

Health Infrastructure

Ryde Hospital Redevelopment (Concept and Stage 1)

Electrical and ICT Utility Report

ARP/SSDA/Concept/1

Issue 3 | 19 July 2022

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Appendix A – Electrical, ICT and Security Early Works Layout

Appendix B – Existing Electrical and ICT Infrastructure

1 Introduction

This report is associated with the Electrical, ICT and Security services and will assess the infrastructure as follows:

20. Infrastructure Requirements and Utilities. In consultation with relevant service providers:	
identify and assess the impacts of the concept development on existing utility infrastructure and service provider assets surrounding the site.	3.1.1
identify any infrastructure upgrades required on-site and off-site to facilitate the concept development and any arrangements to ensure that the upgrades will be implemented on time and be maintained.	3.1.1
provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the concept development.	3.1.1

2 Standards

The electrical services, ICT and security systems for the Redevelopment shall be designed to comply with the following standards, codes and regulations:

- National Construction Code (NCC)
- Supply Authority services rules
- NSW Service Installation Rules
- Electrical Services - AS/NZS 3000
- Low Voltage Switchgear - AS/NZS 3439,
- Electrical Installations – Selection of Cables - AS/NZS 3008
- Artificial Lighting - AS/NZS 1680.0, AS/NZS 1680.1, AS/NZS 1680.2.1, AS/NZS 1680.2.2, AS/NZS 1680.2.3

- Emergency Escape Lighting and Exit Signs for Buildings - AS 2293
- Electrical Installations – Patient Areas - AS/NZS 3003
- Electrical Installation – Emergency Power Supplies - AS/NZS 3009
- Telecommunications Installations – AS/NZS 3080
- Telecommunications Installations - AS/NZS 3084
- Requirements for customer cabling products - AS/CA S008:2010
- Installation requirements for customer cabling (Wiring Rules) - AS/CA S009:2013
- NSW Health Infrastructure Standards, Policies, Procedures and Guidelines (SPPG)
- NSW Health Infrastructure Engineering Services Guidelines
- NSW Health Infrastructure Design Guidance Notes 1 – 24
- NSW Health Infrastructure Guidelines for Hospital Helicopter Landing Sites Version 9 dated Feb 2018
- NSW Health ICT Cabling Standard
- Protecting People and Property
- Australian Health Facility Guidelines (AusHFG)
- International Health Facility Guidelines (iHFG)
- Local Council Regulations
- Hard-wired patient alarm systems - AS 3811:1998
- Uninterruptible power systems (UPS) - AS 62040

3 Concept

3.1 Impacts on existing infrastructure

3.1.1 Electrical

The project is at an early stage and the electrical infrastructure design is yet to be finalised. The location, rating and type of substations is still being determined.

At the next stage, a second SSDA application (SSDA 2) will be made and an Ausgrid approved designer (level 3 ASP) will be engaged to identify and assess the impacts of the concept development on existing utility infrastructure and service provider assets surrounding the site.

At the SSDA 2 stage of design, the level 3 ASP will identify the infrastructure upgrades on-site and off-site along with anticipated construction programs. Once

the design has been developed, an infrastructure delivery and staging plan, including a description of how infrastructure requirements will be co-ordinated, funded and delivered will be provided.

3.1.1.1 Overview

Ryde Hospital is an low voltage (LV) customer and the LOCAL HEALTH DISTRICT buildings are supplied from three Ausgrid substations located within the site boundary.

