

ENVIRONMENTAL AWARENESS PLAN

SILLIMANITE QUARRY

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PREPARED FOR:

Van Zyl Sillimanite
Philip Van Zyl

P.O Box 688
Keimoes
8860
Cell: 083 391 5749
Philipvzyl7@gmail.com

PREPARED BY:

Greenmined Environmental
Contact person: Mrs. Y. Coetzee

Postal Address:
Suite 62
Private Bag X15
Somerset West
7129



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ABBREVIATIONS

MPRDA	Mineral and Petroleum Resources Development Act (MPRDA, ACT NO. 28 OF 2002).
EAP	Environmental Awareness Plan
SHEQ	Safety, Health, Environmental and Quality Management
MSDS	Material Safety Data Sheets

1. INTRODUCTION

The Environmental Awareness Plan is undertaken in terms of Section 39 (3c) of the Mineral and Petroleum Resources Development Act (MPRDA, ACT NO. 28 OF 2002). The aim is to educate and increase awareness with issues related to the environment in the work place. This is to create awareness among personnel on management and action plans required in cases of environmental emergencies in the work place.

Van Zyl Sillimanite applied for a mining permit to mine 5 ha of portion 1 of the farm Wortel 42 which falls in the Khâi-Ma Local Municipality in the Registration Division of Namaqualand RD, Northern Cape Province.

The area earmarked for the proposed mining falls on a section of the farm that was previously used for sillimanite mining and the intention of this application is to develop the existing stockpiles into a quarry. The mining methods will make use of blasting by means of explosives in order to loosen the hard rock. The material is then loaded and hauled out of the excavation to the mobile crushing and screening plants. The sillimanite will be screened to various sized stockpiled. The sillimanite will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site. Blasting will only occur once every six (6) to eight (8) weeks.

The proposed mining area is approximately 5 ha in extent and the applicant, Van Zyl Sillimanite, intends to win material from the area for at least 2 years with a possible extension of another 3 years. The sillimanite to be removed will be used cement or refactoring industries in the vicinity. The proposed quarry will therefore contribute to the building and building contracts in and around the Pella / Pofadder / Aggeneys area.

The material of information used to compile the EAP will be the approved Environmental Management Programme Report(s), as well as other relevant specialist reports. These documents will be utilised to compile a database, which is referred to in this EAP, which will contain all medium to high significant environmental aspects and issues. The environmental issues and aspects will be entered into the database with associated mitigation measures and responses, along with the specific legislation that governs such an impact or aspect. The environmental awareness plan is detailed in the sections below.

2. ENVIRONMENTAL AWARENESS PLAN

The following environmental awareness points should be considered as part of the Safety, Health, Environmental and Quality Management (SHEQ) induction presentations to new staff at the proposed open cast site:-

2.1. Induction

All full time staff and contractors are required to attend an induction session. Please refer to Appendix 1 for the environmental site induction sheet to be used when employees are to be inducted. Employees should be inducted when they start at the mine and when they return from leave. Any contractor, who works on the mine for a period of 24 hours or more, is required to undergo the respective Head of Department/ Unit (H.O.D.) induction training.

Environmental issues and aspects related to the operation will be addressed in induction sessions. All environmental impacts and aspects and their migratory measures will be discussed, explained and

communicated to employees. The induction sessions will be modified according to the level of employee attending the induction session, so that all employees gain a suitable understanding of environmental issues and pollution.

The basic content of the induction programme for full time employees should be as follows:-

- Welcome and Registration;
- Induction Documents Issued;
- Disciplinary Code;
- Fire Extinguisher;
- Employee Assistance Program-EAP;
- Security; and
- HIV/Aids Awareness,

2.2. Environmental Issues

2.2.1. Procedure for Hazardous Substances Such as Oil Spills And Clean-Up

2.2.1.1. Legislated requirements

Hazardous Substances Act (Act No. 15 of 1973) and Hazardous Chemical Substances Regulations (August 1995)

2.2.1.2. Background

Hazardous substances refer to substances scheduled in the Hazardous Substances Act (Act No. 15 of 1973) and Hazardous Chemical Substances Regulations (August 1995). These include fuels, oils, solvents, cement, pesticides, etc.

2.2.1.3. Objectives

To ensure safe and proper storage, handling and disposal of hazardous substances on the Site so as to avoid environmental pollution and human health risks.

2.2.1.4. Performance Indicators

No pollution incidents reported or observed on the Site.

2.2.1.5. Procedures

- All hazardous substances, as scheduled by the Hazardous Substances Act (Act No. 15 of 1973), shall be strictly handled, stored and disposed of as per the manufacturer's specifications. Material Safety Data Sheets (MSDS) for all hazardous materials used on site shall be available on the Site Manager's environmental file for reference e.g. in first aid cases, to guide personal protective equipment use, to guide spill clean ups etc.
- The storage areas for hazardous substances shall meet the requirements of all related safety legislation and shall be sanctioned by the site safety officer.

