HEYNS VAN ROOYEN *Raadgewende Elektriese Ingenieurs BK*
Consulting Electrical Engineers CC
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K0536/8 **05 December 2014**

KATHU

PROVISION OF ELECTRICAL SERVICES: SIMS 462/1

ELECTRICAL SERVICES REPORT

1. Existing Capacity

Sims 462/1 falls within the new Kathu West Intake Substation feeding area. According to the latest available information, this Intake Substation will be completed by November 2016. The possibility exists for an earlier date if Eskom can speed up their processes.

2. Development Under Consideration

This development will consist of 851 Res II stands, 4 Residential Zone III stands (capable of housing 274 apartments), 1x large Institutional Zone I stands (school), 3x Institution Zone II stands (churches), 5x Business Zone I stands and 2x Authority Zone I (municipal applications) stands. The exact size, type and business hours of the buildings on the Institutional, Business and Authority Zones are currently unknown.

Applying the ADMD values as prescribed by Gamagara Municipality, the following loads are applicable in this development:

Type	Qty	ADMD	Load
Residential Zone II	851	3 kVA	2 553 kVA
Residential Zone III	274	2,5 kVA	685 kVA
Institution Zone I (School)	1	300kVA	300 kVA
Institution Zone II (Churches)	3	50% surface at 30VA/m²	165 kVA
Business Zone I	5	50% surface at 90VA/m²	2 500 kVA
Authority Zone I	2	50% surface at 70VA/m²	140 kVA
		TOTAL	**6 343 kVA**

The load of 6 343 kVA can be further diversified when taking into consideration the working hours of each land use type. Therefore, the churches, school, municipal buildings and two thirds of the businesses are ignored for a diversified load of 4 071 kVA.

The developer has indicated that 300 stands will be developed in SIMS (between sites 462/0 and 462/1) in 2018 and another 300 stands in 2019. The rest is assumed to be developed after 2020

for now. This means that between the two sites (462/0 and 462/1), 1 125 kVA will be required in 2018 and another 1 125 kVA in 2019 taking a 50/50 of Res I and Res II units.
Given that this site only has Res II stands, 525 kVA will be needed in 2018 and another 525 kVA in 2019.

It is proposed that the developer install one new 11 kV ring from Kathu West Intake Substation to the proposed site, through the development and back. This will provide a redundant power supply to the development.

3. Standards & Regulations

3.1. The development will adhere to the latest applicable version of SANS 204 – Energy Efficiency in Buildings with Par 4.5.2 Hot Water Services as a specific example:

4.5.2.1 A minimum of 50% by volume of the annual average hot water heating requirement shall be provided by means other than electrical resistance heating, including, but not limited to, solar heating, heat pumps, heat recovery from other systems or processes.

3.2. The development will adhere to the latest applicable version of SANS 10142 Part 1 & 2.

4. Recommendation

4.1. The developer provides the 11 kV cable, minisubs and low voltage reticulation to supply his development's stands including street lighting.
4.2. The 11 kV cable route to be confirmed and finalized with the municipality when the development is undertaken.
4.3. The municipality is to make recommendations on the availability and allocation of 11 kV switch gear in the new Kathu West Intake Substation.
4.4. That the developer adheres to the energy savings measures and regulations as noted under paragraph 3 above.
4.5. The provision of the above mentioned infrastructure to be in accordance with the requirements of the town's electrical engineer.
4.6. The client needs to consult with the municipality on the Bulk Services Contribution for this development as special arrangements may be in place.

5. Validity & Limitations

This Electrical Services Report is only valid for as long as the existing electrical reticulation installation remains the same. Should other developments have an impact on the infrastructure or load on the electrical network, this report might have to be revised.

This report only addresses the capability of the infrastructure to support the development. It does not guarantee the allocation of available capacity in terms of supply to the development. This can only be approved and allocated by the municipality.

6. **Annexures**

Please refer to drawing K0536-03 Rev A detailing the proposed development.

