WAMABLA (PTY) LTD

ELECTRICAL SERVICES REPORT

FOR

THE PROPOSED RESIDENTIAL DEVELOPMENT ON ERVEN 3279 AND 3280 IN HUMANSDORP

REPORT NO: G/19320/R rev 2

July 2024

cmb
CLINKSCALES MAUGHAN-BROWN
CONSULTING MECHANICAL
& ELECTRICAL ENGINEERS

INDEX

Annexure

1.0 INTRODUCTION

This report has been compiled by Clinkscales Maughan-Brown at their George Office, who have been appointed as the Electrical Consultants for this project by the Developer, Messrs. Wamabla (Pty) Ltd.

The purpose of this report is to provide the necessary information on the proposed extension to the existing Kouga Municipality electrical infrastructure to provide a bulk electrical supply to the proposed residential development on Erven 3279 and 3280 in Humansdorp. The report can be included in the erven rezoning application and form the basis of a services agreement on approval of the rezoning process.

2.0 DRAWING

Drawing No. 19320/E/01 is annexed to this report and contains information on the location and layout of the proposed development, the location of the existing municipal electrical infrastructure in the area and the proposed extension thereof.

3.0 LOCATION AND EXTENT OF DEVELOPMENT

The location of the development is depicted on the above-mentioned drawing and is situated on the Southwestern part of the central residential area of Humansdorp. Access to the site is from Kort Street.

Erf 3279 will consist of 67 residential units as follows:

- 29 off 3-bedroom, 2-bathroom units
- 38 off 2-bedroom, 1-bathroom units

Erf 3280 will consist of 128 residential units as follows:

- 16 off 3-bedroom, 2-bathroom units
- 72 off 2-bedroom, 1-bathroom units
- 40 off 1-bedroom, 1-bathroom units

Total 195 residential units.

4.0 SUPPLY AUTHORITY

The Supply Authority for the area is Kouga Municipality and all electrical work will have to comply with their requirements.

5.0 BASIS OF REPORT

The report is based on the following:

(i) Revised plan layout drawings and general information received from Messrs. Wamabla (Pty) Ltd.

(ii) Plan layouts of the existing 11kV (11000 volt) municipal electrical distribution network.

(iii) Meeting and discussions with Mr. Kenneth du Preez, Humansdorp Area Electrical Engineer, on 24 February 2023 regarding the Municipality's preference on providing a bulk supply to the development.

6.0 DEMAND

The following Before Diversity Maximum Demand (BDMD) per unit type has been allowed for:

- 3-bedroom, 2-bathroom unit @ 8kVA (35A, single phase)
- 2-bedroom, 1-bathroom unit @ 6,9kVA (30A, single phase)
- 1-bedroom, 1-bathroom unit @ 5,8kVA (25A, single phase)

The total After Diversity Maximum Demand (ADMD) of the development is estimated at:

(i) Erf 3279:

- 29 units (3-bed, 2-bath) x 8kVA x 0,3 diversity factor = 69,6kVA
- 38 units (2-bed, 1-bath) x 6,9kVA x 0,3 diversity factor = 78,7kVA

(ii) Erf 3280:

- 16 units (3-bed, 2-bath) x 8kVA x 0,3 diversity factor = 38,4kVA
- 72 units (2-bed, 1-bath) x 6,9kVA x 0,3 diversity factor = 149,0kVA
- 40 units (1-bed, 1-bath) x 5,8kVA x 0,3 diversity factor = 69,6kVA

(iii) Area lighting, pump stations and sundry loads = 10kVA

415,3kVA

, rounded off 416kVA

This is only a provisional calculation and will be finalised after all the network load particulars have been concluded. Energy saving measures and alternative energy resources as mentioned hereunder will be investigated and implemented where economically viable, in order to reduce the demand on the national grid.

- The use of solar geysers or heat pumps in combination with back-up electrical heater elements.

- Electricity usage reduction by means of low-flow shower heads and faucet aerators to reduce generation of hot water.

- Thermal insulation of geysers (geyser blankets) and hot water pipes.

- Load management systems to limit load in buildings, i.e. geyser control relays to switch of geysers during peak periods, load control relays to prevent geysers and other high load appliances in buildings from operating simultaneously, etc.

- Energy efficient lighting design, making use of LED lamps and motion / photo detectors to switch off lighting in un-used sections of buildings and to automatically adjust lighting levels according to the amount of natural lighting in buildings, etc.

- The installation of energy efficient appliances and electronic devices, i.e. washing machines, refrigerators, etc.

It has been assumed that energy efficient and load control technologies will be applied to the electrical installation in the houses to reduce the peak kVA demand and energy consumption to at least 20% below the standard demand for such installations.

