

Development Application Submission

Electrical and Telecommunications Services
Infrastructure Report



Development Application Submission

Electrical and Telecommunications Services Infrastructure Report

Client: Grocon Group

Co No.: 51 158 135 927

Prepared by

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In association with

Grocon Group

08 December 2015

Job No.: 60308139

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Quality Information

Document Development Application Submission

Ref The Ribbon

Date 08-Dec-2015

Prepared by Gary Lyle

Reviewed by David Caleo

Revision History



Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
A	22-Jul-2013	Development Application Submission	David Caleo Industry Director	
B	08-Dec-2015	Development Application Submission	David Caleo Industry Director	

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1.0 Introduction

1.1 Project Description

The proposed project at 31 Wheat Road comprises the following:

- The demolition of the existing IMAX building and the construction of a new Hotel & Serviced Apartment development.
- Inclusion of new Retail Outlets and iMax Cinema.
- Upgrades to the surrounding public domain including new playground area.
- Signage zones etc on the new building.

1.2 Purpose

This report outlines the services infrastructure and points of connections to existing and new infrastructure to support the proposed development at 31 Wheat Road, Sydney.

The purpose of the report is to provide an assessment of the telecommunications and electrical infrastructure within the vicinity of the proposed development 31 Wheat Road, Sydney.

The services covered in this report are:

- Telecommunications
- Electrical

1.3 Objectives of Study

The objectives of the report are to determine existing infrastructure that is affected by the proposed development, highlighting areas of concern. Following preliminary liaison with relevant authorities, recommendations for any infrastructure relocation, diversion, augmentation and treatment will be provided.

Significant discussions have been undertaken with both Telstra and Ausgrid. Copies of correspondence and key items highlighted by these authorities are included for reference in the appendices.

1.4 Information Sources

The following information has been provided:

- Information provided by Ausgrid as part of the Dial Before You Dig program.
- Information provided by Ausgrid through the preliminary consultation process, including meetings and inspections of their assets in the vicinity of the proposed development.
- Information provided by Telstra as part of the Dial Before You Dig program.
- Information provided by Telstra direct from their Planning and Services personnel.
- Information provided by Telstra from their web based mapping/coverage system.
- Information provided by Optus as part of the Dial Before You Dig program.
- Information provided by Optus from their web based mapping/coverage system.
- Information provided by Nexgen as part of the Dial Before You Dig program.
- Information provided by Vodafone from their web based mapping/coverage system.
- Information provided by Grocon Group.
- Information obtained from site inspections.

2.0 Area of Consideration

The area of consideration relates to 31 Wheat Road, Sydney.

The proposed area (indicatively shown bounded below) currently consists of the IMAX Theatre and associated retail areas.

