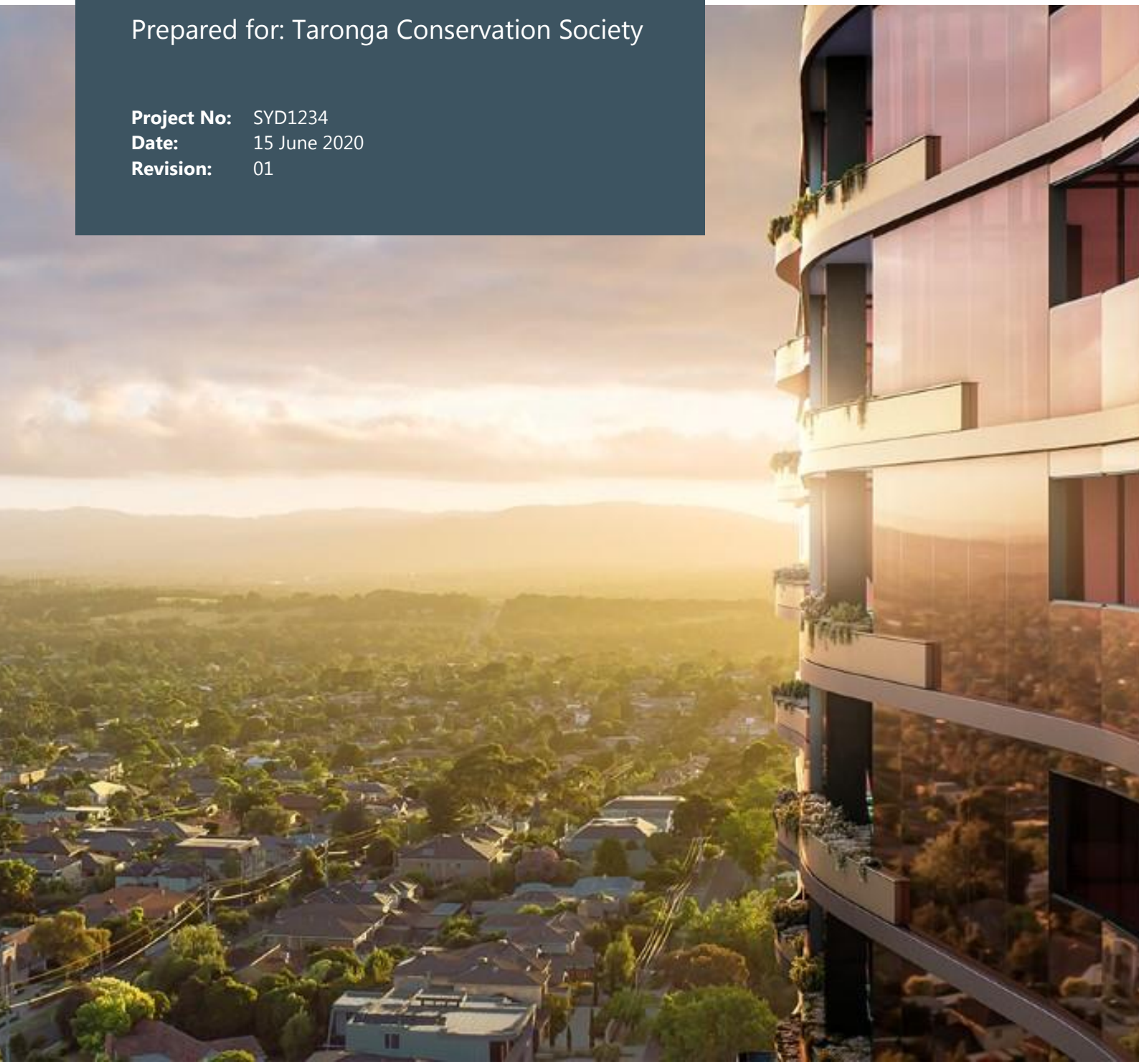


Taronga Zoo Upper Australia Precinct

Building Services Infrastructure Report

Prepared for: Taronga Conservation Society

Project No: SYD1234
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Project:	Taronga Zoo Upper Australia Precinct
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1. Introduction

1.1 Purpose of Report

ADP Consulting have been engaged to undertake a review of the existing building services infrastructure for the Upper Australia Precinct and Nocturnal House at Taronga Zoo, and to identify the required infrastructure upgrades.

