CLIENT:

PROJECT:

ELECTRICAL ENGINEERING BULK SERVICES
INVESTIGATION AND REPORT:
PROPOSED TOWNSHIP GOUTROU
(THEMBELIHLE LOCAL MUNICIPALITY)

SERVICES PROVIDERS:

ELECTRICAL ENGINEERING BULK SERVICES INVESTIGATION AND REPORT:

PROPOSED TOWNSHIP GOUTROU

(HOPETOWN)
(THEMBELIHLE LOCAL MUNICIPALITY)

MAY 2020

Technical Report Prepared by	:	H Jonck
Date	:	May 2020
On behalf of	:	G3T Consult
For	:	Maxim Planning Solutions
Attention	:	Mr K Raubenheimer

ELECTRICAL ENGINEERING SERVICES

INVESTIGATION AND REPORT: PROPOSED TOWNSHIP GOUTROU (THEMBELIHLE LOCAL MUNICIPALITY)

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1. DEVELOPER AND SERVICE PROVIDERS DETAILS

1.1 Developers Details:

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2. BACKGROUND

Goutrou is a rural settlement in South Africa, located towards the north eastern side of the town Hopetown; Hopetown is a town which lies at the edge of the Great Karoo in the Northern Cape Province. It is situated on an arid slope leading down to the Orange River. The first diamond discovered in South Africa, the Eureka Diamond, was found at Hopetown.

Figure 1: Town Location

Goutrou lies in the Karoo region (see Fig 1 above). It's a rural/informal settlement area that lies strategically to the east of the N12 national route between Hopetown and Strydenburg. The proposed development will lay across the R369 to the north and south and forms part of the greater Thembelihle Municipality area. Hopetown is an hour and twenty minutes' drive away from Kimberley, to which it is connected by road and rail. Hopetown is the closest town to Goutrou that can provide income and economical enhancement for the rural settlement surrounding area.

Hopetown was founded in 1850 when Sir Harry Smith extended the northern frontier of the Cape Colony to the Orange River. A handful of settlers claimed ground where there was a natural ford over the Orange River, and by 1854 a frontier town had developed. Hopetown was named after William Hope, Auditor-General and Secretary of the Cape Colony Government at the time. Hopetown was a quiet farming area until several large diamonds, most notable the Eureka Diamond and the Star of South Africa, were discovered there between 1867 and 1869. The Cape Government Railways were founded in 1872, and the Cape government decided to run the main western line, between the Kimberley diamond fields and Cape Town on the coast, directly through Hopetown. The ford was upgraded to a railway bridge in 1884.

Hopetown and Strydenburg are incorporated into the Thembelihle Local Municipality in the Northern Cape Province, situated in the heart of the Karoo halfway between Cape Town and Johannesburg on the N12.

Thembelihle Local Municipality is part of Pixley Ka Seme District Municipality. It is one of the smaller municipalities of the eight that make up the district, accounting for only 8% of its geographical area. This mostly agricultural landscape is rich in natural resources and Thembelihle means 'a place of hope'.

3. SITE DESCRIPTION

3.1 LOCATION

The proposed development site, Goutrou Extension, Hopetown, Thembelihle Local Municipality, approximately 122 hectares in size. It is situated east of Hopetown.

Figure 2: Proposed Development of 1500 Residential Erven

The site is accessible from the N12 national route with a turn off onto the R369 provincial road, leading towards Orania. (See Figure 2 above).

3.2 TOPOGRAPHY

The site is located on a northern slope towards the Orange River, northeast of Hopetown.

The proposed site has a gradual slope from the southwest towards the northeast of approximately 13.6m over a distance of 1.85kms, 1092 to 1099 Metres Above Sea Level. The site indicates an average slope of 0.8% to 1.3% across the entire site.

Figure 3 above depicts the gradient of the proposed site.

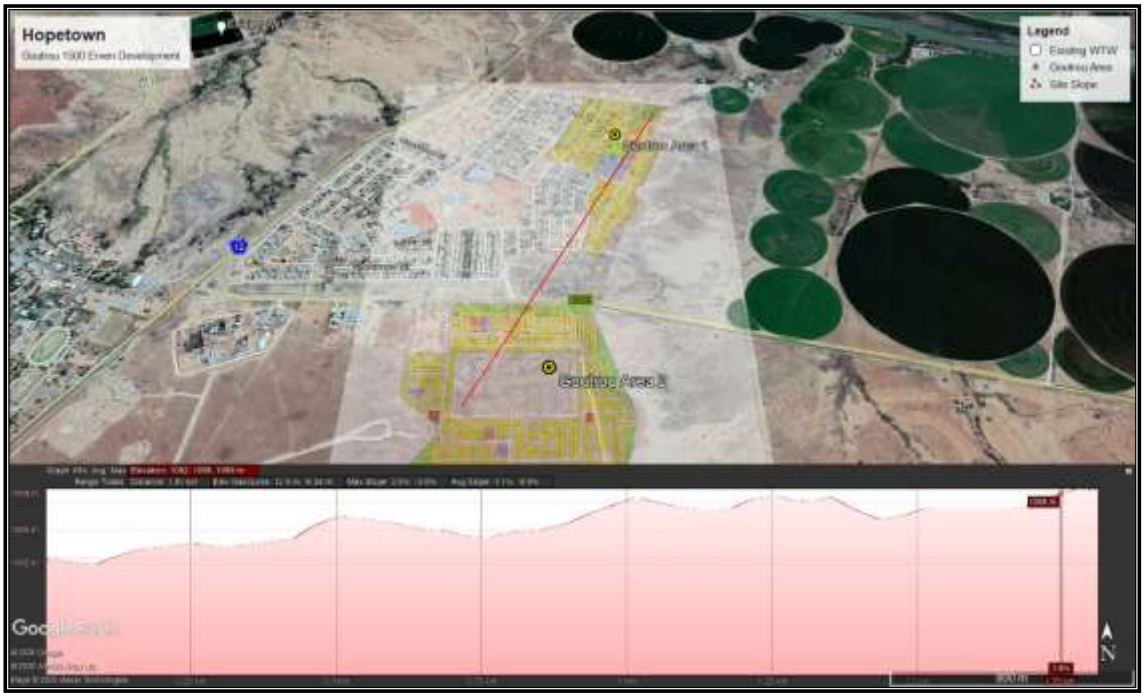

Figure 3: Site Elevation

3.3 CLIMATE

3.3.1 Rainfall

Hopetown normally receives about 322mm of rain per year, with most rainfall occurring mainly during autumn. It receives the lowest rainfall in July and the highest in March. Statistics recorded at the closest weather station De Aar, to the site. Winters are dry with frost common.