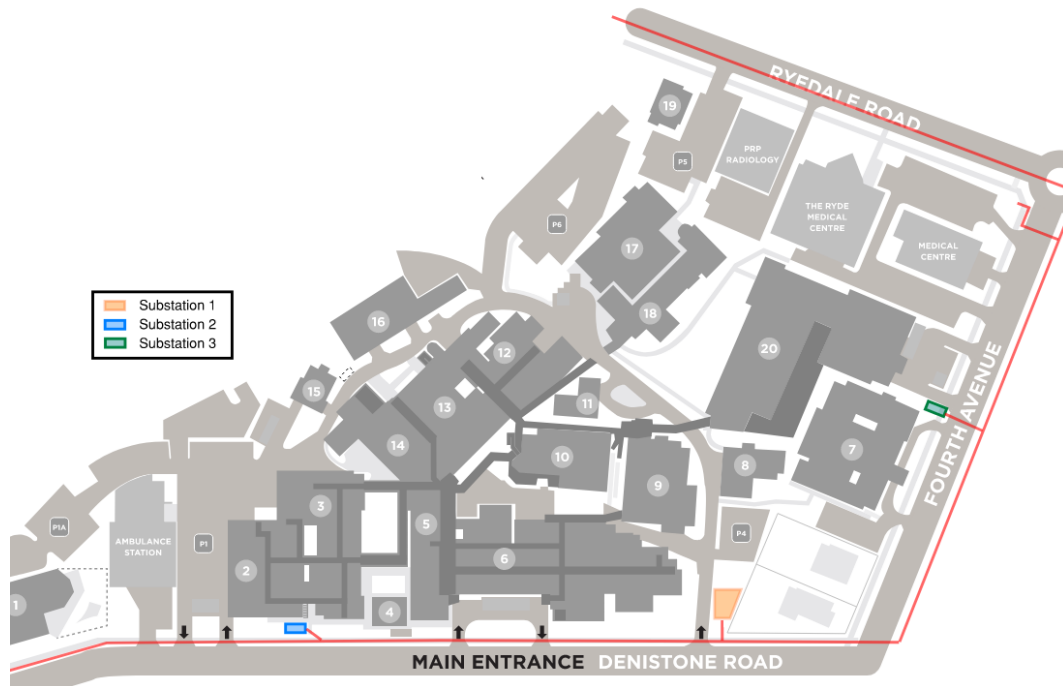


Figure 1 Ausgrid substation locations

Above and below ground high voltage (HV) cables run along Denistone Road. Below ground HV cables run along Fourth Avenue and Ryedale Road. These cables operate at 11kV and feed the adjacent substations.

The diagram below shows which substations supply each building through the colour coding. Grey buildings on the site are fed from separate street supplies that the LOCAL HEALTH DISTRICT is not responsible for.



Figure 2 Substation distribution zoning

The three substations and high voltage reticulation are owned and maintained by power supply authority servicing the area (Ausgrid). The serviceability of the assets is monitored by Ausgrid and appropriate action is taken for any upgrades or maintenance that may be required.

Table 1 Ryde Hospital Substations

Substation Reference	Ausgrid Substation Reference	Rating	Loads
1	S1163	1000kVA (assumed)	MSB1 (Building 6)
2	8434	1000kVA (assumed)	MSB2 (Building 2)
3	S48023	1000kVA (assumed)	MSB3 (Graythwaite)



Figure 3 Substation 1 (S1163)



Figure 4 Substation 2 (8434)



Figure 5 Substation 3 (S48023)

3.1.1.2 Utility communication

An application for connection has been submitted (Nov 2021) to Ausgrid who have provided initial advice. They have advised against multiple kiosk substations for the site and requested either one or two chamber substations be provided. It is anticipated that the HV connection will be derived from existing HV cables in the street, but this will not be confirmed until the level 3 ASP design is complete. The Level 3 ASP design is the electrical supply design completed by a utility accredited services provider.

The Ausgrid contact for the project is Sita Suresh ssuresh@ausgrid.com.au.

3.1.1.3 Demolition

The site includes three substations as detailed in Table 1 'Ryde Hospital Substations'. There will be no substation demolition as part of the early works. Substation 1 and 2 will be demolished as part of the main works. Substation 3 will be retained. Demolition will not commence until stage 2 of the main works. To be confirmed based on the final design.

3.1.1.4 New Electrical Supply

The new building will include one or two new chamber substations. These chamber substations will be supplied from existing HV feeders in Denistone Street and Forth Avenue.

3.1.1.5 Staging

The staging associated with the early works electrical, ICT and security is limited. Supplies to buildings and lighting columns will be isolated. Equipment will then be demolished.

The new building will be constructed in two stages. The stage 1 building will include a new chamber substation and will be constructed before any demolition of existing substations. Once stage 1 substation is completed, existing building supplies fed from the existing substation 1 loads will be either demolished or transferred to the new substation. Existing substation 1 will be demolished once the existing facilities are decanted into the new stage 1 development.

Stage 2 of the new develop will then commence. Buildings fed from the existing substation 2 will either be demolished or transferred to either the new substation 1 or the new substation 2. The final number of new substations will be dependant on the new building layout.

The Ambulance station is understood to be fed from existing substation 2. This will require a new supply from the street prior to the stage two works.

