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- SCOPING REPORT -

ENVIRONMENTAL IMPACT ASSESSMENT

**Proposed Vodacom Cellular Mast**

*Maralaneng BO 5688*

DAE Ref. No. 16/1/6 -

# 1 Introduction

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An environmental investigation was conducted on the farm Mphathlele 457 KS, located approximately 25 km south-east of Lebowakgomo, in the Northern Province. The purpose was to compile a Scoping Report as part of the Environmental Impact Assessment Process required by the National Department of Environmental Affairs and Tourism, on an application for the proposed construction of a Base Station, cellular mast, and access roads to these structures.

## 1.1 Terms of reference

The investigation was requested by Mr. Mark Barkhuizen of the firm Vodacom, as part of the application process for the construction of a Base Station and Cellular mast and access road towards these structures.

The Scoping Report was prepared according to:

- Section 21, 22 and 26 of the Environment Conservation Act (Act 73 of 1989)
- Discussion Document: A National Strategy for Integrated Environmental Management in South Africa, April 1989
- Guideline Document: EIA Regulations - Implementations of Sections 21, 22 and 26 of the Environment Conservation Act, April 1989
- The National Heritage Resources Act (Act 25 of 1999)

The following activity listed in the Guideline Document applies:

*“The construction of structures associated with communication networks, other than telecommunication lines and cables, as well as access routes leading to these structures”*

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### Appendices

The aim of the Scoping Study is to determine the present state of the environment, including:

- the possible occurrence of rare and endangered species
- the possible presence of archaeological sites
- the possible environmental and social impacts, resulting from the proposed development

The Scoping Report must include descriptions of:

- the project
- possible effect on the environment
- environmental issues identified
- alternatives identified
- the public participation process followed

## 1.2 Information Sources

The following sources of information were used during the investigation:

1. SA Topographical Sheet 2230 2429 BC LEBOWAKGOMO, 2<sup>nd</sup> ed. (1983).
2. Vodacom Site Specifications
3. Civil Aviation Authority approval
4. Technical Sketches
  - *Base Station*
  - *Mast*
5. Consent Document for usage of the premises

### **1.3 Investigative method**

The investigation consisted of the following steps:

#### *Desk study*

All available information was collated and evaluated.

#### *Field investigation*

The site was visited and assessed in terms of the occurrence of rare or endangered species, archaeological remains and different habitats. Possible environmental impacts were identified. When required, specialist investigations are requested as applicable.

#### *Public participation*

The standard procedures as indicated in the Guideline Document are followed, viz. the placement of a newspaper advertisement in a locally available newspaper and display of a site notice as a minimum.

#### *Report writing*

The information obtained during the site visit and from specialist reports were interpreted and a report is compiled, attempting to present all the required information in a compact manner.