- No waste hazardous substances may be disposed of on the Site. These shall be directed to a hazardous waste disposal site.
- Hydrocarbons such as diesel, petrol, and oil which are used as fuel for mine machinery which is kept on site, increases the possibility that spillage may occur. As this is a product mine there is also the possibility of a product spillage occurring. In the event of a spillage, procedures must be put into place to ensure that there are minimal impacts to the surrounding environment.
- Diesel, engine oil and hydraulic oil are the most likely hydrocarbons identified during impact assessments that can result in an emergency situation.

The following procedure applies to a hydrocarbon spill:

- If any spills take place the contaminant together with the soil will be removed and placed in acceptable container to be removed with industrial waste to a recognized license facility or licensed company.
- Bioremediation will be done on site to the satisfaction of Department of Environment, Forestry and Fisheries (DEFF)
- A spill clean-up kit is available at the storage yard
- All personnel will be trained in spill clean-up methodologies.
- Every precaution will be taken to prevent the spill from entering the surface water environment;
- In the event of a large spillage, adequate emergency equipment for spill containment or collection, such as additional supplies of booms and absorbent materials, will be made available and if required, a specialised clean-up crew will be called in to decontaminate the area. The soil will be removed and treated at a special soil rehabilitation facility;
- If the spill is larger than 100 litres the Department of Environment, Forestry and Fisheries (DEFF) will be notified by fax and or phone after knowledge of the incident.
- Reasonable measures must be taken to stop the spread of hydrocarbons and secure the area to limit access;
- Dispatch necessary services;
- The incident must be reported to the Environmental coordinator immediately;
- The Environmental Coordinator will assess the situation from the information provided, and set up an investigation team or relevant personnel. Included in this team could be the Mine Manager, Chief Safety Officer, the employee who reported the incident and any individual responsible for the incident;
- When investigating the incident, priority must be given to safety;
- Once the situation has been assessed, the Environmental Coordinator must report back to the Mine Manager;
- The Mine Manager and the investigation team must make a decision on what measures can be taken to limit the damage caused by the incident, and if possible any remediation measures that can be taken;
- The source / reason of the spill or leak will be addressed immediately;
 - Never mix general waste with hazardous waste;

- Use only sealed, non-leaking containers;
- Keep all containers closed and store only in approved areas;
- Always put drip trays under vehicles and machinery;
- Empty drip trays after rain;
- Stop leaks and spills, if safe;
- Keep spilled liquids moving away;
- Immediately report the spill to the site manager/supervision;
- Locate spill kit/supplies and use to clean-up, if safe;
- Place spill clean-up wastes in proper containers; and
- Label containers and move to approved storage area.

2.2.1.6. Monitoring and Reporting

The Site Manager shall inspect storage or handling areas regularly to ensure that they meet safety requirements and any suspected hazardous substances spillage would immediately be investigated or cleaned.

The external environmental auditor is to check if any hazardous substances are stored or used on site and that the correct procedures are followed, including that of the relevant MSDS on file.

2.2.1.7. Responsibilities

The Site Manager is responsible for the implementation of these specifications on site.

2.2.2. Procedure for The Maintenance and Infrastructure Management

2.2.2.1. Legislated Requirements

National Land use and Planning Ordinance of 1985 and Spatial Planning and Land Use Management Act of 2013.

2.2.2.2. Background

This deals with the maintenance of infrastructure e.g. signage, access roads, cabling, fencing etc.

2.2.2.3. Objectives

To ensure that no ecological degradation takes place as a result of poorly maintained roads or drainage line crossings e.g. erosion or poor fencing or livestock damage to rehabilitation areas.

To limit visual impact by avoiding the establishment of indiscrete signage or billboards on site, especially visible from the National or Regional Roads.

2.2.2.4. Performance Indicators

- Infrastructure visibly in good repair and operational areas kept tidy;
- The footprint of the operations and vehicular circulation is clearly defined with no "spill over" into other areas of the site;
- Roads are stable and in good repair; and
- Fences and gates are in good repair.

2.2.2.5. Procedures

2.2.2.5.1. Access Roads

- All access tracks to be maintained in a serviceable condition and all significant erosion repaired and affected road section stabilized immediately; and
- Storm water culverts, road side stormwater gully's and deflection humps across the roads shall be maintained in good repair and kept free of debris.

2.2.2.5.2. Fences and Gates

- All permanent fencing and access and security gates erected by the developer shall be maintained in a neat and serviceable condition for the lifespan of the project; and
- The fence line and gates shall be inspected minimum monthly and any required maintenance work scheduled. All wire strands left over from maintenance work shall be removed from site to prevent injury to livestock or other animals in the area.

2.2.2.5.3. General infrastructure

- All infrastructures must be maintained and any damage repaired regularly to remain in a functional and ethically pleasing condition at all times;
- All operational areas shall be kept neat and tidy at all times;
- The footprint of the operations and maintenance facilities, parking and vehicular circulation must be clearly defined e.g. through the use of fencing and markers were practical, to avoid "spill over" into other areas of the site;
- Signage should be discrete and confined to entrance gates and no corporate or advertising signage in the form of Billboards should be allowed; and
- All unnecessary signage should be avoided.

2.2.2.6. Monitoring and Reporting

The Site Manager shall undertake visual spot checks on a fortnightly basis to check for deterioration or incidental damage of infrastructure and plan and carry out maintenance accordingly.

