Infrastructure Management Plan

St. Joseph's College, Hunters Hill Physical Education and Physical Education and Sports Precinct Project (PESPP)

Luke Street, Hunters Hill NSW 2110

REPORT

PREPARED FOR
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Level 2, Suite 2.04
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North Sydney NSW 2060

Tel: 02 9957 1473

PREPARED BY
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Sydney NSW 2000

Tel: 02 9241 4188

Ref: SY166502-MDR01
Rev: 3
Date: 28.06.2018

INFRASTRUCTURE MANAGEMENT PLAN

Activity Schedule

Date	Revision	Issue	Prepared By	Approved By
23.02.2018	1	Preliminary Issue	T. Sailing	Y. Maharaj
06.06.2018	2	Issue for SEARS EIS	T. Sailing	Y. Maharaj
28.06.2018	3	Revised Issue for SEARS EIS	T. Sailing	Y. Maharaj

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EXECUTIVE SUMMARY

This Infrastructure Management Plan (IMP) report for Electrical and Telecommunications services has been prepared by Northrop Consulting Engineers Pty Ltd (Northrop) on behalf of Bloompark Consulting Pty Ltd (Bloompark) for the St. Joseph's College Hunters Hill Physical Education and Sports Precinct Project.

This IMP outlines the existing infrastructure, detailing information on the existing capacity and any augmentation to the aforementioned services required for the proposed development. The report also details records of consultation with relevant agencies. The details within this report are preliminary and based on currently available information and correspondence undertaken at the time of writing.

This report is provided in response to the Secretary's Environmental Assessment Requirements (SEARs) issued for the project. This IMP, together with the IMP for Stormwater Infrastructure (prepared by Northrop) and Hydraulic infrastructure (prepared by A.J. Whipps) addresses the Infrastructure Management Plan requirements held within Item 13 of the SEARs.

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1. DEVELOPMENT DESCRIPTION

Client: **St Joseph's College Hunters Hill**

Client Acronym: **SJC**

State Significant Development Number: **SSD 8970**

Project Name: **Physical Education and Sports Precinct Project**

Project Acronym: **SPP**

Project Address: **Mark Street Hunters Hill NSW 2110**

Project Description:

1. **Demolition** of the following existing buildings (which are not heritage significant) near the intersection of Luke Street and Gladesville Road:
   (a) College Shop
   (b) Healy Gym and Maintenance Workshop
   (c) Outdoor Sports Courts
   (d) Workshop/Storage and Shed.
2. **Construction** of the Physical Education and Physical Education and Sports Precinct Project (PESPP) comprising the following facilities:
   (a) Lower Ground Floor: New car parking, maintenance workshops, storage, offices, amenities etc. A net increase of 55 car parking spaces is proposed (85 new spaces to be provided in the SPP basement less 30 at grade spaces to be removed)
   (b) Ground floor: Three indoor sports courts, amenities, kitchen and entry lobbies
   (c) First Floor: Void over sports courts, bench seating (180 seats), staff facilities, two general learning areas and foyer
   (d) Driveway entry to the PESPP (no new vehicular cross overs)
   (e) Landscaping and tree removal/replacement.
3. **Construction** of a new single storey building to accommodate the relocated Healy Gym in the north-western corner of the site near the intersection of Mary Street and Mark Street.
4. **Construction** of new kiosk substation and landscaping in the north-eastern corner of the site
5. **Use** of the completed works as an educational establishment.
6. **Staging** which would facilitate completion of the PESPP in up to two stages (noting that the entire project may be completed in one stage).

2. SEARS ISSUES ADDRESSED

This report addresses how the proposed project addresses Item 13 of the SEARs and outlines strategies relating to Utilities. These requirements are outlined below alongside where the response to each can be found within this report;

Item	Action to Address the Requirement	Report Location
Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure.	This IMP report details the existing electrical and telecommunications services infrastructure available to service the proposed St Joseph's College Hunters Hill Physical Education and Sports Precinct Project. This report also includes details regarding any augmentation / amplifications required to service the proposed high school development	Section 4 & 5.

3. SITE DESCRIPTION

3.1 Overview

The site is located in the Sydney Lower North Shore suburb of Hunter's Hill, bounded by Mary Street to the west, Mark Street to the north, Luke Street to the east, and Gladesville Road to the south. The area highlighted in red is the overall St. Joseph's College Hunter's Hill site; the areas highlighted in green is the area where construction work will occur as part of this package. The larger site to the east comprises the Sports Courts and associated electrical infrastructure; the smaller site to the west comprises the Healy Gym.

Existing utility services are available through and around the site, details of which are provided in following sections of this report.

3.2 Existing Site Conditions

The development site occupies an area of 0.48 ha. The northern portion of the site contains a visual arts centre building, a two storey brick building housing a gymnasium and workshops and an ancillary storage shed. The southern quarter of the site is occupied by four (4) hardcourt basketball courts. An asphalt driveway and parking area separates the buildings and basketball courts.

The site generally falls from north to south. Surface grades within the site range between 1% and 5%. This has been attained by the provision of retaining walls and site filling. The difference in elevation across the site is approximately 7.5m – with surface levels varying from 38.6 AHD to 31.1 AH D.

The site consists of significant impervious areas included paved roadways, footpaths, roof and hardstand for sports courts. Landscaped or impervious areas occupy approximately 6.4% of the site.

4. EXISTING UTILITY SERVICES

4.1 Power

The existing site is bounded by Ausgrid high-voltage infrastructure on all four boundary streets, downstream of the zone substation. Ausgrid public lighting services also exist on the four boundary streets.

The existing site is supplied by two separate Ausgrid substations, as per the following.

