

Annex E

Integrated Mine Closure Plan

Part III Annex E

Integrated Mine Closure Plan

Version 1.0

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Yara Dallol Potash Project, Danakil Depression, Ethiopia

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LIST OF ACRONYMS

Abbreviation	Full Definition
ANRS	Afar National Regional State
AQMP	Air Quality Management Plan
BMP	Biodiversity Management Plan
EEPCo	Ethiopian Electrical Power Company
EHS	Environmental, Health and Safety
ES-MS	Environmental and Social Management System
ESIA	Environmental and Social Impact Assessment
IFC	International Finance Corporation
IMCP	Integrated Mine Closure Plan
MoEF	Ministry of Environment and Forestry
OHTL	Overhead Transmission Line
PS	Performance Standard
SEP	Stakeholder Engagement Programme
SPRMP	Sourcing, Procurement and Recruitment and Management Plan
TMA	Tailings Management Area
WAMP	Water Management Plan
WMP	Waste Management Plan

Yara International is a leading global fertilizer company with sales of fertilizer to about 150 countries globally. As part of Yara International's overall upstream strategy, the company is exploring for suitable raw sources that can be developed and used as a source to Yara International's global fertilizer production and directly as finished product in its product portfolio. To complement these upstream processes, Yara International has recently started a subsidiary company, Yara Dallol BV, which is involved in the exploration and mining development of potash concessions in Ethiopia. These concessions are located in the Danakil Depression, Afar National Regional State (ANRS), Ethiopia. Yara International, through its subsidiary, proposes to develop a potash mine - the Yara Dallol Potash Project (hereafter referred to as the Project) within three concession areas.

As part of the environmental approval process for the Project a suite of environmental and social management plans is needed to address the issues identified in the Environmental and Social Impact Assessment (ESIA). Several management plans have been developed to address impacts identified in the ESIA and are implemented as part of an environmental management system for the Yara Dallol Potash Project.

This Integrated Mine Closure Plan (IMCP) has been compiled as a framework, which aims to address environmental and social issues related to the rehabilitation (which will occur progressively through the life of mine), decommissioning and closure of the Yara Dallol Potash Project. Following detailed design of the Project, Yara Dallol BV 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 the 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

The development of this IMCP has been guided by the Yara Dallol BV Health, Environment, Safety, Quality and Product Stewardship Policy, as set out in *Box 1.1*. This Policy is a high-level corporate statement of intent and establishes the principles to be followed in the management of environmental and health & safety issues.

COMPANY COMMITMENT

Yara Dallol BV's aim is to establish sustainable growth and the creation of shareholder and societal value. Yara Dallol BV affirms to their stakeholders, including employees, customers and the public, their commitment to continuously improve and reach standards of excellence in Health Environment, Safety, Quality and Product Stewardship through their operations.

ENVIRONMENTAL POLICY

Yara Dallol BV will manage their business in a life cycle perspective. In its operations Yara Dallol BV will contribute to eco-efficiency by continuously improving energy consumption and reducing waste, emissions and discharges. Waste that is generated will be handled and disposed if safely and responsibly.

Yara Dallol BV will design their products and develop product applications to have the minimum adverse effect on the environment throughout their lifecycle.

1.2**OBJECTIVES**

This IMCP has been compiled within the context that the Project will be evaluated, planned, constructed and operated so as to reduce adverse social and environmental impacts and to meet or exceed requirements set out in applicable laws, regulations and standards. Also, where these laws are absent, Yara Dallol BV will apply cost effective good management practices to protect the social and biophysical environments.

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 Project closure objectives include:

- Leaving a safe environment for both humans and animals;
- Making all areas stable;
- Implementing progressive rehabilitation measures, beginning during the construction phase;
- Returning rehabilitated areas to a state where the landuse is as close to the pre-mining environment as 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;
- Managing possible subsidence in such a way 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;
- The prevention, minimisation and mitigation of negative environmental impacts from operations;
- Assign responsibilities for implementing the IMCP; and
- Describe verification, monitoring and reporting measures.

1.3

PURPOSE AND SCOPE

This IMCP applies to the rehabilitation, decommissioning and closure of the Yara Dallol Potash Project. 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. The closure objectives outlined in *Section 1.2* have been set 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.

1.4

FACTORS INFLUENCING MINE CLOSURE PLANS

During the preparation and review of plans such as this IMCP, a number of different factors need to be considered which may influence decisions in selecting a rehabilitation strategy. These include:

- The conservation value of a proposed environmental outcome;
- The importance of the area to local communities; and
- The consistency of the proposed land use with local and regional plans.

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

1.5

LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS

This IMCP should be read in the context of the Environmental and Social Management System (ES-MS) (discussed in *Chapter 13* of this ESIA), which has been structured to provide a vehicle for the integrated management of the suite of management plans described in *Part III*, which have been designed to address social and environmental risks and impacts.

