PROPOSED COAL STOCKYARD ON MEDUPI ASH DUMP SITE, LIMPOPO PROVINCE

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP):

ADDENDUM TO THE ENVIRONMENTAL MANAGEMENT PLAN FOR THE MEDUPI COAL-FIRED POWER STATION IN THE LEPHALALE AREA, LIMPOPO PROVINCE

Submitted as part of the Basic Assessment Report

March 2012

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PROJECT DETAILS

DEA Reference No.	:	14/12/16/3/1/9
Title	:	Basic Assessment Process: Draft Environmental Management Programme for the Proposed Coal stockyard on Medupi Ash Dump, Limpopo Province (Addendum to the approved EMP for Medupi Power Station)
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Client	:	Eskom Holdings (SOC) Limited
Report Status	:	Draft EMP submitted as part of the Draft Basic Assessment Report for review

When used as a reference this report should be cited as: Savannah Environmental (2012) Draft Addendum to the Environmental Management Programme: The proposed coal stockyard on Medupi Ash Dump, Limpopo Province.

DEFINITIONS AND TERMINOLOGY

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Cumulative impacts: Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (e.g. discharges of nutrients and heated water to a river that combine to cause algal bloom and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period and can include both direct and indirect impacts.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable

'Do nothing' alternative: The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Endemic: An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment: the surroundings within which humans exist and that are made up 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 well-being.

Environmental impact: An action or series of actions that have an effect on the environment.

Environmental impact assessment: Environmental Impact Assessment (EIA), as defined in the NEMA EIA Regulations and 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 that application.

Environmental management: Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management programme: An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).

Indigenous: All biological organisms that occurred naturally within the study area prior to 1800

Indirect impacts: Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Interested and affected party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups, and the public.

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

Red data species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.

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PURPOSE & OBJECTIVES OF THE EMP ADDENDUM CHAPTER 1

An Environmental Management Programme (EMP) is defined as "an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced"[1]. The objective of this Environmental Management Programme is to provide consistent information and guidance for implementing the management and monitoring measures established in the permitting process and help achieve environmental policy goals. The purpose of an EMP is to help ensure compliance with recommendations and conditions specified through an EIA process, as well as to ensure continuous improvement of environmental performance, reducing negative impacts and enhancing positive effects during the construction and operation of the facility. An effective EMP is concerned with both the immediate outcome as well as the long-term impacts of the project.

An EMP provides a link between the impacts predicted and mitigation measures recommended within the Basic Assessment Report, and the implementation activities of a project to ensure that these activities are managed and mitigated so that unnecessary or preventable environmental impacts do not result. The EMP provides specific environmental guidance for the construction and operation phases of a project, and is intended to manage and mitigate construction and operation activities so that unnecessary or preventable environmental impacts do not result. These impacts range from those incurred during start up (site clearing and site establishment) through those incurred during the construction activities themselves (erosion, noise, dust) to those incurred during site rehabilitation (soil stabilisation, re-vegetation) and operation. The EMP also defines monitoring requirements in order to ensure that the specified objectives are met.

Eskom have an approved EMP in place for the construction, operation and maintenance activities associated with the Medupi Power Station (refer to the EMP (EIA Reference Number: 12/12/20/695, April 2007)). This EMP is currently successfully utilised and in force at the Medupi Power Station (a 4800 MW coal-fired power station) currently under construction in the Lephalale area. Regular compliance audits to the EMP requirements are undertaken by the Environmental Control Officer and an external auditor. As such, it is not deemed necessary to reiterate all the specifications of this approved EMP which are currently being applied to all components of the bigger Medupi Power Station project, and therefore this *addendum to the approved EMP* has been prepared to specifically address the potential impacts resulting from construction and operation of the coal stockyard.

[1] Provincial Government Western Cape, Department of Environmental Affairs and Development Planning: *Guideline for Environmental Management Plans,* 2005

1.1. Purpose of the EMP and associated Addendum

The purpose of the Medupi Power Station EMP (EIA Reference Number: 12/12/20/695, April 2007) as well as this addendum to the approved EMP is to assist in ensuring continuous improvement of environmental performance, reducing negative impacts and enhance positive effects during the construction and operation of the project. An effective EMP is concerned with both the immediate outcome as well as the long-term impacts of the project.

The EMP has the following objectives:

» To outline mitigation measures, and environmental specifications which are required to be implemented for the planning, construction, rehabilitation and operation/maintenance phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts associated with the project.
» To identify measures that could optimise beneficial impacts.
» To ensure that the construction and operation phases do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced.
» To ensure that all environmental management conditions and requirements as stipulated in the Environmental Authorisation (once issued) are implemented throughout the project life-cycle.
» To ensure that all relevant legislation (including national, provincial and local) is complied with during the construction and operation phases.
» To identify entities who will be responsible for the implementation of the measures and outline functions and responsibilities.
» To propose mechanisms for monitoring compliance, and preventing long-term or permanent environmental degradation.
» To facilitate appropriate and proactive response to unforeseen events or changes in project implementation that were not considered in the Basic Assessment Process.

This addendum to the approved EMP has been developed as a set of environmental specifications (i.e. principles of environmental management) which are appropriately contextualised to provide clear guidance in terms of the implementation of these specifications for the proposed project.

This addendum to the approved EMP (for the proposed coal stockyard on the authorised Medupi Power Station ash dump site) has been compiled in accordance with Section 33 of the EIA Regulations and will be further developed in terms of specific requirements listed in any authorisations issued for the proposed project. It should be noted that since this addendum to the EMP is part of the Basic Assessment Process undertaken for the proposed project, it is important that this document be read in conjunction with the

Basic Assessment Report (March 2012). In addition, this addendum to the approved EMP must be read in conjunction with the relevant sections and appendices of the Medupi Power Station EMP (EIA Reference Number: 12/12/20/695, April 2007).

