

NEMA EMP

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

PROPOSED NEW COAL MINING ACTIVITIES AND ASSOCIATED INFRASTRUCTURE ON PORTION 38 OF THE FARM ELANDSPRUIT 291 JS, MIDDELBURG, MPUMALANGA PROVINCE

MDEDET Reference: 17/2/3N-247

ENVASS Reference: 089/12_13

SUBMITTED TO:

MDEDET

Attention: Directorate: Environmental Impact Management

P. O. Box 7255

Witbank

1035

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ABBREVIATIONS

CA	Competent Authority
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Implementation Programme
ENVASS	Environmental Assurance (Pty) Ltd
I&APs	Interested and Affected Parties
IWWMP	Integrated Water and Waste Management Plan
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
MHSA	Mine Health and Safety Act (Act 29 of 1996)
MPRDA	Mineral and Petroleum Resources Development Act (Act 28 of 2002) as amended
MSDS	Material Safety Data Sheet
MWP	Mine Works Programme
NEMA	National Environmental Management Act (Act No. 107 of 1998) as amended
NEMAQA	National Environmental Management: Air Quality Act (Act 39 of 2004) as amended
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) as amended
NEMPA	National Environmental Management: Protected Areas Act (Act 57 of 2003) as amended
NEMWA	National Environmental Management: Waste Act (Act 58 of 2009) as amended
NEMWAA	National Environmental Management Waste Amendment Act (Act no. 26 of 2014)
NFA	National Forest Act (Act 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NSBA	National Spatial Biodiversity Assessment
NVFFA	National Veld and Forest Fire Act (Act 101 of 1989)
NWA	National Water Act (Act 36 of 1998) as amended
NWAA	National Water Amendment Act (Act no. 27 of 2014)
PAIA	Promotion of Access to Information Act (Act No. 2 of 2000)
PM	Particulate Matter
PPE	Personal Protective Equipment
SAHRA	South African Heritage Resources Agency
SANS	South African National Standard
WULA	Water Use License Application
WUL	Water Use License

GLOSSARY OF TERMS

Applicant / Developer: Any person who applies for an authorisation to undertake an activity or undertake an Environmental Process in terms of the Environmental Impact Assessment Regulations – National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended) as contemplated in the scheduled activities listed in Government Notice (GN) No R. 543, 544 and 545. The Applicant for this project is Yoctolux Investments (Pty) Ltd.

Archaeological resources: This includes:

- Material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- Rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- Wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Biodiversity: The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

Building and demolition waste: Waste (excluding hazardous waste) produced during the construction, alteration

Construction activities: Activities associated with physical disturbance to the land, including the storage, machinery, equipment and materials.

Construction phase: The construction phase is the period of commencement of physical disturbance to the land, excluding rehabilitation activities, such as re-vegetation and replacing of topsoil

Container: Disposable or re-usable vessel in which waste is placed for the purpose of storing, accumulating, handling, transporting, treating or disposing of that waste and which includes bins, bin liners and skips.

Contaminated water: Any water contaminated by activities carried out by the Applicant, e.g. waste water and runoff from plant, personnel wash areas and spills, etc.

Contractor: Persons/organisations contracted by the Applicant to provide a service. The Contractor shall ensure compliance with this EMPr and shall request advice from the Environmental Assessment Practitioner where considered necessary and appropriate.

Corrective (or remedial) action: Response required to address an environmental challenge that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

Degradation: The lowering of the quality of the environment through human activities e.g. river and soil degradation.

Disposal: The burial, deposit, discharge, abandoning, dumping, placing or release of waste into or onto any land.

Domestic waste: Waste (excluding hazardous waste) that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes (including garden and park wastes as well as municipal and food waste).

Emergency: An unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.

Ecology: The study of the interrelationships between organisms and their environments.

Environment: The surroundings within which humans live and that consist of:

- (i) The land, water and atmosphere of the earth;
- (ii) Micro-organisms, plant and animal life;
- (iii) Any part or combination of (i) and (ii) and the interrelationships among and between them; and
- (iv) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Audit: A systematic, documented verification process of objectively obtaining and evaluating evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria and communicating the results of this process to the Applicant.

Environmental Impact Assessment: In relation to an application, to which Scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of the application.

Environmental Management Program: A legally binding working document, which stipulates environmental and socio-economic mitigation measures which, must be implemented by several responsible parties throughout the duration of the proposed project.

General waste: Waste that does not pose an immediate threat or hazard to health or to the environment, and includes:

- (a) Domestic waste;
- (b) Building and demolition waste;
- (c) Business waste;
- (d) Inert waste; and
- (e) Any waste classified as non-hazardous waste in terms of the regulations made under section 69.

Groundwater: All subsurface water that fills voids between highly permeable ground strata comprised of sand, gravel, broken rocks, porous rocks, etc. and move under the influence of gravitation.

Hazardous waste: Waste that contains organic or inorganic elements or compound that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or object within business waste, residue deposits and residue stockpiles.

Holder of waste: Any person who imports, generates, stores, accumulates, transports, processes, treats or exports waste or dispose of waste.

Impact: The potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environmental within a defined time and space.

Inert waste: waste that:

- (a) Does not undergo significant physical, chemical or biological transformation after disposal;
- (b) Does not burn, react physically or chemically, biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and
- (c) Does not impact negatively on the environment because of its pollutant content and because the toxicity of its leachate is insignificant and which include discarded concrete, bricks, tiles and ceramics; discarded glass as well as discarded soil, stones and dredging spoil.

Infrastructure: The network of facilities and/or services that are required for economic activities e.g. roads, electricity, water and sewerage.

Integrated: Mixing or combining all useful information and factors into a joint or unified whole.

Integrated Environmental Management (IEM): A way of managing the environment by including environmental factors in all stages of the development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments.

Interested and/or Affected Parties: Those individuals or organisations that have an interest in the proposed development or will be directly affected by the activities of the development, as identified in the Environmental Impact Assessment (EIA) process.

Method statement: Written statements that contain details about construction procedures required for work near sensitive environments in the site, including environmentally sensitive activities such as waste management, storage of hazardous substances, dust control, erosion and sediment control, etc. A work method statement is predominantly used in construction to describe a document that gives specific instructions on how to safely perform a work related task, or operate a piece of plant or equipment.

Mitigation measures: Measures designed to avoid, reduce or remedy adverse impacts.

Natural environment: Our physical surroundings, including plants and animals, when they are unspoiled by human activities.

Pollutant: A contaminant at a concentration high enough to endanger the environment or the public health.

Pollution:

- National Water Act, 36 of 1998: “*Water pollution means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it –*
 - (a) *less fit for any beneficial purpose for which it may reasonably be expected to be used; or*
 - (b) *harmful or potentially harmful –*
 - (aa) *to the welfare, health or safety of human beings;*
 - (bb) *to any aquatic or non-aquatic organisms;*
 - (cc) *to the resource quality; or*
 - (dd) *to property”.*
- National Environmental Management Act, No. 107 of 1998:- “*pollution means any change in the environment caused by –*
 - (i) *substances;*
 - (ii) *radioactive or other waves; or*
 - (iii) *noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change*

has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.”

Recycle: A process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separate materials as a product or raw material.

Rehabilitation: Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) in which it was before disruption.

Re-use: To utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles

SANS 10234: Latest edition of the South African National Standard Globally harmonised System of the Classification and Labelling of Chemicals (GHS)

Storage: The accumulation of waste in a manner that does not constitute a treatment or disposal of that waste

Waste: Any substance, whether or not that substance can be reduced, re-used or recycled and recovered-

- (a) That is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- (b) Which the generator has no further use of for the purposes of production;
- (c) That must be treated or disposed of; or
- (d) That is identified as waste by the Minister by notice in the Gazette and includes waste generated by the mining, medical or other sector, but
 - (i) A by-product is not considered waste
 - (ii) Any portion of waste, once reused, recycled and recovered, ceases to be waste.

Waste classification: Establishing:

- (a) Whether a waste is hazardous based on the nature of its physical, health and environmental hazardous properties (hazard classes); and
- (b) The degree or severity of the hazard posed (hazard categories)

Waste generator: Any person whose actions, production processes or activities including waste management activities, results in the generation of waste

Waste management: Classifying, recycling, treatment and disposal of waste generated during operational activities.

ENVIRONMENTAL MANAGEMENT IMPLEMENTATION PROGRAM FOR THE PROPOSED YOCTOLUX COAL MINE

1. KEY PROJECT INFORMATION

NEMA/MDEDET Reference number: 17/2/3N-247 (Application in process)
NWA/DWA IWULA Reference number: 16/2/7/B100/C654 (Application submitted)
MPRDA/DMR Mining Right: MP30/5/1/2/2/10066MR (Approved)
Project name: Proposed Yoctolux Coal Mine
Applicant: Yoctolux Investments (Pty) Ltd
Property Description: Portion 38 of the farm Elandspruit 291 JS, Mpumalanga
21 Digit Surveyor General Code: T0JS00000000291000038

1.1 Details of the Applicant

Table 1: Applicant details

NAME OF APPLICANT	Yoctolux Investments (Pty) Ltd
NAME OF MINE	Yoctolux Coal Mine
CONTACT PERSON	Nicholus Maloba
POSTAL ADDRESS	P.O. Box 14522 Hatfield PRETORIA 0028
PHYSICAL ADDRESS	Tijger Valley Office Park Concept House Block A Unit 15 10 Pony Street Silver Lakes 0081
TELEPHONE NUMBER	012 809 3505
FAX NUMBER	086 696 4891
CELL PHONE NUMBER	083 476 1247
EMAIL	nicholus@talaresources.co.za
LOCATION OF MINE	Portion 38 of the farm Elandspruit 291 JS near Middelburg, Mpumalanga Province
MINERAL TYPE	Coal
ESTIMATED LIFE OF MINE	Estimated at approximately 29 months

1.2 Environmental Consulting/Project Team [Regulation 33 (a) (i) and (ii)]

Table 2: Details and expertise of the Environmental Assessment Practitioner

NAME OF ENVIRONMENTAL CONSULTANCY	Environmental Assurance (Pty) Ltd [ENVASS]
REGISTRATION NO. OF EAP	2004/02655/07
PROJECT TEAM	<p><u>ENVASS TEAM</u></p> <ul style="list-style-type: none"> - Emile van Druten (Specialist, Pri. Sci. Nat) [BSc Honns Environmental Management] - Rachelle Stofberg (Senior Environmental Consultant) [B.Sc. Cons. Ecol. / M Env. Man.]; - Nicolene Lotter (WULA Specialist) [B.Sc. Honns. Env. Man.] ; - Monica Niehof (Public Participation Consultant) [B.Sc. Honns. Env. Man.]; - Vuyokazi April (Ecological Specialist, Pri. Sci. Nat) [M.Sc. Entomology]; and - Du Toit Wilken (Visual, Noise and Air Quality Specialist) [M.Sc. Env. Sci.].
EXPERTISE OF EAP	<p>ENVASS has the necessary experience within our project team to carry out Scoping and EIA processes. Auditing, WULA, MPRDA and EIA (NEMA) projects have been completed for various mining companies throughout South Africa:</p> <ul style="list-style-type: none"> • Samancor Chrome; • Amari Resources; • South African Coal Mine Holdings Limited; • Canyon Coal; • Eastplats; • Makoya Supply Chain Holdings; • Coal of Africa; • Assmang BRMO; and • Shanduka Coal.
ENVIRONMENTAL CONSULTANT	Nicolene Lotter
PHYSICAL AND POSTAL ADDRESS	394 Tram Street Brooklyn Pretoria 0181
TELEPHONE NUMBER	012 460 9768
FAX NUMBER	012 460 3071
EMAIL	nicolene@envass.co.za

1.3 Details of the specialist project team

Table 3: Details of specialist team

ORGANISATION	SPECIALIST INFORMATION / STUDY
ENVASS	Baseline Visual Assessment
Tobias Coetzee and Leanne George	Heritage Impact Assessment
ENVASS	Ecological Assessment
AED	SASS Bio-monitoring, baseline wetland and riparian delineation
AED	Surface Water Assessment

ORGANISATION	SPECIALIST INFORMATION / STUDY
ENVASS	Land Capability Assessment
Tala Mineral Services (Pty) Ltd	Geological Assessment
GPT	Geohydrological Assessment
ENVASS	Noise Assessment
ENVASS	Air Quality Assessment

2. INTRODUCTION

The Applicant, Yoctolux Investments (Pty) Ltd, is proposing the development of the Yoctolux Coal Mine on Portion 38 of the farm Elandspruit 291 JS in Mpumalanga Province.

The proposed coal mine together with its associated infrastructure and activities requires the following authorisations:

- Environmental Authorisation (EA) in terms of National Environmental Management Act (Act 107 of 1998) (as amended) from the Competent Authority (CA) regulating environmental aspects, the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET);
- Mining right in terms of the Minerals and Petroleum Resources Development Act (Act 28 of 2002) from the CA regulating mining aspects, the Department of Mineral Resources (DMR); and
- Water Use License (WUL) in terms of the National Water Act (Act 36 of 1998) from the CA regulating water use aspects, the Department of Water and Sanitation (DWS).

Environmental Assurance (Pty) Ltd (herein after referred to as ENVASS) has been appointed to ensure that the development will be carried out in accordance with the Environmental Impact Assessment (EIA) Regulations (as amended) which were promulgated in June 2010 under the National Environmental Management Act (No. 107 of 1998) [NEMA], as amended. All relevant legislation has been consulted during the Scoping and EIA process and complied with at all times.

This Environmental Management Program (EMPr) is compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development (DEAT, 1992). IEM is a key instrument of the National Environmental Management Act (Act No. 107 of 1998) as amended [NEMA]. NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an Environmental Management Program (EMPr).

This EMPr has been compiled to comply with Section 24N (2) of NEMA and with Regulation 33 of the EIA Regulations, 2010 as corrected and amended.

3. OBJECTIVES OF THE EMPr

This EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring can be undertaken during all the phases of the development, including the construction, operational and decommissioning and rehabilitation phases of the Yoctolux coal mining operations, as well as to ensure that all relevant factors are considered to ensure

an environmentally responsible development. This EMPr informs all relevant parties [the proponent, the Site Manager, the Contractor, the Environmental Site Manager (ESM), the Environmental Control Officer (ECO) and all other staff employed on site] as to their duties in the fulfilment of the legal requirements for the construction, operation and decommissioning phases of the development with particular relevance to the prevention and mitigation of anticipated potential environmental impacts. All parties should note that obligations imposed by the EMPr are legally binding in terms of the EA granted by the MDEDET.

The objectives of the EMPr are to:

- ✓ Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
- ✓ Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr related activities (mitigation measures) are consistent with the significance of the project's impacts;
- ✓ Verify environmental performance through information on impacts as they occur;
- ✓ Respond to unforeseen events;
- ✓ Provide feedback for continual improvement on environmental performance;
- ✓ Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant level;
- ✓ Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- ✓ Identify measures that could optimise beneficial impacts;
- ✓ Create management structures that addresses the concerns and complaints of the I&APs with regards to the development;
- ✓ Establish a method of monitoring and auditing environmental management practices during all phases of the development;
- ✓ Ensure that safety recommendations are complied with; and
- ✓ Specific time periods within which the measures contemplated in the final EMPr should be implemented, where appropriate.

The point of departure for this EMPr is to ensure a pro-active rather than re-active approach to environmental performance by addressing potential problems before they occur. This will limit corrective measures needed during the decommissioning phase of the project. Therefore the purpose of an EMPr is to provide management measures that should be implemented by Developers, Engineers and Contractors alike to ensure that the potential impacts of a proposed development are minimised. It should also be ensured that the EMPr is maintained and upheld as a dynamic document in order for the project team to add or improve on issues that might be considered left out or not relevant to the project. In such instances the approving authority may authorise the ECO to make such changes.

4. FORMAT AND STRUCTURE OF THE EMPR

This EMPr has been compiled in accordance with Section 24N (2) of NEMA and with Regulation 33 of GN R 543 which states that an EMPr must include:

- a) *Details of:*
 - i. *The person who prepared the environmental management programme; and*
 - ii. *The expertise of that person to prepare an environmental management programme;*
- b) *Information to any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of –*
 - i. *Planning and design;*

- ii. *Pre-operations and operational activities;*
- iii. *Operation of undertaking of the activity;*
- iv. *Rehabilitation of the environment;*
- v. *Closure where relevant;*
- c) *A detailed description of the aspects of the activity that are covered by the draft environmental management programme;*
- d) *An identification of persons who will be responsible for the implementation of the measures contemplated in paragraph (b);*
- e) *Proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;*
- f) *As far as reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally acceptable principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;*
- g) *A description of the manner in which it intends to:*
 - i. *Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;*
 - ii. *Remedy the cause of pollution or degradation and mitigation of pollutants;*
 - iii. *Comply with any prescribed environmental management standards or practices;*
 - iv. *Comply with any applicable provisions of the Act in terms of closure where applicable;*
 - v. *Comply with any provisions of the Act regarding financial provisions or rehabilitation, where applicable;*
- h) *Time frames within which the measures contemplated in the Draft environmental management programme must be implemented;*
- i) *The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;*
- j) *An environmental awareness plan describing the manner in which:*
 - i. *The applicant intends to inform his or her employees of any environmental risk which may result from their work; and*
 - ii. *Risks must be dealt with in order to avoid pollution or the degradation of the environment.*

Where appropriate, closure plans, including closure objectives

This EMPr has been divided into the following sections as indicated in Table 4 below.

Table 4: EMPr outline

Section 1	Key project information
Section 2	Project introduction
Section 3	Objectives of EMPr
Section 4	Structure of EMPr
Section 5	Legal status and roles and responsibilities of EMPr for implementation.
Section 6	Management and Mitigation Measures – Planning and Construction Phase
Section 7	Rehabilitation and post closure
Section 8	Financial provision
Section 9	Environmental training and awareness

The commissioning of the mine must be according to the Best Management Practices (BMPs), as identified in the project document. This EMPr, which forms an integral part of the contract documents, informs the Contractor(s) as to his duties in the fulfilment of the project objectives, with particular relevance to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The Contractor(s) should note that obligations imposed by the approved EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the

standard or project specifications then the latter shall prevail. The Contractor(s) shall identify and comply with all South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the development.

5. IMPLEMENTATION OF THE EMPR

5.1 LEGAL STATUS

By virtue of the fact that this document describes mitigation measures that influence the outcome of the environmental authorisation process for this project and its implementation will be a requirement of the Environmental Authorisation issued by the MDEDET, there exists a legal obligation for the specifications of this EMPr to be complied with. This EMPr includes all relevant documentation contained or referred to within it, along with any amendments or appendices to this document. The EMPr forms part of all Contract Documentation and is thus a legally binding document.

5.2 LEGISLATIVE CONTEXT

The specifications and mitigation measures outlined in this EMPr must comply with relevant legislation and conditions of the Environmental Authorisation as issued by MDEDET. Of particular importance is Section 28 (1) of NEMA which places an obligation on all individuals to take due care of the environment and to ensure remedial action is instituted to minimise and mitigate environmental impact. In terms of this Act an individual responsible for environmental damage must pay costs both to environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring. This is referred to as the Polluter Pays Principle. Listed in Table 5 below is the key legislation (relevant laws, permits and authorisations) applicable to the development. All relevant approvals and permits, or any other management requirements in terms of this, or any other legislation applicable to the development, as well as any future amendments to such legislation, are to be complied with. It should be noted that this is not a comprehensive list of all legislation that may apply, only those deemed most relevant to this context.

