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CONSULTING ENGINEERS

DA ELECTRICAL REPORT

FOR

AFRICAN SAVANNAH AND CONGO EXHIBITS

TARONGA
CONSERVATION SOCIETY AUSTRALIA

DATE: 6TH MARCH 2017

OUR REFERENCE: 17010205

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CONSULT AUSTRALIA
Member Firm

REVISION HISTORY

REVISION	DATE	BY	CHECKED	COMMENTS
1	06/03/17	GC	OSG	Preliminary

1 ELECTRICITY SUPPLY WITHIN THE TARONGA ZOO SITE

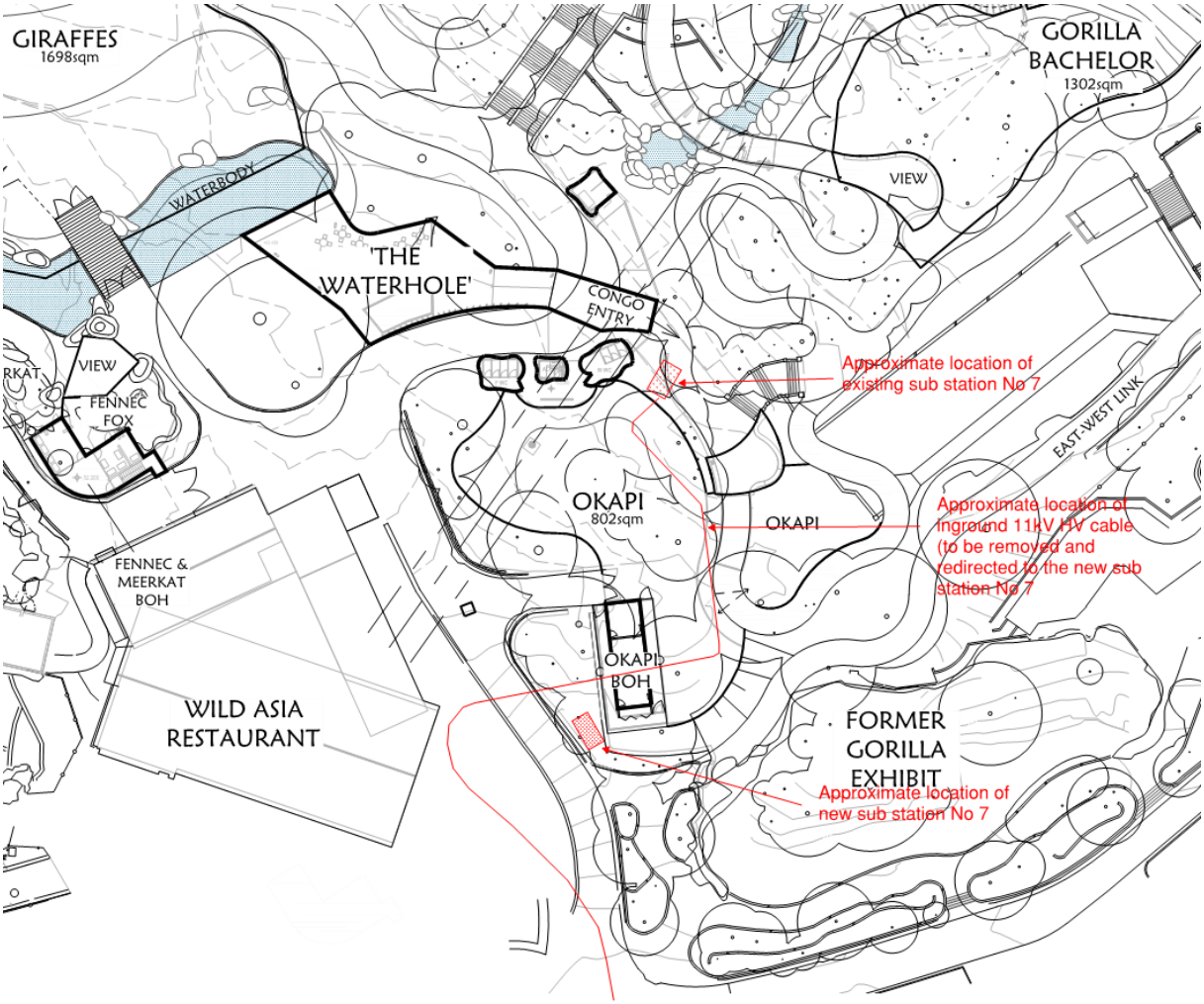
Taronga Zoo is a high voltage customer of the Supply Authority. Supply is derived by means of an underground high voltage (11kV) service to Substation No. 1 at the top of the site and is then distributed by means of an underground high voltage main cabling system to seven (7) other substations located in strategic locations throughout the site. The substations are owned and maintained by the Zoo.

