Attachment A17

Utility services review

ARUP

Wentworth Capital

Life Sciences Hub, 84-94 Parramatta Road, Camperdown

Utility Services Review - Technical Memo

Reference: 304985-00

Rev F | 15 September 2026



This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 304985-00

Arup Australia Services Pty Ltd | ABN 36 625 911 686

Arup Australia Services Pty Ltd
Level 5
151 Clarence Street
Sydney
NSW, 2000
Australia
arup.com

ARUP

Document Verification

Project title	Life Sciences Hub, 84-94 Parramatta Road, Camperdown
Document title	Utility Services Review - Technical Memo
Job number	304985-00
Document ref	304985-00
File reference	

Revision	Date				
Rev B	04/07/25	**Filename**	Utility Services Review - Technical Memo – Rev B		
			Prepared by	**Checked by**	**Approved by**
		Name	Bandula S. Kamolwatchara W.	Bandula S	Julian S
		Signature			
Rev C	03/10/25	**Filename**	Utility Services Review - Technical Memo – Rev C		
			Prepared by	**Checked by**	**Approved by**
		Name	Bandula S. Kamolwatchara W.	Bandula S	Julian S
		Signature			
Rev D	05/03/26	**Filename**	Utility Services Review - Technical Memo – Rev D		
			Prepared by		
		Name	Bandula S. Kamolwatchara W.		
		Signature			
Rev E	30/07/26	**Filename**	Utility Services Review - Technical Memo – Rev E		
			Prepared by	**Checked by**	**Approved by**
		Name	Bandula S. Kamolwatchara W.	Bandula S	Julian S
		Signature			
Rev F	30/07/26	**Filename**	Utility Services Review - Technical Memo – Rev F		
			Prepared by	**Checked by**	
		Name	Bandula S. Kamolwatchara W.	Julian S	
		Signature			

Issue Document Verification with Document ☑

Contents

1.	Introduction	5
1.1	Site Description	5
1.2	Purpose of Memo	7
1.3	National Construction Code Version	7
1.4	Objectives	7
1.5	Site Topography and Flood Levels	7
2.	Review of Existing and proposed Utility Services	9
2.1	Electrical Services	9
2.2	ICT services	12
2.3	Existing Water Services	13
2.4	Existing Sewer Mains Services	13
2.5	Existing Natural Gas Services (Jemena)	14
2.6	Laboratory Gases	15

Tables

No table of figures entries found.

Figures

Figure 1 Locational Context 6
Figure 2: Site Location 6
Figure 3: Peak Flood Depths 1% AEP Event 8
Figure 4: Peak Flood Depths PMF Event 8
Figure 5: Existing Hv infrastructure in the vicinity 9
Figure 6: Existing Ground Sub Transmission Panel to be relocated. 9
Figure 7: Substation Option 1 – In Ground Floor level 10
Figure 8: Substation Option 2 – Basement Substation with Access Hatch (Extracts from Basement) 10
Figure 9 : Substation Option 2 – Basement Substation with Access Hatch and Crane Access (Extracts from Ground Floor) 11
Figure 10: Substation Option 3 – Basement substation with Access hatch from Ground Level (Extracts from Basement) 11
Figure 11: Substation Option 3 – Basement substation with Access hatch from Ground Level and Crane Access (Extracts from Ground Floor) 12
Figure 12: Existing NBN services and existing connections to existing building 12
Figure 13: Existing Water Services 13
Figure 14: Existing Sewer Mains 13
Figure 15: Existing Natural Gas Supply 14
Figure 16 : Liquid CO2 and Liquid N2 compound 15
Figure 17: Proposed Location for Gas Cylinder Store in Basement Level 16

Drawings

Pictures

Photographs

Attachments

Appendices

Appendix A : Site Services Markup – Substation Options
Appendix B : Site Services Markup – Laboratory Gas Services

Appendix C : Correspondence with BOC- Laboratory Gases

1. Introduction

This Utility Services Review Technical Memo is submitted to the City of Sydney on behalf of University of Sydney / Wentworth Capital in support of a Planning Proposal for an amendment to the *Sydney Local Environmental Plan 2012* for the introduction a new site specific Floor Space Ratio (FSR) and Height of Buildings development standard for the purpose of a built life sciences research facility and ancillary uses at 88-94 Parramatta Road, Camperdown

This Planning Proposal seeks approval for the amendment of Floor Space Ratio (FSR) and Height of Buildings in the Sydney Local Environmental Plan 2012. Specifically, approval is sought for the following:

88-94 Parramatta Road

- A new maximum building height of part 80 metres, part 30 metres.
- A new site specific provision for 88-94 Parramatta Road that enables 6.5:1 of additional uplift for non-residential uses.
- A site-specific clause limiting the maximum amount of residential floor space that can be provided on the site.
- Retention of the existing warehouse at 88-90 Parramatta Road.
- Amendments to the Sydney Development Control Plan 2012 (Sydney DCP 2012) to address site specific outcomes.

84 Parramatta Road

- A new mapped maximum height of 30 metres.
- A new mapped maximum floor space ratio for the Veriu site (84 Parramatta Road) of 4.5:1 floor space ratio (retaining the existing MU1 Mixed Use zone).
- Amendments to the Sydney Development Control Plan 2012 (Sydney DCP 2012) to address site specific outcomes.

Full details of the proposed amendments are outlined in the Planning Proposal Report prepared by Colliers Urban Planning.

1.1 Site Description

The site is located at 84-94 Parramatta Road, Camperdown within the City of Sydney Local Government Area (LGA). The site is situated on the traditional land of the Gadigal people.

The land is owned by the University of Sydney and is located on the opposite side of Parramatta Road from the main University of Sydney Camperdown/Darlington campus. The site fronts Parramatta Road along its southern boundary and is bounded by a mixture of residential and commercial uses to the north, east, and west of the site. The site is located just 4km south-west of the Sydney CBD, and 2.5km west of Central Station, and is currently largely used by the University of Sydney for university purposes.

The site's locational context is shown at Figure 1:

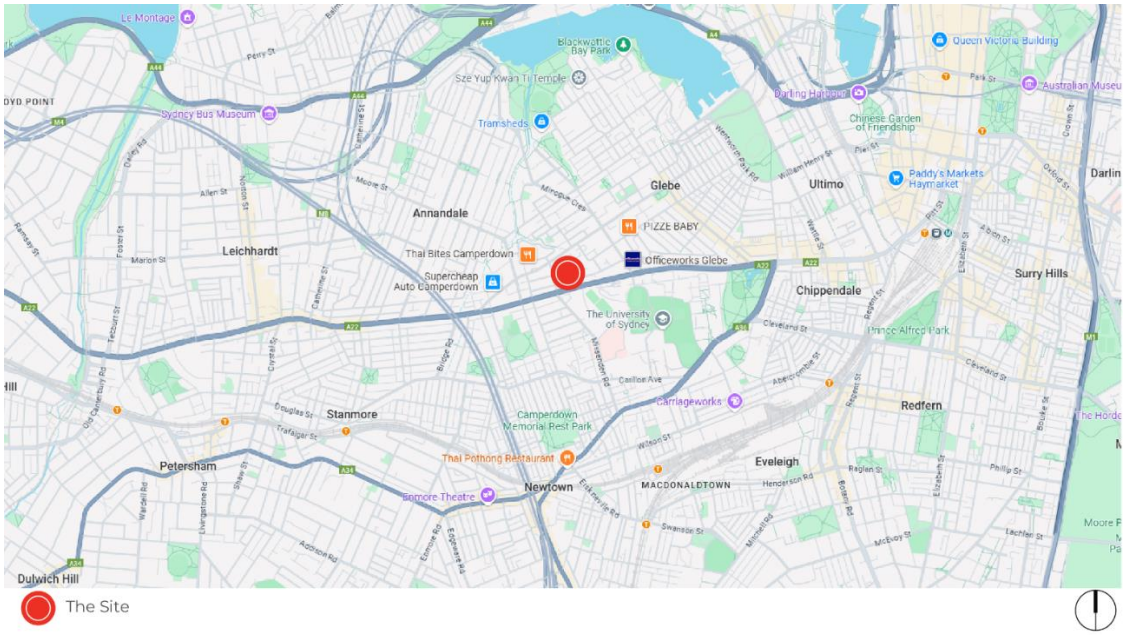


Figure 1 Locational Context

Source: Google Maps

An additional map showing the site location is provided in Figure 2

The proposed development comprises of:

- Life Science Tower Block, 27,685m2 GFA, 15 storeys plus two plant levels and 3 levels of basements. (80 m height)
- Life Science Education Block, 6,647m^2 GFA, 8 storeys. (29.7 m height)
- Veriu Block, 3.545m^2 GFA, 9 storeys- 6 existing plus 3 additional. (29.3 m height)

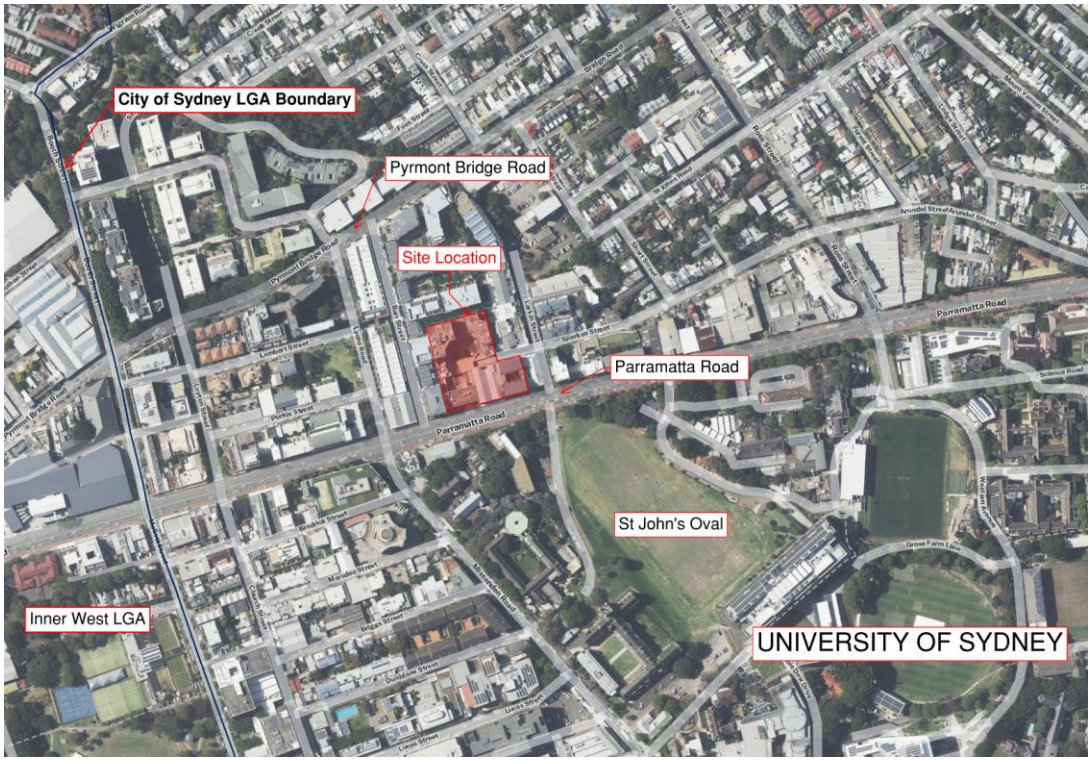


Figure 2: Site Location

1.2 Purpose of Memo

The purpose of this memo is to:

- Provide a high level review of surrounding utilities in order to identify any supply constraints and/or utility interventions required (diversions etc), plus provision of new supplies
- Provide input to the architectural design and traffic report in relation to vehicle access for substations and laboratory gas stores
- Check feasibility of utility provision (substations etc) in relation to flooding

The utility services advice is based on a desktop review of:

- Latest architectural layouts provided by Wentworth Capitol and HDR.
- Before You Dig Australia (BYDA) documents associated with existing utility services.

1.3 National Construction Code Version

At the time of this report, the 2025 version of the National Construction Code (NCC) has not been published. Therefore, we have reference NCC 2022 Amendment 1.

1.4 Objectives

This preliminary utility services assessment considers both existing and proposed conditions at the site. This assessment includes a review of the following:

- Proposed architectural plans and schedule of areas
- Preliminary maximum demand based on AS3000 and bench marking similar facilities
- Existing utility services within proximity to the proposed development.
- Relevant legislation in relation to utility services and local authority requirements;
- ESD, Flood and traffic assessments.

1.5 Site Topography and Flood Levels

The site is situated within Johnstons Creek Catchment, which spans both the CoS and Inner West LGA's. The proposed development site lies completely within the CoS LGA.