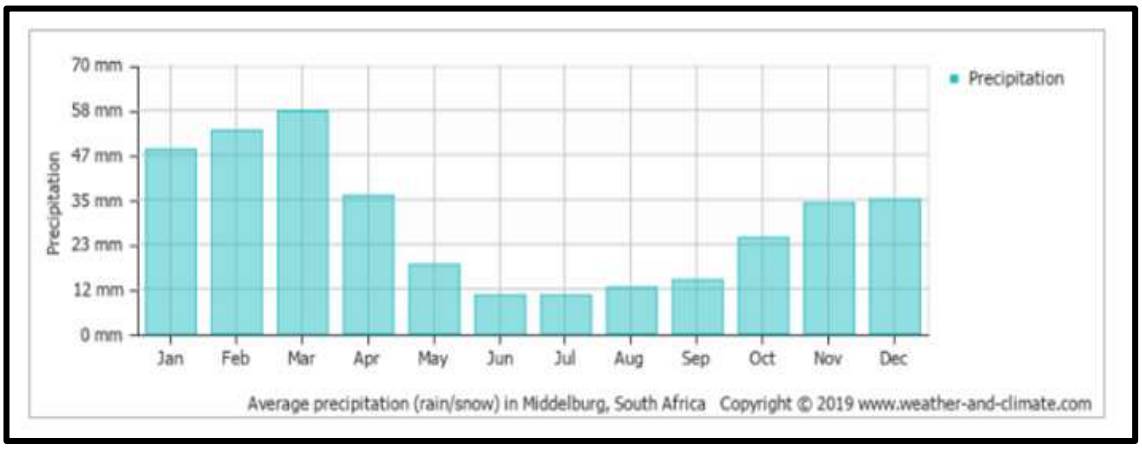

Figure 4: Precipitation

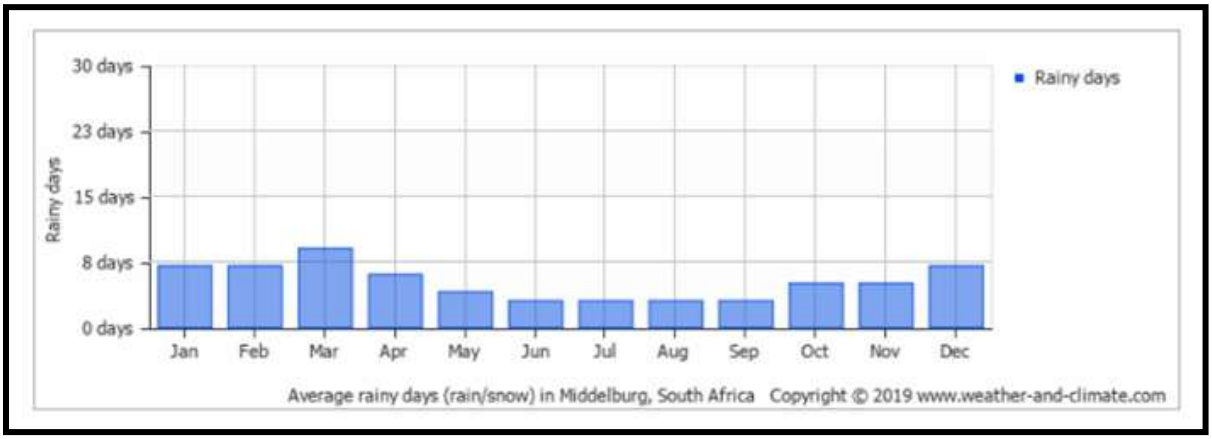

Figure 5: Rain Days

3.3.2 Temperature

The monthly distribution of average daily maximum temperatures for Hopetown range from 17.7°C in June to 32°C in January. The region is the coldest during July when the mercury drops to 1°C on average during the night. The warmest months are normally December, January and February and the coldest month is July.

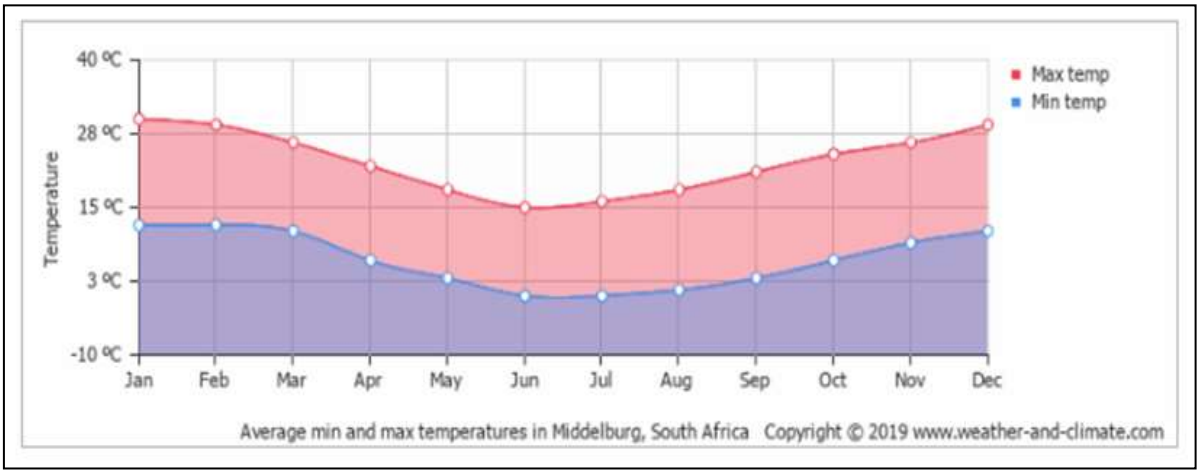

Figure 6: Temperatures

3.4 VEGETATION

Hopetown is a town which lies at the edge of the Great Karoo in South Africa's Northern Cape Province. It is situated on an arid slope leading down to the Orange River. The Karoo xerophytic vegetation consists of aloes, mesembryanthemums, crassulas, euphorbias, stapelias, and desert ephemerals, and becoming very sparse going northwards into Bushmanland and from there into the Kalahari Desert.

The site itself is covered by patches of grasslands of which some was used as agriculture land, and some indigenous trees are present on site. The typical Karoo vegetation is used to support large game, sometimes in vast herds, sheep thrive on the xerophytes, though each sheep requires about 4 ha of grazing to sustain itself.

3.5 GEOLOGY

A phase 1 engineering geological investigation with reference to GSFH-2 specification was conducted on the proposed development site at Goutrou Extension, Hopetown, Thembelihle Local Municipality, Northern Cape Province, with the aim to assess aspects such as geology relief and subsoil conditions which may influence the planned urban development in the area.

The following information was consulted during the investigation. The geological map 2924 Hopetown. Scale 1:250 000. The Geological Survey of South Africa. The topography map 2924CA Hopetown. Scale 1:50 000.The Chief Directorate: Surveys and Land Information, Mowbray.

The site is underlain by shale and sandstone of the Ecca Group, Karoo Supergroup, but is locally covered by recent aeolian sand and calcrete gravel of the Kalahari Formation. Locally, the site is covered by alluvial gravel and calcrete.