## 2 Description of activity

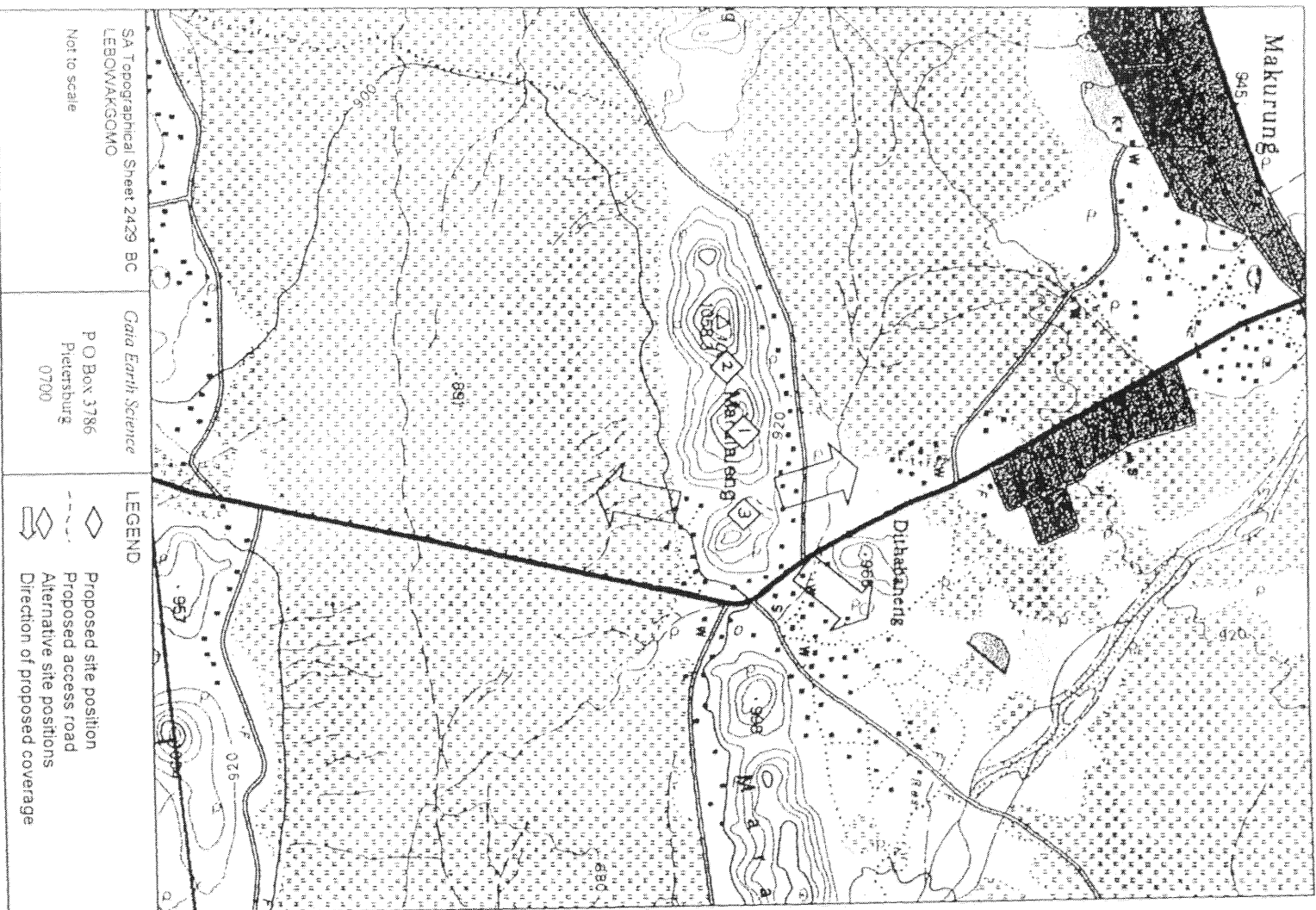
An application is lodged for the construction of a 55 m lattice mast for cellular communication purposes. The motivation for the application is to:

1. elevate sector 2 of the existing Lebowakgomo site, which is permanently in congestion
2. provide new coverage to the villages and road towards Masemola (east of proposed site)
3. provide new coverage to villages and road towards Mphathlele (north of proposed site)

The proposed site is located on the farm Zuiping 487 KS, approximately 25 km south-east of Lebowakgomo in the Northern Province. The Greater Lebowakgomo TLC acts in the capacity of landowner.

Site no.	: BO 5688
Location	: On a hill next to a gravel road leading to Masemola
Farm	: Zuiping 487 KS
Latitude	: 24°22'03'' S
Longitude	: 29°34'39'' E
Elevation	: 960 m ASL
Size of site	: 12 x 10 m
Fence type	: Green steel palisade and flat wrap razor wire
Escom pole no	: HTMR 102/5/28/A
Land use	: Unspecified
Adjacent land use	: Rural residential

A Civil Aviation Certificate of Authority has been obtained and states as a requirement day/night markings. This will include red and white paint and a navigational light on the mast. The site will be subject to a foundation inspection by a professional engineer.



SA Topographical Sheet 2429 BC  
LEBOWAKGOMO

Gata Earth Science  
P O Box 3786  
Pietrusburg  
0700

**LEGEND**

- ◇ Proposed site position
- - - Proposed access road
- ◇ Alternative site positions
- ⇨ Direction of proposed coverage

### 3 Alternatives defined

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The decision on a specific site is made after consideration of various factors. After the need for improved coverage is identified in a specific area, possible sites that would link with the existing network route, are identified. At each of these sites, the following are considered:

- topographical features that might interfere with transmission signals
- % coverage that might be obtained
- accessibility from existing roads and electricity features
- willingness of landowner or -occupant to enter into a lease agreement
- known environmental sensitivity

#### **Sites considered:**

##### *Position 1*

The first identified position was at the highest point of the hill. Upon site inspection, it was, however, realised that this position would be too difficult to reach. Construction of a base station and road would be very complicated as the area is scattered with large boulders. Only the first objective would be reached.