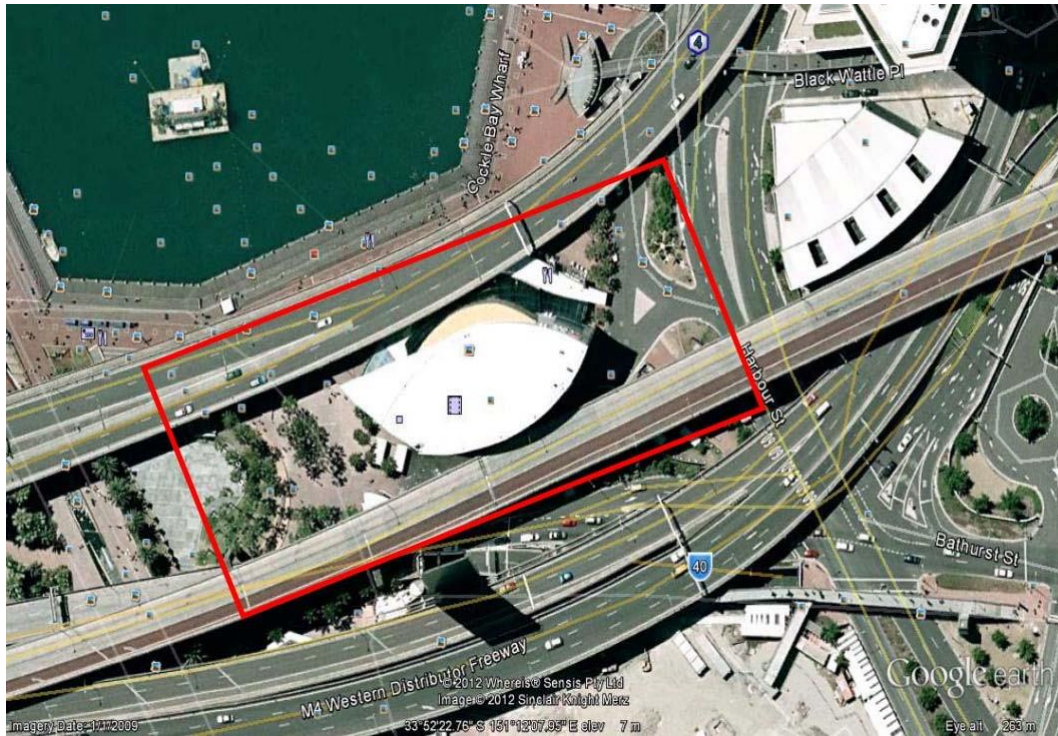


Figure 1: Proposed Site

3.0 Telecommunications Infrastructure

3.1 Existing Telecommunications Services Infrastructure

3.1.1 Telstra Exchanges

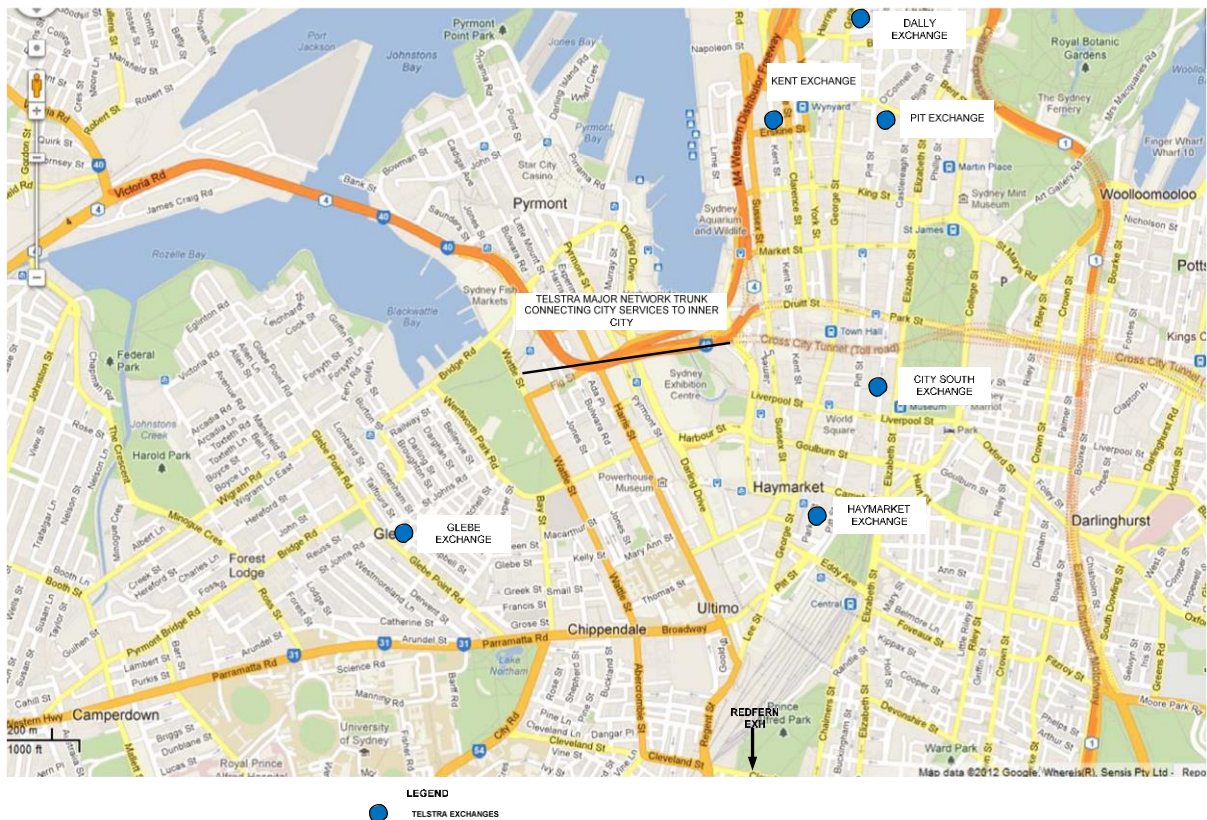


Figure 2: Telstra Exchanges

3.2 Proposed Telecommunications Connections

Telstra can supply to this site from its City South Exchange. Telstra have confirmed capacity to support services for the 31 Wheat Road site from the City South Exchange.

Diverse services can be supplied either from Glebe or Haymarket

Diverse services are an additional cost and can be sourced from any carrier

Haymarket and Glebe may have capacity to support services to the proposed 31 Wheat Road site

Requirements greater than 100 services will be supplied from NBN.

New development applications are to be done as follows:

- <100 services Telstra smart communities
- ≥ 100 services via NBN online application form

Diagrams indicating the current telecommunications infrastructure are provided in Appendix A.

4.0 Electrical Infrastructure

4.1 Existing Electrical Services Infrastructure

4.1.1 Zone substation

The site is located to the west of an existing Ausgrid zone substation.

4.1.2 Sub Transmission Services

Sub-transmission services (ie. 132kV HV cabling) are located in the vicinity of the proposed development. In particular a cable pulling vault located under the Western Distributor carriageway (to the north of the Cross City Tunnel entrance) contains significant 132kV services that serve the adjacent Zone Substation.

4.1.3 Transmission Services

HV services from 11kV to 33kV traverse the proposed development footprint. They are a combination of buried direct and duct bank services.

Advice from Ausgrid is that while some services have been disconnected, all should be treated as “in-service” cables as they may be re-energised in the near future to serve significant future customer loads at the western fringe of the CBD.

Some services are also reticulated through the cable vaults adjacent to or within the proposed footprint of the development.

4.1.4 Distribution Services

Existing LV supplies to the site are minimal. The main IMAX building (and associated tenancies) are supplied from existing Ausgrid Chamber type substation S1456. The maximum load available on this feeder is 1400A/ph. The substation is a shared substation (i.e. supplies other loads). The existing Chiller plant is supplied from existing Ausgrid kiosk type substation S6663. These existing site substations are presently fed from the Darling Harbour 11kV network, however as the load of the new development will be approximately 5,500Amps, this is subject to review by Ausgrid network planners.

A number of customer supplies that are not associated with the existing IMAX or associated retail are supplied from these two substations. Ausgrid are currently reviewing their records, investigating the destination and status of these services.

4.1.5 Services Diagrams

Diagrams indicating the current electrical infrastructure are provided in Appendix B

4.2 Proposed Electrical Services Connections

The site will require new dedicated substation(s) and augmentation of the existing HV network. Actual details of HV supply to the development cannot be confirmed until a formal application for connection is made to Ausgrid.

Ausgrid Application for Connection of Load will be required to confirm actual infrastructure connection details.

5.0 Consideration of Authority Infrastructure

5.1 Telecommunications

There is no significant telecommunications services or infrastructure that will be affected by the proposed development.

Minor service disconnections and diversions will be reviewed in detail with carriers as required.

5.2 Electrical Services

There are significant electrical services and infrastructure that will be affected by the proposed development.

In summary, the key items are as follows:

- Diversion or encasement of existing 33kV cabling (within the proposed building footprint). The decision whether to relocate or encase the 33kV cabling will be done in conjunction with Ausgrid.
- Maintenance of access to sub transmission cable pulling vault (Vault 0)
- Diversion/coordination of existing 11kV cabling heading north from Vault 0 (within the proposed building footprint)
- Decommissioning of existing site 11kV/415V distribution substations and reconnection of other customers

Refer to Ausgrid meeting minutes and correspondence in Appendix C for further details on these key items and recommended remedial actions.

