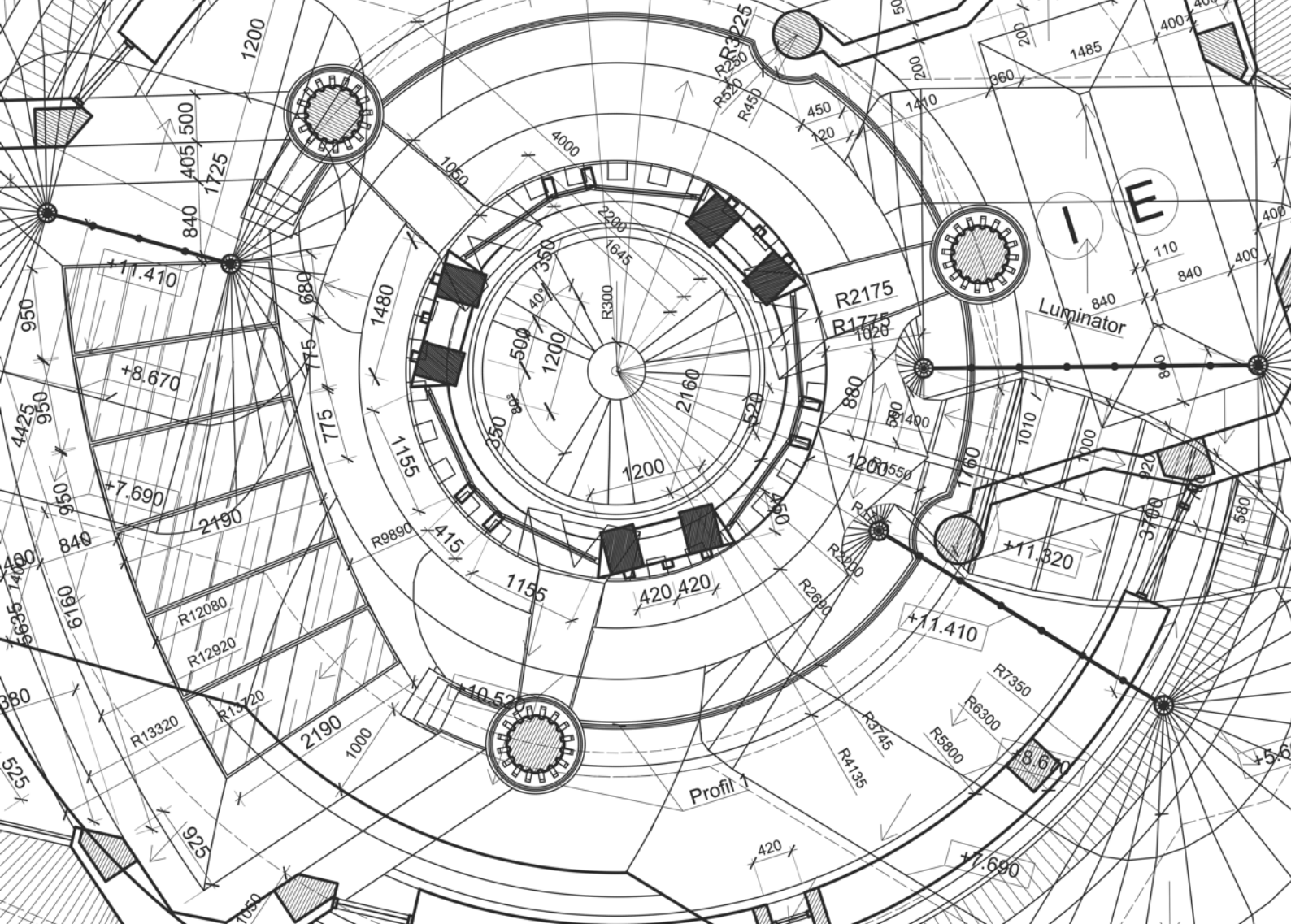


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# Infrastructure Management Plan

LCI



# Infrastructure Management Plan

## Sydney Football Stadium

### Lendlease

Revision A  
28/05/2019

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## Revision Information

<b>Project</b>	Sydney Football Stadium
<b>Title</b>	Infrastructure Management Plan
<b>Client</b>	Lendlease
<b>Revision</b>	A
<b>Revision Date</b>	28 May 2019
<b>Prepared By</b>	LCI Consultants Sydney Office Level 4 73 Walker Street North Sydney 2060
<b>Author</b>	Steven Sam

## Revision Schedule

Revision	Date	Issue Name	Author	Authorised
A	28/05/19	SSD Stage 2 Application	SS	SS

## 1 Executive summary

This report addresses the key master planning utility services considerations to date for the new Sydney Football Stadium (SFS).

It has been updated to reflect the Stage 2 SSD (State Significant Development) application and to address the electrical and communications requirements of the Secretary's Environmental Assessment Requirements (SEARs):

*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 infrastructure.*

- consultation has been undertaken with relevant utilities and agencies: Ausgrid, NBN Co, Telstra, Optus, Vodafone, Authority Services radio networks, NSW Telecommunications Authority
- further consultation will be an ongoing consideration during detailed design
- there is capacity in the Utility networks to support the development
- two new dedicated high-voltage feeder cables will be sourced from the Paddington Zone Substation to supply SFS
- SFS will be a high-voltage customer
- an electrical easement will be required between Moore Park Road and the two High Voltage control chamber substations
- Consultation with Sydney Water and Jemena are ongoing

## 2 Introduction

This report addresses the key master planning utility services considerations to date and supersedes the document *Sydney Football Stadium Redevelopment – Infrastructure Management Plan – Revision 4, 28 May 2018*.