Yours faithfully

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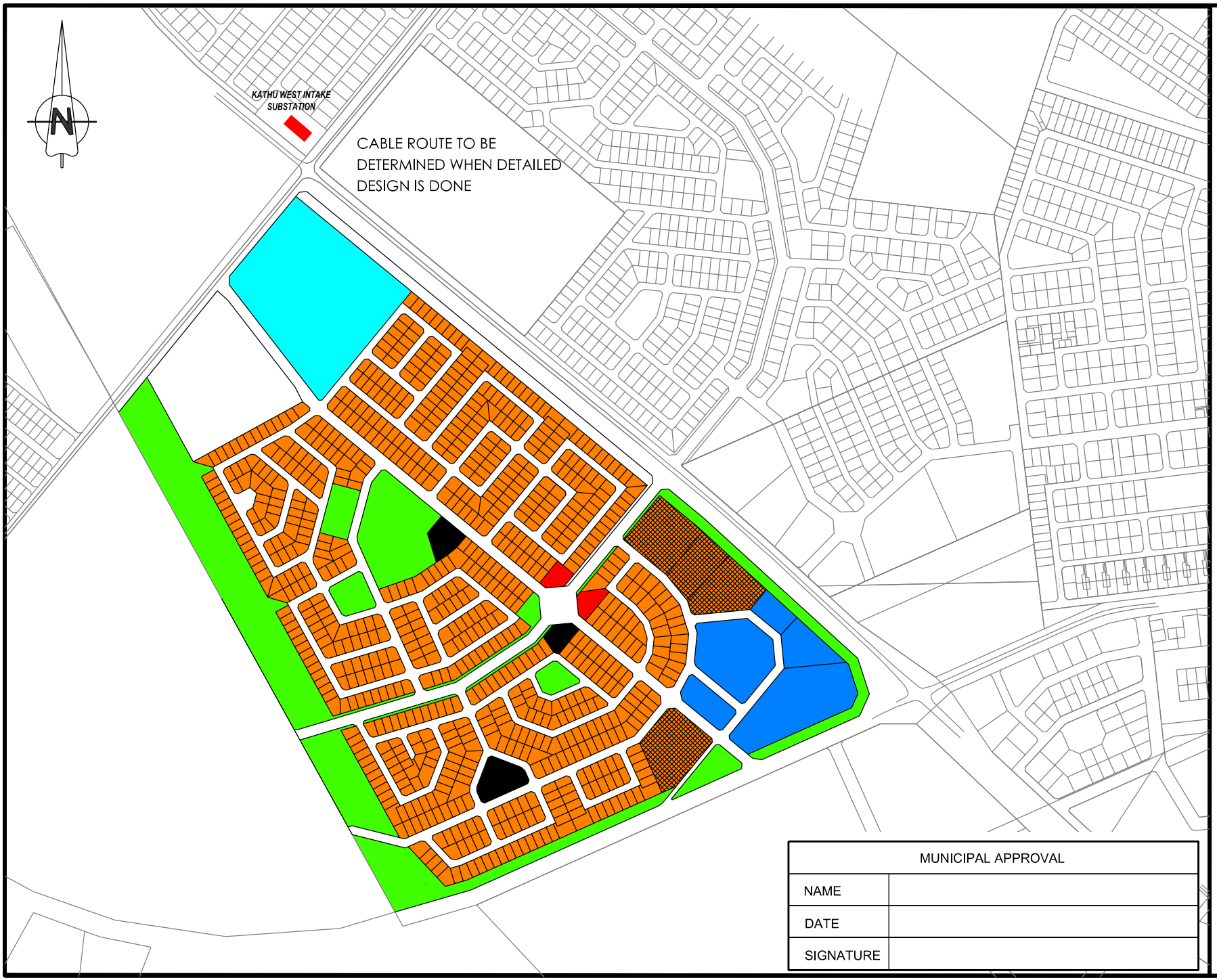
HJ COETZEE PR. TECH. ENG.



LEGEND / BYSKRIF	
	NEW 11 kV PILCDSTA 95mm²x3C CABLE + 70mm² BCEW

NR. NO.	DATUM DATE	WYSIGINGS AMENDMENTS	MAG. AUTH
A	01-12-14	ISSUED FOR MUNICIPAL APPROVAL	A.J.

NOTE:
THE POSITIONS OF THE CABLES ARE SPECULATED AND MUST NOT BE TAKEN AS THE PRECISE LOCATION

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DRAWN :	A.J. JOOSTE	DATE : 01-12-2014
CHECKED :		DATE :

CONSULTANTS DWG NR.
KO536-03

PROFESSIONAL TECH. ENGINEER

NAME :	HJ COETZEE
SIGN :	
DATE :	

CLIENT
KUMBA IRON ORE LTD

PROJECT DESCRIPTION
SIMS 462/1

SCALE N/A	DATE	01-12-2014
DRAWING NUMBER : K0536-03	REVISION	A

MUNICIPAL APPROVAL	
NAME	
DATE	
SIGNATURE	