Appendix A

Communications Infrastructure Diagrams

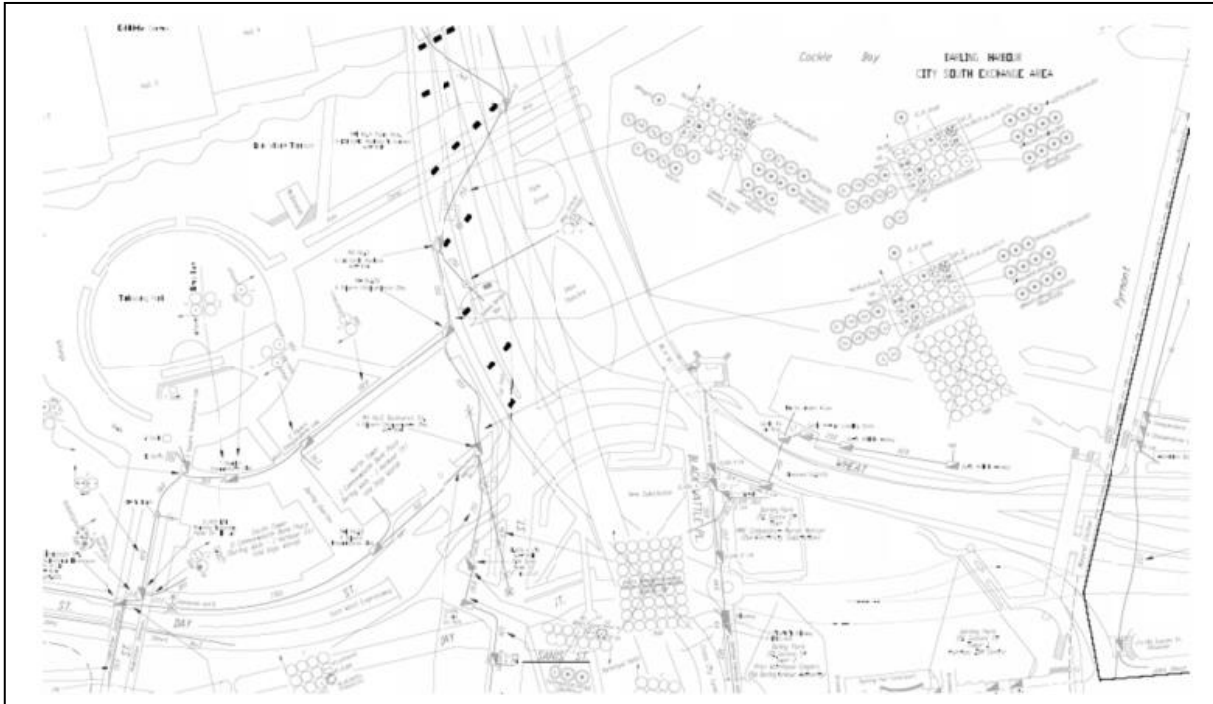
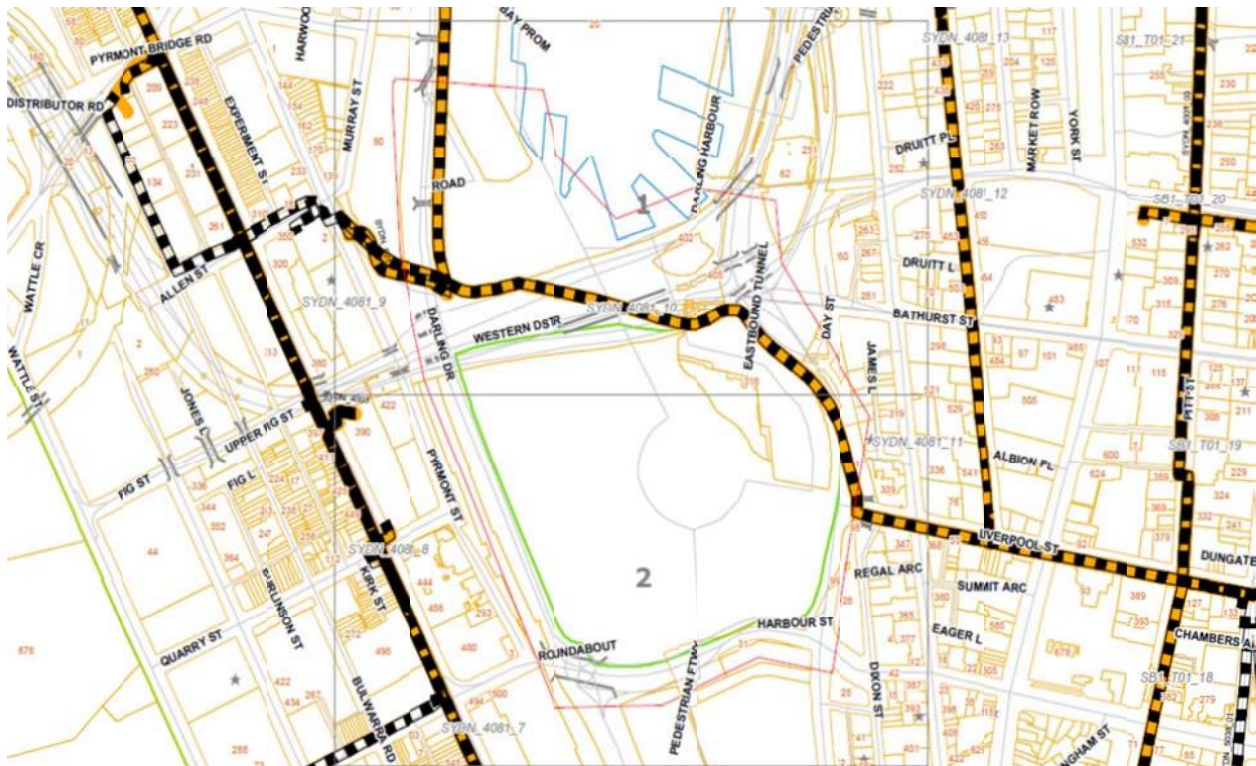
Existing Telecommunications Infrastructure**Figure 3: Existing Telstra Infrastructure**