It has been updated to reflect the Stage 2 SSD (State Significant Development) application and to address the electrical and communications requirements of the Secretary's Environmental Assessment Requirements (SEARs):

- *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 infrastructure.*

This report addresses the following conditions:

- C32- *The future development application must address the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure through the preparation of an Infrastructure Management Plan and Water Reuse Management Strategy Plan in consultation with relevant agencies and service providers. This plan must be based on the conclusions of the Sydney Football Stadium Redevelopment Infrastructure Management Strategy prepared by Aurecon, 2018.*
- C33- *The future development application must provide details of any fuel storage for back-up emergency generator above ground and that all associated pipes, fittings and equipment are located above ground.*

This report addresses the following mitigation measures:

- CP-UI1- *An Infrastructure Servicing Strategy is to be prepared and submitted with the Stage 2 Development Application. Preparation of the strategy is to include consultation with all relevant*

*utility authorities, including but not limited to those in respect of potable water, stormwater, sewage, electricity, gas, telecommunications.*

## 3 Background

On 24 November 2017, the NSW Premier announced the redevelopment of the SFS into a world-class stadium with up to 45,000 seats. The redevelopment will include demolition of the existing facility and replacement with a modern, globally competitive stadium that achieves the requirements for a Tier 1 stadium to meet future requirements. Redevelopment of the SFS will assist in supporting the realisation of the Master Plan principles to:

- Create a flexible venue suitable for sports, e-sports and major events alike
- Include technology for the future
- Create a venue for the growth of men's and women's elite sport, as well as the ability to adapt to new sports and the rise of e-sports
- Create a publicly accessible entertainment and recreational facility
- Create a stadium integrated with its surrounds including Centennial and Moore Parks and the surrounding residential and business areas
- Create a sustainable future

Although the seating capacity remains the same, an increased demand on utilities services infrastructure has resulted due to the significant increase in food and beverage offerings, corporate facilities, amenities and technology being implemented as part of the redevelopment.

## 4 Existing services

### 4.1 Electrical Supply

As per Aurecon's *Sydney Football Stadium Redevelopment Infrastructure Management Strategy* issued as part of the Stage 1 application, the SFS is currently connected to Ausgrid's Paddington Zone Substation via a single 11kV supply. The supply enters the stadium from Moore Park Road into Ausgrid control chamber S6522 located at the northern end of the stadium which contains authority switchgear, metering equipment and private HV switchgear. This supply then forms a private HV ring main within the site which feeds two chamber substations within the stadium and three kiosk substations on the perimeter of the stadium.

These external kiosk substations supply:

- |                                     |  |
|-------------------------------------|--|
| - Indoor Cricket Centre (ICC)       | <i>[to be demolished as part of the redevelopment]</i> |
| - Cricket NSW (CNSW) Administration | <i>[to be demolished as part of the redevelopment]</i> |
| - Venue Service Office              | <i>[to be demolished as part of the redevelopment]</i> |
| - Merchandise Store                 | <i>[to be demolished as part of the redevelopment]</i> |
| - Roosters Building                 | <i>[to be demolished as part of the redevelopment]</i> |
| - Warratahs Building                | <i>[to be demolished as part of the redevelopment]</i> |
| - Sheridan Building                 | <i>[to be demolished as part of the redevelopment]</i> |
| - NRL House                         | <i>[to be retained as part of the redevelopment]</i>   |

Peak demand figures obtained from Ausgrid confirm that the existing ring has a maximum demand of 2.5MVA. The capacity of the ring is known to be 3.8MVA.

## 4.2 Communications

The ICT services in the existing SFS are supported by the Sheridan Building and the SCG via optical fibre cabling. There is no dedicated Telecommunication Carrier incoming links.

There are existing DAS base stations on the eastern and western sides of the SFS roof for Optus, Telstra and Vodafone providing macro coverage of the surrounding area. No internal DAS system has been previously provided.

The above services will be demolished with new dedicated comms infrastructure supplied directly into the new SFS.

## 4.3 Hydraulic and Fire Services

The Sewer and Water service provider throughout the area is Sydney Water. Gas supplier is Jemena.

The information on the existing infrastructure has been collected based on Dial Before You Dig (DBYD) records and visual site inspections.