The typical soil profile is dry to slightly moist and moist, red to dark brown, loose to dense, and open textured sand with gravel of calcrete. Aeolian & pedogenetic. Large calcrete boulders & gravel with refusal on hard pan calcrete, Pedogenetic. Some severe problems regarding excavatability can be expected on the site and a competent TLB, excavator, pneumatic tools and even blasting will be required to reach installation depths for services in many places The average refusal depth was calculated at less than 0,5m. To ensure the stability of excavations, it will need standard sidewall protection in excavations exceeding 1,5m. Due to the level of development surrounding the area, the likelihood for the development of borrow pits on site are low.

The potential for lateral soil movement or erosion is medium to high, and the loose sand is easily washed away during thunderstorms. Except for local slope instability within opened trenches and the collapse of pit side walls, no other slope instability is expected within these relative flat areas.

The excavation characteristics of the different soil horizons encountered have been evaluated according to the South African Bureau of Standards standardized excavation classification for earthworks (SABS − 1200D) and earthworks (small works− SABS 1200DA).

In terms of this classification and the in-situ soil/rock consistencies as profiled, the relationships given below are generally applicable:

- "soft excavation" - very loose/very soft through to dense or stiff.
- "intermediate excavation" - very dense/very stiff through to very soft rock.
- "hard excavation" - soft rock or better

Problems regarding excavations of the upper material is expected and it is difficultly excavated by the competent TLB, and it was classified as intermediate in restricted and non-restricted excavation (SANS 1200 D).

The ideal conditions for urban development may be listed as follows:

- A smooth surface gradient with slopes less than 12. Accessibility should not be restricted by topography (plateau areas).
- No potential for slope instability features such as landslides, mud flows etc.
- Easy excavation for foundations and installation of services (normal depth of 1,5 m required).
- Foundations above the ground water level or perched water table, with not too low permeability.
- Development above the 1:50 year flood line.
- Adequate surface and subsurface drainage conditions, with minimal erosion potential.
- No presence of problematic soils, for example heaving clays, compressible clays, sand with some collapse potential, or dispersive soils, that will require expensive remedial measures.
- No potential for surface subsidence due to the presence of dolomite (sinkholes) or undermining.
- No damaging differential subsidence or movement (less than 5mm total movement at the surface allowed).
- The site should be placed away from potential pollutants such as waste disposal sites.

Seepage and the presence of perennial fluctuations of ground water were not encountered on site, but a seasonal perched water table may exist.
Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures.

The site contains slightly collapsible, compressible and soil with a low expansive potential. Foundations will require normal treatment to withstand movement associated with the variable moisture content of the soil.

Storm water diversion measures such as ponding pools are recommended to control peak flows during thunderstorms. All embankments must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.

3.5.1 Drainage

The site is located on a shallow slope towards the north in the direction of the Orange River. Plate flow is the dominant drainage pattern on site, and no prominent drainage channel intersects the site. Drainage occurs in a northern eastern direction on site.

Although no seepage or the presence of perennial fluctuations of ground water were not encountered on site, we expect that a seasonal perched water table may exist. A calcified profile indicates that some perennial water level fluctuations occur. Ground water in the form of seepage was not

intersected in any test pits during the investigation, but some problems are foreseen and normal water tightening techniques such as damp course on foundation levels are required. The expected high permeability of the silty sand may lead to leachate from sanitation systems to reach the ground water, and a closed water borne sewage system is recommended. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures.

Storm water diversion measures such as ponding pools are recommended to control peak flows during thunderstorms. All embankments must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.

3.6 DEMOGRAPHIC OVERVIEW

As indicated in Table 1, the population of the Thembelihle Municipality (TM) increased from 14 467 in 2001 to 15 701 in 2011 which represents an increase of ~ 0.82%. The sizes of the TM household size have decreased from 3.8 to 3.7 in 2011 census. The statistics indicate that the household sizes have decreased however there is a stabilisation in the working 15-64 age group, staying at the same percentage and a decrease in the young 0-14 age group.

Table 3-1: Overview of key demographic indicators for Thembelihle Municipality

KEY DEMOGRAPHIC INDICATORS	TM	
ASPECT	2001	2011
Population	14 467	15 701
% Population <15 years	32.1	30.9
% Population 15-64	62.8	62.8
% Population 65+	5.9	6.4
Households	3 596	4 140
Agricultural Households	N/A	1 097
Household size (average)	3.8	3.7
Formal Dwellings %	77.1	77.5
Dependency ratio per 100 (15-64)	61.5	59.3
Unemployment rate (official)	23	28.4
Youth unemployment rate (official)	30	35.2
No schooling - % of population 20+	26.4	15.1
Higher Education - % of population 20+	6.4	6.6
Matric - % of population 20+	12.7	19.9

Source: Compiled from StatsSA Census 2011 Municipal Fact Sheet

The majority of the population in the TM in 2011 was Coloureds (70.8%), followed by Black African (15.2%), Whites (13.1%), Indian/Asian (0.5%) and Other (0.4%) (Census 2011). The dominant language spoken is Afrikaans (88.8%), followed by IsiXhosa (5%), English (1.3%), Setswana (1.2%) and Sesotho (0.7%).

The dependency ratio in TM decreased from 61.5 to 59.3. The decrease represents a positive socio-economic improvement by indicating that there are a decreasing number of people dependent the economically active 15-64 age group. The age dependency ratio is the ratio of dependents, people younger than 15 or older than 64, to the working, age population, those ages 15-64. Even though the dependency ratio has decreased there was a slight increase in the elderly age group 64 + that may indicate that more people are reliable on government grant payments.

In terms of percentage of formal dwellings, the number of formal dwellings in TM increased slightly from 77.1% in 2001 to 77.5% in 2011. This represents a small but positive socio- economic movement for the TM but however still reflects the challenges faced by the TM associated with the influx of workers and job seekers to the area. This figure also indicates that there is likely to be a housing backlog in TM.

3.6.1 Employment

The official unemployment rate in TM INCREASED for the ten-year period between 2001 and 2011. In TM the rate elevated from 23% to 28.4%, an increase of 5.4%. Youth unemployment in the TM also elevated over the same period. Youth unemployment in the TM area increased from 30% to 35.2%. These statistics may indicate the unsuccessful job opportunities created /available in the surrounding area. There are 5 393 people economically active (employed or unemployed but looking for work), and of these, 28,4% are unemployed, of the 2 831 economically active youth (15 – 34 years) in the TM area.