Figure 4: Existing Optus Infrastructure



Figure 5: Existing Nexgen Infrastructure



Existing Mobile Networks

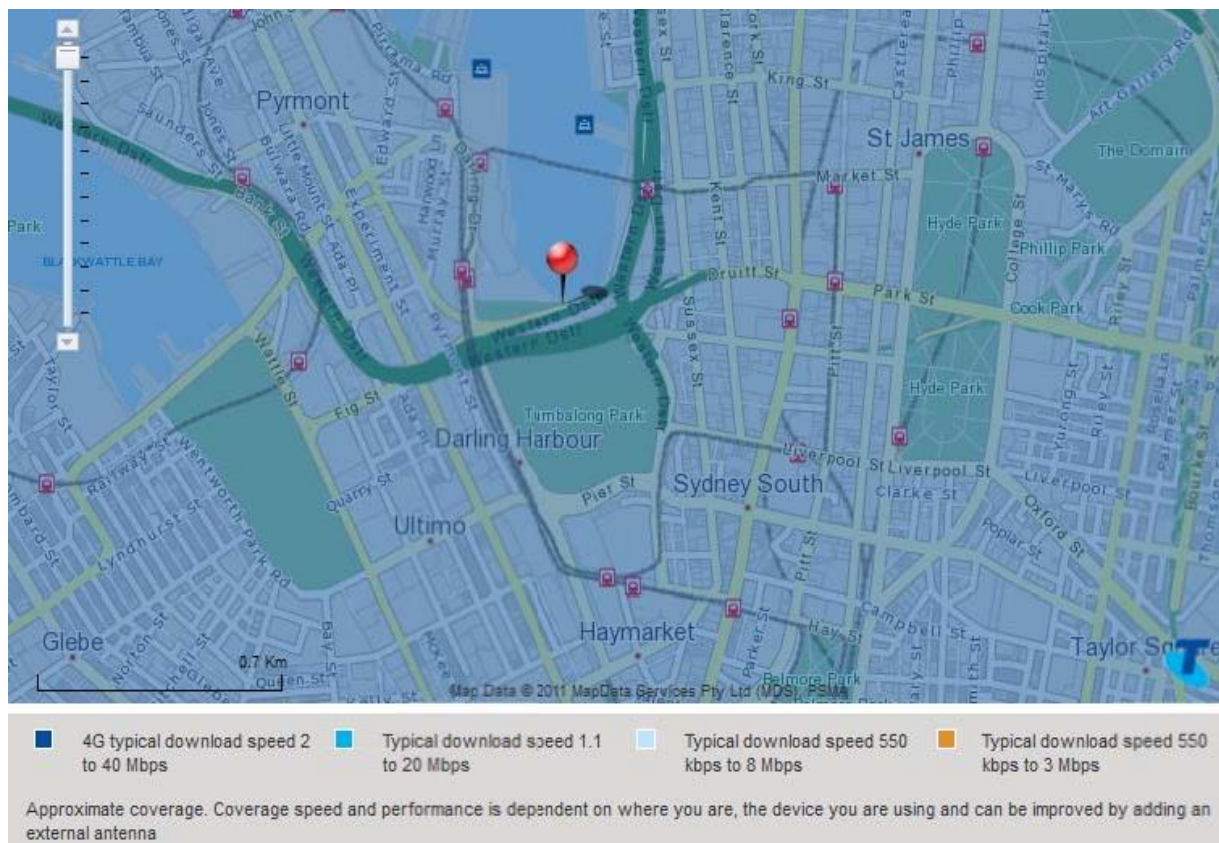


Figure 6: Telstra Mobile Coverage

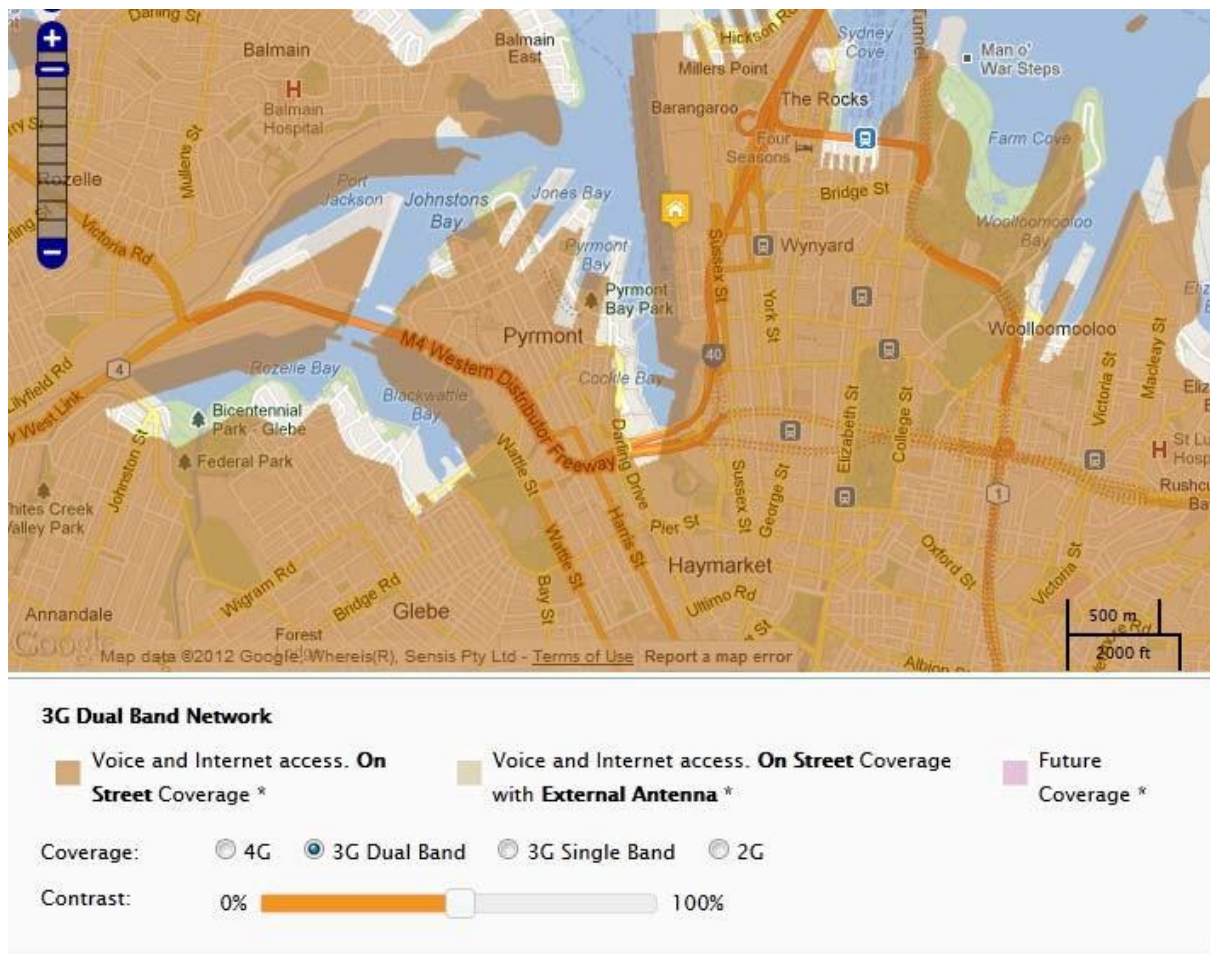


Figure 7: Optus Mobile Coverage