### Water Services

The existing water infrastructure surrounding the site includes the following:

- 1 x DN300 mm inside the old DN500mm water main along Moore Park Road;
- 1 x DN300 mm inside the old DN600mm water main along Moore Park Road;
- 1 x DN200 mm water main along Driver Avenue;
- 150 mm authority water meter located in Paddington Lane;
- 200 mm water supply to fire sprinkler booster valve assembly located in Paddington Lane;
- 150 mm water supply to fire hydrant booster valve assembly located in Paddington Lane;
- 100 mm authority water meter located along Moore Park Road near the main entry to SFS;
- 100 mm water supply to fire hydrant booster valve assembly for ARDC building located at corner of Moore Park Road and Driver Avenue;
- 65 mm authority water meter located at corner of Moore Park Road and Driver Avenue;
- 100 mm water supply to fire hydrant booster valve assembly for NRL House building located in Driver Avenue; 50 mm authority water meter located in Driver Avenue adjacent to NRL House building;
- Private potable water infrastructure throughout the site;

### Gas Services

The existing natural gas infrastructure includes the following:

- A network 110mm main (210 kPa) along Moore Park Road;
- A network 110mm main (210 kPa) along Driver Avenue;
- Jemena gas meter assembly located at Moore Park Road near the main entry to Stadium;
- Jemena gas meter assembly located at the corner of Moore Park Road and Driver Avenue;
- Jemena gas meter assembly located at Driver Avenue in vicinity of SCG Members Stand;
- Private gas infrastructure throughout the site;



### **Sewer Services**

The existing Sewer infrastructure surrounding the site includes the following:

- DN225mm VC sewer main traversing SFS east-west direction towards Driver Avenue and further down along Driver Avenue
- DN400mm sewer main at the north-west corner of the site in Driver Avenue- depth approximately 2.8m;
- Private wastewater infrastructure throughout the site;
- Private grease waste system;

### **Stormwater Services**

Refer to the Stormwater Management Plan

## **5 Project requirements**

### **5.1 Redevelopment requirements**

#### **Electrical supply**

The estimated maximum electrical load for the new stadium is approximately 8MVA. This is based on the expected stadium GFA of over 65,000m<sup>2</sup> with diversified demand requirements of approximately 120VA/m<sup>2</sup>.

The stadium will be supplied via two dedicated 11kV high voltage feeders from the near by Paddington Zone Substation. Ausgrid have confirmed that the Paddington Zone Substation has sufficient spare capacity.

The electrical supply will run along Oxford Street, Oatley Road and across Moore Park Road to two new HV control chamber substations located adjacent the SFS (refer Appendix A for drawings).

From this point, SFS will operate as a private high voltage network with reticulation to private substations located in each quadrant of the stadium through a HV ring.

An electrical easement will be required on the site between Moore Park Road and the HV control chamber substations.

As part of an early works package, the NRL Building will be disconnected from the existing SFS supply and connected to the ARDC Building, which has it's own independent Ausgrid kiosk with sufficient capacity.

Standby power to SFS will be provided by 1,000kVA diesel generators (4 off) located in each quadrant of the stadium. The generators connect directly into the quadrant main switchboards as required by the iNSW Brief. Above ground 2,000 litre diesel storage tanks (providing 6hrs back up) are located in segregated rooms adjacent to the generator unit. All piping and associated equipment is located within the diesel storage tank room.

#### **Communications**

In accordance with the iNSW SFS Brief, two diverse incoming cabling pathways to the precinct with a minimum separation distance of 20 metres will be provided (refer Appendix B for drawings). These will cater for the relevant Authorities and Telecommunication Carriers .

NRL House and the ARDC Building are standalone buildings with their own dedicated connection, and as such will not be affected by the SFS redevelopment works.

### **Potable Water Connection**

New DSW connection to the Sydney water main in Moore Park Road was proposed to allow for the peak hourly estimated flow of 31 Litres per sec for potable water and to allow for the top up of the overall demand of 50 Litres per sec for non potable water.

Acceptance of the proposed solution including confirmation of the location of the connection and the identification to which main in the Moore Park road to connect to is pending the Sydney water approval (Section 73). Refer Appendix C for drawings.

### **Sewer connection**

The peak hourly estimated flow of 69 Litres per sec will be gravity drained towards the existing DN225 mm sewer main. The existing pit will be used to connect the new reticulation. Acceptance of the proposed solution is pending the Sydney water approval (Section 73). If required by Sydney Water, the second connection to the 400mm main reticulating next to the site sheds towards North will be introduced to reduce the flows at the point of the proposed connection to the existing 225 mm main.

### **Gas Connection**

New Gas connection to the Jemena high pressure main in Moore Park Road was proposed.

Gas regulator and gas meter room will be located on the south-east of the stadium. The proposed location for the new Authorities connection is subject to approval. The redundant Gas meter assemblies currently serving the building will be demolished.

### **Fire Services Water connections**

Fire booster assembly location was proposed on the Southern corner of the site, however, two more additional and alternative booster and connection to the Authority mains locations are subject to pressure and flow enquiry (proposed locations indicated on the Hydraulic Services plan). The redundant assemblies currently serving the building will be demolished.