PROJECT DETAILS *CHAPTER 2*

As a result of to the delays experienced in the construction of the Medupi Power Station due to various factors, Eskom proposes to establish a coal stockyard to accommodate coal which is to be supplied to the power station from Exxaro's Grootegeluk Mine from May 2012. This coal stockyard would be able to accommodate the volume of coal provided during the period the power station is not in full commercial operation. The coal stockyard is proposed to be on the Farm Eenzaamheid 687 LQ. The Farm Eenzaamheid 687 LQ has already been assessed within the EIA undertaken for the Medupi Power Station (DEA Ref No 12/12/20/695; completed by Bohlweki Environmental in May 2006), and the establishment of the ash dump associated with Medupi Power Station was **authorised for this property.** The following is relevant for this proposed development:

- The coal stockyard is proposed to be established within the footprint of the already authorised ash dump (DEA Ref No 12/12/20/695 and waste license ref no 12/9/11/L50/6)
- It is expected that approximately 38 million tonnes of coal would be stockpiled at this site up until 2028.
- The area required for the stockyard is approximately 2.5 km x 2.5 km in extent.
- Associated infrastructure would include coal conveyors between Grootegeluk Mine and the coal stockpile, as well as between the coal stockpile and Medupi Power Station. It is proposed that use be made of the already authorised conveyor systems with slight alterations. The conveyor system will cross the authorised ash dump, therefore any slight alteration impacts have already been taken into account in the previous Environmental Authorisation (DEA Ref No 12/12/20/695). There will be associated roads that will run alongside these coal conveyors. The impacts in this regard have already been identified and assessed within the EIA for the power station.
- The proposed holding dams will collect Run off water to be recycled for ash dump operation

Design Concept

Liner Earthworks and Design

The liner earthworks will include constructing the conveyor terracing & liner installation, secondary liner, leakage detection layer, primary liner, and leachate collection layer.

The liner will be as per the Minimum Requirement Standard Specification (DWAF, 1998), Hazardous H:h; which is low to medium.

The Functions of the different layers for the lining on the coal stockyard is as follows (refer to Figure 1):

- Leachate Collection system - Leachate could result in high leachate head, possible clogging from pioneer layer.
- Primary Clay composite system - The main barrier and high probability to damage than the secondary
- Leak detection system – Has a two-fold function, i.e. detecting and collection. It is the first indication of leakage.
- Secondary compacted clay - The final containment layer.

Figure 1: The different lining layers of the construction of the coal stock yard.

Holding Dam

The holding dam (including the coal stock yard) has been designed as a zero liquid effluent discharge (ZLED) site. A liner system has been allowed for underneath the coal stock yard to prevent seepage to the underground.

Seepage and dirty run- off from the coal stockyard area will collect in the holding dam from where the dirty water will evaporate. Should it be required, this water can be used for dust suppression. A leakage detection system is part of the holding dam. The basin of the dam is sloped in such way that any leakage water will migrate towards a leakage detection sump.

The layers above the liner will be deeper than the normal liner for ash to allow mobile plant to move on the site without damaging the liner.

Site Preparation

Site preparation activities will include clearance of vegetation at the infrastructure footprint, some levelling of the land and terracing and establishment of site accessibility

for vehicles and conveyors. These activities will require the stripping of topsoil, which will need to be appropriately stockpiled for use in rehabilitation.

Site Access

The proposed coal stockyard development site falls within the larger footprint for the Medupi Power Station. Access to the site has been established as part of the construction phase of the power station. This existing access will be used during the construction and operation of the coal stockyard. In addition, the conveyor servitude is designed to allow road access on either side of the conveyor for conveyor maintenance requirements.

2.1. Environmental Study Requirements

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA; Act No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of Government Notice R543 – R546, a Scoping and EIA process is required to be undertaken for the proposed project. However, based on a motivation supplied to the National Department of Environmental Affairs in terms of Regulation 20(4) of Government Notice R543, a **downscaling** from a full EIA to a Basic Assessment Process has been approved for the proposed project and therefore a **Basic Assessment Process** is being undertaken. This is based on the fact that the site under investigation for the proposed coal stockyard has been previously assessed and the issues associated with development thereon are known.

