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PROPOSED ASH FACILITIES

ESKOM HENDRINA

SITE EVALUATION REPORT

REV A

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PROPOSED ASH FACILITIES
ESKOM HENDRINA
SITE EVALUATION REPORT STUDY
REV A

1. Conceptual Ash Dump Design Study

This report was compiled by Alan Robinson Consulting Engineers in his capacity as a Civil, Geotechnical and Tailings Design Specialist.

1.1 Introduction

The Conceptual Design has been carried out on selected sites to accommodate 43 million tons of ash for proposed new ash disposal facility at the Hendrina Power Station. The purpose of this report is to provide conceptual design information for the discard facilities for the ash facilities and associated pollution control structures for the last 17 years of the operational life of the Hendrina Power Station.

Five sites were identified in the screening phase of the study, and have been designated A to E in this report. Each of the sites was considered in the light of the current available information, leading to a final recommendation as to which sites should be considered in more detail.

1.2 Scope and Limitations

In the report by ECsoft PTY (Ltd), in September 2010, the current ash facilities were evaluated and recommendations given that once Ash dams 3, 4 and 5 have reached their capacity, a new facility or facilities would be required to cater for the ash to 2035.

At this stage the main limitation on the positioning and sizing of the dam, relates to the following factors:

- a) No Geotechnical information is available
- b) 2m contours were used to determine the general topography, in order to assess the position, and suitability of the sites
- c) No Geohydrological or hydrological information is available in order to be able to size the pollution control dams effectively
- d) No water balance or water usage criteria is available
- e) No Geotechnical information is available in regard to the ash quality or its geotechnical properties
- f) No information is available with regard to the ownership or possibility of acquiring the properties has been looked into

1.3 Methodology

Each site was looked at purely in terms of its physical constraints and topography in relation to the current facilities in choosing its suitability. Of the five sites studied, two present themselves as the most suitable and probably the only two on which it is practically possible to put a new ash facility. It is onto these, that a possible ash dump configuration has been placed, as shown on the attached drawings.

1.3.1 Criteria used to rank the Sites

The following criteria has been used to rank the alternative sites:

- a) Whether there are any physical or natural constraints
- b) Whether the topography and ground slope is suitable
- c) Whether the site is close to the existing facilities

1.3.2 Site Preference Rating (SPR)

Each site was scored in accordance with the following ranking:

- Preferred (4)
- Acceptable (3)
- Not preferred (2)
- No-go (1)

1.4 Regional Overview

The five sites which were identified, have been used in this study, but only two have been considered for practical reasons.

1.5 Site Specific Results

The five sites that were identified are discussed briefly below, together with the specific characteristics:

- Site A appears to be situated on Optimum Mine open cast area, and therefore is not a viable option.
- Site B is within an existing mealie field, and looks to be the second most suitable.
- Site C is about 3kms from the site and is probably too remote to consider.
- Site D is just east of Total coal's Tumela Mine and on the "opposite" side of the river to the current facilities – too inaccessible.
- Site E appears to be the most suitable, because it is close to existing infrastructure,

and all other sites would need their own pollution control dams.

From an inspection of the sites the rankings given in the tables below have been determined. Some sites are precluded because of the proximity of existing mines or other physical constraints.

Table 1.1 - Site A

Site Preference Ranking	Criteria
(1)	Physical
(3)	Topographical
(2)	Locality
Total (6)	

Table 1.2 - Site B

Site Preference Ranking	Criteria
(3)	Physical
(3)	Topographical
(3)	Locality
Total (9)	

Table 1.3 - Site C

Site Preference Ranking	Criteria
(3)	Physical
(3)	Topographical
(2)	Locality
Total (8)	

Table 1.4 - Site D

Site Preference Ranking	Criteria
(3)	Physical
(3)	Topographical
(2)	Locality
Total (8)	

Table 1.5 - Site E

Site Preference Ranking	Criteria
(3)	Physical
(3)	Topographical
(4)	Locality
Total (10)	

Taking the criteria described above into account, it is our view that Site E is the most suitable, and Site B is second best.

1.5 Preliminary Sizing

As shown on the drawings, Site B has a potential capacity of 58 million tons of Ash, and Site E 47 million tons. The requirement is for 43 million tons, so there is some scope for slight height reduction or side slope “flattening”, to cater for stability issues.

The topography for Dump B is not ideal as the “flat” areas limit the dump footprint, and the pumping distance to the existing facilities is significant.

1.7 Conclusions

This brief report simply highlights which of the five sites are viable and based on our assessment of the situation Site E and B should be pursued in that order.

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**APPENDIX A
DRAWINGS**

Drawing No.	Title
618/10 Rev O	Key Plan
618/11 Rev O	Key Plan (Site E)
618/12 Rev O	Key Plan (Site B)
618/13 Rev O	Typical Cross Sections