ESKOM HOLDINGS LIMITED

DEVELOPMENT OF A NEW ASH DAM FACILITY AT KOMATI POWER STATION, MPUMALANGA

SITE SCREENING REPORT

Synergistics
Environmental Services

Project Number: S0194
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Prepared By: Matthew Hemming

PO Box 1822
Rivonia, 2128
Tel: +27 (0)11 807 8225
Fax: +27 (0)11 807 8226
synergy@synergistics.co.za

PROJECT DETAILS:

PROJECT:
Development of a New Ash Dam Facility at Komati Power Station, Mpumalanga.

REPORT:
SITE SCREENING PROCESS: Development of a New Ash Dam Facility at Komati Power Station.
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Project Reference Number: 12/12/20/1007

PROJECT PROPONENT (APPLICANT):
Eskom Holdings Limited (Eskom)
Contact Person: Mr Anilkumar Bhawanideen, Komati Power Station Manager
Tel: (013) 295 8119
Fax: (013) 295 8101
Email: Anil.Bhawanideen@eskom.co.za
Postal Address: Private Bag X, Blinkpan2250

INDEPENDENT ENVIRONMENTAL CONSULTANT:
Synergistics Environmental Services (Pty) Ltd (Synergistics)
Contact Person: Matthew Hemming
Tel: 011 807 8225
Fax: 011 807 8226
Email: matthew@synergistics.co.za
Postal Address: PO Box 1822, Rivonia, 2128

ENGINEERING CONSULTANTS:
Jones & Wagener Consulting Engineers (Jones & Wagener)
Contact Person: Ross Cooper
Tel: 011 519 0200
Fax: 011 519 0201
Email: cooper@jaws.co.za
Postal Address: PO Box 1434 Rivonia 212

1. INTRODUCTION

Eskom Holdings Limited is in the process of re-commissioning the Komati Power Station which is located between Middelburg and Bethal in Mpumalanga Province (see Figure). The operation of a coal fired power station, such as Komati, produces large volumes of ash that is disposed of in specially designed ash dam facilities. The existing ash dam facilities at Komati Power Station do not have sufficient capacity and it is therefore necessary to develop a new ash dam facility. A number of alternative sites were considered during a screening process.

1.1 Project motivation

Eskom Holdings Limited has commenced with the Return to Service Project in which existing, mothballed power stations, are re-commissioned in order to increase electricity supply in South Africa. The Simunye Return to Service Project includes the Camden, Grootvlei and Komati Power Stations which will be returned to service between 2006 and 2009 and provide an additional 2 964 MW of generating capacity.

Komati Power Station was originally commissioned in 1961 and operated until 1990 when it was completely shutdown. Environmental authorisation for the re-commissioning of the Komati Power Station was granted in 2005 by the Mpumalanga Department of Agriculture and Land Administration (17/2/1 NK 40). Upgrading and refurbishment of the power station is currently in progress. It is expected that the first unit will be re-commissioned in 2008 and that the operational life of the power station will be extended by a further 20 years.

The existing ash dam facilities at Komati, which are also being re-commissioned only have an estimated capacity for a further 18 months of ash deposition. It is therefore necessary to investigate the development of a new ash dam facility for Komati Power Station. It is estimated that a maximum of 21 million tons of ash will be produced by Komati Power Station.

1.2 The project

The project includes the development of a new ash dam facility to provide for additional ash deposition capacity at Komati Power Station. The ash dam will be constructed with the fine ash pumped from the power station as dilute slurry. The construction of an ash dam initially involves the creation of the outer dam walls with ash, after which the slurry is deposited into the dam.
The ash delivery pipes for the proposed dam will be taken off the existing system that delivers ash to the current ash dams. The dam will be constructed with soil drains and trenches to improve the dam's stability and reduce the seepage of water into the sub- soils. Clean storm water will be diverted around the dam.

1.3 Where will the project be located?

A preferred site, located within the Komati Power Station property and adjacent to the existing ash dams, has been selected for the new ash dam. The site is located immediately next to the existing ash dams (see Figure). The ash dam site is bound to the west by power lines, to the east by ash dams 1 and 2, to the north by the ash water return water dam and to the south by an area that has been mined. The dam will cover an area of approximately 80 ha and rise to a final height of 40m. This site will be subjected to detailed investigations during the Environmental Impact Assessment (EIA) process. The project has been registered with DEAT under the application number 12/12/20/1007.

2. SITE SELECTION PROCESS

2.1 Background

Surface deposition will be the preferred means of ash disposal at Komati Power Station for future operations. The existing ash facilities do not have sufficient capacity for ash disposal over the planned life of the station and a new facility is therefore required. An investigation, conducted prior to mothballing (Eskom, 1990), identified six potential sites for the establishment of a new ash disposal facility for Komati Power Station. These sites were compared and assessed in terms of the Komati Power Station requirements at the time, but no decision was ever taken to utilise any of these sites.

As explained in the introduction, in Chapter 1 above, Eskom is currently re-commissioning the mothballed Komati Power Station in order to provide additional electricity generation capacity. Ash disposal is an essential activity at a coal-fired power station and operation cannot continue without a facility for ash disposal. A decision must therefore be made on the preferred location of a new ash disposal facility and the necessary permits and authorisations are to be obtained. Environmental authorisation of a new ash dam facility will be required from DEAT in terms of the EIA Regulations. During the EIA it is essential to identify and examine alternatives for the proposed activity.

