



ELECTROLYSIS RISK ASSESSMENT
4 – 18 DONCASTER AVENUE, KENSINGTON
Version 1 – 11th DECEMBER 2018

EXECUTIVE SUMMARY

This report presents an assessment of the risks of stray DC current corrosion associated with the proposed development works at 4 – 18 Doncaster Avenue in Kensington.

Based on the assessment of the proximity of the proposed development to the Sydney Light Rail depot and the construction techniques proposed, it is recommended that the following measures are incorporated into the final design and implemented during construction:

- All conductive services are to be electrically isolated where they enter/exit the boundary of the proposed development is to be located using suitable insulating joints, including water, gas and communications services. It is recommended that these measures are also applied to any services associated with the existing heritage building;
- It is strongly recommended that the embedded earthing arrangement on site (that is bonded to the wider Ausgrid MEN network via the screens of the incoming HV cables) is monitored closely for signs of corrosion through periodic measurement of individual electrode impedances and monitoring of stray DC current propagation through the screens of the incoming HV cables to the MEN network;
- It is recommended that the steel reinforcement within all reinforced concrete structural elements (including but not limited to floor slabs, basement walls, foundations and blockwork retaining wall) is made electrically continuous in a manner that enables demonstration of compliance with Clause 5.2 of AS 2832.5-2008:
 - Ensure electrical continuity between all reinforcement within the proposed development works such that the maximum electrical resistance between any two points is less than or equal to 2 Ω ;
 - Install two electrolysis monitoring terminals (Erico DB12CS701 or equivalent) to be installed flush with the finished surface of the equipotentially bonded reinforced concrete in locations that are as far apart as possible while being accessible for future monitoring/testing if required and not in a position where they will be exposed to direct contact with local soil or pooling water;
- It is highly recommended that any temporary ground anchors used in the construction are configured such that:
 - The ground anchors are electrically isolated from the steel reinforcement and all other conductive elements (preferred method, ensuring 100 mm clearance between the anchors and any conductive part of the building structures); or
 - The ground anchors are isolated from the greater mass of earth in which they are embedded using electrically insulating treatments such as epoxy coating (not as desirable due to cost/complexity and risk of failure of insulating coating).
- It is recommended that the minimum compressive strength of concrete (where interfacing with the greater mass of earth) is maintained at 40 MPa (higher compressive strength ratings typically result in higher electrical resistivity due to the hydrophobic nature) and that the minimum depth of cover of concrete (between steel reinforcement elements and the greater mass of earth) should have a minimum value of 50 mm;
- It is recommended that a non-conductive moisture barrier is incorporated into the installation of the all reinforced concrete elements where there would otherwise be a direct interface with the greater mass of earth (where practical);
- That bare metallic structural components are not to be permitted to be installed in direct contact with the local soil (E.g. sheet piles); and
- It is recommended that a minimum 2000 mm clearance is maintained between the depot noise wall and any conductive features that could be considered to be remotely earthed (MEN-bonded features, conductive features of significant length such as handrails, continuous reinforced hard stand surfaces and fencing etc).

CONTENTS

1	DOCUMENT CONTROL	5
1.1	Document Record	5
1.2	Amendment Record	5
1.3	References	5
2	INTRODUCTION	7
3	ASSESSMENT OF ELECTROLYSIS RISKS	8
3.1	Potential Stray DC Current paths.....	8
3.2	Proximity to the Sydney Light Rail Traction System	8
3.3	Assessment of Construction Details.....	9
4	RECOMMENDATIONS	11
APPENDIX A. REFERENCE DRAWINGS		13
APPENDIX B. ELECTROLYSIS MONITORING TERMINAL DETAILS		37

1 Document Control

1.1 Document Record

Document Identification	Electrolysis Risk Assessment – 4-18 Doncaster Avenue, Kensington NSW
Document Number	11122018-024-001-01
Document Author	Ian Kennedy
Relates to	4 – 18 Doncaster Avenue, Kensington
Original Date Issued	11 th December 2018