We have reviewed the associated flood levels in order to locate the critical utility services infrastructure above the 1% AEP event peak flood depths as required by utility services standards. The relevant flood maps for the 1% AEP and the Probable Maximum Flood (PMF) events from the flood study are listed below:

- Peak Flood Depths – 1% AEP Event (Figure 3)
- Peak Flood Depths – PMF (Figure 4)

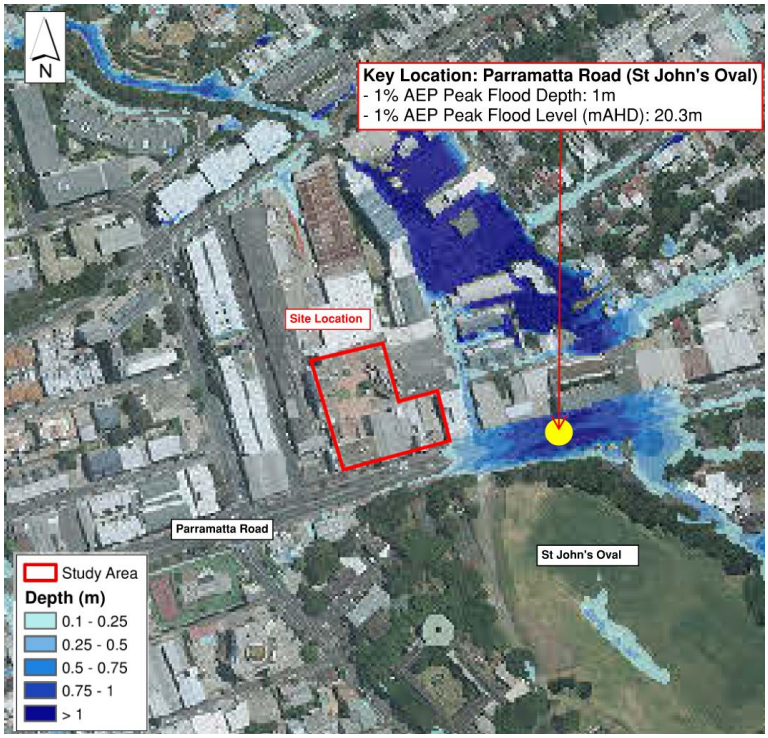


Figure 3: Peak Flood Depths 1% AEP Event

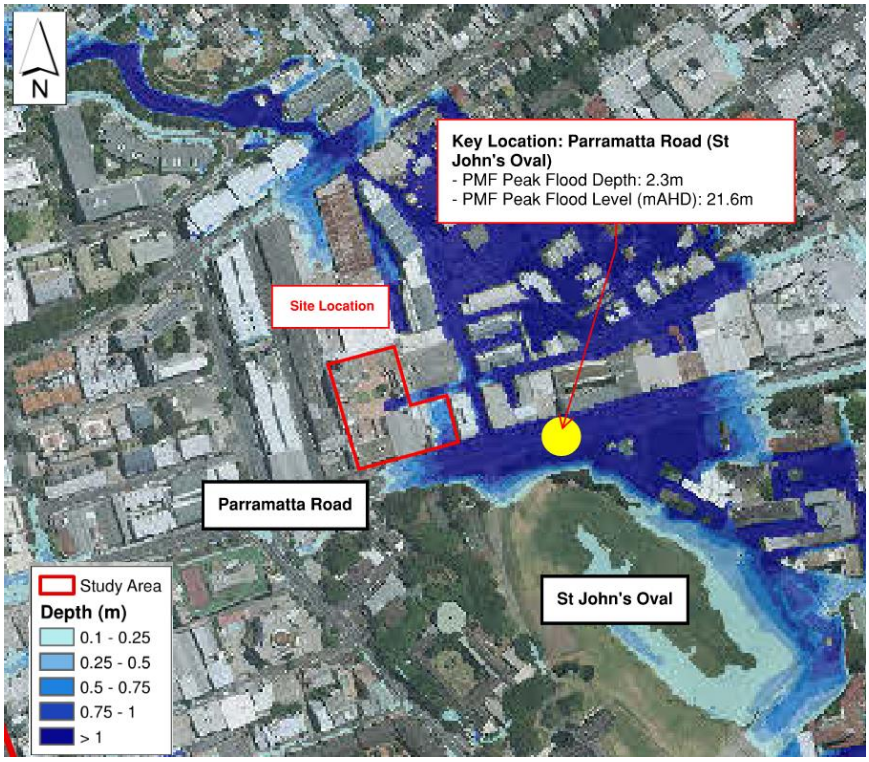


Figure 4: Peak Flood Depths PMF Event

2. Review of Existing and proposed Utility Services

2.1 Electrical Services

Proposed site has access to Ausgrid HV underground network via Parramatta road and through Larkin Street.

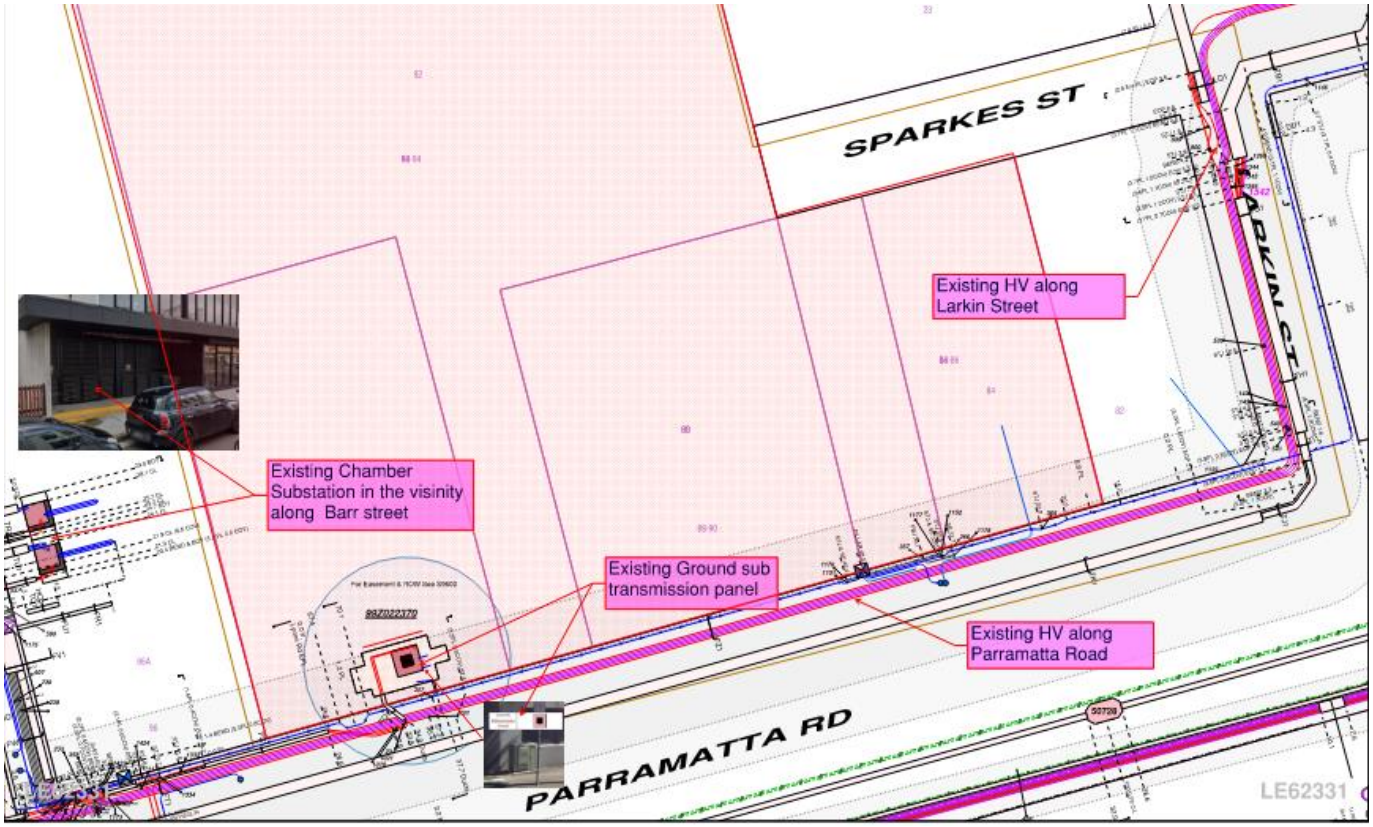


Figure 5: Existing Hv infrastructure in the vicinity

There is an existing Ground Sub transmission panel (May be supplying power to public domain/street services along Parramatta road) on the road reserve next to proposed Residential entrance. Relocation of this panel required in consultation with local power supply authority Ausgrid.

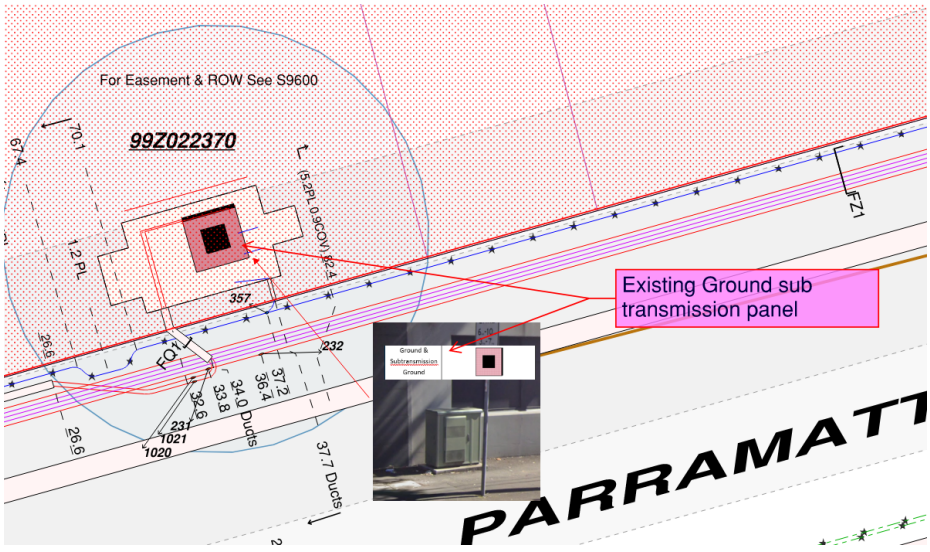


Figure 6: Existing Ground Sub Transmission Panel to be relocated.

Our preliminary design maximum demand calculations based on AS3000 and bench marking similar facilities, we anticipate that the site power demand is approximately 4.45MVA with 80% overall site diversity.

Therefore, we anticipate that 3x1500kVA triplex transformer chamber substation to be installed to supply the proposed development in consultation with local power supply authority Ausgrid.

Propose Substation location options detailed in figures below.

Option 1 – On grade chamber Substation at ground level with direct access from Parramatta Road.

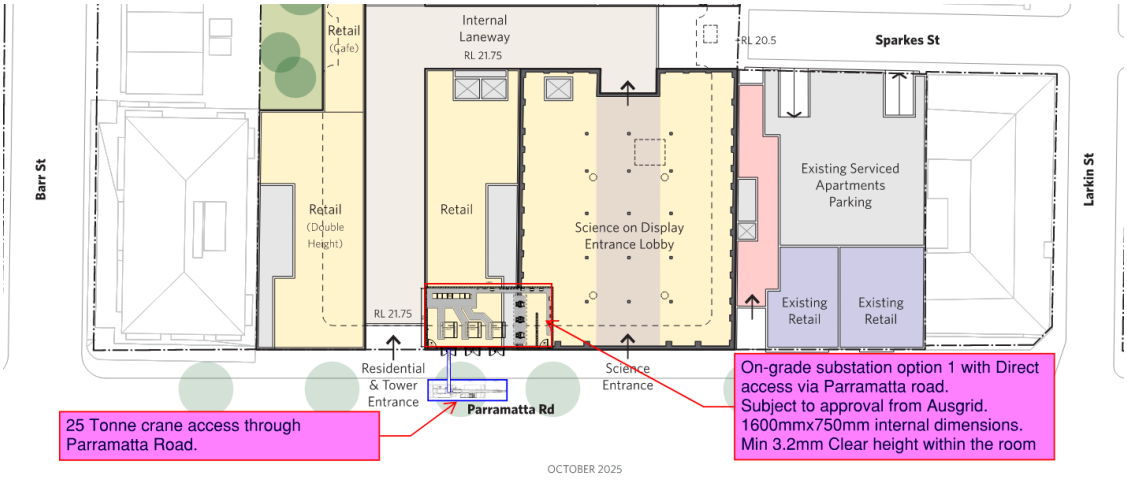


Figure 7: Substation Option 1 – In Ground Floor level

Option 2 – Basement chamber Substation with equipment access from Ground Level via an equipment access hatch.