Figure 8: Vodafone Mobile Coverage

Appendix B

Electrical Services Infrastructure Diagrams

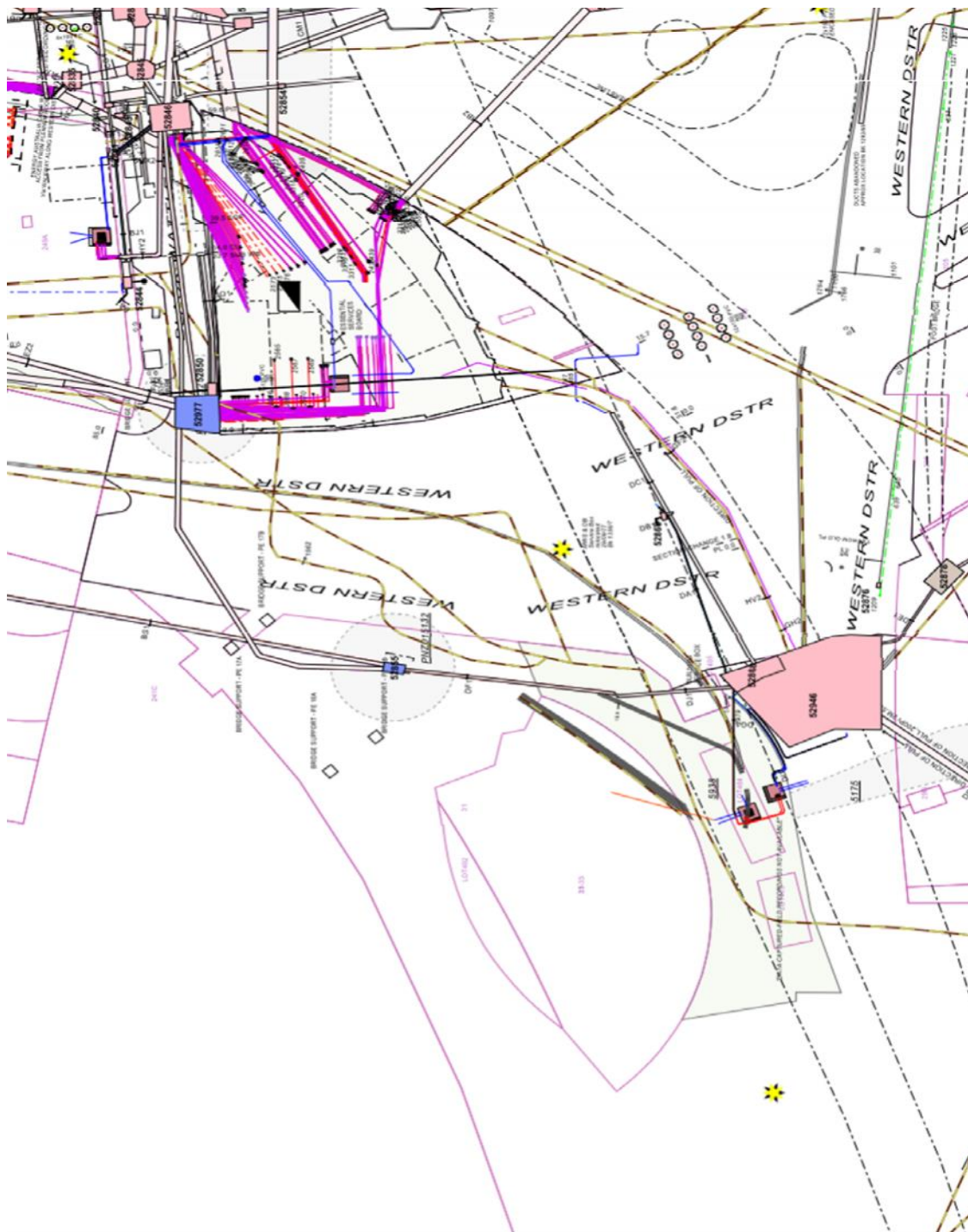


Figure 9: Dial Before You Dig – Ausgrid Information – Extract from SY1332GMLA0 – Distribution 26214458