External environmental auditor shall check that infrastructure is in good repair.

2.2.2.7. Responsibilities

The Operator is responsible for maintaining all infrastructures under their control in a functional and aesthetically pleasing condition.

2.2.3. Procedure for Rehabilitation and Identification and Eradication of Alien Invasive Plants

2.2.3.1. Legislated requirements

National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014.

2.2.3.2. Background

The proposed project site is already disturbed and no longer on pristine condition. However, successful revegetation of areas on site disturbed as a result of construction e.g. adjacent to roads will serve to stabilise the areas and reduce the potential for erosion, reduce the visual impact of the development and will improve the habitat for animals.

While initial revegetation will be undertaken as part of the closure, ongoing management and maintenance is required to ensure successful establishment and ongoing viability of re-established and natural vegetation on site.

2.2.3.3. Objectives

Establishment of vegetation in areas previously disturbed where feasible would stabilise the site, improve aesthetics and provide improved wild animal habitat.

2.2.3.4. Performance Indicators

Evidence of germination and successful establishment of vegetation in areas prepared for rehabilitation.

No areas of poor vegetation cover in rehabilitation locations previously disturbed by construction.

No alien invasive plants (in terms of National Environmental Biodiversity Act [NEMBA]) or otherwise prohibited plant species are present in the rehabilitation areas.

No damage/pollution to the environment through the indiscriminate use of herbicides observed and

Natural vegetation showing signs of vitality will be acceptable rather than lack of significant senescent vegetation.

2.2.3.5. Procedures

2.2.3.5.1. Vegetation recovery

- The Operator is to draw up a rehabilitation maintenance schedule and related budget (to ensure that sufficient funds are made available) for ensuring the continued development of vegetation in rehabilitation areas. This is to allow for alien plant control, over seeding where required and initial irrigation of seeded areas/transplant if required;
- Focus of rehabilitation planning should be on disturbed areas;
- All areas must be cleared of alien vegetation; and
- The establishing rehabilitation areas are to be protected against stock grazing e.g. by means of fencing.

2.2.3.5.2. Erosion repair

The following areas are to be inspected for successful seed germination subsequent to rehabilitation interventions undertaken at the closure.

- The sides of the main and secondary access roads; and
- Area around the buildings.

Only suitable locally indigenous plant species should be used for rehabilitation or planting anywhere on site. This means that no exotic or invasive species should be used for rehabilitation, and this includes commonly used invasive grass species.

2.2.3.5.3. Removal of Alien Invasive Plants

- All rehabilitation areas and areas of natural vegetation shall be kept free of alien plant seedlings and coppice.
- All listed invader plants in terms of the National Environmental Biodiversity Act [NEMBA] (Act No. 10 of 2004) Alien and Invasive Species Regulation GNR 598 and 599 of 2014, are to be removed from the Site on a continuous basis (minimum bi-annually).
- DWS approved methodology should be employed for all alien clearing operations.
- The plants should preferably be pulled by hand while young. Seedlings should not be allowed to grow to a size where they have reached seed bearing age or requiring expensive mechanical or chemical controls.
- No bulldozing or mechanical removal is allowed. All stems must be cut as close to ground level as possible, using loppers or chainsaws (depending on size), and stumps must be immediately hand painted with a suitable Triclopyr herbicide (e.g. Garlon, Timbrel, with color dye) to prevent resprouting.
- No herbicide spraying should be undertaken anywhere within natural vegetation. All cut branches should be stacked into a pyramid (cut ends up) and left to dry. Annual follow-ups are required in all areas that have been previously cleared. Small seedlings may be hand pulled. All alien clearing should take place in the period October to April, to minimize damage to seasonal species.
- All alien plant materials removed from the site are to be disposed of at an approved waste disposal site or chipped for mulch material. The burning or burying of the materials on site should not be allowed.

2.2.3.5.4. Use of Pesticides

- Insecticides shall not be used on site.
- Herbicides shall be used only in terms of alien plant control protocols. Only contact herbicides may be used e.g. Gyphosate based, none that are persistent in the soil.
- Chemicals are not to be applied during rainy or windy periods.
- Painting on of chemicals is preferred to spraying, as this allows for better control of the area being affected.
- Only staff wearing the appropriate protective clothing and using well maintained equipment designed for the purpose and supervised by a certified Pest Control Operator may apply herbicides.
- Any herbicides used must be applied per the manufacturer's specifications and must be registered for the target plant species.
- No chemicals may be stored on the site for any period of time, unless in suitably secure poisons store as per the specifications of the Occupational Health and Safety Act.

- No equipment used for application of chemicals may be washed anywhere on the site.
- Empty poison containers shall be properly disposed of to a landfill site and no pesticide residue or equipment wash water may be deposited or directed to the stormwater system on site.

2.2.3.6. Monitoring and Reporting

The Site Manager shall monitor all rehabilitation areas to ensure that they are establishing well and are free from alien invasive vegetation.

The external environmental auditor is to comment on the progress and success of revegetation efforts.

2.2.3.7. Responsibilities

Operator: is responsible for the ongoing maintenance of rehabilitation areas on site.

