



## **BULK ENGINEERING SERVICES STUDY: HAKSKEENPAN**



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## PROJECT DETAILS

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**Economic Development & Tourism**

Department:  
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NORTHERN CAPE PROVINCE  
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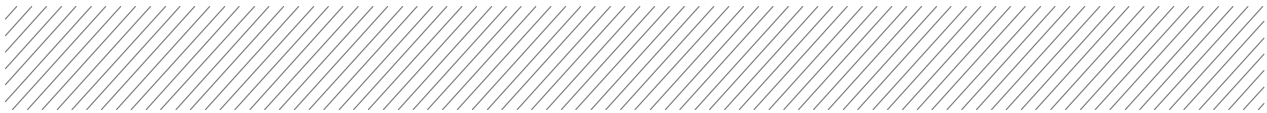
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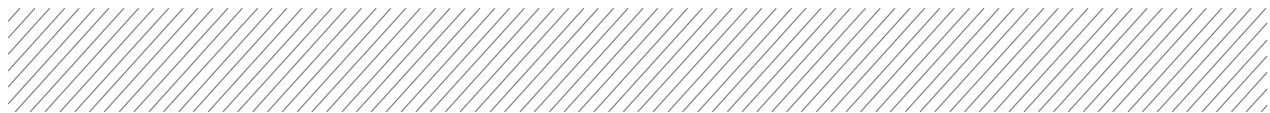
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# 1 INTRODUCTION

## 1.1 TERMS OF REFERENCE

- I. BVI Consulting Engineers were appointed by the Department of Economic Development and Tourism (hereinafter referred to as the Client) to undertake this Bulk Engineering Services Study (Water, Sewer, Electricity and Roads & Storm Water) for the Hakskeenpan located in the area of Mier within the jurisdiction of the ZF Mgcawu District Municipality.
- II. The purpose of the Bulk Engineering Services Assessment is to determine the availability and capacity of existing bulk services in anticipation of the Bloodhound event. This report presents the findings of a preliminary visual inspection and desktop investigation relating to bulk services.
- III. The Bulk Engineering Services addressed in this report are the following:
  - ✓ Water Supply
  - ✓ Sanitation
  - ✓ Roads and Access
  - ✓ Storm Water Management
  - ✓ Electricity Supply
- IV. The following guidelines and references were used as the basis for the assessment of the above listed services:
  - ✓ The “Guidelines for Human Settlement Planning and Design” also commonly known as “The Red Book”.

## 1.2 SITE DESCRIPTION

- I. The project site is the Hakskeenpan is located in the Mier area within the jurisdiction of the Dawid Kruiper Municipality (refer to Figure 1 – Locality map).
- II. The location of the Hakskeenpan is: Latitude: 26°48'38.90"S, Longitude: 20°13'16.44"E.