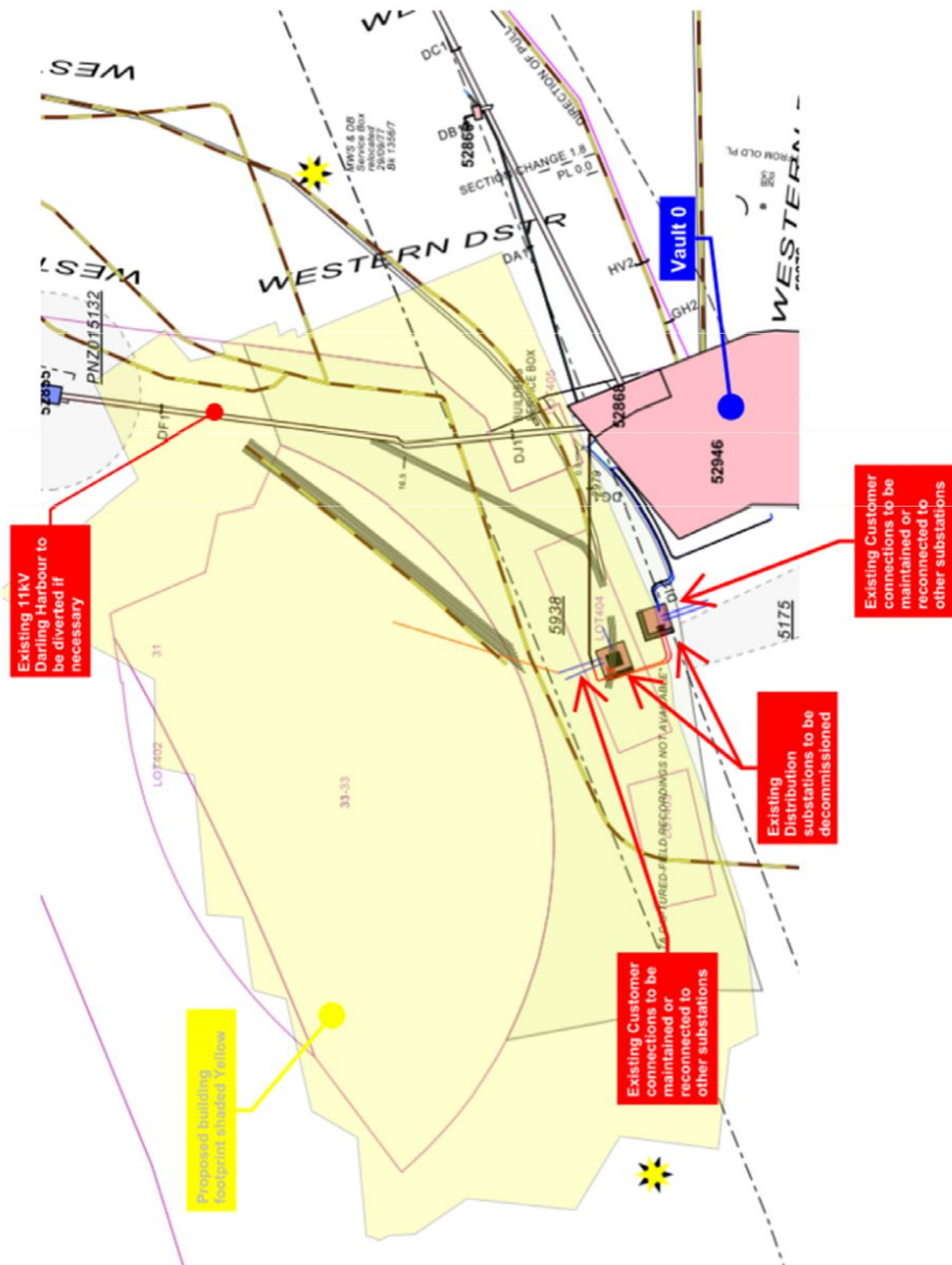
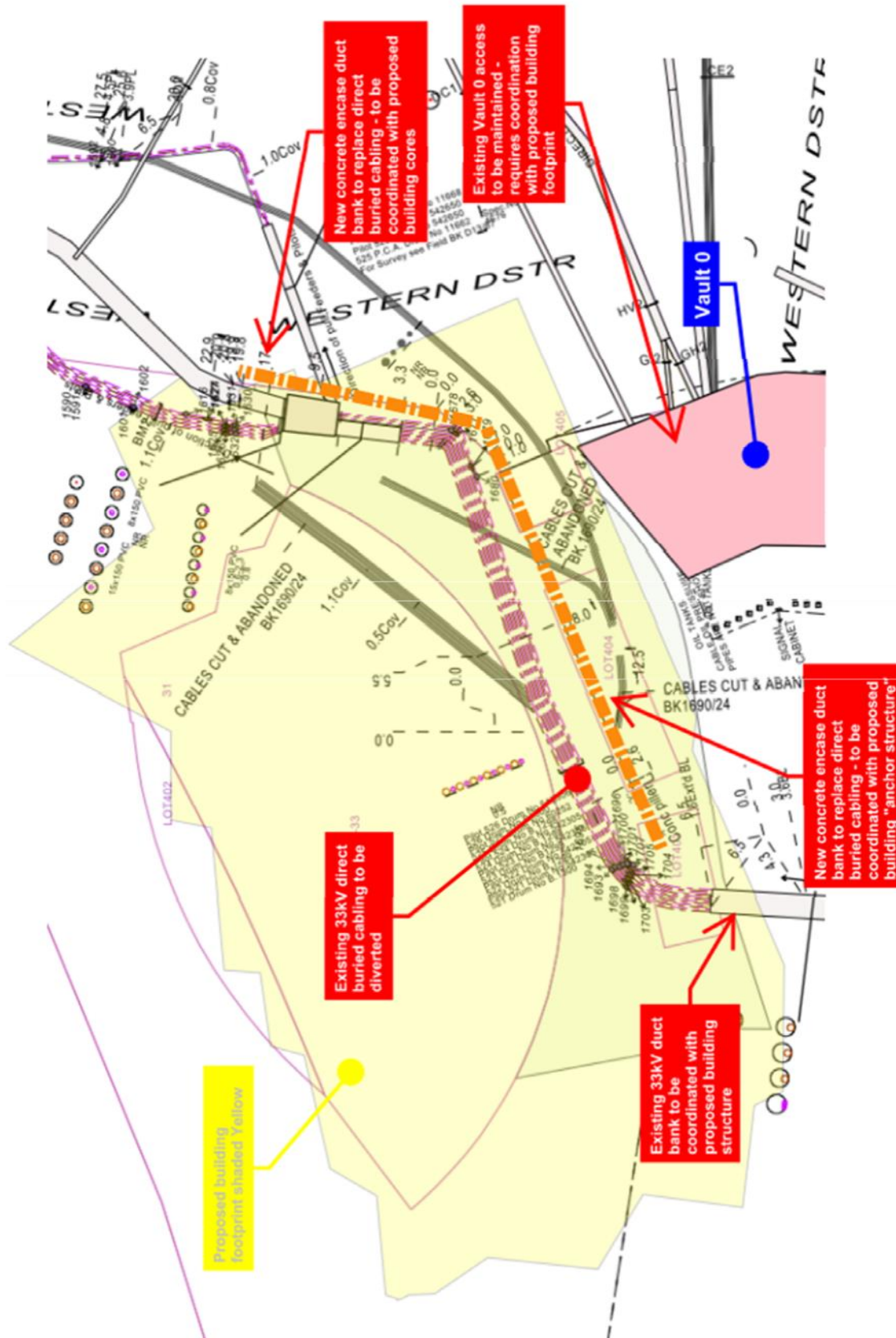


Figure 10: Detail of Dial Before You Dig Distribution information above, showing proposed building footprint

Figure 11: Dial Before You Dig – Ausgrid Information – Extract from SY1332GMLA0 – Transmission 26214458



Appendix C

Ausgrid Meeting Minutes and Telstra Correspondence

22 November 2012

Commercial-in-Confidence

Ashwin Prasad and John Koutsounadis
Ausgrid
Level 1, Building 4
130 Joynton Avenue
Zetland NSW

Dear Ashwin and John

Ribbon Building - Preliminary Discussions with Ausgrid

Thank you for the opportunity to meet with Ausgrid at short notice on this project. We appreciate the representation of all different groups from within Ausgrid including Transmission, Distribution, Contestability and Major Customer Connections.

As discussed, please find enclosed our minutes from the meeting for your review and acceptance. If we have misrepresented any of the discussions or omitted any particular detail, please let us know and we will correct these minutes.

Once acceptable, it would be appreciated if you could provide a letter confirming this meeting and the accuracy of the minutes. This Ausgrid letter and the minutes will be used in our DA submission to Sydney Harbour Foreshore Authority (SHFA).

In summary, the key items are as follows:

- Diversion of existing 33kV cabling (within the proposed building footprint)
- Maintenance of access to Vault 0
- Diversion/coordination of existing 11kV cabling heading north from Vault 0 (within the proposed building footprint)
- Decommissioning of existing site 11kV/415V distribution substations and reconnection of other customers

To progress dot point 4 above regarding decommissioning of existing site 11kV/415V substations, we will send a separate letter to facilitate the start of this process with Ausgrid.

Again, we thank you for your time and look forward to working closely with Ausgrid on this project.