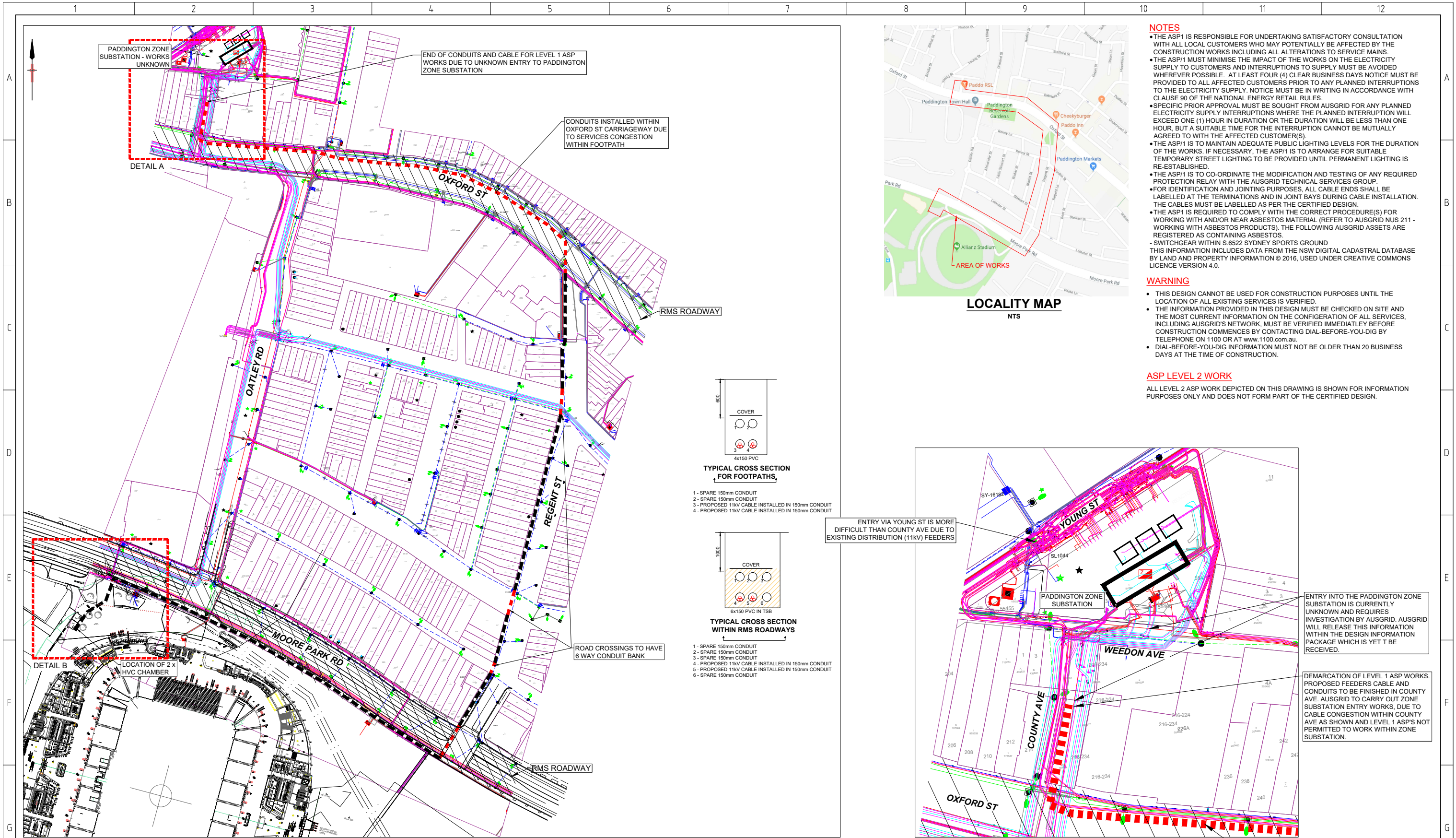
### **Stormwater**

Refer to the Stormwater Management Plan



## Appendix A

### A.1 Electrical Supply Plans



**NOTES**

- THE ASP1 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.
- THE ASP1 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.
- 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).
- THE ASP1 IS TO MAINTAIN ADEQUATE PUBLIC LIGHTING LEVELS FOR THE DURATION OF THE WORKS. IF NECESSARY, THE ASP1 IS TO ARRANGE FOR SUITABLE TEMPORARY STREET LIGHTING TO BE PROVIDED UNTIL PERMANENT LIGHTING IS RE-ESTABLISHED.
- THE ASP1 IS TO CO-ORDINATE THE MODIFICATION AND TESTING OF ANY REQUIRED PROTECTION RELAY WITH THE AUSGRID TECHNICAL SERVICES GROUP.
- FOR IDENTIFICATION AND JOINTING PURPOSES, ALL CABLE ENDS SHALL BE LABELLED AT THE TERMINATIONS AND IN JOINT BAYS DURING CABLE INSTALLATION. THE CABLES MUST BE LABELLED AS PER THE CERTIFIED DESIGN.
- THE ASP1 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). THE FOLLOWING AUSGRID ASSETS ARE REGISTERED AS CONTAINING ASBESTOS.
  - SWITCHGEAR WITHIN S.6522 SYDNEY SPORTS GROUND

