

TO: David Jones (Aurecon)

CC: Graeme Spencer (Hassell)

Matthew Davies (Hassell)

John Riordan (Architectus)

Mark Mulholland (WGE)

FROM: Paul De Gabriele (WGE)

PROJECT: Port Macquarie Base Hospital Expansion Project

PROJECT NUMBER: 22655-SYD-E DATE: 15 December 2011

SUBJECT: - Information for Part 3A Environmental Assessment – Electrical Services

The following information covering the electrical services and information and communication technology is provided to assist in the preparation of an Environmental Assessment in accordance with the Director-General's Requirements for the Port Macquarie Base Hospital Redevelopment.

1 ELECTRICAL SUPPLY

Essential Energy supply electricity to the site and have advised that there is sufficient capacity in their network to supply the additional load. An email from Country Energy (Now Essential Energy) confirming this is attached. A formal application for the additional supply has been submitted to Essential Energy.

Two new 1000 kVA padmounted substations will be required on site. They will be located outside the building adjacent to the Plant Rooms on Level 1.

A new main switchboard, power factor correction and standby generator will be provided for the new buildings within the Level 1 Plant Room.

2 EXISTING ESSENTIAL ENERGY 33KV OVERHEAD POWER LINE

There is an existing 33kV overhead power line which passes through the site. The line follows the Western and Northern boundary as shown on the attached drawing. The power line is owned and operated by Essential Energy and no permanent structures can be erected within 10m of the pole line of this feeder.

The new Pod 4 Building does not provide the required 10 metre separation from power line. In addition the electromagnetic power frequency field (EMF), which is produced by this line, is a concern with regard to human exposure to it and the interference effect which the EMF could have on sensitive medical equipment.

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Page 1 of 4

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Negotiations are well underway with Essential Energy to obtain their approval to replace two spans of the overhead line with underground cables to overcome the above problems. A design has been submitted to Essential Energy for their approval.

Planning assessment and approval for this work was undertaken separately through a Review of Environmental Factors (REF).

3 CARPARK AND PEDESTRIAN PATHWAY LIGHTING

3.1 GENERAL

The following is an overview of the lighting methodology which has been applied for the new car parks and associated new pathways on the site.

The following issues have been considered and are addressed in the design:

- Energy Efficient Lighting.
- Creation of a safe well lit environment.
- Aesthetically suitable lighting arrangement.
- Lighting Control Systems.
- Maintenance and ongoing running costs.

3.2 DESIGN CRITERIA FOR EXTERNAL LIGHTING

The exterior lighting will comply with the following standards and guidelines:

- AS 4282 – Control of Obtrusive Effects of Outdoor Lighting
- AS/NZS 1158.3.1 – Pedestrian Area Lighting (Category P)
- AS 3000 – SAA Wiring Rules

3.3 OUTDOOR CAR PARK LIGHTING

Outdoor car parks are designed to comply with both AS/NZS 1158.3.1 – Light for roads and public spaces, and AS/NZ 4282-1997 – Control of the obtrusive effects of outdoor lighting as follows:

We will provide Category P11a lighting to new car park areas and Category P12 to designated parking spaces specifically intended for people with disabilities. We have based this selection on the following selection criteria:

- Night time vehicle or pedestrian movements – High
- Risk of crime – Medium
- Need to enhance prestige - High

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Page 2 of 4



The light technical parameters associated with Category P11a lighting are as follows:

- Average horizontal illuminance – 14 lux
- Point horizontal illuminance – 3 lux
- Illuminance (horizontal uniformity) – 10
- Point vertical illuminance – 3 lux

Category P12 requires a point horizontal illuminance greater than or equal to 14 lux and greater than or equal to the average horizontal illuminance.

Pole mounted luminaries utilising LED sources will be installed. Luminaries will have zero degree horizontal cut off to minimise any upward light spill and, were necessary, will be provided with shields to prevent light spill into adjoining properties.