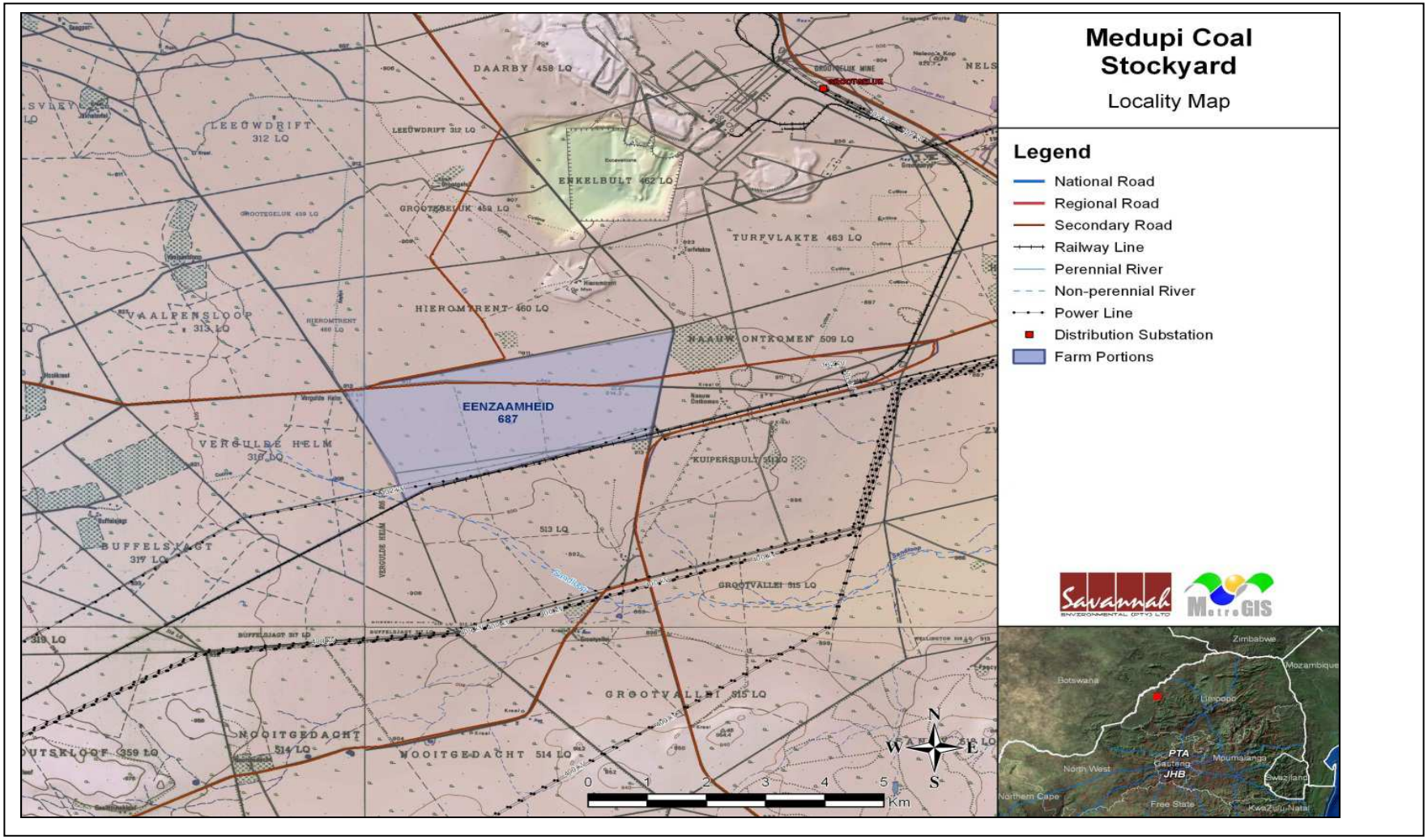

Figure 2.1: Locality Map showing the Farm Eenzaamheid 687 where the proposed coal stockyard is proposed to be established.

Savannah Environmental has been appointed as the independent environmental consultant to undertake the Environmental Basic Assessment to identify and assess any potential environmental impacts. As part of these environmental studies, interested and affected parties (I&APs) have been actively involved through a public involvement process.

In terms of the findings of the Basic Assessment, various planning, construction, and operation-related environmental impacts were identified, including:

» The overall impact on **ecology** is likely to be of **medium significance**. The vegetation in the study area is the same as the regional area. Aspects that will affect the ecological sensitivity status of the habitat units include the confirmed presence of protected tree species of the medium floristic and faunal status of the study area and adequate connectivity to areas of adjacent natural habitat (low fragmentation factor). Eskom has already obtained the necessary tree permits for this property.

» The suitability of Eenzaamheid, in terms of general red data **fauna** requirements, is considered **Medium-Low** due to available habitat being considered moderately suited to the general habitat requirements of red data fauna species that could potentially occupy the area. Impacts of some significance that should be taken into consideration include:
  * destruction of natural habitat; and
  * destruction of protected tree species and associated habitat.

» The overall **heritage** impact is likely to be of **low significance** as no sites, features or objects of cultural heritage significance were identified in the study area. However, should any artefacts be uncovered during the construction period, the necessary permits will need to be obtained.

» The overall impact on **soil and agricultural potential** is expected to be low as a result of the low agricultural potential of the soils on the site due to their sandy nature, increased susceptibility to wind erosion and excessively free drainage.

» The overall impact on ground water contamination potential is expected to be of **low significance**. The proposed coal stockyard site will include an appropriate liner. This would prevent the contamination of the ground water. The liner system also consists of a Leachate Collection system and Leak detection system. By monitoring these two systems, any source of contamination would be timeously identified. In addition, the coal stockyard would be managed by constructing a clay base, separating clean and dirty runoff; installing and maintain surface water controls; sloping topography to prevent ponding; and monitoring groundwater levels and quality.

» The overall **social** impact in terms of positive and negative impacts is likely to be of a **low significance**. Due to the type of the proposed development, most of the operations on site would entail mechanical operations and thus no permanent employment is envisaged.

» The overall **visual** impacts for the coal stockyard are of low significance and not expected to have a regional or long distance visual impact due to the fact that it is either not visible or not recognisable from great distances.

» The overall **air** impacts are of low significance. The coal stock yard is located near the Medupi and Matimba Power stations. The effects from the coal stock yard are expected to be minor.

The Addendum to the EMP has been developed based on the findings of the Basic Assessment, and must be implemented (together with the approved EMP for the Medupi Power Station) to protect sensitive on-site and off-site features through controlling construction and operation activities that could have a detrimental effect on the environment, and through avoiding or minimising potential impacts.

2.1 Activities and Components associated with the coal stockyard

The main activities/components associated with the coal stockyard are detailed in Table 2.1.

Table 2.1: Activities Associated with Planning, Construction, Operation and Decommissioning of the Coal stockyard.

Main Activity/Project Component	Components of Activity	Details
	Planning	
Conduct technical surveys	» Site survey and confirmation of the infrastructure.	» All surveys are to be undertaken prior to initiating construction.
	Construction	
Undertake site preparation	» Clearance of vegetation at the infrastructure footprint » Some levelling of the land and terracing » Establishment of site accessibility for vehicles and conveyors	» These activities will require the stripping of topsoil, which will need to be appropriately stockpiled for use in rehabilitation.
Construction of access roads	» Access to the site has been established as part of the construction phase of the power station.	The existing access roads within the site will be used during the construction and operation of the coal stockyard. In addition, the conveyor servitude is designed to allow road access on either side of the conveyor for conveyor maintenance requirements.
Transport of components and equipment to site	» Trucks will be used to transport all components to site: * The normal civil engineering construction equipment for the civil works (e.g. trucks, graders, compaction equipment, cement mixers, etc.)	» The equipment will be transported to the site using appropriate routes, and the dedicated access/haul road to the site itself.
Coal Stockyard	» Liner earthworks (conveyor terracing & liner	The following process will be followed in the lining of

Main Activity/Project Component	Components of Activity	Details
	installation), secondary liner, leakage detection layer, primary liner, leachate collection layer. » The site will be lined with 200 mm HDPE. » Holding dam	the site: The liner earthworks will include constructing the conveyor terracing & liner installation, secondary liner, leakage detection layer, primary liner, and leachate collection layer. The liner will be as per the Minimum Requirement Standard Specification (DWAF, 1998), Hazardous H:h; which is low to medium. The Functions of the different layers for the lining on the coal stockyard is as follows ; » Leachate Collection system - Leachate could result in high leachate head, possible clogging from pioneer layer. » Primary Clay composite system - The main barrier and high probability to damage than the secondary » Leak detection system – Has a twofold function, i.e. detecting and collection. It is the first indication of leakage. » Secondary compacted clay - The final containment layer. A liner system has been allowed for underneath the coal stock yard to prevent seepage to the underground » A leakage detection system is part of the holding dam. The basin of the dam is sloped in such way that any leakage water will migrate towards a leakage detection sump.