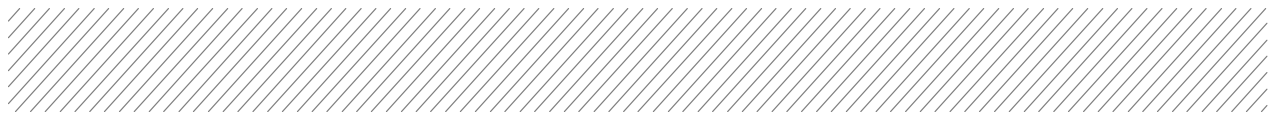
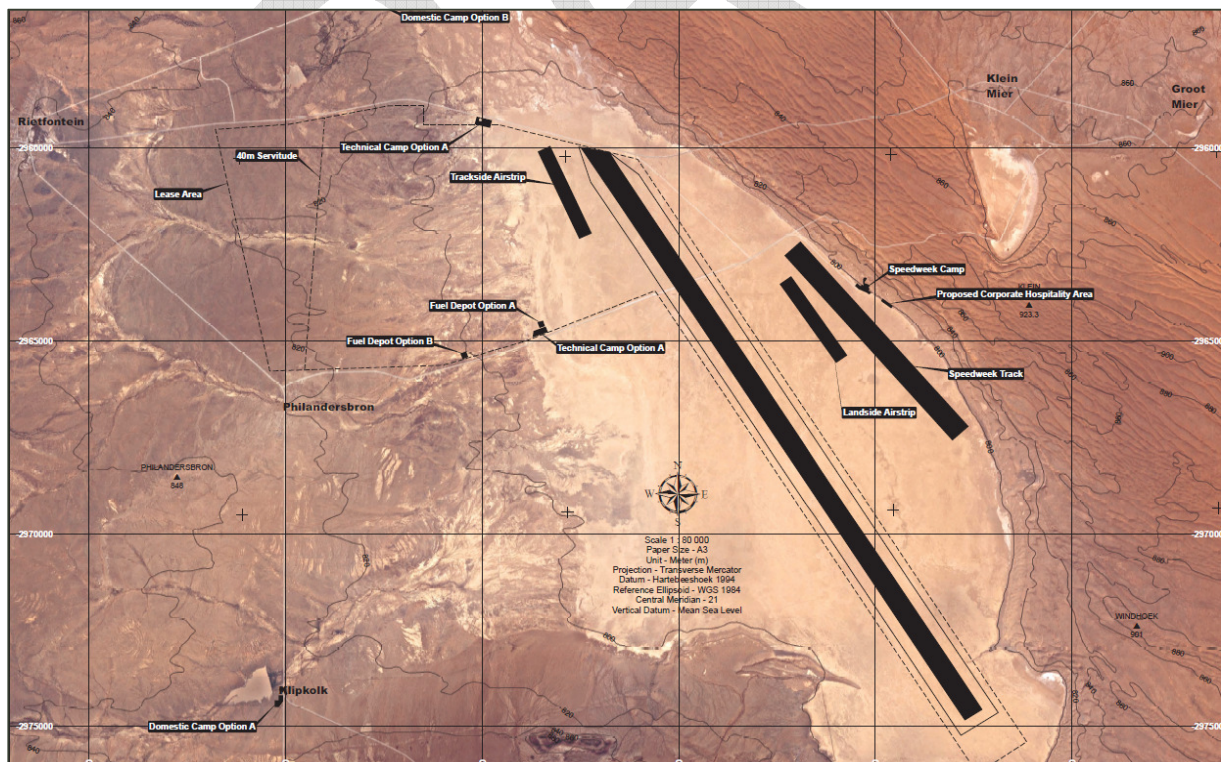


Figure 1: Locality map



Figure 2: Hakskeenpan - Site layout



## 2 WATER SUPPLY

The Kalahari-East to Mier Pipeline runs within the R31 road reserve, adjacent to the Hakskeenpan. The pipeline was designed to supply potable water to the Mier area. The design capacity of the pipeline is approximately 13 l/s over twenty-four hours and operates under gravity.

A 21 ML earth-fill reservoir was also constructed approximately 6 km from Groot Mier to provide two weeks' storage capacity in the event of an emergency.

Water provision to Hakskeenpan is not expected to be a problem. Two water connection points were requested for the Bloodhound project. One connection close to the existing access of the pan and another connection point at the MTN facility.

Once the water requirement for the temporary Bloodhound facilities is made available by the organisers, a model will be developed to simulate the maximum water availability versus the water demand for the Hakskeenpan. In the event that the demand exceeds the supply it is proposed that storage capacity be created on site to store water during off peak times for use under peak conditions.

**Figure 3: Water connection points**





### 3 SANITATION

The closest wastewater treatment facility is located at Rietfontein, approximately 14km from the Hakskeenpan. The treatment facility consists of a set of oxidation ponds. According to the municipality the system is hydraulically overloaded due to the additional sewage load received from Philandersbron and Loubos that is also disposed of at Rietfontein.

The following proposals may be considered:

- Increasing the capacity of the Rietfontein WWTW

Consider the possibility of increasing the capacity of the existing wastewater treatment works at Rietfontein to accommodate the current load from Rietfontein, Philandersbron and Askham, as well as the load that will be generated on Hakskeenpan. This will be mutually beneficial for both stakeholders.

- On-site treatment

Depending on the volume generated, on-site treatment can be considered. This can be achieved by the construction of an on-site treatment facility, such as an oxidation pond system which require low maintenance. A package type plant can also be considered but have more operation and maintenance requirements. Environmental aspects will have to be considered.

- Chemical ablation facilities

The waste will have to be disposed of at a wastewater treatment facility. The only wastewater treatment works in the vicinity of Hakskeenpan is at Rietfontein. The system is already overloaded and this option will not be viable.



## 4 ROADS AND ACCESS

Access to the event site will be obtained from the existing access on the R31 as indicated in Figure 4. The R31 falls within the jurisdiction of the Department of Roads and Public Works, Northern Cape, who shall be the relevant authority regarding necessary access wayleaves and traffic management for the event.

**Figure 4: Site Access**



The Department of Roads and Public Works will have to be formally notified in advance of the planned event and proposed access. Typically, the relevant authority is expected to request that a Traffic Management Plan be submitted for approval.