Basement ramp area should have min 5.5m height clearance for equipment access via a 25tonne crane. Dedicated personal egress door with 24/7 access required to basement level for authorised persons from Ausgrid.

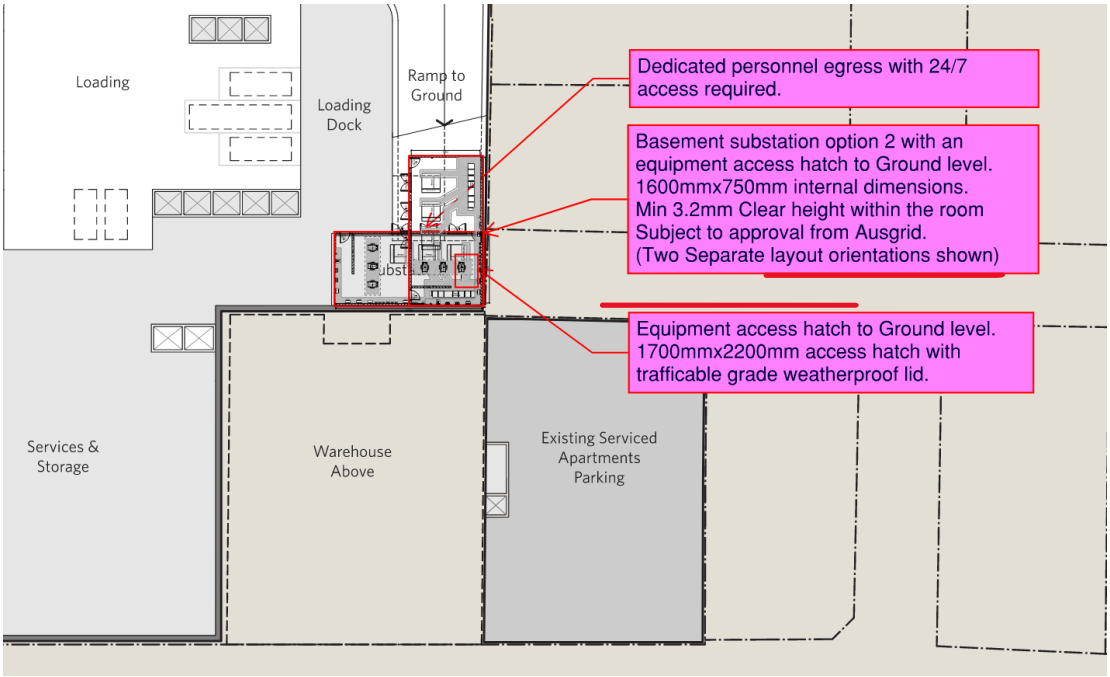


Figure 8: Substation Option 2 – Basement Substation with Access Hatch (Extracts from Basement)

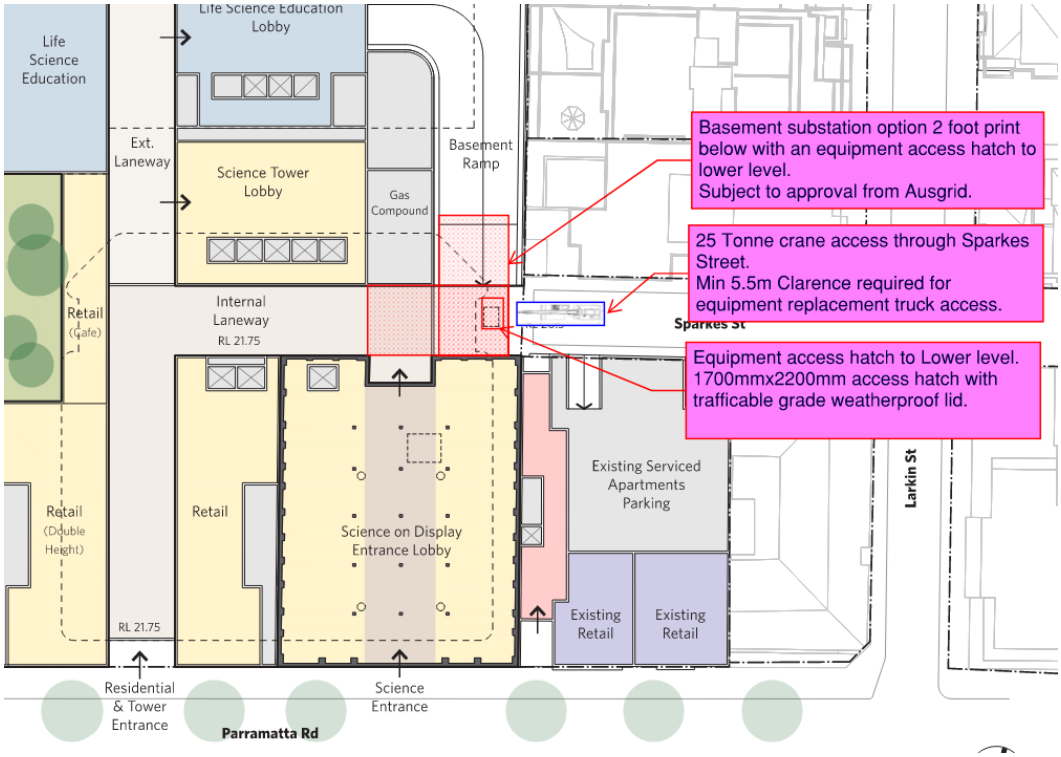


Figure 9 : Substation Option 2 – Basement Substation with Access Hatch and Crane Access (Extracts from Ground Floor)

Option 3 – Basement chamber Substation with equipment access from Ground Level via an equipment access hatch.

Basement residential access ramp area should have min 5.5m clearance for equipment access via a 25tonne crane through Parramatta road. Dedicated personal egress door with 24/7 access required to basement level for authorised persons from Ausgrid.

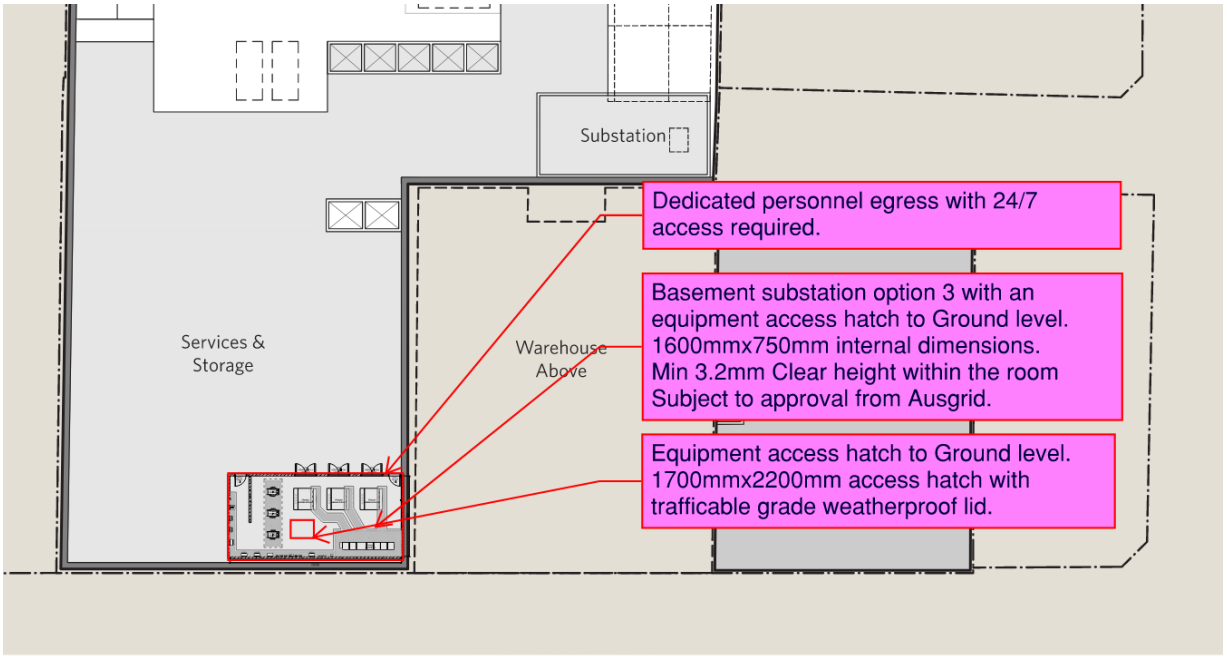


Figure 10: Substation Option 3 – Basement substation with Access hatch from Ground Level (Extracts from Basement)

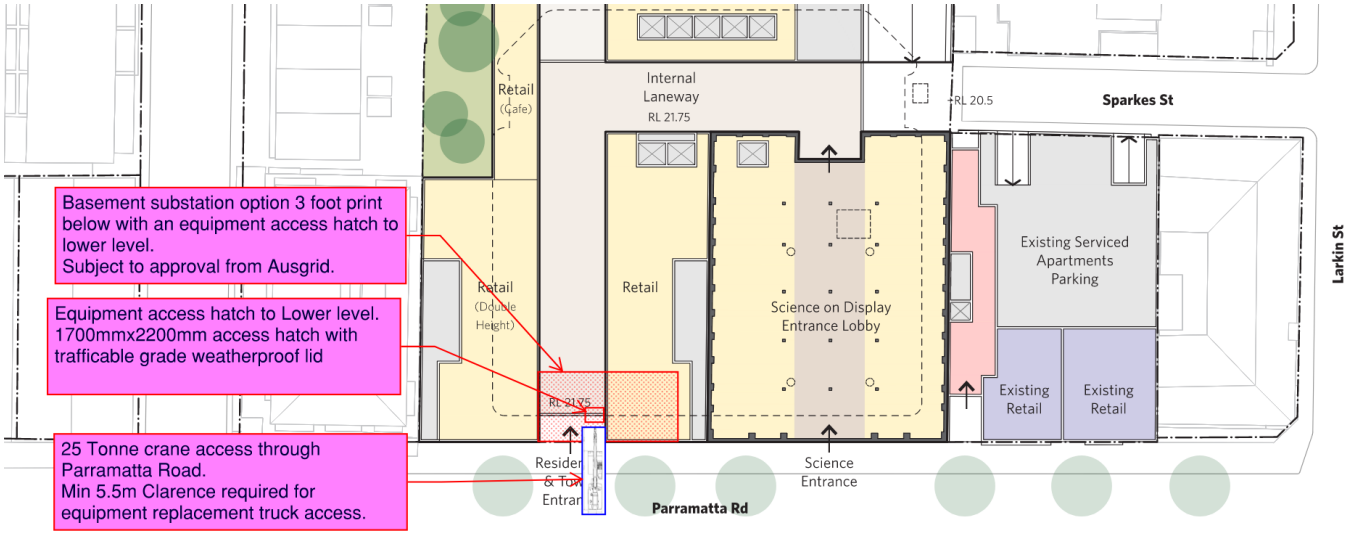


Figure 11: Substation Option 3 – Basement substation with Access hatch from Ground Level and Crane Access (Extracts from Ground Floor)

Basement car park level should include EV charging infrastructure as required by National Construction code and associated fire services requirements to be further reviewed in next design stages.

2.2 ICT services

There is existing NBN Fibre services along the parramatta road as well as the Larkin road. Before you dig Australia documents indicate that there existing NBN connections to the proposed site.

