Lidwala
Environmental & Planning Services

Eskom Holdings Limited

Eskom

Environmental Impact Assessment for the Proposed Expansion of Ash Disposal Facilities at Hendrina Power Station, Mpumalanga Province

SCREENING REPORT

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Screening Report

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1.1 Why Extend The Hendrina Power Station Ash Dams?

Eskom's core business is the generation, transmission and distribution of electricity throughout South Africa. Electricity by its nature cannot be stored and must be used as it is generated. Therefore electricity is generated according to supply-demand requirements. The reliable provision of electricity by Eskom is critical to industrial development and poverty alleviation in the country.

If Eskom is to meet its mandate and commitment to supply the ever-increasing needs of end-users in South Africa, it has to continually expand its infrastructure of generation capacity and transmission and distribution powerlines. This expansion includes not only the building of new power stations but also expanding and upgrading existing power stations to extend their life.

The Hendrina Power Station, in the Mpumalanga Province currently uses a wet ashing system for the disposal of ash . Hendrina Power Station currently have five ash dams, of which two ash dams (Ash dam 3 and 5) are currently in operation, the other three dams (Ash dam 1, 2 & 4) are not in use due to either having reached their full capacity (Dams 1 and 4) or due to stability issues (Dam 2). At the current rate of disposal Dams 3 and 5 will reach full capacity within five years (from the end of 2010). The Hendrina Power Station is anticipated to ash approximately 64.2 million m3 until the end of its life span which is currently estimated to be 2035.

It is clear that the existing ashing facilities are not able to provide sufficient capacity for this amount of ash in order to ensure that the power station can operate for its full life span. Therefore, Hendrina Power Station propose to extend its ashing facilities and associated infrastructure with the following development specifications:

- Airspace of 43.3 million m3
- Ground footprint of 139 ha for the ash dam
- Ground footprint of approximately 70 ha for associated infrastructure such as Ash Water Return dams and Seepage dams

The need for this is extension will allow station to continue ashing in an environmentally responsible way for life of station, which is related to the high ash content in the coal and an urgent need to extend station life.

1.2 What Does The Hendrina Ash Dam Extension Project Entail?

The project includes the expansion of the Ash Dam facilities at the Hendrina Power Station in the Mpumalanga Province. The ash dam expansion will need to be big enough to dispose of 43.3 million m^3. The footprint of the proposed expansion is estimated to be in

the order of 209 ha however the final shape and design of the footprint is still to be determined through conceptual engineering and design.

It is envisaged that the proposed power station will continue to utilise a wet ashing system, however this will be investigated during the EIA process. In addition to the expansion of the ash dams the project will also include the expansion of the relevant infrastructure associated with the ashing system, such as Ash water dams, pipelines, stormwater trenches, seepage water collection systems, pump stations, seepage dams etc.

2 SCREENING ANALYSIS METHODOLOGY

2.1 Introduction

A screening study was initiated upfront in the process in order to identify potential ideal/preferred areas within the study area that would be suitable for use as alternative sites for the proposed new ash dam. The study area was demarcated using an 8 km radius around the Hendrina Power Station. A further 5 km radius was also included in the study as this is anticipated to be the area within which no substantial additional costs would be incurred in terms of the construction and operation of the proposed new ash dam.

In order to ensure that sites were identified in the most objective manner possible, a sensitivity mapping exercise was undertaken for the study area. The purpose of such an exercise was to identify suitable areas within the study area that could accommodate the proposed new ash dam and associated infrastructure and to pro-actively identify sensitive areas (i.e. fatal flaws) that should ideally be avoided. The sites identified during this exercise will be evaluated during the scoping phase of the project

2.2 Sensitivity Mapping

The qualitative sensitivity mapping exercise divided the study area into three categories *viz.* lower, medium and higher sensitivity areas. A sensitivity map for the study area was requested from each of the following specialist fields:

Biophysical
- Groundwater
- Surface Water
- Fauna and Flora
- Avifauna

Social
- Social
- Heritage
- Visual

Table 2.1 provides a description of the various categories used in the sensitivity mapping.

