The University of Newcastle

HCCD Enabling Works - Electrical/Communications

Elec and Comms DA Input

March 2019

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1. Introduction

1.1 Background

The University of Newcastle (UoN) is in the process of acquiring three sites within the Honeysuckle area in Newcastle's CBD. The sites are located within Honeysuckle Drive and Civic Lane, with Wright Lane running through the development areas.

Figure 1-1 HCCD Location and Staging

UoN has contracted GHD to provide the concept and schematic design for the enabling works for the sites. These works consist of:

- The electrical supply and reticulation
- NBN service delivery to site
- UoN communication service delivery to site

1.2 Purpose of this report

The purpose of this report is to provide University of Newcastle with information on matters affecting, or likely to affect, the environment from the proposed construction activities for the electrical and communications enabling works for the proposed development. This report is intended to inform the Development Application (DA) document being prepared by APP.

1.3 Scope and limitations

The scope of this report will cover the construction and operational activities of the electrical, NBN and communications enabling works for Site 1. Environmental effects resulting from the construction, operational and maintenance activities of other utilities and services (such as Water, Gas and geotechnical) are not included, as GHD is only contracted for electrical and communications works only.

1.3.1 Disclaimer

This report has been prepared by GHD for The University of Newcastle and may only be used and relied on by The University of Newcastle for the purpose agreed between GHD and The University of Newcastle as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than The University of Newcastle arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

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GHD has not been involved in the preparation of the Development Application (DA) and has had no contribution to, or review of the Development Application (DA) other than in the 'HCCD – Elec Comms DA Input' document. GHD shall not be liable to any person for any error in, omission from, or false or misleading statement in, any other part of the Development Application (DA).

2. Proposal details

2.1 Proposal location – Site 1

The University of Newcastle is in the process of designing The Honeysuckle City Campus Development (HCCD) located in the Honeysuckle precinct of Newcastle, at the intersection of Honeysuckle Drive and Worth Place. The proposal for these works will be limited to Site 1 with some works extending into Site 2.

Site 1 for the proposed development includes, and is limited to, the following lots adjacent to Honeysuckle Drive, Worth Place, Wright Lane and Settlement Way in the Newcastle suburb:

- Lot 1/DP 1163346
- Lot 2/DP 1163346
- Lot 3/DP 1163346

Site 2 for the proposed development includes, and is limited to, the following lot adjacent to Civic Lane, Worth Place and Wright Lane in the Newcastle suburb:

- Lot 21/1165985

2.2 Proposal description

When Site 1 development is completed it will contain three academic buildings with commercial and ancillary tenancies.

The proposed development includes enabling works for these buildings for electrical, NBN and UoN's private network. The proposal includes:

- Installation of a new 1.5 MVA kiosk substation.
- Re-routing of Ausgrid High Voltage cables to the substation.
- Installation of Low Voltage cable, conduits and pits from kiosk substation to Ausgrid pillar.
- Installation of Low Voltage cable, conduits and pits from kiosk substation to future Building A1.
- Installation of NBN cable, conduits and pits from pit on Honeysuckle Drive to future Building A1.
- Installation of UoN private communication network cable, conduits and pits. The extent of this communication network is from Honeysuckle City Campus to Auckland Street adjacent to Hunter Street after the NewSpace Building. The NewSpace Building is located at the corner of the Hunter Street and Auckland Street.

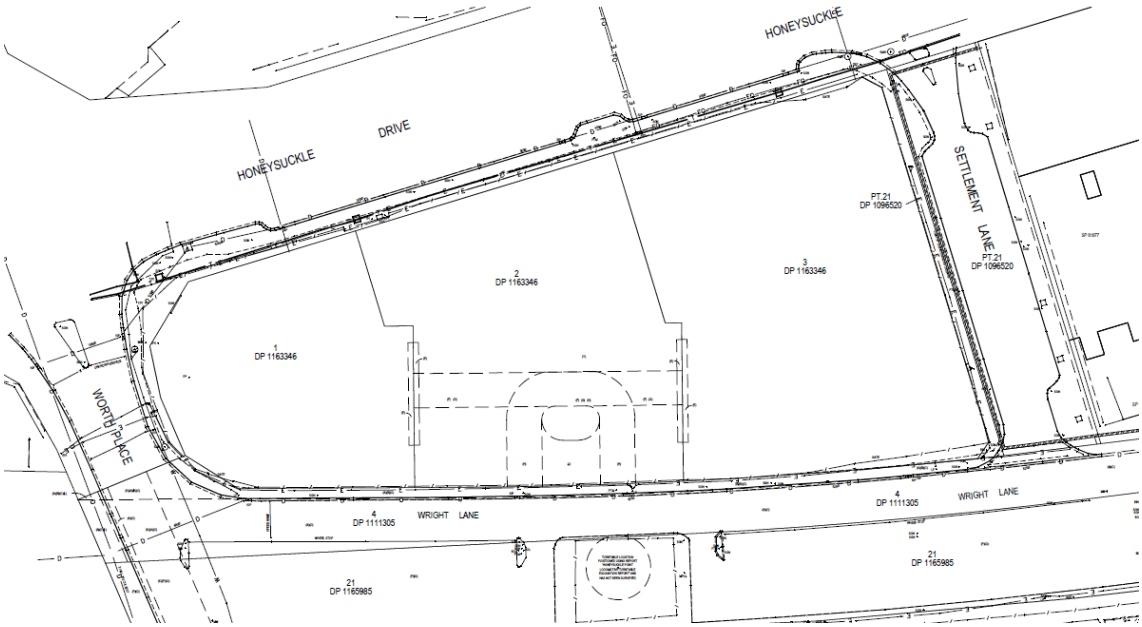

Figure 2-1 Site location – Site 1

2.3 Reason/justification for proposal and proposal objectives

Based on the proposed development there is requirement to upgrade the existing electrical and communications systems to meet the developments requirements. The existing Ausgid and NBN networks have the capacity to service the site and there is no augmentation work expected by Ausgrid or NBN. However works inside the boundaries of the site are required to allow connection of the proposed buildings to the electrical and communications networks.

2.4 Scope of work activities

2.4.1 Proposed electricity & communications routes to site

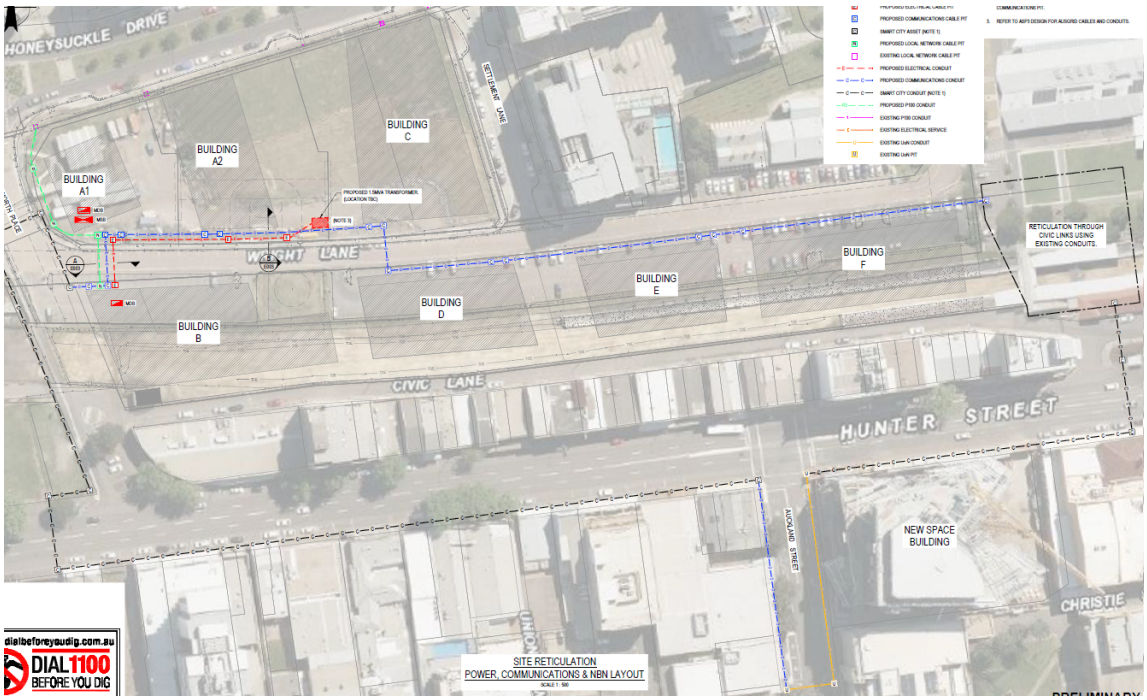

Figure 2-2 Indicative routes of electricity and communications cable extensions to Site 1