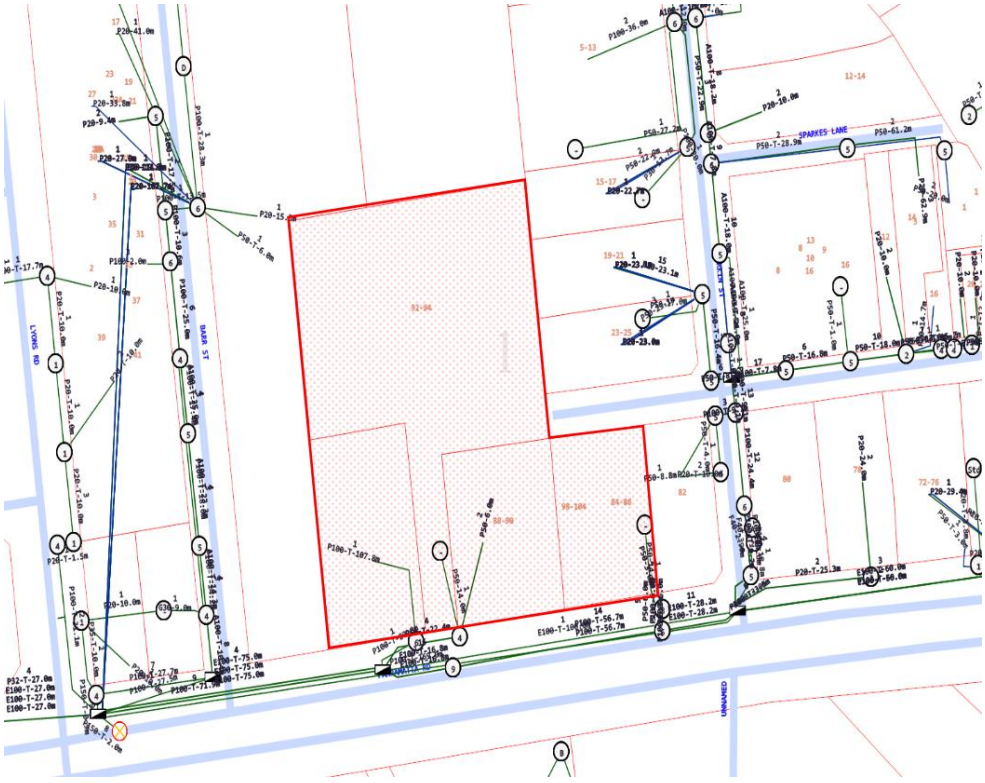


Figure 12: Existing NBN services and existing connections to existing building

ICT service strategy to be developed in consultation with project stake holders in next design stages. NBN Co services and fibre connections from Optus and AARnet and other available across Parramatta road and Larkin road for future connections.

2.3 Existing Water Services

300mm diameter water mains available along the parramatta road and 150mm diameter water mains available along the Larkin Street. As per the reviewed Before you Dig Australia(BYDA) documents, there is existing water connections to the proposed development site.

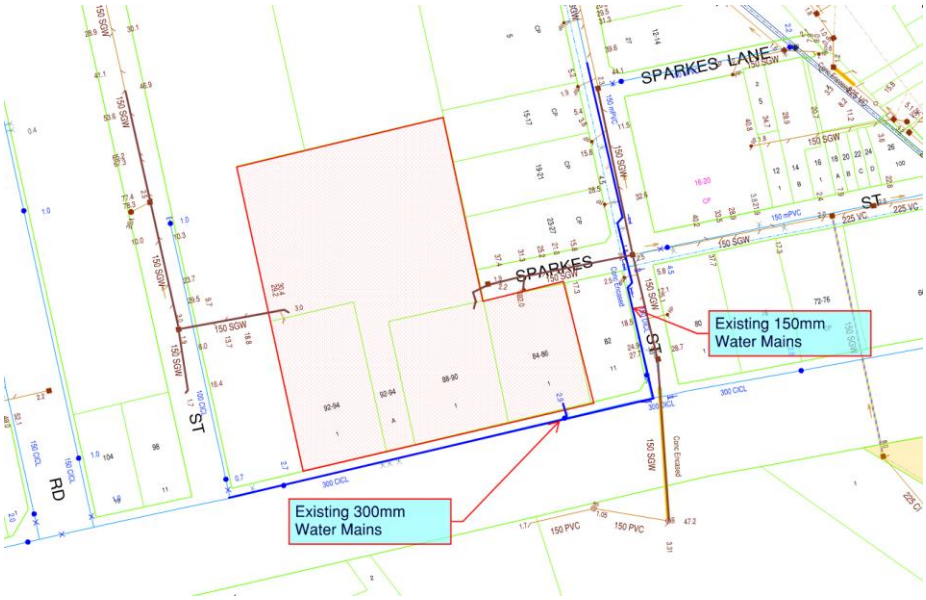


Figure 13: Existing Water Services

Existing water supply to be reconfigured or new supply to be obtained depending on the water supply arrangement requirements for the proposed building via Parramatta Road.

2.4 Existing Sewer Mains Services

As per the reviewed Sydney Water Before you Dig Australia(BYDA) documents, there are two separate Sewer mains connections available to the proposed development site via Barr street and the Sparkes Street.

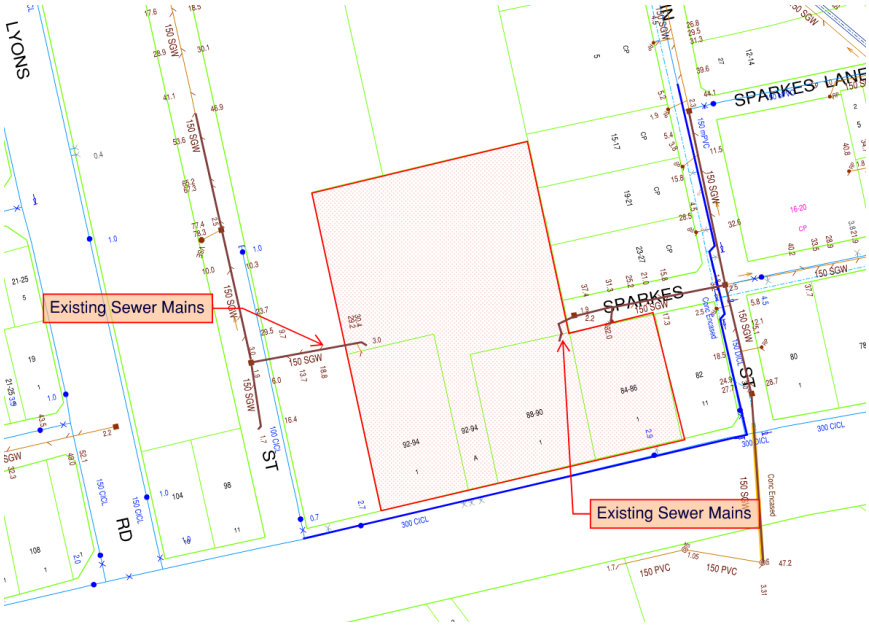


Figure 14: Existing Sewer Mains

Existing Sewer mains connection to proposed site to be reconfigured as required for proposed building.

2.5 Existing Natural Gas Services (Jemena)

As per the reviewed Jemena Before you Dig Australia(BYDA) documents, there is high pressure and medium pressure Gas available along the Parramatta road and Medium pressure gas available along the Larkin street.

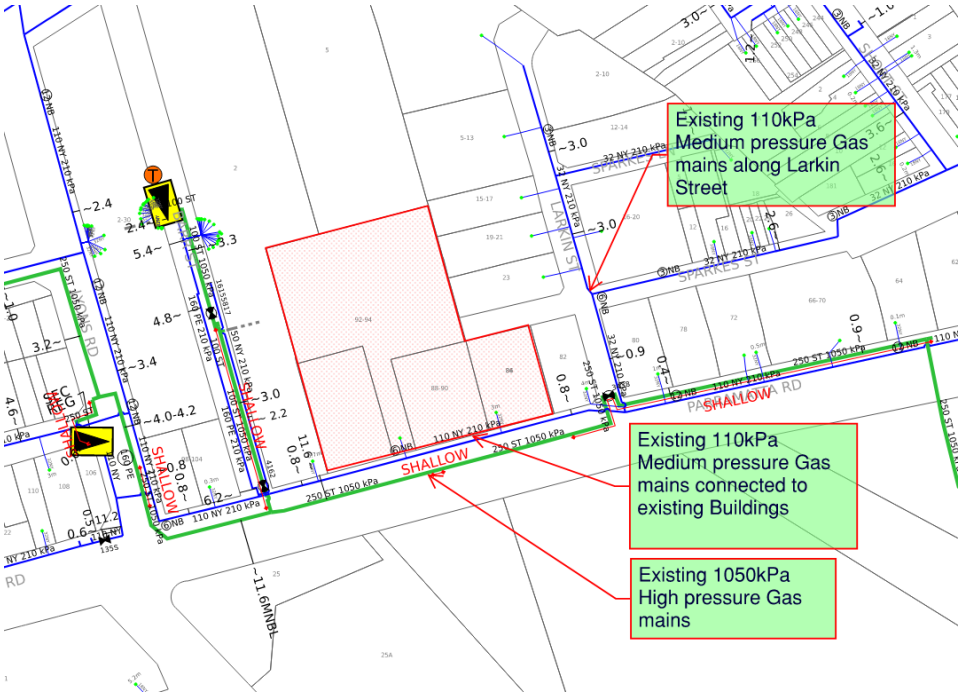


Figure 15: Existing Natural Gas Supply

As the proposed building to be designed as a full electric building we do not anticipate any new gas connections requirement to site. Existing gas connection to existing building (Veriu Serviced apartments) to be further discussed in next design phase.

2.6 Laboratory Gases

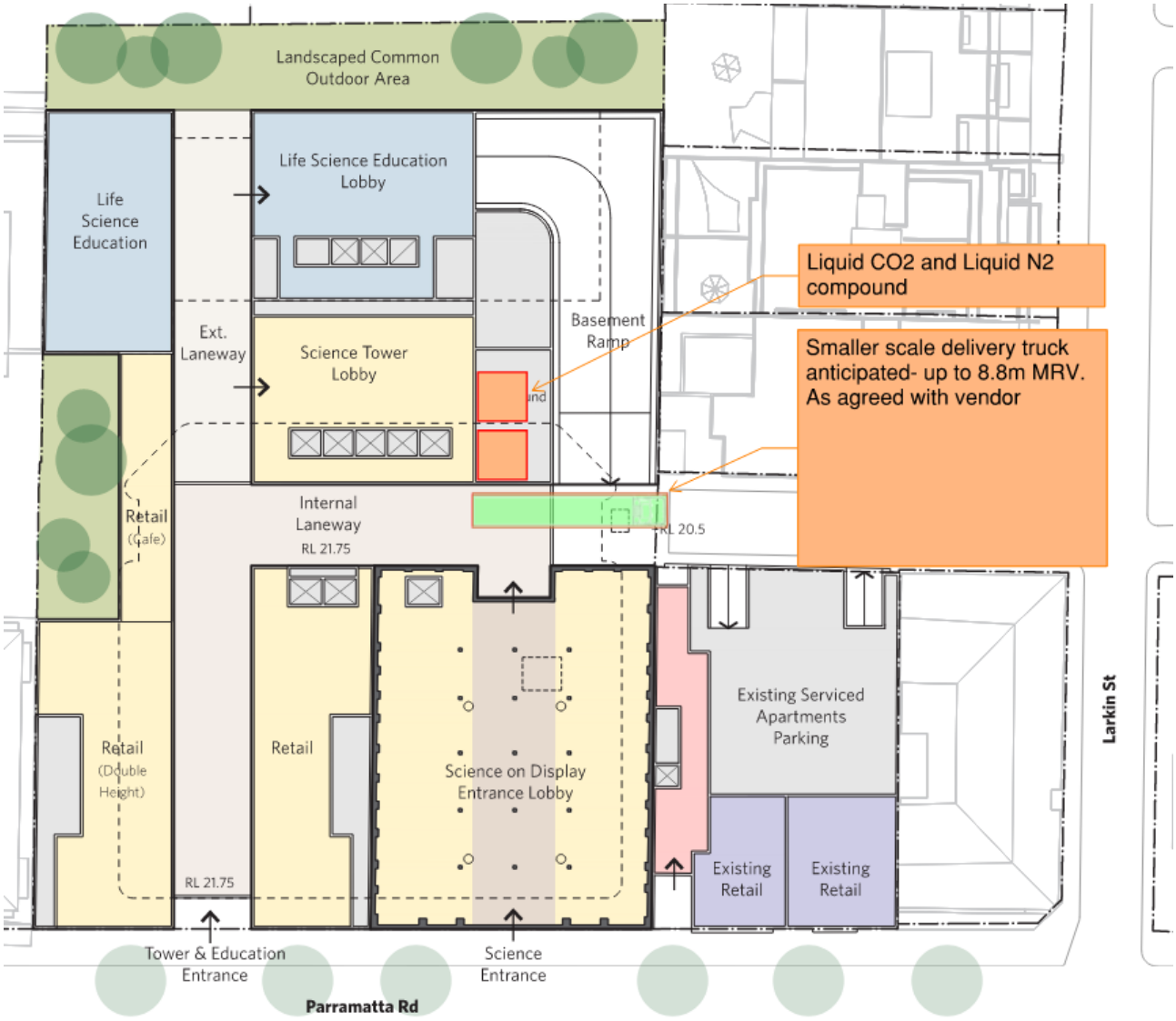


Figure 16 : Liquid CO2 and Liquid N2 compound

Gases requirements for laboratory are driven by functional requirements of each laboratories. To provide flexibility within the base-building. We have made the following allowances within the building footprint.