Table 5: Legislative context

ACT, ORDINANCE, BY-LAW	SECTION	DESCRIPTION	APPLICABILITY TO THE PROJECT
National Environmental Management Act (No. 107 of 1998) [as amended]	<ul style="list-style-type: none"> Section 28 (1) 	<i>Duty of Care and responsibilities to minimise and remediate environmental degradation.</i>	The Applicant is the developer and overall responsibility of the mine rests with him, especially in terms of liabilities associated with the operational phase.
EIA Regulations (Government Notices 543; 544; 546) [as amended]	<ul style="list-style-type: none"> Section 36; and Section 37 	<ul style="list-style-type: none"> <i>Issue of Environmental Authorisation; and</i> <i>Content of Environmental Authorisation</i> 	Environmental Authorisation issued in terms of NEMA. Conditions of Environmental Authorisation must be adhered to.
National Water Act (No. 36 of 1998)	<ul style="list-style-type: none"> Section 3; Section 19; and Section 21. 	<ul style="list-style-type: none"> <i>Regulation of flow and control of all water.</i> <i>Prevention of pollution to watercourses.</i> <i>Water uses</i> 	Design and implementation of Pollution Control Dam. Five water uses in terms of this Act are applicable to the Yoctolux Coal mine and need to be authorised in terms of a Water Use license as well as the associated liabilities.
National Heritage Act, (No. 25 of 1999)	<ul style="list-style-type: none"> Section 33; and Section 44 (1) 	<ul style="list-style-type: none"> <i>Import of objects protected in term so laws from foreign sates.</i> 	Protection of existing indigenous heritage resources that is present

ACT, ORDINANCE, BY-LAW	SECTION	DESCRIPTION	APPLICABILITY TO THE PROJECT
		<ul style="list-style-type: none"> • <i>Preservation and protection of heritage resources</i> 	on the property.
National Forest Act (no. 84 of 1998)	<ul style="list-style-type: none"> • Section 12 (1) (d); • Section 15 (1); and • Section 62 (2) (c). 	<ul style="list-style-type: none"> • <i>Declaration of trees as protected and belonging to a particular species.</i> • <i>Effect of declaration of protected trees.</i> • <i>Offences relating to protection of forests and trees</i> 	Protection of existing indigenous tree species required by the Applicant and the subsequent penalties to non-compliance.
National Environmental Management: Air Quality Act (no. 39 of 2004) [as amended]	<ul style="list-style-type: none"> • Section 27; • Section 32; and • Section 34. 	<ul style="list-style-type: none"> • <i>Use and prohibition of controlled fuels;</i> • <i>Control of dust; and</i> • <i>Control of noise.</i> 	Impacts on surrounding landowners need to be managed through dust and noise mitigation measures
National Environmental Management: Waste Act, (no. 59 of 2008) [as amended] Waste Classification and Management Regulations, 2013 (GNR: 634 – 635):	<ul style="list-style-type: none"> • Section 16; • Section 17; • Section 18; and • Section 21. 	<ul style="list-style-type: none"> • <i>General duty in respect of waste management;</i> • <i>Reduction, re-use, recycling and recovery of waste;</i> • <i>Extended producer responsibility; and</i> • <i>General requirements for storage of waste.</i> 	The mining activities will produce general and mining waste (which includes hazardous waste) which need to be managed and disposed of according to best practices such as recycling, safe storage, etc.
Veld and Forest Fire Act (no. 25 of 1998)	<ul style="list-style-type: none"> • Section 12 (1) 	<i>Duty of the landowner to prevent fire from spreading to neighbouring properties.</i>	Cautionary steps in avoiding the spreads of fire to and from neighbouring properties
Hazardous Chemical Substances Act	<ul style="list-style-type: none"> • Section 2; • Section 4; • Section 16; • Section 9 (1); and • Section 18. 	<ul style="list-style-type: none"> • <i>Declaration of grouped hazardous substances;</i> • <i>Licensing;</i> • <i>Liability of employer or principle;</i> • <i>Storage and handling of hazardous chemical substances; and</i> • <i>Offences.</i> 	The Applicant must ensure the safety of people working with hazardous chemicals (specifically fuels), as well as safe storage, use and disposal of containers during the on-site operational phase together with the associated liability should non-compliance be at the order of the day.
Hazardous Chemical Substances Regulations, 1995	<ul style="list-style-type: none"> • Section 4; and • Section 9A (1). 	<i>Duties of persons who may be exposed to hazardous chemical substances; and Penalties.</i>	Hazardous substances will be stored and utilised on site and non-compliance to management measures will result in prosecution of the Applicant in terms of his liabilities to the socio-economic environment
National Environmental Management: Biodiversity Act (no. 10 of 2004)	<ul style="list-style-type: none"> • Section 9; • Section 27; • Section 30; and • Section 43. 	<ul style="list-style-type: none"> • <i>Norms and standards;</i> • <i>Delegation of power and duties;</i> • <i>Financial accountability; and</i> • <i>Biodiversity management plans.</i> 	Indigenous vegetation need to be protected and managed in accordance with management measures set out in the management plans developed for the mine and the Applicant need to ensure he knows and covers his liabilities.
Conservation of Agricultural Resources Act (no. 43 of 1983)	<ul style="list-style-type: none"> • Section 5; • Section 12; and • Section 16. 	<ul style="list-style-type: none"> • <i>Prohibition of spreading of weeds;</i> • <i>Maintenance of soil conservation works and</i> 	Listed invader/alien plants occurring on site which requires management measures to be implemented to strive to maintain the status quo

ACT, ORDINANCE, BY-LAW	SECTION	DESCRIPTION	APPLICABILITY TO THE PROJECT
		<i>maintenance of certain states of affairs; and</i> <ul style="list-style-type: none"> Regional Conservation Committees 	environment, especially through the guidelines provided by the Regional Conservation Committee.
National Dust Control Regulations, 2013	<ul style="list-style-type: none"> Section 3; Section 4; Section 6; Section 7; Section 8; and Section 9. 	<ul style="list-style-type: none"> Dust fall standard; Dust fall monitoring program; Measures for control of dust; Ambient air quality monitoring (PM₁₀); Offences; and Penalties. 	Dust fall out (PM ₁₀ and PM _{2.5}) need to be monitored in accordance to the standards set out in the monitoring program with the specified measures due to the Applicant being liable to offences and penalties associated with non-conformance to dust which may influence employees and surrounding landowners.

5.3 EMPr ORGANISATIONAL STRUCTURE: ROLES AND RESPONSIBILITIES

The Applicant, with assistance from the Mine/Site Manager, is responsible for the implementation of the EMPr and for internal compliance monitoring of the EMPr. The EMPr will be made binding on all contractors operating on the site and will be included with the official contract documentation of each of the principal contractors to be appointed to the contract. A schedule of fines for environmental damage or EMPr transgressions is listed in Annexure 2. The Applicant must appoint an Environmental Site Manger (ESM), fulfilling the duties of internal Environmental Control Officer (ECO), who will monitor and facilitate compliance with the EMP and other conditions of approval as they relate to environmental matters. All Contractors must inform the ESM immediately of events that have/will cause serious environmental damage or of any breaches of the Environmental Authorisation. The ESM will then inform the Applicant which must then immediately inform the Competent Authority (CA) within 24 hours and the Local Authority of such events and the measures taken to address them. Details of the management and implementation structures for this EMPr, as applicable to the construction and operational phases showing official communication and reporting lines (including instructions, directives and information), are presented in Table 6 and Figure 1 below.

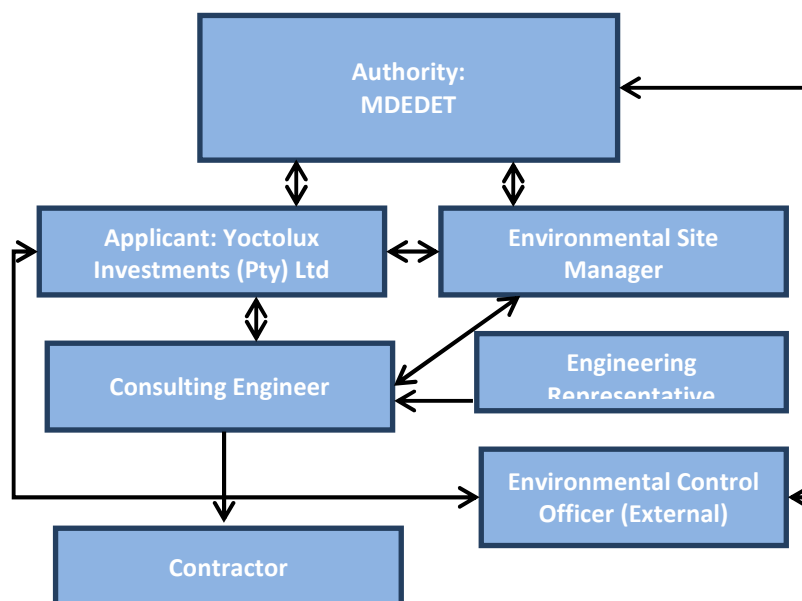


Figure 1: EMPr Organisational Structure

Table 6: Role and Responsibilities

ROLE-PLAYER	RESPONSIBILITIES
Authority	<p>The MDEDET is the designated authority responsible for authorising this EMPr. The MDEDET has the overall responsibility for ensuring that the Applicant complies with the conditions of the Environmental Authorisation (EA) and the EMPr. The MDEDET shall also be responsible for approving any amendments to the EMPr (if required). The MDEDET may also perform random site inspections to confirm compliance with the EMPr.</p>
Applicant	<p>The Applicant is the Developer and has overall responsibility for compliance with the EMPr as it is a fundamental component of the authorisation requirements for the project. The Applicant must:</p> <ul style="list-style-type: none"> • Ensure that relevant authorisations and permits are obtained prior to the commencement of construction on site; • Ensure compliance with the EMPr and conditions of Environmental Authorisation as issued by MDEDET; • Appoint an ESM prior to the commencement of construction activities; • Ensure that there are sufficient resources (people and money) to manage and monitor the environmental issues related to the mining phases, especially in terms of water resources; • Ensure that the professional team and the Contractors are appropriately briefed and that their appointment includes environmental requirements as relevant; • Ensure that he/she is kept fully informed of the performance of the project against the requirements of the EMPr; • Ensure that appropriate action is taken where consistent incidents of non-compliance are taking place; • Ensure that any corrective action required by the Authorities is implemented; • Ensure that any proposed changes to the EMPr are communicated in writing to the Authorities for approval; • Give written notice to MDEDET prior to the commencement of construction on site; and • Provide all Contractors with a copy / access to the EMPr (as part of the tender contract documentation). A hardcopy of the EMPr shall also be kept on site to access at all times.
Contractor	<p>The Contractor is required to:</p> <ul style="list-style-type: none"> • Prepare site specific Method Statements in line with the EMPr (as required); • Be conversant with the requirements of the EMPr; • Brief staff about the requirements of the EMPr; • Comply with requirements of the Engineering Representative (ER) in terms of this EMPr; • Bear the costs of any damages/ compensation resulting from non-adherence to the EMPr or written site instructions (as specified in the contractor agreement with; • Comply with all applicable legislation; • Keep record of any complaints raised by the public and record any comments and responses, in response to the complaints; • Inform the ESM and ECO of any incidents or complaints received; • Ensure that the Applicant is timeously informed of any foreseeable activities that will require input from the ER; and • The Contractor will conduct all activities in a manner that minimises disturbances to and impacts on the environment.

ROLE-PLAYER	RESPONSIBILITIES
	<p>The Contractor is deemed not to have complied with this EMPr if:</p> <ul style="list-style-type: none"> • There is evidence of contravention of clauses within the boundaries of the property and adjacent areas. • If environmental damage ensues due to negligence; • The Contractor fails to comply with corrective or other instructions issued by the Local Authority, Engineer, Engineer's Representative, ECO, or the Applicant within a specified time; • Failure to take any reasonable measure to protect the environment if there is a perceived or identified environmental risk associated with an activity that has not been defined in the EMPr; and • The Contractor fails to respond adequately to complaints from the public. <p>Application of a penalty clause will apply for incidents of non-compliance as per the Schedule of Fines at Annexure 2. Such fines will be paid by the Contractor to the Applicant and will be used in rehabilitation and/ or landscaping.</p>
Environmental Site Manager (Internal Environmental Officer)	<p>The ESM's responsibilities include the following:</p> <ul style="list-style-type: none"> • Facilitation and monitoring (weekly) of EMPr requirements and EA conditions; • Act as a guide and advisor to the construction team on environmental issues during preparation and operation; • Education of staff and contractors and to raise awareness on environmental requirements relating to the site and onsite activities; • Review and approval of method statements; • Record keeping of environmental incidents/issues on site; • Upkeep of complaints register; • Ensure that all environmental incidents reported are dealt with timeously and effectively; • Completing start-up and site closure checklists; • Completing a monthly summary report detailing levels of compliance to be forwarded to the project team and case officer at MDEDET; and • Keeping a photographic record of progress on site from an environmental perspective for the ECO (external).
Consulting Engineer	<p>The Consulting Engineer runs the works contract and has overall responsibility for managing the project engineering aspects and Contractors, and for ensuring that the environmental management requirements are met.</p>
Engineering Representative	<p>The Consulting Engineer's Representative on site, the ER, has the power/mandate to issue site instructions and variation orders to the Contractor.</p>
External Environmental Control Officer	<ul style="list-style-type: none"> • Facilitation and monitoring of EMPr requirements and EA conditions; • Keeping a photographic record of progress on site from an environmental perspective. Conduct regular site visits (monthly or as stipulated in the EA) during the construction phase to be able to report and respond to any environmental issues;

ROLE-PLAYER	RESPONSIBILITIES
	<ul style="list-style-type: none"> • Report compliance and non-compliance issues to the Competent Authority as applicable; • Advise the Contractor on environmental issues within the defined work areas; • Review access and incidents records that may pertain to the environment and reconcile the entries with the observations made during site inspection, monitoring and auditing; • Recommend corrective actions when required for aspects of non-compliance with the EMPr; • Take immediate action on site where clearly defined and agreed “No-Go” areas are violated or in danger of being violated and to inform the Yoctolux Investments (Pty) Ltd representative of the occurrence immediately to take action; • Be contactable by the public regarding matters of environmental concern as they relate to the operation of the works; • Compile monthly audit reports for submission to the Competent Authority as per the EA conditions.

6. PROPOSED ACTIVITY

The proposed Yoctolux Coal Mine will be located on Portion 38 of the farm Elandspruit 291 JS, and falls within the municipal boundaries of the Nkangala district and Steve Tshwete local municipalities. The two main products that will be produced by the mine are bituminous (thermal) and anthracite to semi-anthracite coal. The mining method to be employed on site is that of opencast strip mining (roll-over) and beneficiation of the coal will take place on the site. The reserve to be mined consists of a single opencast mining block the actual resource area is 30 ha.

Table 7: Coordinates

LOCATION	COORDINATE
North eastern corner	25°48'31.81"S 29°23'8.16"E
South eastern corner	25°48'50.43"S 29°23'10.10"E
South western corner	25°48'51.88"S 29°22'39.03"E
North western corner	25°48'31.10"S 29°22'39.91"E
Centre	25°48'42.10"S 29°22'55.14"E

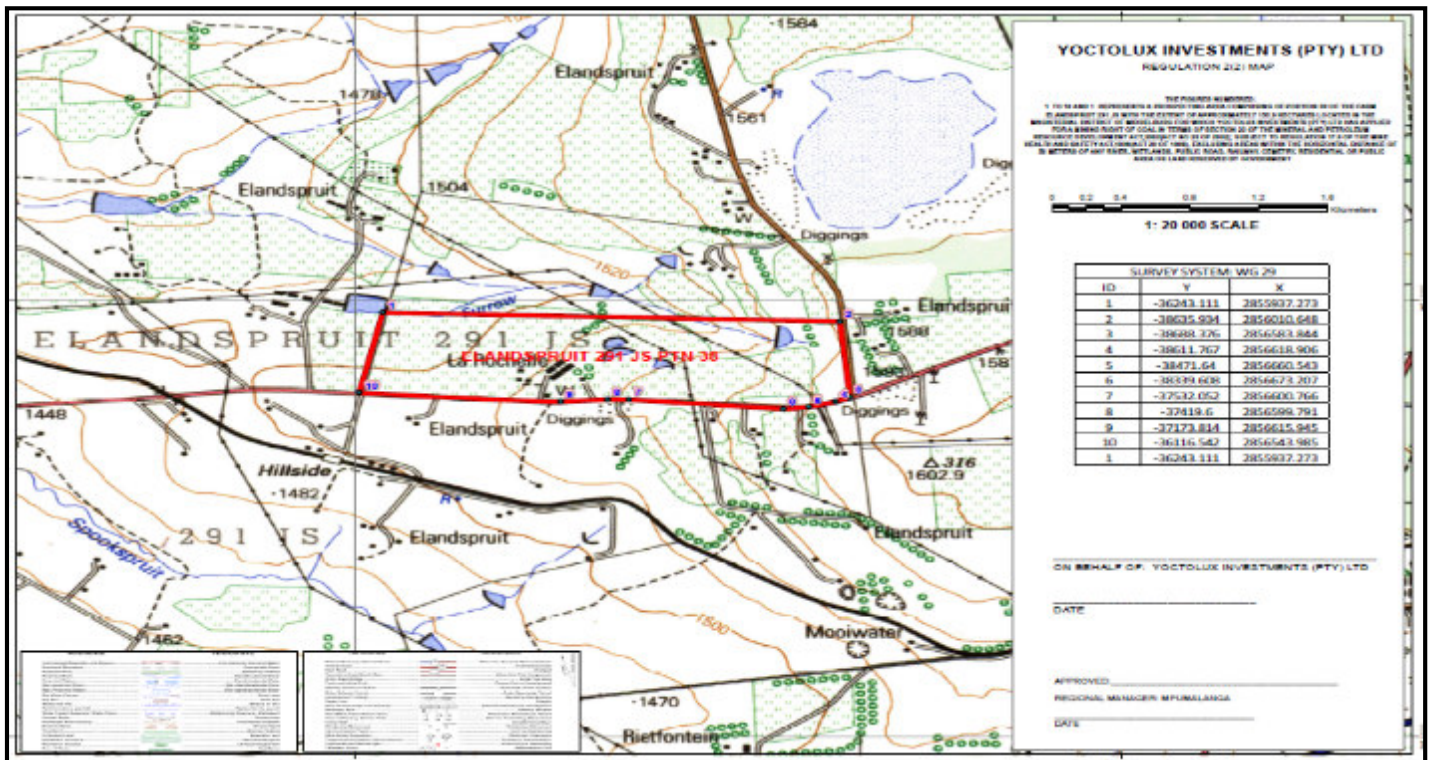


Figure 2: Locality (Yoctolux MWP)

The mining method to be employed on site is that of opencast strip mining (roll-over). Mining operations will commence in a double box cut and operations will advance to a steady state over a year and then till end of life of mine. A conventional strip mining [roll-over] method will be employed. Material from the box cut phase will be stored per overburden classification, with the bulk of the material placed in a position alongside the final strip, to facilitate filling of the final void. Earthmoving will be done by both truck and shovel operation and by dozing, once the opencast mining has entered the strip mining [steady-state] phase. Hard overburden and coal will be blasted to an acceptable fragmentation. Box cut 1 (70m width) will be established during the construction phase. Topsoil and overburden from the box cut will be stockpiled separately for final rehabilitation. Once the box cut has been established the normal strip mining roll-over methodology will be applied to the mining operation whereby topsoil is stripped two strips in advance of the current working strip and is either stockpiled or place directly on the rehabilitated area behind the advancing strips, thereafter subsoil is removed. The overburden is drilled and blasted and approximately 40% is dozed into the void behind the current strip, after which the balance of overburden is loaded and hauled to the rehabilitation side and back-tipped. This sequence continues to the end of the pit. Once reaching the limit of the pit the overburden which has been stockpiled is dozed in to fill the final void and the stockpiled topsoil is then placed on to the levelled area (Yoctolux Mine Works Plan (MWP) 2012).