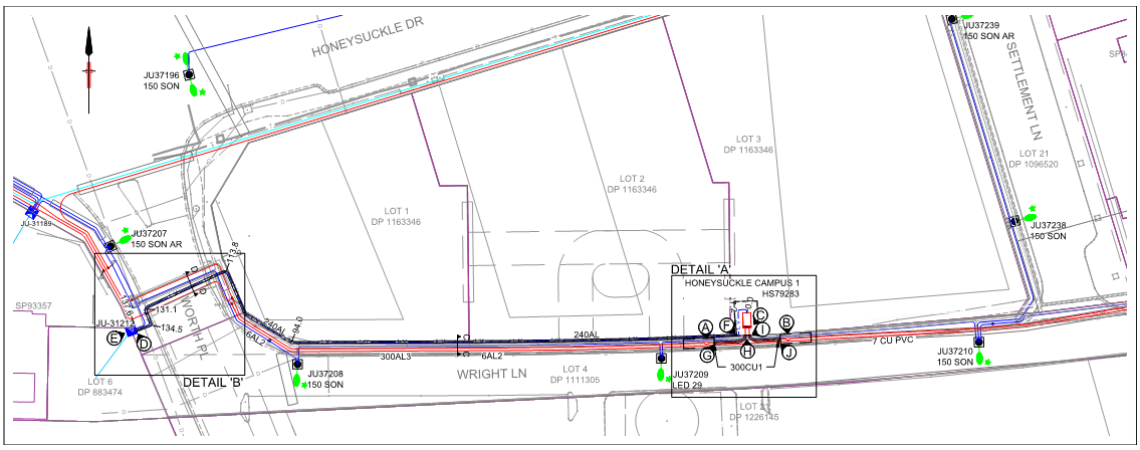

Figure 2-3 Indicative routes of electrical cable extensions as part of the ASP1 works to Site 1

2.4.2 Construction

Construction activities for the electrical and communications enabling works of the development will involve excavation of the locations shown in Figure 2-2, for the proposed conduit and pit locations in site 1. The proposed conduits would be constructed by open trenching and trenchless methods (under boring) where possible. Trench depth would be determined by a number of factors including topography, services and crossings. Trench width may vary depending on neighbouring utilities and ground conditions. The minimum trenching dimensions for the works would be about 400-500 millimetres wide and 600-700 millimetres deep. Trenches may be deeper in isolated locations. The construction method for individual sections of the conduits would be confirmed during detailed design.

Construction activities associated with trenching typically include:

- Installing temporary fencing
- Preparing the site, including removing pavement, footpath and/or road surface
- Stringing conduits along the construction corridor
- Shoring and dewatering trenches or benching the trench profile, depending upon trench depths and groundwater levels
- Spreading granular bedding material such as sand or gravel along the base of the trench before pipe laying
- Installing the pipeline
- Backfilling the trench with compacted bedding material and excavated soil
- Restoring areas disturbed by the construction and replacing topsoil

Construction activities associated with trenchless methods (under boring) would generally include:

- Establishing sites for insertion and receival pits
- Excavation of insertion and receival pits
- Shoring and dewatering of pits depending upon pit depth and groundwater levels
- Inserting a bursting head or splitting head into the existing pipe to shatter the existing pipe
- Stringing pipes along the construction corridor
- Installing the pipeline
- Backfilling the pits with compacted bedding material and excavated soil
- Restoring areas disturbed by the construction and replacing topsoil

2.5 Work equipment and machinery

The following equipment, vehicles and machinery may be used to undertake the proposal:

- Excavators
- Under boring heads and power pack
- Work trucks
- Concrete saws
- Vibrating plate compactors
- Backhoes
- Jack hammers
- Light commercial and passenger vehicles
- Hand tools
- Air compressor
- Generators
- Water trucks
- Skip bins

2.6 Site facilities

Construction compound(s) would likely be required for the proposal to house site sheds and provide a materials laydown area (including conduits, pits, spoil and backfill materials). The exact location of the compound(s) would be determined during detailed design in consultation with relevant landowners.

2.7 Capacity for future development

2.7.1 Electrical capacity

To provide capacity for future development, spare conduits will be included in the design when trenches are excavated. The spare conduits will be reserved to provide additional space in the event that additional power cables are to be added on site.

All conduits have been sized to be greater than the cable sizes anticipated, such that in the event that the maximum demand increases beyond what has been calculated in the schematic design that the cables can be replaced with higher-rated cables (which will be thicker to account for the increased current rating).

Should any cables need to be added or replaced at a future date, access to the cables and conduits will be available through the pits that are installed along the property boundaries – allowing access to the electrical services without excavation.

The 1.5 MVA transformer located between Building A2 and Building C is rated to supply power to Building A1 and future buildings. Once the 1.5 MVA transformer reaches capacity when future buildings come online then a chamber substation will be required.

2.7.2 Communications capacity

Spare conduits will be included in the design when trenches are excavated. These spare conduits are intended to be reserved and used primarily when additional communication cables are required to meet future development.

All communication conduits have been sized to be greater than required to fit the selected fibre cable size used for connecting a communications network. By designing larger than required conduit sizes, larger fibre cables can be utilised, or multiple communications fibre cables can be fitted through the communications conduit simultaneously.

The NBN conduit and pit network only contains a single conduit, which is dedicated solely to NBN fibre cables. While there is only one conduit to use, the size of the conduit is great enough to support multiple NBN fibre cables simultaneously.

Appendices

Appendix A - Drawings

UNIVERSITY OF NEWCASTLE
HCCD - ENABLING WORKS

ELECTRICAL / COMMUNICATIONS SERVICES

22-19320

DRAWING LIST

DRG No.	DRAWING TITLE
22-19320-E001	COVER SHEET & DRAWING LIST
22-19320-E002	SITE RETICULATION - POWER, COMMUNICATIONS & NBN LAYOUT
22-19320-E003	TYPICAL TRENCH DETAILS

LOCALITY PLAN

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	PRELIMINARY ISSUE	ALC	ARC	JL	13.04.18

Note: * indicates signatures on original issue of drawing or last revision of drawing

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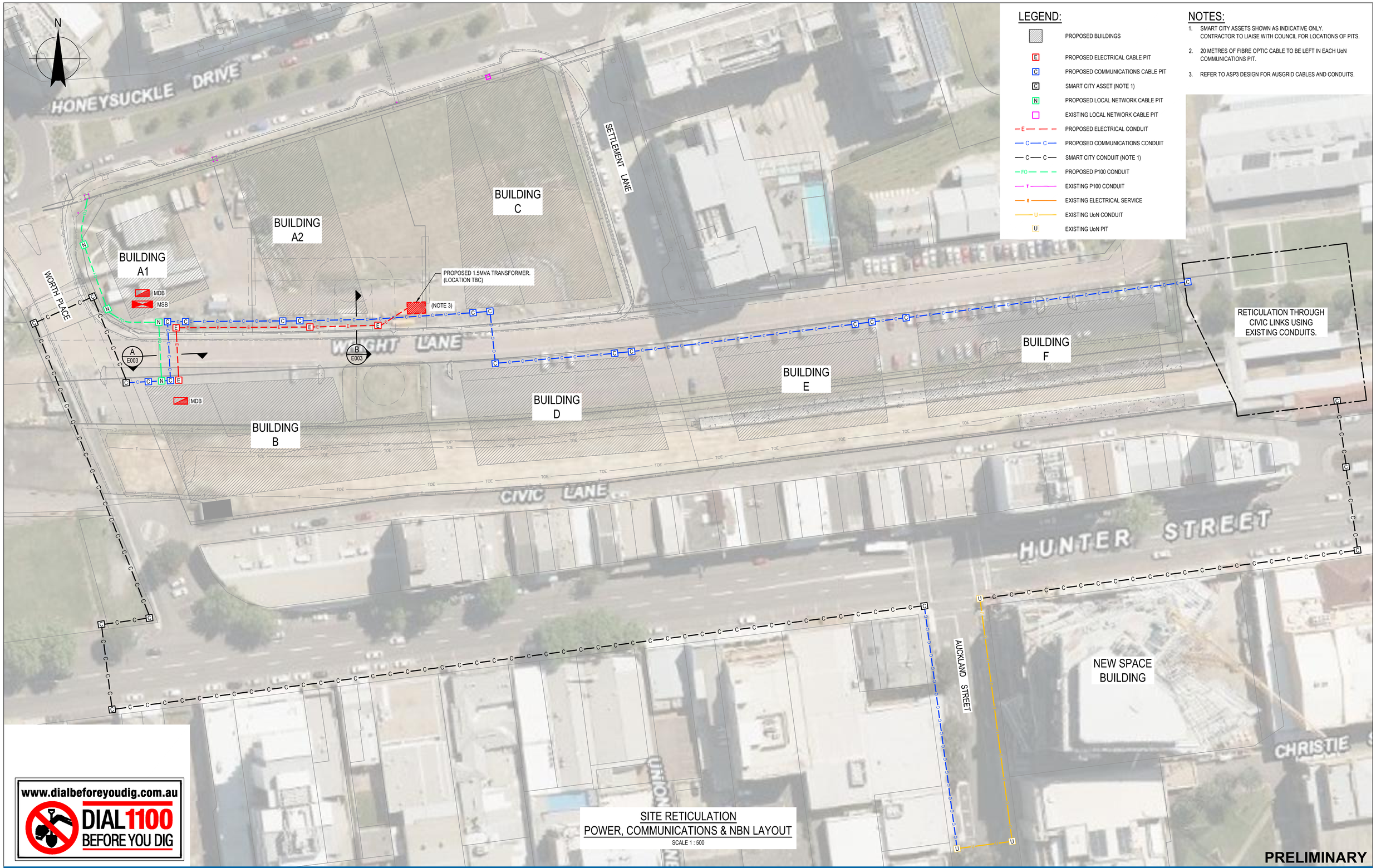
Drafting Check | Design Check
Approved (Project Director)
Date
Scale NOT TO SCALE
This Drawing must not be used for Construction unless signed as Approved