2.6.1 Cryogenic Bulk Store

We have provisioned for the following liquid vessel:

- Liquid Nitrogen
- Liquid CO2

Based on benchmarking from two similar scale projects we estimate that liquid capacity of 3,000L and 1,500L would be required for Nitrogen and Carbon Dioxide, respectively. 4m clear height would be required at these capacities. These assumed volumes are relatively conservative given the commercial nature of this development and the fact that the benchmarks used are fairly intense research usage facilities as follows:

Westmead Institute for Medical Research (PC2, animal facility, PC3, 12,000m2)

- LN2- 3,000L
- LCO2- 1,500L

UniSA CRI (PC2, animal facility, 27,000m2- circa 60% of this is life science space)

- LN2- 3,000L
- LCO2- 1,500L

2.6.2 Gas Cylinders Stores

An allowance for a gas cylinder store has been provided within Basement 1. The store has been sized to house maximum quantity of cylinders while remain to be considered a “minor store”. 2,000L aggregate water capacity (approximately 20 G-size cylinders) of class 2.2 (inert gas) can be located within. Mechanical ventilation to this store will be required. Gas risers will be required to reticulate gas supply from this store up to laboratory areas.

Additional gases may also be required, pending laboratory requirements. It is recommended that a gas cylinder storage area be allowed for on each level to allow for specialised gases that may be required specific to each laboratory to be located outside of the laboratory area. Mechanical exhaust provision should be allowed for in the event that ventilated gas cylinders cabinet are required to suit flammable and/or hazardous gases.

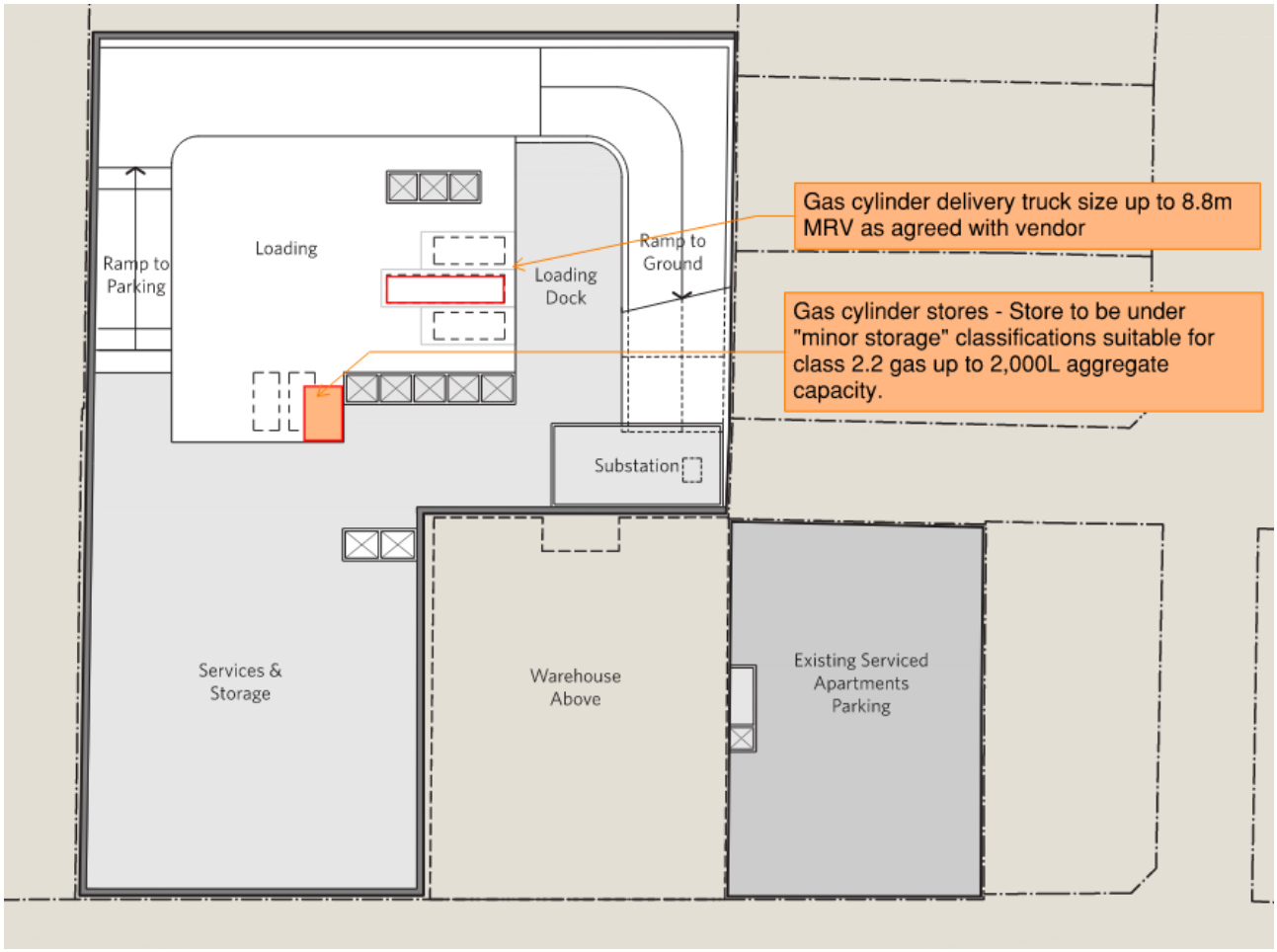


Figure 17: Proposed Location for Gas Cylinder Store in Basement Level

2.6.3 Delivery Vehicle Dimension

Due to the limitations of the roads and entry to the basement, we have consulted with BOC to determine the best delivery vehicle options for the development. These are based on the cryogenic storage volumes and bottled gas assumptions noted above, which we believe are appropriate for this development.

BOC have confirmed that delivery vehicle sizes will be as follows:

- Cryogenic Liquids: Cryospeed delivery truck- equivalent to a 8.8m long MRV
- Gas Cylinders: Rigid flat bed delivery truck- equivalent to a 8.8m long MRV

The MRV (medium rigid vehicle) tracking studies and turning circles etc are noted in the traffic report to demonstrate that the vehicles can service the site through the available street network, and can get into and out of the building to the basement level loading dock.

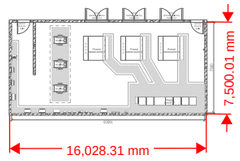
Confirmation e-mails from BOC are included in Appendix C.

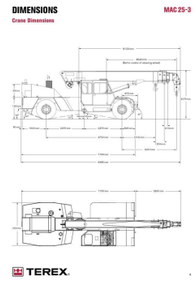
Appendix A : Site Services Markup – Substation Options

