
PROPOSED RAW WATER PIPELINE FOR MEDUPI POWER STATION, LIMPOPO PROVINCE

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (EMP):

ADDENDUM TO THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE MEDUPI COAL-FIRED POWER STATION IN THE LEPHALALE AREA, LIMPOPO PROVINCE (REVISION 2 OF THE EMP DATED SEPTEMBER 2010)

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PROJECT DETAILS

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Title	:	Environmental Basic Assessment Process Environmental Management Plan: Proposed New Raw Water Pipeline for Medupi Power Station Across a non-perennial stream, Limpopo Province.
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Client	:	Eskom Holdings Limited
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DEFINITIONS AND TERMINOLOGY

The following should be read in conjunction with the Glossary of Terms and Abbreviations section of the Medupi Power Station Construction EMP (refer to page 2 of Medupi Power Station Construction EMP).

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 of time 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.

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.

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.

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 general public.

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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OVERVIEW OF THE PROJECT

CHAPTER 1

1.1. Description of the Proposed Project

In order to optimise operations at the Medupi Power Station complex (located near Lephalale in Limpopo Province), Eskom Holdings Limited is currently undertaking the relocation of the planned new water reservoir from the Medupi Power Station complex to the adjacent farm Kuipersbult. Pipelines from the water source to the new reservoir as well as from the new reservoir to Medupi Power Station are required to be constructed.

Environmental Authorisation for the construction of the raw water reservoir and associated pipelines was issued by the Department of Environmental Affairs (DEA) on the on 27 October 2008 (DEA reference number 12/12/20/1139). Due to technical considerations, an application for amendment to the pipeline alignment route was lodged and Environmental Authorisation received on 4 August 2010. During the final design of the pipeline, it has been determined that a non-perennial stream is required to be crossed by the water supply pipeline. This portion of pipeline, which is the subject of this report, is approximately 35 m on either side of the centre line of the stream, and is required to link to the other authorised portions of the water supply pipeline. This Environmental Management Plan (EMP) will therefore focus only on activities that are associated with the crossing of this section of the pipeline. This section of the pipeline (study area) is located to the south of the Medupi Power Station construction site, approximately 11.5 km due east of Onverwacht on the Farm Kuipersbult 511. The pipeline will run parallel to and immediately to the south of a minor, unnamed tar road, and to the north of a small farm dam.

1.2. Potential Environmental Impacts associated with the Construction Phase

Based on the findings of the studies undertaken, in terms of environmental constraints identified through the initial Basic Assessment process, no environmental fatal flaws have been identified as a result of the construction of the proposed raw water pipeline across the non-perennial stream. However, a number of issues have been identified and evaluated, including:

- » Removal and loss of vegetation;
- » Erosion and increased sediment transport into the dam;
- » Water quality deterioration; and
- » Increased flows.

Where identified issues are considered to be potentially significant, recommendations have been made with regards to the implementation of mitigation measures. Impacts identified are anticipated to have impacts of low significance. Potential impacts

associated with the construction will definitely occur, and will be of short duration. Impacts associated with the operation phase are dependent on the management of the pipeline.

Potential impacts identified can be minimised through the implementation of practical and appropriate mitigation measures detailed in Medupi Power Station Construction EMP (Revision 2 dated September 2010) as well as this addendum to the approved EMP.

PURPOSE & OBJECTIVES OF THE EMP ADDENDUM

CHAPTER 2

An Environmental Management Plan (EMP) provides a link between the impacts predicted and mitigation measures recommended within the 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.

Eskom have an approved EMP in place for the construction activities associated with the Medupi Power Station (refer to the Construction EMP (Revision 2 dated September 2010)). This EMP is currently successfully utilised and in force on the construction site, and will continue to be applied to all construction activities associated with the bigger project. Regular compliance audits to the EMP requirements are undertaken by the Environmental Control Officer, and external audits are scheduled to commence soon and extend for the duration of the construction phase. 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 the pipeline construction across the non-perennial stream only.