Main Activity/Project Component	Components of Activity	Details
Construct Conveyor belts	» Design, supply, install and commission a system of conveyors and stacker rec-claimer to meet the specifications.	» There will be eight steel conveyor belts of varying lengths and a bucket stacker-reclaimer machine.
Undertake site rehabilitation	» Remove all construction equipment from the site. » Rehabilitation of temporarily disturbed areas where practical and reasonable.	» On full commissioning of the facility (or a phase thereof), any access points to the site which are not required during the operation phase will be closed and prepared for rehabilitation.
Operation		
Operation	» Coal stock yard » Conveyors » Associated infrastructure	» The operational phase is proposed to extend until 2017, with an total of 38 million tonnes being stored over the lifetime of the facility. » During this time full maintenance, supervision, and monitoring teams will be required on site. » The leachate detection system will be in place.
Maintenance & Security	» Maintenance during the life cycle of the facility.	» This would include emergency repairs, routine maintenance and maintenance of the site.
Decommissioning		
Site preparation	» Preparation of the site for inclusion within the ash dump. » Mobilisation of decommissioning equipment.	» The site is to be designed to cater for both coal storage and later for ash dumping (long-term use after 2028) with minimum changes to the overburden above the liner. It will not be necessary to remove the liner after the coal at the stockyard is exhausted. At this point, the over burden will be skimmed to remove any coal remnants in readiness for ash dumping. The layers above the liner will be deeper than the normal liner for ash to allow mobile plant to move on the site without damaging the liner.

STRUCTURE OF THIS EMP *CHAPTER 3*

Several procedures are necessary for Eskom to achieve environmental compliance for the Medupi Power Station. These are described in detail within the Medupi Power Station EMP (EIA Reference Number: 12/12/20/695, April 2007). In order to ensure site-specific compliance associated with the proposed coal stockyard, this EMP addendum includes the statement of an over-arching environmental **goal**, as well as lists a number of **objectives** in order to meet this goal. The management programme has been structured in table format in order to show the links between the goals for each phase and their associated objectives, activities/risk sources, mitigation actions monitoring requirements and performance indicators. A specific environmental management programme table has been established for each environmental objective. The information provided within the EMP table for each objective is illustrated below:

OBJECTIVE: Description of the objective, which is necessary in order to meet the overall goals; these take into account the findings of the environmental impact assessment specialist studies

Project component/s	List of project components affecting the objective, i.e.: » Coal stockyard and ancillary structures
Potential Impact	Brief description of potential environmental impact if objective is not met
Activity/risk source	Description of activities which could impact on achieving objective
Mitigation: Target/Objective	Description of the target; include quantitative measures and/or dates of completion

Mitigation: Action/control	**Responsibility**	**Timeframe**
List specific action(s) required to meet the mitigation target/objective described above.	Who is responsible for the measures	Time periods for implementation of measures

Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the management Programme.
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting.

The objectives and EMP tables are required to be reviewed and possibly modified whenever changes, such as the following, occur:

» Planned activities change (i.e. in terms of the components and/or layout of the facility).
» Modification to or addition to environmental objectives and targets.
» Relevant legal or other requirements are changed or introduced.
» Significant progress has been made on achieving an objective or target such that it should be re-examined to determine if it is still relevant, should be modified, etc.

3.2 Project Team

This draft addendum to the approved EMP was compiled by:

	Name	**Company**
EMP Compilers:	Umeshree Naicker	Savannah Environmental
	Jo-Anne Thomas	Savannah Environmental

The Savannah Environmental team have extensive knowledge and experience in environmental impact assessment and environmental management, having been involved in EIA processes over the past ten (10) years. They have managed and drafted Environmental Management Programmes for other power generation projects throughout South Africa, including numerous renewable energy facilities.

MANAGEMENT PROGRAMME FOR THE COAL STOCKYARD: CHAPTER 4 PLANNING & DESIGN

4.1. Goal for Planning and Design

Overall Goal for Planning and Design: Undertake the planning and design phase of the coal stockyard in a way that:

» Ensures that the design of the facility responds to the identified environmental constraints and opportunities.
» Ensures that adequate regard has been taken of any landowner concerns and that these are appropriately addressed through design and planning (where appropriate).
» Ensures that the best environmental options are selected for the project.
» Enables the coal stockyard construction activities to be undertaken without significant impacts on the environment.

This addendum to the approved EMP must be read in conjunction with the relevant sections and appendices of the Medupi Power Station EMP (EIA Reference Number: 12/12/20/695, April 2007).

4.2. Objectives

In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE: Ensure that the design of the facility responds to the identified environmental constraints and opportunities

The Farm Eenzaamheid 687 LQ has already been assessed within the EIA undertaken for the Medupi Power Station (DEA Ref No 12/12/20/695; completed by Bohlweki Environmental in May 2006), and the establishment of the ash dump associated with Medupi Power Station was **authorised for this property.** From the studies undertaken for the Medupi Power Station (including the proposed coal stockyard development site), no absolute 'no go' areas were identified.