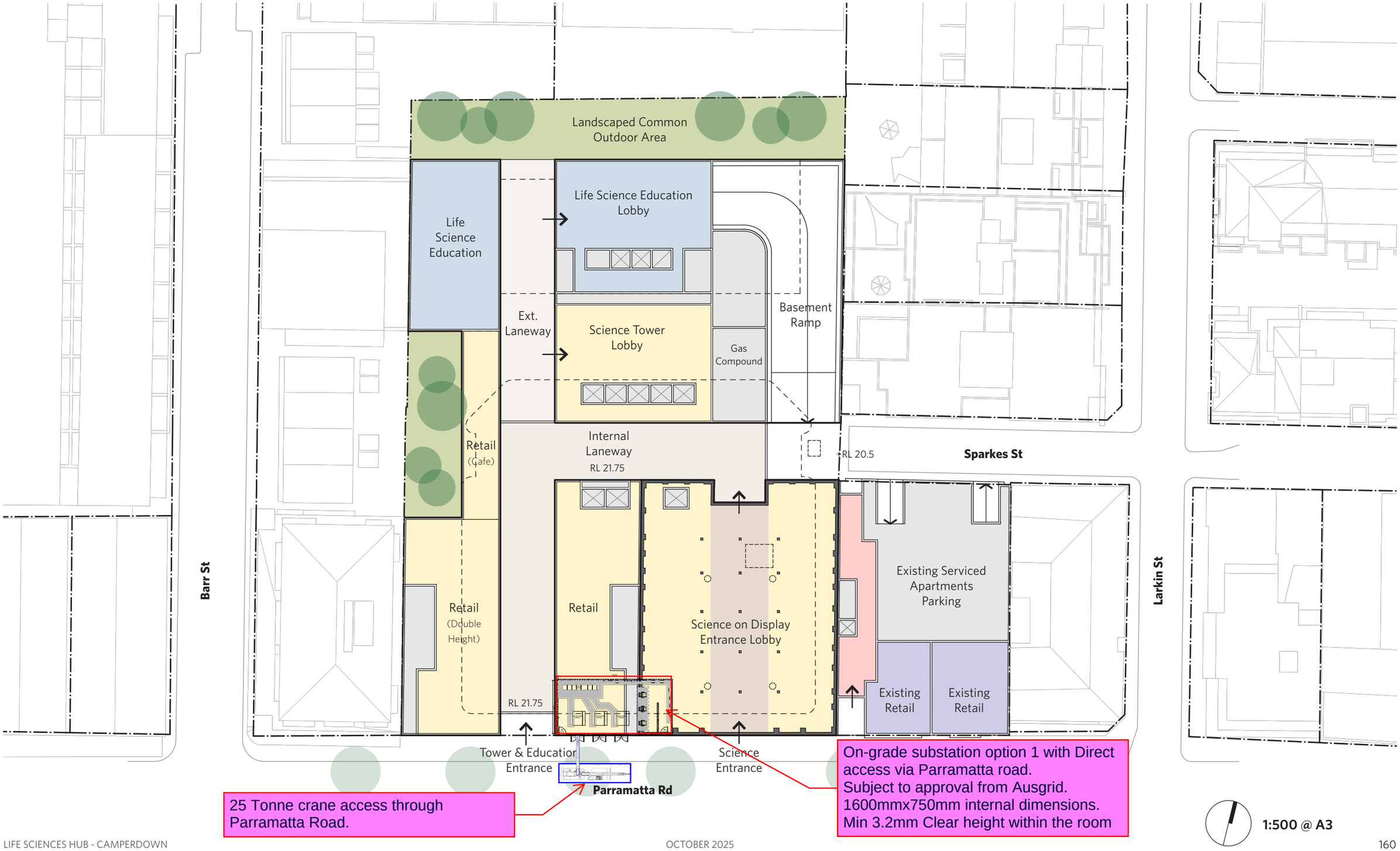
Substation Option 1

REFERENCE SCHEME PLANS

Ground Level





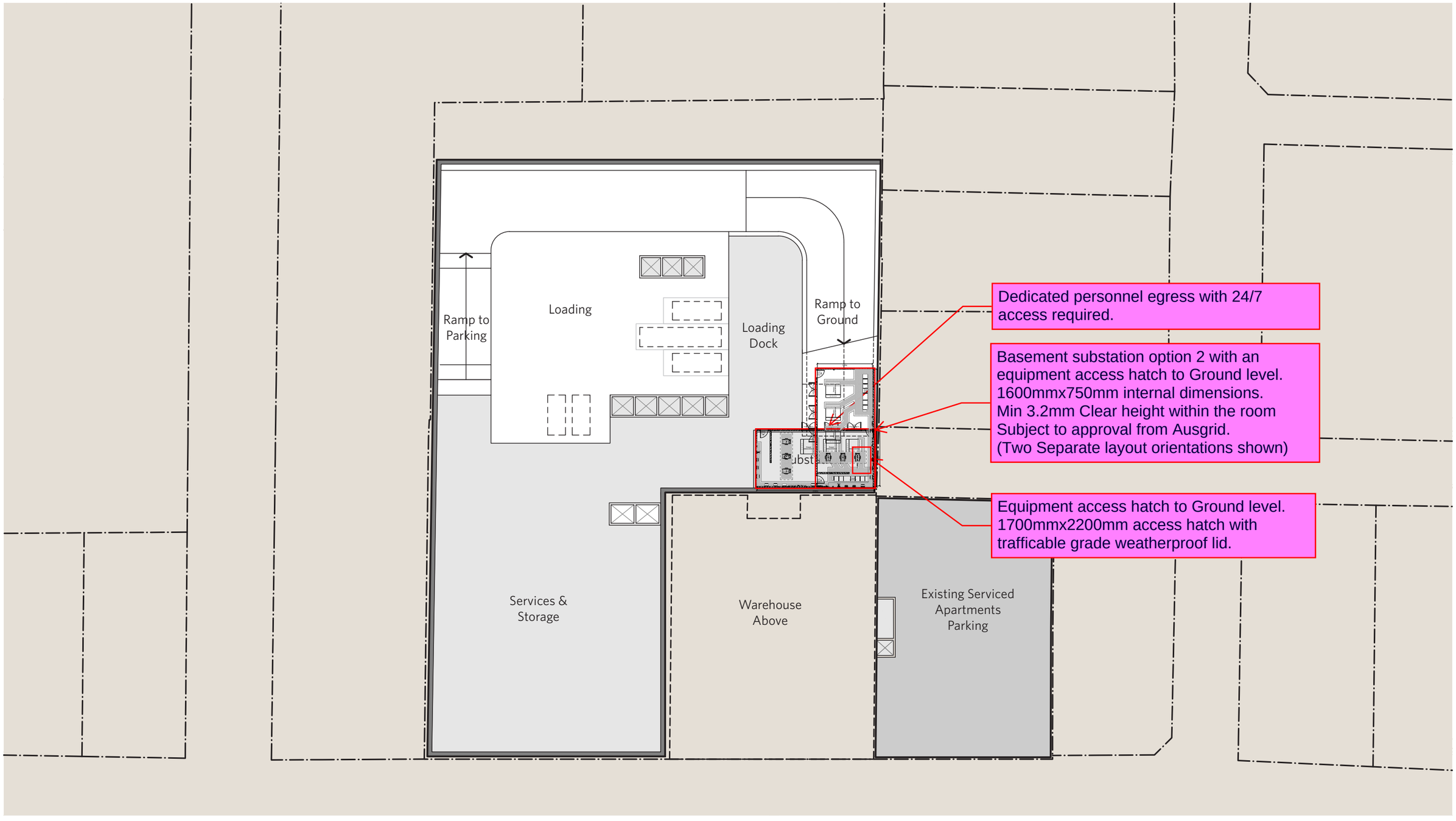


1:500 @ A3

Substation Option 2

REFERENCE SCHEME PLANS

Basement 1

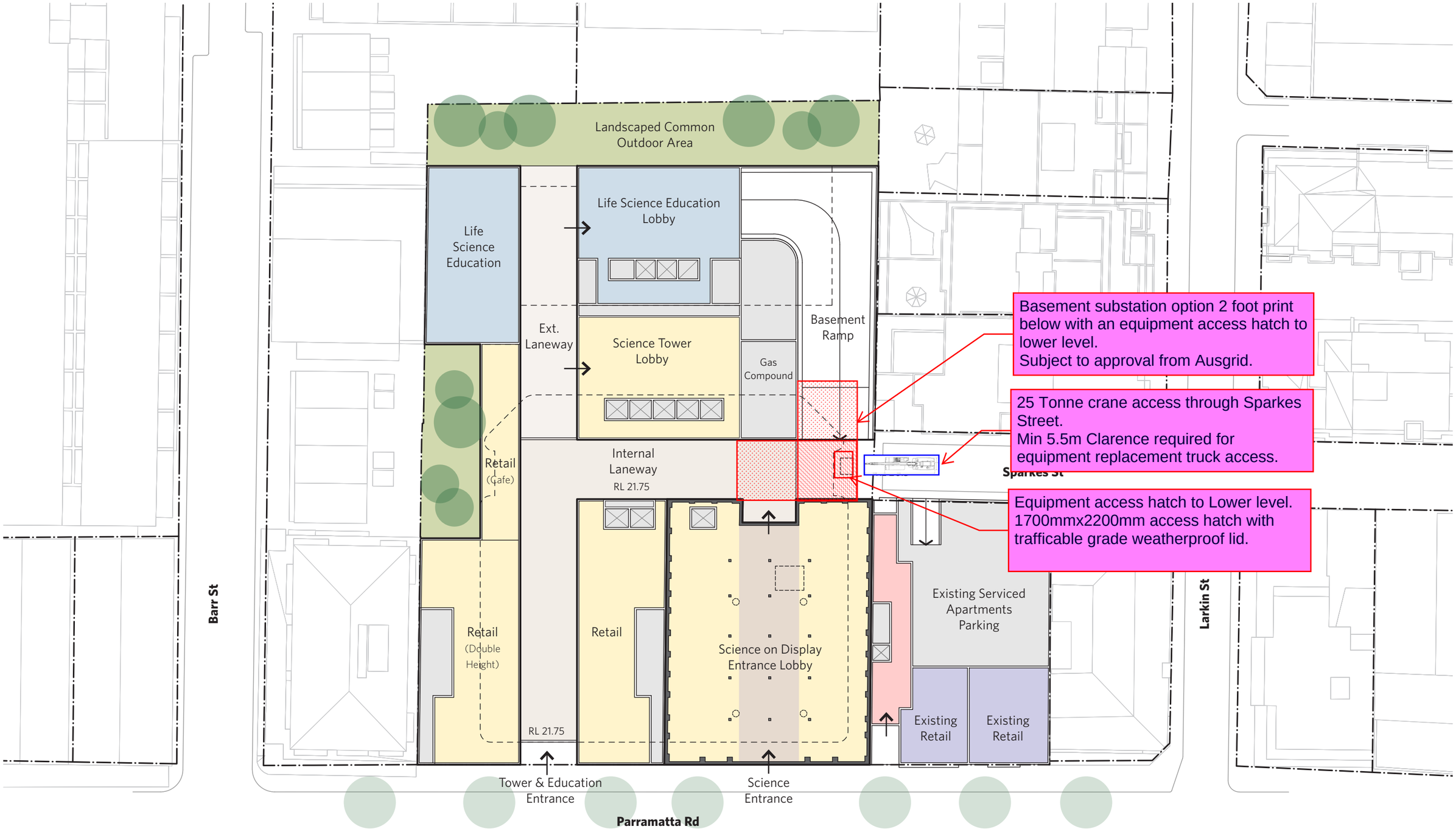


1:500 @ A3

Substation Option 2

REFERENCE SCHEME PLANS

Ground Level

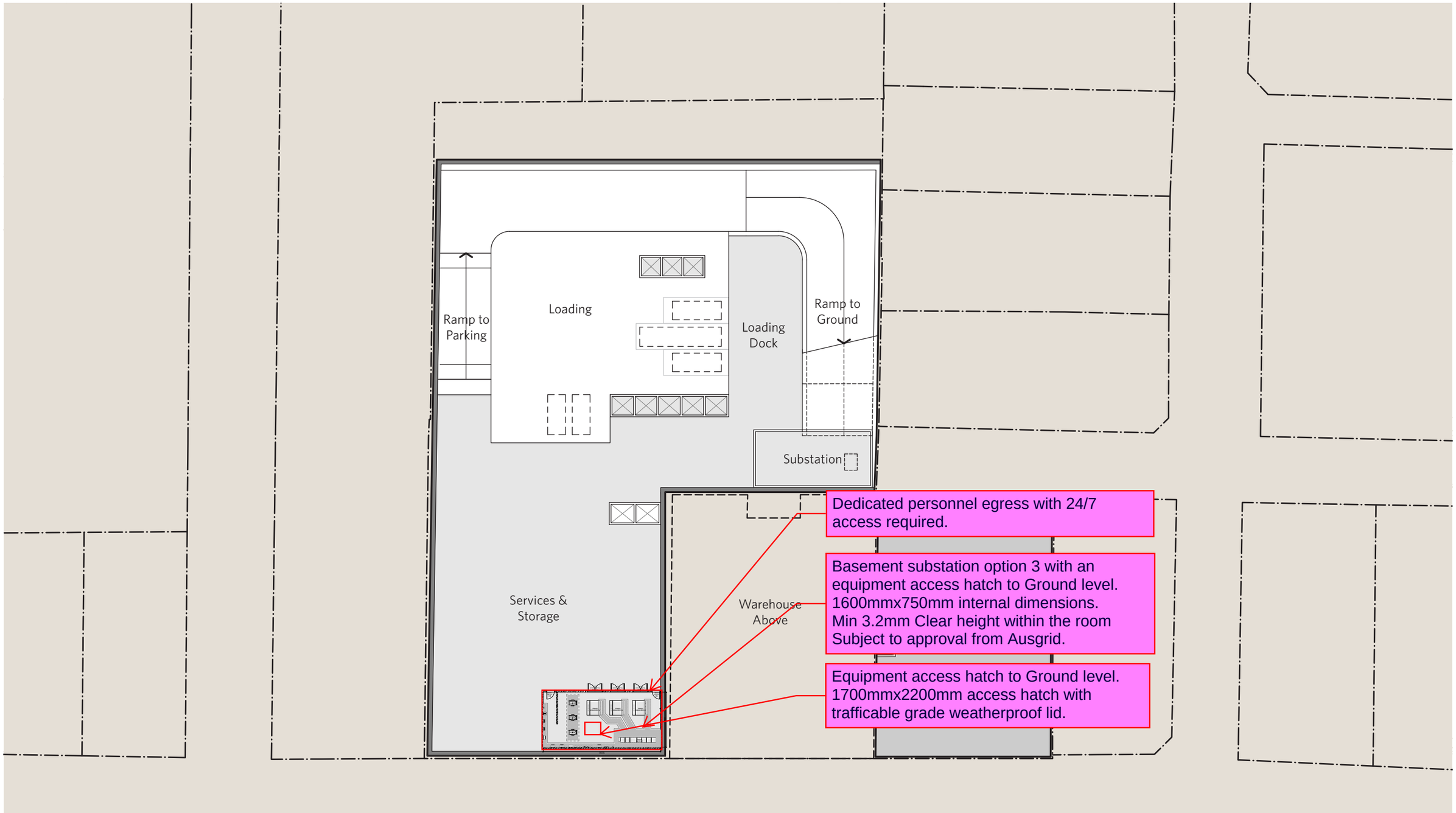


1:500 @ A3

Substation Option 3

REFERENCE SCHEME PLANS

Basement 1



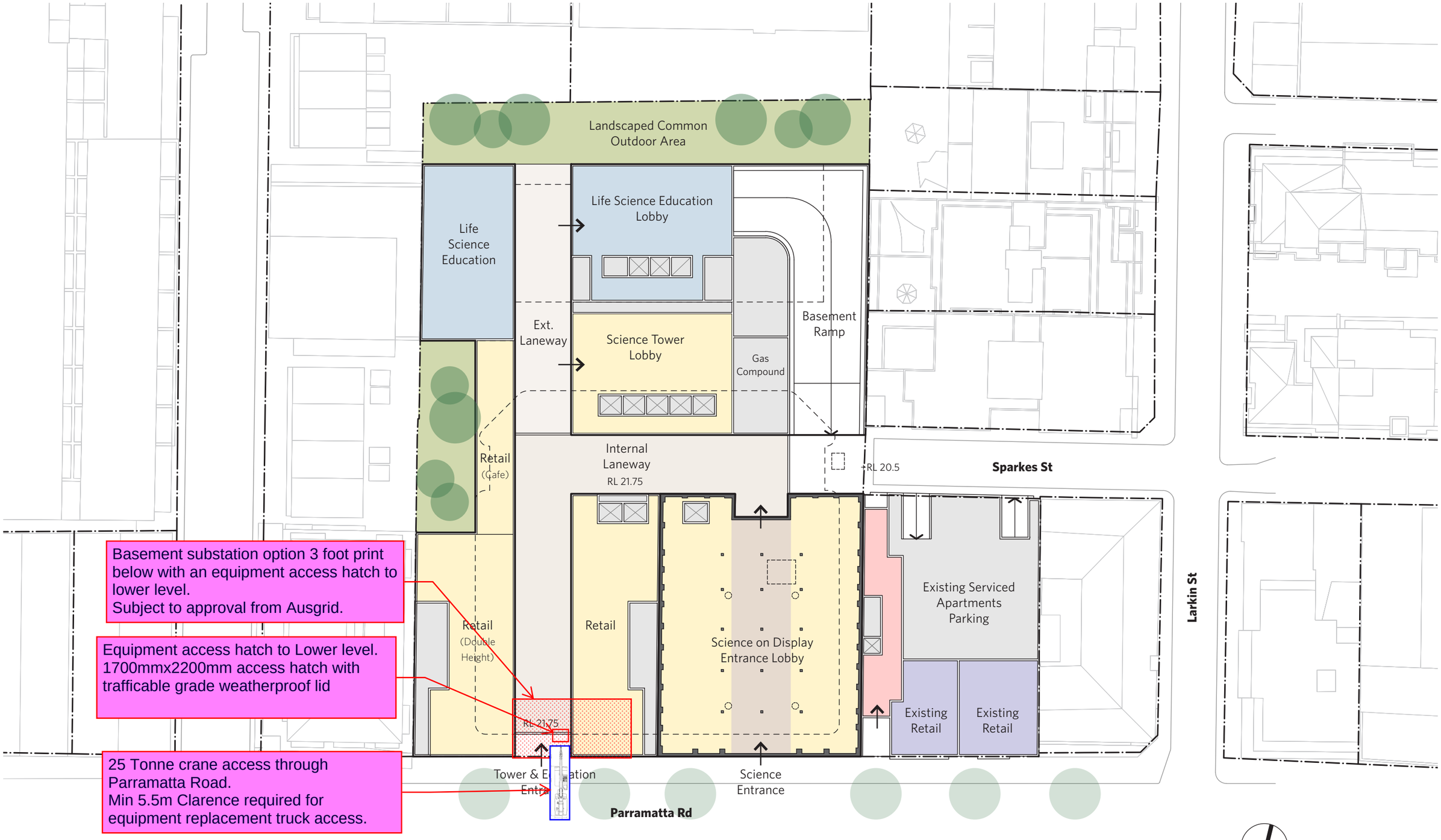
1003

1:500 @ A3

Substation Option 3

REFERENCE SCHEME PLANS

Ground Level

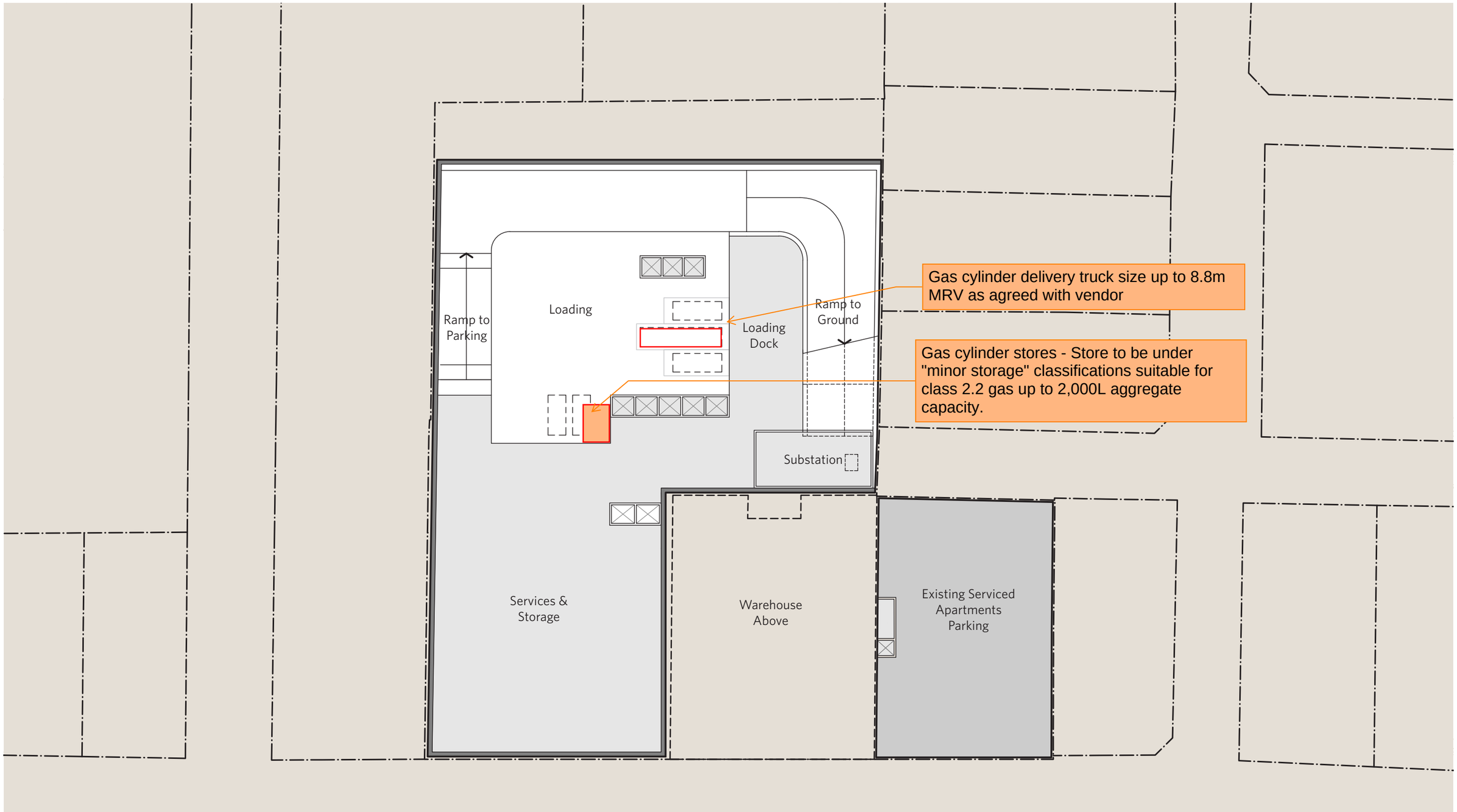


1:500 @ A3

Appendix B : Site Services Markup – Laboratory Gas

REFERENCE SCHEME PLANS

Basement 1

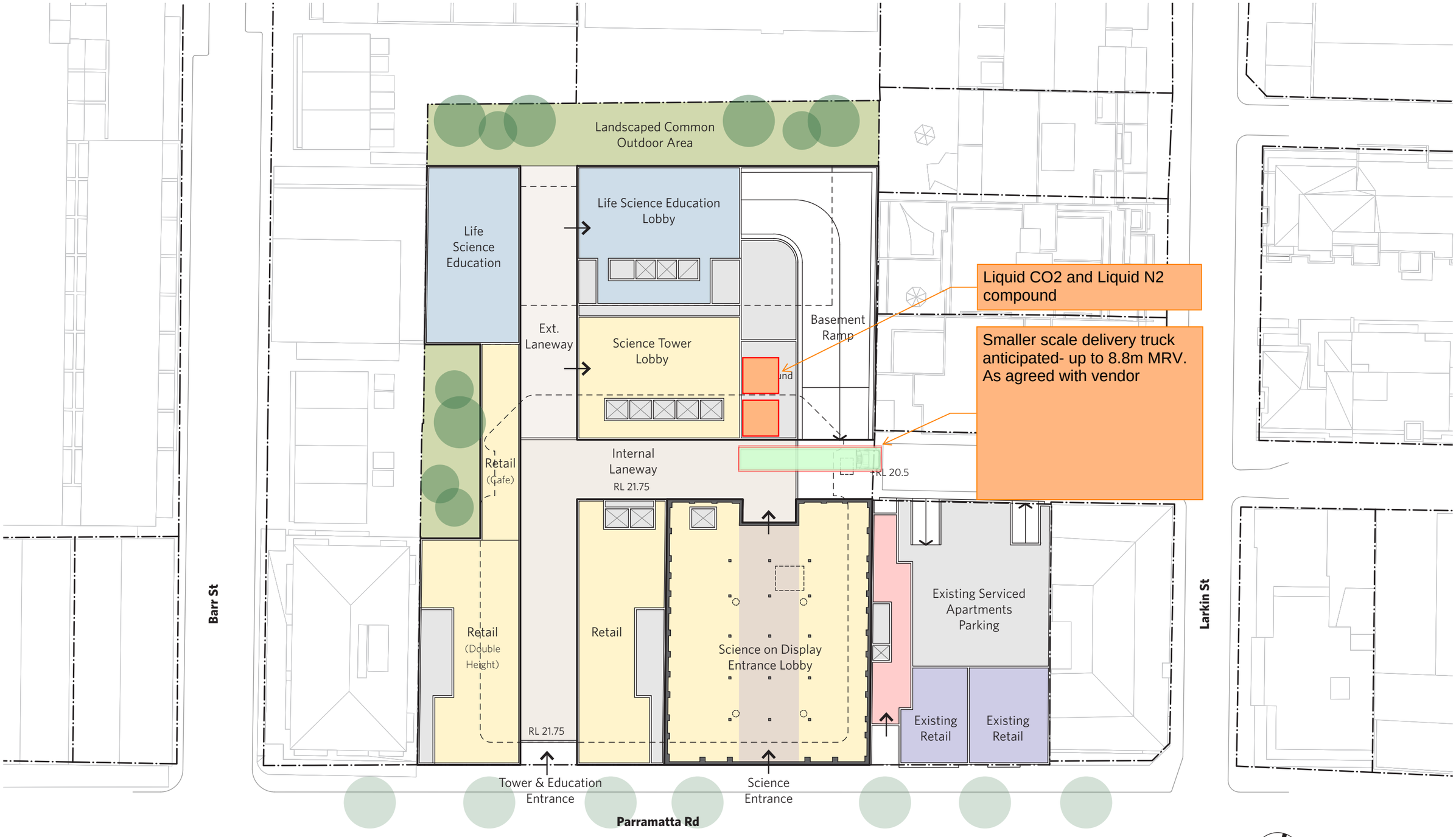


1006

1:500 @ A3

REFERENCE SCHEME PLANS

Ground Level



1:500 @ A3

Appendix C: Correspondence with BOC (Laboratory Gases)

Julian Soper

From: Justin Emmanuel <Justin.Emmanuel@boc.com>
Sent: Thursday, 10 September 2026 9:55 AM
To: James Wilby
Cc: Julian Soper
Subject: RE: New high rise lab building camperdown

Hi Gents

Further to my conversation with Julian yesterday, I can summarise the following:

- If your proposal is to put in a 3000 L tank for LN2 and a 1500 L tank for CO2, we have better delivery options
- We can deliver to these 2 sized vessels with our smaller trucks even if it means we have to deliver up to twice a week for each product
- Anything bigger than a 3000 L vessel will require us to use our bulk tankers and at this point in time we don't see that as an option in the location as we will need mandatory traffic control (at all times) to get in and out and it wont be practical
- Another matter to consider is if the site will have 24/7 access – if that is the case BOC wont have to deliver during peak hours and can deliver in the wee hours of the night or early in the morning with minimal disruption