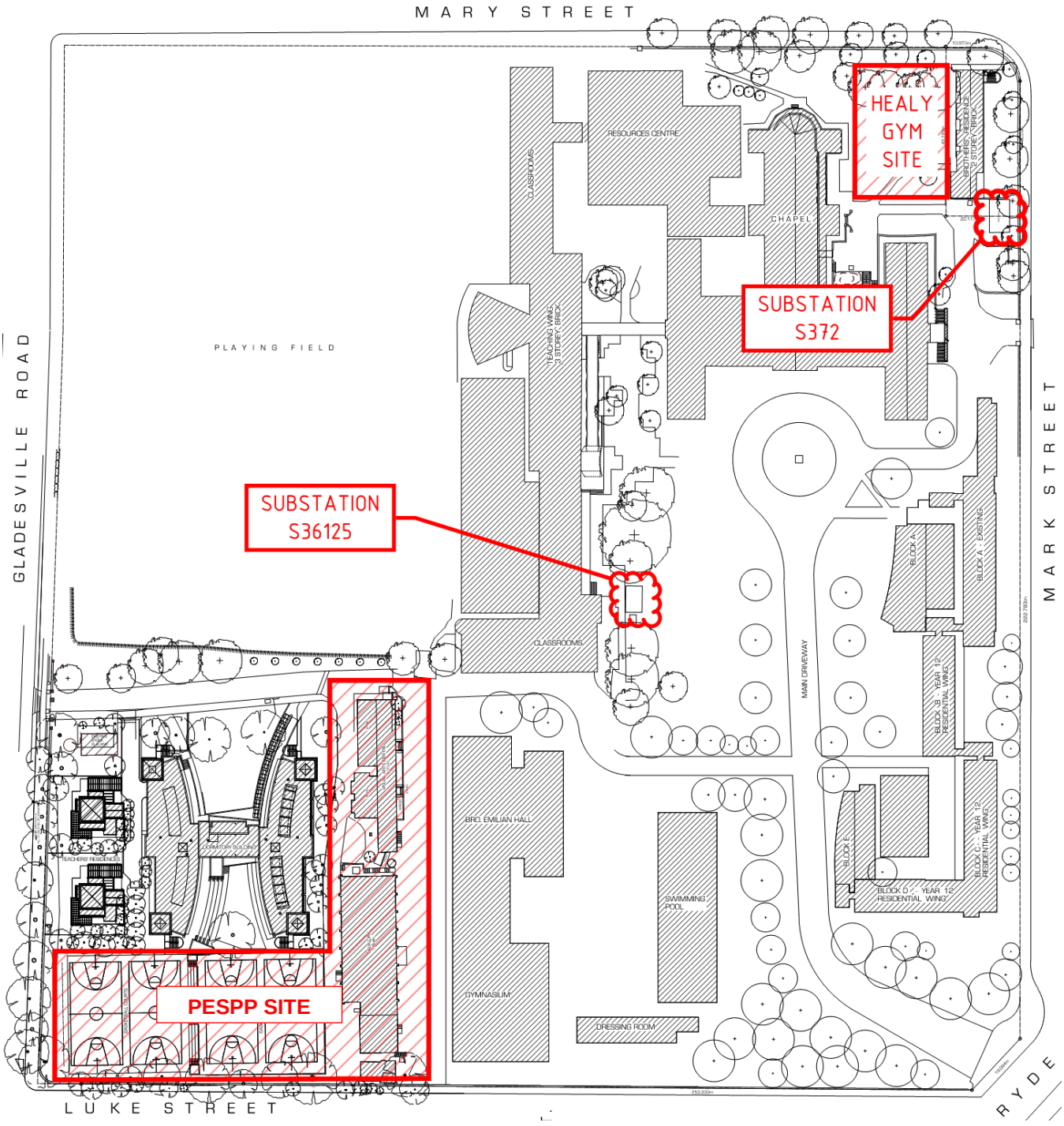


Figure 1: Existing Site Substations in relation to SPP and Healy Gym Sites

4.1.1 Substation S36125

Asset Number	S36125
Type of Asset	Pad-mount Kiosk Substation/Transformer
HV Operating Voltage	11 kV
Location on Site	Opposite Br. Angelus Science Wing, refer Figure 1.
Purpose	Providing low-voltage supply to the southern teaching wings of the College.

4.1.2 Substation S732

Asset Number	S732
Type of Asset	Pad-mount Kiosk Substation/Transformer
HV Operating Voltage	11 kV
Location on Site	Mark Street frontage, refer Figure 1.
Purpose	Providing low-voltage supply to the northern teaching wings of the College.

4.2 Telecommunications

Based on Northrop's interpretation of the supplied DBYD information and further site investigations, we have identified existing utility telecommunications services in the immediate vicinity of the St Joseph's College development. Utility telecommunications cabling is generally installed in underground conduits on street verges, with regular access points through pits the boundary streets.

These services include:

NBN	Existing NBN ducts reticulate on all four boundary roads. NBN trenches/ducts and cables are shared with Telstra services due to NBN taking ownership of the existing Telstra copper network in Hunter's Hill. The ducts contain NBN backbone fibre optic cable and NBN customer copper cabling (shared with Telstra for premises not yet converted to NBN). The site is not currently converted to NBN, and still uses Telstra's copper infrastructure, through a lead-in pit on Mark Street.
PIPENetworks	Existing PIPENetworks (TPG) ducts reticulate in a short path on Mark Street, terminating in a pit opposite 44 Mark Street, where fibre lead-in exists to supply the existing College site.
Telstra	As per the above point regarding existing NBN services, Telstra services coexist with NBN services servicing the Hunter's Hill area. The School is served by a Telstra lead-in conduit off Mark Street which contains copper services through the College's existing pit and conduit network, terminating in the main communications room.
Vocus Communications	Existing Vocus Communications ducts reticulate in a short path on Mark Street, terminating in a pit opposite 44 Mark Street, where fibre lead-in exists to supply the existing College site.