The review was undertaken with reference to existing drawings and documents provided by Taronga Zoo, including Nocturnal House existing services drawings for electrical, mechanical and drainage, and electrical main single line diagrams.

This report assesses the current electrical services infrastructure and the suitability for this infrastructure to be retained, providing recommendations for any necessary upgrades to the Taronga Upper Australia Precinct.

The comments in this report are made on the basis of the validity of the information provided and shall not be relied upon as providing any warranty of the services and equipment.

1.2 Existing Site & Engineering Statement

1.2.1 Upper Australia Precinct

The existing Upper Australia Precinct site incorporates multiple internal and external animal exhibits including platypus house, wombat enclosure, koala encounters, macropod enclosure, wetland ponds, public spaces for guests and an elevated ropes course.

It is intended that the existing services suitable for re-use may be augmented or retained to suit the proposed site works. Spare capacity made available from demolished areas will be utilized with new services installations in the proposed works.

1.2.2 Nocturnal House

The existing Nocturnal House is single storey and incorporates both enclosed and open animal exhibits, public gallery, back of house staff rooms, animal holding and labs.

The existing building services are in varying states, ranging from original equipment such as mechanical exhaust fans and ductwork to recent installations and upgrades such as the electrical distribution board and dry fire detection.

It is intended that the existing services within the Nocturnal House will be upgraded to current standards, building codes and to meet ESD initiatives. Services suitable for re-use will be retained.

2. Description of Engineering Services

2.1 Electrical Services

2.1.1 Upper Australia Precinct & Nocturnal House

Based on the existing Single Line Diagrams and As-Installed documentation available, the site is currently served by two power supplies originating from two separate substations & Main Switchboards:

- > Substation 5 provides power to a Distribution Board located in the Top Entrance which serves the Eastern end of the Upper Precinct Site including the 80A, 3-ph to the existing Platypus House and Koala Encounters & 40A, 3ph to the Macropods.
 - Refer Appendix A.1 for Top Entrance DB Part Single Line Diagram.
- > Substation 8 provides 125A, 3-ph to a Wetlands Pool Distribution Board which serves the Western end of the Upper Precinct Site including sub-boards & load centres located in the Nocturnal House, Wetlands, Wild Ropes Course and surrounding external areas.
 - Refer Appendix A.2 for Wetlands Pool DB Part Single Line Diagram.

The supply to the Platypus House is proposed to be removed with the demolition of the building. Utilizing the spare capacity from the Platypus House, a new supply reticulated via in-ground conduit is proposed to be installed providing power to the Eastern End of the Upper Precinct Site and Tree House.

Power supplies to the Western End of the Precinct are largely proposed to be retained and rearranged to suit the proposed site. A small load centre may be provided to the new Western Pavilion fed from the relocated and renamed Wetlands Pool Distribution Board.

All new external power and communications cabling is proposed to be reticulated via separate in-ground conduit following the pedestrian paths and walkways with access pits spaced evenly and at changes of direction. This includes new submains to the Tree House and Western Pavilion as well as final sub-circuits to the external power outlets, lighting points, public WiFi, CCTV, PA, AV & Access Control.

It is estimated that the overall site load will be approximately equivalent to the existing load and so no upgrade to the supply is anticipated. This estimation is subject to the finalisation of the proposed plans, equipment specification and accuracy of the existing documentation received. However, the electrical single line diagrams indicate capacity in the existing infrastructure.

2.2 Mechanical Services

2.2.1 Nocturnal House

Based on our site visit and the as-built drawings provided, the Nocturnal House is currently provided with a mechanical exhaust and supply air system. As the existing system appears to have reached its end of life, we propose to demolish and remove all existing mechanical plant and equipment (including but not limited to ventilation fans, ductwork and grilles). ADP have been advised the Nocturnal House is to be fully air conditioned. New air conditioning and ventilation systems will be provided.

Extent of plant space required to be determined once finalised heating and cooling requirements for the animals and guests have been clarified. It is proposed to conceal external plant from public view as best as possible, possibly located behind acoustic screens if required.

2.2.2 Upper Australia Precinct

The remainder of the Upper Precinct is external or proposed to be naturally ventilated and so no additional mechanical systems shall be installed.