Many thanks

Justin

From: James Wilby <James.Wilby@arup.com>
Sent: Monday, 7 September 2026 9:02 AM
To: Justin Emmanuel <Justin.Emmanuel@boc.com>
Cc: Julian Soper <Julian.Soper@arup.com>
Subject: RE: New high rise lab building camperdown

CYBERSECURITY ALERT: This is an email from an external organization. Use caution, especially with links and attachments. More

Morning Justin

Would you be able to provide any feedback and clarity on serving options for this site before Wednesday ? Julian and I have a meeting with the developer then where the more we can inform them the better. If you would like to call again let me know, maybe easier to explain over a video call.

Thanks again

From: James Wilby
Sent: 02 September 2026 09:58
To: justin.emmanuel@boc.com
Subject: FW: New high rise lab building camperdown

Sent to wrong email address – see below

James Wilby
Mechanical Engineer

From: James Wilby
Sent: Tuesday, 1 September 2026 12:25 PM
To: justin.emmanuel@boc.com.au
Cc: Julian Soper <Julian.Soper@arup.com>
Subject: New high rise lab building camperdown [Filed 01 Sep 2026 12:25]

Morning Justin

Thanks for calling me and for your time.

The only streets with access to the proposed site are Sparkes and Larkin.

We have done some traffic studies with an MRV (8.8m long) and an HRV (12.5m long) and compared different options of reversing in/out etc to see what existing signage and street car parking would be lost.

There is no significant dedicated turning circle planned for the site – there is a ramp area to the basement where we believe an MRV could conduct a 3-point turn, but an HRV would need to be able to reverse along Sparkes St.

