

PJ TECHNOLOGIES

SERINA KAOLIN (PTY) LTD.

PORTION 5 OF CAPE FARM 1387

OFFICES AND RESTAURANT

IN NOORDHOEK

ELECTRICAL ENGINEERING SERVICES REPORT

(May 2017)

Reference : 1301 r1
Date : 20 June 2017

PJ TECHNOLOGIES - CAPE cc
P O Box 4542, Tygervalley, 7536
4 Rhodes Avenue, Kenridge, 7550
Tel : 021 - 975 - 0016
Fax : 021 - 976 - 2404

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| Client : | <u>SERINA KAOLIN (PTY) LTD</u> |
| Project | PORTION 5 OF CAPE FARM 1387 OFFICES AND RESTAURANT IN NOORDHOEK |
| Date | 20 June 2017 |

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SERINA KAOLIN (PTY) LTD

ELECTRICAL ENGINEERING SERVICES REPORT

(PORTION 5 OF CAPE FARM 1387)

1 INTRODUCTION

Jurgens Daniel is a Professional Registered Engineer (Pr. Eng.) with the Engineering Council of South Africa, and the Managing Member of PJ Technologies was instructed by the client, Serina Kaolin (Pty) Ltd, to prepare an electrical engineering services report for the proposed residential development on portion 5 of Cape Farm 1387, Noordhoek.

It is hereby confirmed that the directors and staff of PJ Technologies, and the company itself has no connection with any portion of the development, whether privately or personally, except for the purposes of preparing the civil engineering services report.

2 TERMS OF REFERENCE

The terms of reference for this Preliminary Services Report on the electrical can be summarized as follows:

- Obtain all services information relating to the proposed township :
- Liaise with the City of Cape Town Electricity Department (Wynberg Depot) to identify the capacity available.
- Provide an Engineering Services Report.

3 LEVEL OF SERVICE

The design parameters used to determine the level of service for this Preliminary Services Report are in accordance with the following:

- The requirements of the City of Cape Town Electricity Department;
- SANS electrification standards & guidelines

4 LOCATION

Portion 5 of Cape Farm 1387 Noordhoek, is located on the northern side of Chapman's Peak Drive and is situated at the start of Chapman's Peak Drive. The proposed development is also situated west of the existing Noordhoek Village retail development and the De Goede Hoop Estate.

5 LAND USE

The envisaged land use rights for the proposed subdivision consist of the following:

5.1 Alterations to erf 549, Noordhoek

The existing wine cellar is to be expanded with additional office space as per the table below:

Portion 1 - Wine cellar & office blocks (erf 549)

| DESCRIPTION | Qty | |
|-----------------------------------|------|----|
| EXISTING LOADS | | |
| Wine cellar (existing) | 1 | |
| PROPOSED ADDITIONS | | |
| Office block1-Wine cellar | 700 | m2 |
| Office block2-Wine cellar | 230 | m2 |
| Wine cellar - Parking and outside | 1 | |
| Office block1 | 904 | m2 |
| Office block2 | 1080 | m2 |
| Office block3 | 1080 | m2 |
| Parking and outside | 1 | |