3.4 PEDESTRIAN PATHWAY LIGHTING

Pathways will be designed to comply with both AS/NZS 1158.3.1 – Light for roads and public spaces, and AS/NZ 4282-1997 – Control of the obtrusive effects of outdoor lighting as follows:

We are of the opinion that there will be occasional high night pedestrian activity, a medium risk of crime and a high need to enhance prestige, the project therefore, fits into light category P2.

The light technical parameters associated with Category P2 lighting are as follows:

- Average horizontal illuminance – 3.5 lux
- Point horizontal illuminance – 0.7 lux
- Illuminance (horizontal uniformity) – 10
- Point vertical illuminance – 0.7 lux

A combination of post top light fittings and bollards will be utilised. Post top and bollard luminaires will utilise LED lamps. Fittings will have zero degree horizontal cut off to minimise any upward light spill and, were necessary, will be provided with shields to prevent light spill into adjoining properties.

3.5 EXTERNAL LIGHTING CONTROL

It is proposed that the light switching be controlled by a photo electric cell (PE Cell). This will allow the lights to remain on from dusk to dawn.

The new car park lighting will be controlled together with the lighting in the existing carpark areas.

3.6 MAINTENANCE

Energy efficient lamps, control gear and luminaries will be selected generally utilising high efficacy LED sources. Vandal resistant luminaries and associated supporting facilities will be selected and ease of maintenance will be considered in the selection and design.

3.7 DRAWINGS

The areas described above are outlined on the attached Drawing Number EL 1000 LO SP CD.

4 GENERAL INTERNAL LIGHTING

The new building will be provided with internal lighting which complies with the requirements of AS/NZS 1680.2.5:1997 – Interior lighting, Hospital and Medical Tasks and NSW Health Technical Series TS 11.

Energy efficient fluorescent and LED luminaires will be utilized.

New exit and emergency lighting will be provided throughout the new building in accordance with AS/NZS 2293

5 GENERAL POWER AND MISCELLANEOUS SERVICES

The new building will be provided with general power provisions, voice and data provisions, nurse call system, duress alarm system, electronic security, access control and CCTV monitoring.

6 ATTACHMENTS

- Email from Country Energy confirming availability of supply
- Drawing No: EL-1000-LO-SP-CD Rev 01

Mark Mulholland (WGE)

From: jason.dowling@countryenergy.com.au
Sent: Thursday, 14 October 2010 12:20 PM
To: Mark Mulholland (WGE)
Subject: Fw: Port Macquarie Base Hospital Forth Pod - Stage 1 - Electrical supply

Hi Mark,

Spoke to the Planners and they have indicated there would be no problem with HV feeder capacity for the 2.2MVA additional load for the upgrade works to the the Port Base Hospital.

If you need more information please let me know.

Regards

Jason Dowling
Project Manager
Phone - 6589 8132
Mobile - 0417 421 134
Fax - 6589 8222