7.0 POINT OF CONNECTION

It is proposed that the Point of Connection be to cut into an existing municipal 11kV underground cable in Park Street as indicated on the drawing. Two (2) new 11kV underground cables will be extended along Piet Uys Street up to and including a new miniature substation located on the Northeast boundary corner of Erf 3280. These 11kV cables will create a ring feed supply to the development from the onset.

The Municipality advised that there should be enough capacity available on their 11kV network, but this will be confirmed once they have obtained exact data recordings from the relevant sub-main substations in the area.

8.0 EXTERNAL NETWORK

The External Network is considered to be the network between the Point of Connection and the Point of Supply as defined hereafter, which is to be taken over by the Municipality on completion for their ownership and operation.

It is proposed that this External Network consist of two (2) 11kV underground cables to be cut into an existing 11kV underground cable at the Point of Connection, together with a new 500kVA miniature substation and an LV (Low Voltage) Meter Kiosk where the Bulk Supply to each erf will be metered in terms of kVA demand and kWh consumption as for the Municipality's standard LV Bulk Supply Tariff.

From the miniature substation, a mains LV cable will be taken to a mains LV circuit breaker and two (2) bulk LV kWh meters, one per erf/portion, located inside the Meter Kiosk.

The load terminals of the two (2) bulk LV kWh meters will be the separation point between the External and Internal Networks.

All drawings and specifications of the External Network must comply with the Municipality's technical requirements and must be submitted to them for official approval before construction can commence.

9.0 POINT OF SUPPLY

As mentioned above, the load terminals of the two (2) bulk LV kWh meters in the Meter Kiosk will become the Point of Supply for the Development.

The network downstream from this Point of Supply is considered to be the Internal Network and will on completion become the responsibility of the Developer / Homeowners' Association for their ownership and operation.

10.0 INTERNAL NETWORK

The Internal Network to supply the residential units on Erven 3279 and 3280 will be designed by the Developer's Consulting Electrical Engineer.

11.0 TAKING-OVER OF INSTALLATION

As stated before, the Municipality should take-over the External Network on completion and the Developer or Homeowners' Association the Internal Network, and respectively be responsible for the operation and maintenance thereof.

It is important that the External Network complies in all respect with the Municipality's requirements and their supply conditions.

Drawings and a specification for the work will be submitted to the Municipality for approval before construction work commences. On completion of construction, a full set of as-built drawings (electronic and hard copy) together with test certificates and manuals of the equipment will be handed over to the Municipality. The Consulting Engineer responsible for the project will also certify that all work has been completed in accordance with the drawings and specification approved by the Municipality.

It should not be a requirement for the Municipality to approve the Internal Network, but the drawings and specification for same will also be submitted to the Municipality for their records and information during the approval stage of the External Network.

12.0 ENVIRONMENTAL REQUIREMENTS

All work on site will comply in all respects with the Environmental Management Plan (EMP) to form part of the specification for the work, if applicable.

13.0 CAPITAL COSTS

It is assumed that the total construction cost of the External as well as the Internal Network will be for the account of the Developer, which will be done under the direction of the Developer's Consulting Engineer and by a suitably and qualified Electrical Contractor.

The Electrical Contractor shall be prior approved by the Municipality for those parts of the network to be taken over by them.

In addition to this cost, it is acknowledged that the Developer will also be responsible for the payment of an Augmentation Levy (future upgrade of the municipal primary network), which at the new 2024/25 municipal tariff scales has been calculated as follows:

Number of ERU's = (Notified Demand in kVA x Nf) ÷ (10,35 x Df)
= (416kVA x 1) ÷ (10,35 x 0,3)
= 133,97
, say 134 ERU's

, where:

ERU = Equivalent Residential Unit
Nf = Network factor
Df = Diversity factor

The Augmentation Levy is equal to the number of ERU's times the cost in Rand per ERU, i.e., 134 ERU's x R 12 659.37 = R 1 696 355.58, excl. VAT.

With the implementation of a new 500kVA miniature substation, some 500kVA – 416kVA = 84kVA spare capacity will be created for future use by the Municipality. A pro-rata percentage of the substation cost itself based on the final demand required, could possibly be subtracted from the Augmentation Levy, depending on the final agreement with the Municipality.

The above is only a provisional calculation and needs to be agreed upon by the Municipality when the final Services Agreement is completed. It is further to be noted that the municipal tariffs are revised annually on 1 July.

14.0 PROGRAMME

A programme for the completion of this project is to be made available to the Municipality once this has been finalised.

15.0 CONCLUSION

We trust that this information is sufficient to obtain the necessary statutory approvals for the development and to draw up the services agreement.

Please contact the writer should more information be required.

If you are in agreement with the above, we can forward a copy of this report directly to the Municipality's Electrical Department for their approval and any further comments that they may have.

