
MEDUPI POWER STATION, LIMPOPO PROVINCE

ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR OPERATION AND MAINTENANCE

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Prepared for

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PROJECT DETAILS

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DEFINITIONS AND TERMINOLOGY

Ash Dump: The ash that is created from the burning of coals is transported after conditioning with 10-15 % moisture via a conveyor transfer system and disposed of in an ash dump. Low quality water is used for dust suppression and any decant is recycled for re-use.

Bag Filters: A collection device that uses fabric bags to filter particulates/ash particles out of a gas stream.

Boiler: Where the pulverised coal is burnt/combusted at extremely high temperatures, generating steam with high pressure and temperature in the tubing in the boiler walls.

Contractor: A person or company appointed by Eskom to carry out stipulated activities.

Direct Dry-cooled technology: Cooling is by means of fans instead of air. This technology is less water intensive than power stations utilising conventional wet-cooling systems. A dry cooled plant shows no visible wet plumes, e.g. fogs or shadow.

Emergency: An undesired event that does result in a significant environmental impact and requires the notification of the relevant statutory body such as a local authority.

Emissions: The release or discharge of substances into the environment, generally referring to the release of gases or particulates into the air.

EMP: Environmental Management Plan. A detailed plan of action prepared to ensure that recommendations for preventing the negative environmental impacts and where possible improving the environment are implemented during the life-cycle of a project. This EMP focuses on the construction phase.

Environment: In terms of the National Environmental Management Act (NEMA) (No 107 of 1998), "environment" means 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) of (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 Practitioner: An independent suitably qualified individual who would on behalf of Eskom, on a daily basis monitor the project compliance with conditions of the

Record of Decision, environmental permits, environmental legislation and recommendations of this Environmental Management Plan.

Environmental Impact: A change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

Flue Gas Desulphurisation (FGD): The process of removing sulphur oxides, primarily SO₂, from the combustion gases.

Incident: An undesired event which may result in a significant environmental impact but can be managed through internal response.

Gaseous Emissions: The elements / compounds that make up the emissions from the power station stacks in their vapour phase, e.g. carbon dioxide (CO₂), nitrogen oxides (NO_x) and sulphur dioxide (SO₂).

Environmental Method Statement: A written submission by the Contractor to the Site Manager in response to Environmental Specification or a request by the Client, setting out the construction equipment, materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Site Manager when requesting the Environmental Method Statement, in such detail that the Site Manager is enabled to assess whether the Contractors' proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

Particulate Matter (PM): The collective name for fine solid or liquid particles suspended in the atmosphere, including dust, smoke, soot and pollen. Particulate matter is classified as a criteria pollutant, thus national air quality standards have been developed in order to protect the public from exposure to the inhalable fractions. PM can be principally characterised as discrete particles spanning several orders of magnitude in size, with inhalable particles falling into the following general size fractions:

- » PM10 - generally defined as all particles equal to and less than 10 microns in aerodynamic diameter; particles larger than this are not generally deposited in the lung;
- » PM10-2.5, also known as coarse fraction particles - generally defined as those particles with an aerodynamic diameter greater than 2.5 microns, but equal to or less than a nominal 10 microns
- » Ultra fine particles generally defined as those less than 0.1 microns.

Pulverised fuel (PF) technology: With this technology, coal is first pulverised, then blown into a furnace where it is combusted at high temperatures. The resulting heat is used to raise steam, which drives a steam turbine and generator.

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OVERVIEW OF THE PROJECT

CHAPTER 1

The Medupi Power Station is located in the Lephalale area of the Limpopo Province on approximately 700 ha of the farm Naauw Ontkomen 509 LQ. Ancillary infrastructure is located on 500 – 1000 ha of the farm Eenzaamheid 687 LQ. Two options are being considered for the ashing facility¹, i.e.

- Creating a new above-ground ash disposal site on the farm Eenzaamheid 687 LQ.
- Ashing back to Exxaro's Grootegeluk coal mine pit.

Other infrastructure associated with the power station includes:

- » Coal stockpile
- » A conveyor belt for coal supply from the adjacent Exxaro operated Grootegeluk Mine.
- » An overland ash conveyor belt.
- » Water supply system to the power station, including a raw water reservoir on the farm Kuipersbult and water supply pipelines.

The Medupi Power Station will ultimately have a maximum installed capacity of up to 4800 MW (6 x 800 MW units). A site layout plan is included within Appendix A.

Medupi Power Station is to be operated as a super-critical, pulverised fuel power station utilising direct dry-cooled technology. The power station will utilise fabric filter bags as its primary pollution abatement technology (for particulate emissions, anticipated to be less than 50 mg/Sm³), and will have low NO_x burners and overfire air for lower NO_x emissions. In terms of sulphur dioxide emissions, the power station is being constructed to be flue gas desulphurisation (FGD) ready, i.e. physical space is being allocated for the FGD plant and the smokestacks will be lined with FGD compatible materials, should the power station be required to be retrofitted with FGD at a later stage. When fully operational, the power station is to strive towards a zero liquid effluent discharge philosophy.

Coal for use at Medupi Power Station will be sourced from the Exxaro's adjacent Grootegeluk Colliery (located to the north-west of Medupi Power Station), to be delivered to the power station via conveyor belts. A part of the conveyor system, the associated infrastructure, included a coal silo, which would be in the existing mining area and act as a transfer facility between the mine and Eskom. The coal silo will have a transfer capacity of 10 000 tons. It will be approximately 58 m in height and 20 m in diameter at its widest point.

¹ This EMP will be updated once a preferred option for ashing has been selected, assessed and approved.

The conveyor belt system alignment follows an alignment cutting through the farms Enkelbult and Turfvlakte (both owned by Exxaro who has prospecting and mining rights on these properties) in a southerly direction towards the farm Naauwontkomen 509 LQ. This alignment is approximately 4,5 km in length (and is known as the western alignment). Eskom's conveyor system has a carrying capacity of 4 000 tons/hour. Eskom would draw the coal from the bottom of the silo through belt feeders onto the coal overland conveyor which would convey coal to the power station. This silo is a transfer point and forms part of the conveyor belt ancillary infrastructure.

PURPOSE & OBJECTIVES OF THE EMP

CHAPTER 2

An Environmental Management Plan (EMP) provides a link between the impacts predicted and mitigation measures recommended within the Environmental Impact Assessment (EIA) 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 is a dynamic document which must be updated on an on-going basis as the project develops.

2.1. Purpose of the EMP

The objective of this EMP 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. This EMP provides specific environmental guidance for the operation and maintenance phase of the Medupi Power Station, and is intended to manage and mitigate operation and maintenance activities so that unnecessary or preventable environmental impacts do not result.

The purpose of the EMP is to help 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.