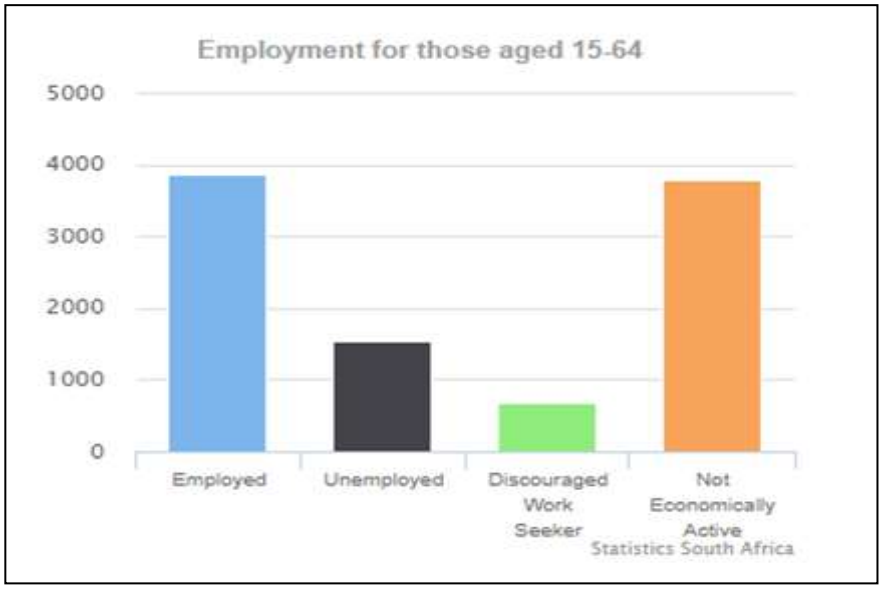

Figure 7: Employment Statistics

Source: Compiled from StatsSA Census 2011 Municipal Fact Sheet

3.6.2 Household income

Based on the data from the 2011 Census, 10.4 % of the population of the TM have no formal income, 2.4% earn between 1 and R 4 800, 4.2% earn between R 4 801 and R 9 600 per annum, 20.2% between R 9 601 and 19 600 per annum, 25.8% between R 19 601 and R 38 200 per annum, 17.8% between R 38 201 and R 76 400 per annum, 9.2% between R 76 401 and R 153 800 per annum, 6.2% between R 153 801 and R 307 600 per annum and 2.9% between R 307 601 and R 1 228 800 per annum. (Census 2011).

These figures are likely to be linked to the influx of job seekers to the area and the inability of all of them to secure work. This is also likely to result in an increasing number of individuals and households who are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the district and local municipality.

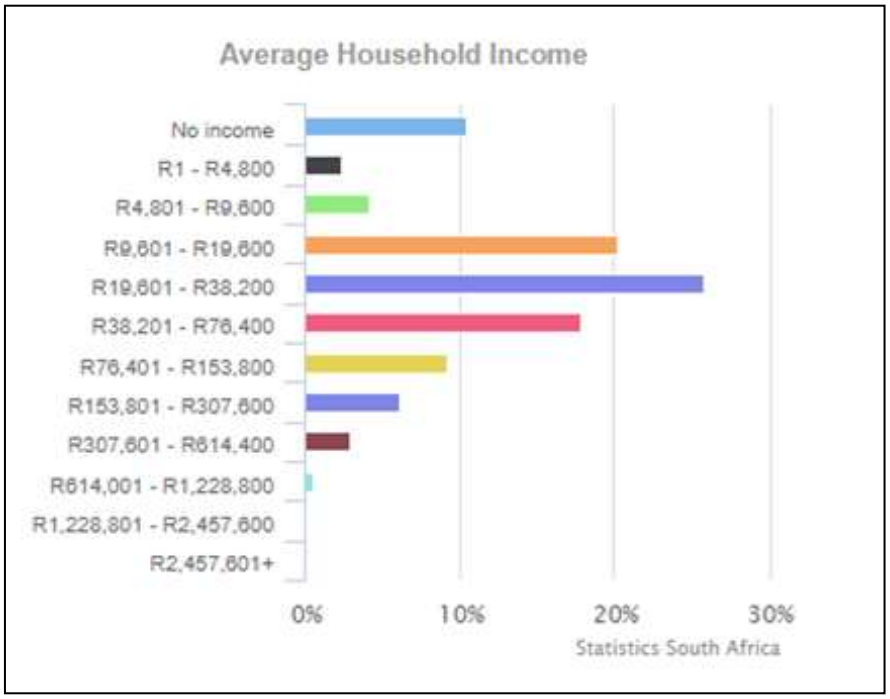

Figure 8: Household Income

Source: Compiled from StatsSA Census 2011 Municipal Fact Sheet

3.6.3 Education

The education levels at local municipal level also improved, with the percentage of the population over 20 years of age with no schooling in TM the decrease was from 26.4% to 15.1%. The percentage of the population over the age of 20 with matric also increased in TM, from 12.7% to 19.9%. However, despite this increase the figure for TM are still below the national (28.4%) levels in 2011. The figure for the TM is also below the provincial level (22.7%).

3.6.4 Municipal services

As indicated in Table 2, the municipal service levels in TM all improved over the period 2001 to 2011. This represents a socio-economic improvement. However, the service levels in the TM are significantly lower than both the national and provincial averages. The national averages for each of the relevant indicators are 46.3% (piped water inside dwelling) and 84.7% for electricity. The figures for the TM are some lower and some higher than the national and provincial averages.

Table 3-2: Overview of Access to Basic Services in TM

Municipal Services	TM	
	2001	2011
% households with access to flush toilet	45.5	60
% households with weekly municipal refuse removal	57.3	68.4
% households with piped water inside dwelling	25.9	33.5
% households which uses electricity for lighting	67.2	75.2

Source: Compiled from StatsSA Census 2011 Municipal Fact Sheet

There were 3899 households in the municipality: with an average household size of 3,8 persons per household. 43,8% of households have access to piped water either in their dwelling or in the yard.

3.6.5 Population Figures

Thembelihle means "a place of hope". Thembelihle Local Municipality is situated in the heart of the Karoo in the Northern Cape province. This mostly agricultural landscape is rich in natural resources. The first diamond was discovered in Hopetown and a great part of the Anglo-Boer War was fought in these parts. The municipal area encompasses a geographic area of approximately 8 023 km². Although unemployment is high, the municipality has great potential for developers.

The municipality incorporates the towns of Strydenburg and Hopetown and strives to deliver basic services to its community by ensuring that there is water, sanitation and electricity. Goutrou is a small rural settlement within the municipality. Hopetown and Strydenburg are the only established towns in the near vicinity of Goutrou. The population figures for the Thembelihle Local Municipality are depicted in Table 3 below.

Table 3-3: Beneficiaries 2011		
Suburb Benefiting	Total Benefiting Population	Total No. Of Households Benefiting
Hopetown	10 259	2 631
Strydenburg	2 987	747
Thembelihle NU	1 563	521
Total	14 809	3 899

Source: Compiled from StatsSA Census 2011 Municipal Fact Sheet

Thembelihle Local Municipality has increased from 14 467 people in 2001 to 15 701 people in 2011 (Census 2011) at an average growth rate of 0.82% per annum. Based on these figures the anticipated population in 2020 is displayed in Table 3-4 below.