ICT connections to the existing main comms room in Denistone House will be unaffected by the early works and the first stage of the main building works. A new connection from Ryedale Road to the new stage 1 building will be established. Once commissioned, the existing connections to Denistone house will be demolished.

3.1.2 ICT

3.1.2.1 Overview

The site is serviced from multiple lead-ins

- Primary WAN connection: Telstra Fibre from Denistone Road to Denistone House Campus distributor
- Secondary WAN connection: NBN fibre from Denistone Road to Graythwaite main comms room
- Copper ~200pair connection from Denistone Road to Building 6 PABX room

Table 2 Existing ICT Lead-ins

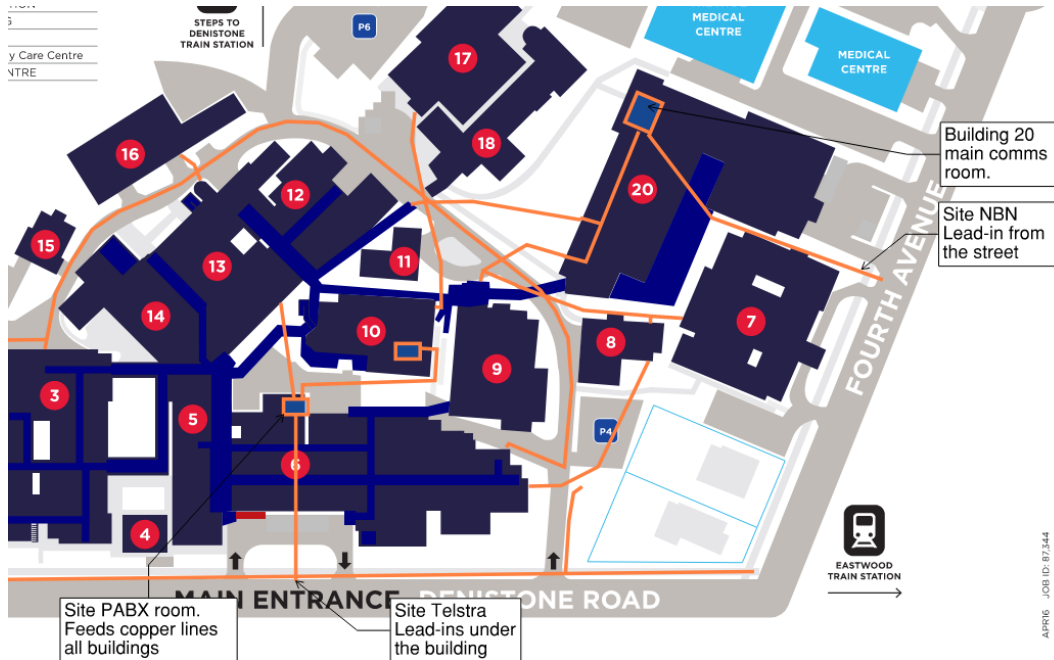


Figure 6 Telstra and NBN Co. Network Termination equipment

There is a single campus distributor (CD) for the site located within Denistone House. The CD contains data networking equipment, Main distribution Frame and terminations for incoming Telstra network. Cabinets are provided for the mounting of patch panels and data network equipment. The network racks are supported by local UPS within the room.

The Private Automatic Branch Exchange (PABX) and the main distribution frame (MDF) are in the PABX room in existing building 6. The system is old and at end of life. The hospital is in the process of converting all phone to Voice over internet protocol (VoIP) and plan to have 90% of these works complete by year end.