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

Specifically, this IMCP ties in closely with the following social and environmental management plans.

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL PLANS	
Stakeholder Engagement Programme (SEP)	Discusses the communication of rehabilitation measures and closure objectives to stakeholders.
Sourcing, Procurement and Recruitment and Management Plan (SPRMP)	Discusses the considerations of retrenchment to the workforce within Project planning.
ENVIRONMENTAL PLANS	
Waste Management Plan (WMP)	Rehabilitation of temporary waste storage facilities is a component of rehabilitation, decommission and closure.
Air Quality Management Plant (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.
Water Management Plan (WAMP)	Post closure of the Project will require ongoing monitoring of surface- and groundwater until positive and predictable environmental trends are established.

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

2.1 NATIONAL LEGISLATION AND POLICY

The rehabilitation, decommissioning and closure of the proposed Yara Dallol Potash Project 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).

Section 61 of the Mining Proclamation (678/2010) details that a mine closure certificate will be required on revocation / termination of a mining license, relinquishment of any portion of a license or when a mine is abandoned. The application for closure must be made within 180 days for the occurrence of any of these aforementioned events. The proclamation further notes that no closure certificate shall be issued until the provisions pertaining to health, safety and the environment have been addressed.

The Yara Dallol Potash Project will also be administered by Ministry of Environment and Forestry (MoEF) representatives who form part of the Ministry of Mines. Because the proposed Project is mining related, the MoEF has delegated review and decision making authority to the MoM.

2.2 INTERNATIONAL FINANCE CORPORATION (IFC) PERFORMANCE STANDARDS

The following IFC Performance Standards are applicable to this IMCP:

2.2.1 *Performance Standard 1 (Assessment and Management of Environmental and Social Risk and Impacts)*

IFC Performance Standard (PS) 1 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.

2.2.2 *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.

2.2.3 *Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources)*

PS6 has the greatest relevance to this IMCP. 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, 2012*

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

- **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).
- **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).

- **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).

With respect to this Plan, Yara Dallol BV has the responsibility to ensure that adequate measures are developed and implemented by parties, including third parties, to ensure adequate rehabilitation, decommissioning and closure.

Moreover, Yara Dallol BV has the responsibility for defining, communicating and monitoring the requirements of contracting third parties and suppliers operating under their control and influence with respect to closure management.

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

The roles and responsibilities within Yara Dallol BV for the implementation of the IMCP are presented in *Table 3.1*.

Table 3.1 *Responsible Parties and Roles and Responsibilities*

Responsible Parties	Roles and Responsibilities
Dallol General Manager	<ul style="list-style-type: none"> • Ensure ongoing implementation of the IMCP and work with Environmental and Social Manager to identify necessary improvements • Ensure operational personnel have management systems in place to support commitments within this IMCP
Environmental and Social Manager	<ul style="list-style-type: none"> • Work with Dallol General Manager to ensure IMCP is developed and implemented throughout the life of the Project • Work with the Dallol General Manager to ensure that stakeholder engagement commitments (at a Federal, Regional and Local level) are undertaken.
Biodiversity Specialist	<ul style="list-style-type: none"> • Support the Environmental and Social Manager in roll-out of the IMCP • Assist the Environmental and Social Manager in monitoring onsite implementation of the Plan
Community Liaison Officer	<ul style="list-style-type: none"> • Support the Environmental and Social Manager in implementing stakeholder engagement commitments.
Human Resources Manager	<ul style="list-style-type: none"> • Work with the Dallol General Manager to ensure that employment cessation at closure of the Project is carried out in a defensible and fair manner
Project Manager	<ul style="list-style-type: none"> • Together with the Environmental and Social Manager is responsible for staffing, planning and day-to-day execution of the management measures described under this IMCP during the construction phase of this Project. • As needed, this individual will develop and propose staff plans and contractual language to ensure that these measures are implemented by Yara Dallol BV staff and contractors throughout the construction phase of the Project.

Responsible Parties	Roles and Responsibilities
Operations Manager	<ul style="list-style-type: none"> • Together with the Environmental and Social Manager is responsible for staffing, planning and day-to-day execution of the management measures described under this IMCP during the operational phase of this Project. • As needed, this individual will develop and propose staff plans and contractual language to ensure that these measures are implemented by Yara Dallol BV staff and contractors throughout the operational phase of the Project.
Contractors (Construction and Operations)	<ul style="list-style-type: none"> • Understand and implement ongoing closure activities throughout the life of the proposed Project

FINAL POST-CLOSURE LAND USE

Please Note - the final post-closure land use proposed for the Project 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 as soon as construction commences, and will continue through each phase of the Yara Dallol Potash Project. The rehabilitation strategies and the necessary closure management measures for each phase of the Project are discussed in this *Section*.