Table 3-4: Anticipated Population by 2020		
Suburb Benefiting	Total Benefiting Population	Total No. Of Households Benefiting
Hopetown	11 041	2 831
Strydenburg	3 215	804
Thembelihle NU	1 682	561
Total	15 938	4 196

4. TERMS OF REFERENCE

G3T Consult CC was appointed by Maxim Planning Solutions on the 18 February 2020 for the compilation of Technical Service report for the Bulk Civil and Electrical Services for the development of 1500 low cost/ subsidized residential erven towards the North Eastern side of Hopetown with in the Thembelihle Local Municipality. The proposed development will consist of the following:

- Residential (Minimum 265m²) 1500 Erven
- Private Residential (Minimum 265m²) 356 Erven
- Business 3 Erven
- Church 3 Erven
- Creche 5 Erven
- Primary School 1 Erf
- Municipal 1 Erf
- Parks 8 Erven
- Total Area 102.3852ha

5. INFORMATION

5.1 INFORMATION OBTAINED

5.1.1 Existing Population Figures

As indicated previously in this report, the projected population figures for Hopetown where obtained from extrapolated figures based on the outcomes of senses 2011. These extrapolated figures may be summarised as follows:

- No. of Households: 2 831
- Population per Household: 3.9
- Total Population: 11 041

5.1.2 Town Planning Zoning

Town Planning Layout was received from Maxim Planning Solutions (Accredited Town and Regional Planners) on 4 th April 2020 *(Refer Annexure C).*

5.1.3 Flood Line Information

Not indicated at this stage.

5.1.4 Geological investigation

Phase 1 Geotechnical Investigation was compiled by Geoset CC to determine the potential for township development at Goutrou extension in Hopetown in January 2020.

5.1.5 Cadastral and Topographic survey

No topographical survey has been received to date; however, contours are visible on the town planning layout received from Maxim Planning Solutions.

6. TECHNICAL DESIGN PARAMETERS AND STANDARDS

The current Supply Authority in Goutrou is the Thembelihle Local Municipality.

The design criteria and specifications as contained in this report are based on the following:

- All electrical services must be designed in accordance to the standards, specifications and equipment types/brands of Eskom.
- NRS 034-1:1999, Electricity Distribution-Guidelines for the provision of electrical distribution networks in residential areas.
- SANS10142-1, The Wiring of Premises − Low Voltage Installations.
- SANS10142-1, The Wiring of Premises − Medium Voltage Installations above 1kV not exceeding 22kV.

- SANS 204 − Energy Efficiency in Buildings & SANS 10400 Part X and XA − Application of the National Building Act − Energy Usage.

- The proposed Goutrou development consists of Goutrou North (547 low-income residential erven) and Goutrou South (975 low-income residential erven). Within Goutrou South there is a private property (stand 624) which could accommodate approximately 356 low-income residential erven. Hence, considering sound engineering, this report makes provision for the bulk supply to the aforesaid private property as well.

- The proposed development of Goutrou North is already serviced and therefor has no bulk supply requirements.

- The Thembelihle Local Municipality does not have a formal electrification policy and thus no after diversity maximum demand (ADMD) per electrical connection value at secondary transformer level. Hence, for this report the maximum demand per household is based on Eskom's "Table 2- Classification of domestic consumers-Typical design load parameters for domestic consumers" (*Refer Annexure A*) and are summarised as follows:

Table 6-1: Proposed ADMD to be used at secondary transformer level

Proposed Land Use	kVA	Note
Res House (Min 300m2)	2.4	
Res House (Min 400m2)	3.6	
Res House (Min 450m2)	3.6	
Business		70W/m2 for 50% of erf size
Church	5	60A, single phase
Creche	15	60A, three phase
Primary School	100	
Secondary School	150	
Sportsfield	15	60A, three phase
Community facility		70W/m2 for 50% if erf size

6.1 DEMAND ESTIMATION

The maximum demand for the proposed development is based on the draft layout plan as received from Maxim Planning Solutions and calculated in accordance with the requirements of *Table 6-1* above.

Table 6-2: Maximum Demand Estimation – Goutrou South 975 Erven

Proposed Land Use	QTY	kVA	Total (kVA)	Note
Res House (Min 300m^2)	975	2.4	2340	
Res House (Min 400m^2)	0	3.6	0	
Res House (Min 450m^2)	0	3.6	0	
Business	3828	0.035	134	70W/m^2 for 50% of erf size
Church	3	5	15	60A, three phase
Creche	4	15	60	60A, three phase
Primary School	0	100	0	
Secondary School	0	150	0	
Sportsfield	0	15	0	60A, three phase
Community facility	0	0	0	70W/m^2 for 50% of erf size
Parks	0	0	0	
Public Street	0	0	0	
Sewer Pumpstation	0	0	0	Running load
Water Reservoir	0	0	0	Running load
Total maximum demand (kVA)			2549	
Total maximum demand (MVA)			2.55	

Table 6-3: Maximum Demand Estimation – Goutrou South Private Property, Stand 654, 356 Erven				
Proposed Land Use	QTY	kVA	Total (kVA)	Note
Res House (Min 300m^2)	356	2.4	854	
Res House (Min 400m^2)	0	3.6	0	
Res House (Min 450m^2)	0	3.6	0	
Business	0	0	0	70W/m^2 for 50% of erf size
Church	0	0	0	60A, three phase
Creche	0	0	0	60A, three phase
Primary School	0	0	0	
Secondary School	0	0	0	
Sportsfield	0	0	0	60A, three phase
Community facility	0	0	0	70W/m^2 for 50% of erf size
Parks	0	0	0	
Public Street	0	0	0	
Sewer Pumpstation	0	0	0	Running load
Water Reservoir	0	0	0	Running load
Total maximum demand (kVA)			854	
Total maximum demand (MVA)			0.85	

Total maximum demand for Goutrou South and Private Property (MVA)	3.40

6.2 BULK SUPPLY

6.2.1 General

We had preliminary negotiations with the Electrification Planning Division of Eskom Kimberley as well as the electrical contractor TCB Engineering of the Thembelihle Local Municipality, and we are reasonably certain that the contents of this document will meet with their formal requirements. However, a formal application must be submitted to the Thembelihle Local Municipality if the project is viable and proceeds.

6.2.2 Existing Network

Hopetown is currently supplied from their Municipal Main Intake 22/11kV "Ster" Substation which is supplied from the Eskom "Osborne-Waterford" 22kV feeder.
The Goutrou North development is already serviced and is supplied from the Municipal "Ster" Substation via an 11kV overhead "Hare" line which has adequate capacity for the Goutrou South development.

The bulk supply limitations on the Municipal and upstream Eskom network are summarised as follows:

a) The Notified Maximum Demand (NMD) at the Municipal Intake 22/11kV "Ster" Substation is 1,8MVA and is fully utilized. Hence, the NMD must be increased as per the load estimate requirements.

b) The upstream Eskom "Osborne-Waterford" 22kV feeder which supply the Municipal "Ster" Substation has 2MVA spare capacity and could accommodate approximately 800 low-income erven. The installation of a Voltage Regulator on this Eskom feeder will accommodate the proposed development in Goutrou South.