At each substation the voltage is stepped down from 11 kV to 415 volts and distributed to the various buildings by means of a series of service pillars and switchboards.

2 EFFECTS ON THE EXISTING HIGH VOLTAGE CABLING

The section of the existing 11kV underground cabling system connecting sub station No 7 (from sub station 6) is installed through the site of the new works and will be affected by those works. It is proposed to relocate sub station No 7 and the 11kV underground cables out of the new works area before the new works commence. Sub station No 7 is an older sub station (dated 1985) and it is recommended to replace the sub station as part of the relocation process. This will also reduce the power outage associated with the relocation as the new sub station can be constructed and then the 11kV cables cut over to the new sub station.

The below sketch outlines the location of the existing sub station No 7 , the proposed new sub station No 7 and the existing 11kV inground HV cable.



The below photo shows the current location of sub station No 7 and the temporary generator connection for the Food Market.

3 EFFECTS ON THE EXISTING LOW VOLTAGE CABLING

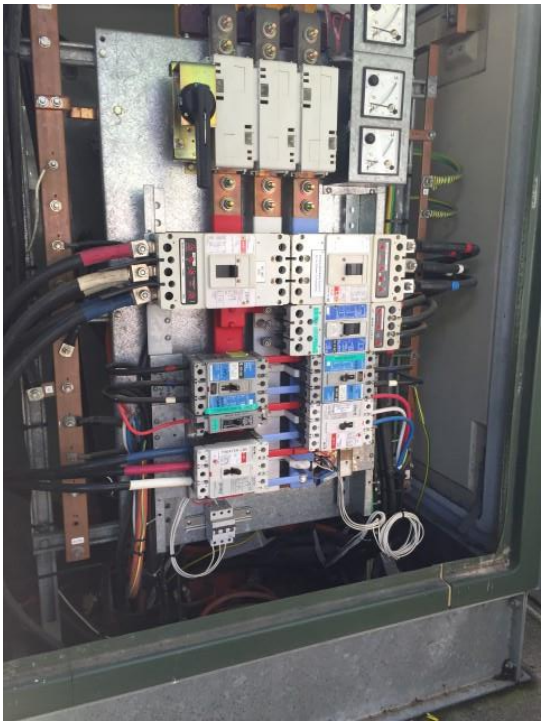
Sub station No 7 currently supplies the following areas

- The Food Market
- The New Theatre
- Gorillas
- Orangutans (Squirrel Monkeys)
- Turner House
- Lemur
- Night Zoo
- Power Factor Correction Units adjacent to substation No 7.

When the new sub station No 7 is commissioned we would propose that the old sub station No 7 Low voltage circuit breakers be connected as a temporary supply to keep the above operational. Once the new works commences, some of the above will be disconnected while the works are carried out and new supplies will be provided form the new sub station No 7.

The power factor correction unit is recommended to be relocated to the new sub station No 7.

The below photo shows the current low voltage circuit breakers at the rear of sub station 7 and the adjacent power factor correction unit.



The power to the Food Market (including a portable/temporary generator back up connection), Theatre and night zoo will need to be connected from the new sub station No 7 to maintain operation. The cable reticulation for these will need to be co-ordinated through the design stage, particularly for the Theatre and night zoo.

4 GORILLA GENERATOR

The existing Gorilla generator is old and has had some recent operational issues of not starting. It is recommended to remove the current generator and replace with a new generator at the new Gorilla back of house area.

5 POWER SUPPLY TO THE AFRICAN SAVANNAH AND CONGO PRECINCT

The low voltage (240 Volts) supply to the new African Savannah and Congo Precinct will be supplied form the new sub station No 7. Final loads will be calculated and the sub station sized to support the new areas plus spare capacity for future expansion.

6 NEW CONDUITS FOR LOW VOLTAGE AND COMMUNICATIONS CABLING

A system of conduits and pits will be installed to enable the installation of low voltage and communications cabling to the new buildings and to provide a path for future cables through the site.

The origin of the existing and new communications cabling to the African Savannah and Congo Precinct is yet to be determined and understood. However, all new cabling will be installed via the new underground conduit system.