Project component/s	Project components affecting the objective: » Coal stockyard and ancillary structures
Potential Impact	Design fails to respond optimally to the identified environmental considerations

Activities/risk sources	Site layout
Mitigation: Target/Objective	To ensure that the design of the facility responds to the identified environmental constraints and opportunities

Mitigation: Action/control	Responsibility	Timeframe
Compile a comprehensive storm water management plan as part of the final design of the project.	Eskom	Design phase
Balance technical and financial considerations against environmental constraints and opportunities in finalising the design of key elements.	Eskom	Tender design, and design review stage
Undertake necessary surveys to determine presence of protected trees and fauna species (such as the Baboon spider). If present, ensure necessary permits are in place for impacting on these species.	Eskom	Pre-construction

Performance Indicator	» Design meets objectives and does not degrade the environment. » Design and layouts respond to the mitigation measures and recommendations in the Basic Assessment report.
Monitoring	Ensure that the design implemented meets the objectives and mitigation measures in the Basic Assessment report through review of the design by the Project Manager, and ECO prior to the commencement of construction.

MANAGEMENT PROGRAMME FOR COAL STOCKYARD: CONSTRUCTION CHAPTER 5

5.1. Overall Goal for Construction

Overall Goal for Construction: Undertake the construction phase of the coal stockyard in a way that:

» Ensures that construction activities are properly managed in respect of environmental aspects and impacts.
» Enables the coal stockyard construction activities to be undertaken without significant impacts on the environment.

This addendum to the approved EMP must be read in conjunction with the relevant sections and appendices of the Medupi Power Station (refer to the EMP (EIA Reference Number: 12/12/20/695, April 2007). This addendum relates only to activities associated with the coal stockyard. Environmental specifications and guidelines included within the approved EMP are not repeated here.

5.2. Roles and Responsibilities for the Construction Phase of the Coal Stockyard

As the Proponent, Eskom must ensure that the implementation of the coal stockyard complies with the requirements of all environmental authorisations and permits, and obligations emanating from other relevant environmental legislation. This obligation is partly met through the development of the EMP, and the implementation of the EMP through its integration into the contract documentation. Eskom will retain various key roles and responsibilities during the construction of the construction of the coal stock yard. These are outlined below. Specific environmental roles and responsibilities are detailed in the approved EMP for Medupi Power Station.

5.3. Objectives

In order to meet the goal detailed in Section 5.1 above, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE: Management of possible ground and surface water contamination

The proposed development site is underlain by Waterberg Group sandstone. Approximately 3 m of permeable sandy soil covers ± 4 m of weathered sandstone. Red hard competent sandstone is intersected below the shallow weathering.

Project component/s	Coal stockyard and ancillary infrastructure
Potential Impact	Contamination (potential acid generation) that may impact on the groundwater or surface water from the coal stock yard.
Activity/risk source	» Areas of artificial recharge, which include the raw water dam and the ash dump toe dam. » Areas of artificial recharge with poor quality water, which are recognised as the sewage plant and dams, the evaporation dams, and the ash dump (including brine deposits from the de-ionised water system). » Recharge and contamination from the recovery / surface water run-off dams, through seepage, spillage, and overflow
Mitigation: Target/Objective	To ensure that ground water and/ or surface water is not contaminated.

Mitigation: Action/control	Responsibility	Timeframe
The coal stockyard should be managed by constructing a clay base, installing a liner; separating clean and dirty runoff; minimising coal stock piles and size of yard; installing and maintain surface water controls; sloping topography to prevent ponding; and monitoring groundwater levels and quality.	Eskom Holdings (SOC) Limited and contractor	Duration of contract

Performance Indicator	» Results from the water quality monitoring should be within the accepted levels.
Monitoring	» Groundwater to be monitored as per the approved Medupi Power Station EMP.

OBJECTIVE: Management of dust and emissions to air

During the construction phase, limited gaseous or particulate emissions are anticipated from exhaust emissions from construction vehicles and equipment on-site, as well as vehicle entrained dust from the movement of vehicles.

Project component/s	Construction and establishment activities associated with the establishment of the coal stockyard and ancillary infrastructure.
Potential Impact	» Dust and particulates from vehicle movement to and on-site, temporary stockpiles, and vegetation clearing affecting the surrounding residents. » Release of minor amounts of air pollutants (for example NO_2, CO and SO_2) from vehicles and construction equipment.
Activities/risk sources	» Clearing of vegetation and some topsoil. » Excavation, grading, scraping. » Transport of materials, equipment, and components on access roads. » Re-entrainment of deposited dust by vehicle movements. » Wind erosion from topsoil and spoil stockpiles and unsealed roads and surfaces. » Fuel burning vehicle engines.
Mitigation: Target/Objective	» To ensure emissions from all vehicles are minimised, where possible, for the duration of the construction phase. » To minimise nuisance to the community from dust emissions and to comply with workplace health and safety requirements for the duration of the construction phase.

Mitigation: Action/control	**Responsibility**	**Timeframe**
Appropriate dust suppressant must be applied on all exposed areas and stockpiles as required to minimise/control airborne dust.	Contractor	Duration of contract
Haul vehicles moving outside the construction site carrying material that can be wind-blown must be covered with tarpaulins.	Contractor	Duration of contract
Speed of construction vehicles must be restricted, as defined by the ECO.	Contractor, and ECO	Duration of contract
Construction vehicles and equipment must be maintained in a road-worthy condition at all times.	Contractor	Duration of contract
If monitoring results or complaints indicate inadequate performance against the criteria indicated, then the source of the problem must be identified, and existing procedures or equipment modified to ensure the problem is rectified.	Contractor	Duration of contract

Performance Indicator	» No complaints from affected residents or community regarding dust or vehicle emissions from construction activities. » Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase. » Drivers made aware of the potential safety issues and enforcement of strict speed limits when they are employed. » Road worthy certificates in place for all heavy vehicles at outset of construction phase and up-dated on a monthly basis.
Monitoring	Monitoring must be undertaken as per the approved Medupi Power Station

	EMP.

OBJECTIVE: Control of impacts on Ecology

The Savannah biome is characterised by a grassy ground layer and a distinct upper layer of woody plants. Mixed Bushveld represents a great variety of plant communities, with many variations and transitions. The vegetation varies from a dense, short bushveld to a rather open tree savannah.