Client UNIVERSITY OF NEWCASTLE
Project HCCD - ENABLING WORKS
Title COVER SHEET & DRAWING LIST

Original Size A1 **Drawing No: 22-19320-E001** **Rev: A**

Plot Date: 10 April 2018 - 3:20 PM Plotted by: Tony Coomber Cad File No: G:\22\19320\CADD\Drawings\22-19320-E001.dwg



LEGEND:

- PROPOSED BUILDINGS
- PROPOSED ELECTRICAL CABLE PIT
- PROPOSED COMMUNICATIONS CABLE PIT
- SMART CITY ASSET (NOTE 1)
- PROPOSED LOCAL NETWORK CABLE PIT
- EXISTING LOCAL NETWORK CABLE PIT
- PROPOSED ELECTRICAL CONDUIT
- PROPOSED COMMUNICATIONS CONDUIT
- SMART CITY CONDUIT (NOTE 1)
- PROPOSED P100 CONDUIT
- EXISTING P100 CONDUIT
- EXISTING ELECTRICAL SERVICE
- EXISTING UoN CONDUIT
- EXISTING UoN PIT

NOTES:

1. SMART CITY ASSETS SHOWN AS INDICATIVE ONLY. CONTRACTOR TO LIAISE WITH COUNCIL FOR LOCATIONS OF PITS.
2. 20 METRES OF FIBRE OPTIC CABLE TO BE LEFT IN EACH UoN COMMUNICATIONS PIT.
3. REFER TO ASP3 DESIGN FOR AUSGRID CABLES AND CONDUITS.

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SITE RETICULATION
POWER, COMMUNICATIONS & NBN LAYOUT

SCALE 1 : 500

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
D	REVISED FOR DA SUBMISSION	ALC	ARC	JL	04.03.19
C	ADDED CONDUITS DOWN AUCKLAND STREET	ALC	ARC	JL	26.06.18
B	PRELIMINARY ISSUE	ALC	ARC	JL	24.04.18
A	PRELIMINARY ISSUE	ALC	ARC	JL	13.04.18

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 5000 10000 15000 20000 25000mm
SCALE 1:500 AT ORIGINAL SIZE

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Designer A.CLEMENTS
Drafting Check
Design Check
Approved (Project Director)
Date
Scale 1 : 500
This Drawing must not be used for Construction unless signed as Approved

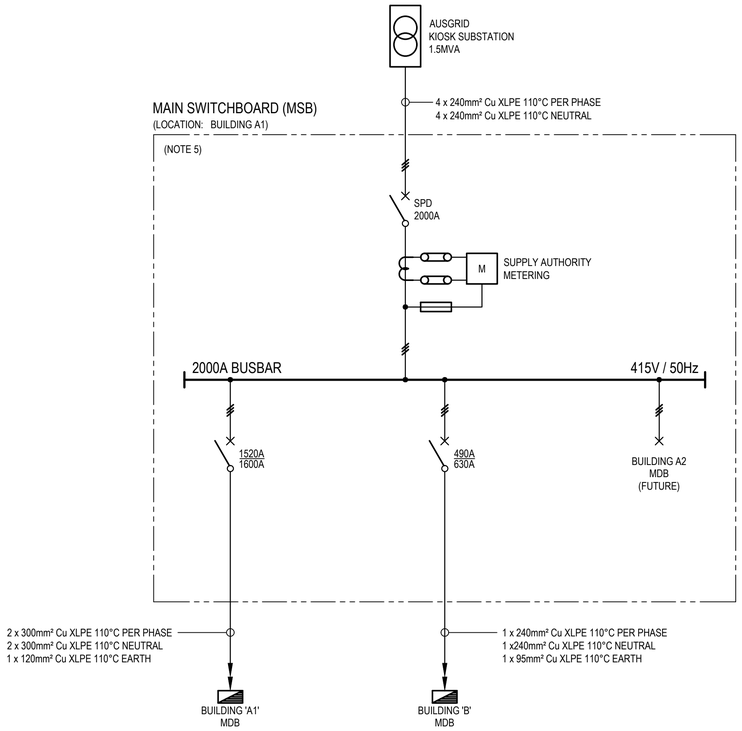
Client UNIVERSITY OF NEWCASTLE
Project HCCD - ENABLING WORKS
Title SITE RETICULATION POWER, COMMUNICATIONS & NBN LAYOUT

Original Size A1
Drawing No: 22-19320-E002
Rev: D

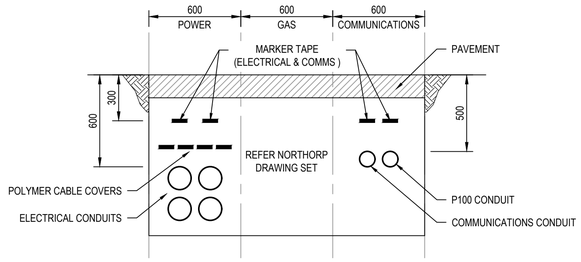
Plot Date: 4 March 2019 - 3:01 PM
Plotted by: Tony Coomber
Cad File No: G:\22\19320\CADD\Drawings\22-19320-E002.dwg

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SCHEMATIC DESIGN REPORT.
2. UNDERTAKE DETAILED VALIDATION OF BELOW GROUND SERVICES (EXISTING).
3. CO-ORDINATE IN-GROUND SERVICES WITH OTHER SERVICES.
4. CONTRACTOR TO UNDERTAKE A DETAILED SITE SURVEY INCLUDING SERVICES LOCATOR PRIOR TO UNDERTAKING EXCAVATION WORKS.
5. MSB / MDB DETAILED DESIGN NOT INCLUDED AS PART OF THE DESIGN. SHOWN FOR CLARITY.
6. SPACING AS PER STREET OPENING CONFERENCE.

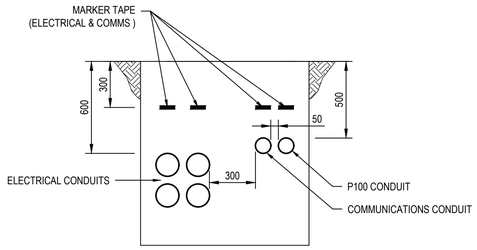


MAIN SWITCHBOARD - SINGLE LINE DIAGRAM



TYPICAL IN-CARRIAGEWAY TRENCH DETAIL (NOTE 6)

A / E002 SECTION
NOT TO SCALE



TYPICAL TRENCH DETAIL

B / E002 SECTION
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PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
B	BUILDINGS A & B DESCRIPTIONS SWAPPED	BS	ARC	JL	17.05.18
A	PRELIMINARY ISSUE	ALC	ARC	JL	24.04.18

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Drafting Check | Design Check
Approved (Project Director)
Date
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Client: **UNIVERSITY OF NEWCASTLE**
Project: **HCCD - ENABLING WORKS**
Title: **MAIN SWITCHBOARD - SINGLE LINE DIAGRAM & TYPICAL TRENCH DETAILS**

Original Size **A1** | Drawing No: **22-19320-E003** | Rev: **B**

Plot Date: 18 May 2018 - 11:52 AM Plotted by: Aaron Clements Cad File No: \\ghdnet\ghd\AU\Newcastle\Projects\22\19320\CADD\Drawings\22-19320-E003.dwg