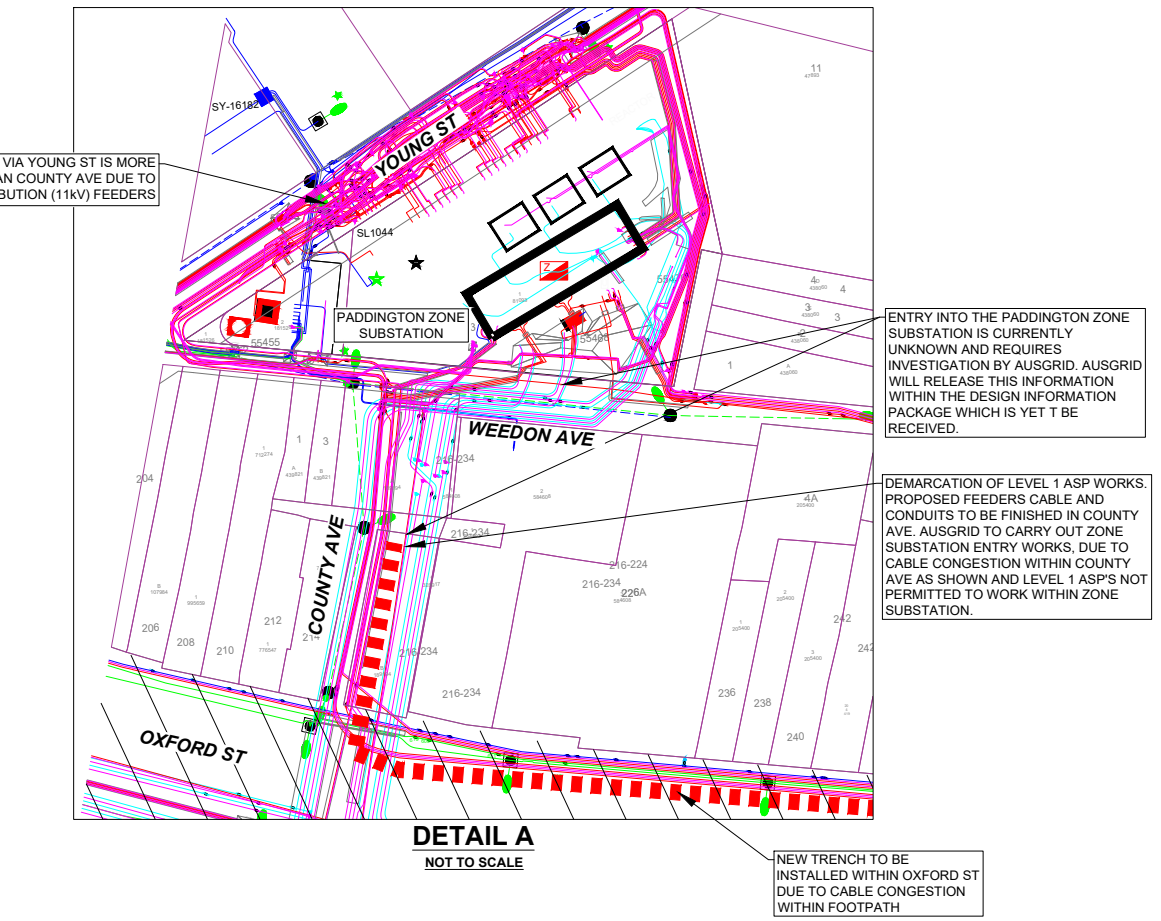
THIS INFORMATION INCLUDES DATA FROM THE NSW DIGITAL CADASTRAL DATABASE BY LAND AND PROPERTY INFORMATION © 2016, USED UNDER CREATIVE COMMONS LICENCE VERSION 4.0.

**WARNING**

- THIS DESIGN CANNOT BE USED FOR CONSTRUCTION PURPOSES UNTIL THE LOCATION OF ALL EXISTING SERVICES IS VERIFIED.
- THE INFORMATION PROVIDED IN THIS DESIGN MUST BE CHECKED ON SITE AND THE MOST CURRENT INFORMATION ON THE CONFIGURATION OF ALL SERVICES, INCLUDING AUSGRID'S NETWORK, MUST BE VERIFIED IMMEDIATELY BEFORE CONSTRUCTION COMMENCES BY CONTACTING DIAL-BEFORE-YOU-DIG BY TELEPHONE ON 1100 OR AT [www.1100.com.au](http://www.1100.com.au).
- DIAL-BEFORE-YOU-DIG INFORMATION MUST NOT BE OLDER THAN 20 BUSINESS DAYS AT THE TIME OF CONSTRUCTION.

**ASP LEVEL 2 WORK**

ALL LEVEL 2 ASP WORK DEPICTED ON THIS DRAWING IS SHOWN FOR INFORMATION PURPOSES ONLY AND DOES NOT FORM PART OF THE CERTIFIED DESIGN.