Rehabilitation of the opencast mining area will be done concurrently with the opencast mining according to a stated mining sequence. Materials will be placed back into the void in the former strata graphical sequence i.e. topsoil on the surface, subsoil directly below the topsoil and all hard material [sandstone and shale] in the bottom of the void. It is envisaged that the final reinstated surface level will be approximately 0.29 m above the original surface level. However the existing surface drainage pattern will remain unchanged and the total disturbed area will be free draining. On completion of surface reinstatement, the area will be re-vegetated with suitable pasture grass species. The estimated post surface profile has been calculated by bulking [Soft 10% and Hards 30%] the overburden and deducting the volume of coal that will have been removed over the area. Excess material will result in a higher surface after mining and a depression if there is insufficient material. In the case of Elandspruit the re-instated surface will be nominally higher at 0.29 m (Yoctolux MWP 2012).

The construction of infrastructure for the mining operations will only commence once the environmental authorisation has been granted. This mining operation will make use of existing infrastructure as much as possible (i.e. existing fencing and access road). The following infrastructure will be established on site:

- Access & Haul roads (with necessary security) including the upgrading of the access point to the gravel road;
- Contractor's Yard with septic/chemical ablation facilities;
- Weighbridge, workshop and stores (with septic/chemical ablation facilities);
- Diesel facilities and a hard park;
- Box cut and opencast pit (drill & blast);
- Stockpiles (topsoil, overburden, subsoil/softs, Run of Mine, Processed & Washed Coal);
- Crushing and Screening Plant;
- DMS Wash Plant; and
- Surface water management measures (stormwater diversion berms and trenches; pollution control dams, etc.) [Yoctolux MWP].

6 ENVIRONMENTAL MANAGEMENT PROGRAMME

6.1 PLANNING PHASE

Adequate planning is crucial to the success of the project as a whole. As part of the planning phase the following have been considered by the project planning team during the environmental impact assessment/feasibility study stage:

- Topography
- Geology and soils
- Groundwater
- Hydrology
- Natural ecosystems (flora and fauna)
- Social and economic regional and local context
- Cultural and historical landscapes and archaeological sites
- Land use Planning requirements
- Planning and environmental approval requirements and specialist studies required
- Economic viability
- Development requirements e.g. services
- Ownership opportunities and constraints
- Site/Spatial opportunities and constraints
- Surrounding developments
- Maintenance capacity

The planning opportunities and constraints considered above have informed the preferred project site locality and layout plan options on which this EMP is based.

6.2 CONSTRUCTION PHASE

Section 6.2 provides the management measures and controls to mitigate the potential impacts associated with the construction phase of the mine. The construction period is stated to be approximately 3 months. The main activities of the construction phase will include *inter alia* all the civil works (concrete works, road works, clearing, excavations, stormwater and mineral processing and mining operation infrastructure development etc). A laydown / contractors yard (including storage areas) will be erected.

6.2.1 Site clearance and bulk earth works

- All work areas and boundaries of the site shall be demarcated as per the approved Final Site Layout Plan authorised by MDEDET.
- Working areas may not exceed the authorised footprint by more than 10%.
- Any sensitive areas (vegetation, hydrological, geological and heritage) within or adjacent to the relevant works area, shall be demarcated prior to the commencement with earth works (refer to Section 6.2.5: restriction of working areas).
- Destruction of sensitive vegetation as identified in the Ecological Assessment (April 2013) must be limited and avoided insofar possible during clearing activities for infrastructure development.
- The locations of any existing above- and underground services shall be marked and identified.
 - No construction excavation work is allowed within the 27.5 meters from the centre line of the Eskom Tx Powerline structure.
 - No building rubble may be dumped within the Eskom servitude area.
 - The clearances between the Eskom Tx's live electrical equipment and the construction area shall be observed as stipulated by Regulation 15 of the Electrical Machinery Regulations.
- Vegetation clearance shall be limited insofar possible. It is however allowed for all areas that will be affected by construction activities which include *inter alia*: Access roads, opencast, buildings, servitudes, parking areas, plant and processing infrastructure, stormwater infrastructure, contractor's laydown area and workshops.
- The ESM shall monitor site clearance and excavation activities for animal presence. All animals shall be rescued and relocated. Records of animal encounters shall be kept by the ESM.
- The Contractor shall, prior to the commencement of topsoil stripping, determine the average depth of topsoil for each construction area. This will be agreed to in consultation with the ESM and ECO. Typically topsoil constitutes the top 150mm of soil including organic matter. However, note that depth may vary from 0-300mm. The Contractor shall ensure that:
 - Topsoil and subsoil are not mixed during stripping operations;
 - Topsoil and subsoil shall be separately stockpiled and areas for storage clearly demarcated;
 - Temporary stockpiling should be limited insofar possible;
 - To the greatest extent possible topsoil and subsoil shall be handled only once for removal and once for replacement;
 - Contamination of stockpiles or littering shall be avoided at all times;
 - Stockpiles shall be kept free of weeds and alien invader plant species;
 - Topsoil stockpiles shall not exceed 1.5m in height to limited visual intrusion;
 - Stockpiles greater than 1.5m in height shall require approval from the ECO and shall be located in designated controlled areas;
 - Erosion measures shall be implemented where stockpiles are at the risk of erosion (Refer Section 6.2.4.Stormwater and erosion control);
 - Topsoil may not be handled in windy conditions;
 - Soil stockpiles shall not be positioned so that they obstruct any water drainage line or area of concentrated runoff;

- Topsoil may only be used for rehabilitation purposes and will not be used for backfilling purposes.
- Trenches and excavations shall be closed as soon as possible after services have been laid in them, to prevent them from posing safety hazards to staff, traffic and animals as well as to prevent rainwater and wind erosion.
- Excavated pits shall be safe for working and have adequate barricading and caution signage.
- Heavy machinery and construction equipment should be at least 6m away from the edge of the excavated area.
- Dust control measures shall be implemented at all times.
- Should any paleontological or archaeological remains of significance be uncovered during excavations, works shall be stopped. The Contractor shall notify the ESM and ECO immediately. No paleontological or archaeological material shall be removed. SAHRA shall be notified. Appropriate actions to be taken. All findings shall be recorded and photograph in situ.
- Any blasting activities require an approved Method Statement prior to commencement. This shall address safety issues and the control of fly-rock.
- The built structures on site (two homesteads) are older than 60 years and may not demolished or negatively impacted by blasting or construction activities. A destruction permit from Mpumalanga Heritage Resources Authority must be applied for if the homesteads are to be demolished.

6.2.2 Waste management

All waste generated during construction shall be managed in accordance with the requirements of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) Waste Classification and Management Regulations, 2013 (GNR: 634 – 635):

6.2.2.1 Waste stream identification and classification

- All waste generated shall be classified into separate waste streams (i.e. general waste, hazardous waste and recyclables);
- Waste shall not be mixed prior to classification and all waste types generated must be kept separate;
- Classification of any hazardous waste shall be done in accordance with SANS 10234 requirements;
- Safety data sheets shall be kept for any hazardous waste in accordance with SANS 10234 requirements;
 - Safety sheets must be prepared in accordance with SANS 10234 for the product that the waste originates from;
 - Safety sheets must be prepared in accordance with SANS 10234 reflecting the details of the specific hazardous waste/s or hazardous chemicals in the waste; and
 - All safety data sheets must be kept on file.

6.2.2.2 Waste management (collection, storage and handling)

- a) A central waste storage and transition area shall be established within the site camp;
- b) The location of this central waste storage and transition area shall be decided upon by the ESM and ECO (external);
- c) The central waste storage and transition area shall be surfaced and demarcated appropriately;
- d) Portable wheelie bins shall be placed throughout the site camp as well as at the remainder of the site and at all working areas in the field;
- e) Wheelie bins shall be colour coded and labelled to identify the waste stream for which it is intended;

Colour coding is as follows

General Waste	Green (Waste type labelling)
Hazardous Waste	Red (Waste type labelling)
Fluorescent tubes and E-Waste	Yellow (Waste type labelling)
Scrap Metal	Dark Blue (Waste type labelling)
Wood	Brown (Waste type labelling)
Recyclables	White (Waste type labelling)

- ✓ Signs with English wording.
 - ✓ Full descriptions of the waste are required to assist site and external personnel to handle the material safely.
 - ✓ Any unidentified wastes will be treated initially as hazardous and will be subject to the classification process outlined above.
 - ✓ All waste containers on-site (bins, skips, drums, etc.) will be clearly labelled to show which wastes can be disposed into them and which wastes they contain.
 - ✓ Any previous labelling will be removed or covered to avoid confusion.
- f) All portable wheelie bins and other containers shall be emptied at the central waste storage and transition area a minimum of once a week as to avoid waste build up;
- g) The waste shall be removed (within 30 days) by a licensed waste service provider as shall be disposed of at a licensed waste landfill site and records of safe disposal (as required for hazardous wastes) shall be supplied to the Contractor. These records shall be kept on site by the ESM.

6.2.2.3 Waste specific management measures

Hydrocarbons and hazardous waste

- All hazardous waste generated shall be kept separate and shall not be mixed with general waste;
- All hazardous waste shall be stored within a sealed drum on a impermeable surfaced area within the central waste storage and transition area;
- All hazardous waste shall have material safety data sheets and such waste shall be disposed of as per the product Material Safety Data Sheet (MSDS);
- Hazardous waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal;
- Certificates of safe disposal shall be acquired from the service provider for record purposes and these shall be maintained by the ESM on site;
- The total quantity of hazardous waste stored at the site at any one time shall not exceed 35m³.
- All containers (skips) within the central waste storage/ transition area must be labelled, or where labelling is not possible, records must be kept, reflecting the following:
 - ✓ Date on which waste was first placed in the container;
 - ✓ Date on which waste was placed in the container for the last time and when the container was filled, closed, sealed or covered;
 - ✓ Dates when, and quantities of waste removed;
 - ✓ Proof of safe disposal by licensed contractor must be kept by the ESM.

Scrap metal

- Steel and any other scrap metals are to be collected and stored within the central waste storage/ transition area within a skip or other suitable container.
- Scrap metal material shall be collected by a licensed waste management company and taken to an approved and licensed local recycling company / scrap metal dealership.
- Documentary proof of delivery to the recycling facility will be maintained on site by the ESM.

Timber

- Timber generated from various activities around the site will be collected and stored within the central waste storage/ transition area.
- The timber shall be kept free of any water (rain) and other hazardous leachate.
- The timber shall be collected and transported to a designated waste / recycle site.
- Documentary proof of delivery to the recycling facility will be maintained on site by the ESM.

Building rubble

- The ESM shall ensure that the entire site (including the site camp/ contractor's laydown area and any other working area) is cleaned of waste at least once a week.
- Clean rubble* shall be temporarily stockpiled in a waste skip / central stockpile (away from any drainage / sensitive areas) and shall be used as a base course material or removed from site to a crusher plant or licensed landfill site.
**No plastics, shrink wrap, paint buckets or any other debris that does not constitute clean building rubble, shall be stored at such stockpile sites.*

Domestic waste

- The ESM shall ensure that the constructor's camp and eating areas are cleaning daily.
- All domestic waste generated shall be disposed of into bins.
- Bins shall be provided at all eating areas.
- Bins shall be emptied twice a week.
- No staff shall be allowed to deposit waste / litter anywhere on the site except into the bins provided.

Medical waste

- Any medical waste generated on site shall be appropriately stored.
- Medical waste shall be collected by a licensed waste service provider and be disposed of at a licensed landfill site with certificates of safe disposal to be kept onsite by the ESM.

Waste water

- Discharge of any waste water directly into the environment shall be prevented at all times

- Waste water from toilets, kitchen facilities etc. shall be pumped into a conservancy tank and temporary stored for removal and safe disposal by accredited contractor.
- Records of removal and safe disposal shall be kept by the ESM.

Recyclables

- Wherever possible and practical, waste materials generated on site must be recycled;
- Recyclable materials includes the following:
 - ✓ Paper / cardboard
 - ✓ Metals
 - ✓ Glass
 - ✓ Plastic
 - ✓ Timber
 - ✓ Clean rubble
- Separate containers (with appropriate colour coding) must be provided for recyclable materials.

6.2.3 Water use management

Water may be abstracted from the following two boreholes as per the WUL Section 21a Water Use for domestic/potable use:

- Existing Farm house borehole on Farm Elandspruit 38 JS (GPS: 25° 48' 53.25" S ; 29° 22' 18.94" E) with daily abstraction volume allowed for at 5m³
- Proposed Mine borehole on Farm Elandspruit 38 JS (GPS: 25° 48' 56.0" S ; 29° 22' 39.2" E) with daily abstraction volume allowed for at 11m³

All boreholes must be metered and abstraction volumes monitored. The quantity of water authorised to be taken from the boreholes may not exceed the total volume as per the WUL.

6.2.3.1 Water conservation management measures

- The minimisation of loss or waste of water, and the efficient and effective use of water shall be maintained on site at all times.
- All hoses shall be fitted with trigger-gun spray nozzles to limit water wastage.
- Dry sweeping shall be undertaken in preference to washing of areas and equipment wherever possible.
- The Contractor shall be responsible for ensuring that there is access to clean drinking water for all employees on site. If water is stored on site, drinking water and multi-purpose water storage facilities shall be clearly distinguished and demarcated.

6.2.4 Stormwater and erosion management

- The construction of stormwater and waste water containment facilities shall be done in accordance with the final plans as approved by in the WUL and IWWMP.

- The construction of the structures must be carried out under the supervision of a professional Civil Engineer, registered under the Engineering Profession of South Africa Act, 1990 (Act 114 of 1990), as approved by the designer.
- Within 30 days after the completion of the infrastructure in accordance with the relevant provisions of WUL, the Applicant shall in writing, inform the Regional Head. This shall be accompanied by a signature of approval from the designer referred to above that the construction was done according to the design plans referred to WUL.
- Increase runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that stormwater does not lead to bank instability and excessive levels of silt entering the stream.
- Stormwater shall be diverted from the mining area complex site and roads and must be managed in such a manner as to disperse runoff and concentrating the stormwater flow.
- Where necessary works must be constructed to attenuate the velocity of any storm-water discharge and to protect the banks of the affected watercourses.
- All stormwater that would naturally run across the pollution areas shall be diverted via channels and trapezoidal drains designed to contain the 1:50 year flood.
- Damage to the environment (botanical and geo-hydrological) due to the construction activities shall be minimised at all times.
- The loss of topsoil must be minimized.
- Erosion and subsequent siltation must be limited.
- Impedance of the flow of both surface and sub-surface water associated within the drainage areas must be minimized.
- All access roads shall be constructed according to the design specifications.
- Any drainage channels shall be suitably designed to ensure that erosion does not occur.
- All areas susceptible to erosion shall be protected and stabilisation measures implemented:
 - Packing of sandbags, gabions, straw bales or brush to reduce the speed of water flow where water is scouring the topsoil and results in the formation of erosion gullies.
 - The installation of water cut-off and flow channels; and
 - Protection of road crossings across the drainage lines.
- All runoff generated within the site camp and substation area must be collected in a formalised stormwater infrastructure system and shall be managed accordingly.
- All stormwater infrastructure on site shall be maintained and kept clean throughout construction period.
- Use of bunds or traps to ensure full containment of hydrocarbon and other hazardous materials are mandatory.
- Fuel and oil spills shall be treated immediately by appropriate mop-up products.
- Any contaminated material is disposed of in an appropriate manner and the potential risks associated with such spills are limited.
- Immediate reporting of any polluting or potentially polluting incidents so that appropriate measures can be implemented.
- Exposed surfaces shall be kept to a minimum to minimise the volume of dirty run-off generated.
- All operational areas shall be kept clean by regular washing or sweeping and such waste material generated is disposed of accordingly.
- All equipment shall be well maintained and fully operational at all times.
- Any surface runoff generated which has a high suspended solid content shall be collected at the point source in an appropriate containment facility, then be allowed to settle before discharged into the environment.
- All water discharged to the environment shall first be cleared of hydro-carbons and subsequent release into the environment shall be within the allowable limits as per DWA General Limits.
- Removal of spills, rainwater and waste produced during cleanup of the bunds – shall be done in accordance to relevant specifications.

6.2.5 Restriction of working areas and protection sensitive areas

- All activities shall be undertaken in accordance with the recommendations proposed by the visual, heritage, paleontological and ecological specialist assessments.
- No activities shall be undertaken in sensitive areas* identified in the various specialist assessments which includes *inter alia*
 - 100m buffer area/ zone of the Elandspruit; and
 - Eskom line servitude.

*Unless otherwise authorized in the WULA or approved by Eskom.
- An adjacent sensitive area near the site includes two Voortrekker graves (700m from the site), nine worker graves (300m from the site) and two homesteads. These areas must be avoided.
- All sensitive and no-go-areas must be demarcated.
- All private property outside of the construction areas (including any detour routes) as set out in the site layout plan shall be considered no-go areas.
- Any additional no-go areas may be declared at any time during the construction phase as deemed necessary and/or at the request of the ECO / ESM or authorities.
- Should any archaeological / paleontological material be discovered during works then:
 - ✓ Work must be stopped in the area immediately.
 - ✓ The area must be demarcated according to the relevant specifications.
 - ✓ Demarcation materials (fencing, signage, etc.) shall not be moved or removed at any stage of the project without approval from the ESM.
 - ✓ Areas where construction activities prohibited are referred to as no-go areas. Entry into these areas by any person (except the ESM and ECO by foot for monitoring purposes), vehicle or equipment without permission will result in a penalty.

6.2.6 Hazardous materials handling, storage and disposal

- All fuels/flammable including other hazardous substances shall be stored within a demarcated area in the Contractor's camp/ laydown area on site.
- The hazardous storage area and perimeter must be free of vegetation and be well away from buildings or stored combustible materials.
- The rated capacity of a tank/container must be able to accommodate expansion of the product contained therein due to the rise in temperature during storage.
- All materials to be stored in accordance with the MSDS requirements.
- All hazardous substances shall be stored in containers with lids, which are kept firmly shut.
- All containers must be kept in such a condition as to be reasonably safe from damage and to prevent leakage there from.
- Flammable liquids in small quantities for e.g. paints, thinners, oils, etc. can be stored in a fireproof cabinet and marked with relevant fire prevention signs and have a copy of the MSDS posted up.
- The requirements of fuel storage and management as detailed in SANS 10089 part 1 and SANS 10131 must be implemented by the Safety Manger.
- All vehicles and equipment must be maintained in a good condition in order to minimise the risk of leakage and possible contamination of the soil or stormwater by fuels, oils and hydraulic fluids.