Table 2.1 Description of the various categories used in the sensitivity mapping

Study Component	Category	Description
Biophysical Components		
Fauna and Flora	Higher Sensitivity	Areas of atypical habitat, conservation areas, riparian and wetland habitat, known presence of plant species of concern, not regarded suitable for proposed development, expected impacts likely to be unacceptable on a local or regional scale, adverse impact not possible to mitigate
	Medium Sensitivity	Associated with natural/ pristine regional habitat, moderate likelihood of harbouring species and habitat of concern, moderate suitability for proposed development. Even with careful site selection, expected impacts could be potentially significant, but possible to mitigate through site-specific mitigation measures and site selection
	Lower Sensitivity	Associated with transformed habitat, not likely to contain biodiversity attributes of sensitivity, considered suitable for proposed development, expected impacts regarded to be of low significance, possible to mitigate through generic mitigation measures. The status of specific areas is also influenced by the presence of nearby sites of sensitivity
Surface Water	Higher Sensitivity	100 m zone from the edge of the permanent wet zone for valley bottom and pan systems.
	Medium Sensitivity	100 m buffer zone from the edge of the temporary zones, or the edge of the riparian zones.
	Lower Sensitivity	Higher lying areas, reflecting terrestrial soils and no obligate, facultative hydrophilic vegetation
Ground Water[1]	Higher Sensitivity	Those areas within the 250 m surface water buffer zone.
	Medium Sensitivity	Areas falling within the area classified as D3, but still outside of all areas within the 250 m surface water buffer zone.
	Lower Sensitivity	Areas falling outside of the 250 m buffer around surface water features, and outside of the area classified as "D3" on the general hydrogeology map series (GRA1 data)

[1] Depth of groundwater across the site is not known with accuracy, but is almost certainly shallower closer to surface water features - hence the higher sensitivity assigned to a 250 m buffer zone adjacent to surface water features. Permeability (rate at which water can "penetrate" ground) is covered by the DWA hydrogeological classification - essentially the same across the site ("D2"), except for the small area classified as "D3" - which has higher borehole yields and likely higher permeability, and has therefore been classified as medium sensitivity rather than lower sensitivity. The 250 m buffer is a horizontal distance, not a depth.

Study Component	Category	Description
Avifauna	Higher Sensitivity	Wetlands, rivers and streams, farm dams, CWAC sites,
	Medium Sensitivity	Remaining cultivated lands and farm lands
	Lower Sensitivity	Built up areas, roads, mines, existing ash dams, railway lines and high voltage power lines
Social Components		
Social: Distance from proposed Ash Dam	Higher Sensitivity	500 – 1000 meters
	Medium Sensitivity	1000 – 1500 meters
	Lower Sensitivity	1500 meters or more
Social: Settlement Type	Higher Sensitivity	Residential
	Medium Sensitivity	Informal Community
	Lower Sensitivity	Single Housing
Social: Settlement Farms	Higher Sensitivity	Community
	Medium Sensitivity	Farm House
	Lower Sensitivity	No housing
Social: Health Risk – air quality	Higher Sensitivity	High risk within radius of 500 – 1000m
	Medium Sensitivity	Medium risk within radius of 1000 – 1500m
	Lower Sensitivity	Low risk within radius of more than 1500m
Social: Dust pollution (visibility/health/quality)	Higher Sensitivity	Above legal standard
	Medium Sensitivity	Within limits
	Lower Sensitivity	Below legal limits
Social: Visual Impact (quality of life)	Higher Sensitivity	Within 1000m
	Medium Sensitivity	Within 1500m
	Lower Sensitivity	Within 3000m
Social: Economic impact on agriculture	Higher Sensitivity	Private farmland
	Medium Sensitivity	Eskom land (but farmed)
	Lower Sensitivity	Denuded land
Heritage	Higher Sensitivity	Heritage resources with qualities so exceptional that they are of special national significance.
	Medium Sensitivity	Heritage resources which, although forming part of the national state, can be considered to have special qualities which make them significant within the context of a province or a region. Medium sensitivity areas also include areas where little work has been undertaken and therefore the presence of significant heritage resources is not known.