Yours faithfully

Dennis Grech
Technical Director - Electrical
dennis.grech@aecom.comMobile: +61 421 317 176
Direct Dial: +61 2 8934 0308
Direct Fax: +61 2 8934 0001Scott Martin
Associate Director - Electrical
scott.martin@aecom.comMobile: +61 411 658 086
Direct Dial: +61 2 8934 0521
Direct Fax: +61 2 8934 0001encl: Minutes from Meeting 21.11.12
Preliminary Maximum Demand v1.0
Existing Services Sketch ESK-22.11.12-001
Existing Services Sketch ESK-22.11.12-002
cc: Geoff Briggs - Grocon
Richard Lennox - Grocon
Justin Murphy - Grocon
Angus Morten - Grocon
David Caleo - AECOM

Minutes of Meeting

Ribbon Building (IMAX Redevelopment)

Subject	Ausgrid Existing Services Coordination and Application for Connection Process	Page	1
Venue	Ausgrid Offices - Zetland	Time	3.00-4.15pm
Participants	Ashwin Prasad – Ausgrid (Acting Manager East, Manager Contestability South) John Koutsounadis – Ausgrid (NO Op East) David Tomlin – Ausgrid (Contestability Officer) Peter Shori – Ausgrid (Senior Project Manager CBD) John Duck – Ausgrid (Major Customer Connections) Rob Bradley – Ausgrid (Transmission) Stephen Gamble – Ausgrid (Distribution Planning) Abbas Reslan – Ausgrid (Distribution Planning) Karl Ghest – Ausgrid (Distribution Planning) Geoff Briggs – Grocon Angus Morten – Grocon Dennis Grech – AECOM Scott Martin - AECOM		
Apologies	Justin Murphy – Grocon Richard Lennox - Grocon David Caleo - AECOM		
File/Ref No.	RIBBON-MIN-AUSGRID-SM001.docx	Date	22-Nov-2012
Distribution	As above		

No	Item	Action	Date
1.0	Introductions		
2.0	Ribbon Project overview Geoff Briggs of Grocon gave Ausgrid a brief overview of the proposed Ribbon Building. <ul style="list-style-type: none"> - Utilises existing IMAX site, providing Premium Grade commercial NLA as well as Cinema and Retail spaces - Larger ground floor footprint extending under roadways, with upper levels extending between roadways - Effectively building is fully above ground (excepting “anchor structure”) - SHFA is the relevant Authority - DA being submitted in early December, 2012 - High level programme: <ul style="list-style-type: none"> o DA submitted Dec 2012 o Approval expected March 2013 o Demolition/site works commence Q2 2013 o Construction complete Q4 2015 	Note	
2.1	Required DA Information For the DA, Grocon require written confirmation that	Note	

No	Item	Action	Date
	Ausgrid are aware of the proposed development and that initial discussions/negotiations have commenced and key issues have been highlighted for future consideration and resolution.		
	Grocon/AECOM to issue minutes of meeting to Ausgrid.	GB /SM	22.11.12
	Ausgrid review and comment on minutes (if required), then send letter confirming meeting occurred and minutes reflect discussions	AP/JK	28.11.12
3.0	<p>Existing Ausgrid Assets/Services – General Discussion</p> <p><i>Minutes in Blue are clarifications of minutes from Ausgrid</i></p> <p>Dennis Grech (AECOM) initiated discussion on existing Ausgrid assets/services in the vicinity of the proposed Ribbon building footprint</p> <p>Overlays based on latest proposed DA drawings (of Ribbon Building) and Dial Before You Dig information obtained in August 2012.</p> <p>Rob Bradley and Stephen Gamble identified major Ausgrid assets and preliminary implications based on their review of their asset diagrams and the overlay information tabled by Dennis Grech. Key issues as follows:</p> <ul style="list-style-type: none"> - Significant 33kV cabling (predominantly direct buried) routed under proposed footprint – all cabling to be considered live/in-service cabling - <i>The integrity of the 33kV cables must be maintained by the developer at all times to ensure the supply to Barangaroo is not compromised.</i> - <i>There may be a limited window of opportunity to get in and replace the 33kV cables via new ductlines within the new building structure. If this opportunity is not taken then the building design will have to accommodate the existing 33kV cable alignment, including suitable provisions for Ausgrid to maintain ongoing access to the direct buried cables and joints.</i> - John Duck noted that these are significant services and some are associated with the Barangaroo development - May be possible to divert existing 33kV cabling to suit Ribbon Bdg structure and provide concrete encased duct bank (plus spares) for these services - Ausgrid need to review if this 33kV work will be contestable or recoverable – following receipt of Application for Connection and subject to internal risk assessments and reviews - Vault 0 – ground level accessible structure used for sub transmission cabling 132kV (plus minimal 11kV services) appears to be just on the edge of the proposed footprint – Building outline to ensure clearance to vault is maintained subject to further coordination with Ausgrid– Grocon to review with AECOM/Architect following completion of detailed site 	<p>Note</p> <p>Note</p> <p>Note</p> <p>Note</p> <p>Note</p> <p>Note</p> <p>Ausgrid</p> <p>Grocon</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p>2013</p> <p>Dec 2012</p>

No	Item	Action	Date
4.0	<p>survey</p> <ul style="list-style-type: none"> - Darling Harbour 11kV supplies routed from Vault 0 under proposed footprint of building – these will need to be coordinated with proposed building cores and may need to be diverted and or straddled with building structure <p>David Tomlin and John Koutsounadis identified existing site distribution substations (one kiosk and one single transformer chamber) as having other customer connections. The decommissioning of these 2 substations will impact on the existing customer connections and reconnections will have to be established prior to decommissioning (and demolition site works associated with the proposed building). Ausgrid advised that Grocon/AECOM should send a letter requesting that preliminary investigations be undertaken to determine possible reconnection solutions. May also need to be considered in parallel with any Temp Builders Supplies required for the demolition/construction phase of works. Subsequently, this may require a separate AFC to facilitate this process.</p>	Grocon	2013
	<p>Other Issues</p> <p>Indicative proposed building maximum demand is approximately 6MVA (attached for information). Current planning has allowance for one surface and one elevated chamber. Available spare capacity is available to be used by Ausgrid for other customers if required.</p>	GB/SM	22.11.12
	<p>Application for Connection required from AECOM. Will be formally provided following submission of DA to SHFA.</p>	AECOM	Dec 2012
	<p>Ausgrid to be advised of any proposed embedded generation and network configuration. Ausgrid highlighted difficulties of paralleling systems with the network. Grocon advised that this will be dictated by Greenstar requirements but at this stage is only envisaged to be stand alone (island) generation. If this changes, Grocon will advise Ausgrid to confirm latest Ausgrid network connection limitations.</p>	Note	
	<p>The Ribbon Building commercial areas will be marketed as PCA Premium Grade and as such the desire is for the supply to be <u>Triplex</u> or equivalent reliability. Stephen Gamble advised that the proposed Ribbon Building is “outside” the Triplex area (in the Suburban network area) and other 11KV arrangements may be required. Due to the proximity of the site to the Triplex, there may be other reasons that will dictate it’s use/connection, but at this stage it is too early to confirm arrangements. This will be considered in the future following the receipt of AFC.</p>	Note	
	<p>The proposed new substations would be configured as firm rated substations.</p>	Note	

No	Item	Action	Date
5.0	Grocon in process of engaging surveyor to undertake detailed site survey including inground services.	Grocon	Dec 2012
	<p>Key Issues</p> <p>The key issues identified during the meeting are summarised as follows:</p> <ul style="list-style-type: none"> - Diversion of existing 33kV cabling - Maintenance of access to Vault 0 - Diversion/coordination of existing 11kV cabling heading north from Vault 0 - Decommissioning of existing site 11kV/415V distribution substations and reconnection of other customers (ie. not IMAX and associated retail customers) is critical for achieving Grocon desired construction programme <p>Refer attached sketch summarising these issues.</p>	As above	



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www.ausgrid.com.au

Scott Martin
Associate Director – Buildings
AECOM
Level 21,
420 George Street,
SYDNEY NSW 2000

3 December 2012

Dear Scott,

In reference to recent discussions between Ausgrid, Grocon and AECOM regarding the proposed Ribbon Building located at IMAX Theatre, Darling Harbour, Ausgrid confirms an initial meeting was held at Ausgrids premises at Zetland on Wednesday 21 November and the follow up meeting occurred on site at IMAX Theatres, Thursday 29 November.