- All vehicles / plant requiring servicing, or which are on site as well as any static plant e.g. generators and concrete mixers are to make use of a drip tray placed strategically to avoid incidental spillage of oils and fuels onto the ground.
- Drip trays shall be inspected at least weekly (daily, if affected by rainwater) and appropriate spill kits used to remove spillages.
- Drip trays shall be closely monitored during rain events to ensure that they do not overflow.
- All hazardous material spills must be cleaned up immediately.
- All hazardous materials must be classified (as detailed), recorded in register and be reported to the ESM.
- Vehicles and machinery must be refuelled at designated refuelling areas only.
- Any person handling or using a hazardous substance must be made aware of the Personal Protective Equipment (PPE) Requirements and he/she shall use the prescribed PPE.
- Should decanting be necessary the spill precaution as recommended on the MSDS must be adhered to.
- Decanting of liquids will only be done over drip trays.
- When hazardous substances are decanting into other containers, all such containers must be labelled correctly.
- Containers into which decanting is being done must be of the same material as in which the original substance is contained.
- PPE as recommended on the MSDS must be used when decanting hazardous substances.
- Storage and classification of hazardous waste to be in accordance with the waste classification and management regulations GNR 634-635.
- Temporary storage of hazardous waste must be avoided insofar possible.
- A designated skip for all hazardous waste must be made available on site.
- All hazardous chemical, hydrocarbons and contaminated containers will be removed and disposed of by a certified hazardous waste removal company and dumped at a certified Hazardous waste site.
- Skips should also be closed - no rain water to enter the skips.
- All drip trays / bunds / other temporary storage containers must be inspected for freeboard after rain and appropriate spill kits used to remove content.
- When hazardous substances are decanting into other containers, all such containers must be labeled correctly.
- Containers into which decanting is being done must be of the same material as in which the original substance is contained.
- All drip trays to be emptied in clearly marked, predetermined hazardous waste bin/drum for removal and appropriate disposal.
- All contents pumped from bunded area sumps must be placed in appropriately marked containers for removal by an approved/reputable hazardous waste contractor.
- Any liquid pumped out from bunded area sumps must be put through an oil-water separator before disposal.
- Ensure safe disposal certificates are obtained and kept on site.
- Ensure a reputable/approved waste removal contractor is appointed for the safe removal of all hazardous waste on a regular basis

6.2.6.1 Concrete and cement works

- Concrete must be mixed on an impermeable surface or on a mixing tray and not directly on soil surfaces.
- Cement must be stored in a designated storage area (secure from water and wind) and kept dry at all times.
- Should there be a batching plant on site, it must be located on appropriate concrete slab, which will be large enough to accommodate the batching plant and cement silos.
- Any cement silos at the batching plant shall be hoarded off with shade cloth and dust suppression bags will be used when the cement is pumped into the silos.

- Any spillages will be swept to minimise dust dispersion.
- Recycle pit: The recycle (washout pit) will be large enough to contain run-off from the surrounding area. The water captured by the recycle pit will be reused in the batching operations. Any slush that collects in the bottom of the recycle pit will be mixed with sand (using the loader) to make it easier to transport. It will then be loaded onto a truck and legally disposed of.
- Sand and Stone Storage area: Sand, crusher dust and stone will be stored in stockpiles on compacted ground. All stockpiles shall be covered under high wind conditions (excess of 45km/hr) or watered down to limited dust emissions.

6.2.7 Noise and lighting control

Noise

- Construction activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise on neighbours. Should the Contractor need to work outside normal working hours, the surrounding neighbours shall be informed prior to the work taking place.
- No amplified music shall be allowed on site.
- Appropriate directional and intensity settings are to be maintained on all hooters and sirens.
- Hearing protection shall be issued by staff in work areas where noise levels exceed 85dB or as otherwise specified in the Mine Health and Safety Plan.
- Regular maintenance to ensure that factory fitted noise abatement measures is effective.
- Excessively noisy machinery must only be used during regular operating hours and not after hours where possible.
- If and where possible, excessively noisy activities shall not be conducted simultaneously.
- Should any complaints regarding noise be received from the adjacent community / staff, a baseline noise assessment and subsequent noise monitoring shall be conducted.
- Any noise complaints received shall be recorded in complaints register by the ESM.
- The Contractor shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations.
- The Contractor shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Subclause 4.1 regarding “built-up” area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas.

Lighting

- Construction operations must insofar possible occur during daylight hours.
- If lighting is required, the lighting will be located in such a place and such a manner so as to minimise any impact on the surrounding community.
- Lighting shall not be unreasonably intrusive into the landscape.
- Any lighting nuisance complaints received shall be recorded in complaints register by the ESM.
- Every complaint shall be investigated by the ESM and mitigating measures be implemented where possible to the satisfaction of the ESM and ECO.

6.2.8 Dust control

- Dust shall be controlled in accordance with the requirements of the National Dust Control Regulations (GN 827, November 2013). This shall include compliance with regards to: *A: Dust fall out standards-* (b) 1200 mg/m²/day averaged over 30 days in areas other than residential and light commercial areas measured using reference method ASTM 01739.
- Generation of dust shall be minimised and dust nuisance for the surrounding community shall be kept to a minimum wherever possible.
- Dust from exposed soil surfaces shall be minimised at all times.
- Reasonable measures must be undertaken by to ensure that any exposed areas and material stockpiles are adequately protected against the wind.
- Dust screens of a suitable height should be erected wherever required and possible.
- All exposed surfaces should be minimised in terms of duration of exposure to wind and stormwater.
- All exposed un-stabilised / un-compacted surfaces shall be surfaced; re-vegetated / stabilised as soon as works are completed.
- Potable water shall not be used for the dust suppression of stockpiles.
- Product stockpiles shall not exceed 1.5m.
- Water for dust suppression (entire site) must be obtained from the mine water dam, a total volume of 180cm³ per day may be utilised as per the WUL requirements.
- Excavation, handling and transportation of erodible materials shall be avoided under high wind conditions (excess of 35km/hr) / when visible dust plume is present.
- The transportation of erodible materials onsite shall be covered at all times.

6.2.9 Vegetation management

- Unnecessary access areas outside of the development footprint (as per the approved Final Site Layout Plan) must be avoided.
- No watercourse or stream shall be diverted or modified.
- Buffer area (100m) of the Elandspruit must be avoided. Vegetation associated with sensitive areas may not be disturbed or removed. Unless otherwise authorised in the WUL.
- Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Particular attention must be paid to imported material.
- Re-vegetation and rehabilitation of the cleared areas shall be undertaken once construction has been completed.
- Areas to be re-vegetated with endemic trees and grass species; and remaining waste areas to be flattened, sloped, covered with topsoil and vegetated.
- No protected trees shall be removed without required permit in terms of the National Forest Act (Act 84 of 1998).
- Search and rescue exercises must be performed on any threatened species found on site.

6.2.10 Animal control

- Wild animals encountered on site may not be trapped, captured, disturbed, injured or killed. ESM to be notified immediately of animal encounters. Note: Animals may be trapped when such an animal (e.g. venomous snake) poses a hazard to staff or where the animal itself is in danger of being harmed by activities in the area.
- Venomous Snake encounters:

- ✓ ESM to be contacted immediately to advise on the capture and release of the animal;
 - ✓ Local conservation staff / reptile handlers to assist with capture and release (if required); and
 - ✓ The ESM will provide basic snake awareness training to all staff and sub-contractors.
- No domestic animals may be brought to site.

6.2.11 Safety and security

- The site camp is to be established under supervision of the ESM and Safety Manager. The site and site camp should be secured and unauthorised access prohibited.
- The site camp and site are to be fenced off to prohibit unauthorised access and/or the possibility of works occurring outside the border of the site.
- Such fencing must be accompanied by signage indicating the site and contractors, emergency numbers, and good practice safety and security signs.
- No temporary site camps or any works associated with the development will be allowed outside the footprint of the development area.
- No personnel, except for security staff, are allowed to stay/live on the site. Security staff is to be provided with accommodation and ablution facilities and communication equipment.
- Visitors are to complete the site visitor diary as well as a brief induction. The site visitor diary is to be kept at the site camp by the ESM for record purposes. Induction shall include an introduction to the site and project, the authorised and unauthorised accesses as well as good practice safety procedures i.t.o. MSHA.
- All personnel working for, or on behalf of, the contractor as well as all visitors are to be outfitted with the required PPE.
- Site camp and construction areas are to be clearly demarcated.
- Site and construction personnel are prohibited from special environments which may be prohibited from access or activities.
- Ablution facilities and areas are to be clearly demarcated and clear signage to be erected.
- One chemical toilet is to be provided for every 8 site workers.
- Chemical toilets are to be serviced (emptied) twice a week.
- Potable water points are to be demarcated.
- Ensure potable water complies with the NWA general limit requirements for drinking water. If necessary potable water shall be treated prior to consumption. If no filtration system is available potable water will be supplied to all site workers on a daily basis.
- Eating areas are to be clearly demarcated and maintained.
- The potential fire hazards must be managed by ensuring that no fires are permitted on site and that the constructors must be aware of the consequences of starting a fire on site to avoid damage to the neighbouring farms.
- Fire extinguishers are to be supplied to vehicles, site camp, security quarters, etc. Fire extinguishers are to be serviced on a six-monthly basis.
- The applicant must train safety representatives, managers and workers in workplace and site safety. All applicable safety standards and regulations, including for subcontractors must be enforced. Training should include emergency procedures.

6.2.12 Traffic management

- All vehicle (construction and private) movement must be controlled on site and all vehicles must remain on designated routes.
- Temporary road signs must be erected during the construction phase.

- Single directional traffic shall be controlled through a stop-go system or any other appropriate traffic control method.
- During all stages of the construction, the Applicant shall be responsible for ensuring that suitable access is maintained for public traffic to all relevant businesses and properties.
- The final position of the temporary signs and the proposed traffic accommodation plan must be approved by the Engineer.
- All traffic accommodation measures are to conform to the latest edition of the South African Road Signs Manual.

6.2.13 Fire management

Fire prevention

- All workers (including sub-contractors) will be sensitized to the risk of fire – no smoking / no fire policy on site through the mandatory safety specific induction. Smoking is only allowed in designated smoking areas.
- The Contractor / Applicant shall ensure that the basic fire-fighting equipment is available on site.
- The Contractor / Applicant shall supply the site with tested and approved fire-fighting equipment (minimum 2 X 9kg fire extinguishers). All “hot” work areas (e.g. welding, gas cutting or cutting of metal) must have fire extinguishers readily at hand.
- The disposal of waste material by burning is prohibited.

Fire response and evacuation

- Reasonable and active steps must be taken to avoid increasing the risk of fire through their activities on site.
- Basic fire-fighting equipment will be to the satisfaction of the Local Fire Services.
- No fires for heating purposes shall be allowed.
- The disposal of any matter by burning is prohibited.
- No smoking will be allowed on site, except in designated smoking points.
- An Emergency Plan (including Fire Protection, Response and Evacuation Plan) is to be prepared and conveyed to all staff on the site. This shall identify:
 - ✓ a Fire Marshall for the site;
 - ✓ all potential fire hazards;
 - ✓ fire-fighting equipment to be provided on site;
 - ✓ procedure in case of a fire;
 - ✓ a fire evacuation route and plan; and
 - ✓ emergency contact numbers.
- Key staff members will be trained to deal with the control of fire-fighting equipment on site and to assist with evacuations as required.
- All staff is to be familiar with the position of fire control equipment on site and response and evacuation procedures. This should be covered in the inductions for all new site staff and visitors.
- In the case of a fire occurring on site, the following actions are to be taken immediately:
 - Contact Local Fire Department/farm response unit.
 - Warn neighbours of potential danger.
 - All fire requirements shall be carried out as contained in the National Building Regulations SABS 0400.

6.2.14 Emergency management

Safety and emergency procedures, risk management and training

- The application of all MSHA and regulations must be ensured. This includes the distribution and use of protective clothing and equipment to at least include safety shoes, overalls, gloves, dust masks, and where appropriate ear muffs and eye/face protection shields.
- Handout and use of safety and protective equipment must be recorded. Staff who fails to use the protective equipment provided by site staff must not be allowed to work at the facility.
- Emergency procedures for fire, adverse conditions due to inclement weather, spillages, stoppage of operations due to refusal to work by employees, etc. must be included in the emergency procedures.
- All relevant fire-fighting equipment should be kept on site.
- The Site Manager shall be assigned as the Safety Coordinator for the facility and the Site Manager shall assign a person as deputy to act when appropriate.

The following requirements would be the minimum for the safety program:

- ✓ Orientation of new employees including safety training and emergency contingency planning.
- ✓ Accident reporting procedures for notification to the Employer and thereafter appropriate agencies.
- ✓ Thorough investigation and documentation of all accidents to ascertain the cause and future methods of preventing recurrence.
- ✓ Mandatory first aid instruction for all staff members.
- ✓ Regularly scheduled safety meetings.
- ✓ Fire prevention and fire-fighting instruction.
- ✓ Routine inspection and testing procedure for all safety and emergency equipment and protective devices, and routine walk through inspections conducted by the Operator through all areas to identify and correct potential unsafe conditions.
- ✓ Posting of safety bulletins and posters required by regulatory agencies and other materials concerning accident prevention and hazardous conditions.
- ✓ The Contractor shall abide by all local, provincial and national safety requirements.
- ✓ The Contractor shall provide for a first aid station and emergency medical response for injured staff.
- ✓ All plant/equipment failure must be repaired or replaced by the Contractor without any undue delay or adverse effect to the operation of the site.
- ✓ This includes all mechanical equipment and tools, safety and warning systems.
- ✓ The Operator will ensure that all equipment is maintained in a safe operating condition.

Accident and incident control and reporting

- All accidents must be recorded irrespective of the severity or seriousness of injuries and damage. Data about the accident must be provided within 24 hours after occurrence.
- Appropriate recording documents must be available on site and a person must be designated as the Health and Safety Officer.
- Appropriate authorities and law enforcement officers must be included in investigations into accidents.
- Steps to avoid recurrence of similar accidents must be identified and implemented. The steps must be recorded and monitored.

- Incidents must be recorded in an incident register noting the time, date and place where the incident occurred, who and what was involved, and a detailed description of the incident must be included in the report.
- Actions taken to address the occurrence of the incident, as well as the avoidance of recurrence of the incident must be recorded.

Refer to Annexure 1: Example of Emergency Procedure.

6.3 OPERATIONAL PHASE

Section 6.3 provides the management measures and controls to mitigate the potential impacts associated with the operational phase of the mine. The operational period will be approximately 26 months. The main activities of the operational phase will include *inter alia* the mining of coal, beneficiation and processing of coal, storage, stockpiling and transportation of coal to the consumer. Other activities will include waste water management, dust suppression and mine administration.

6.3.1 Land use management

Reference is made to the Land Capability Assessment (ENVASS, 2013):

- All mining areas must be demarcated and no mining may take place outside of the approved Site Layout Plan authorised by the MDEDET;
- Overburden stockpiles can be used as a barrier to screen operational activities. If stockpiles are used as screens, the same preventative measures described above should be implemented to prevent loss or contamination of soil;
- The stockpiles should not exceed a maximum height of 6m and it is required that the side slopes and surface areas be vegetated in order to prevent water and wind erosion and to keep the soils biologically active;
- If used to screen mining operations, the surface of the stockpile should not be used as roadway as this will result in excessive soil compaction;
- Any sensitive areas (vegetation, hydrological, geological and heritage) within or adjacent to the relevant works area, must be demarcated prior to the commencement of mining;
- Plant species of special concern must be identified for rescue and relocation *prior* to the commencement of clearing and mining;
- Concurrent rehabilitation must take place;
- Materials should be backfilled such that the last two layers are that of soft materials (treated with lime high mg) and on top the topsoil's layers;
- The soft materials (prior to topsoil) must be contoured and that topsoil's must be spread evenly afterwards; and
- The topsoil's can be ripped into the soft materials to provide stability and simultaneously can N:P:K amelioration be done mechanically.

6.3.2 Topsoil management

- The depth of topsoil for each operational area must be determined prior to the operational activities. Typically topsoil constitutes the top 150 mm of soil including organic matter. However, note that depth may vary from 0 - 300 mm. It must be ensured that:
 - Topsoil and subsoil are not mixed during stripping operations;
 - Topsoil and subsoil must be separately stockpiled and areas for storage clearly demarcated;
 - Temporary stockpiling should be limited insofar possible;

- To the greatest extent possible topsoil and subsoil must be handled only once for removal and once for replacement;
- Contamination of stockpiles or littering must be avoided at all times;
- Stockpiles must be kept free of weeds and alien invader plant species;
- Topsoil stockpiles must not exceed 1.5 m in height to limit visual intrusion as well as to retain the fertility of the soil;
- Stockpiles greater than 1.5 m in height must require approval from the ECO and must be located in designated controlled areas;
- Erosion measures must be implemented where stockpiles are at the risk of erosion;
- Topsoil may not be handled in windy conditions;
- Soil stockpiles must not be positioned so that they obstruct any water drainage line or area of concentrated runoff;
- Topsoil may only be used for rehabilitation purposes and may not be used for backfilling purposes.

6.3.3 Stormwater and erosion control

- Clean and dirty water must be separated on site at all times.
- Dirty / contaminated water must be contained at all times.
- The operation and maintenance of the stormwater and waste water containment facilities shall be done in accordance with the requirements of the WUL and IWWMP.
- The water containing waste and waste containment facilities shall be operated and maintained to have a minimum freeboard of 0.8 metres above full supply level and all other water systems related thereto shall be operated in such a manner that it is at all times capable of handling the 1:50 year flood-event on top of its mean operating level.
- Increase runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that stormwater does not lead to bank instability and excessive levels of silt entering the stream.
- Stormwater shall be diverted from the mining area complex site and roads and must be managed in such a manner as to disperse runoff and concentrating the stormwater flow.
- Where necessary, works must be constructed to attenuate the velocity of any stormwater discharge and to protect the banks of the affected watercourses.
- All stormwater that would naturally run across the pollution areas shall be diverted via channels and trapezoidal drains designed to contain the 1:50 year flood.
- Damage to the environment (botanical and geo-hydrological) due to the mining activities shall be minimised at all times.
- The loss of topsoil must be minimized.
- Erosion and subsequent siltation must be limited.
- Impedance of the flow of both surface and sub-surface water associated within the drainage areas must be minimized.
- Any drainage channels shall be suitably maintained to ensure that erosion does not occur.
- All areas susceptible to erosion shall be protected and stabilisation measures implemented:
 - Packing of sandbags, gabions, straw bales or brush to reduce the speed of water flow where water is scouring the topsoil and results in the formation of erosion gullies.
 - The installation of water cut-off and flow channels; and
 - Protection of road crossings across the drainage lines.
- All runoff generated within the processing area must be collected in pollution control dam and shall be managed accordingly.
- All stormwater infrastructure on site shall be maintained and kept clean throughout operational period.
- Use of bunds or traps to ensure full containment of hydrocarbon and other hazardous materials are mandatory.