This EMP has the following objectives:

- » To outline mitigation measures, and environmental specifications which are required to be implemented for the operation/maintenance phase of the power station 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 operation and maintenance activities associated with the power station 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 are implemented throughout the project life-cycle.
- » To ensure that all relevant legislation (including national, provincial and local) is complied with during the operation and maintenance of the power station.
- » 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 EIA process.

The EMP has been developed as a set of environmental specifications (i.e. principles of environmental management for the operation and maintenance of the Medupi Power Station), which are appropriately contextualised to provide clear guidance in terms of the on-site implementation of these specifications.

2.2. Applicable Documentation

The following environmental documentation is applicable for the project, and must be read in conjunction with this EMP:

- » Final Environmental Scoping Report for the proposed new Coal-Fired Power Station in the Lephalale Area, Limpopo Province (Bohlweki Environmental, November 2005).
- » Final Environmental Impact Assessment Report for the proposed new Coal-Fired Power Station in the Lephalale Area, Limpopo Province (Bohlweki Environmental, May 2006).
- » Environmental Authorisations (refer to Appendix B), including:
 - * Record of Decision (RoD) for the *Medupi Power Station and associated infrastructure* issued on 21 September 2006 by the National Department of Environmental Affairs and Tourism.
 - * Environmental Authorisation for the *raw water reservoir and pipelines* issued on 27 October 2008 by the National Department of Environmental Affairs and Tourism.
 - * Environmental Authorisation for the *construction of a telecommunications mast for Medupi Power Station* issued on 18 September 2008 by the National Department of Environmental Affairs and Tourism.
 - * Environmental Authorisation for the *re-alignment of a portion of the Afguns Road in the vicinity of the Medupi Power Station* issued on 6 November 2008 by the National Department of Environmental Affairs and Tourism.
 - * *Amendment of Record of Decision for the construction of Medupi Power Station: Coal Supply Conveyers*, issued on 21 August 2008 by the National Department of Environmental Affairs and Tourism.
 - * *Amendment of Record of Decision for the construction of Medupi Power Station to remove the requirement for Carbon Monoxide monitoring*, issued on 26 January 2009 by the National Department of Environmental Affairs and Tourism.
 - * *Integrated Water Use License for the Medupi Power Station* issued on 13 February 2009 by the Department of Water Affairs and Forestry.
- » Generation Primary Energy Division Primary Energy (water); Medupi power station technical report.
- » Eskom's operational specifications (refer to Appendix C).

In compiling this EMP, cognisance has been taken of the conditions of the environmental authorisations obtained for the various aspects of the Medupi Power Station (refer to Appendix B). In addition, this EMP for operation and maintenance activities has been compiled in accordance with Section 34 of the EIA Regulations and will be supported by requirements to be detailed by the project safety, health, environment and quality (SHEQ) officer. It must be borne in mind that the EMP is a dynamic document, which will be updated as and when required throughout the life-cycle of the power station.

Should there be a conflict of interpretation between this EMP and the RoD, the stipulations in the RoD shall prevail over that of the EMP, unless otherwise agreed by the Department of Environmental Affairs (DEA) in writing. Similarly, any provisions in current legislation overrule any provisions or interpretations within this EMP.

2.3. Structure of the EMP

The first two chapters of this EMP provide background to the EMP and the Medupi Power Station. The sections which follow considers the operation and maintenance activities associated with the Medupi Power Station.

This section sets out the procedures necessary for Eskom to achieve environmental compliance during the operation and maintenance of the Medupi Power Station. In order to ensure site-specific compliance associated with the power station operation and maintenance, this EMP 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 plan 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 plan 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 |
| Potential Impact | Brief description of potential environmental impact if objective is not met |
| Activity/risk source | Description of activities which could impact on achieving the objective |
| Mitigation: Target/Objective | Description of the target; include quantitative measures and/or dates of completion |

| Mitigation: Action/control | Responsibility |
|---|--|
| List specific action(s) required to meet the mitigation target/objective described above. | Who is responsible for the measures |
| Performance Indicator | Description of key indicator(s) that track progress/indicate the effectiveness of the management plan. |
| 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 |

ENVIRONMENTAL GUIDELINES, LEGISLATION AND STANDARDS

CHAPTER 3

Acts, standards or guidelines relevant to the planning, construction, operation and maintenance of the Medupi Power Station were identified within the EIA process undertaken. Those Acts, standards or guidelines which are relevant for the operation and maintenance of the power station are summarised below.

3.1. Legislative Framework

Table 3.1 provides a summary of the national legislation relevant to the operation and maintenance of the Medupi Power Station.

Table 3.1: List of applicable national legislation and compliance requirements for the operation and maintenance of the Medupi Power Station

| Legislation | Applicable Requirements | Relevant Authority | Compliance requirements |
|--|--|--|---|
| National Environmental Management Act (Act No 107 of 1998) | In terms of the Duty of Care provision in S28(1) Eskom as the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised. In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts. | Department of Environmental Affairs and Tourism (as regulator of NEMA). | While no permitting or licensing requirements arise directly by virtue of the proposed project, this section will find application throughout the life cycle of the project. |
| Environment Conservation Act (Act No 73 of 1989) | Section 20(1) provides that where an operation accumulates, treats, stores or disposes of waste on site for a continuous period, it must apply for a permit to be classified as a suitable waste disposal facility. | National Department of Environmental Affairs and Tourism Department of Water Affairs and Forestry. | Any waste disposal site associated with the proposed project will require an appropriate permit from DEA . |
| Environment Conservation Act (Act No 73 of 1989) | National Noise Control Regulations (GN R154 dated 10 January 1992). | National Department of Environmental Affairs and Tourism Local authorities, i.e. Lephalale Local Municipality | There is no requirement for a noise permit in terms of the legislation. Noise standards are however required to be compiled with (refer to section 3.2.2). |
| National Water Act (Act No 36 of 1998) | Section 21 sets out the water uses for which a water use license is required. | Department of Water Affairs and Forestry | An Integrated Water Use License Application (IWULA) has been issued for Medupi Power Station (refer to Appendix B). |
| National Water Act (Act No 36 of 1998) | In terms of Section 19, Eskom as the project proponent must ensure that reasonable measures are taken throughout the life cycle of | Department of Water Affairs and Forestry (as regulator of NWA) | While no permitting or licensing requirements arise directly by virtue of the proposed project, this section |