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GENERAL NOTES

1. THE PROJECT OBJECTIVE IS TO INSTALL A NEW K TYPE KIOSK SUBSTATION AT 16 HONEYSUCKLE DRIVE, NEWCASTLE. THIS INSTALLATION IS BEING DONE AS PART OF THE PROPOSED UNIVERSITY OF NEWCASTLE, HONEYSUCKLE CITY CAMPUS DEVELOPMENT.
2. CLAIMS FOR VARIATIONS TO THE COST OF NON-CONTESTABLE WORKS, INCLUDING ROCK EXCAVATION, WILL NOT BE ACCEPTED UNLESS VERIFIED ON SITE BY AUSGRID WHILE THE WORKS ARE IN PROGRESS.
3. THE ASP/1 IS RESPONSIBLE FOR UNDERTAKING SATISFACTORY CONSULTATION WITH ALL LOCAL CUSTOMERS WHO MAY POTENTIALLY BE AFFECTED BY THE CONSTRUCTION WORKS INCLUDING ALL ALTERATIONS TO SERVICE MAINS.
4. THE ASP/1 MUST MINIMISE THE IMPACT OF THE WORKS ON THE ELECTRICITY SUPPLY TO CUSTOMERS AND INTERRUPTIONS TO SUPPLY MUST BE AVOIDED WHEREVER POSSIBLE. AT LEAST FOUR (4) CLEAR BUSINESS DAYS NOTICE MUST BE PROVIDED TO ALL AFFECTED CUSTOMERS PRIOR TO ANY PLANNED INTERRUPTIONS TO THE ELECTRICITY SUPPLY. NOTICE MUST BE IN WRITING IN ACCORDANCE WITH CLAUSE 90 OF THE NATIONAL ENERGY RETAIL RULES.
5. SPECIFIC PRIOR APPROVAL MUST BE SOUGHT FROM AUSGRID FOR ANY PLANNED ELECTRICITY SUPPLY INTERRUPTIONS WHERE THE PLANNED INTERRUPTION WILL EXCEED ONE (1) HOUR IN DURATION OR THE DURATION WILL BE LESS THAN ONE HOUR, BUT A SUITABLE TIME FOR THE INTERRUPTION CANNOT BE MUTUALLY AGREED TO WITH THE AFFECTED CUSTOMER(S).
6. ARRANGE PHASING OF 11kV AND LOW VOLTAGE TRANSFORMER TERMINATIONS TO ACHIEVE DYN 11 INTERCONNECTION CAPABILITIES.
7. THE ASP/1 IS REQUIRED TO COMPLY WITH THE CORRECT PROCEDURE(S) FOR WORKING WITH AND/OR NEAR ASBESTOS MATERIAL (REFER TO AUSGRID NUS 211 - WORKING WITH ASBESTOS PRODUCTS). THERE ARE NO AUSGRID ASSETS REGISTERED CONTAINING ASBESTOS AFFECTED BY THE PROPOSED WORKS.
8. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH AUSGRID'S RELEVANT NETWORK STANDARDS (CURRENT EDITIONS).
9. LOCATION OF EXISTING UNDERGROUND UTILITIES AND OTHER SERVICES TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.
10. ACCORDING TO HONEYSUCKLE REDEVELOPMENT AREA FLOOD STUDY (2018), THE 100 YEAR FLOOD LEVEL (1% AEP) IS 2.43m AHD. THE PROPOSED SITE LEVEL IS LEVELLED AT 2.5m AHD WHICH IS HIGHER THAN THE 100 YEAR FLOOD LEVEL.
11. THIS INFORMATION INCLUDES DATA FROM THE NSW DIGITAL CADASTRAL DATABASE BY LAND & PROPERTY INFORMATION © 2016. USED UNDER CREATIVE COMMONS LICENCE VERSION 4.0.
12. FOR IDENTIFICATION AND JOINTING PURPOSES, ALL CABLE ENDS SHALL BE LABELLED AT THE TERMINATION LOCATIONS AND IN JOINT BAYS DURING CABLE INSTALLATION. THE CABLES MUST BE LABELLED AS PER CERTIFIED DESIGN DRAWINGS.
13. THE ASP/1 IS TO MAINTAIN ADEQUATE PUBLIC LIGHTING LEVELS FOR THE DURATION OF THE WORKS. IF NECESSARY, THE ASP/1 IS THE ARRANGE FOR SUITABLE TEMPORARY STREET LIGHTING TO BE PROVIDED UNTIL PERMANENT LIGHTING IS RE-ESTABLISHED.

SCHEMATIC LEGEND

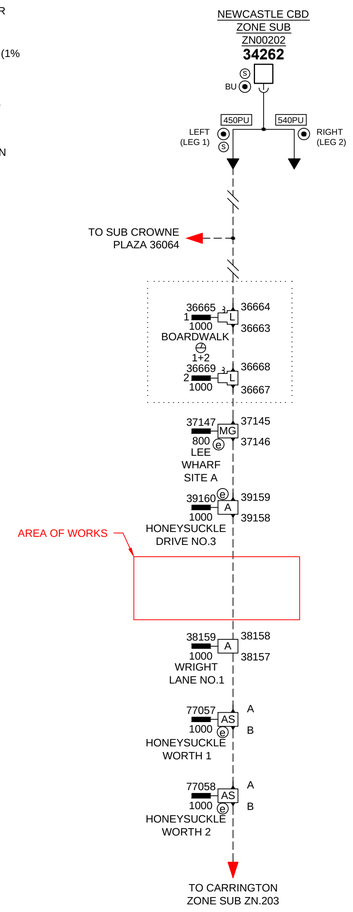
	EXISTING	PROPOSED
CIRCUIT BREAKER		
UGOH		
RING MAIN ISOLATOR		
RING MAIN CIRCUIT BREAKER	22	
CONTINUED CIRCUIT INDICATOR		
HV - UG		
HV - OH		
OPEN	0	0
3 PHASE OVERCURRENT PROTECTION		
EARTH FAULT PROTECTION		
SENSITIVE EARTH FAULT PROTECTION	S	
EARTH FAULT INDICATOR	e	
OVERCURRENT & EARTH FAULT		
FLAIE 23D OR HORSTMANN		23
BALANCED VOLTAGE		

SITE PLAN SYMBOL LEGEND

	EXISTING	PROPOSED	REMOVE
COLUMN			
PRIVATE PILLAR - LV	P	P	
SWITCHGEAR PILLAR - LV			
CABLE JOINT - HV			
KIOSK			
DRIVEN ROD EARTHING ELECTRODE			
STREETLIGHT - PEC			
BOUNDARY			
EASEMENT			
STORMWATER			
SEWER		S	
RISING MAIN		RM	
TELSTRA	T		
DRAIN PIPE	D		

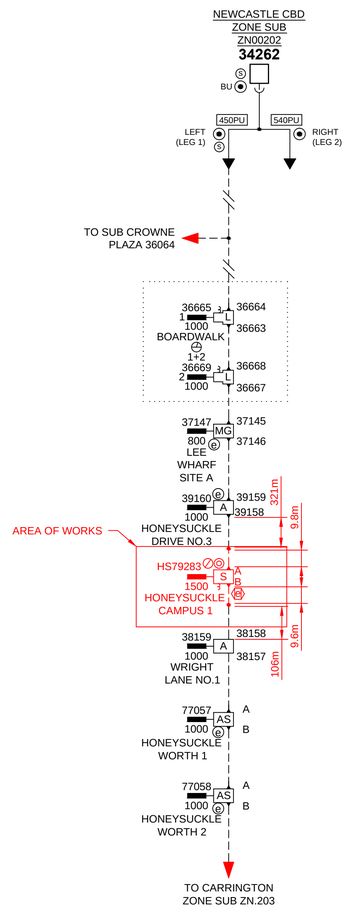
CABLE LEGEND

	EXISTING	PROPOSED	REMOVE
HIGH VOLTAGE - UG		H V	X X X
LOW VOLTAGE - UG		L V	X X X
SERVICE - UG		S V S V	X X X
CONDUIT			
EARTH CABLE			