As part of the EIA process, the EIA team undertook the screening of potential ash dam sites and the identification of a preferred site. Site screening and selection was conducted through a workshop in which sites were assessed and scored on a number of biophysical, technical and social criteria. The point of the workshop was to ensure that a representative suite of relevant criteria were considered during site selection and that further EIA investigations would continue on a site whose selection could be robustly and objectively defended.

The purpose of this chapter is to document the process that lead to the selection of a preferred ash dam site for further investigation during the course of the EIA process.

2.2 Identification of Potential Sites

Potential sites for the location of a new ash dam facility were identified by Eskom in 1990. Suitable sites were identified within 3 km of the power station. The absence of infrastructure and the size of the sites were used as basic selection criteria and six sites were identified. The power station was subsequently mothballed and no further progress was made.

As part of the re-commissioning of Komati Power Station these original sites have all been re-assessed through the current site selection process. Investigations, conducted by Jones & Wagener (J&W, 2007) for the re-commissioning of the existing ash dams, also identified an area near the existing ash dams as an alternative for a medium-term ash deposition facility.

Six greenfield sites and the brownfield site at the existing ash dams were considered during the site selection process. See Figure 1 for the approximate positions of the seven alternative sites. The locations of the sites are described below.

2.2.1 Description of Site Alternatives

Site 1 – Situated north east of the power station on the Broodsnyersplaas, adjacent to the Blinkpan Magazine and shooting range. The site borders the shooting magazine and the bank of the Koornspruit river.

Site 2 – Located to the east of Site 1 across the R35 provincial road from the power station. The site borders on the upper Koornspruit River and is not large enough to provide sufficient capacity for life of station ash deposition.

Site 3 – Situated in the north western corner of the farm Broodsnyersplaas, on the far side of the Koornspruit River and the Richard's Bay Railway line. Underlain by viable coal seams.

Site 4 – Located on a slope east of the Blinkpan dam. It is just to the north of the Blinkpan golf course, on the far side of the Koornspruit River and the Richard's Bay Railway line.

Site 5 – Located south of the power station on Eskom property. The site is immediately west and adjacent to the existing ash dam area. The site is not large enough to provide sufficient capacity for life of station ash deposition. The site is undermined.

Site 6 – Situated on the farm Geluk, to the south east of the existing ash reservoirs. It is across the R35 provincial road from the power station. The site is undermined.

Site 7 – Found at the existing ash dams, immediately to the west of ash dam 1. It will be known as Extension 3. The site is bound to the west by power lines, to the south by areas of under mining and to the north by an ash water return dam. The site is not large enough to provide sufficient capacity for life of station ash deposition, but was considered as a viable alternative as it is a brownfields site that will provide interim ash deposition capacity that would reduce the size of any future greenfields site that may be required in the future.