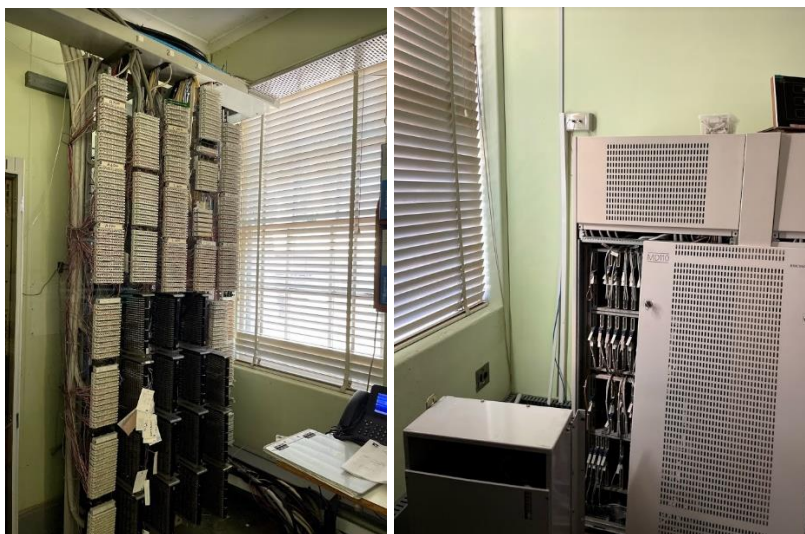


Figure 7 PABX Room Terminations

3.1.2.2 Utility communication

Dial before you dig (DBYD) information shows multiple services carriers in the street surrounding the site. The LOCAL HEALTH DISTRICT will undertake contractual negotiations with preferred services providers to agreed connection types and service package.

3.1.2.3 Demolition

Due to demolition of existing buildings the incoming copper connection and fibre connection from Denistone Road will be demolished during the stage 2 works which is yet to be confirmed. The NBN connection to Graythwaite will be retained.

3.1.2.4 New ICT connections

There are no new ICT connections as part of the early works.

The new main works development will include a new main comms room to support the new development and existing retained buildings. Diverse copper and fibre connections will be derived from Denistone Road and Fourth Avenue. The pit and pipe system from the main comms rooms will be installed during the construction process of the new hospital. As noted above, the LOCAL HEALTH DISTRICT to undertake contractual negotiations with preferred services providers to agreed connection types and service package.

3.1.2.5 Staging

The staging associated with the early works electrical, ICT and security is limited. Supplies to buildings will be isolated. Equipment will then be demolished.

The first stage of the main works will include a new main comms room. Services highways will be installed from Denistone Road and Fourth Avenue to enable

new copper and fibre connections. Once the new Lead-ins are installed, the existing lead-ins will be demolished, allowing for stage 2 construction.

3.2 Infrastructure Upgrades Required Off-site

3.2.1 Electrical

For a development of this size, it is anticipated that the existing high voltage feeders around the site will be sufficient. An application for connection has been submitted and Ausgrid will need to confirm availability. If HV capacity is not available in the street, then a new feeder will need to be installed.

3.2.2 ICT

The site is surrounded by multiple services carriers as indicated on the DBYD information. No upgrades beyond the site are anticipated.

4 Early Works Package

4.1 General

The electrical and ICT early works associated with the concept and Stage 1 SSDA include demolition of existing services within the early works site boundary. Refer to the appendix for the 'Electrical and ICT Early Works' layout.

As part of the SSDA stage 1 application, there will be no impacts to the electrical or ICT incoming utility supplies. A second SSDA application (SSDA 2) will be submitted and this will assess the changes to the utility electrical and communications services on and off site.

4.2 Extent of Scope

The extent of scope includes:

Demolition:

- Building 17 ICT and Electrical connections
- Building 18 ICT and Electrical connections
- Building 11 Electrical connections
- Underground conduits within the ring road
- Lighting columns within the early works site.
- Lighting column circuits to be made good for retained lighting in the circuit.

All electrical, ICT and security services within building 11, 17 and 18 will be made safe to allow for demolition.

4.3 Risks

The following risks have been identified.