11kV SCHEMATIC - EXISTING
SYSTEM DIAGRAM NEWCASTLE CBD 202/5

NOT TO SCALE



11kV SCHEMATIC - PROPOSED
SYSTEM DIAGRAM NEWCASTLE CBD 202/5

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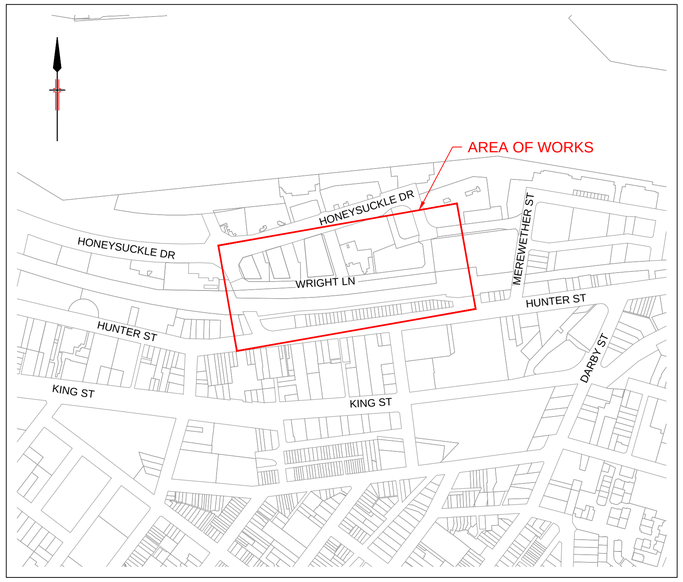

LOCALITY PLAN

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AMENDMENTS

ASSOCIATED DRAWINGS

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AUC 2085

DESIGNED BY	K.HARKESS
AUTH NO.	2085/04
SUBMIT DATE	SUBMITTED 20/09/18
LGA	NEWCASTLE CITY COUNCIL
MAP REF.	UBD 1M4
AUSGRID REF.	JU34
PRJTRAK No.	XCW025749
ASP REF.	22-19320

CERTIFICATION NUMBER ## / ##

NEWCASTLE UNIVERSITY
HONEYSUCKLE CAMPUS
K TYPE KIOSK
WORTH PLACE, NEWCASTLE

SIZE	AUSGRID PROJECT No.	SHEETS	AMD.
A1	SC12879	1 of 5	0

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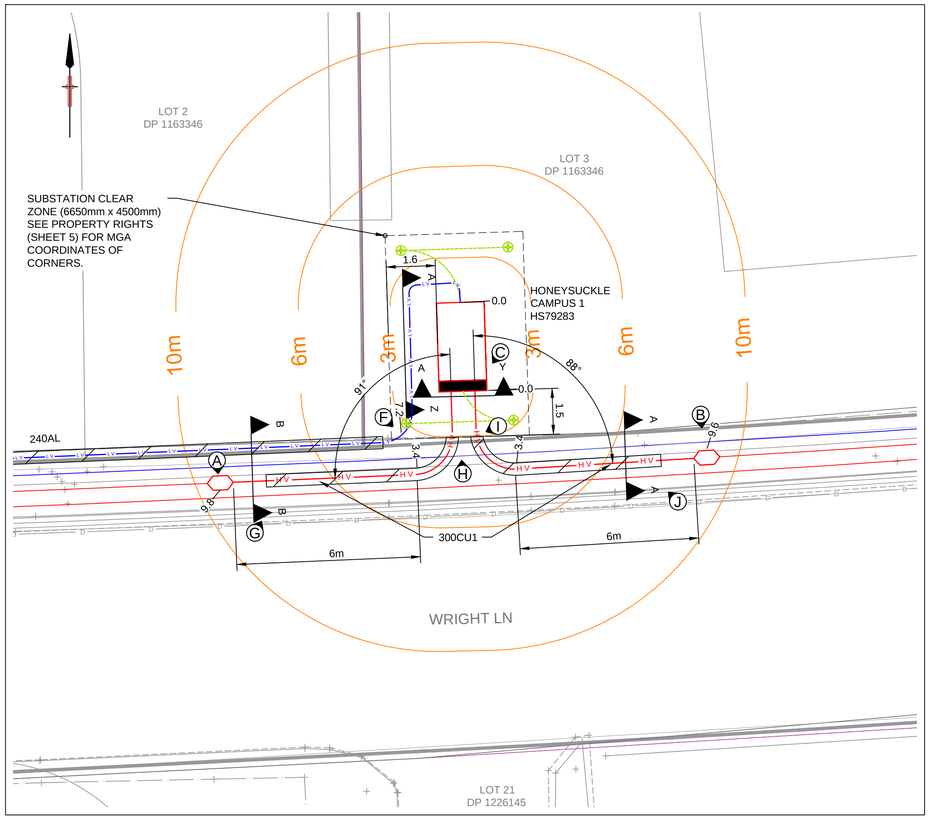

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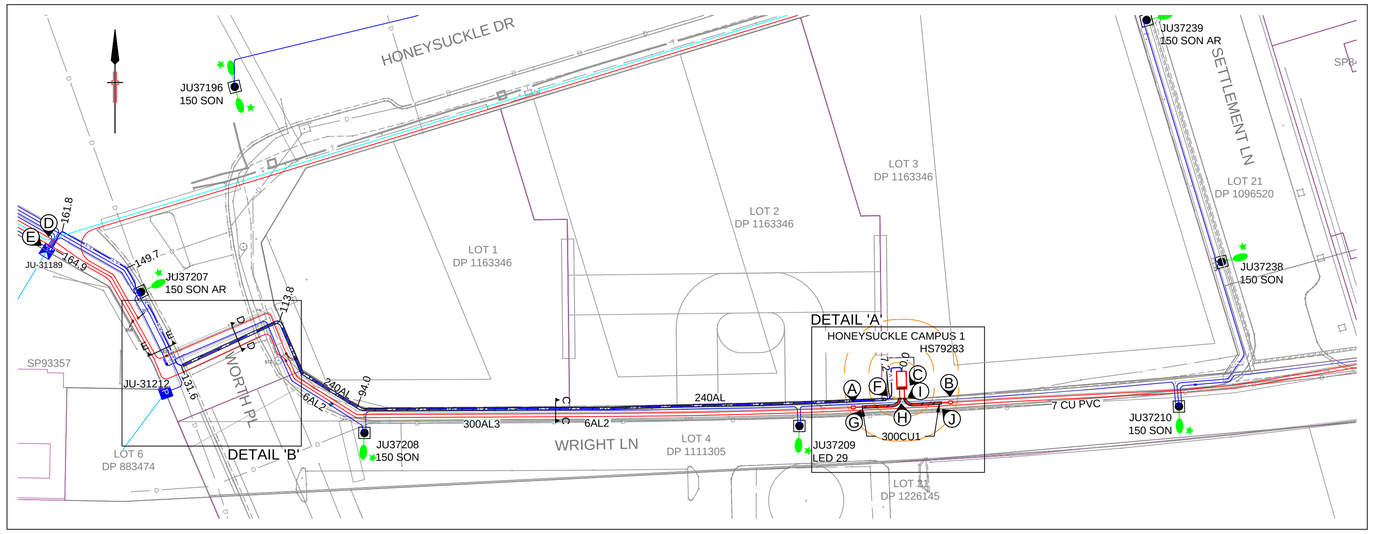

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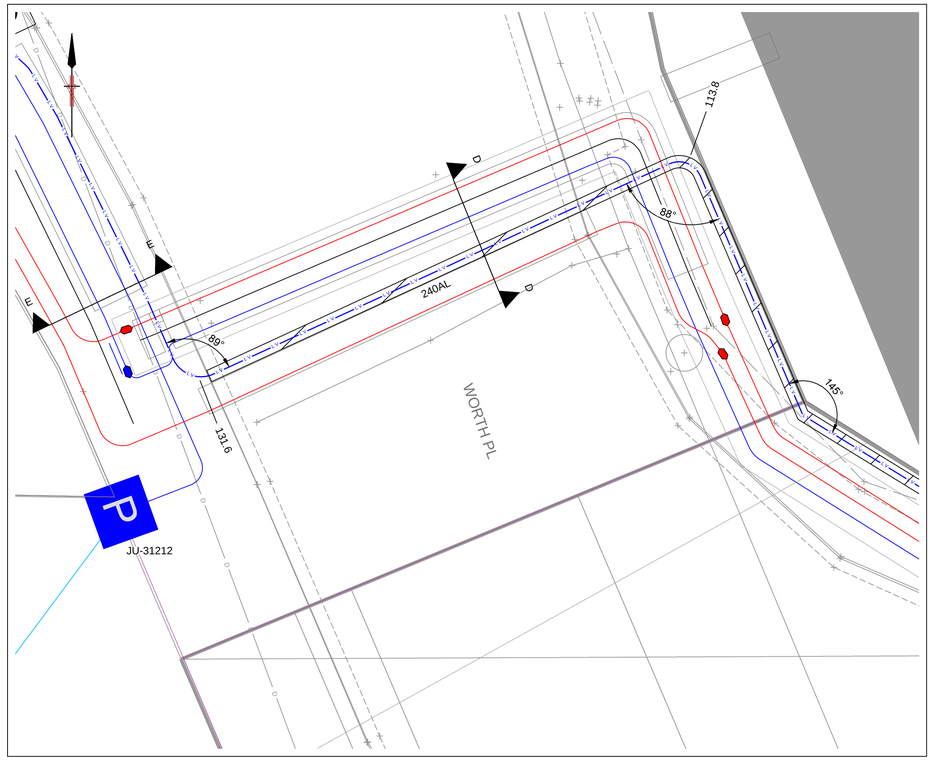