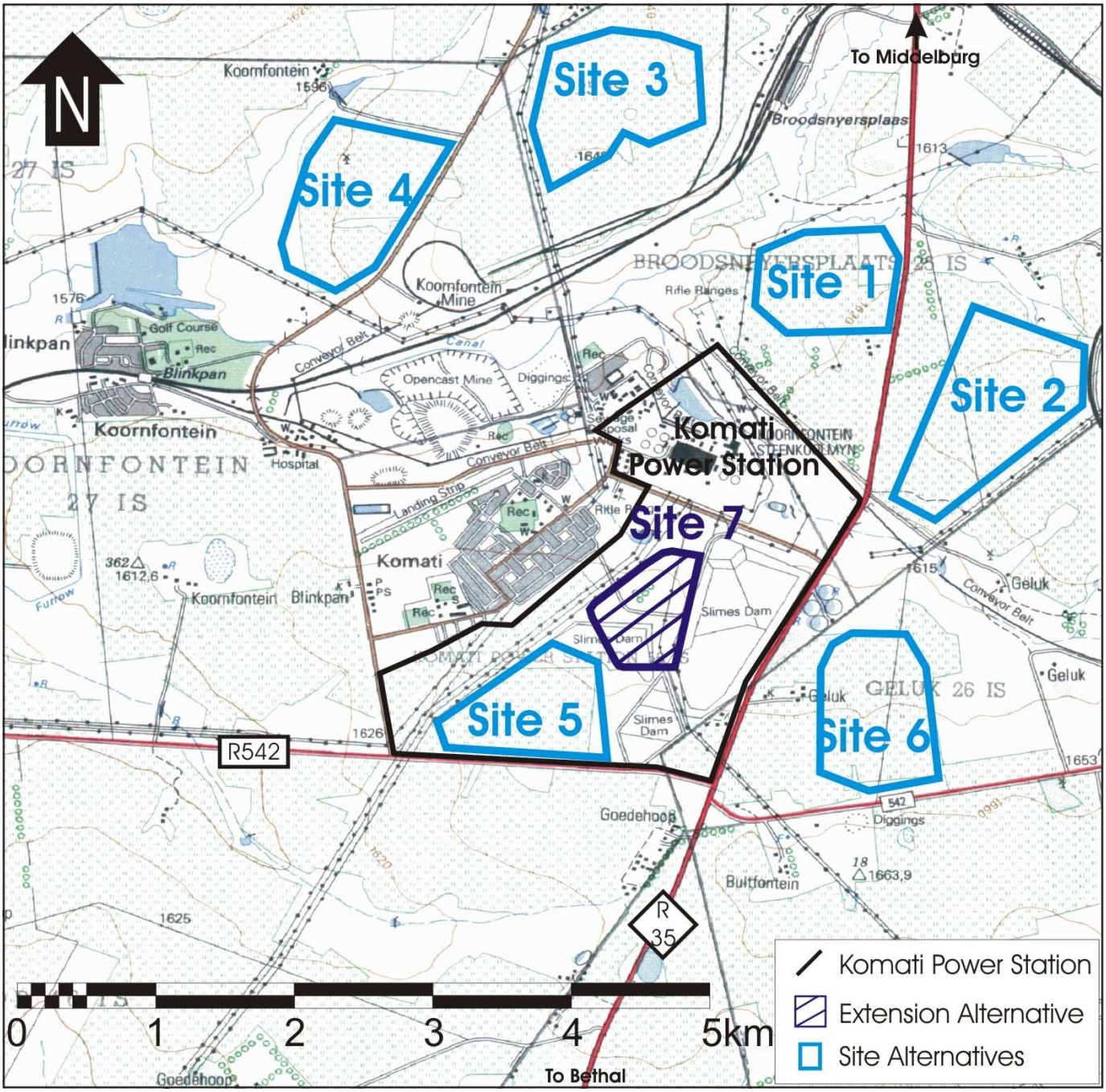

Figure 1: **Location of Site Alternatives for a New Ash Dam Facility at Komati Power Station**

2.3 Site Screening Methodology

2.3.1 Site Screening Workshop

A site screening workshop was held on 31 July 2007, with representation from Eskom, the design engineers, the air quality specialists and the environmental consultants (see Attendance Register). The groundwater specialist was unable to attend and contributed his expert opinion at a later date. The purpose of the workshop was to combine collective, expert judgement to rate the candidate sites in terms of the criteria defined below. Site screening provides a tool to assist with making an informed decision as to a preferred site(s) which should be considered for further investigation during the EIA process.

The sites were assessed at a broad scale and on a strategic level during the workshop. This level of detail was considered sufficient for the purposes of eliminating flawed sites and identifying alternatives requiring further investigation during the EIA. Information available at the workshop included past site selection reports, the J&W feasibility report, aerial photographs and the 1:50 000 topographical map for the area. A summary description of each site, in terms of the criteria under consideration, was compiled from past reports. Each of the experts contributed their opinions, site specific knowledge and understanding of the local and regional conditions to the screening process.

Workshop participants provided input as to the Site Selection Criteria (Section 2.3.2) that would be most useful in assessing a site in terms of the project requirements. The site selection criteria were assigned a weighting (Section 2.3.3) in terms of the significance of that criteria to the decision making process. A scoring system was defined, with specific reference to project conditions, to score each site against the site selection criteria (Section 2.3.4). A matrix was created to calculated the total score for each site (2.3.5).

2.3.2 Description of Site Selection Criteria

The site selection criteria that were selected at the workshop for use during the site selection process are given in Table 1. Criteria were initially identified by the environmental consultants and then critically examined at the workshop. Additional criteria were added to the list while a number were eliminated as they were either not relevant to the project, were indefinable or were unlikely to allow for differentiation between sites. The accepted criteria were then described in terms of how they would be measured or assessed (Table 1). Criteria were selected from biophysical, technical and social categories to ensure that there was relatively equal representation from the different project proponents.

Table 1: Site Selection Criteria used in the Scoring of Site Alternatives

Site Selection Criteria	Site Scoring Against Criteria			Weight
	Low (1)	Medium (2)	High (3)	
Biodiversity	Impacted area	Area of low sensitivity	Area of conservation importance	2
Heritage	No heritage	Heritage impacts can be easily mitigated	Heritage site/ Expensive mitigation	2
Surface Water	Low risk	Possible risk to water resources	Close proximity to surface water (<500m)/high risk	3
Ground Water	Low risk	Moderate risk	High risk	3
Land Capability	No potential	Potential for agriculture	High grazing/cropping potential	2
Current Site Use	No use	Moderate Use	Intensive Use	2
River Crossing	No		Yes	3
Ash Deposition Infrastructure	Use existing	Require limited new	Extensive new	1
Geology and Soils	Suitable for an ash dam	With constraints, but can be overcome	Not suitable / Difficult to engineer	2
Size of Site	Adequate for life of station		Inadequate for life of station	3
Topography	No constraints	With constraints, but can be overcome	Not suitable / Difficult to engineer	2
Undermining	No issues		Undermined- not suitable	3

Site Selection Criteria	Site Scoring Against Criteria			Weight
	Low (1)	Medium (2)	High (3)	
Mineral Resource	No resource		Mineral Resource- not suitable	3
Distance from Power Station	0-1000m	1000- 2500m	> 2500m	2
Current Ownership	Eskom		Private	1
Proximity to Receptors	Within 3000 - 1500m	within 1500 - 500m	< 500m	3
Number of Receptors	Farmlands	Transitional	Residential	2
Neighbouring Activities	No conflict	Potential conflict	Likely conflict	1
Noise	Low impacts	Nuisance noise	Above legal requirements	1
Visibility	Low visibility in impacted area	High visibility in impacted area/ low visibility in natural area	Highly visibility in natural area	2
Air Quality- health risks	Low health risks	Possible health risks	High health risks	3
Air Quality- nuisance	Minimal nuisance	Possible nuisance	High nuisance	2

Further description, the motivation for inclusion and any discussion from the workshop around any of the criteria are described below.

Biophysical Criteria

Biodiversity– The presence of recognised, natural biodiversity features such as red data species or habitat of conservation concern on the site that would be lost under an ash dam. Biodiversity was considered unlikely to provide any differentiating information as all sites have been intensively used or disturbed in the past.