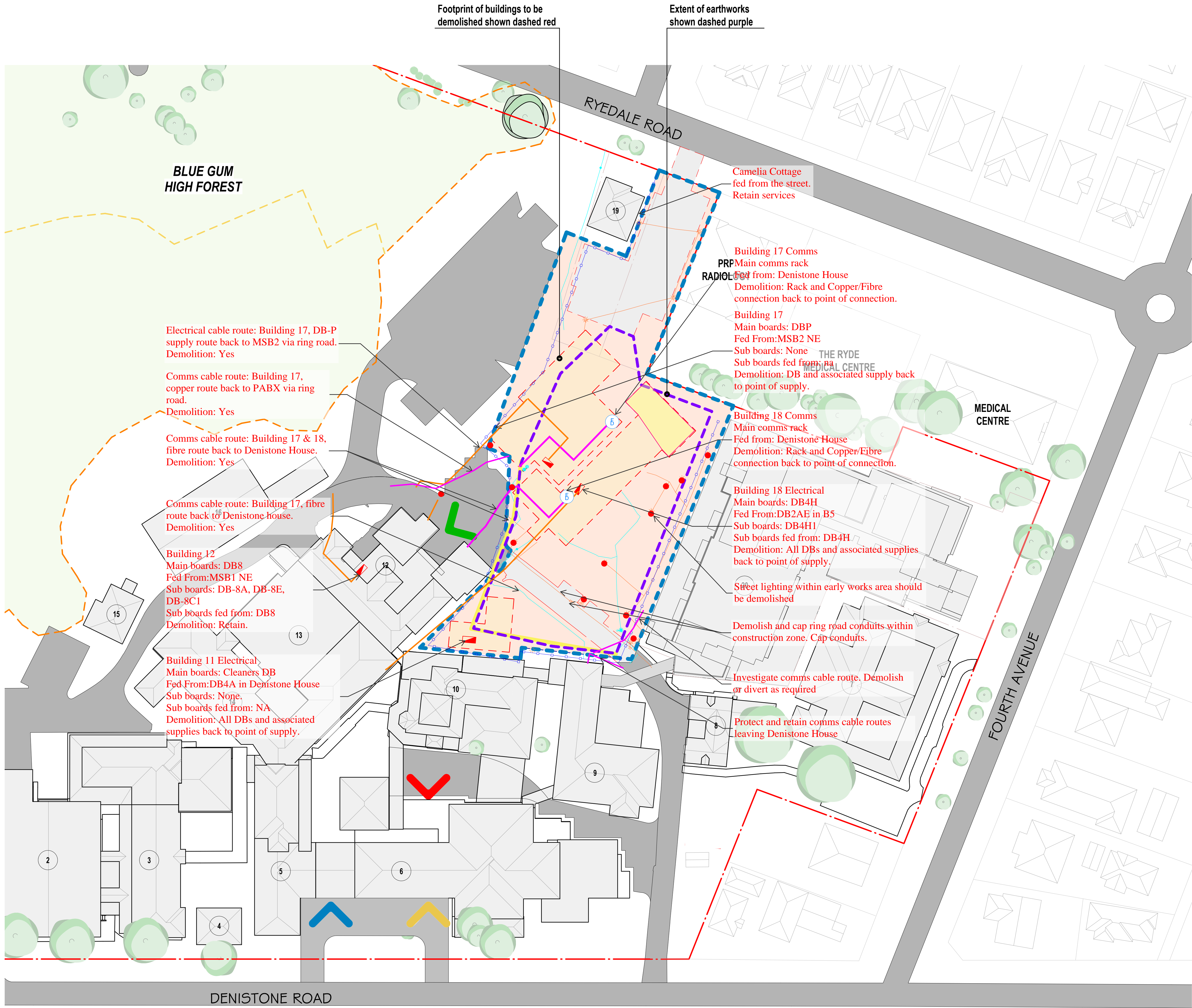
- Ring road conduits are believed to be empty based on ground scanning survey. Electrical contractor will need to check conduits are empty prior to demolition.
- ICT cable route from Denistone house to Graythwaite could not be identified. This should be confirmed through intrusive survey prior to demolition.
- Camelia Cottage is located adjacent to the site and is to be retained as part of these works. Power is derived from the street and should be protected during the works.
- There is know ICT connection from the campus to Camelia cottage. It is assume that this connection comes from the street.

4.4 Existing Retained Services

The existing retained electrical, ICT and security services will be unaffected by these works. The existing retained facility will remain operational.

Appendix A– Electrical, ICT and Security Early Works Layout

A1



LEGEND

- BUILDINGS TO BE DEMOLISHED
- CURRENT STAGE BUILDING SITE
- INDICATIVE STAGE 1 HOARDING LINE
- SITE BOUNDARY
- EXISTING HYDRAULIC SERVICES
- EXISTING ELECTRICAL SERVICES
- EXISTING STORMWATER SERVICES
- TEMPORARY SHORING WALL AS PER CIVIL ENG.'S DRAWINGS
- EXTENT OF EARTHWORKS
- EPBC ACT - EEC ALIGNMENT AS CONFIRMED BY ECOLOGICAL AUSTRALIA
- EXTENT OF MANAGED APZ
- PUBLIC EMERGENCY
- MAIN ENTRY
- AMBULANCE
- LOGISTICS

- Legend**
- Street Light
 - Distribution board
 - Comms room/rack
 - Electrical cable route
 - Comms cable route

Notes:

- This drawing outlines the extent of electrical, ICT and security for the proposed early works. This information has been gathered through non-intrusive site survey. Intrusive survey of all conduits to be completed prior to demolition. All cables to be traced and identified.
- All electrical, ICT and security services within buildings 17, 18 and the cleaners shed are to be demolished.
- External lighting and signage within the early works areas to be demolished.
- All conduits and pits within the early works area to be demolished are removed.

