

KAI! GARIB MUNICIPALITY



PLANGENI

CIVIL SERVICE REPORT

SK3393

Prepared for:

Kai!Garib Municipality
P.O. Box 8
KEIMOES
8800
Tel: 054 461 6400
Fax: 054 461 6400
E-mail: admin@kaigarib.co.za

Prepared by:

Stabilis Development (Pty) Ltd
P.O. Box 861
KIMBERLEY
8300
Tel: 053 833 1654
Fax: 053 831 3786
E-mail: info@stabilis.co.za

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1. BACKGROUND

A piece of land known as Plangeni, consisting of three portions with an area of 50 ha was registered in the name of Kai !Garib Municipality. The piece of land is located in the Northern Cape, Z.F. Mgcuwa district and Kai !Garib jurisdiction area. The coordinates of the land are as follow:

Longitude 21° 06' 3,96'
Latitude 28° 39' 01,75'

A locality drawings is attached as annexure A.

2. PURPOSE OF REPORT

The purpose of this report is to assist the application to register a township on the land for the planning of 500 residential sites. The absence of civil engineering services and possible development solutions for services are provided. The estimated development cost will be provided. The development of the land as a township will be done under the authority of Kai !Garib Local Authority.

3. GEOLOGY OF AREA

Very hard granite outcrops are visible on a large portion of the area. The granite is known as "Kanon Eiland Granite". The area is stable for house foundations, but the construction of underground services are expensive. The high percentage of hard rock excavation inflates the cost of services.

4. CIVIL ENGINEERING SERVICES

4.1 WATER

4.1.1 External water service

The area is located next to an irrigation canal and 2,5km from the Orange River. The capacity of the irrigation canal is insufficient for the supply of sufficient raw water to the proposed development and the irrigation farmers. The canal is also each alternative week shut down for a week.

The raw water must be abstracted from the Orange River and pumped to a purification plant. Servitudes for the supply pipe over private owned land will be required.

An application for a water license from the Department of Water and Sanitation will be required. No current license for water usage from the Orange River is available for the area. An environmental assessment will form, part of the application.

The water source and quality of raw water are reliable.

4.1.2 External water demand

The external raw water demand will be calculated according to the standards supplied in “Guidelines for Human Settlements Planning and Design”. The base of the information for the calculations are as follow:

- Current sites planned:	500
- Average household size:	4,8
- Population growth rate:	1%
- Planning period:	20 years
- Current population:	2400
- Future population:	2928
- Demand per person:	80ℓ/day

The demand calculation are as follow:

- Domestic demand	238,56 m ³ /day
- Municipal use and losses 15%	35,78 m ³ /day
- 20% over supply for external infrastructure	54,87 m ³ /day
- Purification losses 5%	16,46 m ³ /day
- Total	<u>345,67 m³/day (350 m³/day)</u>

4.1.3 Purification and water storage

A purification plant with capacity of 350 m³/day is required for the proposed township. Water storage capacity will be based on the following:

- Ground water storage	72 hours
- Elevated storage	8 hours

The calculated storage to be provided is as follow:

- Ground storage	1050m ³
- Elevated storage for peak demand	117m ³

4.1.4 Domestic water distribution

For the design of the water distribution network the following principles will be applicable:

- PVC class 10 pipes
- Ring feeders must be supplied
- Minimum pressure under peak demand – 10m
- Peak factor – 4
- Underground network with a minimum cover on pipes of 600mm
- Maximum water velocity under peak demand conditions – 1m/s

4.1.5 Site Connections

Each residential site will be supplied with a metered water connection. HDPE pipes will be used for the construction of the connection. Each site will be supplied with a water management device. Free basic water will be supplied to the site until a consumption of 6m³ per month is reached. Slow supply of water will be available after 6m³ consumption until the end of the month or if additional water supply is purchase.

Each occupied site will be supplied with a stand pipe in the yard.

4.2 SANITATION

The proposal for handling of waste water are:

- Grey water to be disposed on site
- Black water to be disposed on site utilizing VIP's or double put toilets.
- Septic tanks may be constructed, but the service cost of the tanks will be very expensive. The nearest waste water plant from Plangeni is Keimoes, 40km. Serious pressure will be put on the vacuum trucks of the municipality to accommodate the additional work.

4.3 ACCESS TO LAND

Access to the area is from a provincial road, R359 between Upington and Kakamas. The access road to the area is provided with interlocking paving blocks.

4.4 INTERNAL ROADS

The internal streets of the area will be graded gravel streets. The storm water run-off will be accommodated in the streets.

4.5 STORM WATER INFRASTRUCTURE

The storm water run-off from the development will on-surface and in the streets. The area do have a natural slope of 1:50 in a north-western direction. The slope is sufficient for on-surface draining system. A drawings indication the slope of the area is attached as annexure B.

5. SOLID WASTE REMOVAL

Kai !Garib Municipality did complete a feasibility study for the upgrading development and application for permits from the Department of Water and Sanitation for solid waste removal sites. This process of upgrading is incorporated in the IDP of the municipality. Funding for the projects is from the MIG programme.

At Plangeni a small transfer facility will be required. Until this facility is established, all solid waste must be transported to the site in Kakamas. This site is the nearest facility with a permit.

6. GRAVEYARD

The town planning process will indicate a location for a graveyard. The development of the graveyard will be funded from the MIG programme.

7. DEVELOPMENT STRATEGY AND COST

The provision of services in the Plangeni area is the responsibility of Kai !Garib Municipality. The required services of the area are incorporated in the IDP of the municipality. The IDP is updated each year, after negotiations with all communities in the jurisdiction area of Kai !Garib Municipality.

The provision of services to address the backlog is done according to a three year development plan, compiled according to the yearly allocation to the municipality through the MIG programme.

A cost indication for the backlog in civil engineering services at Plangeni are as follow:

- External water supply	R 3 858 230.00
- Water purification and storage	R 6 950 000.00
- Water network	R 3 162 500.00
- Metered site connection	R 2 012 500.00
- Streets and storm water	R 2 415 000.00
- Solid waste transfer site	R 450 000.00
- Graveyard development	<u>R 2 500 000.00</u>
	<u>R 21 348 250.00</u>
- VAT 15%	<u>R 3 202 237.50</u>
- TOTAL	<u>R 24 550 487.50</u>

8. EXISTING SERVICES

Households are already occupied sites on the area. Permanent and temporary structures are erected. The municipality was transporting potable water to the people. The potable water was stored in 5 000ℓ plastic tanks.

An emergency water supply and distribution project is currently under construction. The scope of the project is as follow:

- Project no.:	MIG –SMIF/NC0691/W/2020
- Project amount:	R 2 848 369.25
- Water distribution network:	2646m of uPVC piping
- 5000ℓ tanks with standpipes: no.:	15

- Water purification plant (Existing plant removed from Bloemsmond: no.: 1
- Raw water pump from irrigation canal: no.: 2

The access road to the area from the provincial road R359 is paved with interlocking cement paving blocks.

J.H.C. THERON Pr. Eng.
STABILIS DEVELOPMENT (PTY) LTD

DATE

ANNEXURE A

LOCALITY

ANNEXURE B

SLOPE OF AREA