| Legislation | Applicable Requirements | Relevant Authority | Compliance requirements |
|---|--|---|---|
| | this project to prevent and remedy the effects of pollution to water resources from occurring, continuing or recurring. | | will find application throughout the life cycle of the project. |
| National Environmental Management: Air Quality Act (Act No 39 of 2004) | Section 22 of this Act will replace the Scheduled Processes listed under the Atmospheric Pollution Prevention Act (Act No 45 of 1965). Sections 21 and 22 provide for the listing of activities which result in atmospheric emissions and require an Atmospheric Emissions Licence. | Unclear whether the licensing authority will be local government (Waterberg District Municipality), provincial government (Limpopo) or National Government (most likely provincial government). | Eskom must apply for an Atmospheric Emissions Licence for the operation of Medupi Power Station. Eskom must ensure that the conditions in the license are complied with at all times. |
| Conservation of Agricultural Resources Act (Act No 43 of 1983) | Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Weeds are described as Category 1 plants, while invader plants are described as Category 2 and Category 3 plants. These regulations provide that Category 1, 2 and 3 plants must not occur on land and that such plants must be controlled by the methods set out in Regulation 15E. | Department of Agriculture | While no permitting or licensing requirements arise from this legislation, this Act finds application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, the existing weed control and management plan within the EMP must be implemented. |
| Conservation of Agricultural Resources Act (Act No 43 of 1983) | Regulations issued in terms of section 6 (j) in respect of burning veld. | Department of Agriculture | While no permitting or licensing requirements arise from this legislation, these regulations are required to be adhered to throughout the life cycle of the project. |
| Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947) | In terms of this Act, a registered pest control operator will apply herbicides, or will supervise the application of herbicides. | Department of Agriculture | While no permitting or licensing requirements arise from this legislation, these regulations are required to be adhered to during the life cycle of the project. In this regard, Eskom must: » Ensure that a registered pest |

| Legislation | Applicable Requirements | Relevant Authority | Compliance requirements |
|---|---|---|--|
| | | | <p>control operator applies or supervises the application of all herbicides.</p> <ul style="list-style-type: none"> » Ensure that all herbicides are stored in a well-ventilated demarcated storage area. » Ensure that a register of all contents of the storage area is kept and updated on a regular basis. » Ensure that a daily register of all relevant details of herbicide usage is kept, and that such a register is maintained by the relevant Eskom custodian. |
| <p>National Veld and Forest Fire Act (Act No 101 of 1998)</p> | <p>In terms of Section 12 Eskom would be obliged to burn firebreaks to ensure that should a veldfire occur on the property, that same does not spread to adjoining land.</p> <p>In terms of Section 13 Eskom must ensure that the firebreak is wide enough and long enough to have a reasonable chance of preventing a veldfire from spreading; not causing erosion; and is reasonably free of inflammable material.</p> <p>In terms of Section 17, Eskom must have such equipment, protective clothing and trained personnel for extinguishing fires as are prescribed or in the absence of prescribed requirements, reasonably required in the circumstances.</p> | <p>Department of Water Affairs and Forestry</p> | <p>While no permitting or licensing requirements arise from this legislation, this Act will find application during the operational phase of the project.</p> |
| <p>Hazardous Substances Act (Act No 15 of 1973)</p> | <p>This Act regulates the control of substances that may cause injury, or ill health, or death by</p> | <p>Department of Health</p> | <p>It is necessary to identify and list all the Group I, II, III and IV hazardous</p> |

| Legislation | Applicable Requirements | Relevant Authority | Compliance requirements |
|--|---|---|--|
| | <p>reason of their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <p>Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc, nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared to be Group I or Group II hazardous substance;</p> <p>Group IV: any electronic product;</p> <p>Group V: any radioactive material.</p> <p>The use, conveyance or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p> | | <p>substances that may be on the site by the activity and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.</p> |
| <p>National Road Traffic Act (Act No 93 of 1996)</p> | <p>Regulation 274 (read with SABS Code 0232 which deals with transportation of dangerous goods and emergency information systems) states that the regulations are applicable where dangerous goods are transported in quantities, which exceed the exempt quantities (listed in Annex E of SABS Code 0232). Dangerous goods may only be transported in accordance</p> | <p>Department of Transport Limpopo Department of Transport and Public Works (provincial roads) South African National Roads Agency (national roads)</p> | <p>Eskom will need to ensure that procedures are in place to prevent that the quantities of any dangerous goods transported exceed the prescribed quantity (listed in Annex E of SABS Code 0232). Apply for an exemption, if applicable.</p> |

| Legislation | Applicable Requirements | Relevant Authority | Compliance requirements |
|--------------------|--|---------------------------|--------------------------------|
| | with the provisions in the Regulations, unless the Minister of Transport has granted an exemption. | | |

3.2. Environmental Standards

All applicable environmental standards contained within the environmental legislation shall be adhered to. At the time of compiling this EMP, the following environmental guidelines and standards were applicable for the operation and maintenance phases of the Medupi Power Station.

3.2.1. Ambient Air Quality Guidelines and Standards

Air quality guidelines and standards are fundamental to effective air quality management, providing the link between the source of atmospheric emissions and the user of that air at the downstream receptor site. The ambient air quality limits are intended to indicate safe daily exposure levels for the majority of the population, including the very young and the elderly, throughout an individual's lifetime.

Current ambient air quality standards are as listed in Schedule 2 of the National Environmental Management: Air Quality Act (Act No 39 of 2004). The standards that Eskom will be required to comply with for the operation of the Medupi Power Station are those that will be gazetted in September 2009. These standards are currently being formulated by the SABS process².

3.2.2. Noise Control Regulations

Acceptable rating levels of noise for districts are indicated in Table 2 of SANS 10103 as follows:

SANS 10103, Table 2 - Acceptable rating levels of noise for districts

| Type of district | Equivalent continuous rating level ($L_{Req,T}$) for noise, dBA | | | | | |
|--|---|-------------------------|---------------------------|----------------------------|-------------------------|---------------------------|
| | Outdoors | | | Indoors, with windows open | | |
| | Day-night $L_{R,dn}$ | Day-time $L_{Req,d}$ | Night time $L_{Req,n}$ | Day-night $L_{R,dn}$ | Day-time $L_{Req,d}$ | Night time $L_{Req,n}$ |
| Residential Districts | | | | | | |
| Rural districts | 45 | 45 | 35 | 35 | 35 | 25 |
| Suburban districts with little road traffic | 50 | 50 | 40 | 40 | 40 | 30 |
| Urban districts | 55 | 55 | 45 | 45 | 45 | 35 |
| Non-residential Districts | | | | | | |
| Urban districts with some workshops, with business premises, and with main roads | 60 | 60 | 50 | 50 | 50 | 40 |

² This section of the EMP must be updated once the air quality standards are gazetted.

| Type of district | Equivalent continuous rating level ($L_{Req,T}$) for noise, dBA | | | | | |
|----------------------------|---|-------------------------|---------------------------|----------------------------|-------------------------|---------------------------|
| | Outdoors | | | Indoors, with windows open | | |
| | Day-night $L_{R,dn}$ | Day-time $L_{Req,d}$ | Night time $L_{Req,n}$ | Day-night $L_{R,dn}$ | Day-time $L_{Req,d}$ | Night time $L_{Req,n}$ |
| Central business districts | 65 | 65 | 55 | 55 | 55 | 45 |
| Industrial districts | 70 | 70 | 60 | 60 | 60 | 50 |

3.2.3. Control of Alien Vegetation

The regulations applicable in the Conservation of Agricultural Resources Act (Act No 43 of 1983) include:

» *Definitions:*

Declared weeds or alien invader plants are defined by the Conservation of Agricultural Resources Act (Act No 43 of 1983) as follows:

- * **Category 1:** Declared weeds. These species must be eradicated from all areas, and are only permitted with written permission from the Executive Officer (as defined by the Act) or in the case of a formally approved biological control reserve.
- * **Category 2:** Invader plants. These species are only permitted in specially demarcated areas and should be eradicated in all areas, except where permission has been granted. These species are not permitted to grow within 50 m of the 1:50 floodline.