Heritage – Cultural or heritage resources that may require mitigation or stop the project. This criterion was included, but considered unlikely to be a differentiating factor as the available information suggests that all the sites have been used for intensive agriculture in the past.

Surface Water – Surface water pollution resulting from runoff, seepage and storm water from the ash dam. It was assumed that all sites would be constructed outside of any recognised water course floodline. Scored in terms of the approximate distance to a water course or tributary, with consideration for the current pollution status of the water course. Weighted of high significance as pollution events could result in legal contraventions.

Ground Water – Ground water pollution from seepage coming from the ash dam, considered in terms of the features of the site that may contribute to groundwater seepage. Consideration given to the current status of the site and any neighbouring activities that may already impact on the groundwater. High significance as pollution impacts could result in legal contraventions and be difficult to rectify or mitigate.

Land Capability – The potential of the soils on site. Considered in the context of agricultural potential that would be lost under an ash dam. Given a low weighting.

Current Site Use – The intensity of current site use and the associated value of that use, described largely in an agricultural context as the majority of the sites are rural with no infrastructure. Included to give an indication of possible economic losses and likelihood of owner/occupier objections should the site become an ash dump.

River Crossings – The need, or not, for ash delivery pipelines to cross a river en route to the site. Crossing a river or water course with an ash pipeline has significant environmental risks and liabilities and thus sites not requiring a river crossing were preferred.

Technical Criteria

Ash Deposition Infrastructure – The presence or absence of ash deposition infrastructure for delivering ash to a site. Impacts considered in terms of the cost and area of disturbance of installing new infrastructure.

Geology and Soils – The relative suitability of the site for an ash dam facility in terms of the local geology and soils. Geotechnical items were considered. Including features such as dykes and faults, as well as founding conditions such as the nature of the soils and water table that may impact on the feasibility, safety or cost of an ash dam.

Size of the Site - The adequacy of the site to provide ash deposition capacity for the life of the power station. Any site with insufficient capacity to receive the ash volumes expected over the life of power station could ultimately result in an additional ash dam site being required in the future.

Topography – The relative suitability of the site for an ash dam facility in terms of the local topography. Slope, as well as any features (ridges, drainage lines, floodplains) that could impact on the feasibility, design, cost or operations of an ash dam were considered. Of moderate significance as engineering technology is available to deal with most situations.

Undermining – Whether the site is undermined or not. The presence of undermining could seriously affect the stability of the site and the seepage impacts on groundwater of an ash facility. It was identified as a fatal flaw.

Mineral Resources – Whether the site overlies an identified mineral resources or not. This would impact on costs as the value of the resource would have to be considered. It is Eskom policy not to sterilise a known coal resource and the presence of a resource is therefore a fatal flaw.

Distance from Power Station – The distance of the proposed site from the power station. This was assessed as the approximate distance from the power station to the centre of the site. Longer distances imply greater capital and operating expense, larger areas of surface disturbance and a greater likelihood of road and rail crossings.

Social Criteria

Current ownership – Whether the site is owned privately or by Eskom. Eskom property was preferred as the legal requirements, time and costs associated with purchasing private land add considerable risk to the project.

Proximity to Receptors – The proximity of the site to the nearest receptor population, defined in terms of the likely extent of impacts such as noise, visual and air quality impacts. Expert opinion was that impacts from an ash dam would be most significant to receptors closer than 500m and almost insignificant to receptors further than 1500 m. Proximity also represented the risk to receptors in terms of health, safety and hazard factors. The proximity was estimated as the approximate distance to the closest, average receptor group. A single house/structure was not considered as an average receptor.

Number of Receptors – The density of receptors at the nearest identified location (s). Categorised in terms of the relative density of the nearest significant receptors for a site. This was used as measure of the number of people likely to be within the zone of highest impact.

Neighbouring Activities – The land use activities practiced on the surrounding land as they would relate to an ash dam facility. A measure of the likely conflict that may arise between an ash dump and the land use of the neighbouring areas.

Noise – Noise from ash dam operations impacting on local receptors. Construction noise may at various times produce audible noise, however this was not expected to be above legal limits.

Visibility – The visibility of an ash dam facility on the site to local receptors ,this was considered in the context of the current visual environment and in relation to the receptors. Weighted as being of moderate significance as the general areas is already heavily impacted by a number of industrial/mining installations.

Air Quality: health risks – Human health risks to local receptors resulting from an ash dam being located on this site. Assessed in terms of the direct and cumulative health impacts of an ash dam on all local receptors. Any differences between sites would relate to the differences in receptor proximity, number of receptors and the position of the site/receptors in terms of wind pattern and event frequency. The pending air quality regulations must be considered. A criteria of high significance.

Air Quality: nuisance – Dust pollution and nuisance resulting from an ash dam located at this site. Scored as a separate criteria from health risks as the nuisance component of air quality impacts will most likely receive comment from IAPs, but does not constitute a health risk. It also represents a different component of any potential dust.

2.3.3 Weighting of Site Selection Criteria

The weighting assigned to each of the site selection criteria represents the significance of that criterion to the decision-making process for site selection in this project. The significance was thought of in terms of "Would the identification of an aspect of this criteria alter the decision to construct an ash dam at a site?". Criteria weightings were assigned at the workshop through debate and consensus. A weighting of 1 was assigned to criteria with little significance, a weighting of 2 to those criteria with a moderate significance and a weighting of 3 to criteria with a significant impact on the site selection decision (see Table 1).