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

4.1 *FINANCIAL PROVISION*

Yara Dallol BV will make a financial provision to achieve the total quantum for rehabilitation and remediation of social and environmental impacts and associated damage as well as close-out through implementation of one of the following methods:

1. Approved contribution(s) to a dedicated trust fund;
2. A financial guarantee from Yara Dallol BV or financial lending institution approved by the Ethiopian Ministry of Mines, guaranteeing the financial provision required to implement closure and rehabilitation commitments included in this IMCP; or
3. Any other appropriate manner the Minister of the Ethiopian Ministry of Mines may determine.

4.2 *CLOSURE MANAGEMENT DURING THE CONSTRUCTION PHASE*

As is mentioned in *Section 1.2*, Yara Dallol BV will implement progressive rehabilitation measures, beginning during the construction phase. The key factors that will be considered during the construction phase include –

- The ‘greenfield’ area affected by the Project will be minimised; and

- The potential future contact of contaminating materials with the environment will be minimised.

In other words construction will be carried out with closure in mind.

In this respect the following management commitments will apply during the construction phase of the Project:

- Project planning will, where possible, minimise the area to be occupied by infrastructure. This area will be clearly demarcated on a map and on the ground. In the event that additional areas are to be disturbed there should be necessity for this disturbance, and permission will be sought from the Yara Dallol BV Environmental and Social Manager and Dallol General Manager.
- Construction crews will restrict their activities to the planned areas.
- All infrastructure will be 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.

4.2.1

Temporary Infrastructure for use during the Construction Phase

For the purposes of this IMCP, all temporary infrastructure (*viz.* construction site offices, etc.) that will be used for the construction phase of the Project only will be decommissioned and suitably rehabilitated at the end of the construction phase. The following actions will apply in this regard:

- All infrastructure which cannot be used during the operational phase of the Project (or handed over to local communities) will be demolished and the following options can be considered for their viability:
 - Reuse, recycling of material for other planned (and approved) infrastructure developments in the Project Area and surrounds.
 - Equipment/material – sell and remove off site.
 - Disposal (burial) of inert non-hazardous waste material at the onsite landfill.
 - Offsite disposal of hazardous waste material by an accredited specialist waste contractor.
- The site on which infrastructure has been removed will be rehabilitated so as to return the rehabilitated area to as close to the pre-mining environment as possible. This will be undertaken by carrying out the following rehabilitation activities:
 - If necessary, the final site will be contoured to allow the natural flow of any floodwaters;
 - If relevant (i.e. if situated in an area that was previously vegetated – *viz.* the Fringe Habitat), self-succession of vegetation will be allowed to

occur and if this does not happen, then suitable indigenous vegetation will be replaced;

- If necessary, erosion control and floodwater run-off control measures will be implemented;
- Rehabilitation will be monitored; and
- If necessary, erosion will be repaired if and when it occurs.

4.3

MANAGEMENT DURING OPERATION

Certain aspects of rehabilitation will commence during the operational phase of the Yara Dallo Potash Project, such as the ongoing cessation of solution mining caverns. Final rehabilitation will then take place during the decommissioning and closure phase of the Project. 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.

4.3.1

Continuous Updating of the Closure Plan

Although closure planning should be conducted prior to the commencement of the Project, the lifespan means that major environmental and societal changes may have occurred that will affect the original planned land use. Accordingly, this IMCP 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, this IMCP will be updated post detailed Project Design and during the life of mine to 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 (i.e. during the construction, operational and decommissioning and closure phases).
- An assessment of how each activity may potentially impact on the 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 commitments included in this IMCP.
- 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 Yara Dallol Potash 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 active site, or a progressive incorporation of the lower-rank risks into the formal management, prevention and mitigation regime.
- 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 other social and environmental management plans for the Yara Dallol Potash Project, the following activities are required:

- A list of key rehabilitation items will be maintained during the life of the Project.
- All changes in Project planning will be fully assessed for their potential impact on land rehabilitation prior to their implementation.

4.3.2

Operations and Infrastructure Requiring On-going Rehabilitation

With respect to ensuring that the rehabilitation process is scheduled throughout the life of the Project, the following activities will be undertaken during the operational phase of the Project to ensure that activities being undertaken are done in a way that has closure rehabilitation in mind:

General Management

- Periodic *ad hoc* inspections must be carried out at regular intervals to identify areas where any erosion is occurring (especially as a result of flood events). Appropriate remedial action, including the rehabilitation of the eroded areas, and where necessary, the relocation of the paths causing the erosion, are to be undertaken.