The existing overhead electrical network in Goutrou North is in the streets on the pavements approximately 500mm from the erf boundary. Hence, this overhead system must be considered with the installation of the proposed civil services in the streets.

6.2.3 New Network

The required network strengthening in order to accommodate the entire and/or portions of the proposed development are summarised under three options as follows:

a) Option 1- NMD Increase

- Increase the NMD with additional 1.92MVA.
- Install new 11kV pole mounted auto re-closer and metering unit at point of supply.
- Option 1 creates a capacity of 1920kVA which will accommodate ±800 erven at an estimated cost of R 7,542 million (excl. VAT).

b) Option 2-NMD Increase and add Voltage Regulator

- Increase the NMD with additional 3.4MVA.
- Install a new 11kV, 3Can Voltage Regulator on the new Eskom "Osborne-Waterford" 22kV feeder.
- Install new 11kV pole mounted auto re-closer and metering unit at point of supply.
- Option 2 creates a capacity of 3,4MVA which will accommodate ±1331 erven at an estimated cost of R 15,631 million (excl. VAT).

- The estimated cost of Option 2 includes the bulk supply to the private erf, no. 624. The pre-rata bulk contribution for erf 624 is estimated at R 3,907 million (excl. VAT).

Refer to *Annexure B* for a graphical representation of the layout of the existing 11kV bulk supply line.

6.2.4 Eskom / Municipal Electrification Programme

Both Eskom and Municipalities implement their electrification projects for low-income households via the Integrated National Electrification Programme (INEP) of South Africa of which the Department of Energy (DOE) is the funder based on conditional grant allocations.

Briefly, the following criteria must be met before the proposed area qualify as an electrification project:

a) Either Eskom or the Municipality or both may apply to NERSA for the Electricity Distribution License of the relevant area. An Integrated Development Planning (IDP) letter from the local Municipality must accompany the said application.

b) The relevant License Holder must apply to the DOE for funding and the DOE INEP applications must be submitted by 30 June of each year.

c) The Eskom Notified Maximum Demand (NMD) or Main Intake capacity must be confirmed. The INEP also cater for the required bulk supply infrastructure.

   In accordance with the Eskom debt policy an NMD increase application will not be approved if the relevant Municipality's Eskom account is in arrears; however, this matter is still a point of discussion not resolved between Eskom and the DOE because this action will prohibits the DOE with the required Government service delivery via the INEP.

d) The relevant area could be a formal or informal settlement.

e) The number of house/dwellings must physically exist on the site at the time of application.

f) The "as built" layout drawings in .dwg or. dgn format must be made available to the Supply Authority.

6.3 COST ESTIMATE OF BULK SUPPLY

Based on information currently available as well as present material and labour rates, the cost for the Electrical Bulk Supply installation options 1 and 2 are estimated as follows:

As noted in item 6.2.4, the abovementioned cost could be covered by DOE funding via the INEP programme.

Table 6-4: Goutrou South: 11kV Bulk Supply Options					
Summary Of Cost Estimate: 14 April 2020					
OPTION - 1(1 920kVA, 800 erven)					
ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1.	Preliminaries & General	Sum	1		R 97,500.00
2.	Municipal Eskom NMD Increase Conversion Fee	Sum	1.92	R 1,500,000.00	R 2,880,000.00
3.	Pole mounted 11kV, Auto Re-Closer and CT/VT Metering Unit	No	1	R 650,000.00	R 650,000.00
4.	Professional Fees	Sum	1		R 74,500.00
	Estimated Construction Cost of Option 1 (Excl. 15% VAT)				R 3,702,250.00
5.	Security Deposit	Sum	1.92	R 2,000,000.00	R 3,840,000.00
Estimated Construction Cost of Option 1, including security deposit (Excl. 15% VAT)					R 7,542,250.00
OPTION - 2(1MVA, 416 erven)					
ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1.	Preliminaries & General	Sum	1		R 442,500.00
2.	Municipal Eskom NMD Increase Conversion Fee	Sum	3.40	R 1,500,000.00	R 5,100,000.00
3.	Pole mounted 11kV, 200A, 3 Can Voltage Regulator	No	1	R 1,650,000.00	R 1,650,000.00
4.	Pole mounted 11kV, Auto Re-Closer and CT/VT Metering Unit	No	2	R 650,000.00	R 1,300,000.00
5.	Professional Fees	Sum	1		R 339,250.00
	Estimated Construction Cost of Option 2 (Excl. 15% VAT)				R 8,831,750.00
6.	Security Deposit	Sum	3.40	R 2,000,000.00	R 6,800,000.00
Estimated Construction Cost of Option 2, including security deposit (Excl. 15% VAT)					R 15,631,750.00
PRO-RATA BULK CONTRIBUTION COST RELATED TO ERF 624					
ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	Estimated pro-rata nilkcontributioncalculated as follows: Maximum demand 356 erven @ 2.4kVA = 0.85MVA Thus, 0.85/3.4MVA as pro-rata of total estimated cost for OPTION 2	Sum			R 3,907,937.50
	Estimated Construction Cost of Option 3 (Excl. 15% VAT)				R 3,907,937.50

6.4 REQUIREMENTS FOR THE IMPLEMENTATION OF THE BULK SUPPLY

In order to proceed with the bulk supply, the following items will have to be implemented should the proposed development enjoy the council's approval.

6.4.1 List proposed development on Municipal IDP

The proposed project must be recorded on the Integrated Development Plan (IDP) of the Thembelihle Local Municipality.

6.4.2 Confirmation of Supply Authority

Thembelihle Local Municipality must obtain the Electricity Distribution License from NERSA for the applicable area.

6.4.3 Application to DOE

The License Holder must apply to the DOE to fund the bulk supply services.

7. REFERENCES

- Department of Statistics South Africa Census 2011 Municipal Fact Sheet. Thembelihle Local Municipality Draft Integrated Development Plan 2018/2019.
- Guidelines for the Provision of Engineering Services and Amenities in Residential Township Development, 1994 as amended (a.k.a. the "Blue Book").
- Guidelines for Human Settlement Planning and Designs as published by the CSIR and will also refer to the local municipality's guidelines and standards (a.k.a. the "Red Book").
- Water Institute of South Africa; Manual on the Design of Small Sewage Works; First Edition 1988
- Government Gazette, 5 July 2006: Electricity Regulation Act, 2006: Chapter III – Electricity Licenses and Registration
- Department of Energy: Bulk Infrastructure Policy Guidelines for Integrated National Electrification Programme (INEP)
- Department of Energy: Mixed Developer Projects Policy Guidelines for Integrated National Electrification Programme (INEP)
- Department of Energy: Suit of Supply Policy Guidelines for Integrated National Electrification Programme (INEP)
- Integrated Development Plan (IDP) 2018-2022: Thembelihle Local Municipality.

8. CONCLUSION

We trust this will enable you to make the necessary decisions. MVD Kalahari will gladly assist with additional information should the need arise.