2.2.4. Procedure for The Storm Water and Erosion Control

2.2.4.1. Legislated requirements

National Water Act (Act No. 36 of 1998) General Authorisation section 3.7 and Conservation of Agricultural Resources Act (No 43 of 1983) section 6.

2.2.4.2. Background

The drainage lines on site may be susceptible to erosion or sediment deposition, particularly where these have been disturbed by construction e.g. service crossings.

Stormwater runoff will be restricted to surface sheet flow across most of the site except for a few formal stormwater interventions such as stormwater open channels or swales and where stormwater will be channelled away from and through culverts under the roads.

While erosion potential is limited on the flat parts of the site, disturbed areas and embankments adjacent to roads will be susceptible to erosion until such time as these are adequately stabilised.

2.2.4.3. Objectives

Prevent contamination of storm water run-off from the facility to prevent pollution of receiving environments.

Prevent localised flooding or water logging on site by ensuring that drainage lines or channels, culverts etc. are not impeded e.g. through sediment build up and debris and remain functional.

Avoid or minimize potential erosion by reducing the speed of drainage flows from the site and by maintaining the stability of slopes, embankments and previously disturbed areas on site.

2.2.4.4. Performance Indicators

No indication of significant erosion or sediment deposition on the Site.

Drainage lines, stormwater channels, swales and culverts are functional (i.e. in good repair) and visibly free of significant litter, sediment and other contaminants.

2.2.4.5. Procedures

- Maintenance activities shall not lead to undue damage, blockages or disruption of the drainage lines or stormwater channels on site or concentrate stormwater sheet flow into erosive channels.
- Sediment to be removed on a need basis from all drainage channels, culverts and pipes under roads to prevent blocked pipes and erosion damage to road sides due to disrupted flow.
- Significant erosion in the drainage lines or stormwater channels or swales shall be addressed by implementing water slowing measures e.g. temporary straw bales or sand bags or permanent gabion weirs and stabilized overflows and crossings to prevent recurrence.
- All erosion channels anywhere on site shall be repaired immediately through backfilling with appropriate material and stabilizing to prevent recurrence.
- Where vegetation has been washed away or damaged as a result of the erosion this shall be reinstated once the area has been stabilized.
- Stabilization measures e.g. grass blocks shall be maintained in good repair.
- No materials or wastes shall be dumped into stormwater channels, in the drainage lines or their buffer zones. Any litter or foreign material blown or washed into these areas inadvertently is to be removed regularly (minimum monthly) without undue disturbance to the vegetation and stability of the area.
- Fuel or oil or other chemical spills anywhere on site should be treated immediately with an appropriate mop-up or bio-remedial product as directed by manufacturers to prevent contamination of runoff.

2.2.4.6. Monitoring and Reporting

The Site Manager is to inspect the drainage lines and any other stormwater channels on site at least monthly and immediately after heavy rains for damage and foreign matter/litter and shall log pollution/obstruction incidences and plan maintenance activities accordingly.

The external environmental auditor shall inspect the drainage lines and any other stormwater channels on site for evidence of significant erosion and pollution during formal audit inspections.

2.2.4.7. Responsibilities

Site Manager: to implement the above procedures.

2.2.5. Procedure for Water Use

2.2.5.1. Legislated requirements

National Water Act (Act No. 36 of 1998): Section 21.

2.2.5.2. Background

Water will be used from the quarry pit for dust suppression on site. No abstraction from boreholes.

2.2.5.3. Objectives

To use water in a responsible way.

To minimize consumption.

To prevent wastage of this limited resource.

To prevent unauthorised water abstraction e.g. via unmetered or unauthorised boreholes.

2.2.5.4. Performance Indicators

No undue water wastage observed.

No visible water leaks.

No unauthorised boreholes observed on site.

2.2.5.5. Procedures

2.2.5.5.1. Abstraction

Abstraction volumes from boreholes must be monitored. If more than 10 000L is extracted on any given day, the boreholes should be registered with the Department of Water and Sanitation.

2.2.5.5.2. Wastage

Wastage of water shall be avoided at all times.

All supply points shall remain properly closed when not in immediate use and all broken pipes or fittings shall be isolated immediately and repaired as soon as possible.

2.2.5.5.3. Prevention of Water Pollution

The pollution of surface or ground water shall be prevented. Such pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage, water carrying soil particles or waste products etc.

2.2.5.6. Monitoring and Reporting

The Site Manager shall monitor the project's water extraction quantities, for water leaks or wasteful practices by staff.

The external environmental auditor shall check that water is being abstracted from a legitimate source (agreement with landowner, that the boreholes are registered if required). Any significant water leaks observed during the site inspection shall also be noted.

2.2.5.7. Responsibilities

Site Manager: is responsible for implementing responsible water usage practices including the procedures stipulated above.

2.2.6. Procedure for Dust Control

2.2.6.1. Legislated requirements

NEM: Air Quality Act (No. 39 of 2004) (Dust)

2.2.6.2. Background

It is anticipated that dust will be a significant issue on the site due to haulage and from poor vegetation cover in disturbed areas due to slow recovery of natural veld and traffic can lead to dust generation on site.

2.2.6.3. Objectives

Minimize dust generation and associated nuisance.

