ESKOM GENERAL & HAZARDOUS WASTE LANDFILL DEVELOPMENT (LEPHALALE)

SCOPING PHASE AND SCOPING PHASE ADDENDUM REPORTS
PROJECT NO: 080847

REPORT STATUS: SCOPING PHASE

FEBRUARY2009

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TITLE OF REPORT:

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ESKOM LANDFILL DEVELOPMENT

TRAFFIC AND TRANSPORTATION SCOPING PHASE REPORT

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Traffic and Transportation Screening Report

1. Introduction

In this report traffic and transportation aspects that might influence the selection of suitable sites for the proposed Eskom General and Hazardous Landfill site will be discussed. The landfill will be required to cater for Matimba, Medupi and the two new proposed coal fired power stations in the Waterberg area.

The proposed sites for this Landfill are located within the farms of Grootvallei, Hanglip and the farm located at 513 LQ. A site screening exercise was undertaken and these sites were narrowed down to Grootvallei as a possible site. Grootstryd was consequently added as an additional site to be considered for the siting of this Landfill. A site visit was undertaken by the Design Engineers, Geohydrological and Geotechnical on 17 December 2008 to visit and groundtruth the Grootstryd site. The five sites considered in this report are depicted in figure 1.

2. Methodology

The access roads to reach each of the identified sites will be determined once the preliminary designs are finalised. These sites will then be compared relative to their access arrangements. The following criteria will be used:

Site Selection Criteria	**Site Scoring Against Criteria**		
	High (2)	**Medium (1)**	**Low (0)**
Access To Site	Easy	Moderate	Difficult
Transportation Costs	Low	Medium	High

The availability of the road network and the travel time to and from the power stations will be considered as well. The distance to be travelled and the condition of the roads are directly linked to transportation costs and are therefore the most important considerations when ranking the sites.

Traffic counts were conducted on the 15th of January 2009 and additional counts will be conducted if necessary. The background traffic on the various access routes indicate sufficient capacity to accommodate the trips generated by the proposed landfill site.

The landfill is expected to accommodate 1200 000 m^3 of both hazardous and general waste over a period of 50 years:

$$= \frac{1200\ 000\ m^3}{6\ m^3\ truck} = 200\ 000 \text{ one way trips}$$

$$= \frac{400\ 000 \text{ two-way trips}}{18\ 250 \text{ days}}$$

$$= 21.9 \text{ say } 22 \text{ trips a day}$$

The hard surfaced roads are generally in an acceptable condition including for the usage of waste truck movements. Most of the gravel roads are in a poor condition and are generally not acceptable for waste truck movements and will need to be upgraded if these roads are included in the final choice.

3. Nature of Impact

The investigation will include the following:

- Impact of traffic during construction
- Impact of trucking waste to site
- Impact of employee traffic once operational

4. Extent of Impact

The main roads surrounding the sites are:

- Nelson Mandela Drive (Provincial Road)
- Steenbokpan Road
- Kuipersbult Road

The nearest town to all the identified sites is Lephalale (Ellisras). **Refer to the drawing on page 7 for a full road network layout.**

5. Findings

5.1. Access

Although minor roads in a very poor condition are available for sites 1+2 and 3, the required road network to an acceptable standard for waste-truck movements is not available. Kuipersbult Road Extension is of a higher quality than roads 1 & 2 but still require upgrading to the required standard needed for waste-truck movements. Site 5 scores highest since the roads between Medupi and the site are hard surfaced roads forming part of the major road network.

5.2. Transportation Costs

Transportation costs consist of capital costs of building the new hard surfaced roads, travel costs and maintenance costs.

5.2.1. Capital Costs

The capital costs of building a new hard surfaced road is based on a rate of R400.00/m^2 using a width of 7.5 m.