**CHECK FOR OTHER SERVICES BEFORE BORING OR EXCAVATION**

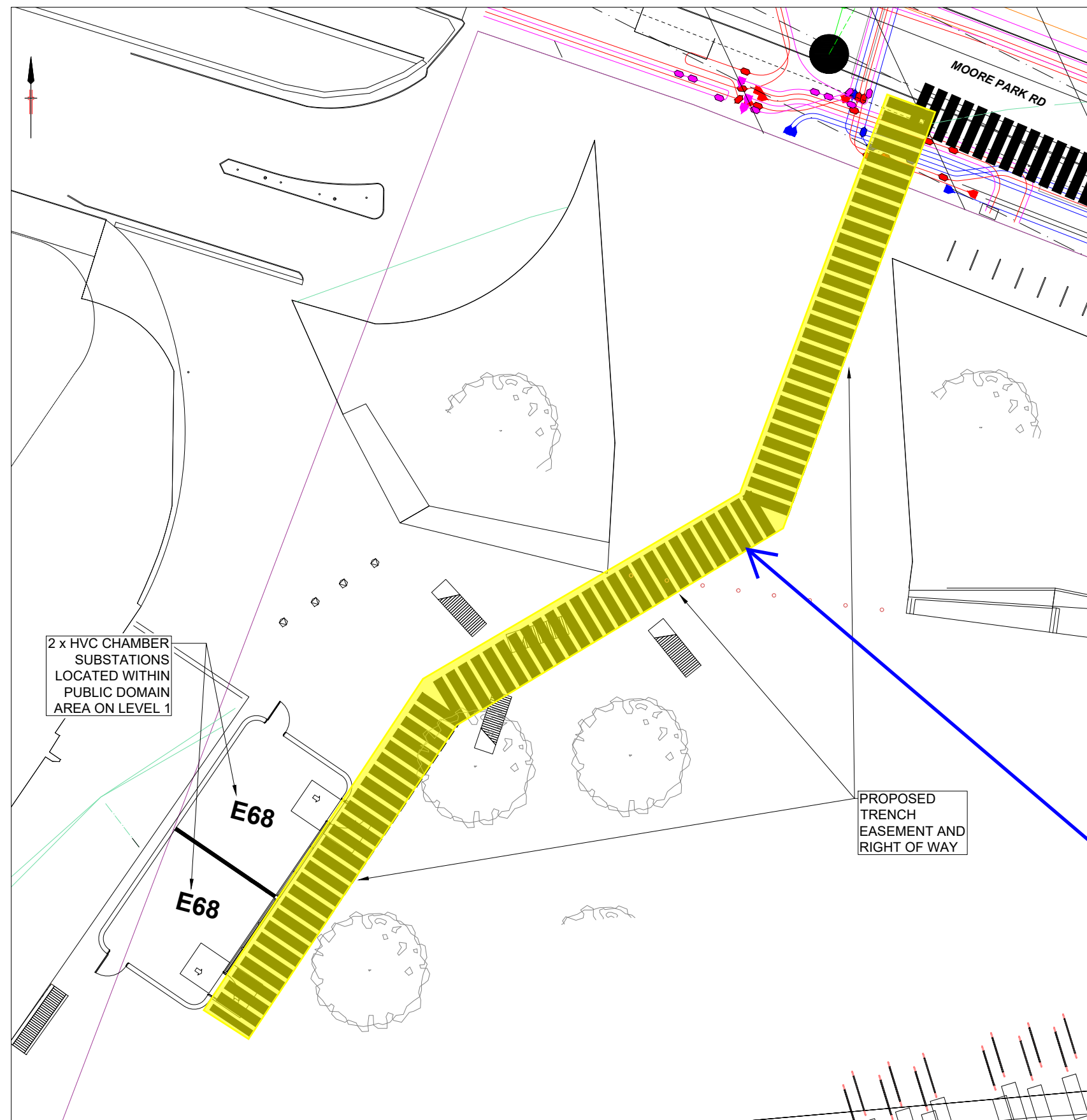
**PRELIMINARY DESIGN**  
**NOT FOR CONSTRUCTION**  
**10/05/2019**

PROPOSED		EXISTING	PROPOSED		EXISTING	PROPOSED		EXISTING	REMOVE	
Pole			Pole-to be removed		UGOH  Pot End	UGOH  Pot End	Joint  Sealed End	Joint  Sealed End	OH Lines	
SL Standard			USL		Joint  Sealed End	Joint  Sealed End	Conduit	Conduit	HV	
Pillar Standard			ABS		OH Lines	UG Cables	OH Lines	UG Cables	LV	
LV Link Pillar			IDT		OH Lines	UG Cables	OH Lines	UG Cables	SL	
Streetlight			Kiosk Sub		-HV-	-HV-	-HV-	-HV-	UG Lines	
Streetlight-PEC			Chamber Sub		-LV-	-LV-	-LV-	-LV-	HV	
Streetlight-replacement			Pole Sub		-LV-	-LV-	-LV-	-LV-	LV	
Streetlight-removal			Two Pole Sub		-SL-	-SL-	-SL-	-SL-	SL	
					-SV-	-SV-	-SV-	-SV-	Joints	
									HV	
									LV	
									SL	

**ASSOCIATED DRAWINGS**

<b>STOWE</b>	STOWE AUSTRALIA PTY LTD 57 JACK WILLIAMS DRIVE PERRICHI NSW 2760 TEL 02 4720 2222 A.B.N. 27 002 556 603
DESIGNED BY	J.BADMAN
AUTH NO.	2979/01
SUBMIT DATE	XX/XX/2019
LGA	CITY OF SYDNEY
MAP REF.	UBD MAP 16 REF G4
AUSGRID REF.	SY44
PRJ/TRAJ No.	XCZ021296
ASP REF.	405363 - 01
CERTIFICATION NUMBER	## / ##

<b>PROPOSED FEEDER ROUTE</b> <b>SYDNEY FOOTBALL STADIUM</b> <b>MOORE PARK</b>	
SIZE	A1
AUSGRID PROJECT No.	SC14160
SHEETS	1 of 2
AMD.	0