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SITE PLAN NOTES

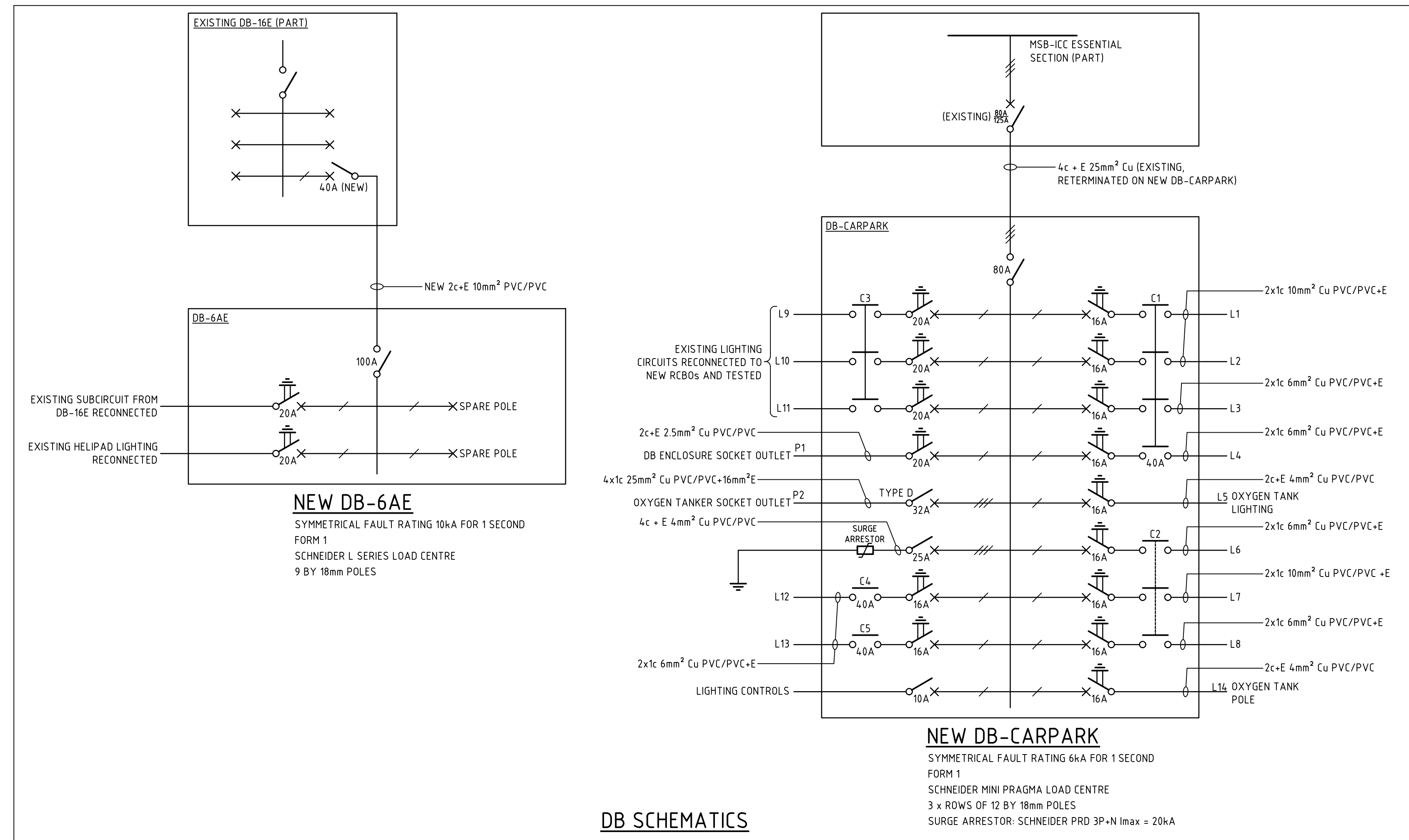
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ELECTRICAL SERVICES SECTION OF THE SPECIFICATION, THE ARCHITECTURAL DRAWINGS AND ALL OTHER RELEVANT SERVICES DRAWINGS.
- REFER TO THE LEGEND AND LIGHT FIXTURE SCHEDULE.
- WHERE POSSIBLE, ALL POWER AND COMMUNICATION CONDUITS SHALL BE INSTALLED IN COMMON TRENCHES WITH THE OTHER SERVICES TRADES. ENSURE THAT THE MINIMUM REQUIRED CLEARANCE IS MAINTAINED BETWEEN SERVICES THAT RUN IN COMMON TRENCHES.
- CABLE PITS WITHIN PATHWAYS SHALL BE FINISHED FLUSH WITH THE FINISHED LEVEL OF THE INSITU CONCRETE, PAVING OR BITUMEN.
- ALL CONDUITS SHALL BE SEALED TO PREVENT THE INGRESS OF WATER AFTER INSTALLATION OF CABLEING.
- SUPPLY NEW DB 16A-E FROM EXISTING DB16-E. BOARD AND BREAKERS TO MATCH EXISTING. HELIPAD LIGHT TO BE SUPPLIED FROM EMERGENCY GENERATOR BACKED UP SUPPLY.
- PROVIDE THE FOLLOWING ON A GALVANISED SHS POST AT THE FRONT OF THE OXYGEN TANK ENCLOSURE:
(a) TANKER SOCKET OUTLET:
OUTLET: CLIPSAAL 4 MODULE BASE CAT No 6564VHGY
SWITCH: 32A CLIPSAAL CAT No 565032LEGY
SOCKET: 4 PIN 32A CAT No 5650432LEGY
RCD: CLIPSAAL CAT No 5650432LEGY (130mA)
RCD COVER: CLIPSAAL CAT No 5650432LEGY WITH NEON ACROSS 2 PHASES
(b) A COMMUNICATION CONDUIT TERMINATED IN AN IP66 BOX IN A POSITION AGREED WITH BOC GASES.
DO NOT PROVIDE AN RCD FOR THE TANKER OUTLET WITHIN THE DISTRIBUTION BOARD.