##### *Position 2*

The second option was to construct the base station next to an existing reservoir to the west of the highest point of the hill. An existing access could be used, which would minimise any possible environmental impact. Coverage to Mphathlele and Masemola would, however, be impaired, as a “signal shadow” would be created by the high rocky outcrop. A mast at this position would only alleviate pressure in Lebowakgomo Sector 2 and not reach objectives 2 and 3.

##### *Position 3*

The third option was to move the site to the westernmost summit of the rocky hill, nearest to the gravel road. A base station at this site would be ideal, as it would link up with the Masemola and Mphathlele masts, and also reach Lebowakgomo Sector 2.



#### 4 Biophysical Site Description

After taking all alternative position into consideration, position 3 was chosen as the final.

The application site occurs in the Mixed Bushveld of the Savannah Biome. This Bushveld represents a great variety of plant communities, with many variations and transitions - from a dense, short, bushveld to a rather open tree savannah, covering the greater part of the Northern Province.

Dominant trees include the *Combretum apiculatum*, *Acacia caffra*, *Dichrostachys cinerea*, *Sclerocarya birrea*, *Terminalia sericea*, *Ochna pulchra*, *Grewia flavia*, *Peltophorum africanum* and *Burkea africana*. Common grasses include *Digitaria eriantha*, *Schmidtia pappophoroides*, *Antephora pubescens*, *Stipagrostis uniplumis* and various *Aristida* and *Eragrostis* species. Fire and grazing determine the structure of this vegetation type. The Mixed Bushveld is conserved in various smaller provincial nature reserves, private game farms and conservation areas.

The proposed site is located next to the neck between two rocky outcrops on a hill next to the gravel road between Lebowakgomo and Masemola. Existing access is provided to the foot of the hill. The hill is quite steep and very rocky. Vegetation is sparse and therefor not representative of the vegetation expected in this veld type. The site was inspected by a professional archaeologist and was found not to contain any archaeological or cultural material.

Confirmed on this day 29 of November 2000.....

Name

..... P. van der Merwe

Company

..... P. van der Merwe Research Consultants

Signature

..... P. van der Merwe

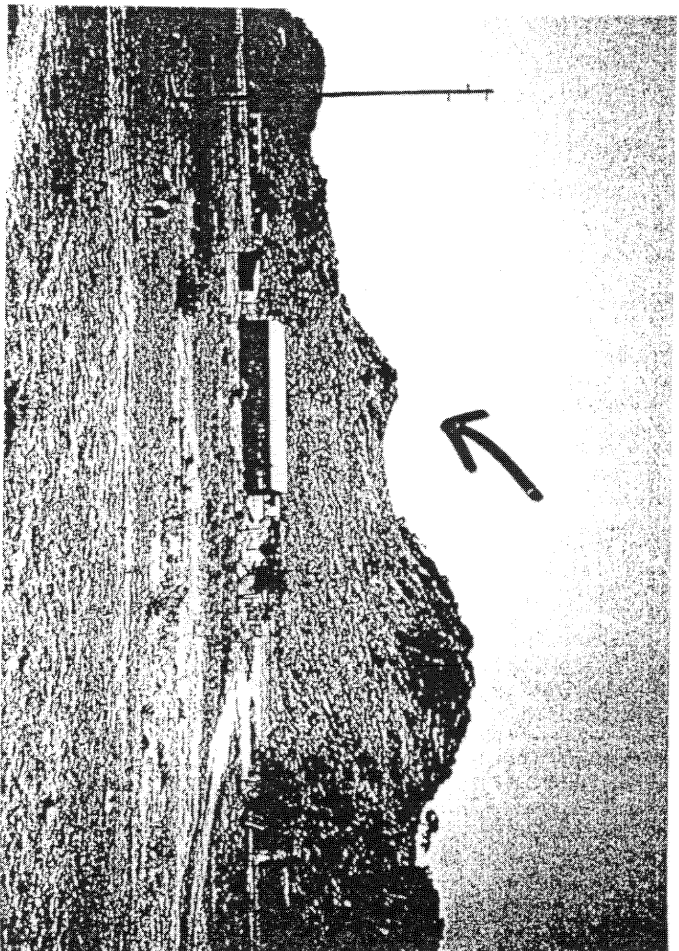


Fig 1 View towards the proposed site. Photograph taken from the gravel road between Lebowakgomo and Masemola