Appendix B— Existing Electrical and ICT Infrastructure

B1

BLD No.	DESCRIPTION	BLD No.	DESCRIPTION
1	APPLE COTTAGE CHILD CARE	10	DENISTONE HOUSE
2	OPERATING SUITE	10	DIABETES SERVICE
3	CARDIOLOGY UNIT	10	DIETETICS
3	CORONARY CARE UNIT (CCU)	10	INFORMATION TECHNOLOGY
3	HIGH DEPENDENCY UNIT (HDU)	10	J.M.O. TRAINING
3	PERIOPERATIVE UNIT	10	OCCUPATIONAL THERAPY
4	FRESH PLUS CAFÉ	10	PODIATRY
5	ADMISSIONS	10	SPEECH PATHOLOGY
5	EXECUTIVE OFFICE	10	SOCIAL WORK
5	MEDICAL RECORDS (HIS)	11	CLEANERS
5	WORKFORCE	12	FOOD SERVICES
5	RECEPTION (MAIN)	12	PHYSIOTHERAPY
6	STERILISING	12	STORES
6	ELCA (EDUCATION, LIBRARY & CONFERENCE AREA	13	PATIENT GYM
6	EMERGENCY DEPARTMENT	13	WARD 2
6	NURSING ADMINISTRATION	14	CHAPEL
6	OUTPATIENTS CLINIC	14	EMPLOYEE ASSISTANCE
6	PATHOLOGY	14	VMO LOUNGE
6	PHARMACY	14	WARD 3
6	RADIOLOGY	15	MORTUARY
6	SECURITY	16	ENGINEERING
6	WARDSPERSONS	17	AGED CARE + REHABILITATION
7	MENTAL HEALTH	18	CHATTERY / STAFF DINING
8	ANTE NATAL CLINIC	18	STAFF ACCOMMODATION
8	STABLES BUILDING	19	CAMELIA COTTAGE - Family Care Centre
9	MATERNITY	20	GRAYTHWAITE REHAB CENTRE
9	PATIENT TRANSIT LOUNGE		
9	WARD 6		
9	WARD 7		
9	WARD 8		