2.2.6.4. Performance Indicators

No evidence or reports of significant dust problems.

2.2.6.5. Procedures

- Operator vehicles to keep to a 40km/hr speed limit on gravel access roads on site to minimize dust generation.
- Use water for damping down dust on roads wherever possible.
- Ensure establishment of vegetation in previously disturbed areas.

2.2.6.6. Monitoring and Reporting

The Site Manager must monitor for compliance per the procedures above.

2.2.6.7. Responsibilities

Site Manager: must ensure that adequate dust control measures are implemented on the Site.

2.2.7. Procedure for Animals On Site

2.2.7.1. Legislated requirements

Nature Conservation Ordinance, 1974 (Ordinance 19 of 1974)

2.2.7.2. Background

Parts of the site have historically been used for agriculture which includes livestock grazing.

2.2.7.3. Objectives

Rescue and relocate any trapped animals on site.

Exclude domestic livestock from site especially on rehabilitation areas.

2.2.7.4. Performance Indicators

No evidence of injured wildlife.

No evidence of domestic livestock in the mining area and rehabilitation areas.

2.2.7.5. Procedures

2.2.7.5.1. Wild animals

- If wild animals are encountered on the Site, they may not be trapped, captured, disturbed, injured or killed.

- If not threatened, or causing a threat to anyone, the animal is to be left alone.
- If threatened e.g. trapped or causing a threat e.g. a potentially venomous snake, the Site Manager shall arrange for the capture of the animal and release thereof into natural undisturbed veld on the site. Assistance from local conservation staff may be required in terms of potential problem or injured animals. No untrained person shall attempt to capture a potentially venomous snake.

2.2.7.5.2. Domestic animals

- Grazing livestock shall be kept away from rehabilitation areas till they are fully rehabilitated.
- It is strongly recommended that no animals should be left wandering in the mining area

2.2.7.6. Monitoring and Reporting

The Site Manager shall monitor the site for roaming wild life and animals at the mining area. The external environmental auditor shall check for suitable clearance for small animal movement under the perimeter fence.

2.2.7.7. Responsibilities

The Site Manager shall be responsible for the day to day implementation of these procedures on the site.

2.2.8. Procedure for The Identification and Relocation of Graves

If graves are identified on the area where the new activity occurs, but the activity will not have an impact on the graves, the following measures should be taken:

- SAHRA should be notified of the existence of the graves
- The grave sites should be fenced off or demarcated.
- The position of the graves will be clearly marked on a map.
- All contractors and employees should be made aware of the location of the graves.

2.2.8.1. Relocation of Graves.

There are no identified Graves within the mining area therefore there will be no disturbance of such.

2.2.8.2. Unearthing of Graves

If unmarked graves are unearthed during construction activities the following measures should be taken:

- SAHRA will be contacted to inspect the grave sites.
- Immediately upon the identification or unearthing of a grave, all work, construction, or excavation within a radius of 3m of the gravesite shall cease, to avoid desecration of the grave or any further damage.
- A person will be appointed to watch over the grave until a security guard has arrived;
- The Site Manager or his representative will be informed of the discovery of the grave immediately.

The site manager will ensure that:

- The grave is clearly marked with hazard tape, screening off a radius of m around the site of the grave;
- A security guard is placed to watch over the grave until attended to by the undertaker;

- Photographs and co-ordinates are taken of the grave and surroundings;
- A local undertaker is contacted to attend the grave within a 24-hour period;
- The local municipal health inspector should be informed should the grave(s) be exhumed
- The National Heritage Resources Act [ACT NO. 25 OF 1999] and regulations will be followed further in an effort to contact/find relatives.

2.3. Environmental Education and Training

2.3.1.Environmental Symposiums

Environmental symposiums can be held with management, and selected groups of supervisors, foremen or employee representatives. This will take the form of an open discussion between the relevant department and these individuals. The symposiums will aid in environmental awareness being generated at all levels, as well as assist the relevant department in defining all, and identifying new environmental issues, concerns and pollution sources.

2.3.2.In-House Training

In-house training sessions should be held with relevant employees. The training sessions should be determined by the relevant department, and would allow for employees to participate in determining what the environmental issues and concerns are with regard to their specific occupation. Education with regard to environmental incident reporting will be detailed at these sessions.

2.3.3.On The Job Training

On the job training is an essential tool in environmental awareness. Employees should be given details of the expected environmental issues and concerns specifically related to their occupation. Employees should be trained on how to respond if an environmental problem or source of environmental pollution arises. The training will be on-going, and all new employees will be provided with the same standard of training as existing employees.

2.3.4.General Training and Skills Development

Human Resources Development Programmes should include appropriate training and skills development programmes as required by the workforce in support of operation specific business plans (both mining and non-mining related). Training will be offered in portable skills, being competencies that will enable employees to find jobs elsewhere within the mining industry, or to become self-employed. Basic environmental and pollution control skills should be included in this training.

2.3.5.Environmental Open Days

If necessary, environmental open days should be arranged by environmental unit or management of the mine and liaison departments. Open days can be utilised to discuss environmental issues in a less formal manner, thereby allowing employees the opportunity to participate in environmental management by educating them about environmental pollution and waste management in areas beside the workplace such as home. The open days do not necessarily have to be confined to employees only, but may be open to employee's families and

schools so as to ensure that the principles of environmental management, pollution prevention, waste management and sustainable development are communicated to the communities surrounding the operation.