5.2 Alterations to erf 551, Noordhoek

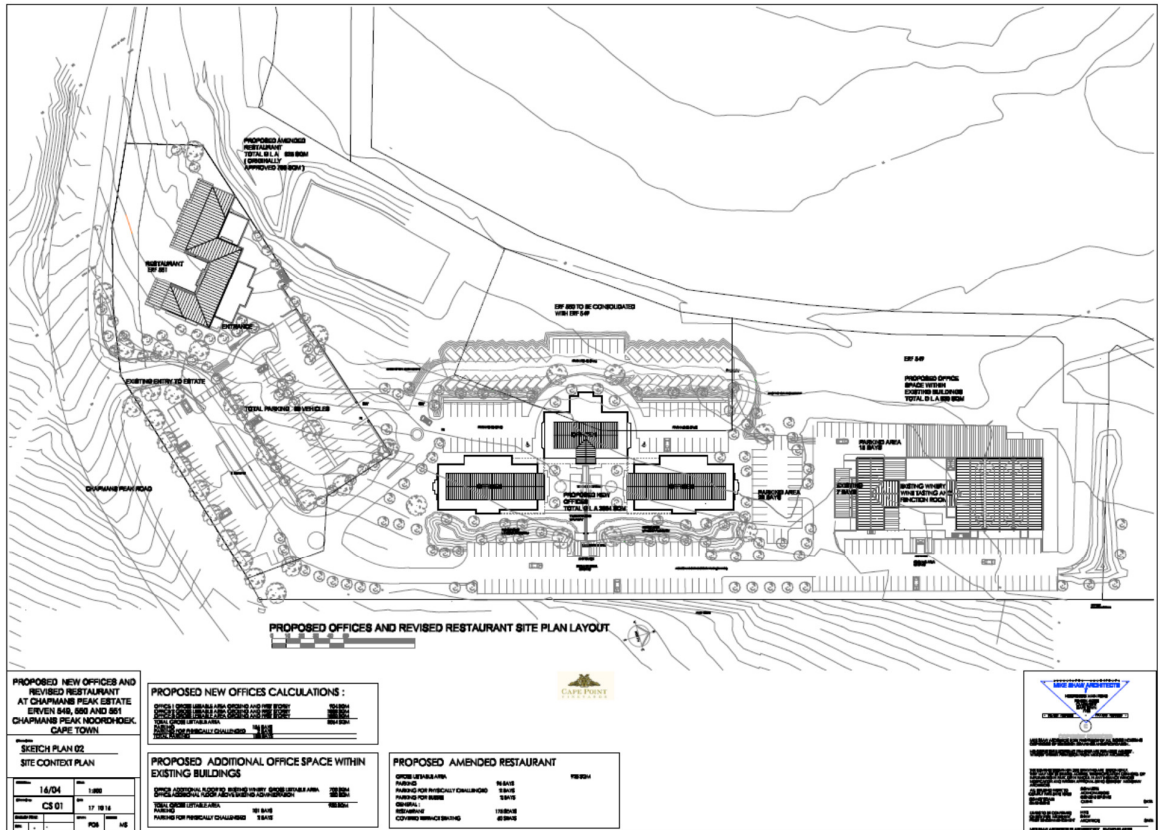
The approved restaurant is to be developed to include a craft beer and micro distillery as per the table below:

Portion 2 - Restaurant, Craft Beer & Micro Distillery (erf 551)

| DESCRIPTION | No of units |
|---------------------------------------|-------------|
| Restaurant & wine tasting (portion29) | 1 |
| Craft beer | 1 |
| Micro distillery | 1 |
| Sewer pump station | 1 |
| Water booster pump station | |
| Domestic water | 1 |
| Fire booster | 1 |

5.2.1 Civil services:

It has been confirmed that for this development a sewer pump station and a water booster pumping installation is required and must be located on erf 551 for the whole development.



5.3 Erf 552, Noordhoek Residential development

The approved residential development is to be developed as per the table below:

Portion 3 - Residential development (erf 552)

| DESCRIPTION | No of units |
|-----------------------------------|-------------|
| Residential - 27 units | 27 |
| General services | 1 |
| Perimeter - CCTV & Security | 1 |
| Borehole for irrigation | 1 |
| Water treatment and pump stations | 1 |

5.3.1 Civil services:

The open spaces will be used for fynbos and provision for irrigation of the areas is required as part of the greening of the development.

6 BULK SERVICES

Bulk services investigations were undertaken with the Municipality for the proposed development.

The existing supply to erf 549 is by means of a LV bulk supply with a transformer and 11kV cable supplying it. The following is the particulars of the existing supply:

- A/c no. 115313994, Meter no 560443
- Electricity tariff - Low voltage Bulk

The full capacity of the existing supply is to be reserved for the development on erf 549.

The balance of the development, restaurant (erf551) and the residential portion must be supplied by a network that is to be installed as part of the subdivision.