- All spill incidents will be managed in accordance with the Emergency Response Plan and Spill Prevention, Control and Containment Plan (refer to *Annex D* and *F* in *Part III* of this ESIA respectively).
- Areas disturbed by construction and operational activities will be continuously monitored for the presence of alien species (*viz.* Sodom's Apple shrubs [*Calotropis procera*]). Any alien species detected by the Environmental Support Staff will be removed.

Progressive Rehabilitation during the Operational Phase

While the majority of infrastructure related to the Yara Dallol Potash 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 core material will then be stockpiled within the well field (core 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, if possible. Stockpiled core will be replaced as far as possible; however, majority of the overburden will be deposited onto the Tailings Management Area (TMA). The cavern/well will be sealed with a concrete plug. Moreover, spoil material used for roads and pads will be recuperated and reused for future solution mining wells.

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

Onsite Landfill

The onsite landfill will need to be effectively rehabilitated so that it is visually acceptable as a new landform in the landscape, and so that dust emissions and windblown waste are effectively controlled.

The placement of soil as a rehabilitation cover on the onsite landfill will be a continuous operation. Upon closure of a landfill cell, the final site will be backfilled with water. Due to the nature of the salt flats, the landfill surface will crystallise and "self-rehabilitate" overtime

4.4

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 Waste Management Centre, Onsite Landfill and the Sewage 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.

4.4.1 *Impacts and Issues during Decommissioning and Closure*

Social and environmental impacts have been detailed in the ESIA for the Project and associated environmental and social 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 emissions;
- Impact on soil and surface water features as a result of hazardous substance spills; and
- Impact on flora and fauna due to direct interference, hydrocarbon spills and/or deterioration in soil and water quality/quantity.

Social Impacts

- Cessation of income generating opportunities from direct and indirect contracting for the Project;
- Increased income generating opportunities related to in-migration;
- 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.

4.4.2 *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 surface- and groundwater is not contaminated as a result of the Project;
- To monitor any flood water 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 social and biophysical impacts on groundwater use.

Social Objectives and Targets

- To avoid, mitigate and manage social impacts mentioned in *Section 4.4.1*;
- To work with relevant stakeholders to jointly design and define the processes of handover of infrastructure;
- To plan an 'exit strategy' for any 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.

4.4.3 *Management Actions*

This *Section* describes management actions for Project related infrastructure, environmental aspects and social aspects required during the decommissioning and closure phase.

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 Wellfield

On cessation of mining, the final solution well(s)/cavern(s) mined must be backfilled with previously removed core stockpile and backfilled with MgCl₂ brine, following which the well will be sealed with a concrete plug.

The removal of the blanket oil tank and oil separator infrastructure at the well fields and final site rehabilitation will be in accordance with the management actions detailed for *decommissioning and removal of infrastructure and site rehabilitation* the decommissioning for the Processing Plant Site (refer to *Page 4-8*).

Internal Access Roads

Prior to the construction internal access roads **outside of the salt flats**, the ground surface will be stripped and stockpiled as a flattened linear windrow to the side of the road, 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, access roads outside of the salt flats will then be ripped on contour (even if this means ripping across the direction of the route), and levelled.

Borrow material used to create access roads **along the salt flats** will be removed and used as backfill during the rehabilitation of borrow pits during the decommissioning and closure phase of the Project.

Overhead Transmission Line (OHTL) and Pipelines

The OHTL linking the Project Site to the Ethiopian Electrical Production (EEP) Danakil electrical substation will be one of the final Project infrastructure to be decommissioned as this will need to remain for the duration of the decommissioning phase for the provision of power for decommissioning activities.

The removal of the OHTL and pipelines from site will be in accordance with the management actions detailed for the decommissioning and *removal of infrastructure associated* with Processing Plant Site (refer to the *Section* below).

Processing 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 management actions will apply:

- All infrastructure (including asphalted roads and civil concrete) which cannot be used by alternative land users will be demolished and the following options can be considered for their viability:
 - Reuse, recycling of material for other planned (and approved) infrastructure developments in the Project Area and surrounds.
 - Equipment/material – sell and remove off site.
 - Disposal (burial) of inert non-hazardous waste material at the onsite landfill.
 - Offsite disposal of hazardous waste material by an accredited specialist waste contractor.
- The final site will be contoured so as to return the rehabilitated area to as close to the pre-mining environment as possible. This will be undertaken by carrying out the following rehabilitation activities:
 - Excavation and suitable offsite disposal of contaminated soils to the depth of contamination;
 - If necessary, the final site will be contoured to allow the natural flow of any floodwaters;
 - If relevant (i.e. if situated in an area that was previously vegetated- *viz.* the Fringe Habitat), self-succession of vegetation will be allowed to

occur and if this does not happen, then suitable indigenous vegetation will be replaced;

- If necessary, erosion control and floodwater run-off control measures will be implemented;
- Rehabilitation will be monitored; and
- If necessary, erosion will be repaired if and when it occurs.