2.1. Purpose of the EMP and associated Addendums

The purpose of the Medupi Power Station Construction EMP (Revision 2 dated September 2010) as well as this addendum to the approved EMP is to help ensure 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 draft EMP has the following objectives:

- » To outline mitigation measures and environmental specifications which are required to be implemented for the construction phase of the project in order to minimise and to manage the extent of environmental impacts associated with the project.
- » To ensure that the construction phase does 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 construction phase.

- » 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.

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 localised project.

This EMP addendum for construction activities has been compiled in accordance with Section 46 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 raw water pipeline, it is important that this document be read in conjunction with the Basic Assessment Report (November 2010) and the Environmental Authorisation (once issued). This will contextualise the EMP addendum. This addendum to the approved EMP must be read in conjunction with the relevant sections and appendices of the Medupi Power Station Construction EMP (Revision 2 dated September 2010).

2.2. Structure of the Addendum to the EMP

Several procedures are necessary for Eskom to achieve environmental compliance for the construction of the proposed raw water pipeline within the Medupi Power Station complex. These are described in further detail within the Medupi Power Station Construction EMP (Revision 2 dated September 2010). In order to ensure site-specific compliance, 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 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	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 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

2.3. Project Team

This draft EMP was compiled by:

EMP Compiler:	Bongani Khupe Jo-Anne Thomas	Savannah Environmental
Specialists:	Dieter Kassier Allan Batchelor	Wetland Consulting Services
Eskom environmental inputs:	Kubentheran Nair	Eskom Generation: Environmental Management

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 Plans for a number of projects throughout South Africa.

MANAGEMENT PLAN: CONSTRUCTION**CHAPTER 3**

Construction activities associated with the proposed development may cause a low to medium impact on a local scale for a very short duration. These impacts would relate to construction activities and potentially include removal and loss of vegetation, erosion and increased sediment transport into the dam, water quality deterioration, and increased flows. The construction activities of the proposed raw water pipeline will take place simultaneously with the construction activities of the Medupi Power Station and proposed raw water reservoirs, any impacts resulting from the construction of the proposed raw water pipeline can be adequately mitigated by the appropriate procedures as outlined below, and as per the Environmental Management Plan (and amendments) for the Medupi Power Station complex.

3.1. Overall Goal for Construction

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

- » Ensures that construction activities are properly managed in respect of environmental aspects and impacts.
- » Minimises the impact on the vegetation and habitats within the area.

This addendum to the approved EMP must be read in conjunction with the relevant sections and appendices of the Medupi Power Station Construction EMP (Revision 2 dated September 2010). Generic environmental specifications and guidelines included within this approved EMP are not repeated here.

3.2. Objectives for Construction

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

OBJECTIVE: Minimise the extent on surface disturbance

Project component	Construction phase of the pipeline
Potential impact	Construction activities will result in the removal of vegetation, as well as disturbance and destruction of vegetation within the construction servitude.
Activity / risk source	Injudicious clearing of vegetation; extending activities outside the construction servitude
Mitigation: Target /	All surface disturbances should be limited to a

Objective	construction servitude no wider than 15m. No disturbance of any kind associated with the construction activities may take place outside this servitude.
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Mitigation: Action / Control	Responsibility	Timeframe
The Environmental Best Practice Specifications for Construction, as published by the DWAF (2005) in the Integrated Environmental Management Series should be fully implemented (this document is available from the DWA website: http://www.dwa.gov.za/iem.aspx).	Eskom	Construction Phase
As per the best practice guidelines, a construction servitude width of 15m is permitted for machine excavation, and 6m for manual excavation. If required, the ECO can specify a smaller servitude. The servitude must accommodate all construction related activities, including materials storage, access routes, soil stockpiles etc.	Eskom	Pre-construction Phase
The construction servitude should be identified and be clearly demarcated prior to the commencement of any construction activities on site and before the arrival of construction machinery.	Eskom	Pre-construction Phase
The demarcations should stay in place for the entire construction phase and no personnel, construction machinery or construction material should move or be placed outside the demarcated construction servitude.	Eskom	Full duration of project.
Care should be taken not to unnecessarily remove or damage any large trees within or adjacent to the construction servitude.	Eskom	Construction Phase
Following completion of construction activities, a clean-up operation of the construction servitude and 100m either side of the servitude should be undertaken to remove all litter and construction related waste.	Eskom	Construction Phase

Performance Indicator	No disturbance of any sort may take place outside the clearly demarcated servitude.
Monitoring	This should be monitored daily by the ECO.