Site 1 = 7 000m
Site 2 = 5 000m
Site 3 = 6 600m
Site 4 = 5 400m

COSTS	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5
Capital	R21 million	R15 million	R19.8 million	R16.2 Million	R0.00

5.2.2.1. Travel distance

Distances	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5
From Medupi	+/- 11.25 km	+/- 10.5 km	+/- 14.1 km	+/- 10.4km	+/- 7 km
From Matimba	+/- 18.3 km	+/- 17.5 km	+/- 21.1 km	+/- 17.4 km	+/- 1 km

5.2.2.2. Travel Costs

Travel costs are based on a rate of R14.00/km one way trip using a 6 m^3 truck. Total trips required to move the waste over a period of 50 years are 200 000.

Costs	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5
From Medupi	R158.00 per trip	R147.00 per trip	R198.00 per trip	R146.00 per trip	R98.00 per trip
From Matimba	R256.00 per trip	R245.00 per trip	R296.00 per trip	R244.00 per trip	R14.00 Per trip

5.3. Maintenance

Maintenance for all gravel roads is based on a rate of R5000.00/ day using a grader assuming that the road would be gartered once every 4 months during a dry season and once every 2 months during a wet season for 30 years. Hard surfaced roads maintenance is based on a rate of R400.00/ m^3 every 8 years for a lifespan of 30 years.

	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5
Roads leading to	R1.8 Million	R1.8 Million	R2.4 Million	R1.8 Million	R1.26 Million

Roads leading to site 1, 2, and 4 will costs R1800 000 to maintain as they are gravel roads. Site 5 will costs less as the roads surrounding the site are already hard surfaced.

Total Costs

	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5
Total	R53 Million	R51 Million	R82 Million	R66 Million	R21 Million

Scoring Results Table

Site Selection Criteria	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5
Access	0	0	0	0	1
costs	0	0	0	1	2
Total	1	1	1	1	3