Evaporation Ponds

During the construction phase of the evaporation ponds, the ground surface (salt crust) within the footprint of the ponds will be stripped and stockpiled as a flattened linear windrow along the perimeter of the ponds. During closure, the stockpiled windrows (salt) 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 plastic lining used to seal the evaporation pond will be perforated so as to ensure the movement of water between the liner. Perforations will have a diameter of at least 1m and at least one perforation will be made in every 25m² block of the evaporation pond. Moreover, plastic lining at the edge of the evaporation ponds will be buried to at least 1m below ground surface.

Tailing Management Area (TMA)

No specific management actions are necessary for the closure of the TMA.

Staff Living Quarters

For the purposes of this Plan, during the closure and decommissioning phase, it is assumed that the staff living quarters will be demolished. The removal of infrastructure and final site rehabilitation will be in accordance with the management actions detailed for the *decommissioning of site infrastructure and site rehabilitation* for the Processing Plant Site (refer to *Page 4-8*).

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.

Waste Management Centre

The Waste Management Centre used for the interim storage and sorting of hazardous and non-hazardous waste 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 and sort waste from the site.

Any residue hazardous waste will be disposed of offsite by an accredited specialist waste contractor. Any residue non-hazardous waste will be disposed of into the onsite landfill.

The removal of infrastructure and final site rehabilitation will be in accordance with the management actions detailed for the *decommissioning of site infrastructure* and *site rehabilitation* for the Processing Plant Site (refer to *Page 4-8*).

Onsite Landfill

The majority of the onsite landfill would have been rehabilitated during the operational phase. The landfill 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 from the site. Final site *rehabilitation* will be achieved through backfilling with water. Due to the nature of the salt flats, the landfill surface will crystallise and “self-rehabilitate” overtime.

Incinerator

The incinerator is to be dismantled and removed from the site. Any residual waste is to be disposed of in the onsite landfill. The removal of the incinerator from site will be in accordance with the management actions detailed for the *decommissioning and removal of infrastructure* associated with Processing Plant Site (refer to *Page 4-8*).

Sewage Treatment Plant

The sewage treatment plant 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 sewage waste from the site. Residue treated effluent will be used for dust suppression for activities during decommissioning. Treated effluent will conform to recognised effluent standards before discharge into the environment. If tests indicate that it is suitable to do so, residue waste sludge will be distributed to villages such as Bada for use as compost where water is available for subsistence agriculture.

The removal of infrastructure and final site rehabilitation will be in accordance with the management actions detailed for the decommissioning of the Processing Plant Site (refer to *Page 4-8*).

Management of Environmental aspects during Decommissioning and Closure

Surface Water Management

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

- Within areas susceptible to flash flood flows, water will be encouraged to flow off the rehabilitated surface as quickly as possible without causing erosion.
- Monitoring of surface water features will continue until positive and predictable environmental trends are 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 for groundwater:

- 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.
- If necessary, the maintenance of any community water supply boreholes will be handed over to the local or regional authorities.
- Groundwater monitoring will continue until positive and predictable environmental trends are established.
- In the event groundwater contamination relating to mining activities is established (for example through the use of diesel blankets), 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

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 Project are discussed in more detail in the AQMP (*Annex A in Part III of the ESIA*).

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 C in Part III of the ESIA*).

Environmental Awareness

Environmental awareness must be developed to make all Yara Dallol BV employees, contractors and the community at large aware of the various social 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 good practice environmental options at that given point in time, will form the basis of the strategy which will inform the closure of the Yara Dallol Potash Project.

Management of Social aspects during Decommissioning and Closure

Handover of Infrastructure (if applicable)

Yara Dallol BV will engage formal and traditional authorities and relevant partners surrounding any necessary 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 Yara Dallol BV will record engagement and assessment that has been undertaken and who will manage infrastructure post-closure.

Retrenchment of Employees

Yara Dallol BV 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 Yara Dallol BV 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 Yara Dallol BV will provide certification for training received and letters of reference to all employees.

Exit Strategy for Community Development

Yara Dallol BV will consider methods for the cessation of any 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

Yara Dallol BV 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 Yara Dallol BV will prepare a series of engagement workshops with relevant stakeholders at a federal, regional 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 positive and predictable environmental trends are established. Residual impacts are expected to include impact associated with surface- and groundwater, increased prevalence of alien flora, visual impact of rehabilitated areas and subsidence and potential social impacts which are currently difficult to quantify.

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

- Surface (*viz.* Killifish ponds) and groundwater quality compliance with agreed conditions:
 - Ensuring water qualities meet the objectives.
- Reconstructed landform stability and ability to support the intended final landuse (i.e. to a state where the landuse is as close to the pre-mining environment as possible):
- 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 will comply with objectives and targets for closure. Towards the end of the life of the 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.