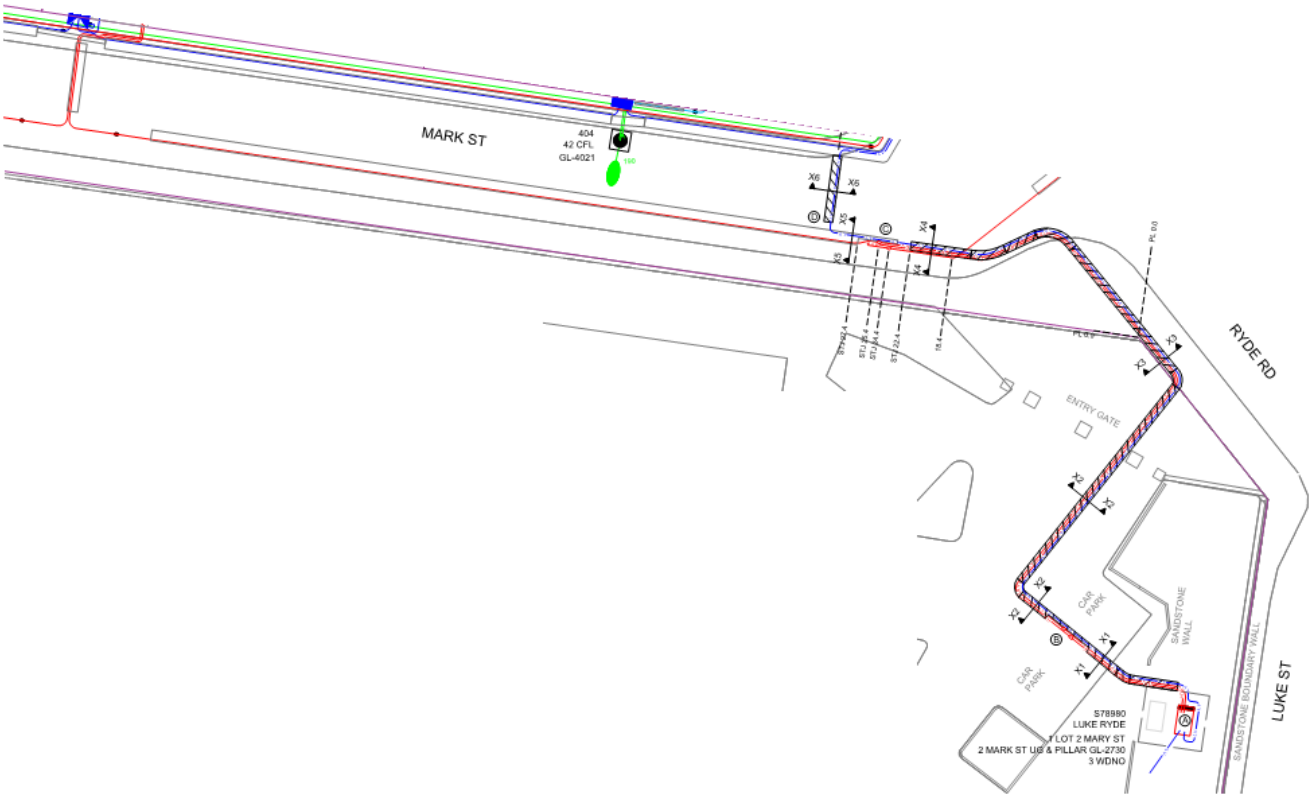
According to the information given on DBYD, no other communications services (private fibre, dark fibre or otherwise) are known to traverse the vicinity of the College site. This does not resolve the Contractor of their responsibility to conduct a thorough survey of all areas of excavation and ensure that no existing services shall be disrupted.

5. PROPOSED INFRASTRUCTURE & AUGMENTATION

5.1 Power

The existing site contains two padmount kiosk type substations serving separate alignments of the existing school. Both substations carry insufficient spare capacity to serve the new SPP building. A new power supply shall be obtained from the local supply authority, Ausgrid.

Based on the areas necessitated by the architecture, Northrop conducted a preliminary load assessment of electrical demand according to AS/NZS 3000:2007 Table C3, which culminated in an estimated requirement of 808.3 kVA (1,124.6 amps/phase). This assessment has required that one (1) new 1,000 kVA (rated) kiosk substation be required to support the new building, bringing the site total of substations up to three. Furthermore, master planning future stages necessitates that a fourth substation may be required in the future; spatial planning has been conducted to allow for construction of this additional substation. The new substation will be located along Luke Street, supplied by the existing HV infrastructure along Mark Street.



Existing substations will be retained and maintained during the construction phase to maintain continued operation of the College.

Northrop, as the Level 3 Accredited Service Provider assigned to this project, are currently working with Ausgrid to support the power supply requirements for this development. A design information package (DIP) has been issued by Ausgrid, confirming provision of the substation as per this design. The DIP is attached in Appendix B, at the rear of this report.

Furthermore, the site's power requirements will be supplemented by a photovoltaic (PV) power system, incorporated in the project ESD requirements.

5.2 Telecommunications

The existing College is supplied by a sufficient level of telecommunications infrastructure. The College is served with a private fibre optic link from Vocus Communications, via the Mark Street parallel. The College's internal communications network is fibre-optic based, and carries sufficient bandwidth to support the SPP site's data requirements.

No new telecommunications service or augmentation is likely to be required as part of the SPP. During the construction timeframe, the existing Telstra services are going to be replaced by NBN connections, which will require internal mitigation on the College's part.