Fig 2 View from proposed mast position towards target area of Lebowakgomo Sector 2

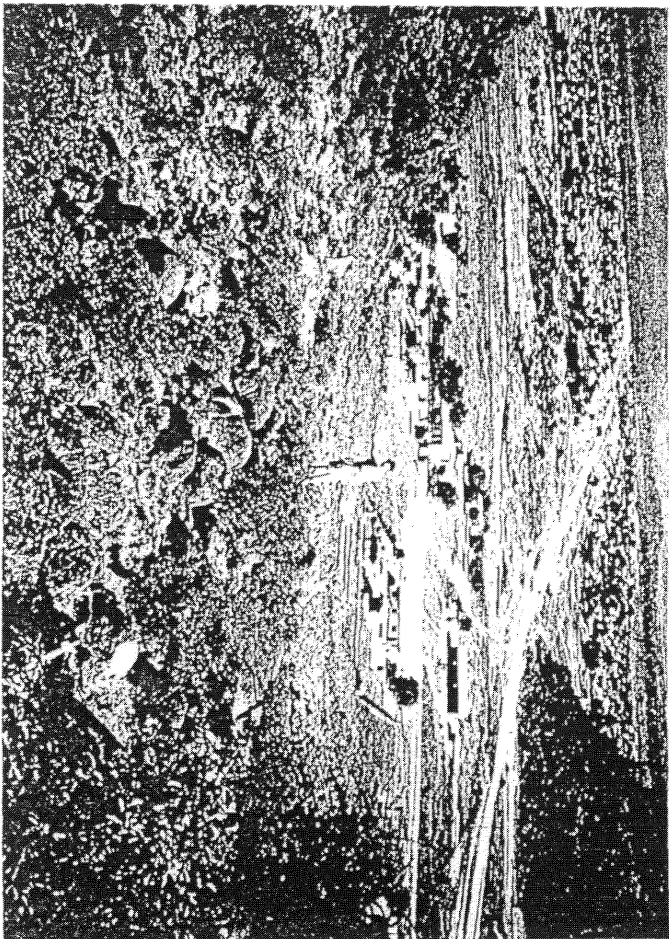


Fig 3 View of proposed route to site, with site position in foreground

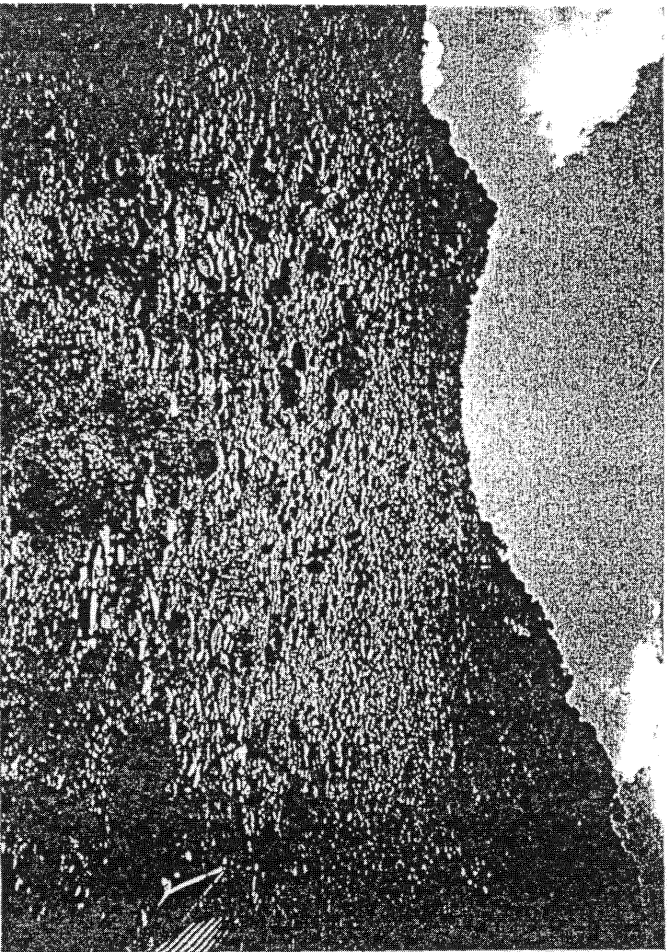


Fig 4 View of proposed road to site from foot of hill

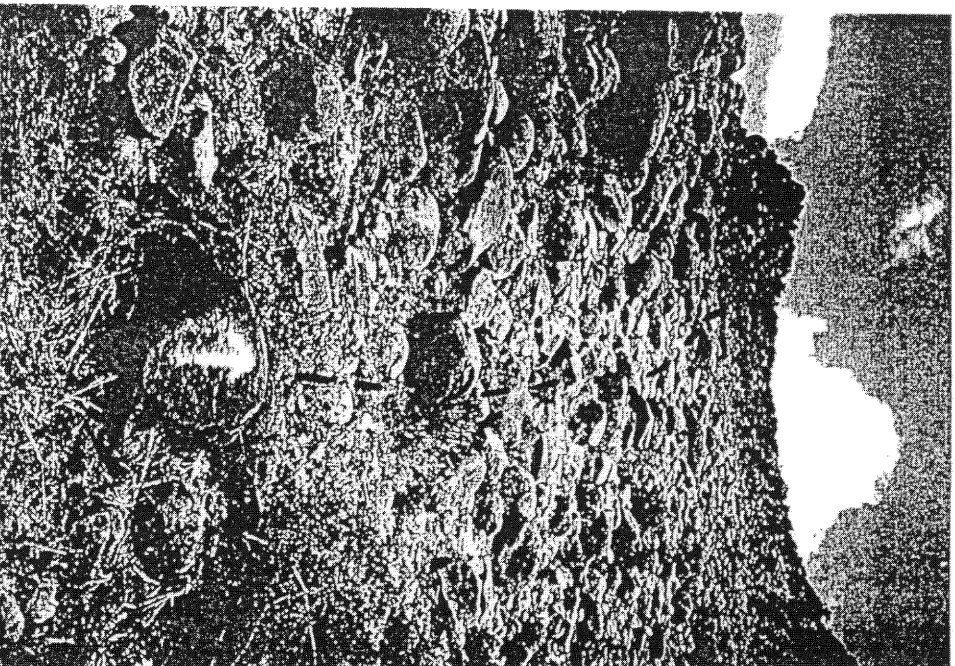


Fig 5 Detail of proposed road

## 4 Public Participation Process

After identifying the potential site, Vodacom communicated with the legal owner of the land (Greater Lebokwagomo TLC) and obtained permission to construct the mast on the specific site ("Consent for Usage" document