DETAIL 'B'
SCALE 1:100

SCALE 1 : 100
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ASP LEVEL 2 WORK

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CAD DRAWING
AMENDMENTS

ASSOCIATED DRAWINGS

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AUC 2085

DESIGNED BY	K.HARKESS
AUTH NO.	2085/04
SUBMIT DATE	SUBMITTED 20/09/18
LGA	NEWCASTLE CITY COUNCIL
MAP REF.	UBD 1M4
AUSGRID REF.	JU34
PRJTRAK No.	XCW025749
ASP REF.	22-19320
CERTIFICATION NUMBER	# # / # #

NEWCASTLE UNIVERSITY
HONEYSUCKLE CAMPUS
K TYPE KIOSK
WORTH PLACE, NEWCASTLE

SIZE	AUSGRID PROJECT No.	SHEETS	AMD.
A1	SC12879	2 of 5	0

20160817

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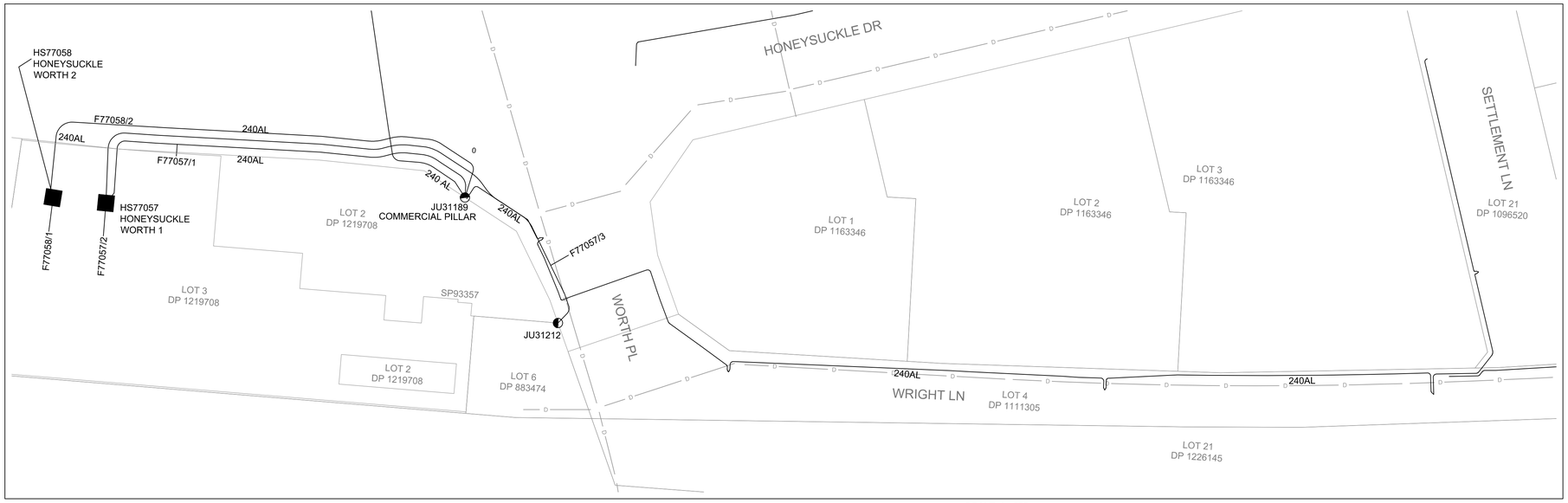

LV GEO-SCHEMATIC - EXISTING

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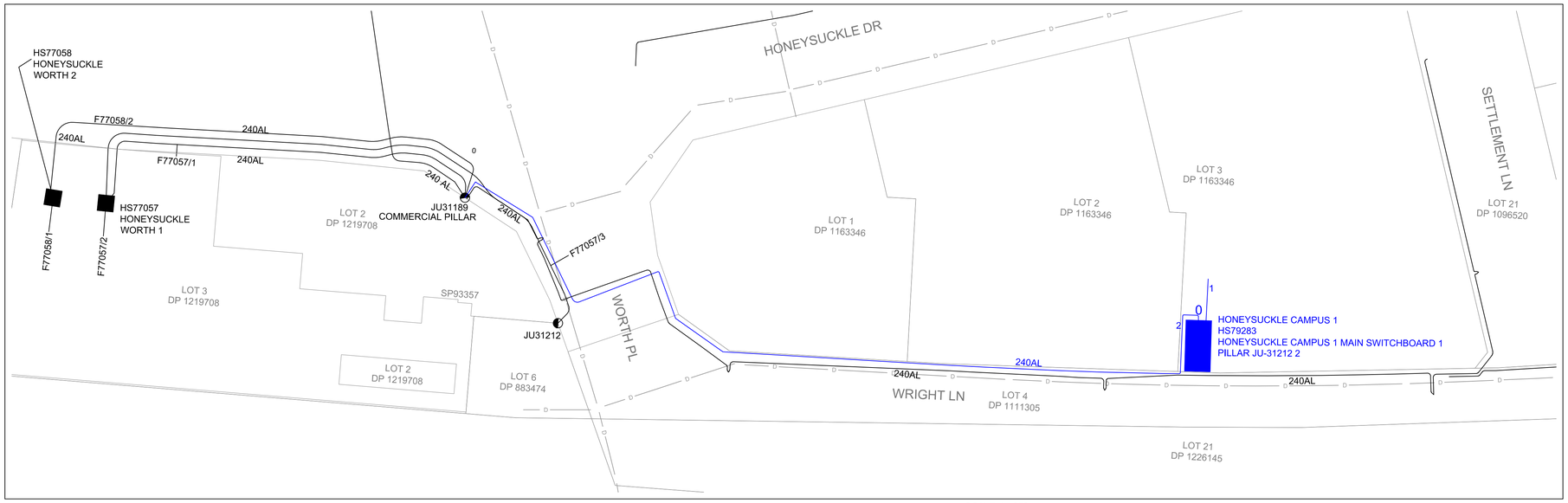

LV GEO-SCHEMATIC - PROPOSED

SCALE 1:500

SCALE 1 : 250

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LEGEND

	EXISTING	PROPOSED
PILLAR		
LV UNDERGROUND		
KIOSK SUBSTATION		

CAD DRAWING

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NEWCASTLE UNIVERSITY HONEYSUCKLE CAMPUS

K TYPE KIOSK

WORTH PLACE, NEWCASTLE

SIZE	AUSGRID PROJECT No.	SHEETS	AMD.
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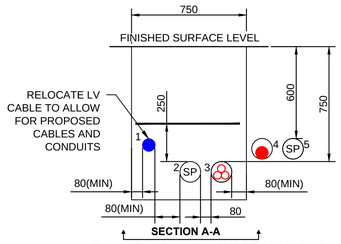
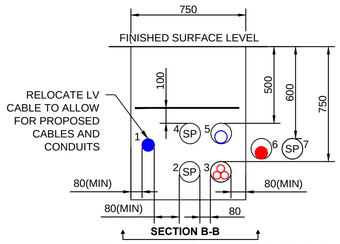


1 - EXISTING LV 240V 7 CU PVC DIRECT BURIED
2 - PROPOSED SPARE 150mm CONDUIT
3 - PROPOSED 300 CU1 TRIPLEX 70 CU (WS) ZYQ/TX IN 150mm CONDUIT
4 - EXISTING 11kV 300 AL3 XQMB CU (WS) ZYQ IN EXISTING 140mm CONDUIT
5 - EXISTING SPARE 140mm CONDUIT

PROPOSED TRENCH CROSS SECTION A-A

NOT TO SCALE



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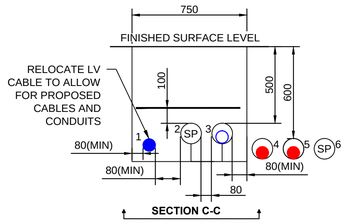
2 - PROPOSED SPARE 150mm CONDUIT
3 - PROPOSED 300 CU1 TRIPLEX 70 CU (WS) ZYQ/TX IN 150mm CONDUIT
4 - PROPOSED SPARE 150mm CONDUIT
5 - PROPOSED LV 240AL4 XQZ/SAC IN 150mm CONDUIT
6 - EXISTING 11kV 300 AL3 XQMB CU (WS) ZYQ IN EXISTING 140mm CONDUIT
7 - EXISTING SPARE 140mm CONDUIT