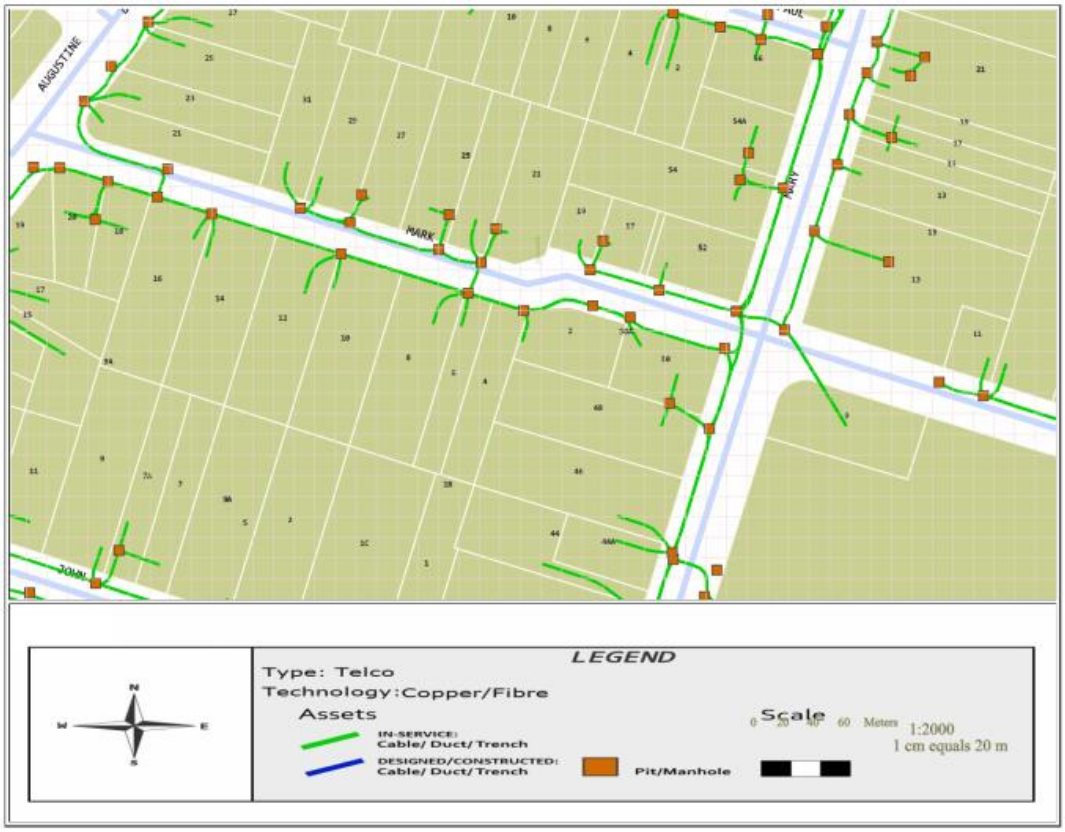
6. CONCLUSION

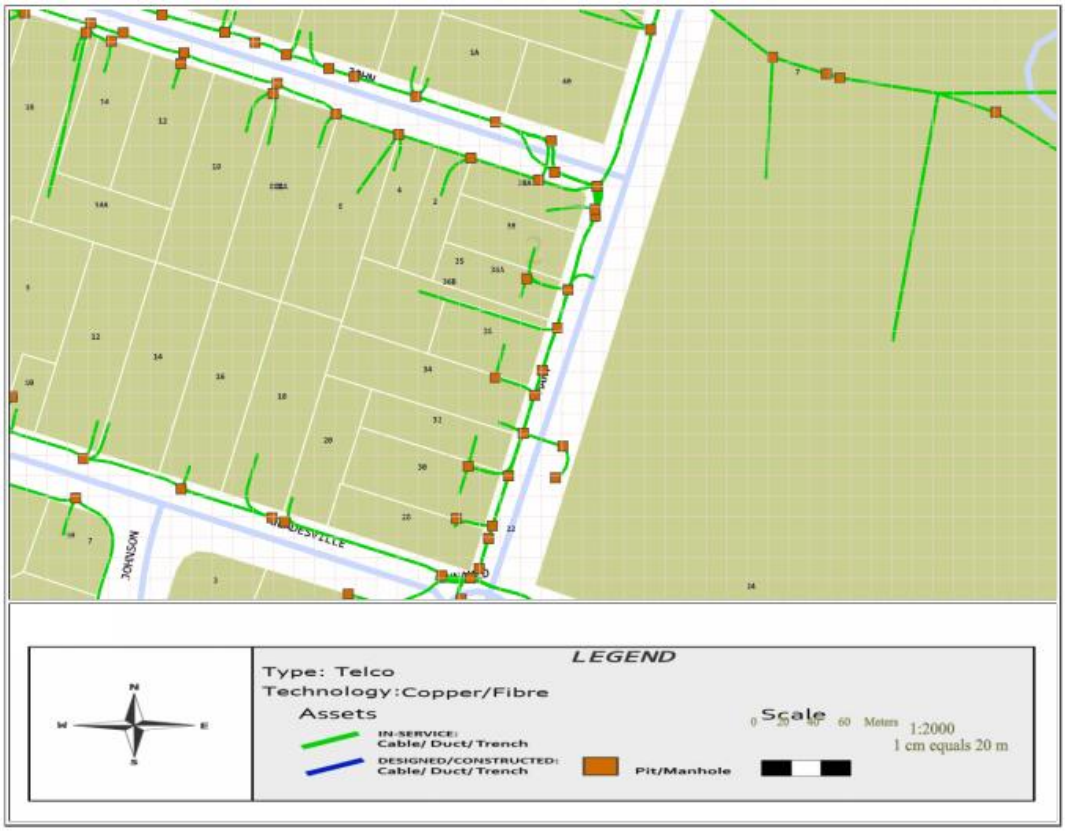
The Services Infrastructure Management Plan for Electrical and Telecommunications services for the proposed development for St Joseph's College Hunters Hill, addresses the Secretary's Environmental Assessment Requirements (SEARs) issued for the project.