2.3 Hydraulic Services

2.3.1 Nocturnal House

A new kitchen and WC is proposed in the Nocturnal House which will be provided with new cold water services and sanitary drainage. It is proposed that a new HWU be provided within the kitchen.

Sanitary Drainage to be provided through a new topping slab within the keepers BoH area.

Based on the information provided, it is anticipated that the existing cold-water services & drainage to the Nocturnal House exhibits may be retained and rearranged to suit the proposed layout.

New cold-water services to be provided to the platypus pool plant room - final requirements to be confirmed by pool / aquarium consultant.

2.4 Dry Fire Services

2.4.1 Upper Australia Precinct & Nocturnal House

The existing Nocturnal House is provided with fire detection and a Building Occupant Warning System over the existing PA system. The existing addressable Fire Indicator Panel is located near the front entrance.

It is intended to relocate the FIP and provide new fire detection and occupant warning speakers to suit the proposed Nocturnal House Layout.

The existing fire detection and occupant warning provided to the Platypus House will be removed and headend systems reprogrammed as required during to enable demolition works.

The external Upper Australia Precinct Occupant Warning System is an extension of the site-wide Occupant Warning System which provides prioritised messages over the PA system.

It is intended that augmentation and extension to the existing system will be provided to suit the proposed Upper Australia Precinct.

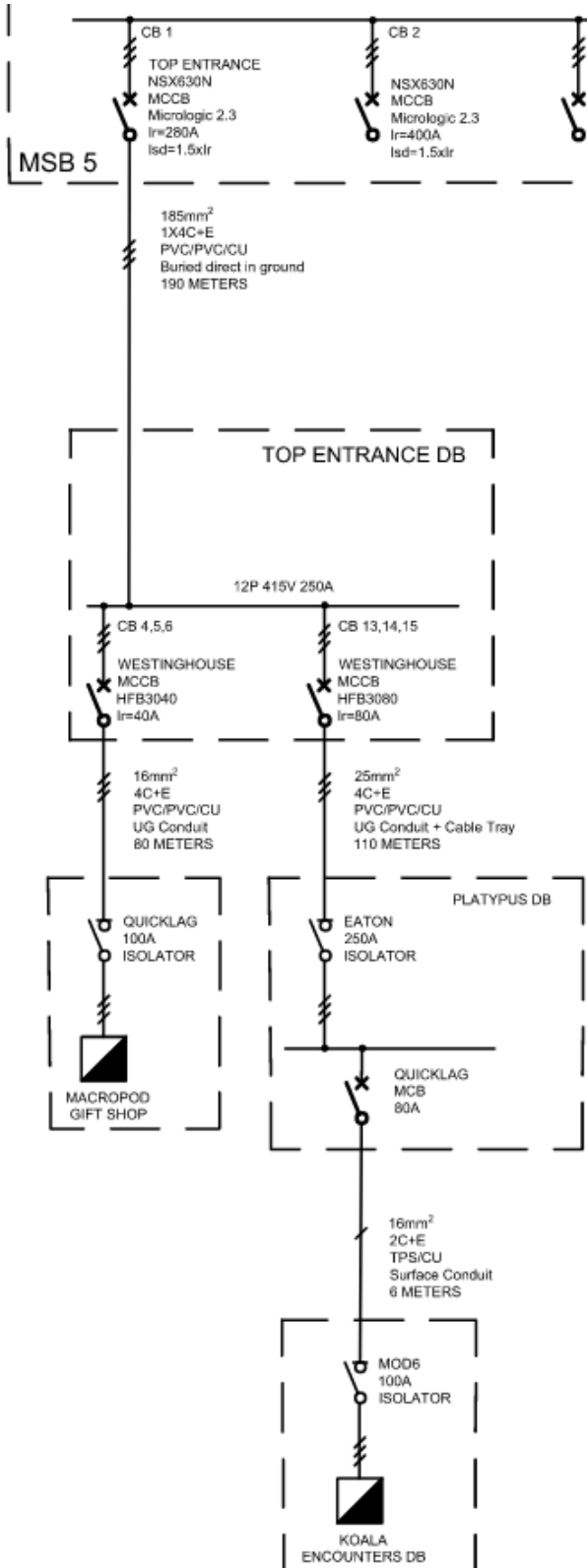
3. Existing Infrastructure Assessment

It is deemed that the existing engineering services infrastructure for the Nocturnal House will be adequate for the proposed works with new equipment and augmentation to the existing provided in accordance with the latest standards & codes.