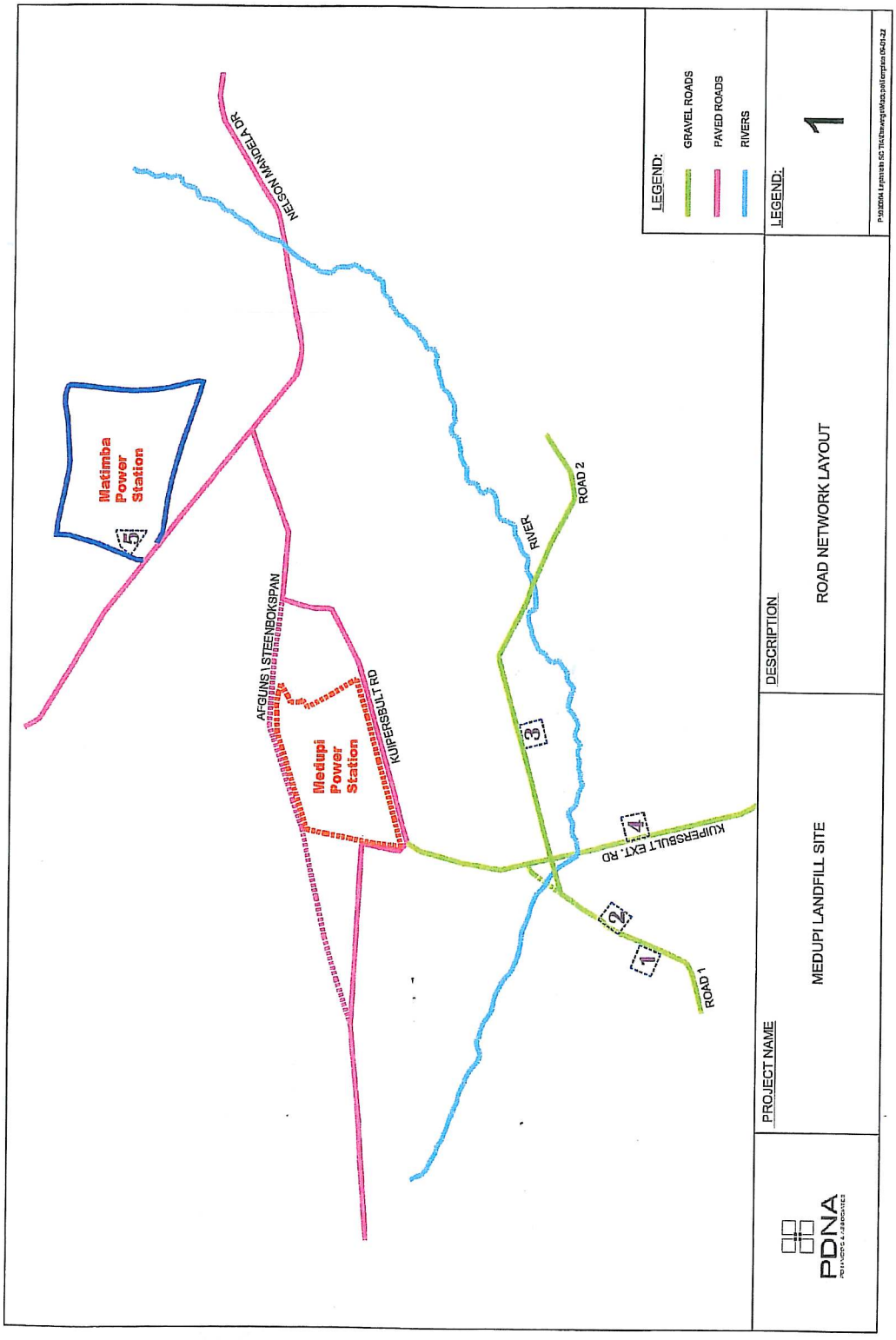
6. Conclusion

It is concluded that site 5 scores the highest due to its close proximity to Matimba Power Station thus reducing the transportation costs and the fact that the surrounding roads are hard surfaced.

7. Recommendations

It is recommended that:

7.1. A detailed traffic impact study is undertaken for the preferred site as determined by this Environmental Scoping Study to identify possible traffic engineering concerns at the chosen site.


LEGEND:
GRAVEL ROADS
PAVED ROADS
RIVERS
LEGEND:
1
NELSON MANDELA DR
Matimba Power Station
5
AFGUNS \ STEENBOKSPAN
Medupi Power Station
KUIPERSBULT RD
RIVER
ROAD 2
3
KUIPERSBULT EXT. RD
4
2
1
ROAD 1
DESCRIPTION
ROAD NETWORK LAYOUT
PROJECT NAME
MEDUPI LANDFILL SITE
PDNA

SCOPING

PHASE

ADDENDUM

ESKOM LANDFILL DEVELOPMENT
TRAFFIC AND TRANSPORTATION SCOPING REPORT ADDENDUM

1. Anticipated impact

The following impacts will be investigated during EIA Phase

- Impact of traffic during construction
- Impact of trucking waste to site
- Impact of employee traffic once operational

2. Extent of Impact

- The main roads surrounding the site are:
- Nelson Mandela Drive(Provincial Road)
- Steenbokpan Road
- Kuipersbult Road
- Access Roads

3 Methodology

Study Parameters

Decide on the study parameters including the study area, time horizon, critical peak periods, land use application details etc.

Trip generation

A number of trips generated by the landfill and an operational plan for the landfill site will be discussed.

Trip assignment

Involves the process where the trips between development and the origin and destination of trips are assigned to a specific route. This assignment is based on the shortest travel time between the origin and destination.

Access

The biggest impact usually occurs at the accesses due to the concentration of all the trips generated by the development especially if the access is on an arterial road.
The location number of accesses operational and geometrical layout of accesses to a proposed landfill development will be investigated fully during the EIA phase.

Impact of trips generated by site during construction

Trips to and from a borrow pit to site would be determined and assigned to the road network. Trips from the equipment storage if outside of the site need to be assigned to the road network and it should be checked if the trips are going to cause delays along the surrounding roads.

Impact of trips generated by site once operational

Trips generated by the landfill development in terms of the trucks moving the waste from power stations to the site and trips generated by people coming to work will be investigated and discussed under this topic.

Upgrades if required

Thorough analysis will be carried out using TSS Aimsun transportation simulation software for the whole road network within the study area and upgrades will be recommended if necessary.

Conclusions

All the items mentioned above would be taken into consideration and conclusions will be drawn from there.