A list of species defined as Category 1 and 2 is presented in Appendix D.

In terms of Government Notice R 1048, the following regulations are applicable with regards to the control of invasive alien vegetation and declared weeds:

- » It is illegal to have declared weed species or invasive alien vegetation on one's property.
- » The landowner must immediately take steps to eradicate them by using the methods prescribed in the regulations, namely:
 - * uprooting and burning, or
 - * the application of a suitable chemical weed-killer (herbicide), or
 - * any other method of permanent eradication.
- » One may not uproot or remove such plants and dump or discard them elsewhere to re-grow or to allow their seeds to be spread or blown onto other properties.
- » If the landowner does not comply with the requirements above, a person may be found guilty of a criminal offence.

MANAGEMENT PLAN FOR MEDUPI POWER STATION: OPERATION AND MAINTENANCE

CHAPTER 4

No environmental fatal flaws were identified through the EIA process to be associated with the operation and maintenance of the Medupi Power Station. However, a number of potential impacts requiring management and mitigation were identified. These include:

- » Impacts on air quality and human health as a result of emissions to air from the facility
- » Impacts on surface and groundwater resources as a result of the operation of the power station
- » Visual impacts
- » Noise impacts
- » Social impacts

Mitigation measures required to be implemented in order to minimise the above identified impacts were detailed within the EIA Report (Bohlweki Environmental, May 2006). Environmental specifications (i.e. principles of environmental management for the operation and maintenance of the Medupi Power Station) and procedures necessary for Eskom to achieve environmental compliance during the operation and maintenance of the Medupi Power Station are detailed within this section of the EMP.

4.1. Overall Goal for Operation

Overall Goal for Operation: To ensure that the operation and maintenance of the Medupi Power Station does not have unforeseen or avoidable 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 Medupi Power Station in a way that:

- » Ensures that operation and maintenance activities are properly managed in respect of environmental aspects and impacts.
- » Enables operation and maintenance activities to be undertaken without significant disruption to other land uses in the area, in particular with regard to noise impacts, air quality impacts, surrounding land use practices and effects on local residents.

4.2. Institutional Arrangements: Functions and Responsibilities for the Operational Phase of the Medupi Power Station

OBJECTIVE: To establish clear reporting, communication and responsibilities in relation to an environmental incident

Formal responsibilities are necessary to ensure that key procedures are executed. Power Station Management will comprise of a Power Station Manager and relevant heads of technical groups. This team represents Eskom Generation on site and is committed to comply with ISO 14001 environmental practices. Each technical group head will be responsible and accountable for environmental management within his/her area of responsibility, and will ensure that his/her department has procedures in place that address environmental aspects and adherence to these will minimise environmental impacts. Specific responsibilities of the Generation Environmental Manager, Power Station Manager, and SHE Representative/Environmental Officer for the operations phase of this project are as detailed below.

The **Generation Environmental Manager** will:

- » Provide overall assurance to the MD: Generation Division (and hence ultimately the CEO) that environmental issues are appropriately addressed and managed at the various business units (i.e. power generation stations).
- » Develop and implement strategies on various issues such as Environmental Management Systems, waste management, etc.
- » Be responsible for overall consolidation and reporting of environmental performance within the Generation Division.
- » Liaise on a strategic level with Government and other stakeholders on a range of issues.

The **Power Station Manager** will:

- » Identify and appoint representatives from different departments of the facility. These employees shall be assigned the role of EMP drivers and shall collectively form the Environmental Management System (EMS) management team.
- » Ensure that adequate resources (human, financial, technology) are made available and appropriately managed for the successful implementation and operation of the EMS.
- » Implement high level indicators to monitor the long term viability of the environment within which the EMS is operated.
- » Conduct annual basis reviews of the EMS to evaluate its effectiveness.
- » Take appropriate action as a result of findings and recommendations in management reviews and audits.
- » Provide forums to communicate matters regarding environmental management.

The **Environmental Practitioner** will:

- » Implement an Environmental Management System (EMS) for the power station and associated infrastructure.
- » Manage and report on the facility's environmental performance.
- » Maintain a register of all known environmental impacts and manage the monitoring thereof.
- » Conduct internal environmental audits and co-ordinate external environmental audits.
- » Liaise with statutory bodies such as the Department of Environmental Affairs (DEA) and the Limpopo Department of Economic Development, Environment and Tourism (DEDET) on environmental performance and other issues.
- » Conduct environmental training and awareness for the employees who operate and maintain the power station.
- » Make environmental indicators visible through the printing and distribution of posters.
- » Compile and disseminate information regarding improvement programmes to the rest of the power station, head office personnel and the public where applicable.
- » Compile environmental policies and procedures.
- » Liaise with interested and affected parties on environmental issues of common concern.
- » Track and control the lodging of any complaints regarding environmental matters.

A Safety Health and Environmental Committee will meet regularly as defined by the EMS. The purpose of the meeting will be to keep management updated on, *inter alia*, environmental issues and to resolve any environmental concerns.

4.3. 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 dust and emissions to air

Sources of impacts on air quality associated with the operation of the power station 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.

Stack Emissions

Coal combusted in a power plant to produce heat for electricity generation produces two distinct products, viz. fine particulate matter (FPM) and gaseous emissions. The latter is made up of; *inter alia*, carbon dioxide, sulphur dioxide and nitrogen oxides.

Sensitive Receptors

Given that the power station will be associated with low level emissions (e.g. from mining and ashing operations) and elevated emissions (power station stacks), the Medupi Power Station has the potential of impacting on receptors in the near and medium fields.

Residential areas in the vicinity of the proposed operations include Marapong located just south of the Farm Zongezien and northeast of the existing Matimba Power Station and Onverwacht and Lephalale situated to the southeast and east of the existing power station respectively (refer to Figure 4.1).