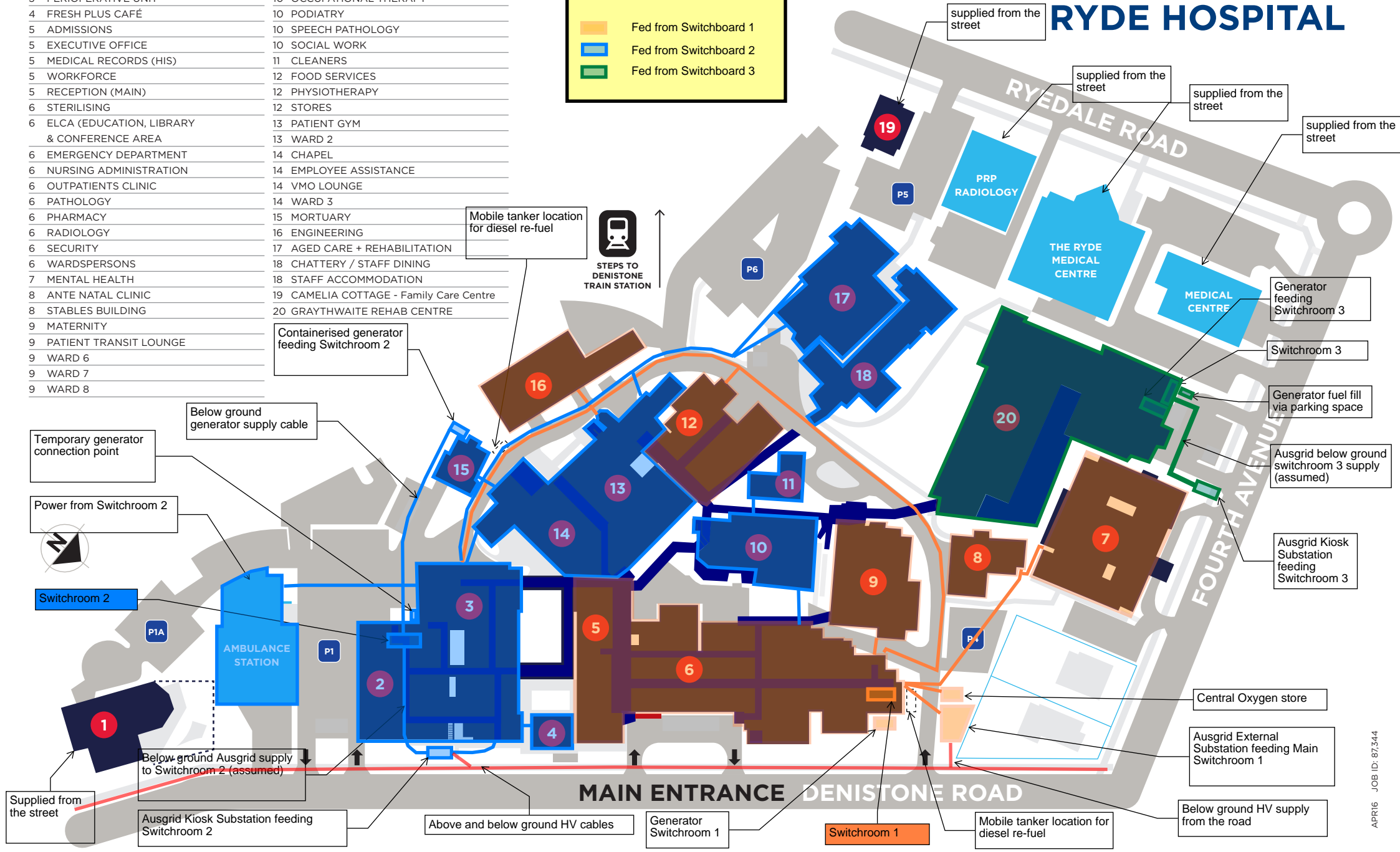
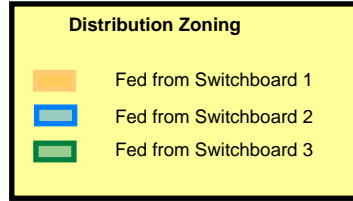
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CARPARK
SPACES

Arup Site Visit 16/06/2021
Site Wide Power Distribution



Health
Northern Sydney
Local Health District

RYDE HOSPITAL



BLD No.	DESCRIPTION
1	APPLE COTTAGE CHILD CARE
2	OPERATING SUITE
3	CARDIOLOGY UNIT
3	CORONARY CARE UNIT (CCU)
3	HIGH DEPENDENCY UNIT (HDU)
3	PERIOPERATIVE UNIT
4	FRESH PLUS CAFÉ
5	ADMISSIONS
5	EXECUTIVE OFFICE
5	MEDICAL RECORDS (HIS)
5	WORKFORCE
5	RECEPTION (MAIN)
6	STERILISING
6	ELCA (EDUCATION, LIBRARY & CONFERENCE AREA
6	EMERGENCY DEPARTMENT
6	NURSING ADMINISTRATION
6	OUTPATIENTS CLINIC
6	PATHOLOGY
6	PHARMACY
6	RADIOLOGY
6	SECURITY
6	WARDSPERSONS
7	MENTAL HEALTH
8	ANTE NATAL CLINIC
8	STABLES BUILDING
9	MATERNITY
9	PATIENT TRANSIT LOUNGE
9	WARD 6
9	WARD 7
9	WARD 8

BLD No.	DESCRIPTION
10	DENISTONE HOUSE
10	DIABETES SERVICE
10	DIETETICS
10	INFORMATION TECHNOLOGY
10	J.M.O. TRAINING
10	OCCUPATIONAL THERAPY
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15	MORTUARY
16	ENGINEERING
17	AGED CARE + REHABILITATION
18	CHATTERY / STAFF DINING
18	STAFF ACCOMMODATION
19	CAMELIA COTTAGE - Family Care Centre
20	GRAYTHWAITE REHAB CENTRE



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Arup Site Visit 16/06/2021
Site Wide Comms



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