PROPOSED TRENCH CROSS SECTION B-B

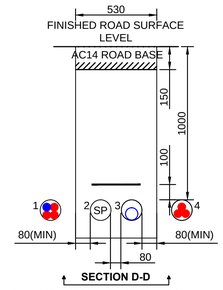
NOT TO SCALE



1 - EXISTING LV 240V 7 CU PVC DIRECT BURIED
2 - PROPOSED SPARE 150mm CONDUIT
3 - PROPOSED LV 240AL4 XQZ/SAC IN 150mm CONDUIT
4 - EXISTING 11kV 300 AL3 XQMB CU (WS) ZYQ IN EXISTING 140mm CONDUIT
5 - EXISTING 11kV 300 AL3 XQMB CU (WS) ZYQ IN EXISTING 140mm CONDUIT
6 - EXISTING SPARE 140mm CONDUIT

PROPOSED TRENCH CROSS SECTION C-C

NOT TO SCALE



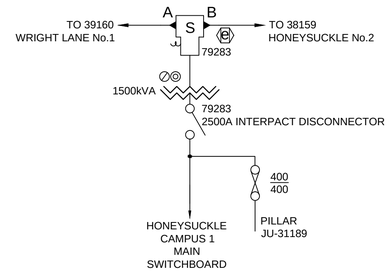
1 - EXISTING 11kV 185CU1 EPR CU(WS) YQ AND EXISTING LV 240V 6AL2 IN EXISTING 100mm CONDUIT
2 - EXISTING 11kV 185CU1 EPR CU(WS) YQ IN EXISTING 100mm CONDUIT
3 - PROPOSED LV 240AL XQZ/SAC IN 150mm CONDUIT
4 - PROPOSED SPARE 150mm CONDUIT

PROPOSED TRENCH CROSS SECTION D-D

NOT TO SCALE

KIOSK SUBSTATION DETAILS	
SUBSTATION NAME:	HONEYSUCKLE CAMPUS 1
SUBSTATION NUMBER:	79283
ADDRESS:	16 HONEYSUCKLE DRIVE, NEWCASTLE
SUBSTATION TYPE:	K
SIZE (kVA):	1500
VECTOR GROUP:	DYN 1
TAP SETTING:	11000 / 433
HV SWITCHGEAR:	SCHNEIDER ELECTRIC RMICB
HV FUSE DETAILS:	-
LOAD CYCLE:	A
PHASING DETAIL:	TO BE CONFIRMED ON SITE
LOW VOLTAGE BOARD:	2500/400
TRANSF. LV LINK RATING:	LVL 79283 2500 AMP
CCT1 LV FUSE SIZE (Amps):	2500
CCT2 LV FUSE SIZE (Amps):	400
CCT3 LV FUSE SIZE (Amps):	N/A
CONFIGURE AS Dyn11:	YES
EARTHING REQUIREMENTS:	AS PER NS116 & REFER TO SPECIFIC AUSGRID EARTHING DESIGN SPECIFICATION & AS BUILT REPORT ISSUE DATED 08/06/2018
SUBSTATION PIERING:	PIERING AS PER NS141 DRAWING 151190
EASEMENT PLAN DETAIL:	PLAN 'E' ON SC12879 SHEET 5

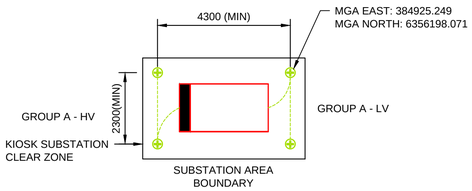
79283
HONEYSUCKLE CAMPUS 1



LV DISTRIBUTOR DETAILS	
NUMBER	DESTINATION
1	2500A INTERPACT DISCONNECTOR - HONEYSUCKLE CAMPUS 1 MAIN SWITCHBOARD
2	400A/400A - PILLAR JU-31189 - WORTH PLACE

KIOSK SUBSTATION SCHEMATIC

NOT TO SCALE



KIOSK SUBSTATION HS.79283 HONEYSUCKLE CAMPUS 1 EARTHING DETAIL

NOT TO SCALE

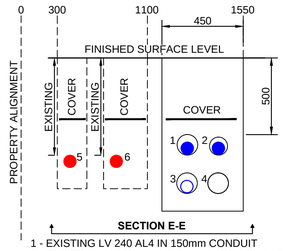
EARTHING LEGEND — EXISTING — PROPOSED

DRIVEN ROD ELECTRODE (5.4m)

KIOSK SUBSTATION

EARTH CABLE

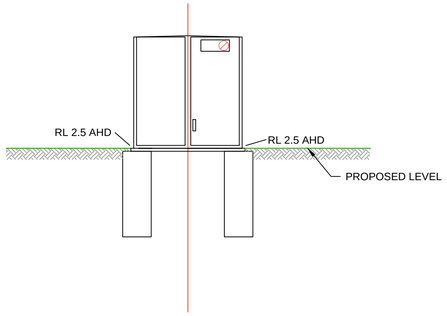
EARTHING SPECIFICATION TABLE	
GENERAL	
EARTHING CONFIGURATION:	COMBINED
DESIGN CURVE:	ENA - TDMEN 5 Ωm
ELECTRODES INSTALLATION:	DRIVEN
HV ELECTRODES	
NUMBER OF ELECTRODES:	2
DEPTH OF EACH ELECTRODE:	5.4m
SPACING BETWEEN ELECTRODES:	2.3m
MAX RESISTANCE - NORMAL:	3.07Ω
MAX RESISTANCE - DROUGHT:	6.00Ω
LV ELECTRODES	
NUMBER OF ELECTRODES:	2
DEPTH OF EACH ELECTRODE:	5.4m
SPACING BETWEEN ELECTRODES:	2.3m
MAX RESISTANCE - NORMAL:	3.07Ω
MAX RESISTANCE - DROUGHT:	6.00Ω
COMBINED	
RESISTANCE:	4.66Ω
MINIMUM SEPARATION DISTANCES	
MINIMUM SEPARATION FROM TELCO ASSETS:	1.2m
MINIMUM SEPARATION BETWEEN HV AND LV AND/OR MEN ELECTRODES:	4.3m
REFERENCE DRAWINGS FOR THIS INSTALLATION:	167433



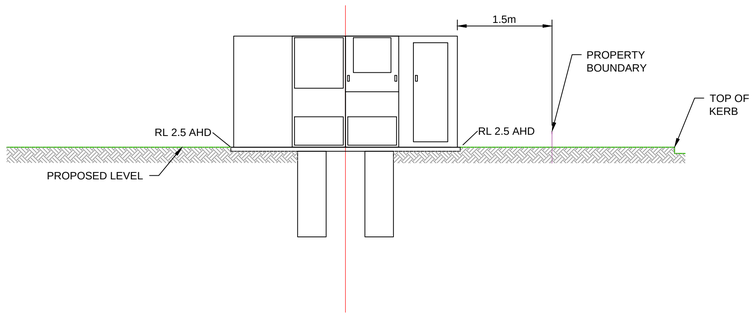
1 - EXISTING LV 240 AL4 IN 150mm CONDUIT
2 - EXISTING LV 240V 6 CU2 Z Z/ + EARTH SL CABLE IN 100mm CONDUIT
3 - PROPOSED 240 AL4 IN EXISTING 150mm CONDUIT
4 - EXISTING SPARE 150mm CONDUIT
5 - EXISTING 11kV 400AL3 TRXQ 35CU(WS) ZYQ DIRECT BURIED
6 - EXISTING 11kV 240 CU3 P LA YQ DIRECT BURIED

PROPOSED TRENCH CROSS SECTION E-E

NOT TO SCALE



SECTION A-Y



SECTION A-Z

K TYPE KIOSK SUBSTATION SITE PROFILE - 1500kVA

NOT TO SCALE

NOTES:

- ELECTRODES ARE TO FOLLOW THE HV AND LV CABLE ROUTE WHILE ADHERING TO SPACING & SEPARATION REQUIREMENTS.
- MINIMUM SEPARATION FROM TELCO ASSETS IN THE AREA IS 1.2m
- MINIMUM SEPARATION BETWEEN HV AND MEN ELECTRODES IS 4.3m
- DEPTH OF HV ELECTRODES: 5.4m
- SPACING BETWEEN ELECTRODES: 2.3m
- REFER TO EARTHING DESIGN SPECIFICATION AND AS BUILT INSTALLATION REPORT ISSUE No. 1 FOR KIOSK SUBSTATION HS.79283 DATED 08/06/2018
- EXISTING UNDERGROUND SERVICES ARE TO BE LOCATED PRIOR TO POSITIONING THE ELECTRODES TO ENSURE REQUIRED SEPARATION DISTANCES ARE ADHERED TO.
- ELECTRODES ARE NOT TO BE POSITIONED BENEATH THE ROADWAY.
- SPECIFIC LOCATIONS OF THE ELECTRODES ARE TO BE DETERMINED ON SITE SUBJECT TO EXISTING SITE CONDITIONS AND UNDERGROUND SERVICES.