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H JONCK (PR TECH ENG, 200370008)
MVD Kalahari
Consulting Engineers and Town Planners
Level 2 B-BBEE Contributor
/hj/2985-004-QR-Goutrou Civil and Electrical Services Investigation & Report

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C VAN TONDER (Pr Tech Eng 200770060)
G3T CONSULT CC

ANNEXURES

Annexure A:
Eskom Classification Of Domestic Consumers

Table 2 — Classification of domestic consumers —Typical design load parameters for domestic consumers[1)]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Current type			**Load parameters – 7 years**[c d e f]						**Load parameters – 15 years**[c d e f]					
Consumer class	**AMPS**[a] and **LSM**[a] **class**	**Income range**[b] (gross R/month)	*a*	*b*	*c*	**ADMD** kVA	*μ* A	*ó* A	*a*	*b*	*c*	**ADMD** kVA	*μ* A	*ó* A
Rural settlement	LSM 1 (low end)	0 to 600	0,30	2,98	20	0,42	1,83	2,78	0,35	2,88	20	0,50	2,17	3,03
Rural village	LSM 1 and 2	400 to 900	0,43	2,52	20	0,67	2,91	3,55	0,48	2,13	20	0,84	3,65	4,07
Informal settlement	LSM 3 and 4	800 to 1 500	0,77	9,88	60	1,00	4,35	4,56	0,91	8,80	60	1,30	5,56	5,36
Township area	LSM 5 and 6	1 500 to 3 000	1,05	7,81	60	1,64	7,13	6,18	1,22	5,86	60	2,37	10,30	7,96
Urban residential I	LSM 7	3 000 to 5 500	1,23	5,56	60	2,50	10,87	8,28	1,25	3,55	60	3,59	15,61	10,93
Urban residential II	LSM 7 and 8	5 500 to 8 500	1,45	6,07	80	3,54	15,39	10,81	1,42	4,10	80	4,72	20,52	13,68
Urban township complex	LSM 8	8 500 to 12 000	1,45	5,75	80	3,70	16,09	11,20	1,42	4,13	80	4,70	20,43	13,63
Urban multi-storey/estate[f]	LSM 8 (high end)	12 000 to 24 000	1,43	4,41	80	4,50	19,57	13,15	1,37	3,39	80	5,30	23,04	15,09

[a] Living standards measure (LSM) as quoted in the All Media and Product Survey (AMPS) conducted annually by the South African Advertising Research Foundation.

[b] Average household income ranges shown for comparative purposes are in 2005 Rands. Any income data collected at a later date should be deflated by the CPI to allow a direct comparison.

[c] If the target community matches the description, but the chosen value of *c* is different, new *a* and *b* values can be calculated for the chosen value of *c*, using the formula given in B.4.3.

[d] Parameters have been normalized to the climate in the interior of South Africa where the winters are generally cold and with low rainfall. In regions where the winter is cold and wet (e.g. Cape Peninsula), the ADMD is about 12 % higher than that given. In climates similar to that of the Durban coastal region, the ADMD is about 12 % lower than that given.

[e] Except as indicated in f below, the parameters have been derived from carefully monitored case studies around the country, and reflect best knowledge at the time of publication of actual consumer demand over time. The actual load parameters used depend upon the strategy of the planner with regard to phasing of capital expenditure.

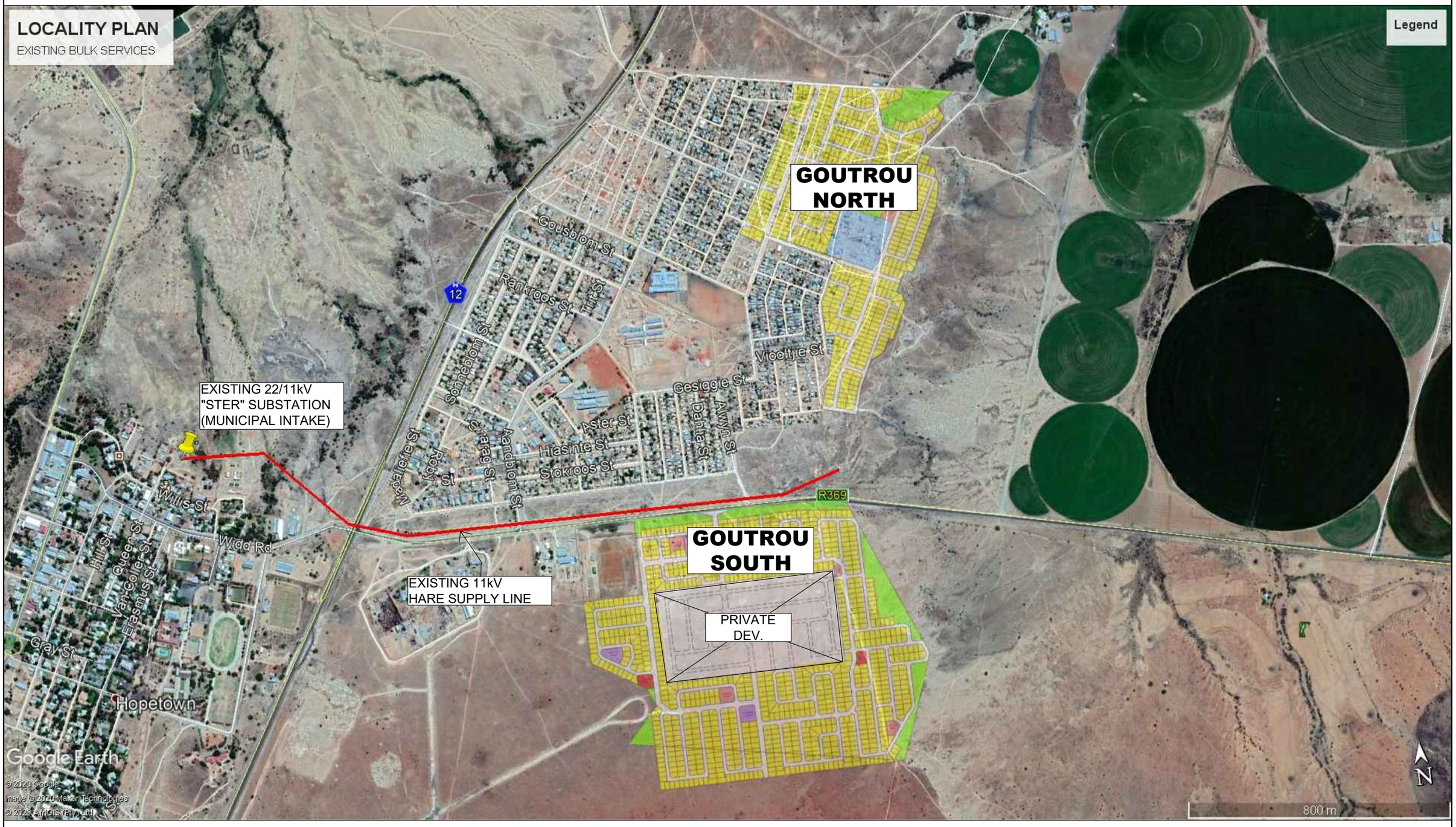
[f] Parameters for this consumer class have been extrapolated from existing data, since no sample load data have yet been collected from such consumers. Loads significantly higher than the ADMD shown in LSM 8 (high end) can be expected in the case of specific high-consumption developments. In such cases, estimated load data should be obtained from the relevant local authority or licensee.