The conditions of the Municipality is that the developer will be responsible for the upgrading of the MV network as defined by the Municipality and the developer will contribute towards the upgrade by means of the development contribution costs.

6.1 Electrical supplies:

The following supply configuration is envisaged for the various portions of the development:

- i. Erf 549, Wine Cellar: Existing Bulk LV supply
 - a. A/c no. 115313994, Meter no 560443
- ii. Erf 551,
 - a. Restaurant: Bulk LV supply (new connection)
 - b. Civil services: Water booster and sewer pump station : Bulk LV supply (new connection)

Presently the erf does not have any electrical supply. The preliminary investigation into the supply indicated that a new MV network with minisub is required for erf 551 and will be done in accordance with the conditions of the Electricity Department.

- iii. Erf 552: Residential portion, 27 single residential erven.
 - a. This erf is to be subdivided in 27 separate title residential erven and in accordance with the conditions of the Electricity Department, each erf must have a connection with the Municipality and the internal and external MV and LV electrical network will be transferred to the Electricity Department on commissioning.

6.2 Development contribution

Development contribution will be applicable and is payable in accordance with the rates annually published for electricity.

6.3 System loading

The expected maximum demand of the various portions of the development is listed below. The breakdown of the electrical loading is based on the system at the point of supply substation level.

6.3.1 Alterations to erf 549, Noordhoek

Portion 1 - Wine cellar & office blocks (erf 549)

| DESCRIPTION | ADMD as per guidelines |
|--|------------------------|
| EXISTING LOADS | |
| Wine cellar (existing) | 600.0 |
| PROPOSED ADDITIONS | |
| Office block1-Wine cellar | 84.0 |
| Office block2-Wine cellar | 28.0 |
| Wine cellar - Parking and outside | 5.0 |
| Office block1 | 109.0 |
| Office block2 | 130.0 |
| Office block3 | 130.0 |
| Parking and outside | 5.0 |
| Summated total of the Electrical loading of Development | 1 091.0 |

6.3.2 Alterations to erf 551, Noordhoek

Portion 2 - Restaurant, Craft Beer & Micro Distillery (erf 551)

| DESCRIPTION | ADMD as per guidelines |
|--|------------------------|
| Restaurant & wine tasting (portion29) | 250.0 |
| Craft beer | 40.0 |
| Micro distillery | 40.0 |
| Sewer pump station | 15.0 |
| Water booster pump station | - |
| Domestic water | 20.0 |
| Fire booster | 25.0 |
| Summated total of the Electrical loading of Development | 390.0 |

The provision for the electrical capacity at the water pumping stations will be finalised with the respective departments of the Municipality.

6.3.3 Erf 552 Residential erven (27 off)

Portion 3 - Residential development (erf 552)

| DESCRIPTION | ADMD as per guidelines |
|--|------------------------|
| Residential - 27 units (BDMD = 50kVA) | 540.0 |
| General services | 15.0 |
| Perimeter - CCTV & Security | 15.0 |
| Borehole for irrigation | 12.0 |
| Water treatment and pump stations | 10.0 |
| Summated total of the Electrical loading of Development | 592.0 |

7 INTERNAL SERVICES AND DESIGN STANDARDS

The normal electrical services will be provided for the development and the network shall be installed by suitable qualified contractors. The electrical installation for the development station will be done in accordance with the requirements of the standards for electrical reticulation.

The following standards shall apply in the design and construction of the electrical network:

7.1 Diversity curves to be used on the calculations of voltage drop:

- Diversity and Unbalance correction factor :
City of Cape Town (Electricity) Beta Herman diversity factors

7.2 Voltage drop

- Voltage drop: on low voltage (LV) network: 5% on feeders to the sub distribution boards in accordance with SANS 10142-1
- Voltage regulation: 420V (100% ± 5%) on LV terminals of transformer at full load.

7.3 Medium Voltage (MV)

The proposed internal MV network is to be connected to existing MV network in Chapman's Peak Drive and the adjacent development.