1.2 Amendment Record

Rev	Date	Description	Prepared By	Approved By
1	11/12/2018	Initial Issue	I. Kennedy	I. Kennedy
Signatures:				

1.3 References

- [1] '4 Doncaster Ave, Kensington Sydney – Basement Plan – Structural Comments – Sketch SK01', produced by Michael Bale & Associates, 5th of December 2018.
- [2] '4 Doncaster Ave, Kensington Sydney – Ground Floor Plan – Structural Comments – Sketch SK02', produced by Michael Bale & Associates, 5th of December 2018.
- [3] '4 Doncaster Ave, Kensington Sydney – Level 1 Plan – Structural Comments – Sketch SK03', produced by Michael Bale & Associates, 5th of December 2018.
- [4] '4 Doncaster Ave, Kensington Sydney – Level 2 Plan – Structural Comments – Sketch SK04', produced by Michael Bale & Associates, 5th of December 2018.
- [5] '4 Doncaster Ave, Kensington Sydney – Level Roof – Structural Comments – Sketch SK05', produced by Michael Bale & Associates, 5th of December 2018.
- [6] '4 Doncaster Ave, Kensington Sydney – Existing Site Plan – Preliminary Issue – Drawing TP01.01', produced by Hayball Architects, 5th of December 2018.
- [7] '4 Doncaster Ave, Kensington Sydney – Proposed Site Plan – Preliminary Issue – Drawing TP01.02', produced by Hayball Architects, 5th of December 2018.
- [8] '4 Doncaster Ave, Kensington Sydney – Basement Plan – Preliminary Issue – Drawing TP02.01 Revision 2', produced by Hayball Architects, 5th of December 2018.
- [9] '4 Doncaster Ave, Kensington Sydney – Ground Floor Plan – Preliminary Issue – Drawing TP02.02 Revision 4', produced by Hayball Architects, 5th of December 2018.
- [10] '4 Doncaster Ave, Kensington Sydney – Level 1 Plan – Preliminary Issue – Drawing TP02.03 Revision 3', produced by Hayball Architects, 5th of December 2018.
- [11] '4 Doncaster Ave, Kensington Sydney – Level 2 Plan – Preliminary Issue – Drawing TP02.04 Revision 3', produced by Hayball Architects, 5th of December 2018.
- [12] '4 Doncaster Ave, Kensington Sydney – Roof Plan – Preliminary Issue – Drawing TP02.05 Revision 1', produced by Hayball Architects, 5th of December 2018.

- [13] '*4 Doncaster Ave, Kensington Sydney – Elevations – Preliminary Issue – Drawing TP03.01*', produced by Hayball Architects, 5th of December 2018.
- [14] '*4 Doncaster Ave, Kensington Sydney – Shadow Diagrams – Construction Issue – Drawing TP06.01*', produced by Hayball Architects, 5th of December 2018.
- [15] '*4 Doncaster Ave, Kensington Sydney – Shadow Study – Southern Interface - Landscape – Preliminary Issue – Drawing TP06.02*', produced by Hayball Architects, 5th of December 2018.
- [16] '*4 Doncaster Ave, Kensington Sydney – Shadow Study – Southern Interface – Preliminary Issue – Drawing TP06.03*', produced by Hayball Architects, 5th of December 2018.
- [17] '*LCE15880 Doncaster Avenue – Combined Services Spatial, Basement Level*', produced by Lucid Consulting Australia, 28th of November 2018.
- [18] '*LCE15880 Doncaster Avenue – Combined Services Spatial, Ground Floor*', produced by Lucid Consulting Australia, 28th of November 2018.
- [19] '*LCE15880 Doncaster Avenue – Combined Services Spatial, Level 1*', produced by Lucid Consulting Australia, 28th of November 2018.
- [20] '*LCE15880 Doncaster Avenue – Combined Services Spatial, Level 2*', produced by Lucid Consulting Australia, 28th of November 2018.
- [21] '*LCE15880 Doncaster Avenue – Combined Services Spatial, Roof*', produced by Lucid Consulting Australia, 28th of November 2018.
- [22] '*Report on Supplementary Geotechnical Investigation – Proposed Residential Development 4-18 Doncaster Avenue, Kensington – Project No.73965.02 Document No.R.001.Rev0*', produced by Douglas Partners, December 2015.