OBJECTIVE: Prevent erosion

Project component	Construction phase of the pipeline
Potential impact	Construction activities will result in disturbances to the soil as well as removal of vegetation, rendering the soils susceptible to erosion, especially within the riparian zone crossing. Surface run-off due to rainfall events during the construction process will result in increased sediment transport into the dam, contributing to increased turbidity in the dam.
Activity / risk source	Construction during periods of rainfall; lack of adequate rehabilitation; lack of installation of mitigation measures.
Mitigation: Target / Objective	No visible erosion scars should form during the construction process, and no erosion damage should be visible 1 year after completion of construction. Successful vegetation establishment after 1 year.

Mitigation: Action / Control	Responsibility	Timeframe
Ideally, construction activities should thus be undertaken during the dry season (May to September), though it is understood that the pipeline is required urgently and that this might not be possible. Construction of the pipeline crossing should thus be done in as short a period as possible, preferably within 2 days (excavation of trench to trench closure), to minimise the chances of a large rainfall event coinciding with construction of the crossing.	Eskom	Construction Phase
Following construction, the active channel should be shaped to approximate pre-construction conditions. No flow concentration should occur as a result of the crossing, and the slope of the active channel should not be altered.	Eskom	Construction Phase

It is also recommended that a rock packed mattress be constructed immediately downslope of the road culvert to prevent deeper scouring of the incised channel and possible erosion and exposure of the pipeline.	Eskom	Construction Phase
Re-vegetation of all bare soil areas with indigenous species.	Eskom	Construction Phase

Performance Indicator	No visible erosion scars should form during the construction process, and no erosion damage should be visible 1 year after completion of construction. Successful vegetation establishment after 1 year.
Monitoring	This should be monitored daily by the ECO, as well as after completion of the construction and again a year after construction.

OBJECTIVE: Prevent deterioration of water quality

Project component	Construction phase of the pipeline.
Potential impact	Water quality deterioration.
Activity / risk source	Spillages of hazardous/polluting substances.
Mitigation: Target / Objective	Prevent the deterioration of water quality. It is difficult to set targets for water quality with no knowledge of background/status quo water quality. As such, mitigation measures are recommended and the target should be the full implementation of the mitigation measures.

Mitigation: Action / Control	Responsibility	Timeframe
To prevent spillages, no diesel or oil should be stored on site, other than what is required for work undertaken during the course of 1 day. Such diesel and oil should be stored in a way that will allow any spillages to be easily and quickly isolated and prevent contamination of any soils or water. Spills should be clean-up with approved absorbent material such as "Drizit" or "Spillsorb". These should be kept in sufficient quantities on site to deal with small spills. Absorbent material and contaminated soil	Eskom	Construction Phase

should be disposed off at a registered hazardous waste site.		
<p>Should cement be used on site, the following guidelines apply:</p> <ul style="list-style-type: none"> • Carefully control all on-site operations that involve the use of cement and concrete (this applies to areas other than the batching plant). • Limit cement and concrete mixing to single sites where possible. • Use plastic trays or liners when mixing cement and concrete: Do not mix cement and concrete directly on the ground. • Dispose of all visible remains of excess cement and concrete after the completion of tasks. Dispose of in the approved manner (solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste). 	Eskom	Construction Phase

Performance Indicator	It is difficult to set targets for water quality with no knowledge of background/status quo water quality. As such, mitigation measures are recommended and the target should be the full implementation of the mitigation measures. All conditions of the IWUL should also be met.
Monitoring	Daily monitoring by the ECO.

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. 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 Project Manager/Site Manager, setting out the plant, materials, labour and method the Contractor proposes using to conduct an activity, in such detail that the Project Manager/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”. A Method Statement must cover applicable details with regards 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 Project Manager/Site Manager.

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 arrangement 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.