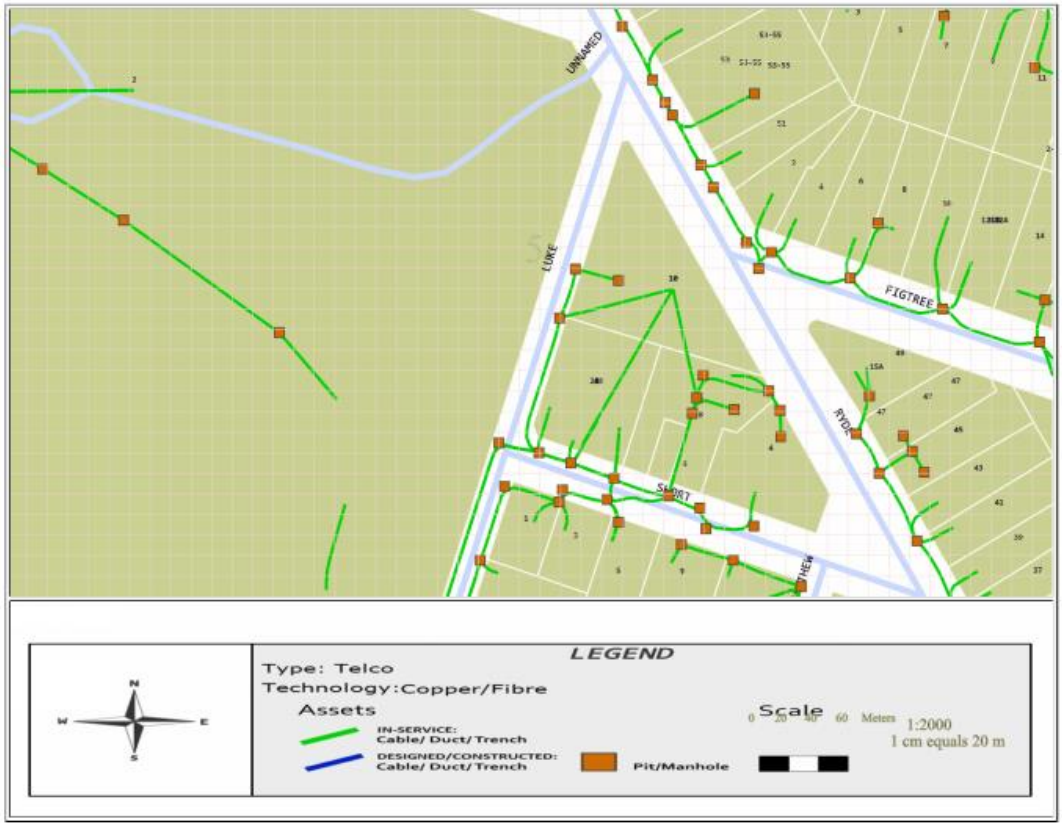
The site can be adequately serviced by the power supply authority, Ausgrid; the telecommunications authority, Telstra (and NBN if required) and private fibre providers servicing Greater Sydney on a request basis.

APPENDIX A – DBYD EXTRACTS

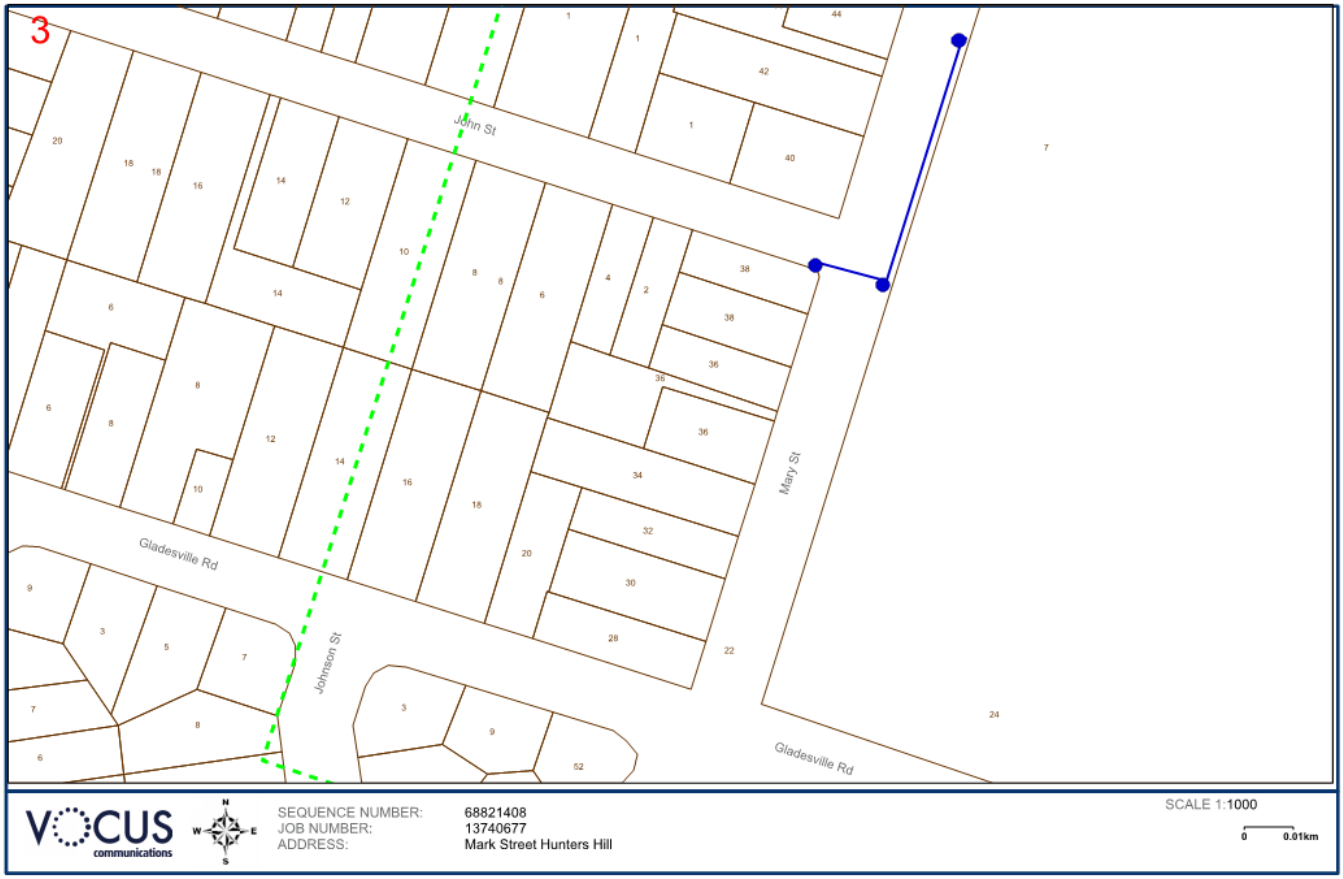
NBN/Telstra







Vocus Communications



APPENDIX B – AUSGRID DESIGN INFORMATION PACKAGE

Issue Date: 6 February 2018

Amendment: 0

Design Information - Site Specific Terms and Conditions

Ausgrid's Response to a Proposed Design Scope submission received 11.01.2018.