attached). The EIA-process was advertised in the Northern Times of November 8, 2000. The same notice was displayed next at a crèche and postal agency opposite the proposed site. No comments or queries were received.

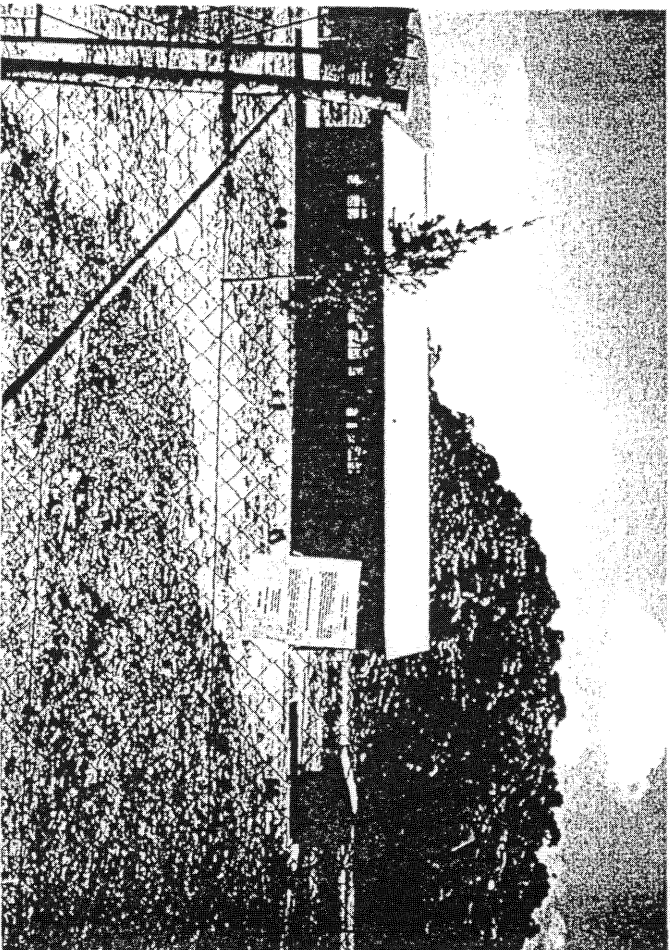


Fig 6 Site notice at the local crèche

**ENVIRONMENTAL IMPACT ASSESSMENT**

Notice is given in terms of Regulation 4(6) of the regulations published in Government Notice No R. 1183 under Section 26 of the Environment Conservation Act (Act 73 of 1989) of intent to apply for the construction of a 55m lattice mast for cellular communication purposes at:

**Maralaneng (on the farm Mphathlele 457 KS)**

In order to ensure that you are identified as an interested and/or affected party please submit your name, contact information and interest in the matter before

November 21, 2000  
to  
GAJA Earth Science  
PO Box 3786 PIETERSBURG 0700  
Fax (015) 298-9028

*Northern Times 8/11/00*

NO JOBS

Fig 7 Newspaper advertisement

## 5 Infrastructure

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### 5.1 Access Roads

#### 5.1.1 Vodacom Roads Policy

##### *Construction roads*

The purpose of construction roads is to supply the Base Station contractor with a temporary road to enable him to obtain access to the site where the Base Station has to be constructed. The policy is to utilise and upgrade existing roads as far as possible. Should a new road be required, the following are taken into consideration:

- The route leading to the base station would be kept as short as possible to have the minimum impact on the environment.
- The removal of trees would as far as possible be prevented.
- The gradient of the road would be limited to < 1:4.
- The surface of the road would be cambered to 5 % to prevent water from causing erosion on the surface.
- Mitre drains would be cut at approximately 20 m intervals at an angle to the road to prevent water from collecting on and next to the road surface.

##### *Maintenance roads*

The final road is designed as soon as the Base Station is completed. With the design, the following are taken into consideration:

- The road gradient as well as the ground conditions determines the surfacing provided.
- The aim is to construct a dirt road (up to 1:5 gradient). The road would be constructed of a selected layer, 150 mm thick, consisting of approved imported fill. As far as possible, the road would be 3m wide.
- To prevent erosion, ground berms 300 mm high are constructed across the road at 15 m intervals. The “upstream” section of the berms are protected by means of stone pitching that would prevent finger erosion on the road surface.

- Both sides of the road would be protected from erosion by means of stone pitching 300 - 500 mm wide.
- Concrete paving is used should the gradient of the road exceed 1:5. The concrete paving would be 150 mm thick and 2.5 m wide. Storm water flow would be controlled with a concrete kerb on the side of the road. Outlets on the side of the road would be stone pitched to prevent erosion.

#### 5.1.2 Proposed Access Road

An access road would have to be constructed, as the proposed site is located on top of a hill with no existing access.

The proposed access road is very rocky and will be constructed against a relatively steep slope. The entire road (300 m) will be constructed of concrete. The contractor must ensure that the road is not turned into a “channel”, in order to ensure that runoff is directed into the yeld. The contractor is under strict orders to remove rocks in the roadway with the minimum of disturbance and/or destruction to the surroundings.

ROAD LOGS - CONSTRUCTION PHASE	
Distance (m)	Description
0 - 300	Start road construction towards foot of hill. Fill road on average 200 mm for gravel section. Use retaining blocks. Road ends at gravel road.

ROAD LOGS - MAINTENANCE PHASE	
Distance (m)	Description
0 - 300	Start road construction (concrete) Stone pitching at both sides, plus kerbing. End at existing gravel road

### 5.1.3 Road maintenance

The Base Stations have to be visited on a regular basis and therefor the roads should be kept in a good condition. Maintenance contractors have to report all damage on a six-weekly basis.

### 5.2 Electricity

An overhead electricity line would be provided from ESCOM pole number HTMR 102/5/28/A.



## 7 Environmental Impact

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1. Construction of the mast will have a negative impact on all habitats and fauna associated with the immediate site.  
*Medium to high, irreversible, short to long term*
2. Clearing of vegetation may result in the increased invasion of weed species. However, the site is already cleared to an extent.  
*Low, short to medium term*
3. Construction activities will involve serious groundworks, the raising of dust, generation of noise and building rubble and possible erosion.  
*High, temporary, short to medium term.*
4. Littering by construction workers  
*Low, temporary, short term*
5. Negative visual impact, as the proposed mast will be constructed on the highest point in the immediate vicinity. The fact that a lattice mast instead of a sectional pole will be used will lessen this effect.  
*Medium, long term (mast life)*
6. Positive impact of improved cellular coverage, contributing to improved availability of communication infrastructure in the south-western section of Greater Lebowakgomo.  
*High, long term*