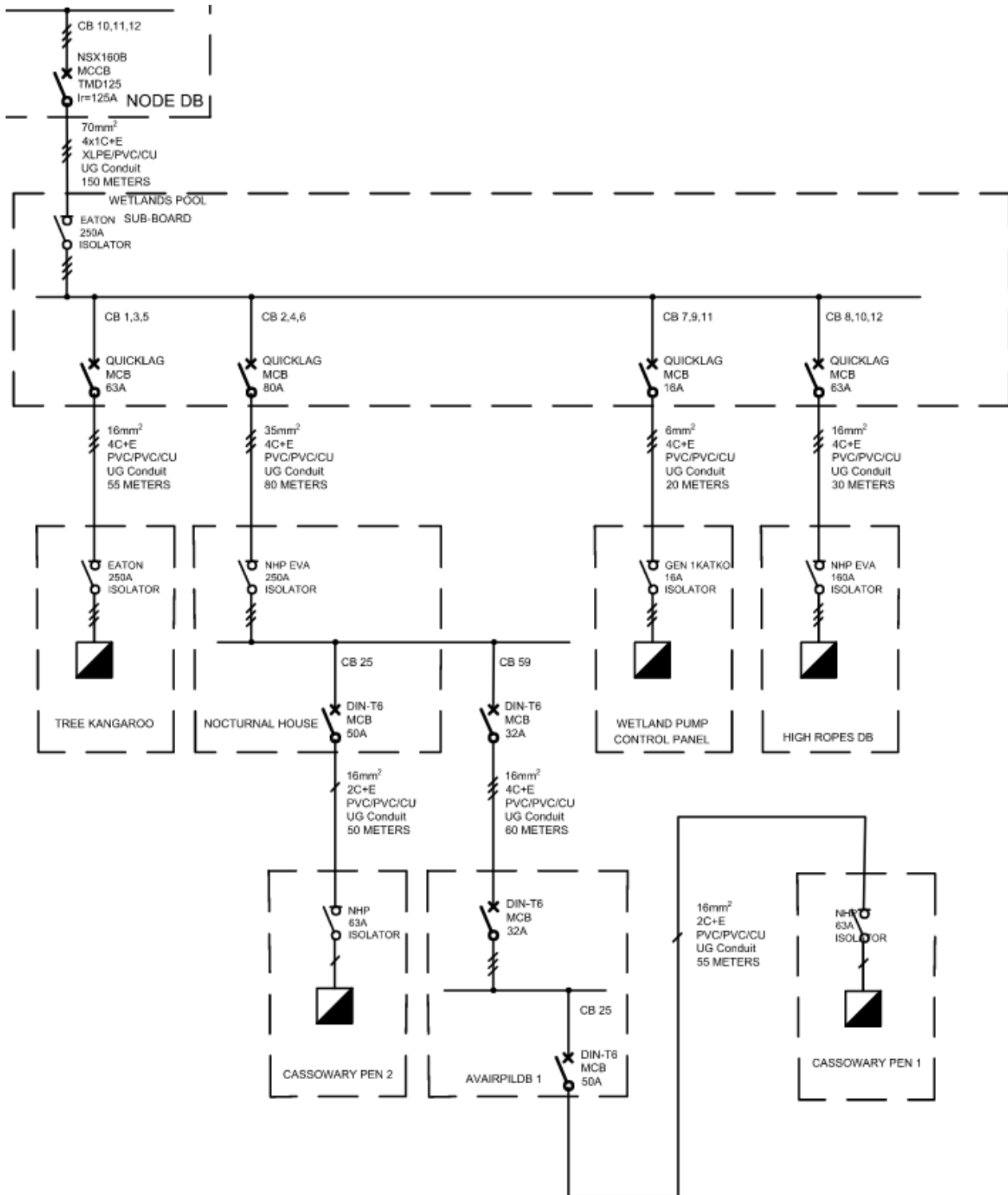
There appears to be capacity in the existing Upper Precinct Electrical & Dry Fire infrastructure, and it is deemed that an upgrade will not be required to provide these services to the proposed site.

New panel boards, Occupant Warning System equipment & cabling will be provided throughout the Upper Australia Precinct.

A.1 Top Entrance Existing Electrical SLD



A.2 Wetlands Pool Existing Electrical SLD



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