This document must be read in conjunction with the Design Information – General Terms and Conditions document that is available on the Ausgrid Website http://www.ausgrid.com.au

1. Ausgrid Project References

SAP Project Number	**SC12405**
Project Name	**New Kiosk Substation S.78980 Luke Ryde**
Project Address	**2 Mary Street HUNTERS HILL**
Prjtrak Number	**XCH014080**

2. Ausgrid Contact Details

Note that this information is not to be placed on the design	
Ausgrid Contact	**Damian Carmody**
Telephone Number	**43998092**
Email Address	**dcarmody@ausgrid.com.au**

3. Response to Proposed Design Scope (PDS)

The design must meet the requirements contained in the Design Information – General Terms and Conditions, Ausgrid Network Standards and Ausgrid policies regardless of the wording/description of proposed works detailed on the submitted PDS form. Any request for variation and/or dispensation to the Ausgrid requirements must be done via a dedicated application to Ausgrid (eg NS181).

The proposed design scope submission is approved with the following alterations.

3.1. Conduits

Spare conduits to be laid as part of this project: Minimum of 1 x spare per new cable.

3.2. Substation

- Panel configuration 1600/400/400.

3.3. Identification of Works Funded by Ausgrid

- Items as detailed in Apportionment of Costs section of the Design Information – General Terms and Conditions document.

The full extent of the Ausgrid funded works is determined when a design is submitted by the ASP/3 designer for certification. Ausgrid will detail the final funding arrangements and the amount to be paid by Ausgrid on the schedule to the certified design.

4. Enclosures

- Proposed Design Scope.

SC12405 - 20180206 - DIP.docx Page 1 of 1

ASSET INVESTMENT
DP/AC/CE DPI-2018_0067.doc

DPI2018_0067 Project Number: SC12405

30 January 2018

Sent To: Distribution Planning Manager (Mark Appleton)/
Negotiating Officer – Contestable Connection (Damian Carmody)

Copy to: Branch File 342.20 General (Hunters Hill Zone)

PREFERRED POINT OF ENTRY AND HIGH VOLTAGE CONNECTION FOR THE ESTABLISHMENT OF THE CUSTOMER SUBSTATION S.78980 LUKE RYDE, LOT 2 MARY STREET, HUNTERS HILL.

Following is a reply to your request dated 16 January 2018 and subsequent correspondence requesting the Preferred Point of Entry and HV connections for the above project.

PREFERRED POINT OF ENTRY
N/A

HV CONNECTIONS
1) Refer to attached drawings.

2) Use 300mm^2 Cu Triplex cable (or equivalent).

3) Install and commission DM&C (monitoring and control) device on all proposed substations.

4) Where performing trenching works, install an ultimate 4 x 150mm duct bank for HV use. If any of these ducts are expected to be used for LV purposes, please contact the Distribution Planner to determine the optimal duct bank size.

VOLTAGE DROPS AND NOMINAL 3 PHASE FAULT LEVELS S.78980 LUKE RYDE
1) Assuming a source three phase Fault Level on the TX2 11kV group busbar at Hunters Hill zone substation of 8.52kA, the three phase fault level* on the HV side of the proposed S.78980 Luke Ryde is anticipated to be 7.07kA.

2) Assuming a maximum voltage level on the TX2 11kV group busbar at Hunters Hill zone substation of 10.55kV, the voltage level* at the proposed S.78980 Luke Ryde is anticipated to be 10.51kV(0.38%VD).

*Please note this data is NOMINAL, and for a NORMAL network configuration. It is based on the current data in the GIS, and on the 11kV Busbar fault information provided by Subtransmission Planning. The actual Voltage Drop and 3 Phase Fault Levels may differ (for example) due to network switching, paralleling of Transformers, the effects of future projects, Transformer tap settings, and the currency / accuracy of the GIS data and the 11kV busbar fault level provided. The Fault Level is not the minimum Fault Level for equipment ratings. See NS-114 (Chamber Substations), NS-117 (Kiosks Substations), NS-122 (Pole Mounted Substation) and also refer to "Clause 1.16.4 and 7.5.4" of the New South Wales Service and Installation Rules dated June 2015 Amendment November 2016 for further information.

Notes:-

1. Where single core cables are to be installed for lengths greater than 10 metres, always use bundled single core cables ie.Triplex, unless stated otherwise by Distribution Planning.
2. Conduit banks containing six or more power cable conduits (for use at any voltage level) must be installed as per the TSB requirements as per Section 12.9 of NS130.
3. When cables are installed in Thermally Stable Bedding (TSB) material the data capture must include the appropriate Conductor Codes and geo spatial of the cross section.
4. To minimise the effect of mutual heating on parallel sections of mains, whenever new cable/s are installed (for parallel lengths in excess of 10m) a minimum separation of 4 meters is to be maintained from all Transmission assets (33-330 kV) and 2m is to be maintained from existing distribution mains (415V/11kV) (transverse crossings are not a significant issue), unless stated otherwise by Distribution Planning.
5. Wherever excavation is carried out, please email Engineer Standards & Communications (Tsuey Chia) at thchia@ausgrid.com.au to determine if an additional duct suitable for Fibre/Communications will be required.
6. These HV Connections are only valid for a period of 12 months from the day of issue.

There are no other special planning requirements, however should there be any further changes to the loading information, substation design or site details please e-mail Central Distribution Planning/Ausgrid (CentralDistributionPlanning@ausgrid.com.au).