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UNDERGROUND CONSTRUCTION WORKS SCHEDULE - (DUCT PULL SOFTWARE V1.1)

REF IDENTIFIER	ROUTE DISTANCE (m)	CIRCUIT VOLTAGE	CONDUCTOR OR ASSET DETAILS	CONDUCTOR CODE/STOCK CODE	MIN. INTERNAL BENDING (mm) DURING INSTALLATION	MIN. INTERNAL BENDING (mm) AFTER INSTALLATION	CALCULATED MAX. PULLING TENSION (kN) DURING INSTALLATION	CONSTRUCTION DETAILS
A	CHAINAGE 9.8	11kV	3-1 JOINT TYPE (HV2-23)	177790	NA	NA	NA	BREAK INTO EXISTING CONDUIT AND CUT EXISTING HV CABLE. MAINTAIN AND PROTECT ADJACENT CONDUITS, SOME OF WHICH CONTAIN LIVE CABLES. INSTALL 3-1 JOINT (POLYMERIC TO POLYMERIC) AT REF "A".
B	CHAINAGE 9.6	11kV	3-1 JOINT TYPE (HV2-23)	177790	NA	NA	NA	BREAK INTO EXISTING CONDUIT AND CUT EXISTING HV CABLE. MAINTAIN AND PROTECT ADJACENT CONDUITS, SOME OF WHICH CONTAIN LIVE CABLES. INSTALL 3-1 JOINT (POLYMERIC TO POLYMERIC) AT REF "B".
C	CHAINAGE 0.0	11kV	1500kVA K-TYPE SUBSTATION	178853	NA	NA	NA	INSTALL NEW 1500kVA K-TYPE IN CLEAR ZONE, MGA COORDINATES SEE PROPERTY RIGHTS DRAWING (SHEET 5).
A-C	9.8	11kV	300 CU1 TRIPLEX TRXQ 70 CU (WS) Z YQ/TX	179122	1275mm (BUNDLED)	850mm (BUNDLED)	0.657	INSTALL NEW 11kV CABLE IN CONDUIT FROM JOINT AT REF "A" TO SUBSTATION AT REF "C" AS PER CROSS SECTION.
B-C	9.6	11kV	300 CU1 TRIPLEX TRXQ 70 CU (WS) Z YQ/TX	179122	1275mm (BUNDLED)	850mm (BUNDLED)	0.657	INSTALL NEW 11kV CABLE IN CONDUIT FROM JOINT AT REF "B" TO SUBSTATION AT REF "C" AS PER CROSS SECTION.
E-C	137.6	LV	LV 240AL4 XQZ/SAC	141739	590mm	395mm	6.99 (SEE SPECIAL NOTE 1)	INSTALL NEW LV CABLE BETWEEN REF "E" AND REF "C" AS PER CROSS SECTIONS. NORMALLY OPEN AT KIOSK 79823, CLOSED AT PILLAR JU-31189, LVL 45696 LV CABLE FOR EARTHING ONLY. NOT TO BE PERMANENTLY ENERGISED. INSTALL LABEL AT PILLAR LINK & KIOSK FUSE STATING "CABLE FOR EARTHING ONLY", "NOT TO BE PERMANENTLY ENERGISED".
D-F	130.4	LV	1 x SPARE 150mm CONDUIT	N/A	NA	NA	NA	INSTALL NEW LV SPARE CONDUIT BETWEEN REF "D" AND REF "F" AS PER CROSS SECTIONS.
G-H	6.7	11kV	1 x SPARE 150mm CONDUIT	N/A	NA	NA	NA	INSTALL NEW HV SPARE CONDUIT BETWEEN REF "G" AND REF "H" AS PER CROSS SECTIONS.
I-J	6.6	11kV	1 x SPARE 150mm CONDUIT	N/A	NA	NA	NA	INSTALL NEW HV SPARE CONDUIT BETWEEN REF "I" AND REF "J" AS PER CROSS SECTIONS.

SPECIAL NOTE 1:

PULLING EYE NEEDS TO BE USED FOR INSTALLATION OF PROPOSED LV 240AL4 XQZ/SAC

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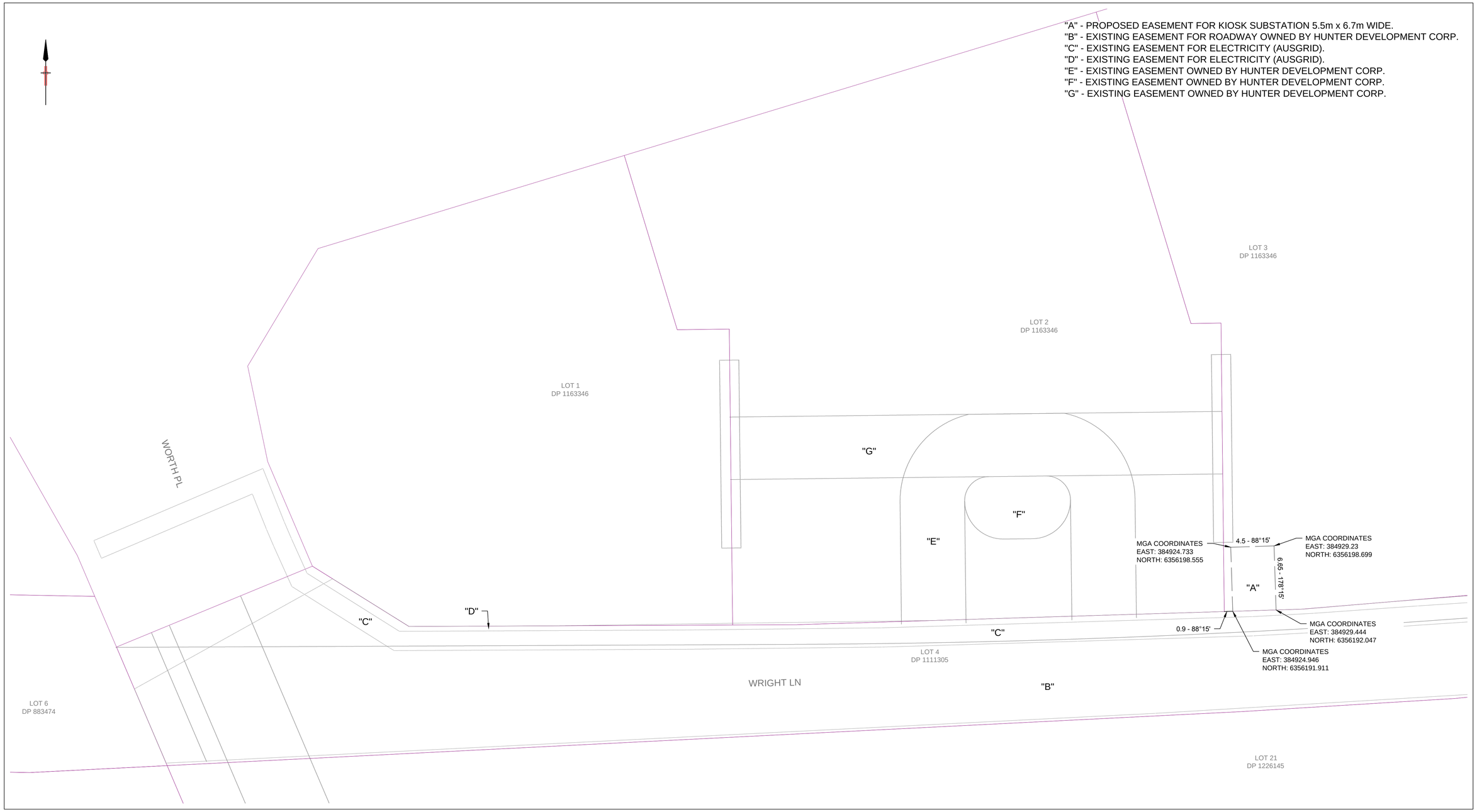

PROPERTY RIGHTS EASEMENT PLAN

SCALE 1:200

SCALE 1 : 200

0 5 10 15 20 METRES

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	A. Clements	J. Lever		J. Lever		22/05/2018
1	A. Clements	J. Lever		J. Lever		05/07/2018
2	A. Clements	J. Lever		J. Lever		04/03/2019

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