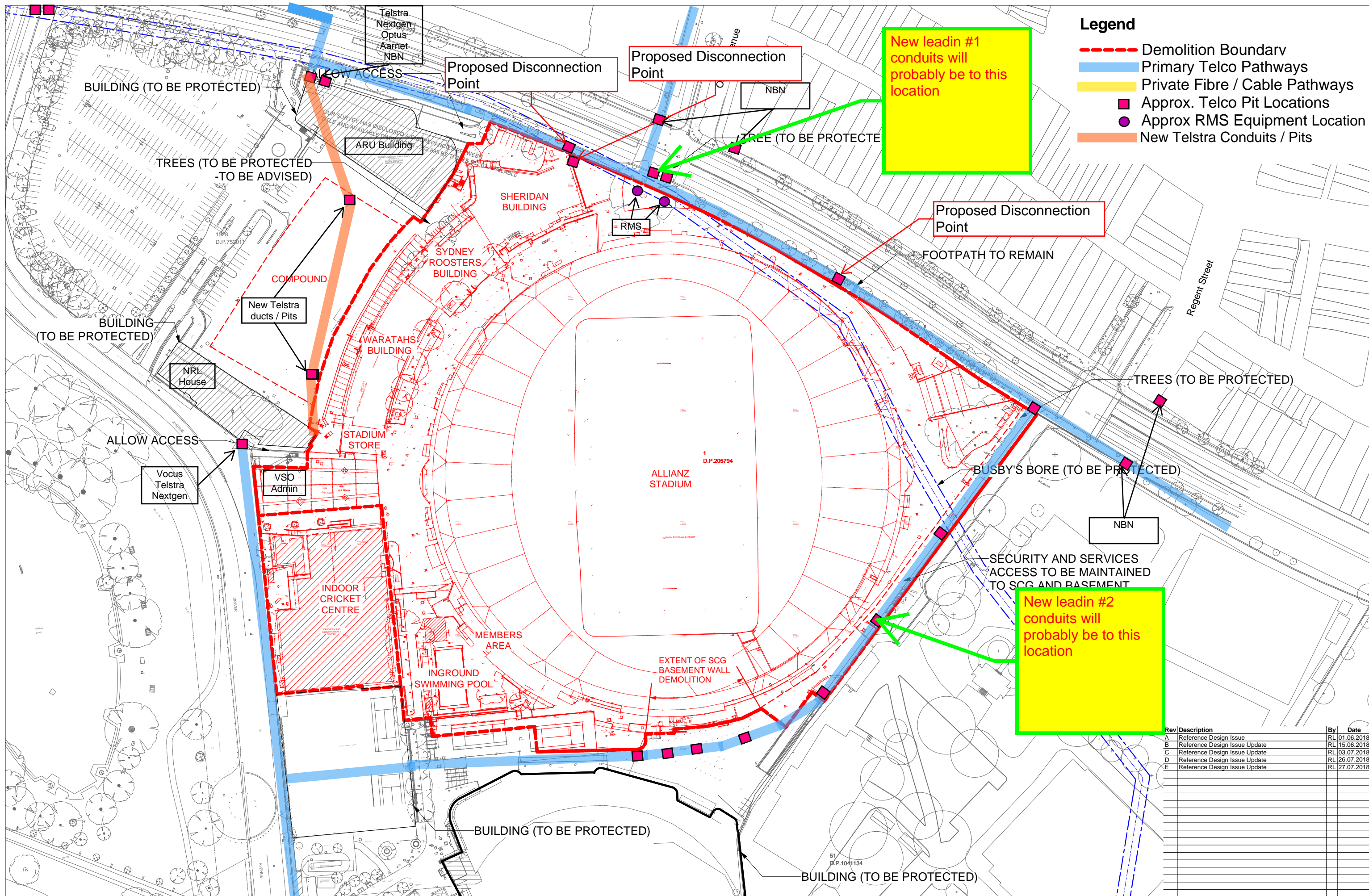


SIZE	AUSGRID PROJECT No.	SHEETS	AMOUNT
A1	SC14160	2 of 2	0

## Appendix B

### B.1 Incoming Communications Plan



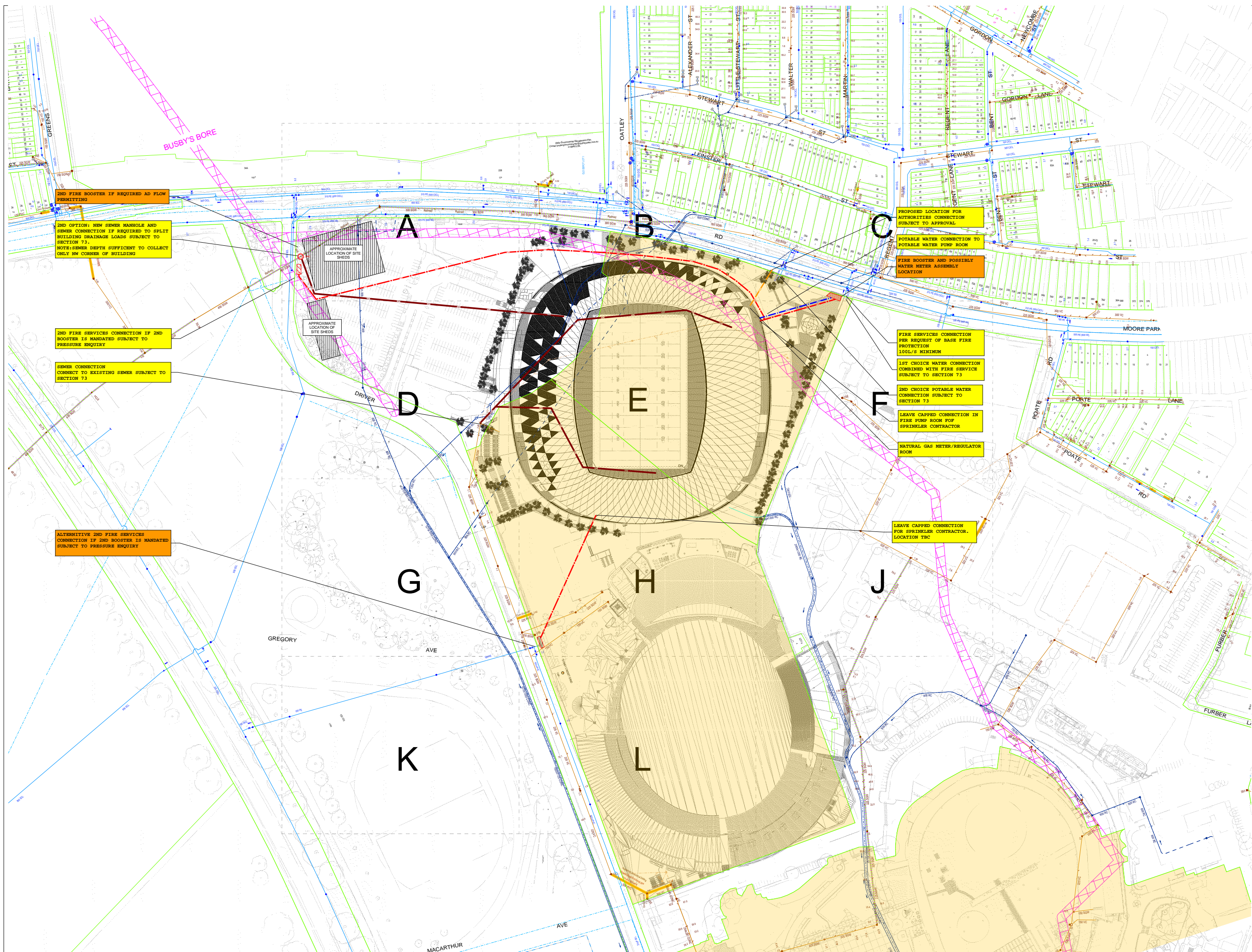


Rev	Description	By	Date
A	Reference Design Issue	RL	01.06.2018
B	Reference Design Issue Update	RL	15.06.2018
C	Reference Design Issue Update	RL	03.07.2018
D	Reference Design Issue Update	RL	26.07.2018
E	Reference Design Issue Update	RL	27.07.2018

## Appendix C

### C.1 Hydraulic Services Plan



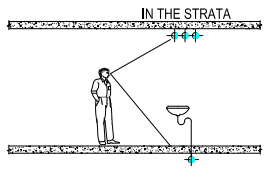


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 1. VERIFY ALL DIMENSIONS AND LEVELS ON SITE BY SURVEY CHECK PRIOR TO ORDERING OR CONSTRUCTION. DO NOT SCALE DRAWINGS.  
 2. DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL ISSUED

FOR CONSTRUCTION

[illegible]

DESIGN ZONE



PRELIMINARY

CLIENT \_\_\_\_\_

M&C SUB-CONTRACTOR \_\_\_\_\_

ARCHITECT \_\_\_\_\_

LANDSCAPE ARCHITECT \_\_\_\_\_

STRUCTURAL / CIVIL \_\_\_\_\_

SERVICES \_\_\_\_\_

SECURITY / COMMS. \_\_\_\_\_

HYDRAULIC CONSULTANT



## Consulting Services

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Sydney NSW 2000  
Tel. (02) 9708-5666

PROJECT

DRAWING TITLE

SCALE		PROJECT NORTH	
DATE	DRAWN BdK	CHECKED JD	APPROVED
PROJECT No.	DRAWING No.	STATUS	REV



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# SYDNEY CONSTRUCTION DIVISION

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RYDALMERE NSW 2116

30 May 2019

## RE: SYDNEY FOOTBALL STADIUM (SFS), MOORE PARK EMERGENCY GENERATOR DIESEL STORAGE

The generator design for the Sydney Football Stadium project is four (4) generator sets which supply the life safety and generator backed loads (as per the iNSW brief) for a period of 6 hours. All four systems will have designated 1000-2000L diesel tanks located above ground on basement level in separate two hour fire rated rooms. The diesel tanks will be double skinned to prevent a fuel leak from the internal tank.

Stowe believe the current generator fuel system design mitigates the risk of a diesel spill to the ground water and the environment.

Sean Dawson  
Engineering Manager  
**STOWE AUSTRALIA PTY. LTD.**

STOWE AUSTRALIA PTY LTD ABN 27 002 556 603  
[www.stoweaustralia.com.au](http://www.stoweaustralia.com.au)

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