- PROVIDE DEDICATED CIRCUITS FROM THE DISTRIBUTION BOARD TO THE OXYGEN TANK ENCLOSURE FOR LIGHTING WITHIN THE ENCLOSURE. POLE AND POLE MOUNTED LUMINAIRE SHALL BE PROVIDED BY BOC GASES. PROVIDE RCD AND CABLEING, INCLUDING 3 METRE TAILS. ADDITIONALLY PROVIDE 2 NO WALL MOUNTED TYPE A1 LUMINAIRES AND 15% RATED 10A SWITCH CONFORM TO THE REQUIRED SWITCHING ARRANGEMENT WITH BOC GASES. COORDINATE EXACT LOCATIONS WITH BOC GASES.
- PROVIDE CONDUIT TO LPG ENCLOSURE FOR FUTURE POWER PROVISION AT A POSITION NOMINATED BY ELGAS.
- COORDINATE THE EXACT LOCATIONS OF GAS ENCLOSURE SERVICES WITH BOC GASES AND ELGAS.
- ALL LIGHTING CONTROL CONTACTORS SHALL BE CONTROLLED VIA THE EXISTING PHOTO ELECTRIC CELL. INSTALL ALL CONTACTORS WITHIN THE NEW DB-CARPARK.
- ALL NEW RCDs SHALL BE SINGLE POLE.
- STRIP OUT EXISTING DB-CARPARK AND MAIN SWITCH. PROVIDE NEW DB-CARPARK WITHIN EXISTING GALVANISED STEEL ENCLOSURE. REPOSITION AND RECONNECT THE EXISTING SOCKET OUTLET AND LIGHT SWITCH WITHIN THE ENCLOSURE TO ACCOMMODATE THE NEW DB. PROVIDE NEW GALVANISED STEEL COVER TO ENCLOSE NEW CABLEING.
- DB-CARPARK-L12 MUST BE CONTROLLED VIA A DEDICATED CONTACTOR TO ENABLE FUTURE TIMER CONTROL TO REDUCE LIGHT OBTRUSION TO NEIGHBOURING PROPERTIES.
- COORDINATE EXACT LOCATION OF CONDUIT ROUTE WITH HYDRAULIC AND MEDICAL GAS SERVICES. PIPE ROUTES SHALL SHARE TRENCHES WHERE PRACTICABLE.
- ALL PITS MUST BE RATED TO AS 3996 (LOAD CLASS B (MINIMUM)) AND SHALL BE DRAINED. ALL PITS SHALL BE LOCATED WITHIN FOOTPATHS OR SOFT LANDSCAPING.
- ONE COMMS CONDUIT WILL ACCOMMODATE MEDICAL GAS ALARM CABLEING. THE CABLEING SHALL BE INSTALLED BY THE MEDICAL GAS SUBCONTRACTOR.
- REFER ARCHITECTS DRAWINGS FOR ALL POLE SETBACK DIMENSIONS FROM KERB.
- NO WORKS TO BE UNDERTAKEN ON DB'S WITHOUT THE HOSPITAL ENGINEER'S AUTHORISATION.

