



FRANSCHHOEK SKYTRAM

ELECTRICAL INFRASTRUCTURE SERVICES REPORT

8 AUGUST 2023

Report compiled by:

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8 August 2023

The Franschhoek Cableway Company (Pty) Ltd.
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For the attention of Mr Alwyn Laubscher

FRANSCHHOEK SKYTRAM: ELECTRICAL INFRASTRUCTURE SERVICES REPORT

1. Introduction

The objective of this report is to give conceptual feedback with regards to the electrical infrastructure requirements to service the proposed development, and to provide feedback on the information received from Stellenbosch Municipality Electricity Department.

The report is based on the latest available drawings as received from MTA/VDMMA Architects during April 2023, presenting the proposed layout plans for the developments on the existing farm Haute Cabrière, as well as the Middagkrans Peak in the Mont Rochelle Nature Reserve.

Electrical load estimates have been determined, and the principal concept of providing power to the development was discussed and clarified with the Superintendent, Dwarsrivier Electricity Engineering Services (Mr Martin Slabber) and the Manager, Metering, Loss Control and Dwarsrivier Infrastructure Services (Mr Victor Dyusha) in a series of e-mail and telephonic correspondence between the 6th of June 2022 to the 20th of July 2023.

2. Project and Details

The project comprises of the development of an aerial cableway and associated infrastructure and tourist facilities to be operated as a world-class tourist attraction.



The Lower Station of the cableway will be located on Erf 1466, the existing Haute Cabrière farm, Lambrechts Road, Franschhoek. The GPS co-ordinates of the site are 33°54'49.17"S 19°08'09.68"E. The Upper Station will be located on the remainder of Erf 23, near the Peak of Middagkrans Mountain. This site falls within the Mont Rachel Nature Reserve. The GPS co-ordinates of this site are 33°55'03.05"S 19°08'44.79"E.

Works and facilities at the Lower Station will include the following:

- Demolishing of some of the existing farm sheds and buildings
- Construction of a cableway lower base station structure
- New office facilities building (to be shared with Haute Cabrière)
- Ticket office, coffee shop, ablutions, storerooms, plant rooms etc.
- New multi-level parking and pedestrian walkways
- Integration with the existing Haute Cabrière facilities

Works and facilities at the Upper Station will include the following:

- Construction of a cableway upper station structure
- Building containing an all-day restaurant, wine tasting centre, souvenir Shop, exhibition centre, ablutions and storerooms and viewing deck
- Viewing terraces/decks, pedestrian walkways and seating areas
- Kiosk or satellite bar/café

The Lower Station site falls within the electrical supply area of Stellenbosch Municipality, and the Upper Station falls within the supply area of Eskom.

The existing municipal electrical supply to the Haute Cabrière Farm is via an 11kV overhead power line from the town network and routed along the northern and western sides of the farm dam. The existing transformer and LV distribution kiosk is located within the area of the existing farm buildings that is earmarked for redevelopment. Please see Figure 1 below for details.

There is no supply available near the Upper Station location, and Stellenbosch Municipality advised that there is no existing Eskom infrastructure anywhere near the site. They have in the past sought to get a supply to a pump station located on the same side of Middagkrans Mountain, but due to the terrain and distance to the nearest Eskom lines, it was not feasible to get a supply from Eskom. They rely on generator power for the operation of their pumpstation.

3. Load Estimates and Reticulation Requirements

The cableway installation will have the main drive gear situated at the Lower Station, and the electrical requirements at the Upper Station will be limited to the operation of some sliding doors only. The maximum electrical demand for the cableway system itself was provided by the Swiss manufacturer, Garaventa AG.

Provisional load estimates were calculated for the Lower and Upper Station complete developments including the cableway, and the total expected maximum demands are as follows:

- Lower Station - 700kVA
- Upper Station - 80kVA

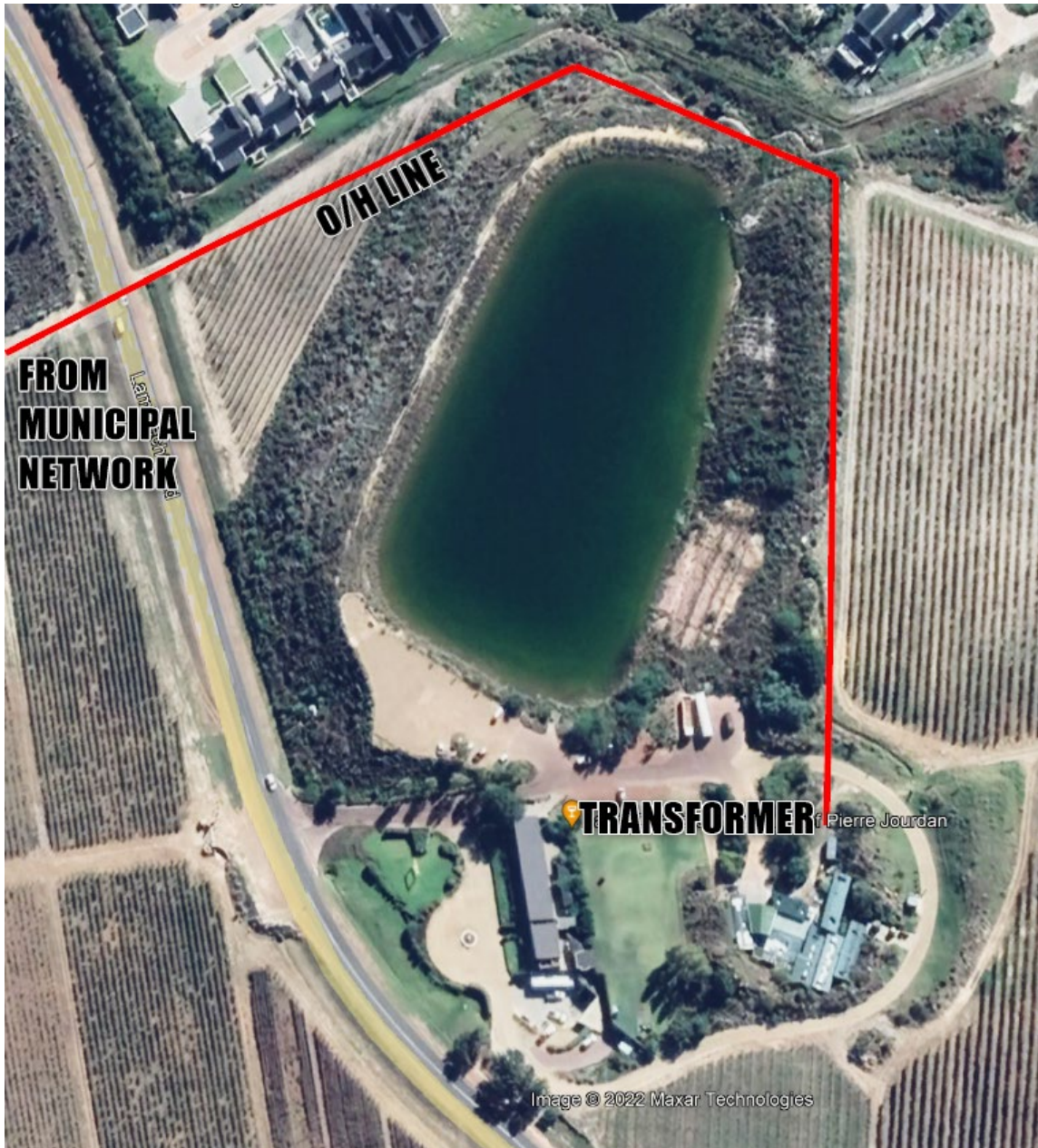


Figure 1: Existing Overhead Power Line and existing Supply Point

The new buildings at the Lower Station will be on the same existing supply that currently services the farm and Cellar buildings, and an upgrade of this supply will be required to provide for the additional capacity required for this project. An additional separate supply will not be possible as this is prohibited in the Municipal By-Laws.

Electrical supply to the Upper Station will be taken from the Lower Station by means of a custom-designed aerial cable that will be spanned between the cable car track ropes. The total length of the cable will be approximately 1 200m, and the cable construction and anchoring points will be designed in such a way that it will safely withstand the cable weight and additional wind loading. A 400V/3.3kV step-up and step-down configuration will be used to reduce the cable weight, cable diameter, wind loading, and the electrical losses. This configuration will require a small area for a transformer at both the Lower and Upper Station buildings, and will be allocated within the station structures.



Figure 2: Typical Step-up/down transformer

In view of the above and considering that the load requirements may still change as the detail design gets further developed, a capacity confirmation request was submitted to Stellenbosch Municipality for an increase in the existing supply Nominated Maximum Demand by 800kVA, and not exceeding 1MVA.

4. Municipal Supply Network and Capacity

Stellenbosch Municipality confirmed that their existing electrical network installed to the farm was designed to supply an adjacent residential development to the north of the farm as well. This development has taken up significantly less power than anticipated, hence they do have sufficient spare capacity on their network infrastructure to accommodate the increase in supply required. This was confirmed telephonically, as well as in an internal e-mail correspondence between Martin Slabber and Victor Dyusha.