2.3.6. Other

Environmental Steering committees could work to increase awareness in the community regarding environmental constraints and opportunities. At corporate level, this includes providing support for NGOs involved with specific environmental awareness programmes.

2.4. Environmental Communication Strategy

Management shall establish and maintain procedures for the internal communication between the various levels and functions of the organisation, and receiving, documenting and responding to relevant communication from external interested & affected parties. The organisation shall consider processes for external communication on its significant environmental aspects and record its decision.

Communication is a management responsibility. All line supervisors are responsible for effective communication within their own sections. Environmental communication can be divided into two categories, namely internal communication and external communication.

2.4.1. Internal Communication

The following communication channels and media should/can be used to communicate environmental issues within company.

HOD Meetings: The Mine Manager communicates information to senior management on environmental issues and the information is minuted.

HSEC Meetings: Environmental issues should be an agenda item on plant and section monthly safety, health & environmental meeting agendas.

Publications: Leaflets, posters etc are produced by the relevant department or other designated persons. Email notifications or relevant articles should also distribute when required as to update the personnel of the environmental issues regarding the plant or site.

EMS Database (if established): Feedback from line management on objectives, targets and actions.

Daily/ Weekly Safety Meeting: All meetings are scheduled to commence with a discussion on safety, health and environmental topics.

Intranet: Should the associated infrastructure exist, a database of environmental incidents and their respective control measures, linked to a continually updated environmental legislation database should be kept and maintained at the mine.

2.4.2. External Communication

The following communication channels and media could be used to communicate environmental issues to individuals who are not employed by B & E International (Pty) Ltd.

Environmental Committee: An Environmental Committee should be established and used as a forum to keep interested and affected parties informed of the significant environmental aspects identified through the Environmental Impact Assessments and Management Plans. This should also be the forum where interested and affected parties get the opportunity to raise environmental concerns.

Records must be kept of all decisions and concerns. The Environmental Committee should be chaired by the Mine Manager, or another appropriately appointed competent individual.

Publications: Selected publications should be produced and used to communicate environmental issues to outside parties. Examples include newsletters and Annual Reports.

Communication from External Parties and Employees: A department should be established that will be responsible for liaison with the media in respect of any crisis that may arise. A complete procedure for media liaison must be made available to all employees. Communication from external interested and affected parties may be received by e-mail, fax, telephonically or by mail.

Where required, a written response will be sent, on receiving such communication, by the appropriately appointed individual under signature of the Mine Manager, to the respective interested and affected party. All telephonic or facsimile correspondence received on the mine must be forwarded to the relevant department for action. All events or concerns will be captured and actioned on an existing and/or future database.

E-mail: E-mail communication received must be stored, with replies, in an appropriate folder on a server. E-mail messages, relevant to environmental management, should be kept for a minimum of two years before deletion.

Mail: Correspondence received by mail must be filed, along with the response (where relevant), within the relevant department's filing system for a minimum period of 2 years. Paper correspondence will be archived in this department.

Telephone: A register of telephonic environmental queries should be kept by the relevant department detailing caller, contact details, date, query, action taken and response. Furthermore, the person answering the call will be responsible for logging their particulars against the call, as well as ensuring that all communication that leads to an aspect or an impact, is entered on the database.

Storage of Correspondence: All original correspondence must be retained by the Mine Manager for a minimum period of two years.

Environmental Reports: Copies of relevant specialist study reports and Environmental Impact Assessments will be made available by the Mine Manager should these be requested by an external party.

Queries from Interested and Affected Parties: Response about environmental impacts and aspects will be addressed by the relevant department, and approved by the Mine Manager.

Queries and Requests from the Media: Requests for articles on environmental issues at will be co-ordinated by the HR Manager, with input from the relevant department, as approved by the General Manager, in line with the Communication Strategy. The Communication Strategy should be based on a behavioural approach.

Due to the environmental awareness generated by induction, on the job training etc, employees are able to identify environmental problems, issues, concerns and pollution timeously.

2.5. Incident Reporting Structure

Environmental incident reporting is a vital part of communication. Employees are required to report any and all environmentally related problems, incidents and pollution, so that the appropriate migratory action can be implemented timeously. In the event of an Environmental Incident the reporting procedure as indicated in

Table 1 should be followed:

Table 1: Environmental Incident Reporting Procedures

ENVIRONMENTAL INCIDENT REPORTING STRUCTURE	ACTION REQUIRED
Line Management in relevant area of responsibility where the incident occurred	<p>Shall investigate the incident and record the following information:</p> <ul style="list-style-type: none"> o How the incident happened; o The reasons the incident happened; o How rehabilitation or clean up needs to take place; o The nature of the impact that occurred; o The type of work, process or equipment involved; and o Recommendations to avoid future such incidents and/or occurrences. <p>Shall inform the Environmental Manager and the Mine Manager on a daily basis of all incidents that were reported in the area/section.</p> <p>Shall consult with the relevant department / person for recommendations on actions to be taken or implemented where appropriate (e.g. clean-ups).</p> <p>Shall assist the Environmental Manager and/or Mine Manager with applicable data in order to accurately capture the incident into the reporting database.</p>