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 (i.e. to a state where the landuse is as close to the pre-mining environment as possible).

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:

- Erosion;
- Surface water drainage systems and surface water quality;
- Groundwater quality at agreed locations;
- Groundwater levels 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 Social and Environmental Management Plans (*Part III* of this ESIA).

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, water monitoring etc.

5.2 SOCIAL MONITORING

Monitoring of the social aspects will also take place during the decommissioning and closure phase of the Project. For more detail on the indicators to be monitored, refer to the monitoring sections of the various Social Management Plans (*Annex I to M in Part III* of this ESIA).

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 will be incorporated into a report and submitted to authorities for review as part of the closure application process.

6.2 *INTERNAL REPORTING*

The Yara Dallol BV Environmental and Social Manager will ensure monitoring is on-going until such time that positive and predictable environmental trends are established. Ongoing monitoring results will be included into a report and distributed to the Yara Dallol BV board of directors.

7 INTEGRATED MINE CLOSURE PLAN SUMMARY TABLE

Table 7.1 Construction Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Preparation of Foundations, Construction of Site Infrastructure	<ul style="list-style-type: none"> Minimise the 'greenfield' area affected by the Project Minimise the potential future contact of contaminating materials with the environment 	<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 and on the ground Ensure that construction crews restrict their activities to the planned areas 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Dalloy General Manager Project Manager Environmental and Social Manager
Removal of Temporary Infrastructure used during the Construction Phase	<ul style="list-style-type: none"> Remove temporary infrastructure used during the construction in a way that results in minimal social and environmental impact and suitably rehabilitate the site 	<ul style="list-style-type: none"> All infrastructure which cannot be used during the operational phase of the Project (or handed over to local communities) will be demolished and materials resulting from demolishing managed in accordance with options provided in Section 4.2.1. 		

Table 7.2 Operational Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Outdated and Non-conformant IMCP	<ul style="list-style-type: none"> To maintain an up to date IMCP that conforms with any changes to societal or environmental baseline To ensure that the IMCP effectively ensures that the rehabilitation activities conform to the commitments made in other social and environmental management plans 	<ul style="list-style-type: none"> Update the IMCP post detailed Project design. Revise the IMCP periodically throughout the life of the Project and annually during the last seven years of the Project life cycle. A list of key rehabilitation items (viz. stockpiles) will be maintained during the life of the Project. All changes in Project planning will be fully assessed for their potential impact on land rehabilitation prior to their implementation. 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Dalloy General Manager Operations Manager Environmental and Social Manager
General Management	<ul style="list-style-type: none"> To ensure that the rehabilitation process is scheduled throughout the life of the Project 	<ul style="list-style-type: none"> Periodic <i>ad hoc</i> inspections at regular intervals to identify areas where erosion is occurring. Appropriate remedial action of the eroded areas, and where necessary, the relocation of the paths causing the erosion. All spill incidents will be managed in accordance with the Emergency Response Plan and Spill Prevention, Control and Containment Plan (refer to Annex D and F in Part III of this ESI respectively). Areas disturbed by construction and operational activities will be continuously monitored for the presence of alien species. Any alien species detected will be removed. 		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Progressive Rehabilitation during the Operational Phase	<ul style="list-style-type: none"> Where possible, to progressively rehabilitate certain parts of the Project during the operational phase 	<ul style="list-style-type: none"> Undertake continuous rehabilitation of the solution mining wells once mining at a particular well is complete Undertake continuous placement of soil as a rehabilitation cover on the onsite landfill. Upon closure of a landfill cell, the cell will be filled with water, following which the landfill surface will crystallise and "self-rehabilitate" overtime. 		