Farm households are scattered through the area, with livestock farming (primarily cattle and game) representing the main agricultural land use in the area. The closest schools and clinics include: Ellisras School, Clinic and Hospital, the Lekhureng Primary School and Weltevrede Montoma School.

| | |
|-------------------------------------|--|
| Project component/s | List of project components affecting the objective: » Stack emissions » Coal handling » Ash handling » Ash dumps » Topsoil use and recovery initiatives |
| Potential Impact | » Impact on air quality » Impact on human health |
| Activity/risk source | » Coal combustion » Coal and ash handling » Wind entrainment from the ash dump » Recovery and use of topsoil material |
| Mitigation: Target/Objective | » To ensure compliance with ambient air quality standards » To ensure compliance with the conditions and emission limits in the Atmospheric Emission Licence |

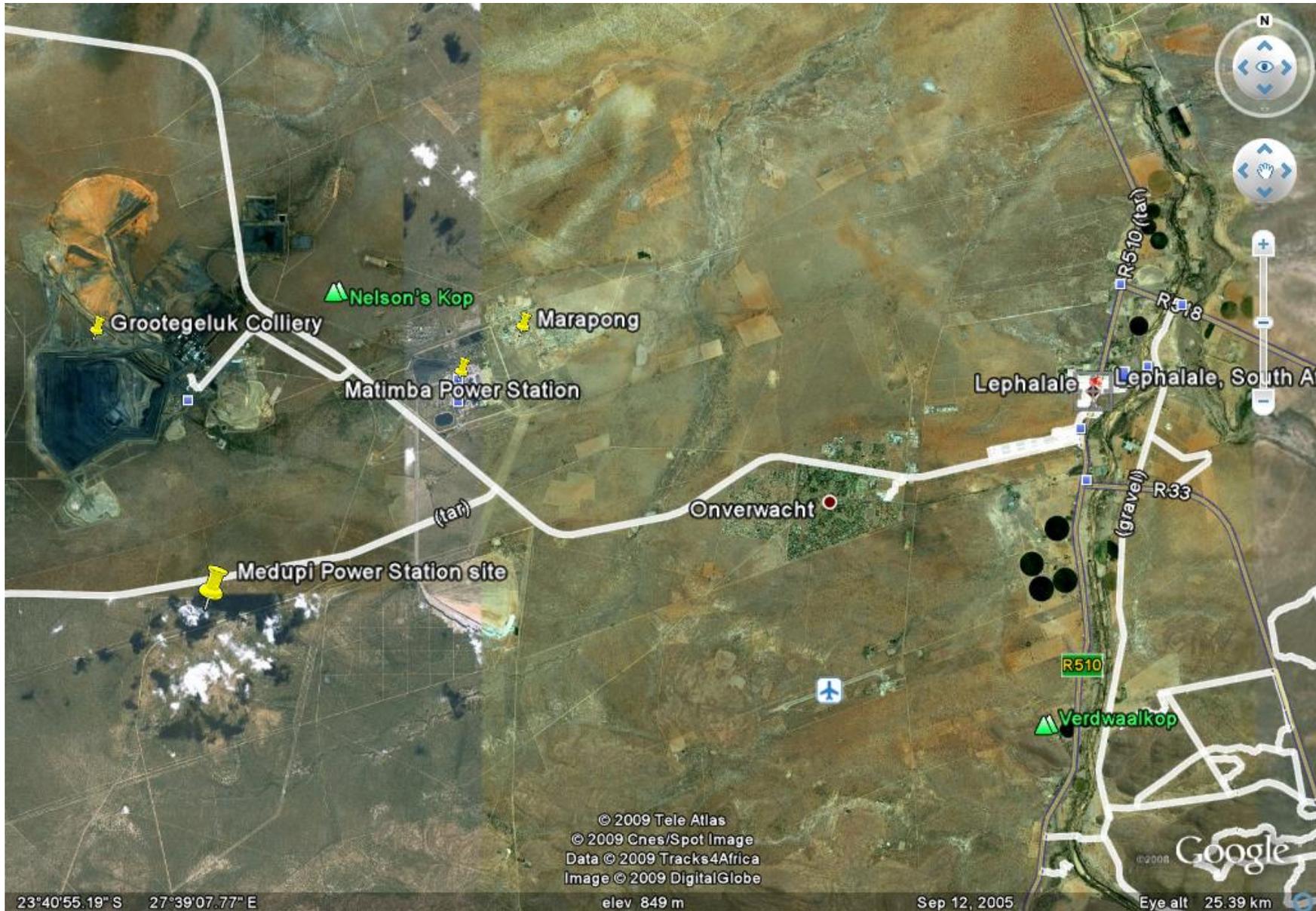


Figure 4.1: Medupi Power Station site and surrounding areas

| Mitigation: Action/control | Responsibility |
|--|--|
| Obtain air emissions permit/license from CAPCO and ensure compliance with the requirements of this permit, once issued. | Eskom Obtain permit: Generation Environmental Management Ensure compliance: Medupi Power Station |
| Initiate a programme for the continuous monitoring of ambient concentrations of pollutants in the Marapong residential area well as areas surrounding the power station. The air quality monitoring equipment will be located at an appropriate position in the Marapong residential area and will be such as to provide continuous measurement of the following substances or mixtures of substances: Sulphur Dioxide (SO ₂); Nitrogen Dioxide (NO ₂); Particulate Matter (PM ₁₀ and PM _{2.5}); Ozone (O ₃); and Mercury (Hg). | Eskom: Generation Environmental Management and Sustainability & Innovation |
| Install, commission and operate any required SO ₂ abatement measures that may be necessary to ensure compliance with emission or ambient air quality standards published in the national Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004). | Eskom: Medupi power station |
| Investigate additional mitigation measures to further reduce sulphur dioxide emissions such as Flue Gas Desulphurisation technology. | Eskom |
| Maintain power station equipment according to industry standard in order to achieve required emission standards. | Eskom: Medupi Power Station |
| Manage ash disposal areas to minimise their potential for dust pollution. | Eskom: Medupi Power Station |
| Maintain all vehicles in a roadworthy condition. | Eskom: Medupi Power Station |
| Roads will be sealed and maintained to ensure that dust emissions are minimised. | Eskom: Medupi Power Station |
| Burning of waste material such as vegetation and old cleaning materials resulting from maintenance activities at a site is strictly prohibited. | Eskom: Medupi |
| In situations where firebreaks will be constructed to prevent fires spreading from the site as well as fires entering the site from adjacent land, these will be established in accordance with the National Veld and Forest Fires Act (Act No 101 of 1998). | Eskom: Medupi |
| Develop and implement an air pollution management plan for the power station. | Development: Generation Environmental Management Implementation: Medupi Power Station |

| | |
|------------------------------|---|
| Performance Indicator | <ul style="list-style-type: none"> » Compliance with ambient air quality limits, to be evaluated using measurements collected at ambient air quality monitoring stations located in the nearby residential areas. » Compliance with conditions and emission limits stipulated in the Atmospheric Emission Licence. » No complaints from affected residents or community regarding emissions once Medupi power station is fully operational. |
| Monitoring | <ul style="list-style-type: none"> » Continuous emission monitoring systems are to be installed on all units to measure emissions of SO₂, NO_x and PM, in addition to O₂ and volumetric flow rate. » Ambient air quality (SO₂, NO_x, PM₁₀, PM_{2.5} and O₃) and meteorology is to be continuously monitored at the Marapong ambient air quality monitoring station). » Fugitive dust emissions are to be monitored from the ash dump. » Results of the ambient air quality monitoring are to be reported quarterly to the relevant authority. » Emissions are to be reported monthly to the relevant authority. » A complaints register will be maintained, in which any complaints from residents/the community will be logged. Complaints will be investigated and, where appropriate, acted upon. » An incident reporting system will be used to record non-conformances to the EMP. |