Yours faithfully

Stiaan Adams Pr Tech Eng
CLINKSCALES MAUGHAN-BROWN

…….	…….	…….
Signed as Approved by Developer	*Name*	*Date*

…….	…….	…….
Signed as Approved by Kouga Municipality Electrical Services	*Name*	*Date*

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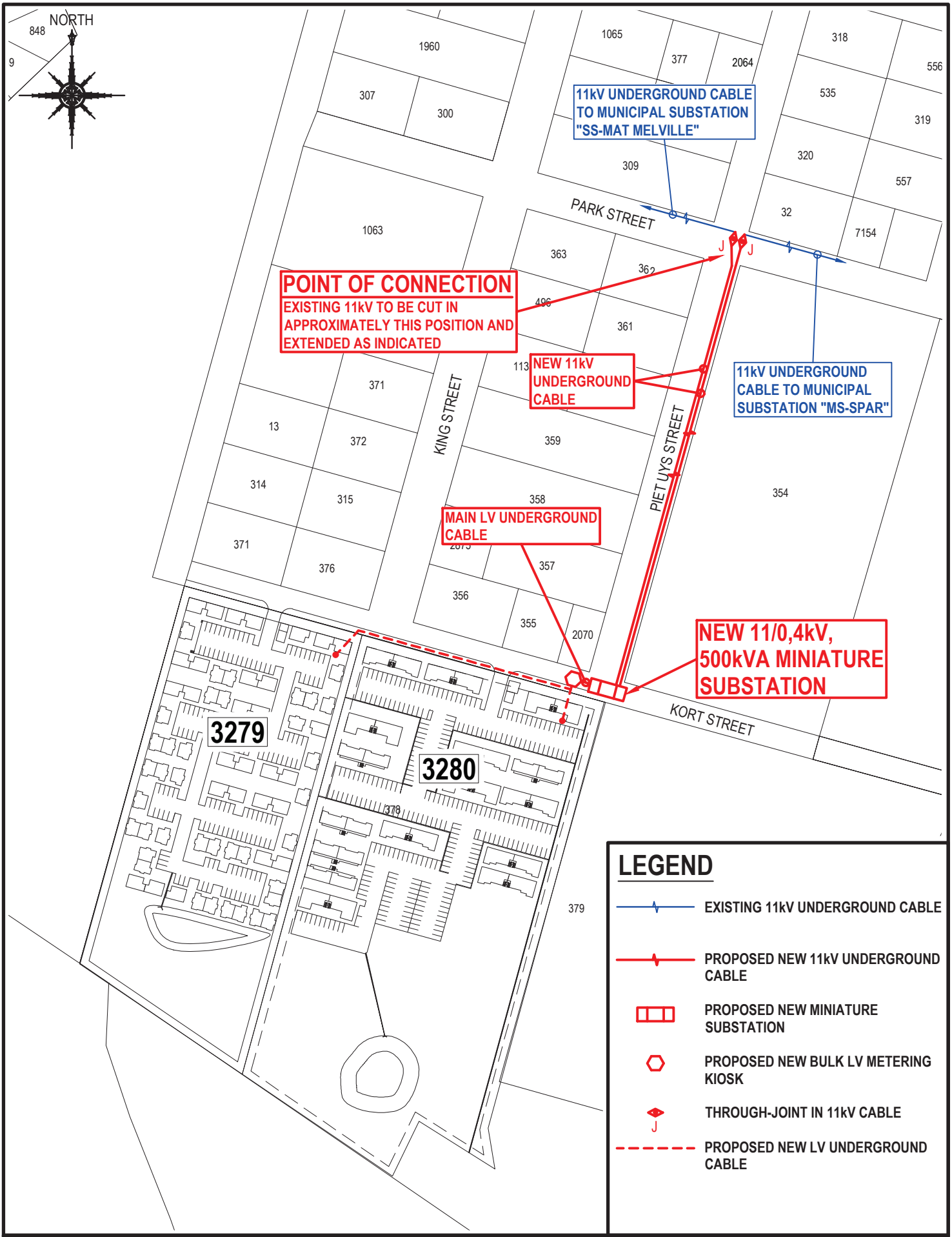

LEGEND

- EXISTING 11kV UNDERGROUND CABLE
- PROPOSED NEW 11kV UNDERGROUND CABLE
- PROPOSED NEW MINIATURE SUBSTATION
- PROPOSED NEW BULK LV METERING KIOSK
- THROUGH-JOINT IN 11kV CABLE
- PROPOSED NEW LV UNDERGROUND CABLE

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CLIENT: WAMABLA (PTY) LTD

PROJECT: PROPOSED DEVELOPMENT ON ERF 3279 & 3280, HUMANSDORP

DRAWING TITLE: PLAN LAYOUT OF PROPOSED BULK ELECTRICAL SUPPLY

DRAWN	DESIGNED	CHECKED	APPROVED
MvM	GSA	GSA	

SCALE	DATE	CAD REF No.	DWG-SIZE
1:2500	23/02/2023	19320-E-01	A4

DRAWING NO: 19320/E/01

REVISION: A 25/04/2024