Table 7.3 Decommissioning and Closure Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Solution Mining Wellfield	<ul style="list-style-type: none"> To remove all mining infrastructure Leave a safe environment for both humans and animals Make all areas stable To prevent soil and groundwater contamination by managing all water on site to acceptable and agreed standards Comply with statutory requirements 	<ul style="list-style-type: none"> On cessation of mining, the final solution well(s)/cavern(s) mined must be backfilled with the core stockpile and MgCl₂ brine and sealed with a concrete plug. 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager
Internal Access Roads	<ul style="list-style-type: none"> To remove all mining infrastructure Leave a safe environment for both humans and animals Maximise the recovery and effective storage of those profile materials that will be most useful during the rehabilitation process Retain infrastructure that will benefit communities in the Study Area Make all areas stable 	<ul style="list-style-type: none"> Prior to the construction internal access roads <i>outside</i> of the salt flats, the ground surface will be ripped. At closure, access roads outside of the salt flats will then be ripped on contour (even if this means ripping across the direction of the route), and levelled. Borrow material used to create access roads along the salt flats will be removed and used as backfill during the rehabilitation of borrow pits during the decommissioning and closure phase of the Project. 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager
Overhead Transmission Line (OHTL) and Pipelines	<ul style="list-style-type: none"> To remove all mining infrastructure Leave a safe environment for both humans and animals Make all areas stable 	<ul style="list-style-type: none"> The OHTL linking the Project Site to the EEPco substation will be one of the final Project infrastructure decommissioned. The removal of the OHTL and pipelines from site will be in accordance with the management actions detailed for the decommissioning and removal of infrastructure associated with Processing Plant Site (refer to Page 4-8). 	Refer to Section 5.1 above	
Processing Plant	<ul style="list-style-type: none"> To remove all mining infrastructure Leave a safe environment for both humans and animals Comply with statutory requirements To ensure proper decommissioning, demolition and decontamination of building structures Maximise the use of previously recovered profile materials during the rehabilitation process Make all areas stable 	<ul style="list-style-type: none"> All infrastructure which cannot be used by alternative land users will be demolished All infrastructure demolished will be managed in terms of its end use in accordance with viability considerations detailed on Page 4-8. Contouring of the final site to return the rehabilitated area to as close to the pre-mining environment as possible If necessary, the repair erosion if and when it occurs 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager
Evaporation Ponds	<ul style="list-style-type: none"> To remove all mining infrastructure Leave a safe environment for both humans and animals 	<ul style="list-style-type: none"> Replace the stockpiled windrow (salt crust) along the perimeter of the evaporation pond by pushing it back into the 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
	<ul style="list-style-type: none"> Comply with statutory requirements Maximise the use of previously recovered profile materials during the rehabilitation process Rehabilitate to reduce environmental and visual impacts Make all areas stable 	<ul style="list-style-type: none"> 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 Perforation of the plastic liner along the base of the evaporation pond. 		
Tailings Management area	<ul style="list-style-type: none"> Leave a safe environment for both humans and animals Comply with local, regional and federal regulatory requirements Make all areas stable 	<ul style="list-style-type: none"> No specific management actions are necessary for the closure of the TMA 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager
Staff Living Quarters	<ul style="list-style-type: none"> To remove all mining infrastructure Leave a safe environment for both humans and animals Comply with local, regional and federal regulatory requirements 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 Make all areas stable 	<ul style="list-style-type: none"> All infrastructure which cannot be used by alternative land users will be demolished All infrastructure demolished will be managed in terms of its end use in accordance with viability considerations detailed on Page 4-8. Contouring of the final site to return the rehabilitated area to as close to the pre-mining environment as possible If necessary, repair erosion if and when it occurs 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager
Borrow pits	<ul style="list-style-type: none"> Leave a safe environment for both humans and animals 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 The pit wall and flattened side walls will be ripped on contour 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager
Waste Management Centre	<ul style="list-style-type: none"> To ensure that this infrastructure is one of the last rehabilitation efforts and that it remains open for the duration of decommissioning phase in order to receive and sort waste from the site. To remove all mining infrastructure Leave a safe environment for both humans and animals Comply with local, regional and federal regulatory requirements 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 Make all areas stable 	<ul style="list-style-type: none"> The Waste Management Centre will be one of the final sites to be rehabilitated as it needs to remain open for the duration of the decommissioning phase Any residue hazardous waste will be disposed of offsite by an accredited specialist waste contractor. Any residue non-hazardous waste will be disposed of into the onsite landfill. All infrastructure which cannot be used by alternative land users will be demolished All infrastructure demolished will be managed in terms of its end use in accordance with viability considerations detailed on Page 4-8. Contouring of the final site to return the rehabilitated area to as close to the pre-mining environment as possible If necessary, repair erosion if and when it occurs 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager
Onsite Landfill	<ul style="list-style-type: none"> To ensure that the onsite landfill is one of the last rehabilitation efforts and that it remains open for the duration of 	<ul style="list-style-type: none"> The landfill will be one of the final sites to be rehabilitated as it needs to remain open for the duration of the decommissioning 	Refer to Section 5.1 above	<ul style="list-style-type: none"> Environmental and Social Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