ENVIRONMENTAL INCIDENT REPORTING STRUCTURE	ACTION REQUIRED
Area / Line Managers	<p>Shall forward a copy of the incident form to other line managers.</p> <p>Shall forward a copy of the incident form to the Environmental Manager and the Mine Manager.</p> <p>Shall inform the relevant department / person on a weekly basis of the incident by e-mail or by submitting a copy of the incident report. Once a High Risk Incident (<i>any incident which results from a significant aspect and has the potential to cause a significant impact on the environment</i>) occurred it must be reported immediately to the Environmental Manager and the Mine Manager by telephone or email to ensure immediate response / action.</p> <p>Shall forward a copy of the completed Incident Reporting Form (and where applicable a copy of the incident investigation) to the relevant department / person.</p>
Environmental Manager / Mine Manager	<p>Shall complete an incident assessment form to assess what level of incident occurred.</p> <p>Shall make recommendations for clean-up and / or appropriate alternate actions.</p> <p>Shall enter actions necessary to remediate environmental impacts into the database in conjunction with the responsible line manager.</p> <p>Shall enter the incident onto the database in order to monitor the root causes of incidents.</p> <p>Shall include the reported incidents in an appropriate monthly / quarterly report.</p> <p>Shall highlight all incidents for discussion at HSEC meetings.</p>

2.6. Others

2.6.1.No Go Areas

No mining should occur out of restricted areas (e.g. areas of natural vegetation outside of development footprint, drainage lines and neighbouring properties).

2.6.2.Hazardous substances

Hazardous substances used should be handled and stored safely. No oils, fuels, paints or chemicals or polluted wash water or mop up products containing these to be thrown out on site. These must be placed into sealed containers before removal from site.

2.6.3.Fire

- 🌿 No fires and burning of wastes are allowed on site.
- 🌿 No smoking in vegetated areas or near flammable materials.

2.6.4.Waste Control

- 🌿 Work areas should be cleaned on a daily basis. Waste must be disposed of in the bins provided on site.
- 🌿 Plastics and litter that can blow around shall immediately be put into bins.
- 🌿 All food waste should be thrown into bins with scavenger proof lids.
- 🌿 Rubble should be kept in central stockpiles and regularly removed.
- 🌿 Rubbish and rubble should not be mixed.
- 🌿 Recycling programme should be explained to personnel and bins used for that purpose clearly marked.

2.6.5.Animals

- 🌿 Report problem wild animals (e.g. nesting birds, snakes or trapped or injured animals) to site management for rescue.
- 🌿 Do not feed any wild animal.
- 🌿 Know first aid procedure in case of a snake bite.
- 🌿 Close gates and do not interfere with stock animals on or adjacent to the site.

2.6.6.Material storage/stockpiles

No stockpiling outside of site/in no-go areas.

2.6.7.Vehicles and machinery

- 🌿 Drip trays placed under leaking static plant (e.g. pumps, generators and parked vehicles) and during servicing and refueling.
- 🌿 Report all leaking machinery and oil/fuel spills immediately. Spills should be treated and machinery fixed or removed from site.

2.6.8. Toilets

- Blocked and leaking toilets should be reported.
- Toilets should be kept clean on a daily basis.
- No paper or stone should be used, only toilet papers.

2.6.9. Water wastage

Leaking water pipes should be repaired immediately and if possible protected from damage.

2.6.10. Archaeology

Any suspected archaeological findings should be reported to site manager immediately and worked stopped in the area until further notice.

Appendix 1: Site Induction Sheet

Environmental Induction and Awareness Training General Workforce

Site Management:

- ✦ Stay within boundaries of site – do not enter adjacent properties
- ✦ Keep tools and material properly stored
- ✦ Smoke only in designated areas. No smoking is allowed in vehicles
- ✦ Use toilets provided – report full or leaking toilets

Water Management and Erosion:

- ✦ Check that rainwater flows around work areas and are not contaminated
- ✦ Check that dirty water is kept from clean water
- ✦ Maintenance activities shall not lead to undue damage, blockages or disruption of the drainage lines or stormwater channels on site or concentrate stormwater sheet flow into erosive channels.
- ✦ Sediment to be removed on a need basis from all drainage channels, culverts and pipes under roads to prevent blocked pipes and erosion damage to road sides due to disrupted flow.
- ✦ Significant erosion in the drainage lines or stormwater channels or swales shall be addressed by implementing water slowing measures e.g. temporary straw bales or sand bags or permanent gabion weirs and stabilized overflows and crossings to prevent recurrence.
- ✦ All erosion channels anywhere on site shall be repaired immediately through backfilling with appropriate material and stabilizing to prevent recurrence.
- ✦ Where vegetation has been washed away or damaged as a result of the erosion this shall be reinstated once the area has been stabilized.
- ✦ Stabilization measures e.g. grass blocks shall be maintained in good repair.
- ✦ No materials or wastes shall be dumped into stormwater channels, in the drainage lines or their buffer zones. Any litter or foreign material blown or washed into these areas inadvertently is to be removed regularly (minimum monthly) without undue disturbance to the vegetation and stability of the area.
- ✦ Fuel or oil or other chemical spills anywhere on site should be treated immediately with an appropriate mop-up or bio-remedial product as directed by manufacturers to prevent contamination of runoff.