Prepared By:

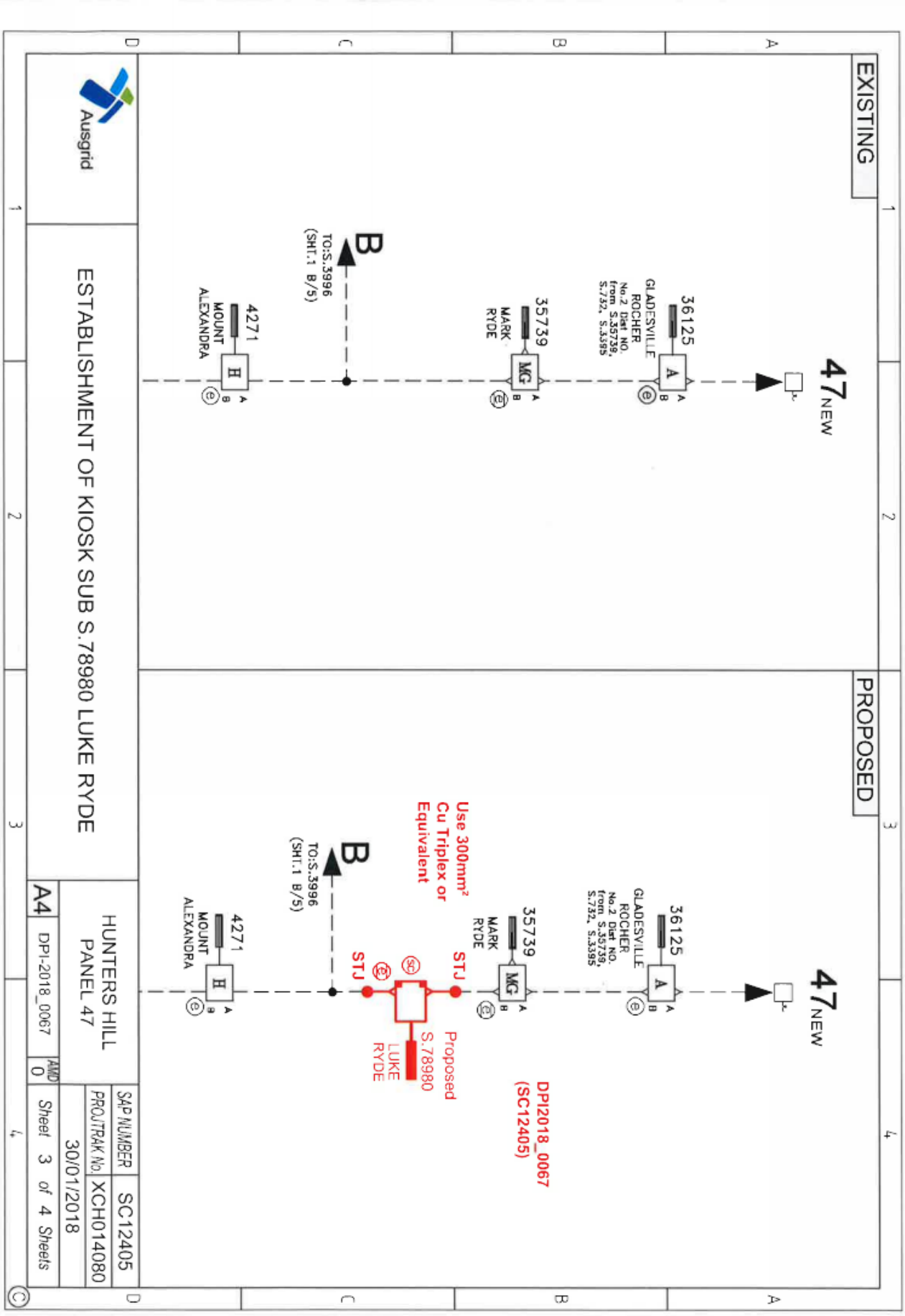
Date: 30 January 2018

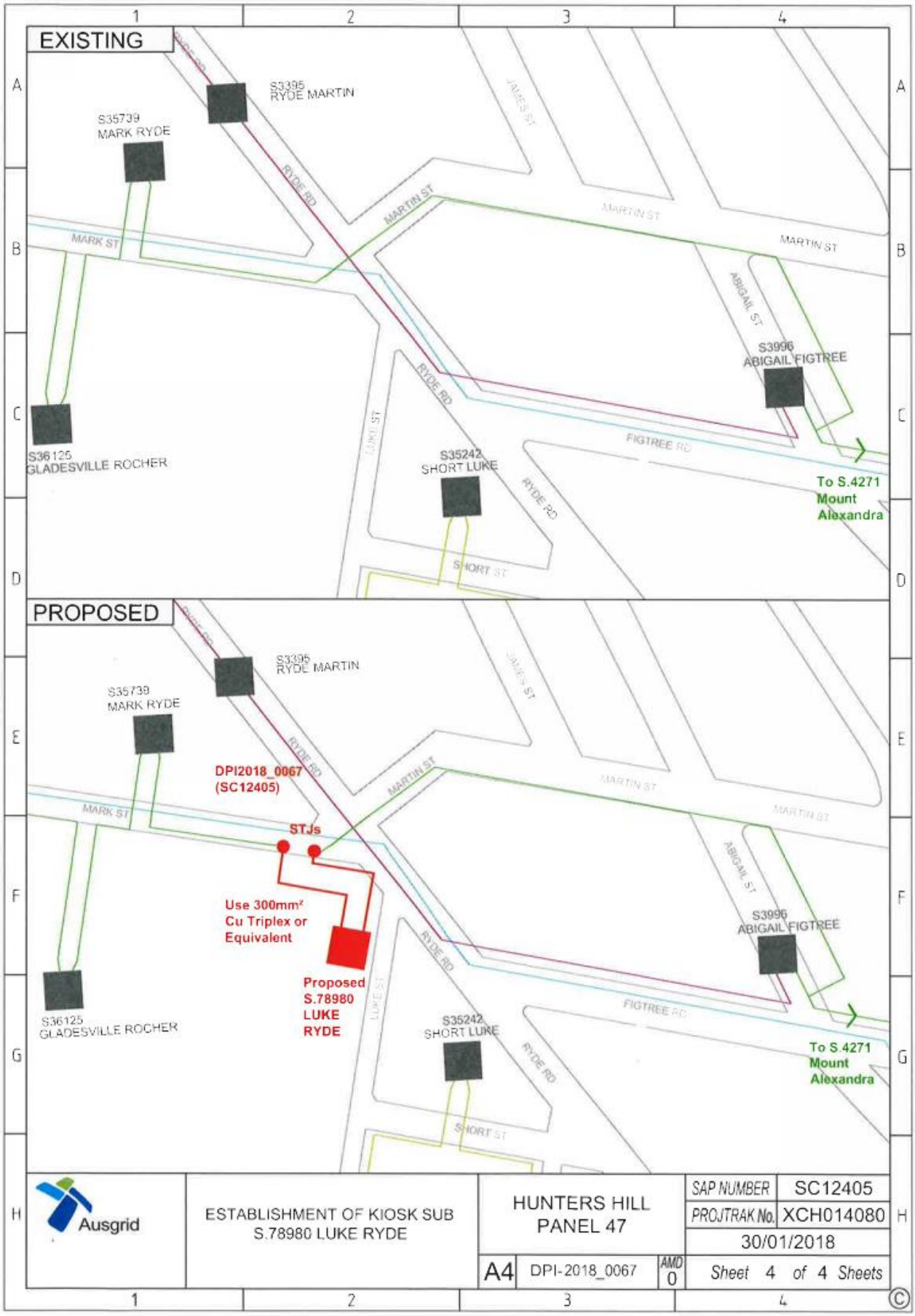
Ahmad Chehade
Distribution Planner - Distribution Planning Central