LEGEND

- POLE MOUNTED SINGLE LED LUMINAIRE ON 6m HIGH POLE
- POLE MOUNTED DOUBLE LED LUMINAIRE ON 6m HIGH POLE
- POLE MOUNTED TRIPLE LED LUMINAIRE ON 6m HIGH POLE (PERPENDICULAR MOUNTING)
- BOLLARD LUMINAIRE
- POWER CABLE CONDUIT (ORANGE)
2P100 DENOTES 2x100mm DIAMETER CONDUITS
- COMMS AND MISCELLANEOUS SERVICES CABLE CONDUIT (WHITE)
2C100 DENOTES 2x100mm DIAMETER CONDUITS
- POWER CABLE PIT
- COMMUNICATIONS AND MISCELLANEOUS CABLE PIT
- THREE PHASE SOCKET OUTLET
- PERMANENT POWER CONNECTION SINGLE PHASE
- WALL MOUNTED TWIN LAMP FLUORESCENT LUMINAIRE

LUMINAIRE SCHEDULE

- | | |
|----|---|
| A1 | 2x28W SURFACE MOUNTED FLUORESCENT LUMINAIRE, IP65 RATED EAGLE LIGHTING DENSUS G2 |
| Y1 | ADLTA RUDD BETALED AREA XAL1408DC 80 LED 6K TYPE 4 525mA |
| Y2 | ADLTA RUDD BETALED AREA XAL1396DC 60 LED 6K TYPE 3 525mA |
| Y3 | ADLTA RUDD BETALED AREA XAL1408DC 80 LED 6K TYPE 4 525mA |
| Y4 | ADLTA RUDD BETALED AREA XAL1408DC BACK TO BACK DUO 80 LED 6K TYPE 4 525mA |
| Y5 | ADLTA RUDD BETALED AREA XAL1406DC BACK TO BACK DUO 60 LED 6K TYPE 4 525mA |
| Y6 | ADLTA RUDD BETALED AREA XAL1396DC BACK TO BACK DUO 60 LED 6K TYPE 3 525mA |
| Y7 | ADLTA RUDD BETALED AREA XAL1394DC BACK TO BACK DUO 40 LED 6K TYPE 3 525mA |
| Y8 | ADLTA RUDD BETALED AREA XAL1394DC TRIPLE HEAD 40 LED 6K TYPE 4 525mA |
| Z1 | ADLTA RUDD BETALED PATHWAY XBP43018H 18 LED 6K TYPE 3 350mA BOLLARD 1100mm HIGH (NOMINAL) |



EXISTING 33kV OVERHEAD
POWER LINE TO BE REPLACED BY
UNDERGROUND CABLES (NOT
INCLUDED IN THIS CONTRACT)

1. PROPOSED SITE PLAN

1:500

- NOTES
- DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN.
 - ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 - ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE PROCEEDING WITH THE WORK. HASSELL SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES.
 - THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, REPORTS AND DRAWINGS.

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D	PRELIMINARY ISSUE	111117
C	PRELIMINARY ISSUE	111103
B	PRELIMINARY ISSUE	111101
A	PRELIMINARY ISSUE	111028

Rev	Description	Date	Rev	Description	Date	Rev	Description	Date
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HASSELL

PROJECT

PORT MACQUARIE BASE HOSPITAL EXPANSION
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DRAWING TITLE
SITE PLAN
ELECTRICAL SERVICES
ENABLING WORKS

STATUS	JOB NO.
TENDER ISSUE	22655
SCALE AT A0	DRAWN
1:500	PGD
DISC.	LEVEL
EL 1000	L0
REGION	SP
STAGE	CD
ISSUE	01

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