- Fuel and oil spills shall be treated immediately by appropriate mop-up products.
- Any contaminated material is disposed of in an appropriate manner and the potential risks associated with such spills are limited.
- Immediate reporting of any polluting or potentially polluting incidents so that appropriate measures can be implemented.
- Exposed surfaces shall be kept to a minimum to minimise the volume of dirty run-off generated.
- All operational areas shall be kept clean by regular washing or sweeping and such waste material generated is disposed of accordingly.
- Stormwater leaving the site must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.
- All reagent storage tanks and reaction units must be supplied with a bunded area built to the capacity of the facility and provided with sumps and pumps to return the spilled material back into the system. The system shall be maintained in a state of good repair and standby pumps must be provided.
- Any access roads or temporary crossings must be:
 - Non-erosive, structurally stable and shall not induce any flooding or safety hazard; and
 - Be repaired immediately to prevent further damage.
- Strict access procedures must be followed in order to gain access to the property. Access to the dirty water management: Facilities (all dams) must be limited to authorized employees.
- Notices prohibiting unauthorized persons from entering the areas, as well as internationally acceptable signs indicating the risks involved in case of an unauthorized entry must be displayed along the boundary fence of these areas.
- Annual annual internal audit on compliance with the conditions of the WUL relating to stormwater management must be conducted.
- An independent external auditor must be appointed to conduct an annual audit on compliance with the conditions of the WUL. The first audit must be conducted within 3 (three) months of the date of WUL.
- Geochemical assessment on all mine residue deposit must be undertaken annually.
- The IWWMP and Rehabilitation Strategy and Implementation Programme (RSIP) must be updated as required in the WUL conditions.
- The ESM must conduct weekly visual inspections of stormwater infrastructure and discharging stormwater for the presence of:
 - Suspended sediment
 - Turbidity
 - Discoloration
 - Emulsification
 - Oil sheen

6.3.4 Dust control

- Dust shall be controlled in accordance with the requirements of the National Dust Control Regulations (GN 827, November 2013). This shall include compliance with regards to: A: *Dust fall out standards*- (b) 1200 mg/m²/day averaged over 30 days in areas other than residential and light commercial areas measured using reference method ASTM 01739.

General Measures:

- Generation of dust shall be minimised and dust nuisance for the surrounding community shall be kept to a minimum wherever possible.
- Dust from exposed soil surfaces shall be minimised at all times.

- Reasonable measures must be undertaken by to ensure that any exposed areas and material stockpiles are adequately protected against the wind.
- Dust screens of a suitable height should be erected wherever required and possible.
- All exposed surfaces should be minimised in terms of duration of exposure to wind and stormwater.
- Potable water shall not be used for the dust suppression of stockpiles.
- Product stockpiles shall not exceed 1.5m.
- Water for dust suppression (entire site) must be obtained from the mine water dam, a total volume of 180cm³ per day may be utilised as per the WUL requirements.
- Excavation, handling and transportation of erodible materials shall be avoided under high wind conditions (excess of 35km/hr) / when visible dust plume is present.
- Specific dust source management is detailed in Table 8 below.

Table 8: Dust specific mitigation measures

Windblown Dust Sources	
Source	Control Measures
Areas disturbed by mining operations	Exposed areas are created by the removal of vegetation and top and subsoil. Vegetation clearance shall be limited insofar possible. All exposed un-stabilised / un-compacted surfaces shall be surfaced; re-vegetated / stabilised as soon as works are completed.
Overburden emplacement areas	Use of cover crops or other temporary re-vegetation measures to form temporary covers on the surface of large elevated overburden will reduce windblown dust from overburden.
Handling and stockpiling of material	Maintain material handling areas in a moist condition using water carts to minimise windblown and traffic generated dust.
Activity Generated Dust Sources	
Source	Control Measures
Haul roads	All roads and trafficked areas must be watered using water carts/bowsers to minimise the generation of dust. Roads must be graded to remove accumulated dust from load surface. Obsolete roads must be ripped and re-vegetated. Speed limit on site must be kept under 30 km/h.
Topsoil Stripping	Pre-watering of areas to be stripped is required.
Topsoil Stockpiling	Erosive stockpiles must be located in a wind sheltered areas where possible. Stockpile covers - Shade cloth fencing mesh and windscreens must be used where feasible. Long term (longer than 6 months) topsoil stockpiles, must be re-vegetated.
Exposed areas	Dust suppression by means of water or dustex must be applied to exposed areas. Mined out areas and obsolete roads will be rehabilitated and re-vegetation to minimise dust pollution.

Monitoring:

- A Gravimetric Dust Monitoring program must be implemented on the site as stipulated in section 4 of GN 827 – National Dust Control Regulations, in terms of section 53(o), read with section 32 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).
- A minimum of eight dust buckets must be erected around the site in the eight main wind directions.
- Monthly monitoring and reporting of dust fallout is required as detailed in Table 9 below.

Table 9: Dust monitoring and reporting

Monitoring Aspect	Receptors	Frequency
Gravimetric Dust Fallout	8 main wind directions border of property	Monthly

Reporting:

- Monthly air quality report will be required as per the regulations to:
 - Ensure that the environmental mitigation and control measures are implemented;
 - Monitor environmental performance of the mining operations;
 - Tracking of progress due to pollution control measure implementation;
 - Verify compliance with all relevant legal and statutory requirements;
 - Promote environmental education and protection; and
 - Determine sources of significant pollution.

6.3.5 Water use management

Water may be abstracted from the following two (2) boreholes as per the WUL Section 21a Water Use for domestic/potable use:

- Existing farm house borehole on Farm Elandspruit 38 JS (GPS: 25° 48' 53.25" S ; 29° 22' 18.94" E) with daily abstraction volume allowed for at 5m³
- Proposed mine borehole on Farm Elandspruit 38 JS (GPS: 25° 48' 56.0" S ; 29° 22' 39.2" E) with daily abstraction volume allowed for at 11m³

All boreholes must be metered and abstraction volumes monitored. The quantity of water authorised to be taken from the boreholes may not exceed the total volume as per the WUL.

- The minimisation of loss or waste of water as well as the efficient and effective use of water must be maintained on site at all times;
- All hoses must be fitted with trigger-gun spray nozzles to limit water wastage;
- Dry sweeping must be undertaken in preference to washing of areas and equipment when and wherever possible;
- Water conservation must be included in environmental training; and
- Should water be stored on site, drinking water and multi-purpose water storage facilities must be clearly distinguished and demarcated.

6.3.6 Surface water management

- No activities shall be undertaken in the 100m buffer area/ zone of the Elandspruit. Unless otherwise authorised in the WUL in terms of Section 21 c and i.
- The pollution of surface water shall be prevented. Such pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage, water from excavations, construction water, water carrying soil particles or waste products etc.
- Acid Mine Drainage (AMD) is likely to occur at the stockpile and coal loading areas during the mining phase and where possible, the water quality of the Elandspruit (as it is near pristine) from future contamination with AMD, originating from water that will be decanting from the flooded, backfilled void created by the mine.
- AMD must be managed actively throughout the operational phases. Chemicals used for treating AMD after formation are hydrated lime, pebble quicklime, caustic soda, soda ash briquettes, and ammonia. Each chemical has advantages for certain

water conditions and treatment. Each chemical reacts differently with a specific AMD. Therefore, it is essential that each AMD source be treated and evaluated with each chemical to determine which is most environmentally sound, efficient and cost effective. Coagulants and flocculants may be used in water treatment where retention time in sedimentation ponds is insufficient for metal precipitation. Oxidants can be used to meet more stringent effluent limits and to make chemical treatment more efficient.

Monitoring:

- A Surface water sampling monitoring programme must be in place during the operational phase.
- The following sampling points must be included in the monthly monitoring programme:

Table 10: Surface water monitoring points

Sample	Decimal Degrees (WGS84)		Metres WG29° (Positive North)	
	Lat	Lon	X WG29°	Y WG29°
OLIFANTS RIVER UPSTREAM	-25.8061774	+29.3190028	31990.17	-2855400.40
OLIFANTS RIVER DOWNSTREAM	-25.7963925	+29.3299628	33091.97	-2854319.09
ELANDSPRUIT DAM 1	-25.8129662	+29.3819466	38300.15	-2856169.32
ELANDSPRUIT DAM 2	-25.8095388	+29.3722051	37324.37	-2855786.82
ELANDSPRUIT SPRING	-25.8130624	+29.3833657	38442.42	-2856180.40
PCD	-25.8137693	+29.3790102	38005.44	-2856257.44
MINE WATER DAM	Not sited	Not sited	Not sited	Not Sited

- The following parameters must be analyzed during surface water sampling:
 - Suspended Solids
 - Total Alkalinity
 - pH
 - EC
 - Na+
 - K+
 - Ca2+
 - Mg2+
 - NO3-
 - Cl-
 - SO4²⁻
- A full spectrum ICP-MS scan (or equivalent analyses) must also be conducted once during the rainy and once during the dry season, preferably during July and January of each year on all the above samples.
- It is recommended that samples be collected and the analyses results recorded on a monthly basis and that reports be compiled and submitted to DWA twice per year.

6.3.7 Groundwater management

Reference is made to the Geohydrological Assessment (Geo Pollution Technologies, 2013)

- Water samples must be taken from all the monitoring boreholes by using approved sampling techniques and adhering to recognised sampling procedures. Samples should be analysed for both organic as well as inorganic pollutants, as mining activity often lead to hydrocarbon spills in the form of diesel and oil.
- The boxcut must be started at the farthest point from the dam/stream. In such a mining scenario the impact on the dam/stream will be delayed to the latest possible time before closure of the opencast.
- All mined areas should be flooded as soon as possible to bar oxygen from reacting with remaining pyrite.
- Mining should remove all coal from the opencast and as little as possible should be left.
- The final backfilled opencast topography should be engineered such that runoff is directed away from the opencast area.
- The final layer (just below the topsoil cover) should be as clayey as possible and compacted if feasible, to reduce recharge to the opencasts.
- Quarterly groundwater sampling must be done to establish a database of plume movement trends.

Table 111: Groundwater monitoring points

Name	X-coord	Y-coord	Monitoring Requirement
EMBH1	29.38587452	-25.81613014	Source/Plume Monitoring
EMBH2	29.3757697	-25.81848541	Plume Monitoring
EMBH4	29.38064412	-25.81464556	Source/Plume Monitoring
EMBH5	29.38210915	-25.8112478	Source/Plume Monitoring
EMBH3	29.37755553	-25.81555625	Plume Monitoring
EMBH6	29.37844662	-25.81039085	Plume Monitoring

- Regular sampling and chemical analyses of the groundwater must be undertaken:
 - Groundwater in all boreholes within a distance of less than two kilometres must be sampled regularly to establish a database against which future groundwater levels can be compared.
 - Sampling must be preferably quarterly, but at least twice annually, following the dry – and rainy seasons.
 - If it is found during such a sampling event that groundwater from any extraction borehole is polluted beyond acceptable standards, alternative water will have to be supplied to the affected party.
- Remaining acid producing material should be placed as low in the pit as possible to ensure fast flooding of the material. All mined areas should be flooded as soon as possible to bar oxygen from reacting with remaining pyrite²⁰.
- Minor spills such as diesel, petrol and oil will impact on groundwater quality and must be managed accordingly.

6.3.8 Hazardous material handling and storage

The construction activities associated with the hazardous material handling and storage/ disposal will continue through the operational phase. Refer to section 6.2 above.

6.3.9 Biodiversity management

Reference is made to the Ecological Assessment ENVASS (2014)

- Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Particular attention must be paid to imported material;

- Measures must be taken to remove alien vegetation and control new alien vegetation recruitment on any disturbed areas;
- Minimising the creation of at-risk hosts during vegetation clearance by using directional felling to avoid or minimise damage to adjacent floral species;
- All alien invasive plant (AIP) species must be managed in accordance with the specifications detailed with a site specific Invasive Plants Management and Rehabilitation Plan.
- All AIPs on site must be identified and eradicated / controlled through the appropriate methods.
- Management should include:
 - Prevention—Keep the invasive species out;
 - Early detection and rapid response—Detect and eradicate invasive species to stop them from spreading;
 - Control and management— Eliminate or control the problem of invasive species;
 - Rehabilitation and restoration— Heal, minimize, or reverse the harmful effects from invasive species.
 - AIPs must be removed through either Mechanical / Chemical / Biological Control (which ever control method is suitable for the specific AIP).
- An independent contractor must be appointed for the removal of eradicated alien plant material. Such material is to be disposed of at an approved or licensed waste disposal site.
- Records of removal and disposal must be kept.
- No protected trees may be removed without the necessary permit in terms of the National Forest Act (No. 84 of 1998);
- No watercourse or stream may be diverted or modified in any way without approval from the DWS;
- Preparation of a comprehensive rehabilitation plan, including weed and pest management, to restore the mined areas to a cover species composition that would at least in part be comparable to the current vegetation composition because of the altered substrates but that would be compatible with the surrounding ecosystems. This rehabilitation plan must be implemented concurrent with the mining operations;
- Prevention or control of the establishment and spread of weeds on and off-site;
- Remaining waste areas must be flattened, sloped, covered with topsoil and vegetated;
- Re-vegetation and rehabilitation of the cleared areas must be when and wherever possible;
- Unnecessary access areas outside of the development footprint must be avoided;
- Vegetation associated with sensitive areas may not be disturbed or removed; and
- If any threatened species are found during the above mentioned process, a plan to protect or rescue them should be developed and implemented.

6.3.10 Animal control

- Wild animals encountered on site may not be trapped, captured, disturbed, injured or killed. ESM to be notified immediately of animal encounters. Note: Animals may be trapped when such an animal (e.g. venomous snake) poses a hazard to staff or where the animal itself is in danger of being harmed by activities in the area;
- Venomous Snake encounters:
 - ESM must be contacted immediately to advise on the capture and release of the animal;
 - Local conservation staff / reptile handlers to assist with capture and release (if required);
 - The ESM will provide basic snake awareness training to all staff and sub-contractors; and
- No domestic animals may be brought to site.

6.3.11 Waste management

All waste generated during the operational phase shall be managed in accordance with the requirements of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) Waste Classification and Management Regulations, 2013 (GNR: 634 – 635):

Waste management activities shall continue in the operational phase as detailed in the construction phase (refer to point 6.2 above).

6.3.12 Noise and lighting control

Noise

Noise management and mitigation measures shall in the operational phase as detailed in the construction phase (refer to point 6.2 above). In addition, the following must be undertaken:

- Monthly noise monitoring program and reporting; and
- Noise mitigation measures such as barriers, vegetative screening or earth berms must be investigated if required.

Lighting

- Operational operations must occur during daylight hours;
- If lighting is required, the lighting will be located in such a place and such a manner so as to minimise any impact on the surround community;
- Lighting must not be unreasonably intrusive into the landscape; and
- Any lighting nuisance complaints received must be recorded in complaints register by the ESM.

6.3.13 Fire management

Fire response and evacuation

- The Applicant must take all reasonable and active steps to avoid increasing the risk of fire through their activities on site;
- The Applicant must ensure that the basic fire-fighting equipment is to the satisfaction of the Local Fire Services;
- No fires for heating purposes must be allowed;
- The disposal of any matter by burning is prohibited;
- No smoking will be allowed on site, except at designated smoking points;
- An Emergency Plan (including Fire Protection, Response and Evacuation Plan) is to be prepared and conveyed to all staff on the site. This must identify:
 - A Fire Marmust for the site;
 - All potential fire hazards;
 - Fire-fighting equipment to be provided on site;
 - Procedure in case of a fire;
 - A fire evacuation route and plan;
 - Emergency contact numbers;

- Key staff members will be trained to deal with the control of fire-fighting equipment on site and to assist with evacuations as required;
- All employees and Contractors must be familiar with the position of fire control equipment on site and response and evacuation procedures. This should be covered in the mine's health and safety inductions required for all employees, Contractors and visitors;
- In the case of a fire occurring on site, the following actions are to be taken immediately:
 - Contact Local Fire Department/farm response unit;
 - Warn neighbours of potential danger;
 - All fire requirements must be carried out as contained in the National Building Regulations SABS 0400.

6.3.14 Emergency management

Safety and emergency procedures, risk management and training

- The application of all mine health and safety regulations must be ensured. This includes the distribution and use of protective clothing and equipment to at least include safety shoes, overalls, gloves, dust masks, and where appropriate ear muffs and eye/face protection shields;
- Hand out and use of safety and protective equipment must be recorded. Staff who fails to use the protective equipment provided by site staff must not be allowed to work at the facility;
- Emergency procedures for fire, adverse conditions due to inclement weather, spillages, stoppage of operations due to refusal to work by employees, etc. must be included in the emergency procedures;
- All relevant fire-fighting equipment should be kept on site;
- All staff working on site must be trained in all relevant aspects of the MHSA and relevant regulations promulgated under this act;
- The Site Manager must be assigned as the Safety Coordinator for the facility and the Site Manager must assign a person as deputy to act when appropriate.

The following requirements would be the minimum for the safety program:

- Orientation of new employees including safety training and emergency contingency planning;
- Accident reporting procedures for notification to the Employer and thereafter appropriate agencies;
- Thorough investigation and documentation of all accidents to ascertain the cause and future methods of preventing recurrence;
- Mandatory first aid instruction for all staff members;
- Regularly scheduled safety meetings;
- Fire prevention and fire-fighting instruction;
- Routine inspection and testing procedure for all safety and emergency equipment and protective devices, and routine walk through inspections conducted by the Operator through all areas to identify and correct potential unsafe conditions; and
- Posting of safety bulletins and posters required by regulatory agencies and other materials concerning accident prevention and hazardous conditions.

Accident and incident control and reporting

- All accidents must be recorded irrespective of the severity or seriousness of injuries and damage. Data about the accident must be provided within 24 hours after occurrence.

- Appropriate recording documents must be available on site and a person must be designated as the Health and Safety Officer.
- Appropriate authorities and law enforcement officers must be included in investigations into accidents.
- Steps to avoid recurrence of similar accidents must be identified and implemented. The steps must be recorded and monitored.
- Incidents must be recorded in an incident register noting the time, date and place where the incident occurred, who and what was involved, and a detailed description of the incident must be included in the report.
- Actions taken to address the occurrence of the incident, as well as the avoidance of recurrence of the incident must be recorded.