OBJECTIVE: Minimisation of impacts on surface and groundwater resources

Power Station Water Use

An Integrated Water Use License (IWUL) has been issued by the Department of Water Affairs and Forestry for the operation of the Medupi Power Station (refer to Appendix B). This license permits the taking of a maximum water quantity of 25 000 m³/a from the Limpopo River, and the disposal of a maximum of 40 500 m³/a of waterwater from the Medupi Power Station complex.

The power station requires an assured reliable water source in order to generate sufficient energy to meet its demands. The Department of Water Affairs (DWA) provides the water at an assurance of 99,5% i.e. the probability of system failure occurring only once in 200 years.

Possible Sources of Contamination that may Impact on Groundwater or Surface Water

The possible sources of contamination or infrastructure that may impact on the groundwater or surface water were identified to be (Bohlweki Environmental, 2006):

| Infrastructure | Possible contamination source |
|-----------------------------------|--|
| Coal stockpiles | Potential acid generation area |
| Sewage plant and dams | Irrigation of effluent may impact on groundwater |
| Treated (de-ionized) water system | Brine added to fly ash for deposition on ash dump |
| Evaporation dams | Source of "poor" quality artificial recharge |
| Recovery (dirty water) dams | Overflow and irrigation may impact on groundwater |
| Bunker fuel oil | Oil enters water and requires treatment |
| Ash dump & ash dump toe dam | Potential source of leachate that will artificially recharge groundwater |
| Solid waste site | Source of leachate or poor quality water |

| | |
|-------------------------------------|--|
| Project component/s | List of project components affecting the objective: » Coal stockpiles » Raw water dam » Sewage plant and dams » Treated (de-ionized) water system » Evaporation dams » Recovery (dirty water) dams » Bunker fuel oil » Ash dump » Ash dump toe dam » Solid waste site |
| Potential Impact | » Contamination of surface and groundwater resources |
| Activity/risk source | » Poor quality water stored on site recharging the groundwater » Artificial recharge impacting on groundwater » Solid waste site (all waste transported to a licensed waste site until a licensed site is available) » Seepage below the ash dump » Poor quality surface water on site » Sewage facilities » Fuel (bunker) oil » Surface water supply » Coal stockyard |
| Mitigation: Target/Objective | » Ensure appropriate management and use of water resources » Minimise potential for impacts on surface and groundwater |

| Mitigation: Action/control | Responsibility |
|---|----------------|
| Obtain an integrated water use licence application from DWA for the water uses associated with the Medupi Power Station (refer to Appendix B). | Eskom |
| Drill, construct and maintain monitoring boreholes on site. The groundwater monitoring points must include a shallow (~10 m) and a deep (~30 m) pair of monitoring boreholes. The pair of monitoring boreholes must be designed and constructed to allow sampling of the shallow weathered aquifer and the deeper fractured rock aquifers. The monitoring boreholes must be located adjacent to the potential contaminant sources and approximately 30 m to 50 m down gradient of the identified sources. | Eskom |

| Mitigation: Action/control | Responsibility |
|--|----------------------|
| Undertake groundwater modelling and potential plume migration on an on-going basis to assess on-going risk reduction measures and potential impacts. | Eskom/specialist |
| Where water quality at monitoring locations is found to fall outside of the prescribed guideline levels, the source of the deviation must be investigated and corrective measures taken immediately. | Eskom |
| In accordance with the requirements of the National Water Act, contamination or pollution of surface or groundwater must be avoided (possible pollution sources include oil, petrol, cleaning materials, herbicides, power station "dirty water" and ash, etc.). | Eskom |
| All hazardous substances at the site shall be adequately stored and accurately identified, recorded, and labelled (that is, polychlorinated biphenyls – PCB/Askarel). | Eskom/ contractor |
| All waste to be disposed of at an appropriate waste facility by an appropriate contractor. | Eskom/ contractor |
| Spill kits will be made available on site for the immediate clean up of spills and leaks of contaminants. | Eskom |
| Spill response procedures to include removal/disposal of potentially contaminated materials to avoid secondary pollution of water sources. Contaminated materials to be disposed of at an appropriately licensed waste disposal site. | Eskom/ contractor |
| In the event of a major spill or leak of contaminants, the administering authority will be contacted immediately as per incident reporting procedures. | Eskom |

| | |
|------------------------------|---|
| Performance Indicator | <ul style="list-style-type: none"> » No contamination of surface and groundwater resources indicated by monitoring results. » All provisions of the National Water Act (No 36 of 1998) and the Water Use License issued in terms of this Act are adhered to. » No complaints from affected residents or community regarding water quality or quantity. |
| Monitoring | <ul style="list-style-type: none"> » Groundwater levels and hydrochemistry are to be monitored on a quarterly basis. » Parameters to be measured include: Depth (m), pH, EC (mS/m), Al (mg/l), B (mg/l), Ba (mg/l), Be (mg/l), Br (mg/l), Ca (mg/l), Cd (mg/l), Cl (mg/l), Co (mg/l), Cr (mg/l), Cu (mg/l), F (mg/l), Fe (mg/l), K (mg/l), Li (mg/l), Mg (mg/l), Mn (mg/l), Mo (mg/l), Na (mg/l), Ni (mg/l), NO₂ (as N), NO₃ (as N), Pb (mg/l), PO₄ (mg/l), Se (mg/l), SO₄ (mg/l), Sr (mg/l), V (mg/l), Zn (mg/l) |

OBJECTIVE: Minimisation of visual impacts

Sources of visual impact associated with the power station include the power station infrastructure as well as lighting which may be associated with the power station operation.