Example:

Site Selection Criteria	Weight
Noise	1
River Crossing	3

2.3.3.1 Fatal Flaws

It was decided by the workshop panel that a high score (i.e. 3) for certain of the site selection criteria was in fact a fatal flaw that would result in the elimination of that site from the screening process. The presence of a mineral resource and undermining of a site were considered as criteria that would represent a fatal flaw.

2.3.4 Scoring of Site Against Criteria

Each site was examined by the panel of experts and project proponents in terms of the available information and given a score from 1 to 3 for each of the site selection criteria. A site scored high (3) when the placement of an ash dam was judged likely to result in a definite or significant impact on that criterion. Conversely a site scored low (1) if it was unlikely to result in an impact, or would result in an insignificant impact for that criterion. Sites where an ash dam would result in moderate impacts scored a two. Impacts were considered in terms of the effects, the risks, and the costs of mitigation. An explanation of the qualifying factors for scoring a site in terms of each criteria is given in Table 1.

Example:

	Site Score		
Site Selection Criteria	**Site 1**	**Site 2**	**Site 3**
Criteria X	1	2	1
Criteria Y	1	3	3

2.3.5 Scoring Matrix

A matrix was developed to compute the total score for each of the sites. The site score for each of the site selection criteria was multiplied by the criteria weighting to give a weighted site score. All the weighted site scores for a site were summed to give a total site score.

Example:

		Site Score					
Site Selection Criteria	**Weight**	**Site A**		**Site B**		**Site C**	
Criteria X	1	1	1	2	2	1	1
Criteria Y	3	1	3	3	9	3	9
Total Site Score			4		11		10

Total site scores are relative numbers that can only be used to make comparisons between sites to determine the most favourable site for the project. In the scoring matrix a site with many negative features and significant risks or impacts will score high. A more favourable site will have a relatively lower total site score. The site with the lowest Total Site Score is thus the preferred site for the new ash dam site.

Example:

Site A, with a total site score of 4 is more favoured than site C, which is in turn more favoured than Site B. Site A is the preferred site.

2.4 Results of the Site Screening Process

Sites 3, 5 and 6 scored 103, 100 and 87 respectively. These sites were all identified as having been undermined or with mineral resources present. These two criteria were declared to be fatal flaws and these sites cannot be considered further (Table 2 and Figure 2).

Sites 1, 2 and 4 scored 107, 103 and 108 respectively. The major risks associated with all of these sites included the risks to surface water as a result of the sites being located adjacent to a water course, the risks to groundwater as a result of these being uninvestigated greenfields sites and the need for a river crossing. Site 1 had high risks associated with the proximity to receptors and air quality health impacts as it is located near to the power station and mine houses. Site 4 was associated with a high air quality health risk as a result of it being located upwind and adjacent to Blinkpan Village and Golf Course. Site 2 is not sufficiently large to provide for all future ash deposition and therefore, as a greenfields site, is not considered as a feasible site.

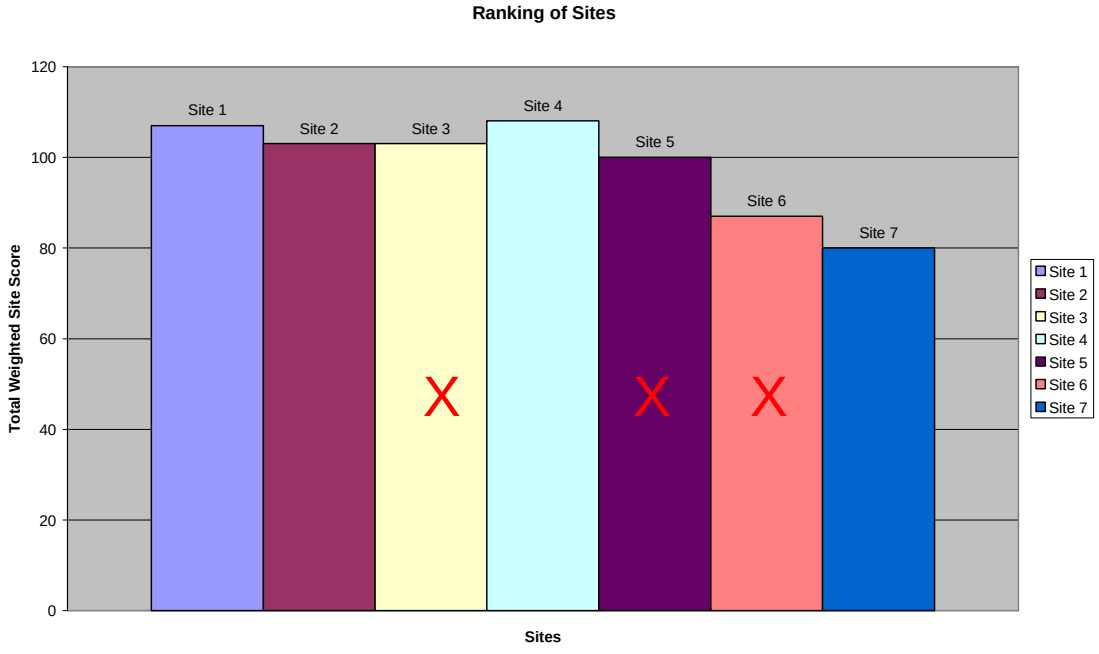

Figure 2: **Total Weighted Site Scores**
X sites with fatal flaws

Site 7 had the lowest total weighted site score, which at 80 was more than 22% lower than the scores of any of the other feasible sites. It was ranked as the best site in terms of environmental and technical criteria, but ranked moderately in terms of the social criteria. The site is associated with high risks in terms of the proximity to receptors and air quality health impacts. The site does not have any fatal flaws and is located in a heavily impacted brownfields area. Site 7 is therefore considered as the preferred alternative for the new ash dam facility.