6.3.15 Safety and security

- Fencing must be accompanied by signage indicating the site and contractors, emergency numbers, and good practice safety and security signs;
- No personnel, except for security staff, are allowed to stay/live on the site. Security staff is to be provided with accommodation and ablution facilities and communication equipment;
- Visitors are to complete the site visitor diary as well as a brief induction. The site visitor diary is to be kept at the site camp by the ESM for record purposes. Induction must include an introduction to the site and project, the authorised and unauthorised accesses as well as good practice safety procedures i.t.o.;
- All personnel working for, or on behalf of, the contractor as well as all visitors are to be outfitted with the required PPE;
- Site and operational personnel are prohibited from special environments which may be prohibited from access or activities;
- Ablution facilities and areas are to be clearly demarcated and clear signage to be erected;
- Ablution facilities are to be maintained weekly and kept clean as well as be inspected for any leaks that could lead to water loss;
- Potable water points are to be clearly demarcated and maintained;
- Ensure potable water complies with the NWA general limit requirements for drinking water. If necessary potable water must be treated prior to consumption. If no filtration system is available, the Applicant must supply all employees, Contractors and visitors with potable water (at least 2 litres daily);
- Eating areas must be clearly demarcated and maintained;
- The potential fire hazards must be managed by ensuring that no fires are permitted on site and that the Contractors must be aware of the consequences of starting a fire on site to avoid damage to the neighbouring farms;
- Fire extinguishers must be supplied to vehicles, security quarters, etc. Fire extinguishers must be serviced on a six-monthly basis;
- The mine must train safety representatives, managers and workers in workplace and site safety. All applicable safety standards and regulations, including for subcontractors must be enforced. Training should include emergency procedures

6.3.16 Traffic management

- The Mine Manager must control the movement of all vehicles (operational and private) including that of his suppliers so that they remain on designated routes;
- Single directional traffic must be controlled through a stop-go system or any other appropriate traffic control method;
- Speed limit on site manage be set and be appropriate for:
 - the vehicles using the route;
 - the types of load they carry and how they carry them;

- the driving surface;
 - the route layout, including how tight the bends are, and visibility at junctions;
 - hazards along the way;
 - work being done on or near the route.
 - speed limits shall be capable of being practically and equitably enforced by use of speed zones of adequate length, by limiting speed limit changes and by clarity and frequency of sign posting — in other words, not too many changes in speed limit over a short distance;
 - the speed limit shall not be so low that a significant number of drivers will ignore it;
 - speed limits shall not be applied specifically for the purpose of compensating for isolated geometric deficiencies — in other words, build well-designed roads so that low speed limits do not have to be used to compensate for design faults (e.g. corners that are too tight); and
 - all signposted speed limits shall be in multiples of 10 km/h. When determining appropriate speed limits on mine sites, the following points should be considered.
- The mine must ensure that suitable access is maintained for public traffic to all relevant businesses and properties;
 - All traffic accommodation measures are to conform to the latest edition of the South African Road Signs Manual;
 - All employees and visitors shall adhere to all traffic rules, signals, speed limits and warnings;
 - It is required all vehicles that enter the mining area to be equipped with buggy whips and/or strobe lights;
 - All headlights shall be kept on during daylight hours to enhance visibility;
 - Internal traffic network must be designed to reduce exposure to blindside hazards;
 - Mining equipment always has the right of way (except emergency vehicles); and
 - Noise supervision devices are recommended on heavy vehicles to mitigate the noise impact.

6.3.17 Visual

- Stockpile heights must be kept as low as possible;
- Rehabilitation of the area must be done as the mining is completed;
- Dust suppression techniques, as per the specifications of the Air Quality Impact Assessment Report (2013), should be in place. This is specific to areas where vegetation has been removed, soil stockpiles, on temporary / permanent unpaved road and any other areas where soil will be exposed;
- As much vegetation as possible should be kept during site clearance;
- Buildings and structures constructed should be painted with colours that reflect and complement the natural browns and greens of the surrounding landscape. Pure light colours and pure blacks should be avoided;
- To reduce the potential of glare, external surfaces of buildings and structures should be articulated or textured to create interplay of light and shade;
- Housekeeping on site should be enforced; and
- Downscaling of operations:
 - Keeping infrastructure at minimum heights;
 - Introducing landscaping measures such as vegetating berms;
 - Avoid the unnecessary removal of vegetation during;
 - Avoid the use of highly reflective material in operations.

6.3.18 Heritage recourses

Reference is made to the Phase 1 Archaeological Impact Assessment (Coetzee and George, May 2013)

- The built structures on site (two homesteads) are older than 60 years and may not be demolished or negatively impacted by blasting or construction activities. A destruction permit from Mpumalanga Heritage Resources Authority must be applied for if the homesteads are to be demolished.
- Culturally significant material and skeletal remains may be exposed during the operational phases, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist (NHRA); and
- Should any paleontological or archaeological remains of significance be uncovered during excavations, works shall be stopped. No paleontological or archaeological material shall be removed. SAHRA shall be notified. Appropriate actions to be taken. All findings shall be recorded and photographed in situ

6.4 DECOMMISSIONING AND CLOSURE PHASE

Section 6.4 provides the management measures and controls to mitigate the potential impacts associated with the decommissioning phase of the mine. The decommissioning period will be approximately 3 months. During decommissioning the many of the operational impacts will continue briefly as infrastructure is slowly removed. The operational management plan will therefore still be applied during the initial stages of decommissioning. Only additional decommissioning phase management measures are discussed below.

6.4.1 Land use management

Reference is made to the Land Capability Assessment (ENVASS, 2013):

- Construction and operation phase land use management will continue through decommissioning as and when required until activities on site cease.
- Land use will be restored, as far as possible, to its original use or pre-determined status.
- Rehabilitated areas demarcated as arable areas should be covered with an average of 500mm of high potential soil and areas demarcated for grazing with an average of 3000mm medium-low potential soil.
- During rehabilitation, soil samples should be taken to determine soil chemical and physical parameters to determine amelioration requirements. Treatment specifications from pedologist should be applied.
- Ensure soils are replaced to an adequate depth and ensure soil quality is adequate.
- Re-vegetate any bare soil immediately. Activity should be limited to area of disturbance. Where required the compacted soils should be disced to an adequate depth and re-vegetated with indigenous plants.
- Activity should be limited to area of disturbance. Where required the compacted Erosion control measures must be considered in areas of high risk for erosion.
- All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material and spill kits in the prescribed manner and spill kits in the prescribed manner.
- Concurrent rehabilitation will need to take place, in such ensuring that exposed pyrites are water locked fast and so reducing extreme or extended oxidation and subsequent acid formations.
- Materials should be backfilled such that the last two layers are that of soft materials (treated with lime high mg) and on top the topsoil's layers.

- Recommended that the soft materials (prior to topsoil) be contoured and that topsoil's be spread evenly afterwards. The topsoil's can be ripped into the soft materials to provide stability and simultaneously can N:P:K amelioration be done mechanically.

6.4.2 Topsoil management

- Construction and operation phase topsoil management will continue through decommissioning as and when required until activities on site cease.
- Topsoils are the most important component to any rehabilitation project as it provides the level of stability of the surface and also provides directly the growth medium in which sustainable grazing material must re-establish.
- Further to the above does the topsoil quality and quantity also determine the inflow rate of surface water which has a very specific impact and influence on the acid mine drainage tempo and advances. It is thus the objective to ensure that as little as possible water enter the underground (disturbed) water regime which will reduce oxygen additions and will reduce plumes related to decanting of acid water.

6.4.3 Stormwater and erosion control

- Construction and operation phase stormwater and erosion control measurements will continue through decommissioning as and when required until activities on site cease.
- Monitor area for erosion and pooling and rehabilitate if necessary.
- Ensure water management facilities are operating adequately until such time that these get rehabilitated to prevent silt loading and contamination of surrounding areas.
- Establish artificial wetlands if necessary and ensure water stays within artificial wetlands long enough to adequately treat water quality.

6.4.4 Dust control

- Construction and operation phase dust control measurements will continue through decommissioning as and when required until activities on site cease.
- Roads will be sprayed with water regularly, especially during times of high dust generation. Speed limits will be established on the dirt road to minimise dust generation. All contractors will enforce speed limits.
- Monthly dust monitoring at various locations as specified by specialists.
- Target thresholds as per regulations must be maintained and action plans devised around areas where targets are exceeded.

6.4.5 Water use management

- Construction and operation phase water use management will continue through decommissioning as and when required until activities on site cease.

6.4.6 Surface water management

- Construction and operation phase surface water management will continue through decommissioning as and when required until activities on site cease.
- Monitor area for erosion and pooling and rehabilitate if necessary.
- Monitor area for AMD must be managed actively throughout the decommissioning and closure phases. Please refer to the construction phase mitigation measures if AMD occurs.
- Continue with surface water monitoring.
- Establish artificial wetlands if necessary and ensure water stays within artificial wetlands long enough to adequately treat water quality.
- Trucks, machinery and equipment will be regularly serviced to reduce risk of leaks. Any leakages should be reported and treated as per the emergency response plan. For large spills Hazmat will called in.
- Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at a licensed facility.
- Specialists must be consulted if issues with surface water are observed and qualities do not fall within DWA target qualities or water qualities for livestock watering. Any affected registered water users must be compensated if levels and quality are impacted by the mining activities.

6.4.7 Groundwater management

Reference is made to the Geohydrological Assessment (Geo Pollution Technologies, 2013)

- Construction and operation phase ground water management will continue through decommissioning as and when required until activities on site cease.

6.4.8 Hazardous material handling and storage

- Construction and operation phase ground water management will continue through decommissioning as and when required until activities on site cease.

6.4.9 Biodiversity management

Reference is made to the Ecological Assessment which was undertaken by ENVASS in August 2014

- Construction and operation phase measurements as well as floral management measures will be applied during decommissioning as required.
- Eradicate and control all alien invasive species on site. Rehabilitate and revegetate all areas where alien invasive species were removed.
- Rehabilitate disturbed areas with natural indigenous flora.
- Monitor rehabilitated areas for cover abundance.
- Conduct annual surveys to monitor floral biodiversity.
- Ensure berms/trenches are erected between active area and wetland areas to contain all dirty water runoff and divert to RWD. Clean out silt build up over dry season. Ensure adequate capacity in the RWD.

- Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination. Refuse bins will be placed around site to collect all non-recyclable waste for disposal at a licensed facility.
- Limit activity to area of disturbance and revegetate impacted areas as soon as possible.
- The environmental manager will ensure that any ecologically sensitive species are protected and monitored should they be observed on site.

6.4.10 Animal control

Reference is made to the Ecological Assessment which was undertaken by ENVASS in August 2014

- Construction and operation phase measurements as well as animal control management measures will be applied during decommissioning as required.
- The ongoing and long term commitment to successfully re-establish the vegetation of the opencast areas will establish a habitat that will encourage animal life to return to the rehabilitated land.
- Conduct annual surveys to monitor faunal biodiversity.
- Conduct annual surveys to monitor faunal biodiversity.
- Inform staff, contractors and visitors to not harm fauna in the area.
- The environmental manager will ensure that any ecologically sensitive species are protected and monitored should they be observed on site.

6.4.11 Waste management

Construction and operation phase waste management will continue through decommissioning as and when required until activities on site cease.

6.4.12 Fire management

Construction and operation phase ground water management will continue through decommissioning as and when required until activities on site cease.

6.4.13 Emergency management

Construction and operation phase emergency management will continue through decommissioning as and when required until activities on site cease.

6.4.14 Safety and security

Construction and operation phase safety and security management will continue through decommissioning as and when required until activities on site cease.

6.4.15 Traffic management

Operational phase measurements will continue to be applied until closure.

6.4.16 Visual

Operational phase measurements will continue to be applied until closure.

6.4.17 Heritage resources

No impacts are expected to such sites and no mitigation measures are required.

6.5 POST-CLOSURE PHASE

The activities will be limited to monitoring. Impacts will be negligible as monitoring will assist in identifying issues which will need to be attended to. Closure objectives must be attained through rehabilitation and monitoring should indicate whether these objectives are being attained.

7. REHABILITATION PLAN

This rehabilitation involves the overall rehabilitation strategy which provides reference to the planned rehabilitation of the final landforms and related facilities, including but not limited to the:

- Open cut mining areas;
- Water and water infrastructure, and
- Ancillary infrastructure areas (including hardparks, roads, etc).

The following key aspects relating to this specific mine site rehabilitation:

- The control and management of mine waste (i.e. overburden, coarse rejects and fine tailings);
- Proposed rehabilitation methods;
- The management of topsoil resources for use in rehabilitation of the site;
- Description of the planned progressive re-vegetation of areas across the mine site;
- The integration with on-going and future rehabilitation activities across the wider mining area; and
- Rehabilitation monitoring and maintenance requirements which may apply.

7.1.1 Rehabilitation Principles

Rehabilitation of the disturbed land associated with mining will proceed as soon as areas become available for rehabilitation. In some situations, however, rehabilitation may be delayed due to interactions with other nearby areas that are unavailable for rehabilitation. Where this is the case, temporary rehabilitation methodologies may be applied to provide short-term stabilisation of the areas. The rehabilitation of disturbed land at the mine site will be conducted so that:

- Suitable species of vegetation are sown/planted and established to achieve the nominated post-mine land uses;
 - The potential for water and wind induced erosion is minimised, including the likelihood of environmental impacts being caused by the release of dust;
 - The quality of surface water released from the site is such that releases of contaminants are not likely to cause environmental harm;
 - The water quality of any residual water bodies (other than the final void) is suitable for the nominated use and does not have the potential to cause environmental harm; and
- The final landform is stable and not subject to slumping, subsidence, or erosion which will result in the agreed post mining landform not being achieved.

Roll-over Mining and Concurrent Rehabilitation Methodology



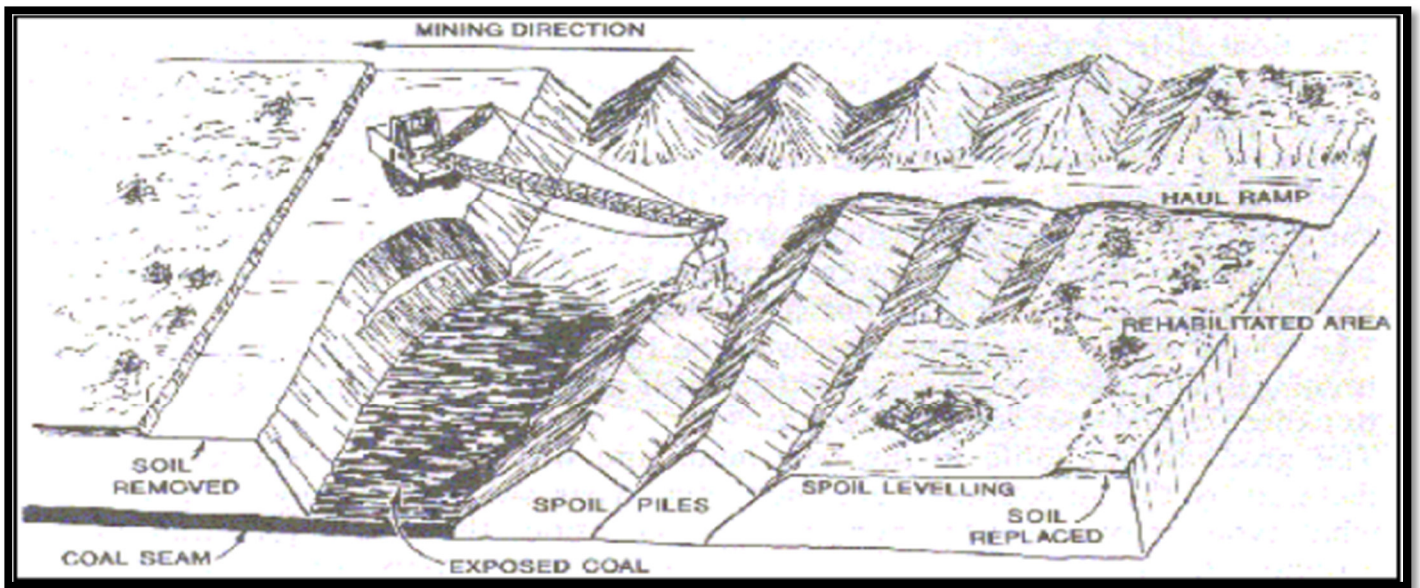


Figure 3: Rollover Rehabilitation (following initial Boxcut State)

Figure 3 illustrates the roll-over opencast coal mining methodology, is a graphic representation of the rollover method. The stripping and stockpiling of topsoil is the most important step in any rehabilitation program and must begin before any minerals are extracted from the intended area of disturbance. Prior to the commencement of minerals extraction, the site will be cleared and grubbed. Then all topsoil located in the area of disturbance should be stripped from the site, avoiding mixing with trees, boulders and other discard materials, and should be stockpiled in berms located outside the boundaries of the proposed operations for use at later mining phases. Ideally, topsoil should not be worked when wet and prolonged storage should be avoided. In this way the valuable topsoil, an ideal medium for plant growth, will become available for rehabilitation purposes at the site as mining advances.

Subsoil and overburden should be stockpiled in berms for use at later mining phases. As mining advances, topsoil, subsoil and overburden will initially be shifted and stockpiled outside the boundaries of the pit and will then subsequently be shifted to mined-out areas. The movement and stockpiling of topsoil at the Yoctolux Coal Mine will take place as follows to ensure that progressive rehabilitation takes place during all phases of mining:

Initial box cut to be mined

All identified topsoil, to a minimum depth of 300mm, will be removed from the area identified as the initial box cut and stockpiled at the areas marked as Topsoil Stockpile, adjacent to the pits before the next phase of mining is initiated. This soil will subsequently be spread back over the pit area marked for the initial box cut to a depth of at least 300mm after the area has been mined.

The following basic principles of rehabilitation form the basis of the roll-over mining method:

- Prepare a rehabilitation plan prior to the commencement of mining;
- Agree on the long-term post - mining land use objective for the area with the relevant government departments, local government councils and private landowners. The land use must be compatible with the climate, soil, topography of the final landform and the degree of the management available after rehabilitation;
- Progressively rehabilitate the site, where possible, so that the rate of rehabilitation is similar to the rate of mining;
- Prevent the introduction of noxious weeds and pests;

- Minimise the area cleared for mining and associated facilities to that absolutely necessary for the safe operation of the mine;
- Reshape the land disturbed by mining so that it is stable, adequately drained and suitable for the desired long-term land use;
- Minimise the long-term visual impact by creating landforms which are compatible with the surrounding landscape;
- Reinstate natural drainage patterns disrupted by mining wherever possible;
- Minimise the potential for erosion by wind and water both during and following mining;
- Characterise the topsoil and retain it for use in rehabilitation. It is preferable to reuse the topsoil immediately rather than storing it in stockpiles. Only discard if it is physically or chemically undesirable, or if it contains high levels of weed seeds or plant pathogens;
- Consider spreading the cleared vegetation on disturbed areas;
- Deep rip compacted surfaces to encourage infiltration, allow plant root growth and key the topsoil to the subsoil, unless subsurface conditions dictate otherwise;
- Ensure that the surface one or two metres of soil is capable of supporting plant growth;
- If topsoil is unsuitable or absent, identify and test alternative substrates, e.g. overburden may be a suitable substitute after addition of soil improving substances;
- Re-vegetate the area with plant species consistent with the post mining land use; and
- Monitor and manage rehabilitation areas until the vegetation is self-sustaining.

Rehabilitation activities during the decommissioning phase should adhere to the following guidelines:

Site grading

The local environment in un-rehabilitated disturbed mining areas is unfavourable to vegetation establishment. Lack of topsoil, combined with uneven and often quite steep slopes hinders plant germination and establishment. While the disturbed slopes are being graded, care must be taken to ensure proper drainage of the site. Consideration should at this time be given to the creation of berms at the pit entrance, to screen the site and to prevent further unauthorized access.

Spreading of stored topsoil

Once the disturbed area's – box cuts as well as the new pit area - backfilling, grading and sloping is complete, subsoil and topsoil from storage berms located outside the mining area should be spread on the slopes as evenly as possible. When this has been completed, the next stage in the rehabilitation program should immediately commence to prevent erosion and topsoil loss.