The power station will be similar to the existing Matimba Power Station in terms of operations, design and dimensions. The structure's dimensions include: two smoke stacks (a maximum of 250 m high) and a core power station building that is 130 m high and approximately 500 m wide. The ash dump will be approximately 45 m to 50 m high, about 2 000 m long and 600 m wide. Ancillary infrastructure which will also pose a visual impact include the coal and ash conveyor systems.

| | |
|-------------------------------------|--|
| Project component/s | List of project components affecting the objective: » Smoke stacks » Power station building » Ash dams » Coal stockpiles » Conveyor Belts |
| Potential Impact | » Visual intrusion on surrounding areas |
| Activity/risk source | » Size/scale of power station stacks (~250 m in height) and building (~130 m in height) » Size/scale of ash dams » Associated lighting » Conveyor systems |
| Mitigation: Target/Objective | » To minimise potential for visual impact » Minimise contrast with surrounding environment and visibility of the power station |

| Mitigation: Action/control | Responsibility |
|---|--------------------------|
| Ensure careful planning and sensitive placement of any light fixtures throughout the operational phase of the power station, and ensure the fitment of covers and shields designed to contain, rather than spread the light. | Eskom/ lighting engineer |
| Periodic adjustment of lighting shields or covers to compensate for the movement of the ash depositing device. | Eskom |
| Ensure timely maintenance of the power station, ancillary infrastructure and the general surrounds of the property (gardens, access roads, etc.) in order to prevent the visual impact of degradation and perceived poor management. | Eskom |
| Use of overtly contrasting and bright colours will be avoided when painting the cladding of the power station. Natural hues that compliment the natural environment (i.e. light sky blue where the facility is seen against the skyline | Eskom |

| Mitigation: Action/control | Responsibility |
|--|----------------|
| or pale green where it is seen against vegetation cover) will be used. | |
| Any removal of natural vegetation associated with the operation and maintenance activities will be limited to the bare minimum and should not be undertaken without proper planning and delineation. | Eskom |

| | |
|------------------------------|--|
| Performance Indicator | <ul style="list-style-type: none"> » Minimised visual intrusion on surrounding areas. » Minimised visual impact associated with lighting of the power station. |
| Monitoring | <ul style="list-style-type: none"> » Ensure that adequate safety lighting is installed and is functional at all times. |

OBJECTIVE: Maintain the noise levels around the power station site within acceptable levels and minimise the impact on residential areas and communities

Sources of noise associated with the power station (as identified through the EIA) include the power station itself, the associated conveyor systems, the ash dump spreader operations, the sewage works and traffic associated with the operation of the power station.

Sensitive Receptors

Existing residential areas in the study area have been defined as noise sensitive land uses. These areas include:

- » Town of Lephalale. The nearest section of the town to the study area namely Onverwacht Township lies approximately 15 km to the east of the Medupi Power Station.
- » Marapong Township, which lies 8,5 km to the north-east of the Medupi Power Station.
- » Several farmhouses and farm labourer houses located throughout the area surrounding the power station.

| | |
|-----------------------------|--|
| Project component/s | List of project components affecting the objective: <ul style="list-style-type: none"> » Cooling fans » Coal silo and conveyor belt systems » Ash dump spreader operations » Operational traffic » Sewage works serving power station |
| Potential Impact | <ul style="list-style-type: none"> » Increased noise levels in the surrounding areas, noise nuisance and sleep disturbance of the affected communities |
| Activity/risk source | <ul style="list-style-type: none"> » Power station components (as listed above) |
| Mitigation: | <ul style="list-style-type: none"> » To minimise noise levels generated by the facility as far as possible |

Target/Objective » To minimise impacts on identified noise sensitive areas

| Mitigation: Action/control | Responsibility |
|---|----------------|
| Ensure that all the necessary acoustic design aspects required are installed and maintained in order that the overall generated noise level from the new installation does not exceed a noise level of 70dBA (just inside the property boundary). | Eskom |
| The latest technology incorporating maximum noise mitigating measures for the power station components should be implemented into the system. | Eskom |
| The design process is to consider, inter alia, the following aspects: <ul style="list-style-type: none"> * The position and orientation of buildings on the site. * The design of the buildings to minimise the transmission of noise from the inside to the outdoors. * The insulation of particularly noisy new plant and equipment. | Eskom |
| Farm labourer houses affected should be relocated, unless these are no longer required or uninhabited. | Eskom |
| Maintain power station equipment according to industry standard. | Eskom |
| Use the National Noise Control Regulations and SANS 10103 as the main guidelines for addressing the potential noise impact associated with the operation of the power station. | Eskom |

| | |
|------------------------------|--|
| Performance Indicator | » No complaints from residents of surrounding areas. » A Complaints register should be kept on site. |
| Monitoring | » Undertake routine assessments of noise levels to confirm if adherence to SANS guidelines is being met. |

OBJECTIVE: Maintenance of power station property

In order to ensure the long-term environmental integrity of the site following construction, maintenance of the power station property (including all areas rehabilitated post-construction) must be undertaken.

| | |
|-----------------------------|--|
| Project component/s | List of project components affecting the objective: <ul style="list-style-type: none"> » Power station property (including access roads, fences and access control points) » Areas rehabilitated post-construction |
| Potential Impact | » Environmental integrity of site undermined resulting in reduced visual aesthetics, erosion, compromised land capability and the requirement for on-going management intervention |
| Activity/risk source | » Power station property » Areas disturbed during construction |

| | |
|---|--|
| Mitigation: Target/Objective | <ul style="list-style-type: none"> » To undertake power station property is maintained such that environmental integrity is ensured » To ensure and encourage site rehabilitation of disturbed areas |
|---|--|

| Mitigation: Action/control | Responsibility |
|---|-----------------------|
| Clearly demarcate the boundaries of the Eskom site to ensure that the whole site is maintained throughout the operational phase (the site usually extends far beyond the security fence). | Eskom |
| Protected or endangered plant and animal species occurring on Eskom sites and servitudes shall be identified and protected from Eskom's activities or plant. Permits shall be obtained from the relevant authority for the clearing of protected plants. | Eskom |
| A site rehabilitation and landscaping program will be implemented. Indigenous plants will be used in landscaping and rehabilitation activities. | Eskom |
| Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works will be addressed on a continual basis, through an alien vegetation control and monitoring programme. | Eskom |
| <p>An alien control and monitoring programme will be developed and implemented. The following elements will be included in such a programme:</p> <ul style="list-style-type: none"> » The active control of all alien invasive species by means of manual removal, ring-barking, chemical control or a combination of these methods. » The bigger trunks and branches will be removed while the smaller branches can be used as a soil stabiliser against wind erosion in exposed areas, while providing micro-habitat for seedling establishment. » Rehabilitation of the cleared areas, starting with the establishment of a grass cover and phasing in the re-establishment of indigenous species by sowing in of smoked treated seed or pre-emerged seed. » All emergent seedlings will be removed by hand and re-sprouting from existing rootstock will be chemically treated in a continual monitoring and follow-up programme. | Eskom/ specialist |
| The legal requirements in terms of herbicide usage will be adhered to. Herbicide usage shall be recorded and monitored in order to manage and control the damage to vegetation and associated areas. | Eskom |
| A botanist familiar with the vegetation of the area should monitor the rehabilitation success of areas disturbed by construction on an annual basis, and make recommendations on how to improve any problem areas. Vegetation will be replanted in areas where vegetation cover has decreased due to dieback, or has failed otherwise to successfully establish. | Eskom/ Specialist |
| Access roads and site ground shall be monitored for deterioration and possible erosion. Soil erosion shall be prevented at all times. Proactive measures shall be implemented to curb erosion and to rehabilitate eroded areas. | Eskom |
| No fires shall be made for waste destruction. Firebreaks shall be constructed to prevent fires from spreading from or into the site. Regulations in respect of veld burning issued under the Conservation of Agricultural Resources Act (Act | Eskom |