The floristic species diversity of the study area is considered relatively poor (i.e. the site investigation revealed the presence of approximately 120 plant species). This relatively low diversity reflects the general absence of topographical and environmental diversity that cause changes to the land surface resulting in the formation of varying communities and hence diverse species composition.

There are four (4) protected tree species within the proposed development site was confirmed i.e. *Acacia erioloba* (Camel thorn), *Adansonia digitata* (Baobab), *Boscia albitrunca* (Shepherd's tree) and *Combretum imberbe* (Leadwood). The removal of these trees would require a tree permit. Eskom is already in possession of a valid Tree Permit for the proposed development site.

No red data fauna species were recorded on the farm Eenzaamheid during the EIA undertaken for the power station. Likely, impacts resulting from the proposed construction activity are expected to result in animal species migrating from this property to nearby areas that is suited to their breeding-, general habitat- or territorial requirements.

The Baboon Spider has been recorded on site during the construction of the Medupi Power Station and there is therefore a possibility that this species could occur in the area proposed for the coal stockyard.

Project Component/s	Coal stockyard and ancillary infrastructure
Potential Impact	Irreversible habitat alteration of an area of relatively poor floristic species diversity
Activities/Risk Sources	Construction activities, maintenance activities.
Mitigation: Target/Objective	Minimise impacts on the environment

Mitigation: Action/Control	**Responsibility**	**Timeframe**

Mitigation: Action/Control	Responsibility	Timeframe
Prevent impacts on any surface water as a result of hazardous materials, contamination, unnecessary crossing by vehicles or personnel, extraction, drinking or other human uses, construction and maintenance activities.	ECO, Contractor, Contractor	Construction, Operational phases
The removal or picking of any protected or unprotected plants shall not be permitted and no horticultural specimens (even within the demarcated working area) shall be removed, damaged, or tampered with unless agreed to by the ECO.	ECO, Contractor	Construction, operational phases
No painting or marking of rocks or vegetation to identify locality or other information shall be allowed as it will disfigure the natural setting. Marking shall be done by steel stakes with tags, if required.	ECO, Contractor	Construction, operational phases
Make use of existing access roads, ensuring proper upgrade/ construction/ maintenance in order to limit erosion, proliferation of weeds.	Contractor	Construction, operational phases
Use of branches of trees and shrubs for fire making purposes is strictly prohibited.	ECO, Contractor	Construction, operational phases
Prevent open fires; provide demarcated fire-safe zones, facilities, and fire control measures.	ECO, Contractor	Construction, operational phases
Fire fighting equipment shall be made available on all vehicles and at various suitable points within the development site.	ECO, Contractor	Construction, operational phases
No animal may be hunted, trapped, or killed for any purpose whatsoever.	ECO, Contractor	Construction, operational phases
In the event that animals are present that may pose a risk to human safety, a suitable animal handler must be requested to remove the animal in an environmentally responsible manner. This specifically refers to snakes and scorpions.	ECO, Contractor	Construction, operational phases
Ensure immediate surface restoration and resloping in order to prevent erosion, taking cognisance of local contours and landscaping.	ECO, contractor	Construction phase
In the event of Baboon spiders being present, obtain the necessary permits to relocate these.	Contractor	Construction

Performance Indicator	» Necessary tree permits are in place. » Necessary permits to impact on baboon spiders (if present) are in place.
Monitoring	Implement a monitoring programme of which the aims and objectives should be to monitor:

	» Compliance to the approved EMP and addendum to the approved EMP;

OBJECTIVE: Control runoff, soil erosion & degradation, and the prevention of contamination of surface water

A set of strictly adhered to mitigation measures are required to effectively limit the impact on the environment. Erodibility is not a problem in flat areas, such as the existing terrain, but if the stored topsoil was to be used for rehabilitation in sloping areas (for example on the sides of the ash dump), great care should be taken to ensure that erosion does not occur. Soils on site are sandy, have an increased susceptibility to wind and excessive free drainage, and therefore not deemed of high agricultural potential.

A borrow pit or man-made depression that has filled with water is located on site. However, this appears to be at the top end of a drainage valley. This may be the reason the hole has filled with water (close to the water table / ground water level). The site must be maintained in such a manner as to minimise impacts on any downstream watercourses to which this area may be linked.

Ground water monitoring is required to determine if there is any contamination from the stockyard.

Project component/s	Coal stockyard and ancillary infrastructure
Potential Impact	» Soil erosion. » Surface and ground water contamination
Activities/risk sources	» Water and wind erosion of cleared and excavated areas. » Excavation, mixing, dumping, stockpiling, and compaction of soil. » Concentrated discharge of water from construction activity. » Site preparation and earthworks. » Foundations, liner or plant equipment installation. » Mobile construction equipment movement on site. » Siltation during filling of the depression.
Mitigation: Target/Objective	» Minimise degradation of soil by construction activity. » Conserve topsoil by stockpiling and re-using in disturbance areas. » Minimise erosion of soil from site during construction. » Minimise deposition of soil into drainage lines. » Prevent siltation of downstream areas due to in filled depression area.

Mitigation: Action/control	Responsibility	Timeframe
Erosion features must be immediately stabilised with appropriate erosion control measures, if they develop.	Contractor	Construction
Stockpile topsoil for re-use in rehabilitation phase.	Contractor	During site

Mitigation: Action/control	Responsibility	Timeframe
Maintain stockpile shape and protect from erosion. Limit the height of stockpiles as far as possible to reduce compaction.		establishment, and any activity related to earthworks as well as the duration of construction
Rehabilitate any disturbed areas immediately after construction in that area is complete in order to stabilise landscapes.	Contractor	Post-construction
Ensure that the slope of stockpiled material is such that surface runoff is minimal.	Contractor	Duration of contract
Erosion control measures: run-off attenuation on slopes (sand bags, logs), silt fences, stormwater catch-pits, shade nets, or temporary mulching over denuded areas. Surface structures such as swales and berms can also be used.	Contractor/ ECO	Erection: before construction Maintenance: duration of contract
Vehicular traffic must be controlled during construction, confining access and roadways, where possible, to proposed or existing road alignments.	Contractor	Duration of contract
As far as possible, access to the facility construction site should be restricted to a single access point.	Contractor	Duration of contract
Internal access roads should be kept to a minimum. Use existing roads wherever possible.	Contractor	During site establishment
Movement of vehicles on-site is to be on approved and formalised access roads only, which shall be adequately maintained throughout construction. Where temporary tracks are required these are to be ripped and rehabilitated as soon use of the track in an area is no longer required.	Contractor	Duration of contract

Performance Indicator	» Acceptable level of soil erosion around site, as approved by ECO. » Acceptable level of increased siltation in drainage lines, as approved by ECO. » Acceptable level of soil degradation, as approved by ECO. » Acceptable state of excavations, as approved by ECO.
Monitoring	» Ongoing monitoring of area by ECO during construction. » An incident reporting system will record non-conformances.