7.4 Materials to be used

Underground cables

MV Network: 70, 95, 120, 185 mm² Aluminium, 11 kV PILE GDSTA manufactured to SABS 97/91 (City of Cape Town specifications)

LV Network: 2 and 4 core Copper conductor cables, 600/1000V PVC SWA PVC manufactured to SABS 1507

Earthing of network at minisub (MV & LV) and the distribution network / metering kiosks (LV). As per the standards of City of Cape Town

Land use: All sites where Minisubs (typically 4x5m), MV substations ($\pm 20\text{-}30\text{m}^2$) are positioned in road reserves, private / public open spaces must be surveyed according to CCT requirements and transferred to the Electricity department at no cost.

Metering:

Bulk supplies: All connections larger than 100kVA will be metered on the Large Power tariff (MV or LV);

Residential: In accordance with the guidelines for Load Estimation Standard, each erf will be provided with a 100A, three phase supply (ADMD = 20kVA per erf). The configuration of the metering will be confirmed whether it will be credit or prepaid meters.

Streetlight The street lighting in the development will be designed based on the requirements of the developer.

7.5 Material design standards

The following standards shall apply in the construction of the network:

7.5.1 Low voltage network

The cables are to be installed in the trench used for other services, with a minimum separation of 600 mm and 1000mm to Telkom and Water mains respectively.

7.5.2 Excavation

All MV cables shall be installed on a sand bed at a 1000 mm deep with a 250 mm sand cover over with warning tape on it. Where MV and LV cables share the same trench, the cables shall be installed at a 1000mm and 600 mm cover respectively.

The LV cables shall be installed on a sand bed at 600 mm deep with a 300 mm sand cover over with warning tape on it.

The LV cables shall be installed on a sand bed 200 mm deep, at 600 mm below the finished ground level, with a 300 mm sand cover over and a warning tape on it. Where the area is to be tarred or brick paved, the cables must be installed in sleeves.

NOTE: Only graded back filling to be used in trenches for electrical services.

7.5.3 Ducts

The following ducts shall be installed in road crossings and where deemed necessary for the protection of cables:

160 mm dia: 2 off for MV cables

110 mm dia: 1 off per LV cable; 1 off per 4 service connection cables;

1 off per streetlight cable.

Spare ducts: Minimum of 1 per MV and 1 per LV circuit.

7.5.4 Street lighting

The standard of street lighting is to be used in this portion on shall be in accordance with the requirements of the Municipality's requirements.

Any street lighting is to be used shall be either

- Street lighting in accordance with the requirements of City of Cape Town's requirements for any network that will be on public roads;
- The street lighting in the parking areas and private roads will comply with the requirements with the bylaws of the supply authority ;

The supply for the general parking will be fed of the same supply as the supply to the restaurant and winery.

8 ADDITIONAL ITEMS.

8.1 Gate House & General Services:

A supply made available of the development for the gate house and the access control that will be fed off the minisub.

8.2 Intercom and Access Control

No provision has been made for additional ducting, cabling for intercom, access control and/or pay television.

8.3 Optical fiber

No provision has been made for additional ducting, cabling, manholes and interfacing with a fibre network (FTTH).

8.4 Access for the Electricity Department

Any form of access control to the development must include the condition that the Department requires 24 hour access to the equipment.

8.5 Energy management

The developer need to advise the Municipality on measures he intends to conserve energy by means of load control devices, PV panels and renewable energy.

8.6 Energy conservation

The developer need to advise the Municipality on measures he intend to conserve energy by means of energy efficient lighting, use of gas for cooking or hot water, solar water heaters for hot water generation. Furthermore must the developer include in the final design of the development, proposals for the reduction of energy by means of solar energy and the use of energy efficient lighting as per the requirement of the Electricity Department.

8.7 Standby generators

The provision for a standby generator and the operation thereof must be in accordance with the By-Laws of the Municipality for interconnection of the unit and the control of the noise during the operation thereof.

9 CONCLUSION:

The proposed development can be adequately serviced with the proposed external and internal electrical services.



J. J. **DANIEL** Pr. Eng.
(Managing Member)
PJ Technologies Cape cc