| Mitigation: Action/control | Responsibility |
|---|----------------|
| No 43 of 1983) section 6 (j) shall be adhered to. These shall align with the Forest Act (Act No 122 of 1984) and the National Veld and Forest Fires Act (Act No 101 of 1998). | |

| | |
|------------------------------|--|
| Performance Indicator | <ul style="list-style-type: none"> » Power station property maintained in a good condition. » No soil erosion. » Successful rehabilitation of disturbed areas. » No alien or invader plant species located on the power station property. |
| Monitoring | <ul style="list-style-type: none"> » Monitoring of alien and invasive species on the property. » Monitoring of plant growth in rehabilitated areas will be conducted on a weekly basis during initial phases and on a monthly basis when plants have become firmly established. » On-going alien plant and weed monitoring and eradication should be undertaken on an annual basis. |

OBJECTIVE: Appropriate handling and management of hazardous substances and waste

The operation and maintenance of the power station will involve the generation of limited waste products. The main wastes expected to be generated by the operation and maintenance activities include:

- » general solid waste
- » hazardous waste
- » liquid waste
- » sewage

| | |
|-------------------------------------|---|
| Project component/s | List of project components affecting the objective: <ul style="list-style-type: none"> » Power station and associated infrastructure |
| Potential Impact | <ul style="list-style-type: none"> » Inefficient use of resources resulting in excessive waste generation » Litter or contamination of the site or water through poor waste management and hazardous substance handling practices |
| Activity/risk source | <ul style="list-style-type: none"> » Office and workshop facilities at the power station » Fuel and oil storage » Ash dump » Pollution control dams |
| Mitigation: Target/Objective | <ul style="list-style-type: none"> » To comply with waste management guidelines » To minimise production of waste » To ensure appropriate waste disposal |

» To avoid environmental harm from waste disposal

| Mitigation: Action/control | Responsibility |
|---|-----------------------------------|
| Waste streams will be separated at source (i.e. general from hazardous waste) and stored in appropriate waste disposal containers. | Eskom |
| General waste will be recycled or sold to a recycling merchant, where possible, or disposed of at an appropriately licensed waste disposal facility. | Eskom/waste management contractor |
| Hazardous waste (including hydrocarbons) will be stored and disposed of separately. | Eskom/waste management contractor |
| Hazardous substances will be stored in sealed containers within a clearly demarcated designated area. | Eskom |
| Storage areas for hazardous substances will be appropriately sealed and bunded. | Eskom |
| All structures and/or components replaced during maintenance activities will be appropriately disposed of at an appropriately licensed waste disposal site or sold to a recycling merchant for recycling. | Eskom |
| Care will be taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Handling of these materials will take within an appropriately sealed and bunded area. Should any accidental spillage take place, it will be cleaned up according to specified standards regarding bioremediation. | Eskom |
| Waste handling, collection and disposal operations will be managed and controlled by a waste management contractor. | Eskom/waste management contractor |
| Wastewater: Water from bunds and oily water from oil/water separator will be removed by a licensed contractor. | Eskom/waste contractor |
| Oil and water separator must effectively remove oil from water so that only contaminated oil is removed from site by contractor. | Eskom |
| Used oils and chemicals: » Appropriate disposal shall be arranged with a licensed facility in consultation with the administering authority. » Waste will be stored and handled according to the relevant legislation and regulations. | Eskom/waste management contractor |
| Disposal of waste will be in accordance with relevant legislative requirements, including the use of licensed contractors. | Eskom |

| | |
|------------------------------|--|
| Performance Indicator | » No complaints received regarding waste on site or indiscriminate dumping. » Internal site audits identifying that waste segregation recycling and reuse is occurring appropriately. » Provision of all appropriate waste manifests. » No contamination of soil, water or air. |
|------------------------------|--|

| | |
|-------------------|---|
| Monitoring | <ul style="list-style-type: none"> » Waste collection will be monitored on a regular basis. » Waste documentation will be completed and available for inspection on request. » An incidents/complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon. » Regular reports on exact quantities of all waste streams exiting the site will be compiled by the waste management contractor and monitored by the SHE Representative. All appropriate waste disposal certificates accompany the monthly reports. |
|-------------------|---|

OBJECTIVE: Effective management and communication with affected communities

The process of communication and consultation with the community representatives must be maintained throughout the operation and maintenance phase of the power station.

| | |
|-------------------------------------|--|
| Project component/s | List of project components affecting the objective: » Power station and associated infrastructure |
| Potential Impact | » Community opposition and/or attitude formation towards the operation of the power station |
| Activity/risk source | » Power station operation |
| Mitigation: Target/Objective | » To ensure the on-going effective management and communication with affected communities |

| Mitigation: Action/control | Responsibility |
|---|----------------|
| A list of the neighbouring properties, property owners' names, addresses, and telephone numbers, and land use will be drawn up. This will be kept on site and updated on a continuous basis in order to ensure effective channels of communication. | Eskom |
| An emergency plan of action will be concluded with the neighbouring property owners and the relevant authorities in the case of an emergency (veld fire, oil spillage, water contamination, etc.). Eskom contact names and telephone numbers will be given to all neighbours, and vice versa. | Eskom |
| Removal (pilfering) of agricultural products (sugar cane, fruit, vegetables, stock, fire wood, etc.) and poaching on surrounding properties are prohibited. | Eskom |
| Environmental clauses will be included in contract documents for all contractors (the services of contractors with proven track records of sound environmental performance shall be used). | Eskom |

| | |
|------------------------------|--|
| Performance Indicator | » Appropriate communication channels established between Eskom and affected communities. |
| Monitoring | » An incidents/complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon. |

**APPENDIX A:
SITE LAYOUT PLAN**

**APPENDIX B:
ENVIRONMENTAL AUTHORISATIONS**

**APPENDIX C:
ESKOM'S OPERATIONAL SPECIFICATIONS**

**APPENDIX D:
PLANT SPECIES DEFINED AS CATEGORY 1 AND 2 IN TERMS
OF THE CONSERVATION OF AGRICULTURAL RESOURCES ACT
(ACT NO 43 OF 1983)**