Ausgrid hereby acknowledges that the minutes of these meetings reflect discussions that took place.

Yours faithfully

Ashwin Prasad
Acting Regional Manager
Sydney City

No	Item	Action	Date
	<p>considered the installation of a “roof” hatch to provide cable pulling access to the Vault to be acceptable.</p> <ul style="list-style-type: none"> - Hatch to be indicatively 2x900mmx900mm with Class D GATIC covers – actual detail to be confirmed in conjunction with Ausgrid - Hatch cannot be located over 11kV pits inside vault - Vehicular access to be an extension of new substation vehicle access – 4m wide and loading to be confirmed - Grocon to conduct detailed survey of cabling exiting vault to determine depth of cover to assist in design of vehicle access way - Other safety measures adjacent to hatch such as bollards/barriers/fencing to be determined in conjunction with Ausgrid <p>Grocon confirmed the proposal would be to maintain existing door access into the Vault with pedestrian access to the south of the proposed building.</p> <p>Ausgrid would try and provide DWG format asset drawings (similar to DBYD drawings) of the site area to AECOM to enable an overlay with the proposed building footprint. Ausgrid noted the drawings should not be relied upon as accurate and must be confirmed using detailed site survey.</p>	<p>Note</p> <p>Note</p> <p>Note</p> <p>Grocon</p> <p>Note</p> <p>Note</p> <p>Ausgrid</p> <p>Grocon</p>	
3.0	<p>33kV Cabling Crossing Site</p> <p>Notes from previous meeting minutes</p> <p><i>“There may be a limited window of opportunity to get in and replace the 33kV cables via new ductlines within the new building structure. If this opportunity is not taken then the building design will have to accommodate the existing 33kV cable alignment, including suitable provisions for Ausgrid to maintain ongoing access to the direct buried cables and joints.”</i></p> <p>Ausgrid stressed the very limited window to undertake this work and the importance to undertake preliminary design coordination as soon as possible.</p> <p>Ausgrid (Rob Bradley) to try and provide drawings/details showing proposed duct configuration (ie. 4wide x 2high 200mm ID conduits, minimum 6m bending radius).</p>	<p>Grocon</p> <p>Ausgrid</p>	
4.0	<p>11kV Cabling exiting Vault 0</p> <p>This cabling will also need significant coordination with proposed building structure and may require provision of duct banks to facilitate diversion of existing services and connection of new services to the proposed building.</p>	<p>Note</p>	
5.0	<p>Decommissioning of existing site Substations and impact on existing customers/connections</p> <p>Letter from AECOM to Ausgrid attached to facilitate commencement of this process.</p>	<p>SM</p>	

29 November 2012

Commercial-in-Confidence

David Tomlin and John Koutsounadis
Ausgrid
Level 1, Building 4
130 Joynton Avenue
Zetland NSW

Dear David and John

Ribbon Building - Decommissioning of Existing Substations S1456 and S6663

Further to our initial meeting last Wednesday and subsequent minutes issued yesterday, could you please undertake any necessary preliminary investigations with respect to the implications for other customers for the decommissioning S1456 and S6663 to enable demolition and construction of the IMAX/Ribbon Building project.

If AFC or Temporary Builders Supply applications should be submitted to Ausgrid to assist with this investigation, please let us know. Similarly, if a Feasibility Study and any associated Summary of Charges is required to facilitate this investigation please let us know.

Yours faithfully



Scott Martin
Associate Director - Electrical
scott.martin@aecom.com

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Direct Dial: +61 2 8934 0521
Direct Fax: +61 2 8934 0001

cc: Geoff Briggs - Grocon
Justin Clark - Grocon
Angus Morten - Grocon
David Caleo - AECOM
Dennis Grech - AECOM

Martin, Scott

From: Culjak, Marko <Marko.Culjak@team.telstra.com> on behalf of Nietoski, Les P <Les.Nietoski@team.telstra.com>
Sent: Friday, November 30, 2012 4:00 PM
To: Charalambous, Gregg
Cc: Rajaram, Kumar; Martin, Scott; Nietoski, Les P; Rajaram, Kumar
Subject: RE: 1 Wheat Rd Exchange capacity

Hi Gregg,

Our records indicate that the IMAX Theatre site is addressed 31 Wheat Rd, Sydney.

This particular site appears to be served off our City South telephone exchange.

Depending on the nature and size of your development, with regards to PSTN and ADSL2+ services we have the capability of delivering such services in your area.

For specific business product requirements including primary and redundant feeds for these products you may wish to discuss this with Telstra Business & Enterprise 1800 334 884 or your Telstra sales representative Andrew Boileau (03) 86470479

Thanks.



Marko Culjak Principal Planner

Forecast and Area Planning NSW and Wideband | Network and Access Technologies | Telstra Operations
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From: Charalambous, Gregg [<mailto:Gregg.Charalambous@aecom.com>]
Sent: Friday, 30 November 2012 7:21 AM
To: Nietoski, Les P
Cc: Rajaram, Kumar; Martin, Scott
Subject: RE: 1 Wheat Rd Exchange capacity

Hi Les,

As discussed, can you please confirm back via return email the verbal advise we received from Kumar indicating that there is sufficient capacity to service a new building development at 1 Wheat Rd, Darling Harbour (where the IMAX theatre is currently located) with a primary and redundant supply.

Kind regards

Gregg Charalambous

Technical Director
D +61 2 8934 0148 M +61 431 672 091
Gregg.Charalambous@aecom.com

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From: Charalambous, Gregg
Sent: Wednesday, 28 November 2012 3:01 PM
To: kumar.a.rajaram@team.telstra.com
Subject: 1 Wheat Rd Exchange capacity

Hi Kumar,

As discussed, can you please confirm that Telstra has sufficient capacity to service a new building development at 1 Wheat Rd, Darling Harbour (where the IMAX theatre is currently located) with a primary and redundant supply.

Kind regards

Gregg Charalambous
Technical Director
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Gregg.Charalambous@aecom.com

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