OBJECTIVE: Protection of sites of heritage value

Although no sites, features or objects of cultural heritage significance were identified in the study area, it may possible that sites will be uncovered during excavation activities associated with construction. If at any stage during the construction phase any archaeological artefact is observed, it would be vital to stop the work immediately and report this occurrence to the South African Heritage Resources Agency and/or a professional archaeologist as soon as possible so that appropriate mitigation measures can be implemented.

Project component/s	Coal stockyard and ancillary infrastructure
Potential Impact	Heritage objects or artefacts found on site are inappropriately managed or destroyed.
Activity/risk source	» Site preparation and earthworks. » Foundations or plant equipment installation. » Mobile construction equipment movement on site.
Mitigation: Target/Objective	To ensure that any heritage objects found on site are treated appropriately and in accordance with the relevant legislation.

Mitigation: Action/control	Responsibility	Timeframe
If a heritage object is found, work in that area must be stopped immediately, and appropriate specialists brought in to assess to site, notify the administering authority of the item/site, and undertake due/required processes.	Eskom Holdings (SOC) Limited, contractor, and heritage specialist	Duration of contract

Performance Indicator	» All heritage items located are dealt with as per the legislative guidelines. » A record is kept of all instances of accidental disturbance of heritage material, as well as post construction review of impacts on landscape context.
Monitoring	Supervision of all clearing and earthworks by the ECO throughout construction phase.

5.4. Detailing Method Statements

OBJECTIVE: Ensure all construction activities/practices/procedures are undertaken with the appropriate level of environmental awareness to minimise environmental risk, in line with the specifications of the EMP

The environmental specifications are required to be underpinned by a series of Method Statements, within which the Contractors and Service Providers are required to outline how any identified environmental risks will practically be mitigated and managed for the duration of the contract, and how specifications within this EMP will be met. That is, the Contractor will be required to describe how specified requirements will be achieved through the submission of written Method Statements to the Site Manager and ECO.

A Method Statement is defined as "a written submission by the Contractor in response to the environmental specification or a request by the Site Manager, setting out the plant, materials, labour and method the Contractor proposes using to conduct an activity, in such detail that the Site Manager is able to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications". The Method Statement must cover applicable details with regard to:

» Construction procedures;
» Materials and equipment to be used;
» Getting the equipment to and from site;
» How the equipment/material will be moved while on-site;
» How and where material will be stored;
» The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
» Timing and location of activities;
» Compliance/non-compliance with the Specifications, and
» Any other information deemed necessary by the Site Manager.

The Contractor may not commence the activity covered by the Method Statement until it has been approved by the Site Manager, except in the case of emergency activities and then only with the consent of the Site Manager. Approval of the Method Statement will not absolve the Contractor from their obligations or responsibilities in terms of their contract.

The Contractor may not commence the activity covered by the Method Statement until it has been approved by the Site Manager/ECO (or as per the reporting structures in the Medupi Power Station EMP), except in the case of emergency activities and then only with the consent of the Site Manager. Approval of the Method Statement will not absolve the Contractor from their obligations or responsibilities in terms of their contract

MANAGEMENT PROGRAMME FOR THE COAL STOCKYARD: CHAPTER 6 OPERATION AND MAINTENANCE

6.1 Overall Goal for Operation and Maintenance

Overall Goal for Operation: To ensure that the operation and maintenance of the coal stockyard does not have unforeseen impacts on the environment and to ensure that all impacts are monitored and the necessary corrective action taken in all cases. In order to address this goal, it is necessary to operate the proposed project in a way that:

» Ensures that construction activities are properly managed in respect of environmental aspects and impacts.
» Enables the coal stockyard operation activities to be undertaken without significant impacts on the environment.

This addendum to the approved EMP must be read in conjunction with the relevant sections and appendices of the Medupi Power Station (refer to the EMP (EIA Reference Number: 12/12/20/695, April 2007). This addendum relates only to activities associated with the coal stockyard. Environmental specifications and guidelines included within the approved EMP are not repeated here.

6.2 Objectives for Operation and Maintenance

In order to meet the goal for operation and maintenance, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE: Management of possible ground and surface water contamination

The proposed development site is underlain by Waterberg Group sandstone. Approximately 3 m of permeable sandy soil covers ± 4 m of weathered sandstone. Red hard competent sandstone is intersected below the shallow weathering.

Project component/s	Coal stockyard and ancillary infrastructure
Potential Impact	Contamination (potential acid generation) that may impact on the groundwater or surface water from the coal stock yard.
Activity/risk source	» Areas of artificial recharge, which include the raw water dam and the ash dump toe dam. » Areas of artificial recharge with poor quality water, which are recognised as the sewage plant and dams, the evaporation dams, and

	the ash dump (including brine deposits from the de-ionised water system). » Recharge and contamination from the recovery / surface water run-off dams, through seepage, spillage, and overflow
Mitigation: Target/Objective	To ensure that ground water and/ or surface water is not contaminated.