[1)] Table 2 is administered by the NRS Project Management Agency (PMA) on behalf of the Electricity Supply Industry. The table is updated from time to time, based on the analysis of the latest available load research data without this part of the specification being revised. The current table can be viewed on the NRS website: <www.nrs.eskom.co.za> or obtained from the NRS Projects Manager.

NOTE Contact details for the NRS Projects Manager are:

Telephone +27 11 651 6846; Fax +27 11 651 6827; Postal address: Industry Association Resource Centre, Technology Standardization, Eskom Convention Centre, PO Box 1091, Johannesburg 2000

Annexure B:
Layout Of Existing 11kv Bulk Supply Line



NOTE/NOTA :
NO DIMENSIONS ARE TO BE SCALED OFF ANY DRAWINGS. ALL DIMENSIONS ARE TO BE RATIFIED ON SITE PRIOR TO ANY CONSTRUCTION.
GEEN AFMETINGS MAG VAN TEKENINGE GESKAAL WORD NIE. ALLE AFMETINGS MOET OP TERREIN NAGEGAAN WORD VOOR KONSTRUKSIE.

A BEFORE CONTRACT COMMENCES. VOOR KONTRAK IN AANVANG NEEM.
AFTER CONTRACT HAS COMMENCED.
A1 NA KONTRAK IN AANVANG GENEEM HET.

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NO. NR.	DATE DATUM	AMENDMENTS WYSIGINGS

CLIENT/KLIENT

DRAWING DESCRIPTION/TEKENING BESKRYWING
GOUTROU - LOCALITY PLAN

PROJECT/PROJEK
PROPOSED TOWNSHIP - GOUTROU
ELECTRICAL BULK SERVICES REPORT

DESIGN ONTWERP	------	DRAWN GETEKEN	------	CHECKED NAGEGAAN	------	CLIENT KLIENT	------	SCALE SKAAL	N.T.S
								DATE DATUM	Apr 2020

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MVD Kalahari
Raadgewende Ingenieurs en Stadsbeplanning.
Consulting Engineers and Town Planning.

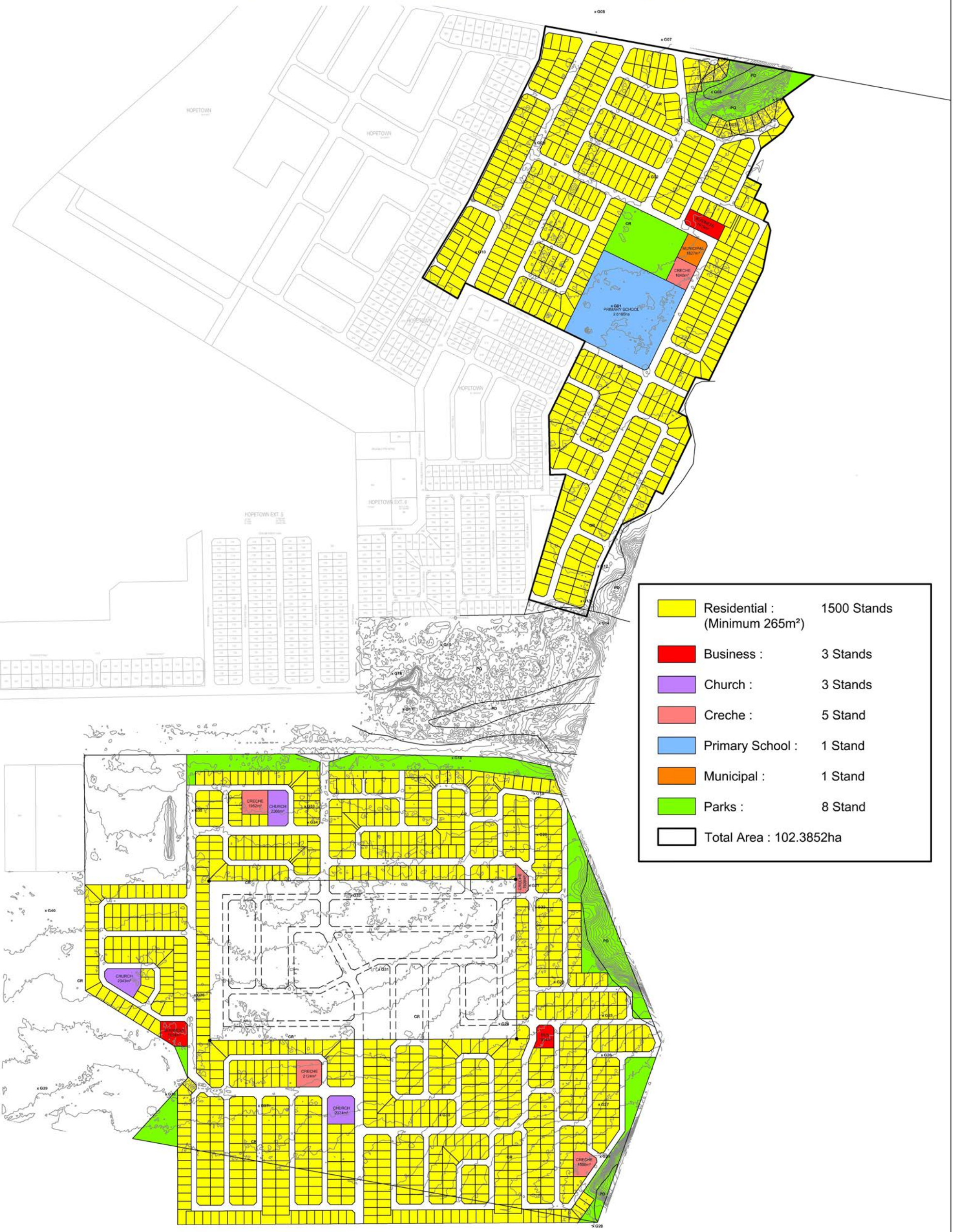
DRAWING NO./TEKENING NR.
2985/004

Annexure C:
Town Planning Layout

DRAFT LAYOUT PLAN :

PROPOSED TOWNSHIP GOU TROU (1500)

ON A PORTION OF THE REMAINING EXTENT OF ERF 1, HOPETOWN



	Residential : (Minimum 265m²)	1500 Stands
	Business :	3 Stands
	Church :	3 Stands
	Creche :	5 Stand
	Primary School :	1 Stand
	Municipal :	1 Stand
	Parks :	8 Stand
	Total Area : 102.3852ha	

Scale 1 : 6 500

COGHSTA

Department of Co-operative Governance, Human Settlements and Traditional Affairs of the Northern Cape

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