Table 2: Site Matrix

Criteria	Description	Weight	Site 1		Site 2		Site 3		Site 4		Site 5		Site 6		Site 7	
			Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Biophysical	Biodiversity	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
	Heritage	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
	Surface Water	3	3	9	3	9	1	3	3	9	1	3	2	6	2	6
	Ground Water	3	3	9	3	9	3	9	3	9	2	6	2	6	1	3
	Land Capability	2	3	6	3	6	3	6	3	6	2	4	3	6	1	2
	Current Site Use	2	3	6	3	6	3	6	3	6	3	6	3	6	1	2
	River Crossing	3	3	9	3	9	3	9	3	9	1	3	1	3	1	3
Subtotal			**17**	**43**	**17**	**43**	**15**	**37**	**17**	**43**	**11**	**26**	**13**	**31**	**8**	**20**
Technical	Ash Dam Infrastructure	1	3	3	3	3	3	3	3	3	2	2	3	3	1	1
	Geology and Soils	2	3	6	1	2	3	6	1	2	1	2	1	2	1	2
	Size of Site	3	1	3	3	9	1	3	1	3	3	9	1	3	3	9
	Topography	2	1	2	3	6	3	6	2	4	1	2	1	2	1	2
	Undermining	3	1	3	1	3	1	3	1	3	3	9	3	9	1	3
	Mineral Resource	3	1	3	1	3	3	9	1	3	3	9	3	9	1	3
	Distance From Power Station	2	2	4	2	4	3	6	3	6	2	4	2	4	1	2
Subtotal			**12**	**24**	**14**	**30**	**17**	**36**	**12**	**24**	**15**	**37**	**14**	**32**	**9**	**22**
Social	Current Ownership	1	3	3	3	3	3	3	3	3	1	1	3	3	1	1
	Proximity to Receptors	3	3	9	2	6	2	6	2	6	3	9	2	6	3	9
	Number of Receptors	2	2	4	1	2	1	2	3	6	3	6	1	2	3	6
	Neighbouring Activities	1	2	2	2	2	2	2	3	3	3	3	1	1	3	3
	Noise	1	1	1	1	1	1	1	2	2	2	2	1	1	2	2
	Visibility	2	3	6	3	6	3	6	3	6	3	6	3	6	1	2
	Air Quality- health risks	3	3	9	2	6	2	6	3	9	2	6	1	3	3	9
	Air Quality- nuisance	2	3	6	2	4	2	4	3	6	2	4	1	2	3	6
Subtotal			**20**	**40**	**16**	**30**	**16**	**30**	**22**	**41**	**19**	**37**	13	**24**	**19**	**38**
TOTAL				**107**		**103**		**103**		**108**		**100**		**87**		**80**
Site Ranking				6		4		4		7		3		2		1

2.5 Sensitivity analysis

To test how sensitive the site scoring is to the weighting of the criteria a number of different scenarios were tested. In each of these scenarios the criteria weightings were altered and the subsequent site rankings recorded.

In the initial scenario of the sensitivity analysis all criteria were assigned an equal weighting, to represent a scenario where all criteria are of equal importance to the project decisions (Figure 3). The total weighted site scores for each of the sites were again compared and ranked. Site 7 remained the best site and its score was 23% better than any of the feasible sites.

A second test scenario was run where the technical criteria were discounted by giving them a weighting of 0 and only the environmental and social criteria considered as per their original weightings (Figure 4). In this scenario site 7 ranked second behind site 6, but was more favourable than the rest of the sites. The next most favourable sites were 3 and 5. However sites 3, 5 and 6 have fatal flaws and could not be considered further. Site 7's score was more than 20 % lower than any of the 3 other feasible sites despite the relative greater importance of social and environmental factors in the matrix.

A third scenario was tested where the social criteria were weighted 0 and only the biophysical and technical criteria considered (Figure 5). Site 7 improved in the relative scoring of the sites and scored more than 37% lower than any other feasible sites. Site 1 and 4 were the second ranked sites.

The final test scenario was conducted where the biophysical criteria were 0 weighted and the social and biophysical criteria considered as per their original ratings (Figure 6). In this scenario site 6 scored the lowest, although it is fatally flawed, with site 2 and site 7 ranking tied second by a small margin. Both site 2 and 7 have insufficient capacity, however site 7 is a brownfields and could serve as an interim site and ultimately result in a smaller greenfields development, should one be required. Use of site 2 would not reduce the area of greenfields sites required for ash deposition.

It can thus be concluded that, despite any influence of the criteria weightings, site 7 consistently emerges as the ash dam site preferable to any of the other candidate sites.