Waste Management:

- ✦ Take care of your own waste
- ✦ Keep waste separate into labelled containers – report full bins

the goal isn't to live forever, it is to protect a planet that will

- Be mindful of recycling of waste
- Place waste in containers and always close lid
- Don't burn waste
- Pick-up any litter laying around

Hazardous Waste Management (Petrol, Oil, Diesel):

Hydrocarbons such as diesel, petrol, and oil which are used as fuel for mine machinery which is kept on site, increases the possibility that spillage may occur. As this is a product mine there is also the possibility of a product spillage occurring. In the event of a spillage, procedures must be put into place to ensure that there are minimal impacts to the surrounding environment.

Diesel, engine oil and hydraulic oil are the most likely hydrocarbons identified during impact assessments that can result in an emergency situation.

The following procedure applies to a hydrocarbon spill:

- If any spills take place the contaminant together with the soil will be removed and placed in acceptable container to be removed with industrial waste to a recognized license facility or licensed company.
- Bioremediation will be done on site to the satisfaction of DEFF
- A spill clean-up kit is available at the storage yard
- All personnel will be trained in spill clean-up methodologies.
- Every precaution will be taken to prevent the spill from entering the surface water environment;
- In the event of a large spillage, adequate emergency equipment for spill containment or collection, such as additional supplies of booms and absorbent materials, will be made available and if required, a specialised clean-up crew will be called in to decontaminate the area. The soil will be removed and treated at a special soil rehabilitation facility;
- If the spill is larger than 100 litres the DEFF will be notified by fax and or phone after knowledge of the incident.
- Reasonable measures must be taken to stop the spread of hydrocarbons and secure the area to limit access;
- Dispatch necessary services;
- The incident must be reported to the Environmental coordinator immediately;
- The Environmental Coordinator will assess the situation from the information provided, and set up an investigation team or relevant personnel. Included in this team could be the Mine Manager, Chief Safety Officer, the employee who reported the incident and any individual responsible for the incident;
- When investigating the incident, priority must be given to safety;
- Once the situation has been assessed, the Environmental Coordinator must report back to the Mine Manager;

- The Mine Manager and the investigation team must make a decision on what measures can be taken to limit the damage caused by the incident, and if possible any remediation measures that can be taken;
- The source / reason of the spill or leak will be addressed immediately;
 - Never mix general waste with hazardous waste;
 - Use only sealed, non-leaking containers;
 - Keep all containers closed and store only in approved areas;
 - Always put drip trays under vehicles and machinery;
 - Empty drip trays after rain;
 - Stop leaks and spills, if safe;
 - Keep spilled liquids moving away;
 - Immediately report the spill to the site manager/supervision;
 - Locate spill kit/supplies and use to clean-up, if safe;
 - Place spill clean-up wastes in proper containers; and
 - Label containers and move to approved storage area.

Discoveries:

- Stop work immediately
- Notify site manager/supervisor
- Includes – Archaeological finds, Cultural artefacts, Contaminated water, Pipes, Containers, Tanks and drums, Any buried structures

Air Quality:

- Wear protection when working in very dusty areas
- Implement dust control measures:
 - Sweep paved roads
 - Water all roads and work areas
 - Minimize handling of material
 - Obey speed limit and cover trucks

Driving and Noise:

- Use only approved access roads.
- Respect speed limits
- Only use turn-around areas – no crisscrossing through undisturbed areas
- Avoid unnecessary loud noises
- Report or repair noisy vehicles
- All occupants of a vehicle should be buckled up

Fauna and Flora including Alien Invasive Species

- 🌿 Do not remove any plants or trees without approval of the site manager
- 🌿 Do not collect fire wood
- 🌿 Do not catch, kill, harm, sell or play with any animal, reptile, bird, fish, amphibian or other marine species on site
- 🌿 Report any animal trapped in the work area
- 🌿 Do not set snares or raid nests for eggs or young
- 🌿 All areas must be cleared of alien vegetation.

Fire Management:

- 🌿 Do not light any fires on site, unless contained in a drum at demarcated area
- 🌿 No smoking is allowed in vehicles
- 🌿 Smoking only permitted in designated areas
- 🌿 Cigarette butts must be disposed of in sand buckets in the designated smoking area
- 🌿 Do not smoke near gas, paints or petrol
- 🌿 Know the position of firefighting equipment
- 🌿 Report all fires
- 🌿 Don't burn waste or vegetation

Maintenance And Infrastructure Management

- 🌿 Infrastructure visibly in good repair and operational areas kept tidy.
- 🌿 The footprint of the operations and vehicular circulation is clearly defined with no "spill over" into other areas of the site.
- 🌿 Roads are stable and in good repair and
- 🌿 Fences and gates are in good repair.

Environmental Induction and Awareness Training General Workforce

Appendix 2: Site Awareness Posters