Mitigation: Action/control	**Responsibility**	**Timeframe**
Ensure the integrity of the liner installed below the coal stockyard through the continual monitoring of the leakage detection system and the results of groundwater monitoring in the surrounding area	Eskom Holdings (SOC) Limited and contractor	Duration of operation
Ensure the maintenance of the systems in place for the separation of clean and dirty runoff; surface water controls; sloping topography to prevent ponding; and monitoring groundwater levels and quality	Eskom Holdings (SOC) Limited and contractor	Duration of operation

Performance Indicator	» Results from the water quality monitoring should be within the accepted levels.
Monitoring	» Undertake surface and groundwater monitoring as per the approved Medupi Power Station EMP. » Groundwater monitoring shall take place on a three-monthly basis, in accordance with "The minimum requirements for water monitoring at waste management facilities" (Department of Water Affairs & Tourism, 1998).

OBJECTIVE: Management of dust and emissions to air

As at the existing Matimba Power Station, sources of atmospheric emission associated with the proposed power station will include stack emissions in addition to fugitive dust releases arising as a result of coal and ash handling, wind entrainment from the ash dump, and recovery and use of topsoil material. These issues are already addressed within the application for the Air Emissions License for the power station. Construction of the coal stockyard will require an amendment to this air emissions license as the coal storage is a listed activity in terms of the National Environmental Management: Air Quality Act.

Project component/s	Coal stockyard and ancillary infrastructure
Potential Impact	» Release of dust from the coal stockpile.
Activities/risk	» Fugitive dust releases arising as a result of coal handling

sources	» wind entrainment from the coal stockyard
Mitigation: Target/Objective	» Ensure that emissions are as stipulated in the Air Emissions License

Mitigation: Action/control	Responsibility	Timeframe
Submit an application to amend the Air Emissions license issued for the power station to include the coal stockyard	Eskom	Operation
Monitoring of the air and emissions to air as per Air Emissions License.	Eskom	Operation
All activities on-site must comply with the provisions of the National Environment Management: Air Quality Act, Act 39 of 2004	Eskom	Operation

Performance Indicator	» No complaints from affected residents or community regarding dust or pollution from the ash or coal.
Monitoring	» Monitoring must be undertaken as per the approved Medupi Power Station EMP to ensure emissions are not exceeding the prescribed levels in the Air Emissions Licence » Monitoring as per the approved Medupi Power Station EMP.

OBJECTIVE: Visual impact on surrounding impacts

The coal stockyard (expected to be up to 30 m in height) is not expected to have a regional or long distance visual impact due to the fact that it is either not visible or not recognisable from great distances. It does, however, have the potential to create short distance visual impacts due to its close proximity to secondary roads in the area, as well as to adjacent landowners.

Project component/s	Coal stockyard and ancillary infrastructure
Potential Impact	» Visual impacts on local roads and surrounding landowners
Activities/risk sources	» Short distance visual impacts due to its close proximity to secondary roads in the area
Mitigation: Target/Objective	» Prevent the visual impact of degradation and perceived poor management.

Mitigation: Action/control	Responsibility	Timeframe
Timely maintenance and the general surrounds of the property can prevent the visual impact of degradation and perceived poor management.	Eskom	Operation

Performance Indicator	» No complaints from affected residents or community regarding the visual impact.
Monitoring	» Monitoring of the maintenance of the surrounding property on a weekly basis.

MANAGEMENT PROGRAMME FOR THE COAL STOCKYARD: CHAPTER 7 DECOMMISSIONING

The coal stockyard will have a lifespan of 15 years (i.e. up to 2017). Thereafter, the site will be incorporated into the Medupi Power Station ash dump.

The site is to be designed to cater for both coal storage and later for ash dumping (long-term use after 2028) with minimum changes to the overburden above the liner. It will not be necessary to remove the liner after the coal at the stockyard is exhausted. At this point, the over burden will be skimmed to remove any coal remnants in readiness for ash dumping. The layers above the liner will be deeper than the normal liner for ash to allow mobile plant to move on the site without damaging the liner.

In order to minimise impacts on the environment during these activities, the following objectives are recommended.

OBJECTIVE: Management of dust and emissions to air

During the decommissioning phase, limited gaseous or particulate emissions are anticipated from exhaust emissions from construction vehicles and equipment on-site, as well as vehicle entrained dust from the movement of vehicles.

Project component/s	Decommissioning activities associated with the skimming of the overburden on the coal stockyard site.
Potential Impact	» Dust and particulates from vehicle movement to and on-site. » Release of minor amounts of air pollutants (for example NO_2, CO and SO_2) from vehicles and construction equipment.
Activities/risk sources	» Excavation, grading, scraping/skimming. » Transport of materials, equipment, and components on access roads. » Re-entrainment of deposited dust by vehicle movements. » Fuel burning vehicle engines.
Mitigation: Target/Objective	» To ensure emissions from all vehicles are minimised, where possible, for the duration of the construction phase. » To minimise nuisance to the community from dust emissions and to comply with workplace health and safety requirements for the duration of the construction phase.

Mitigation: Action/control	Responsibility	Timeframe
Haul vehicles moving outside the construction site	Contractor	Duration of

Mitigation: Action/control	Responsibility	Timeframe
carrying material that can be wind-blown must be covered with tarpaulins.		contract
Speed of construction vehicles must be restricted, as defined by the ECO.	Contractor, and ECO	Duration of contract
Construction vehicles and equipment must be maintained in a road-worthy condition at all times.	Contractor	Duration of contract
If monitoring results or complaints indicate inadequate performance against the criteria indicated, then the source of the problem must be identified, and existing procedures or equipment modified to ensure the problem is rectified.	Contractor	Duration of contract

Performance Indicator	» No complaints from affected residents or community regarding dust or vehicle emissions from construction activities. » Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase. » Drivers made aware of the potential safety issues and enforcement of strict speed limits when they are employed. » Road worthy certificates in place for all heavy vehicles at outset of construction phase and up-dated on a monthly basis.
Monitoring	Monitoring must be undertaken in accordance with the approved Medupi Power Station EMP

FINALISATION OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME CHAPTER 8

The EMP is a dynamic document, which must be updated when required. It is considered critical that this draft EMP be updated to include site specific information and specifications as the project progresses. This will ensure that the construction and operation activities are planned and implemented in such a way that impacts on the environment are minimised.