The Traffic Management Plan will generally include, but not be limited to;

- Temporary road signage
- Proposed access layout
- Planned site layout
- Parking facilities
- Emergency access
- Traffic flow analysis and conceptual planning

It is advisable to submit the required event information as soon as possible to allow sufficient time for feedback and approval process from the department in question.

## 5 SOLID WASTE

There are four registered solid landfill sites in the vicinity of Hakskeenpan. All of which are classified as Class G: C: B- disposal sites. The landfill classification is as follows;

- Waste class : General Waste (G)
- Size of landfill operation : Communal Landfill
- Site water balance : No significant leachate will be generated in terms of the Site Water Balance, so that a leachate management system is not required.

General Waste refers to any waste that does not fall within the definition of Hazardous Waste. In other words, waste that does not pose a significant threat to public health or the environment.

The waste generated at Hakskeenpan can be screened on site and the General Waste disposed off at one of the solid landfill sites. The Hazardous waste will have to be pre-treated on site and disposed off according to the chemical and physical composition on a registered hazardous waste landfill site. There is not such a landfill site in the Mier area.

The figure below contains the permit details for the respective sites.

**Figure 4 : Landfill Sites Register**

Province	Permit Reference No	Waste Disposal Site	Class	Type of Facility	Date Issued	Permit Holder
Northern Cape	16/2/7/D421/D1/Z3/P358	Rietfontein	G:C:B-	Landfill	30/11/1999	The Management Council - Mier Rural Area
Northern Cape	16/2/7/D421/D1/Z5/P359	Philandersbron	G:C:B-	Landfill	30/11/1999	The Management Council - Mier Rural Area
Northern Cape	16/2/7/D540/D18/Z1/P360	Loubos	G:C:B-	Landfill	30/11/1999	The Management Council - Mier Rural Area
Northern Cape	16/2/7/D570/D1/Z1/P361	Groot Mier	G:C:B-	Landfill	30/11/1999	The Management Council - Mier Rural Area

## 6 ELECTRICITY SUPPLY

The Hakskeenpan falls within the Dawid Kruiper (Mier Local) Municipal Supply area. Eskom is currently the electricity supply authority for the Rietfontein, Mier, Loubos and surrounding areas.

Eskom supplies these towns via NAMPOWER from Kokerboom substation with an overhead power line. The upstream infrastructure from the desired point of supply at Hakskeenpan is at capacity and cannot accommodate additional loads or electrical connections.

Previous applications submitted to Eskom for electricity connections were not approved because of the lack in electrical supply capacity from Eskom.

The abovementioned information was gathered during an informal discussion with network analysers and planners from Eskom.

The following proposals may be considered:

- Load shedding of surrounding towns

Consider the possibility of load shedding of the surrounding town at strategic periods to make capacity available at Hakskeenpan.

- Submission of an Eskom Application

The submission of the Eskom application for the desired electrical demand can be considered to obtain official feedback on the status quo of the infrastructure and available capacity.

- Renewable Energy

1. The construction of a Solar Photo Voltaic Plant might be considered to supply electricity during the day.
2. Area lighting and personal lighting can be facilitated by rechargeable floodlights during the night.
3. Warm water heating of water can be achieved by solar water geysers and/ or gas geysers
4. Alternative energy sources can also be used for preparation of eatables and cooling of beverages.
5. Solar photo voltaic installations can also be hired from suppliers for temporary use.
6. Essential installations should however be supplied with diesel generators.

- Diesel Generators

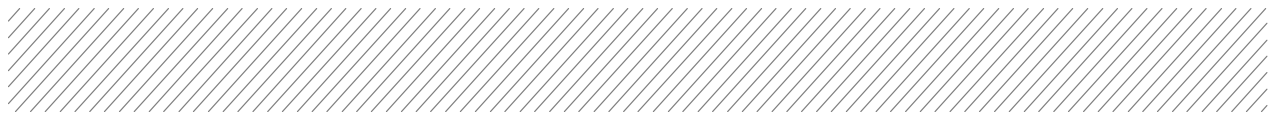
Diesel generators are readily available and offer the option of renting diesel generators for temporary use.

Financial implications and risk assessments

	<b>Load Shedding</b>	<b>Eskom Application</b>	<b>Renewable</b>	<b>Diesel generators</b>
Initial Capital Investment	Low	Low	High	Low
Maintenance and running costs	None	None	Low	High
Leading time	Interim	High	High	Low
Sustainability	High	-----	Interim	High

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## 7 CONCLUSION

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