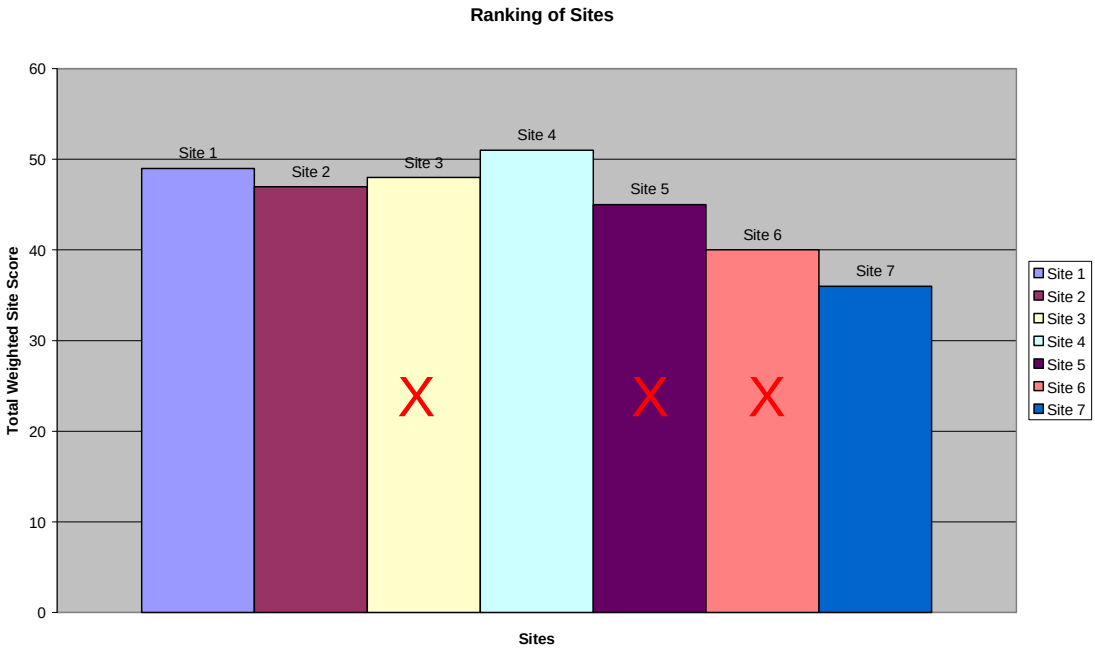

Figure 3: **Total Weighted Site Scores with Equal Criteria Weighting**
X *sites with fatal flaws*

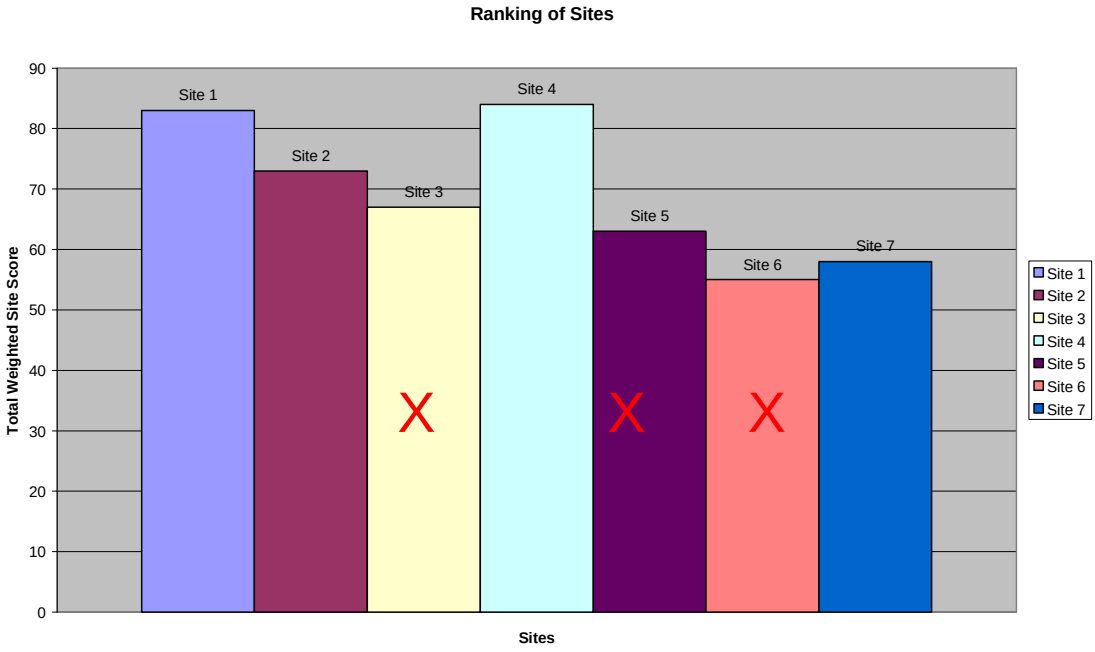

Figure 4: **Total Weighted Site Scores without Technical Criteria**
X *sites with fatal flaws*