The official Capacity Confirmation Letter received however stated that Stellenbosch Municipality currently do not have sufficient spare capacity available at their main intake point from Eskom.

In view of the planned layout of the Lower Station and associated buildings, a portion of the existing overhead line will need to be taken underground to provide clearance for the cable cars. The existing transformer point also falls within an area to be re-developed and will need to be relocated.

The existing transformer and distribution kiosk will be replaced with a 1 250kVA miniature substation. The existing cellar facilities and the new cableway and associated buildings will all be supplied from this miniature substation. The final location of the miniature substation is still to be determined during the detail design stage, but will be in the area as indicated on the drawing below.



5. Developer's Responsibility

The following will be the responsibility of the owner/developer:

- 5.1 An application for an upgrade of the electricity supply needs to be submitted to Stellenbosch Municipality. The Municipality will then provide a quotation letter, which will include a rate for the Bulk Levy Contribution cost.
- 5.2 An application for the re-routing of the O/H line to underground also needs to be submitted to Stellenbosch Municipality. The Municipality will provide a quotation for the total cost for this work, which will be for the account of the owner/developer.
- 5.3 The miniature substation and all internal MV & LV reticulation cabling, kiosks and distribution boards will need to be installed as part of the project, including the interfacing with the existing supplies to the farm and the cellar.

6. Standby Power and Supplementary Supplies

There is currently a diesel standby generator at Haute Cabrière that supplies backup power to the farm and the cellar. This generator will be retained but relocated. An additional diesel generator ($\pm 500\text{kVA}$) will be installed at the Lower Station complex to supply backup power to multiple systems, including the cableway, associated facilities, fire pump and external lighting. The final location is still to be confirmed, but it is currently being planned to be incorporated into one of the new buildings in lieu of an outdoor canopy-type set.

Since power to the Upper Station will be reticulated from the Lower Station, no additional standby power plant will be required at the Upper Station.

The possibility of using a regenerative braking system on the cable car as a supplementary form of supply to reduce energy consumed from the grid will be further explored during the detail design stage.

Any additional backup power systems required shall be done by using inverters with battery energy storage.

7. Conclusion

The current proposed designs and the feedback received from Stellenbosch Municipality indicates that this project is feasible for execution from an electricity supply perspective, subject to the Municipality being successful with their application to Eskom for an increase in their main intake substation supply capacity. This is perceived as a very low risk to the project.

The architect's designs are following a route of minimizing the visual impact as far as possible. A primary focus during the detail design will be to select and position luminaires in such a way that, especially at the Upper Station complex, the light sources will be hidden and not be visible from below the mountain. Light pollution and glare will be kept to an absolute minimum.

We trust that you will find the above report in order. Please do not hesitate to contact Coert Slabbert at our Cape Town office if there are any uncertainties.

Yours faithfully

A handwritten signature in black ink, appearing to be 'Coert Slabbert', enclosed within a large, loopy oval shape.

Coert Slabbert Pr. Eng.
For
CA du Toit Western Cape (Pty) Ltd

ANNEXURE A

CAPACITY LETTER



STELLENBOSCH

STELLENBOSCH • PNIEL • FRANSCHHOEK

MUNISIPALITEIT • UMASIPALA • MUNICIPALITY

Enquiries : Mr Victor Dyusha (victor.dyusha@ Stellenbosch.gov.za)
Contact number: 021 808 8333/8334
Our reference : 10/2/3VDYUSHA
Your reference : 10/2/3VDYUSHA
Date : 22 July 2022

CA du Toit Consulting Engineers
P.O.Box 2368
BELLVILLE
7535

Dear Coert Slabbert

**RE: CONFIRMATION OF ELECTRICAL SUPPLY CAPACITY FOR HAUTE CABRIERE, LAMBRECHTS ROADS,
FRANSCHHOEK**

Your request for confirmation of electricity availability for the proposed upgrades at Haute Cabriere, refers.

1. The anticipated additional capacity of 800kVA required is noted, however there is no additional capacity available on the electricity network at our main intake point from Eskom. At the present moment we are very close to reaching our full capacity in terms of our Nominated Maximum Demand. The municipality is in the process to apply to Eskom to increase our Nominated Maximum Demand of 10MVA.
2. The existing overhead lines can be taken underground provided that all costs to do so will be paid for by the owner of Haute Cabrier.
3. For the municipality to issue a quotation, a formal application must be submitted to the municipality and a refundable quotation deposit of R 500 VAT inclusive must be paid.

For any enquiries you may contact me on 021 808 8334.

Yours sincerely

Victor Dyusha

MANAGER: METERING, LOSS CONTROL AND DWARSRIVIER OPS