Approved By:

Date: 30/01/18

Charbel Estephan
Senior Distribution Planner - Distribution Planning Central


EXISTING
PROPOSED
47 NEW
36125
GLADESVILLE
ROCHER
No.2 Dist NO.
from S.35739,
S.732, S.3395
35739
MARK
RYDE
4271
MOUNT
ALEXANDRA
TO:S.3996
(SHT.1 B/5)
Use 300mm² Cu Triplex or Equivalent
STJ
Proposed S.78980 LUKE RYDE
DPI2018_0067 (SC12405)
Ausgrid
ESTABLISHMENT OF KIOSK SUB S.78980 LUKE RYDE
HUNTERS HILL PANEL 47
A4
DPI-2018_0067
AMD 0
SAP NUMBER SC12405
PROJTRAK No. XCH014080
30/01/2018
Sheet 3 of 4 Sheets


EXISTING
S3395
RYDE MARTIN
S35739
MARK RYDE
S36125
GLADESVILLE ROCHER
S35242
SHORT LUKE
S3996
ABIGAIL FIGTREE
RYDE RD
MARTIN ST
MARK ST
JAMES ST
ABIGAIL ST
FIGTREE RD
SHORT ST
LUKE ST
To S.4271
Mount
Alexandra
PROPOSED
DPI2018_0067
(SC12405)
STJs
Use 300mm²
Cu Triplex or
Equivalent
Proposed
S.78980
LUKE
RYDE
Ausgrid
ESTABLISHMENT OF KIOSK SUB
S.78980 LUKE RYDE
HUNTERS HILL
PANEL 47
SAP NUMBER
SC12405
PROJTRAK No.
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Sheet 4 of 4 Sheets

DP1 2018 0067 ⇒ Ahmad

Ausgrid

PROPOSED DESIGN SCOPE

DATE: 11/01/2018

To: Ausgrid - Contestable Connections
contestability@ausgrid.com.au

From: ASP Company: Northrop Consulting Engineers
ASP Representative: Taena Siddiquee
Authorisation Number: 2431/3
Phone: 02 9241 4188
Email: tsiddiquee@northrop.

Ausgrid reference: SC12405

S.78980 LUKE RYDE

Project Description:	Installation of a kiosk substation
Project Address:	LOT 2 Mary Street HUNTERS HILL

Connection Details	☐ HV Supply (i.e. HVC) ☒ LV Supply			Include description of existing and proposed load fields below
Existing Load:	- Phases	-	Amps	
Proposed Load:	3 Phases	1124.0	Amps	
Total:		1124.0	Amps	Proposed connection Date: 01/05/2018

HV Proposal	
Proposed Distribution Centre: include substation type, size, LV panel layout (e.g. L type kiosk, 1000kVA, 1600/400 panels)	L type kiosk, 1000kVA, 1600/400/400.
Proposed Zone/Feeder:	Hunters Hill Zone 20; Panel 47 (new)
HV Network Proposal: describe the HV connection proposal (e.g. loop in new new substation between HS01234 and HS09876)	Install a new kiosk substation between S36125 and S35739 at LOT 2 DP 527024. For sub location, see attached.
HV Relocation Proposal:	

LV and/or SL Proposal, including comms	
LV and/or SL Network Proposal:	Install new service from proposed substation to new MSB within the site. Install LV interconnector.
LV/SL Relocation Proposal:	

Does this proposal involve modification of Ausgrid's transmission, ADSS or pilot cable system(s)? If YES, please include on sketch	☐ YES ☒ NO
Do you require fault level information that is not on WebGIS:?	☐ YES ☒ NO

Attachments: Items marked with X are mandatory. Items with * asterisk are mandatory if applicable to the project type/application		
	☒ Sketch - proposed method of connection*	☐ Master plan (if multi stage subdivision)*
	☒ Sketch – System Diagram (for HV works)*	☐ Photographs
	☒ Connection Application	☐ Development Site Plans
	☐ includes large/disturbing loads*	☐ Other
	☒ Design Contract Acceptance	

Ausgrid Use Only	Date Offer Accepted:	Load Cycle:
	Ausgrid Project Number:	CPC: Damien Carmody

Planning: Response / Comments / Recommendations: (use additional pages if necessary)