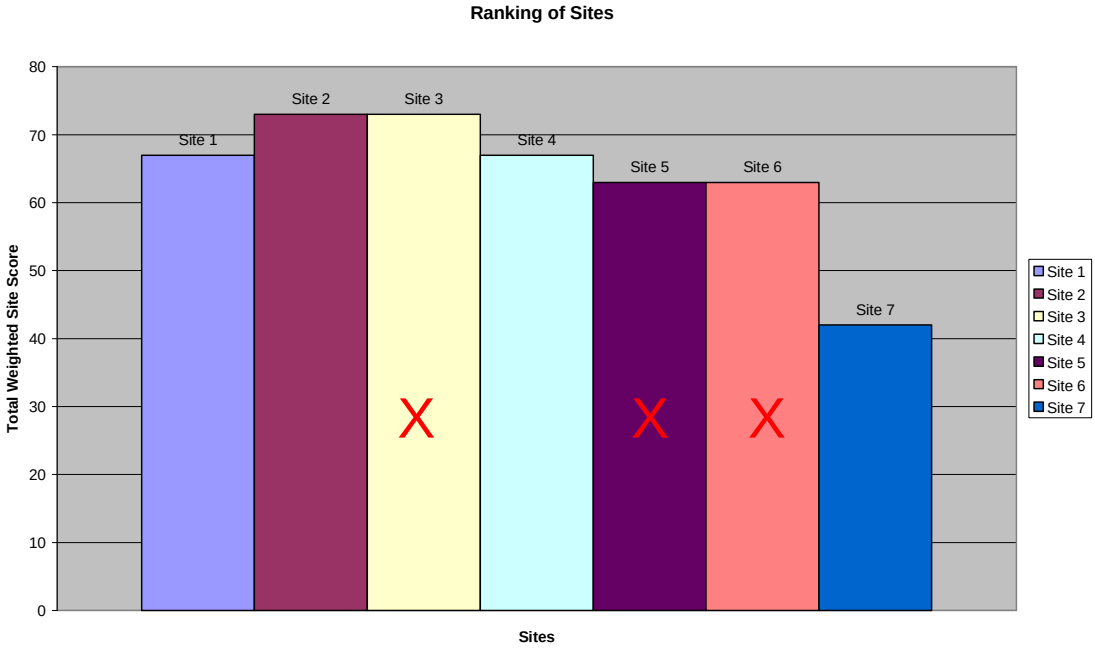

Figure 5: **Total Weighted Site Scores without Social Criteria**
X sites with fatal flaws

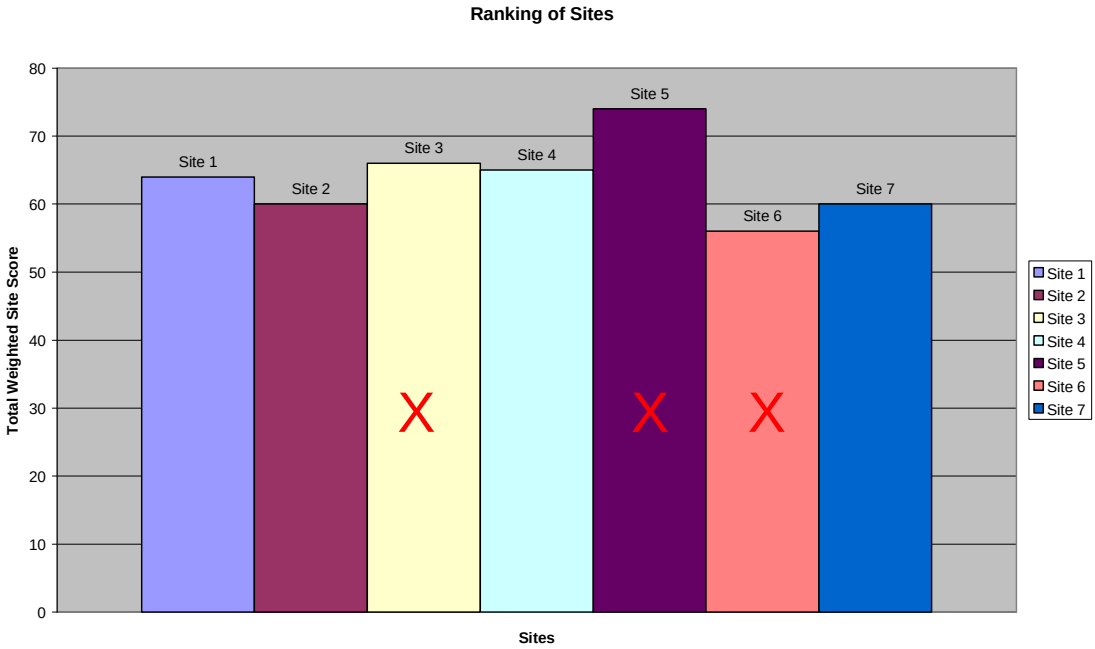

Figure 6: **Total Weighted Site Scores without Biophysical Criteria**
X sites with fatal flaws

2.6 Conclusions

Sites 3, 5 and 6 cannot be considered as possible ash dam sites as they are either undermined, resulting in high stability and groundwater seepage risks, or overlie mineable coal reserves, which Eskom will not consider sterilizing.

Of the 4 feasible sites site 7 was consistently the most favoured by total weighted site score. The other 3 sites regularly had site scores with very small differentiation from the others. Site 2 was consistently the second most favoured of the remaining sites, although only by a small margin. It is however too small to house an ash dam with deposition capacity for all ash from the power station, should the station operate for the full extent of its planned life.

Site 7 emerged as the most favourable site from the workshop proceedings and was consistently among the most favoured sites through the sensitivity analysis. It is also too small to house an ash dam with deposition capacity for all ash from the power station, should the station operate for the full extent of its planned life. However the site is a brownfields site that is adjacent to the existing ash dams for Komati Power Station. All of the technical, biophysical and social criteria of the site and its immediate receptors are already impacted by the current installation and thus establishment of an additional ash dam on site 7 will have reduced impacts when compared to any of the other sites which are greenfields sites.

Although site 7 has insufficient capacity for all ash deposition from the power station, should the station operate for the full extent of its planned life, the use of site 7 in the interim will result in a smaller greenfields facility being required in the future. The benefits of utilising site 7 are thus twofold: firstly ash dam impacts are contained to a zone that is already impacted on by an existing ash dam; and secondly should this facility not have capacity the size of any future greenfields facility would be significantly reduced.