Decommissioning and closure will entail the following:

- Slope and whaleback the slopes of both the old box cuts as well as the new pits to a gradient of at least 1:6, in order to accommodate any future agricultural activities within the area;
- The topsoil will be stockpiled as detailed in the previous section;
- Topsoil will be spread out over prepared areas to a depth of no less than 300mm, unless otherwise stated (see the 'topsoil stockpiling' section above);
- Neat stockpiling of oversized rock in the one corner of the pit or alternatively clustering rocks on long slopes with gradients of 1:6 to reduce erosion through water run-off and facilitate plant growth by providing seedlings and seeding of the disturbed area;
- Remove the concrete/impermeable floor where refuelling occurred;
- Remove all containers;
- Decontaminate any hydrocarbon spills by removing the soil and disposing of it at a licensed disposal facility;
- Remove the temporary fencing;

- Maintain the area by doing regular site inspections ensuring the establishment of vegetation and the eradication of alien invader species; and
- Reinstatement of natural drainage patterns disrupted by mining wherever possible.

All of the topsoil must be utilised as a growing medium in the rehabilitation process of the site, in other words it must be spread over all prepared areas (ripped to a depth of 300mm and sloped) and be re-vegetated with seeds found within the area or prepared in such a way as to satisfy the agricultural requirements of the area and/or the land owner.

It is imperative that rehabilitation occurs concurrently with mining activities, as topsoil, containing seeds from plants within the area, degrades over time with the result that the soil environment becomes unfavourable for germinating seeds.

Final Closure

The closure objective is to ensure that all the significant impacts have been mitigated against. All rehabilitated areas will be left in a stable, self-sustainable state. Proof of this will be submitted at closure.

The closure objectives for the Yoctolux open cast coal mine can be summarised as follows:

- Make all areas safe for both humans and animals;
- Make all areas stable and sustainable;
- Ensure impact on any water bodies, water courses and catchment areas have been avoided or minimised;
- Rehabilitate disturbed areas as soon as possible; and
- Minimise the impact on the local community.

With specific reference to the ground water environment, the following closure objectives should be pursued:

- Rehabilitation of the surface infrastructure where necessary to minimize infiltration into the underground water regime (the philosophy of concentration and containment); and
- Rehabilitation to minimize contamination of surface water resources (the philosophy of dilution and dispersion).

When and if necessary suitable structures and/or systems are to be put, and kept in place to limit contamination of water resources, and to limit parameter concentrations in accordance with the Target Water Quality Ranges for human consumption.

The goals upon decommissioning and closing of the Yoctolux open cast coal mine will include that all significant impacts have been mitigated and that there are no alterations to the environment that are apparent as far as is practically possible. All land will be rehabilitated to a state that facilitates compliance with current national environmental quality objectives including air quality objectives and water quality guidelines.

7.1.2 Infrastructure Decommissioning and Closure

7.1.2.1 Site Preparation

Prior to the commencement of any demolition works on the site the following activities will be undertaken:

- All sumps will be dewatered and the excess coal material removed from around the coal handling areas;
- All items will be decommissioned, de-oiled, depressurised and isolated; and

- All hazardous materials will be removed and disposed of to appropriately licensed facilities.

7.1.2.2 Site Services

- All services including power, water, for the entire site will be isolated, disconnected and terminated to make them safe.

7.1.2.3 Infrastructure and Buildings

- All sumps will be dewatered and the excess coal removed prior to the commencement of demolition. In addition all items of equipment will be de-oiled, degassed, depressurised and isolated and all hazardous materials removed from the site.
- All buildings, including the main administration building, workshop, etc) will be required to be demolished and removed from the site. As these buildings are mobile buildings where possible these assets may be re-used or sold to other mines.
- The remaining items will be demolished, removed and transported from the site as required. All recoverable scrap steel will be sold and recycled.

7.1.2.4 Hardstand and Haul Roads

- Contaminated, carbonaceous or unsuitable (gravel, etc) material will be removed from the haul roads and hardstand surfaces and disposed. Minor dozer reshaping work will be undertaken to ensure surface level consistency with the surrounding areas.
- The site will be rock raked to remove all surface rocks to a size of less than 500 mm and ripped to a depth of at least 1 m.
- A light vehicle access road is to be maintained to enable inspections of the site following closure of the mine. All roadside markers (tyres and guideposts) and signs are also to be removed from within the area once mine closure activities within the pit area have been completed.

8. FINANCIAL PROVISION

An annual calculation of the quantum of pecuniary provision was completed as per the requirement of the Department of Minerals and Resources DMR. This financial provision was calculated using DMR's "Rule-Based" approach and was submitted to the DMR within the last year. The figures presented here are for the entire mine footprint upon closure and therefore do not just focus on the specific NEMA activities.

The financial provision calculated rehabilitation costs of the mine at **R10,828,189.00**

It should be noted that one of the biggest contributing factors to a high rehabilitation cost for the open cast mine works and buildings.

9. ENVIRONMENTAL AWARENESS AND TRAINING

The ESM shall ensure that the construction team and all-contractor/s and Yoctolux employees (operational phase) are familiar with the EMPr requirements and have a basic level of environmental awareness training. The ESM shall undertake basic environmental awareness induction training prior to the start of construction activities on site. Topics to be covered by the training should include *inter alia*:

- ✓ What is meant by “environment”?
- ✓ Why the environment needs to be protected and conserved.
- ✓ How construction and operational activities can impact on the environment.
- ✓ What measures can be taken to mitigate against these impacts.
- ✓ Prevention of pollution and litter control and the minimisation of disturbance to sensitive areas.
- ✓ The need for a “clean site” policy also needs to be conveyed to construction workers.
- ✓ Worker conduct on site which encompasses a general regard for the social and ecological well-being of the site and adjacent areas.

Yoctolux Coal mine will implement an Environmental Awareness Plan (EAP). The material of information used to compile the EAP will be the approved NEMA EMPr, as well as other relevant specialist reports. The documents will be utilised to compile a database, 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 (Refer to Table 11 below). All full time staff and contractors are required to attend induction sessions. 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, shall be required to undergo the respective Head of Department/ Unit (H.O.D.) induction training. Environmental issues and aspects related to the operations must be addressed in induction sessions. All environmental impacts and aspects and their mitigatory 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.

Table 122: Environmental awareness and training

ENVIRONMENTAL IMPACT	LEGISLATIVE REQUIREMENTS	BACKGROUND / SITE CONTEXT	OBJECTIVES	PERFORMANCE INDICATORS	PROCEDURES / MITIGATION AND MANAGEMENT MEASURES	MONITORING AND REPORTING	RESPONSIBILITIES
<p><u>EXAMPLE</u></p> <p>Excessive dust generation which impacts air quality and health and safety of the workers and adjacent community.</p>	<p>NEM: AQA (No. 39 of 2004)</p> <p>Dust Control Regulations (GN 872 November 2013)</p>	<p>Dust generation as a result of site establishment and bulk earthworks (construction phase) and haulage, blasting and mineral processing and storage (operational phase)</p>	<p>Minimize dust generation and associated nuisance during construction and operational phases.</p>	<p>Gravimetric Dust Fallout must be fall below the stipulated limit 1200 mg/m²/day;</p> <p>No evidence or reports of significant dust issues.</p>	<p>Operator vehicles to keep to a 20km/hr speed limit on gravel access roads on site to minimise dust generation.</p> <p>Use water for damping down dust on roads wherever possible.</p> <p>Ensure establishment of vegetation in previously disturbed areas.</p> <p>Dust suppression on stockpile areas on windy periods.</p>	<p>ESM</p>	<p>ESM and Applicant</p>

The following must be addressed during the Environmental Awareness Training (construction and operational phases) of the mine:

- Hazardous materials handling and storage and disposal
- Housekeeping and waste management
- Alien and invasive species management
- Water resource use and management
- Noise management
- Stormwater and erosion control
- Blasting
- Environmental emergencies (fire, spillages)

Annexure 1:
Emergency Response Procedure

EXAMPLE EMERGENCY RESPONSE PROCEDURE

ENVIRONMENTAL EMERGENCY PROCEDURE

1. PURPOSE

To establish a procedure to guide actions required and to facilitate efficient response to an emergency event or situation on site.

2. SCOPE

To ensure that the mentioned site is prepared in case of an Emergency and includes the periodic testing of the emergency procedures, the periodic review of the procedures, particularly after an accident or emergency situation.

REFERENCES:

ISO 9001:2008	Quality Management Systems - Requirements
ISO 9004:2000	Quality Management Systems – Guidelines for Performance Improvement
ISO 14001:2004	Environmental Management Systems – Requirements
Veld and Forest Fire Act (No. 101 of 1998) (fire prevention/control)	

3. DEFINITIONS, ACRONYMS AND ABBREVIATIONS

MAS	=	Management System
CDC	=	Custodian of documentation
SHE	=	Safety, Health and Environment
EMS	=	Environmental Management System

Emergency Incident will include;

- General – Information on local services and site management posted in areas on site.
- Fire – any situation which could be contained.
- Fire prevention – To prevent any situation where there is a risk of fire.
- Fire response and evacuation
- Explosion – involving flammable substances or electrical apparatus
- Chemical fuel spill – Any spillage of a liquid or chemical that could be contained
- Flooding- Any area that is in the line of flooding stormwater
- Fatal or serious incident
- Spillage of hazardous materials

4. RESPONSIBILITIES

Emergency Controller

In the event of a serious incident where intervention is required by emergency response teams the emergency controller assumes overall control to ensure actions are coordinated to reduce the effects of the emergency.

The emergency controller is responsible to communicate with external and internal emergency teams ensuring that clear status reports are available on the situation;

- ✓ type of incident,
- ✓ location of incident,
- ✓ possible number of injuries and types, and
- ✓ evacuation status.

After notification of a possible emergency the emergency controller will:

- ✓ Proceed to main site office and based on information available, assess the situation and direct all activities.
- ✓ If deemed necessary to evacuate the premises then instruct the site evacuation marshals on the conditions and evacuation status.
- ✓ Should the emergency involve a hostage or captive situation or where weapons are involved an immediate evacuation must be ordered off the area. No person may negotiate or attempt to attack the perpetrator. Security breach and falls in line with the security procedure.
- ✓ Ensure the SHEQ Manager has notified the required external emergency response teams.
- ✓ If injuries are reported direct First aider to the locations where needed. This may only be done if the first aider's own safety will not be at risk.
- ✓ Notify the Authorities of the emergency and provide specific details.
- ✓ Communicate with Municipal Emergency Response team coordinator on status of emergency.
- ✓ Hand over "fire file" to Emergency Services Control Officer and then proceed to the Assembly point.
- ✓ Co-ordinate evacuation activities – collect and collate Assembly point attendance registers, communicate with Emergency Services Control Officer on status of missing persons.
- ✓ Ensure that records of all casualties are available and passed on to the Human Resources representative. Names of the casualties may not be released to any source until their next of kin have been notified.
- ✓ Liaise with Appointed Management Representative to provide details of the nature of the emergency and casualties.
- ✓ The emergency controller is not responsible for releasing any information to the public or media, the controller may merely confirm an incident has occurred and that a statement will be issued by an appointed representative.
- ✓ When the emergency has stabilized the emergency controller may on the advice of the Emergency response team commander declare the all clear.
- ✓ If employees are allowed back into the building the emergency controller will coordinate this with the evacuation marshals.
- ✓ Should the Emergency Response Commander require a full evacuation that is away from the building then the Emergency Controller will coordinate this with the evacuation marshals.
- ✓ Where the emergency results in permanent damage to the buildings the Emergency Controller will along with the Contingency plan manager notify employees of further action to be taken.
- ✓ In the case of a spill that can be contained, the emergency response commander will delegate the spill reaction unit to take action in the event of a spill to ensure minimum contamination.
- ✓ The Emergency Controller is responsible to ensure the emergency plan is reviewed from time to time to ensure actions remain current.

Evacuation Marshals

The evacuation marshal will be notified of an emergency in one of the following ways:

- Contacted directly by person discovering incident
- Floor receptionist will notify marshals via telephone system
- Emergency controller will contact marshals.
- On notification of an emergency the following actions are required:
 - The evacuation marshal will assume overall control of the site area allocated to them.
 - An assessment of the situation will take place to determine action as appropriate, unless the emergency controller gives the direct instruction to immediate evacuation or partial evacuation of the site area.
 - Should the emergency involve a hostage or captive situation or where weapons are involved an immediate evacuation must be ordered of the area. No person may negotiate or attempt to attack the perpetrator.
 - If there are injured persons and the first aid assistance will be required, the emergency controller will be notified and first aid assistance will be sent to the required location if this can be achieved safely.
 - Arrangements will be made to guide the first aider or emergency response team to the location of the injured persons.
 - The emergency controller will be informed of the nature and extent of the emergency, which areas, if any, should be evacuated and safest escape routes to be taken.
 - All personnel not required for essential duties are directed to the relevant emergency exits and assembly points outside.
 - A final sweep will be made of the floor or site area to ensure all persons have evacuated, this may only be completed if this action will not endanger the evacuation marshal.
 - When the evacuation marshal is satisfied that the floor and site areas are cleared then they proceed to the Assembly areas, to collect roll call lists which must be passed on to the Emergency Controller.
 - The evacuation marshal shall assist in arranging to have casualties removed to hospital.
 - Where possible the marshal will assist appointed persons establish the cause of the incident and record relevant facts.

First Aid

Only trained persons with a valid first aid certificate may be appointed as a first aid team member.

The first aider may be notified of an incident by:

- The injured person or colleagues;
- The Site Receptionist; or
- The Emergency Controller or evacuation marshal.

On notification of an emergency the first aider will respond by:

- If the injured person comes to the first aider then an assessment of the injury should be made. Where of a minor nature then treat and record in first aid register. If more serious treat and report to ground floor reception and request assistance.
- Remain with injured until help arrives.
- Where the emergency is of a more serious nature where emergency response teams are required the first aider may be required to provide first response assistance until the paramedics arrive:
- The first aider proceeds to the scene of incident with their first aid kit.
- An assessment of the situation is made to ensure the first aider is not endangered before attempting to render first aid assistance.
- First Aid assistance is rendered as required. Where assistance is required then the Evacuation Marshal and/or floor receptionist will be notified.
- Where possible the first aider remains with the injured and then hands over the injured to the emergency response team.
- If required to evacuate the Evacuation Marshal will notify the first aider – after evacuating to assembly point the first aider will standby to render any first aid if so required and assist in arranging for casualty evacuation
- If casualty evacuation is required the first aider will assist in establishing and recording as many facts about the incident as possible.
- In the event of a fatal accident, care must be taken not to disturb any objects involved before the arrival of an inspector – such action may only be taken to prevent further accidents or to rescue persons from danger.

Receptionists

The receptionist plays a crucial role in the successful implementation of the Emergency Procedure of the site office. This person is required to remain calm to ensure clear communication is provided between the emergency response teams.

The receptionist should remain at the station until instructed to evacuate. He / She must not endanger their own lives, and therefore should assess the situation and if believing they should evacuate then proceed to the Assembly Point.

On being informed of an emergency the receptionist will:

- Contact the Evacuation Marshal and First Aider stating clearly what the emergency is.
- Receptionist is to contact the site manager to keep him / her informed of the situation.
- Upon instruction from the Emergency controller the receptionist, if so instructed by a senior member of management activate the fire alarm.
- If the alarm was not raised by the emergency controller then they must be notified of the nature and extent of the emergency.
- Close down all switchboards for all calls except those related to the emergency.
- Standby for instructions and then contact relevant Emergency Response services as required.
- Standby for instruction from the Evacuation Marshal to evacuate to relevant assembly point when instructed to do so.
- Where the incident involves injuries or a medical emergency the following applies:
 - Contact the relevant first aider and direct them to the location of the emergency and await further information.
 - Contact the Site Manager and notify of situation and possibility that an emergency response team may be required.

- If required then the He / She will be the only person to notify the emergency response service required.
- Liaise with the Responsible Manager and inform of the nature of the emergency and casualties.
- No information will be given out to the press, next of kin or any other person, other than through the appointed persons.

Duty Security Officer

Normal Working Hours

On hearing the alarm or if the security officer is informed of an emergency event:

- The officer will contact the Receptionist to inform them of the situation on hand.
- If the Security Officer is reporting the incident then clear information on status of emergency must be passed on to the Receptionist.
- Exact location
- Type of emergency
- Access to and from the operations yard must be restricted to all vehicles except Emergency Response Vehicles.
- The Security Officers will standby inside the entrance to the site and await further instruction.
- The Security Officer will be required to arrange for the gate to the assembly area to be opened. Contact must be made with security personnel to ensure clear access is provided.

After Hours

- On discovery of an emergency the Security Officer will telephonically contact the SHEQ Manager.
- Depending on the type of emergency the officer will contact the Emergency Response Coordinator or the authorities telephonically.
- Exact information must be given on status of emergency.
- Restrict access to the site to all vehicles except Emergency Response Vehicles and Authority.
- A "fire file" will be given to the Fire Chief when the Emergency Response Teams arrive on site.
- The officer will direct the response team to the location of the emergency.
- The Security Officer or the Security Controller may give no information out to the media, next of kin or any other person, other than through the appointed persons.

Persons discovering an emergency

- Any person who discovers a situation which may develop into an emergency the person is responsible to react in a calm and responsible way. Actions taken must ensure the most efficient actions can be taken to reduce the effects of the potential emergency:
- Should the emergency involve a hostage or captive situation or where weapons are involved an immediate evacuation must be ordered of the area. No person may negotiate or attempt to attack the perpetrator.
- The person must immediately notify the floor Receptionist who will, based on the nature of the incident contact the relevant persons.

- To assist in providing an efficient response the receptionist may request the reporting person to notify the Department Head and/or Floor Evacuation Marshal
- If the person discovers a fire and has been trained to use a fire extinguisher they may attempt to extinguish the fire. This should not be attempted alone notify a colleague who will then report to the receptionist.
- Where electrical equipment is involved, switch off power supply, if this can be done safely.
- If there is an injury or medical emergency then inform the floor First Aider and/ or Departmental Head:
- If the injury is of a serious nature the casualty must not be move except where there is a possibility of further injury and this should only be done by the First Aider.
- Do not remove any objects involved in the incident.
- Take note of the time and circumstances of accident after reporting the incident, and if the situation requires then move out of the site office to the assembly point.

All Personnel

- On hearing the alarm all persons must remain calm and await instructions from the Evacuation Marshal unless the situation clearly requires immediate evacuation.
- All persons in the site office must terminate all telephone calls, this will free up the lines for emergency communication only.
- Unplug all electrical equipment if this can be done safely.
- Persons responsible for laptop computers and who are at the location of this equipment should close and take the laptop out of building with them.
- All persons working in the assembly hall will shut down and switch off all electrical and mechanical equipment and move to the assembly point.
- All persons in the eating facility will shut down all electrical appliances and leave their lunch boxes to move to the assembly point in an orderly fashion.
- All persons working at the batch plant area will switch off all electrical and mechanical equipment and move to the assembly point in an orderly fashion.
- All persons working on site will switch off all electrical equipment and leave their current activities and evacuate to the assembly area in an orderly fashion.
- Move to the assembly points without panic; follow instructions from Evacuation Marshal where they are present.
- Move directly to the assembly point and be sure you are marked present on the roll call register.
- No information may be given out to the press, next of kin or any other person, other than through the appointed persons.
- Persons allocated as assistants to disabled persons must ensure they assist them to the assembly points
- At the assembly points if you are aware of any persons who have left the building or who were not present then this must be reported to the Evacuation Marshal.
- Wait at the assembly points for further instruction, if the all clear is given then move back to your work station. Report any out of the ordinary situations to the Department Head or direct supervisor.
- Should a general evacuation be required from the Assembly Point then the Emergency Response Teams will guide all persons to a safe location.