## 8 Mitigation measures

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1. Retain rocks and boulders as far as possible, as they form vital habitats for numerous reptiles. Rocks removed during road and site construction should not be taken from the site, but deposited next to the road.
2. Any succulent plant specie encountered, must be carefully removed (retain some soil around the roots) and taken to the herbarium of the University of the North. Contact DAE-NP or Gaia to this regard.
3. Local traditional healers should be provided with the opportunity to gather medicinal plants before vegetation is removed.
4. Removal of all building rubble, litter and waste material once construction has been completed.
5. In the absence of suitable toilet facilities, the contractor should provide chemical toilets that can be removed afterwards.
6. Restrict the use of open fires for food preparation, as a precaution against accidental fires.

## 9 Conclusion

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The proposed mast would have a negative impact on the natural environment, which will be a low impact as it can be mitigated to a great extent. This negative impact refers mainly to groundworks that need to be conducted during road construction, as well as the visual impact. The possible impact on the surrounding vegetation would be negligible, as if the surrounding area is totally disturbed as vegetation consist mainly of pioneer species.

Maintenance of the site will be done according to ISO 14 001 standards to which Vodacom subscribes. This would ensure that strict standards are maintained regarding spills and litter at the stand, as well as road maintenance.

It is concluded that:

- the applicant has obtained all the relevant approvals
- there are no sensitive environmental issues that would prohibit development at the site.
- the need for improved cellular reception in a underdeveloped rural area of South Africa will be met

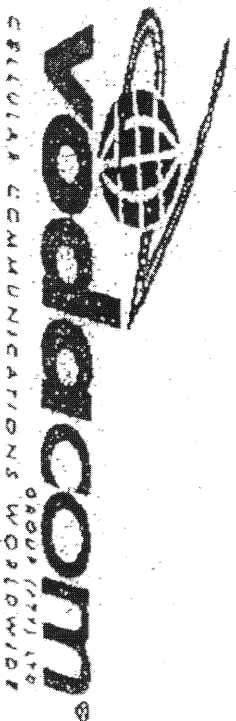
*It is thus recommended that the application be approved.*

# Appendices

1. Site Specifications
2. Authorization of Employees
3. OVA Approval
4. Technical Sketches

APPENDICES TO THE MAIN REPORT





BO: 5688  
BASE STATION: MAZALANDERS

ACCEPTANCE OF PROPOSAL FOR NEW BASE STATION:

I M.S. MATHANAYAKI.....(Legal property owner / duly authorised representative) hereby accept the proposal dated 16.10.2000 made by Vodacom and agree that the construction of the base station can commence on the basis of the said proposal. The lease agreement will be agreed to and signed by both parties as soon as possible.

Signed at Lebanon on 17.10. 2000

[Signature]  
(Who warrants being duly authorised)

[Signature]  
(Witness)



CAA APPROVAL



TO: SOUTH AFRICAN CIVIL AVIATION AUTHORITY

ATTENTION: Mr. Koos Pretorius

FROM: Projex Afrised

Tel: (012) 346-1643

Vodacom intends erecting a mast at a position as indicated below. Kindly evaluate the information and advise whether this mast may be erected and whether any markings are required on the mast.

Site No. <b>B05688</b>	Site Name: <b>Maralaneeng</b>
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Latitude: 

24	22	03	S
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Longitude: 

29	34	39	E
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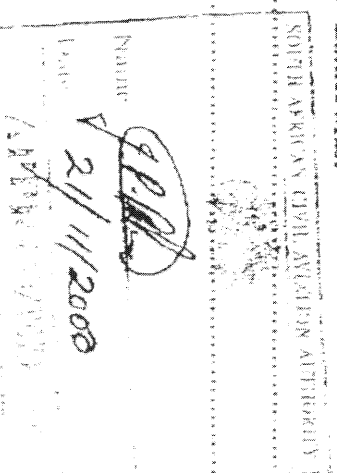
Height Above Sea Level: 

960	m
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Mast Height: **55m**

Mast Type: **Lattice Mast**

Remarks:



FOR VODACOM

15 November 2000  
DATE

Yours faithfully

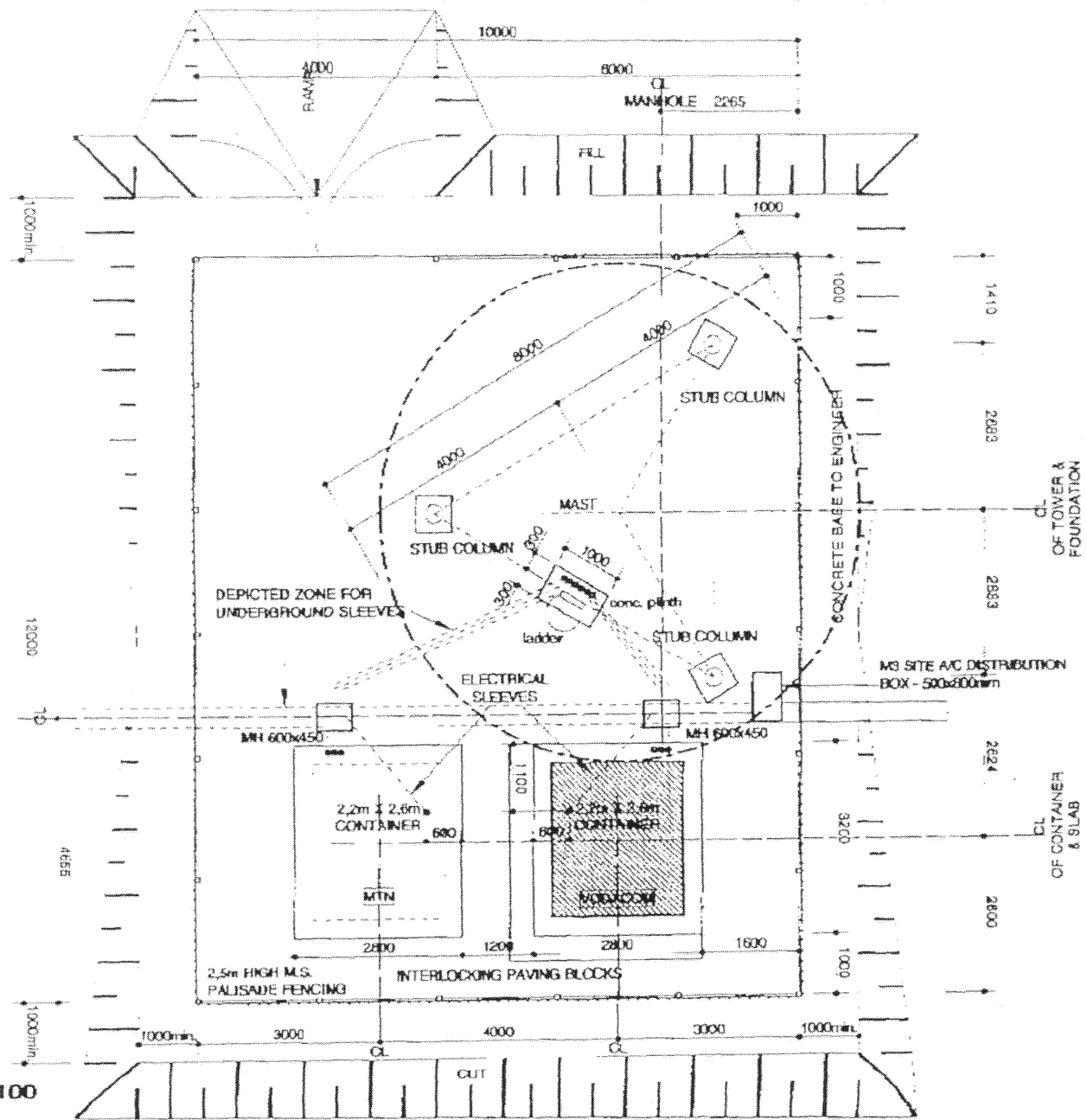
*Francis*

The above mentioned structure may / ~~may not~~ be erected and requires the following markings:

*DAY/NIGHT MARKINGS*







PLAN 1:100



P.O. BOX 260, GROENKLOOF, 0027  
TEL (012) 346-1643 FAX (012) 346-2706

**New 55m GSM mast  
for Vodacom  
on the farm  
Zuiping No.487-KS**

DRAWING TITLE  
**Plan  
MARALANENG  
BO: 5688**

Project No. PA2061		Drawing No. 03		Revision R0	
Scale AS	Date 11/00	Designed	Drawn EA	Checked	