

# Wyong Hospital Redevelopment SSD No.9536

Electrical Services Infrastructure Management Plan

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# **Revision Information**

Project	Wyong Hospital
Title	Electrical and Communication Services Infrastructure Management Plan
Client	Health Infrastructure NSW
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# **Revision Schedule**

Revision	Date	Issue Name	Authorised
P1	27/09/2018	For Review	LEP
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# 1 Introduction

LCI has been engaged by Health Infrastructure NSW to prepare the Electrical and Telecommunications Utility Infrastructure Management Plan for the proposed new Acute Services Building (ASB) at Wyong Hospital.

This report addresses the requirements outlined in the Planning Secretary's Environmental Assessments Requirements (SEARs), dated 25 September 2018 for application SSD 9536 Wyong Hospital Redevelopment; specifically, items 6.1 and 12.1:

- 6. Ecologically Sustainable Development (ESD) Detail how ESD principles will be incorporated in the design and ongoing operation phases of the development.
- 12. Utilities

Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructures

#### **1.1 Project Overview**

This request for SEARs seeks environmental assessment requirements for a SSD application for Construction

The scope of proposed works include:

- Construction of a new Clinical Services Building (CSB):
- A CSB of a gross floor area of approximately 16,980sqm, providing new and expanded clinical services. These services will be provided in a new building comprising a part 5/part 6 storey CSB, to be connected to the existing hospital via a bridge link, including a new emergency department (ED), intensive care unit (ICU), medical imaging, acute medical unit (AMU) and paediatric assessment unit (PAU);
- Provision for undercroft car parking;
- Provision for at grade ambulance parking;
- Provision of east-west road connection to Louisiana Road; and
- Associated works including landscaping, earthworks, and servicing upgrade.



Figure 1: New Acute Services Building (ASB) Footprint



### **1.2 Design Guidelines and Standards**

The Electrical services to this building will be designed in accordance with the following Guidelines and Australian Standards:

- NSW Health Infrastructure Engineering Services Guidelines
- NSW Health ICT Cabling Standards
- NSW Service and Installation Rules
- Ausgrid Network Standards and Electricity Supply Policies and Standards
- Relevant Australian Standards



# 2 Electrical Utility Services

#### 2.1 Existing Supply Authority Infrastructure

The Supply Authority to Wyong Hospital is Ausgrid. Currently, the Ausgrid HV network supplies various parts of the Wyong Hospital Campus. Refer to Figure 2.1: Existing Ausgrid HV Network and Substations within Wyong Hospital for HV network in the vicinity of the Campus. Two Ausgrid substations are located within the main Wyong Hospital Campus:

- Substation 1 (S12062 Wyong Hospital Pacific) is a 1000kVA kiosk
- Substation 2 (S18196 Wyong Hospital Pacific No 2) is a chamber substation consisting of 3 x 1500kVA transformers



Figure 2.1: Existing Ausgrid HV Network and Substations within Wyong Hospital



Figure 2.2: Ausgrid WebGIS Extract

Due to the location and magnitude of the new load, new substations are required to be constructed near the new building. It is expected that the Ausgrid HV network will be augmented and extended to service the proposed



building. Initial Application for Connection was submitted to Ausgrid and HI have provided acceptance of Ausgrid's response. LCI is awaiting the release of the Ausgrid Design Information Package (DIP) for details of HV augmentation requirements.

#### 2.2 Proposed Electrical Infrastructure

Two (2) 1500kVA kiosk substations will be installed to service the building as per Ausgrid's response to our Application for Connection. The proposed site electrical infrastructure capacity includes spare capacity to enable future building expansion, including two additional floors containing inpatient units as well as a roof-level helipad.

The kiosk substations will be located within the property boundary, as close to the new building as practicable, with due consideration of fire and smoke separation to the building. The consumer mains from the kiosk substations will be reticulated via underground conduits to the main switchboards located in the Main Switchroom on Level 1.

Easements will be required for the kiosk substations and high voltage cabling. A right of way will also need to be created for the property.

Final substation location and design details are subject to the Ausgrid Design Information Package and Ausgrid certification process.

### 2.3 Construction Period Services Continuity

Minimal disruption is expected during construction period. The existing Ausgrid network includes a high voltage ring system that enables cabling to be extended to the new Current HV feeders will be extended prior to installation of new kiosk substations. However, this is subject to final HV augmentation requirements.



# **3** Telecommunications Carrier Services

#### 3.1 Existing Telecommunication Infrastructure

Currently Wyong Hospital Campus is serviced via 200-pair Telstra copper lead-in and 18-core Telstra single mode optic fibre service. This cabling terminates in the existing MDF room located adjacent to the mental health executive offices. This arrangement is indicated in Figure 3.1: Telstra Network Mapping and Figure 4.2: Existing Wyong Hospital Communication Lead-in Location below.



Figure 3.1: Telstra Network Mapping



Figure 4.2: Existing Wyong Hospital Communication Lead-in Location



#### 3.2 Proposed Telecommunication Infrastructure

A new campus distributor room will be established in the new ASB building. Connectivity will be provided between the new campus distributor room and the existing campus distributor room, which accommodates the existing lead-in services and core network switches.

A pathway and cable containment will be provided for an additional lead-in carrier services to the new building. This will provide redundancy in carrier services to the overall Wyong Hospital Campus, via a diverse pathway.

## 3.3 In-building Mobile Coverage

A new distributed antenna system (DAS) will be provided within the new building to provide 3G and 4G coverage. A new carrier room will be provided to house carrier equipment. The design of the system will comply with Mobile Carrier Forum (MCF) DAS Design Specification.

#### 3.4 Government Radio Network (GRN)

GRN coverage will be measured post-construction to determine signal strength throughout the building. Where required, an in-building system will be installed to provide necessary signal strength and coverage.

#### 3.5 Construction Period Services Continuity

No disruption to telecommunication carrier services to other parts of the Wyong Hospital Campus is expected during construction. It is not proposed to construct new buildings over the existing telecommunications carrier plant. Diversion of existing telecommunications services is not anticipated for the new building.



# 4 Ecologically Sustainable Development

LCI design provision will include the following ecologically sustainable initiatives:

- Provision of power factor correction to reduce building electrical maximum demand.
- Inclusion of photoelectric sensors to automatically control external lighting.
- Provision of energy efficient LED lighting throughout.
- Use of motion sensors for back of house areas and carpark to automatically switch luminaires off after periods of inactivity.
- Installation of a central monitoring and testing system for emergency lights and exit signs, with automated self-testing to minimise ongoing maintenance and costs. All new emergency lighting will be provided with lithium battery and long-life LED light sources, resulting in lower whole-of-life costs and longer battery life.
- Provision of digital power meters for lighting, power and mechanical equipment to meet NCC-Section J. All digital power meters will be interfaced to the building management system to enable energy consumption to be readily monitored.
- Use of low smoke zero halogen horizontal communication cabling throughout.