	<p>decommissioning phase in order to receive waste from the site.</p> <ul style="list-style-type: none"> • Leave a safe environment for both humans and animals • Comply with local, regional and federal regulatory requirements • Maximise the recovery and effective storage of those profile materials that will be most useful during the rehabilitation process • Make all areas stable 	<p>phase in order to receive waste from the site.</p> <ul style="list-style-type: none"> • Final site rehabilitation will be achieved through backfilling with water. Due to the nature of the salt flats, the landfill surface will crystallise and “self-rehabilitate” overtime. 		
Incinerator	<ul style="list-style-type: none"> • To remove all mining infrastructure • Comply with local, regional and federal regulatory requirements • To ensure proper decommissioning, demolition and decontamination of building structures 	<ul style="list-style-type: none"> • The incinerator is to be dismantled and removed from the site. • Any residual waste is to be disposed of in the onsite landfill. • The removal of the incinerator from site will be managed in terms of its end use in accordance with viability considerations detailed on Page 4-8. 	Refer to Section 5.1 above	<ul style="list-style-type: none"> • Environmental and Social Manager
Sewage Treatment Plant	<ul style="list-style-type: none"> • To ensure that this infrastructure is one of the last rehabilitation efforts and that it remains open for the duration of decommissioning phase in order to receive sewage waste from the site. • To remove all mining infrastructure • Leave a safe environment for both humans and animals • Comply with local, regional and federal regulatory requirements • 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 • Make all areas stable 	<ul style="list-style-type: none"> • The Sewage Treatment Plant will be one of the final sites to be rehabilitated as it needs to remain open for the duration of the decommissioning phase • Residue treated effluent will be used for dust suppression for activities during decommissioning. Treated effluent will conform to recognised effluent standards before discharge into the environment. • If tests indicate that it is suitable to do so, residue waste sludge will be distributed to villages such as Bada for use as compost where water is available for subsistence agriculture. • All infrastructure which cannot be used by alternative land users will be demolished • All infrastructure demolished will be managed in terms of its end use in accordance with viability considerations detailed on Page 4-8. • Contouring of the final site to return the rehabilitated area to as close to the pre-mining environment as possible • If necessary, repair erosion if and when it occurs 	Refer to Section 5.1 above	<ul style="list-style-type: none"> • Environmental and Social Manager
Surface Water Management	Prevent contamination to surface water	<ul style="list-style-type: none"> • Within areas susceptible to flash flood flows, water will be encouraged to flow off the rehabilitated surface as quickly as possible without causing erosion. 	<ul style="list-style-type: none"> • Refer to Section 5.1 above • Monitoring of surface water features will continue until positive and predictable environmental trends are established 	<ul style="list-style-type: none"> • Environmental and Social Manager
Groundwater	<ul style="list-style-type: none"> • Seal water supply production boreholes to prevent usage as the water may not be suitable for human consumption, • Seal monitoring boreholes to prevent usage as the water will not be suitable for human consumption • If necessary, ensure that the water supply to any villages is sustained. 	<ul style="list-style-type: none"> • Decommissioning of water supply production boreholes • If necessary, the maintenance of any community water supply boreholes will be handed over to the local or regional authorities. • Continued groundwater monitoring until positive and predictable environmental trends are established 	<ul style="list-style-type: none"> • Refer to Section 5.1 above • Groundwater monitoring should continue until positive and predictable environmental trends are established 	<ul style="list-style-type: none"> • Environmental and Social Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		<ul style="list-style-type: none"> Remediation of any contaminated groundwater Decommissioning of monitoring boreholes once water table reaches pre-mining conditions and no mining related groundwater contamination is detected 		
Air Quality	To comply with the commitments detailed in the decommissioning section of the Air Quality Management Plan	Management measures relating to air quality management during decommissioning are discussed in more detail in the Air Quality Management Plan (<i>Annex A in Part III</i>)	Refer to <i>Section 5.1</i> above	<ul style="list-style-type: none"> Environmental and Social Manager
Biodiversity	To comply with the commitments detailed in the decommissioning section of the Biodiversity Management Plan	Management measures relating to biodiversity management during decommissioning are discussed in more detail in the Biodiversity Management Plan (<i>Annex C in Part III</i>)	Refer to <i>Section 5.1</i> above	<ul style="list-style-type: none"> Environmental and Social Manager
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 Project	Refer to <i>Section 5.1</i> above	<ul style="list-style-type: none"> Environmental and Social Manager
Social Impacts	Handover of Infrastructure (if applicable)	If applicable, engage formal and traditional authorities and relevant partners regarding infrastructure management post-closure. Record post-closure management responsibilities as part of detailed closure plan.	Refer to <i>Section 5.2</i> above	<ul style="list-style-type: none"> Environmental and Social Manager
	Retrenchment of Employees	Engage employees surrounding planned retrenchment one year prior to the commencement of retrenching. Plan retrenchment in consultation with employees through non-discriminatory process in compliance with national law and collective bargaining agreements. Make relevant severance and compensation payments as negotiated with workers.		<ul style="list-style-type: none"> Human Resources Manager
	Exit Strategy for Community Development	Consider methods for the cessation of any community development funding during the decommissioning and closure phases		<ul style="list-style-type: none"> Environmental and Social Manager Community Liaison Officer
	Stakeholder Engagement	Undertake national, regional and local engagement programme surrounding the decommissioning activities and post-closure land uses.		<ul style="list-style-type: none"> Environmental and Social Manager Liaison Officer