6. Environmental Emergency

- Each operating area shall; periodically initiate a process to identify and record potential emergency situations.
- Actual emergency situations shall be recorded and a formal response, with well documented mitigation measures will be held.
- The ability of the operating area to deal with an environmental emergency should be tested frequently; this should be done by simulating environmental emergencies and recording the most appropriate management measures.
- There will be a supply of absorbent material on site in spill wheeley bins available in identified positions to absorb any emergency hydrocarbon (fuel/oil) spills as soon as possible after an occurrence, and where possible be designed to encapsulate minor hydrocarbon spillage. Capability of treating a spill will per wheeley bin quantity of such materials shall be able to absorb a minimum of 200 liters of hydrocarbon liquid spill. The affected area will be removed and sent to a treatment facility to ensure that the breakdown process will be let to complete to satisfaction of the SHEQ Manager.
- All environmental incidents will be reported and recorded.

7. Training

- The SHEQ manager will endeavor to ensure all persons resident in the buildings and site is made aware of the requirements of the Emergency Procedures.
- Initial training with all personnel and then follow up training will be schedule annually to keep persons informed of any changes which may take place and ensure they remain mindful of requirements.

Emergency Drills

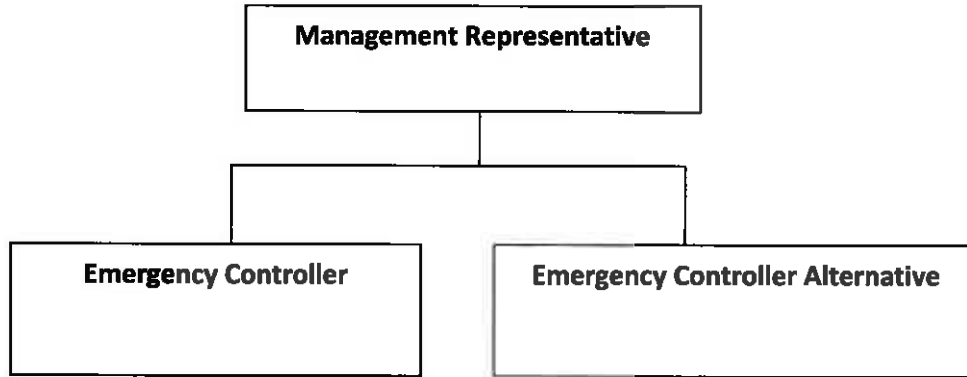
- Due to the nature of the operations full practice drills may be required to be done monthly. In sequence the emergency response drills will be executed at least two times a year.
- Full Fire – any situation which could or couldn't be contained.
- Explosion – involving flammable substances or electrical apparatus
- Fatal or serious incident.
- Security breach resulting in person held captive or hostage.
- Spillage of hazardous materials and environmental incidents.
- Social unrest.
- This exercise will be performed and a record made of this exercise, time date and attendance.

Prevention

- **Hazard avoidance:** Office, aisles, passages and on site thoroughfares to be kept clear of obstructions. Permanent aisles and passageways should be appropriately marked. The area around exits shall be maintained so that they are unobstructed and accessible at all times
- **Fire protection:** Portable fire extinguishers suitable to each area's conditions and hazards shall be provided and in a ready to use condition. They should be conspicuously located and mounted so as to be readily accessible. Fire extinguisher training to be provided to designated fire marshals.
- **Environmental inspection:** Site inspection to include observation and reporting on site-specific aspects relating to this guide-line.

- Evacuation: Appropriate evacuation procedures and a programme of periodic drill shall be drawn up and maintained. The Site Manager shall provide a suitable building and/or site evacuation procedure and take responsibility for the maintenance thereof.

8. Emergency Teams



EVACUATION MARSHAL	SITE RECEPTIONIST	FIRST AIDERS
OFFICE		
MECHANICAL FITTING TEAM		
FIRE		
STORES / INSTALLATION TEAM		
FIRE		

Emergency Call Out List

NAME	DEPT.	CELL	EXT. NO.

External Emergency Contact Numbers

SERVICE	Contact Number
POLICE BOMB SQUAD	10 111 / 10177
HOSPITAL AMBULANCE CASUALTY	
TRAFFIC	
FIRE	
WATER 24 hours	
ELECTRICITY	
POISON CENTRE	
ELECTRICAL	
GENERATORS	

9. Records

- Practice drill records
- Emergency Assembly point registers
- Emergency Procedures Communication.

- Simulation Checklist
- Environmental Reports from SHEQ and Operations Management
- Inspections and findings report.

Annexure 2:
Schedule of fines for environmental damage or
EMPR transgressions

SCHEDULE OF FINES FOR ENVIRONMENTAL

SCHEDULE OF FINES FOR ENVIRONMENTAL DAMAGE OR EMP TRANSGRESSIONS

(Based on City of Cape Town: Standard Environmental Specifications – Ver. 5 (03/2002))

Note: The maximum fine for any environmental damage will never be less than the cost of applicable environmental rehabilitation.

EMP TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE	MIN. FINE	MAX. FINE
Failure to comply with prescriptions regarding appointment of an ESM and monitoring of OPERATIONAL EMP compliance.	R500	R1000
Failure to comply with prescriptions regarding environmental awareness training.	R500	R5000
Failure to comply with prescriptions regarding method statements.	R500	R5000
Failure to report environmental damage or EMP transgressions to the GDARD.	R500	R1000
Failure to comply with prescriptions posting of emergency numbers.	R500	R5000
Failure to comply with prescriptions regarding a complaints register.	R500	R1000
Failure to comply with prescriptions regarding information boards.	R500	R1000
Failure to comply with prescriptions for supervision for loading and off loading of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for securing of loads to ensure safe passage of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for the storage of imported materials within a designated areas.	R500	R1000
Failure to comply with prescribed administration, storage or handling of hazardous substances.	R500	R1000
Failure to comply with prescriptions regarding equipment maintenance and storage.	R500	R1000
Failure to comply with fuel storage, refueling, or cleanup prescriptions.	R500	R1000
Failure to comply with prescriptions regarding procedures for emergencies (spillages and fires).	R1000	R5000
Failure to comply with prescriptions for the use of ablution facilities.	R500	R1000
Failure to comply with prescriptions regarding water provision.	R500	R1000
Failure to comply with prescriptions for the use of designated eating areas, heating	R500	R1000

source for cooking or presence of fire extinguishers		
Failure to comply with prescriptions regarding fire control.	R500	R5000
Failure to comply with prescriptions for solid waste management.	R500	R5000
Failure to comply with prescriptions regarding road surfacing.	R500	R5000
Failure to comply with prescriptions to prevent water pollution and sedimentation	R500	R5000
Failure to comply with prescriptions to the protection of natural features, flora, fauna and archaeology.	R500	R5000
Failure to comply with prescriptions regarding off road vehicle access to the beach	R500	R5000
Failure to comply with prescriptions regarding speed limits.	R500	R1000
Failure to comply with prescriptions regarding noise levels of construction activities.	R500	R5000
Failure to comply with prescriptions regarding working hours.	R500	R5000
Failure to comply with prescriptions regarding aesthetics.	R500	R1000
Failure to comply with prescriptions regarding dust control.	R500	R1000
Failure to comply with prescriptions regarding security and access onto private property	R500	R1000

For each subsequent similar offence committed by the same individual, the fine shall be doubled in value to a maximum value of R50,000.

SPILL PROCEDURE EXAMPLE

<h1>SPILL PROCEDURE</h1>

	Originated By	Review By	Approved By
Name			
Designation			
Signature			
Date			

Annexure 3: Spill Procedure

1. Introduction

The goal of operations onsite is to operate without spills. In spite of preventive measures taken, there is still the potential for spills to occur. This Procedure details the responsibilities and actions in the event of a spill occurring. This Procedure is designed to implement a series of emergency response actions on site when a spillage occurs. This Procedure itemizes the steps that are to be taken to reduce the risks of environmental damage to as low as is reasonably practicable. The basic actions (quick and simultaneous), to be performed by responsible person. Success in containing a spill depends on the competence, imagination, resourcefulness of personnel, and the availability and state of readiness of equipment and material. A critical analysis of the sequence of the actual events will be prepared after any incident and distributed to site management.

2. Objectives of the Spill Response Procedure

The objectives of this Procedure are:

- To detail arrangements for handling spillages.
- To minimise environmental impacts.
- To ensure all necessary materials and equipment are available on site.
- To provide a written procedure in line with EMP requirements.
- To train personnel to implement this procedure.

3. Classification and Identification of Spills/Spill Potential

For the purposes of this procedure, spills are classified as follows:

Major (Level 3): Any incident that has the potential to result in a greater consequence than recorded and would include serious / disabling injury, fatality, catastrophic failure, major environmental impact / discharge. Spills of hazardous materials equal or superior to 500L, to land or water will be considered a Major incident. Major incidences must be reported to the relevant Authorities. **This limit should be used as a guideline only, and all spills should be assessed in terms of severity, hazard and damage to the environment.**

Medium (Level 2): An incident with the potential to breach licence conditions¹ or environmental regulations² and which is not necessarily reportable to the authorities. This incident must be reported to the employer, SHEQ Manager . Example: hydrocarbon spill (between 10 and 500L).

Minor (Level 1): It is an event with little potential to breach license conditions or environmental regulations, and which is not reportable to the authorities or employer, if addressed immediately and adequately. (Spills less than 10L). Such spills must be reported to the SHEQ Manager.

4. Response Actions

Organisational requirements for response action

For site management to implement effective spill response, all items listed below are supplied or adhered to:

- The site must have a minimum of spill response materials and equipment on site, as described in this document.
- The Emergency Commander and the Emergency Response Team (Supervisor of the area and his work crew) are to be instructed on the implementation of this Procedure by the SHEQ Manager.
- Emergency contact numbers must be displayed at all locations.

A detailed report of any incident, with the associated mitigation measures and rehabilitation steps, must be submitted within 2 (Two) days (as soon as possible) after the spill occurred, using a standard report format. An incident notification report must be submitted within 12 hours of the incident.

5. Duties and Responsibilities

Emergency Commander (EC)

The Manager of the involved area or his nominated deputy is designated as the EC. His duties are as detailed below:

- He ensures that an incident notification report is submitted within 12 hours, which include the following aspects:
 - Area of spillage
 - Classification of spillage
 - Source of spillage
 - If the incident is reportable or not
- He ensures that the incident is investigated and a detailed report is circulated for action.
- He ensures all reportable incidents are submitted to the relevant authorities within the prescribed timelines.
- He maintains a complete and accurate chronological record of all events that occur.
- Provide advice on the clean-up and disposal of recovered spills and debris in a manner that is acceptable.
- Provide advice on the use and handling of chemicals such as dispersants, detergents and other non-mechanical methods used to combat spills.
- Continuously assess damage and potential damage to the environment, and advise on the response techniques.
- He advise site management on requirements for additional resources.

Site Management

The Site Manager's duties are as detailed below:

- He ensures that spill response equipment is adequate and well maintained.
- He satisfies himself, through regular reports from the SHEQ Manager, as to the frequency and effectiveness of drills.
- He ensures himself that response is adequate and takes appropriate action should shortcomings arise.
- He ensures that mandates and lines of responsibilities are adequately communicated to all key staff.

SHE Manager

The SHE Manager reports to the Project Manager:

- He has complete authority over the containment and clean-up operation at the spill scene.
- He has the responsibility to ensure proper and adequate spill control and clean up as well as ensuring correct disposal thereafter.
- Ensure that adequate spill prevention measures are taken.
- Ensure that staff is properly trained on the use of containment and clean-up equipment.
- Ensures the safe and adequate use and handling of chemicals such as dispersants, detergents and other non-mechanical methods used to combat spills.

6. Procedure - Identification of Spill Causes

Causes

The Risk Assessment and Aspects and Impacts Register both show that spills can occur due to:

- Refueling activities
- Loss of containment of stored diesel
- Fires
- Malpractice
- Seepage
- Leakage
- Insufficient storage space
- Material failure
- Inadequate storage facilities
- Tampering / Sabotage

7. Actions on Discovery of a Spill

On discovery of a spill, the main objective of any action is to reduce potential damage to the local environment.

- Contain the spill, and if possible, recover with available equipment and personnel.
- Remove the source of the spill by closing taps, valves or plugging holes or openings, where applicable
- Report full details of the incident to site management.

- Assess expected disturbances from affected third parties, i.e. if the spillage and pass this on to site management.
- Request additional assistance if needed. The initial request will be made by the EC to the Site Manager /SHEQ manager.
- Take necessary steps to restore area or facility disturbed to normality.
- Take necessary steps to ensure safe disposal, and/or storage if required, for contaminated material.
- Prepare a critical analysis of the sequence of the actual event.

8. Spill Response Principles

- The method used to clean up a spillage depends on the type of surface contaminated.
- In all instances, appropriate Personal Protective Equipment (PPE) must be worn during cleanup procedures.
- Under no circumstances may any spillage be rinsed into any drain, trench or stormwater canal.
- Certain recovered chemicals i.e. hydrocarbons can be pumped, stored or transferred from the holding containers to waste containers, specially marked for this purpose or collection tanks until removed by an approved waste or recycling contractor.

9. Spill response on land

The principals to be followed for a spill response on land are as described below:

10. Spills on soil/land

Spills on land should be contained and cleaned up as quickly as possible to prevent infiltration into the soil and contamination of groundwater.

- The spread of the spill must be prevented.
- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- If large spills occur and absorbent booms prove not to be sufficient to contain the spill, soil bunds or pre-packed sand-filled bags may be used.
- All entrances to surface drains, trenches and stormwater canals must be blocked using pre-packed sand filled plastic bags and/or absorbent booms or, if applicable, soil booms or diversion trenches should be created using spades from the spill-kits.
- All excess spillage must be scooped up and placed in clearly marked hazardous waste bins.
- Contaminated soil must be taken to a bioremediation site (if one exists) or treated in-situ with bioremediation agents.
- If no bioremediation is to be undertaken, the contaminated soil must be placed into clearly marked hazardous waste bins, and must be removed as hazardous waste by an approved contractor.

11. Spills on concrete and other non-tarmac surfaces

- If a spill occurs outside of a bunded area, the spill must immediately be contained to as small an area as possible.

- The spread of the spill must be prevented.
- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- If large spills occur and absorbent booms prove not to be sufficient to contain the spill, soil bunds or pre-packed sand bags may be used.
- All entrances to surface drains, trenches and stormwater canals must be blocked using pre-packed sand filled bags and/or absorbent booms or, if applicable, soil booms or diversion trenches must be created using spades from the spill-kits.
- All excess spillage should be pumped, scooped or mopped up and placed in clearly marked hazardous waste bins.
- In cases of smaller spills where containment with booms are not necessary, suitable absorbent fibres from the spill kits must immediately be used to absorb the remaining spillage from the concrete or other non-tarmac surfaces.
- The used fibre, fibre booms and any contaminated rags, etc. must be placed into clearly marked hazardous waste bins, and must be removed as hazardous waste by an approved contractor.

12. Spills on tarmac surfaces

Spills should be cleaned immediately because certain chemicals i.e oil and diesel, soften the tar surface.

- If a spill occurs outside of a bunded area, the spill must immediately be contained to as small an area as possible.
- The spread of the spill must be prevented.
- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- If large spills occur and absorbent booms prove not to be sufficient to contain the spill, soil bunds or pre-packed sand bags may be used.
- All entrances to surface drains, trenches and storm water canals must be blocked using pre-packed sand filled bags and/or absorbent booms or, if applicable, soil booms or diversion trenches should be created using spades from the spill-kits.
- All excess spillage should be pumped, scooped or mopped up and placed in clearly marked hazardous waste bins.
- In cases of smaller spills where containment with booms are not necessary, suitable absorbent fibres from the spill kits could immediately be used to absorb the remaining spillage from the tarmac surfaces.
- The used fibre, fibre booms and any contaminated rags, etc. must be placed into clearly marked hazardous waste bins, it must be removed as hazardous waste by an approved contractor.

13. Spill response on water

The principals to be followed for a spill response on Water are the same as those described above, but in addition the EC will consider;

- The spread of the spill must be prevented.

- The source of the spill must be identified and removed by closing taps, valves or plugging holes or openings (whichever is applicable);
- Floating absorbent booms must be used, if possible, to contain the spill to as small an area as possible on the water surface.
- If practical, scoop as much spillage as possible from the water surface into suitable holding containers.
- Suitable absorbents must be applied onto the spill in the water, which must manually be removed once the spill substance has been absorbed.
- The used fibre, fibre booms and any contaminated rags, etc. must be placed into clearly marked hazardous waste bins, and must be removed as hazardous waste by an approved contractor.
- Any recovered chemicals must be pumped, stored or transferred from the holding containers to either waste containers, specially marked for this purpose or collection tanks until removed by an approved waste or recycling contractor.

14. Administration

Spill reporting

- All spills no matter the size/quantity must be reported to the Environmental Officer.
- An incident notification report will be circulated within 12 hours of the spillage
- The spillage will be investigated by the Environmental Officer. The detailed report is to be submitted within 48 hours of the incident.
- The detailed report must include the following aspects:
 - Area of spillage
 - Responsible person
 - Sub-standard act leading to spillage
 - Source/origin of spillage
 - Classification of spillage
 - Mitigation measures/steps taken to clean the spillage
 - Precautionary measures/steps put in place to avoid a re-occurrence of spillage
 - Follow up inspection date

15. Follow-up actions

All spills must be investigated to determine the possible causes as soon as the situation is brought under control. From the investigation, conclusions must be drawn to limit the occurrence of such spills. The EC shall;

- Do a follow up inspection to ensure cleanup was done effectively
- If the spillage is re-occurring:
 - Assess what can be done to stop it
 - The time period this will take
 - Expected volumes
 - Initiate repair works
 - Keep in constant communication with the Department Manager until clean-up/repair works has been completed satisfactorily; and
- Hold a follow up meeting to review actions taken with a view to enhancing future spill response and control.

16. Storage and disposal of debris

Debris is classified as contaminated absorbents, remaining spilled product, vegetation, grass, weeds etc. accumulated during and after clean-up operations of an impacted environment.

As stipulated above, all contaminated waste will be disposed of in a clearly marked hazardous waste container/bin for removal by an approved waste or recycling contractor.

- Proof of safe disposal of any hazardous substance/waste is required.
- Records must be kept on site at all times.
- Records must be kept by the SHEQ.

17. Rehabilitation of impacted area

Site rehabilitation policy will be governed by the location and level of impact.

18. Spill equipment and materials

The primary spill response equipment and materials are listed below. The use of this equipment for spill response will depend on gravity and the magnitude of the spill.

- Sorbent Sheets or sawdust
- Pumps
- Jerry Cans/Drums
- Diesel Generator
- Personal Protective Equipment
- Waste Oil Tanks
- Communications Equipment

19. Management Review

This procedure shall be subject to a management review annually and following a major spill event. The reviews shall be recorded.

20. Document Change Record

A	As result of incidents	B	As result of audit findings	
C	Changes in operating procedures	D	Changes in legislation	
E	Changes in technology	F	Changes in machinery / equipment	
G	Result of risk assessments	H	Change in training requirements	
I	New Document format	J	Small changes	
K	To integrate a special instruction into the document control system			
Date of Change		Revised Item	Reason	Reviewed By