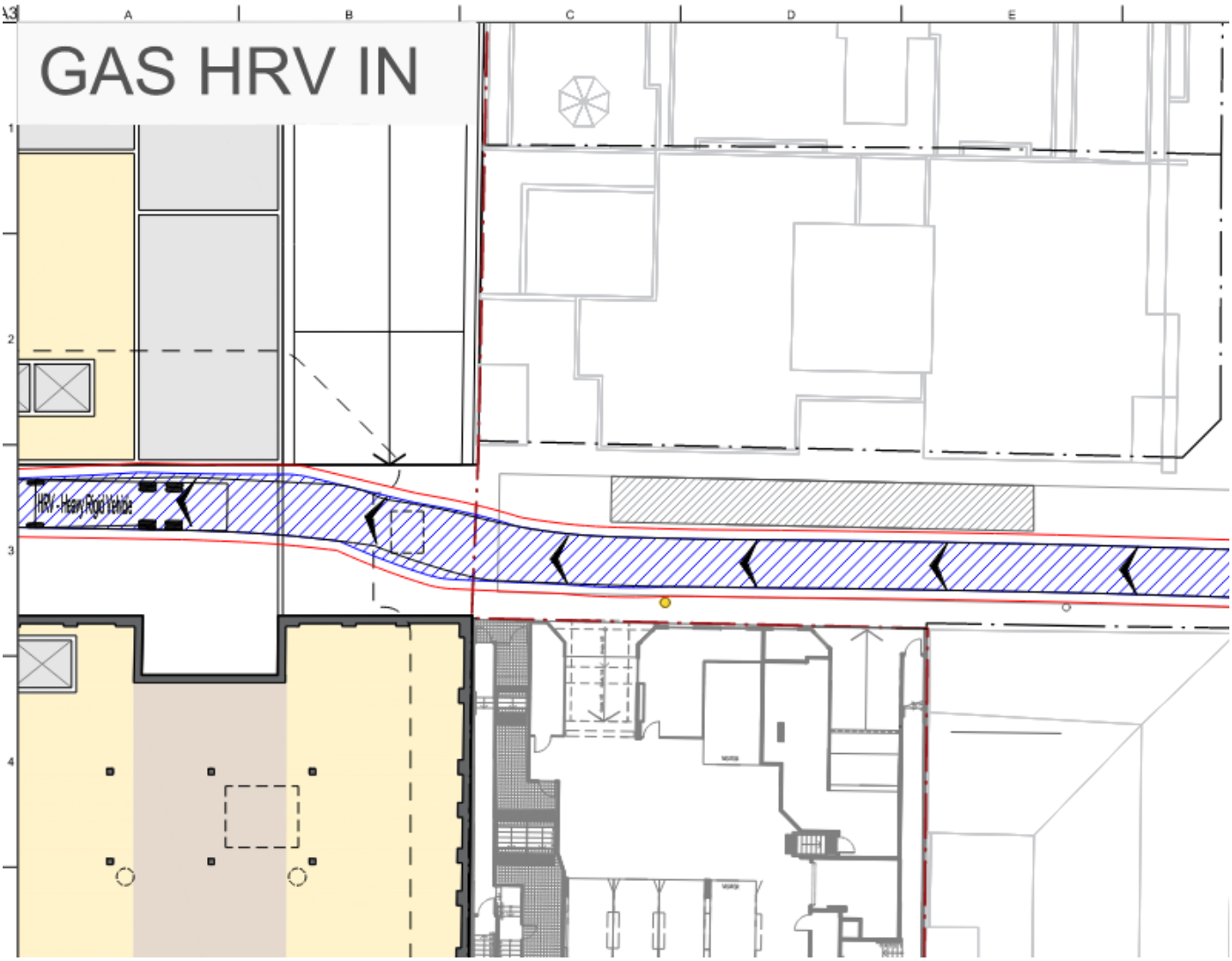
What are your thoughts on the HRV option, would BOC consider this as workable, and if it were only the MRV that was feasible, what size deliveries could be made for LN2 and CO2?



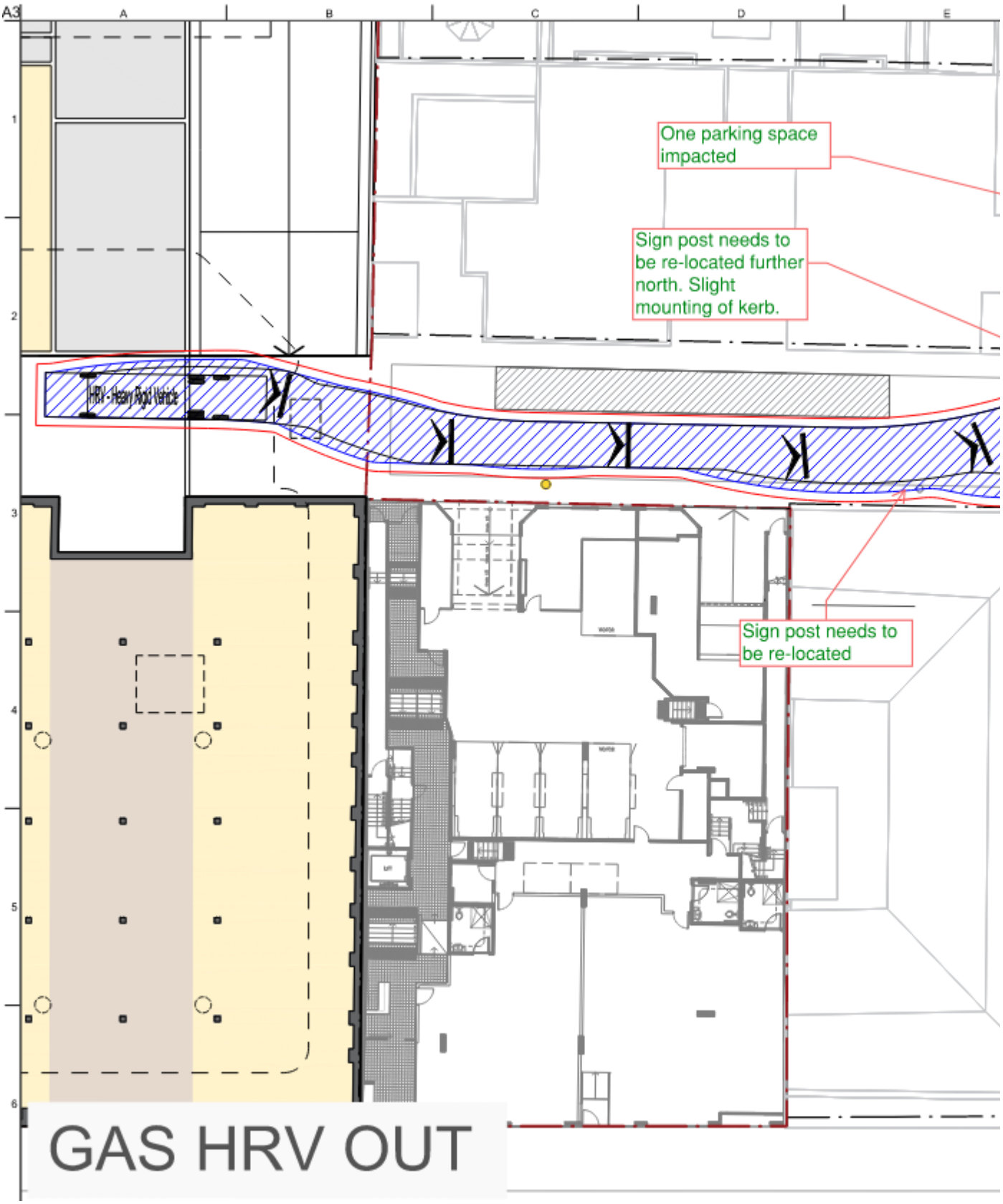
The following snips are confidential, can I please ask you don't share outside BOC at the time being, thanks.

Thanks for your time, my colleague Julian may add more clarity to our request.

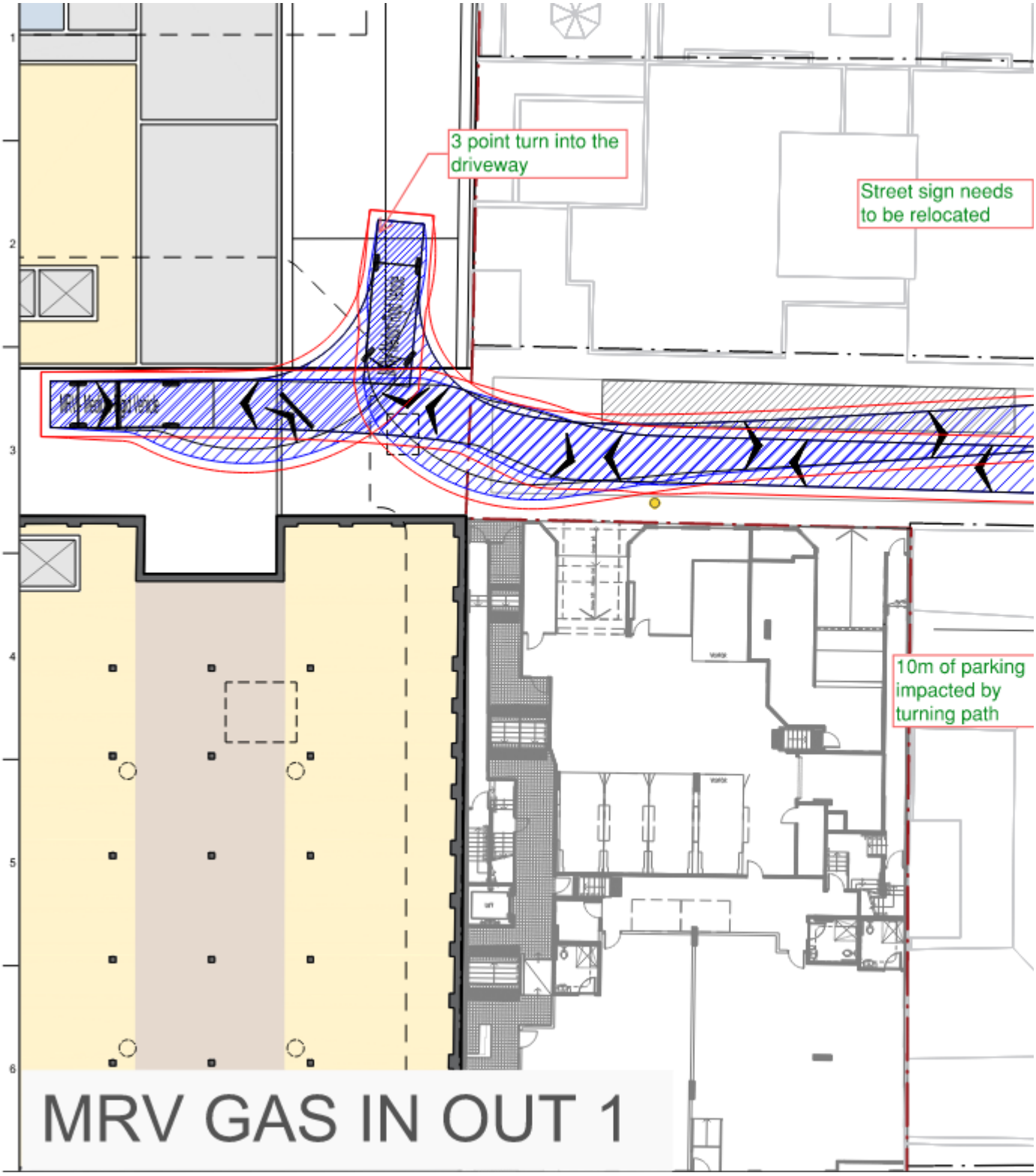
HRV IN option on the proposed site layout



HRV OUT option on the proposed site layout



MRV IN and OUT option



James Wilby
Mechanical Engineer

Arup
Barrack Place, Level 5, 151 Clarence Street,
Sydney, NSW, 2000, Australia
d +61 2 9320 9953
m +61 428 751 588

arup.com
Follow us: LinkedIn Instagram YouTube Facebook

Ove Arup & Partners Limited | Registered in England & Wales Registered Number: 1312453 | Registered Address: 8 Fitzroy Street, London, W1T 4BJ

Electronic mail messages entering and leaving Arup business systems are scanned for viruses and acceptability of content.

The information contained in this email and any attachments may be confidential and is provided solely for the use of the intended recipient(s). If you are not the intended recipient, you are hereby notified that any disclosure, distribution, or use of this e-mail, its attachments or any information contained therein is unauthorized and prohibited. If you have received this in error, please contact the sender immediately and delete this e-mail and any attachments. No responsibility is accepted for any virus or defect that might arise from opening this e-mail or attachments, whether or not it has been checked by anti-virus software.

Julian Soper

From: Justin Emmanuel <Justin.Emmanuel@boc.com>
Sent: Tuesday, 15 September 2026 1:17 PM
To: Julian Soper; James Wilby
Subject: RE: New high rise lab building camperdown

Hi Julian

Further to our conversation this afternoon, I can advise that a 8.8 metre entrance allowance will allow the BOC truck to be able to get in to deliver cylinders

Cheers

Justin

From: Justin Emmanuel
Sent: Monday, 7 September 2026 11:27 AM
To: 'Julian Soper' <Julian.Soper@arup.com>; James Wilby <James.Wilby@arup.com>
Subject: RE: New high rise lab building camperdown

Hi Julian

Thanks for the added detail. As soon as I get some advise from my team I will be in touch.

Please think about other options including dedicated traffic control for delivery during business hours, option for delivery after hours. If we have access to site 24/7 BOC can deliver at off peak hours with minimal disruption

Will talk shortly

Cheers

Justin

From: Julian Soper <Julian.Soper@arup.com>
Sent: Monday, 7 September 2026 11:15 AM
To: Justin Emmanuel <Justin.Emmanuel@boc.com>; James Wilby <James.Wilby@arup.com>
Subject: RE: New high rise lab building camperdown

CYBERSECURITY ALERT: This is an email from an external organization. Use caution, especially with links and attachments. More

Hi Justin,

I think it would be best for us to have a discussion with you to talk through what the traffic engineers have looked at. Some options have traffic control (the question is who provides this), others don't. It isn't a particularly busy area- no worse than the RPA Hospital precinct where we understand liquid Oxygen tankers routinely deliver in some fairly difficult situations.