2 Introduction

It is a requirement that an electrolysis risk assessment report is developed for the proposed residential development at 4 – 18 Doncaster Avenue in Kensington due to the close proximity to the nearby Randwick Depot associated with the Sydney Light Rail system.

This report presents an assessment of the risks of stray DC current corrosion associated with the proposed development works at 4 – 18 Doncaster Avenue in Kensington.

This report will consider the following aspects of the proposed development:

- The mechanisms for stray DC current related corrosion (electrolysis) and how they relate to the proposed development works;
- The proximity of the proposed development works to the Sydney Light Rail network and the relative location of nearby traction substations within the traction system; and
- The details of the construction techniques associated with the proposed design drawings and the significance of these details in the context of the risk of stray DC current related corrosion.

3 Assessment of Electrolysis Risks

This section will discuss the key mechanisms through which stray DC traction current can cause electrolytic corrosion, present an assessment of the proposed development in the context of these corrosion mechanisms, and provide recommendations regarding mitigation measures to be incorporated into the design of the primary structural members and interfaces with service providers.

3.1 Potential Stray DC Current paths

There are two key processes by which the flow of stray DC current associated with a traction system can lead to the electrolytic corrosion of conductive structural elements and metallic services:

- A conductive service or structural arrangement runs in parallel with electrified track in close enough proximity and over a sufficient distance to lead to the conductive service or structural element providing a low resistance parallel path for stray DC current flowing through the greater mass of earth in the vicinity of the track alignment,
- A conductive service or structural arrangement inadvertently becomes a pick-up/drop-off point for the flow of stray DC current between the local area (near the adjacent electrified track) and other common-bonded elements (bonded through either the multiple earthed neutral system of the distribution network service provider or other conductive service interconnections) that are in turn within close proximity to the electrified track associated with the traction system.

In considering the potential impact of the flow of stray DC traction current, it is useful to keep the following two factors in mind:

- Stray DC current corrosion (electrolysis) is a function of current magnitude and duration of exposure. The generally accepted yet crude rule of thumb is that 1 ampere of continuous stray DC current flow will lead to the loss of 9 kg of steel over the course of a calendar year. Significant reduction of either the magnitude of current flow (insulation measures) or the duration of the exposure of the structure/service to current flow (stray current monitoring devices and processes) will directly lead to a significant reduction in corrosion,
- Stray DC current causes damage to conductive elements only where the current leaves the conductive element and can only cause corrosion where the point at which the stray DC current exits is located within a suitable electrolyte.

3.2 Proximity to the Sydney Light Rail Traction System

The site of the proposed development sits immediately to the west of the new Sydney Light Rail maintenance and stabling depot at Randwick.

This part of the traction system is primarily supplied by a traction substation within the depot itself referred to as Randwick Depot Traction Substation (approximately 100 metres to the east of the proposed development).

The next Sydney Light Rail traction substations in each direction are Kensington Traction Substation (600 metres to the north west of the proposed development) and Alison Road Traction Substation (approximately 1 km to the south east of the proposed development).

Given the area of the Sydney Light Rail system that the proposed development works is adjacent to it is anticipated that the rail-earth potential in the vicinity of the proposed development will be predominantly negative with respect to earth.

The location of the proposed development works relative to nearby key elements of the Sydney Light Rail traction system is presented in Figure 3.1.

Figure 3.1 Location of Proposed Development Site

This means that the flow of stray DC current between the conductive parts of the development and the local soil will be predominantly such that stray DC current is flowing into the soil from the conductive elements of the development.

On this basis, the risk of stray DC current corrosion on the conductive elements of the development is higher than if the development were located further from the nearest traction substation and measures hence mitigation measures need to be implemented to minimize the risk of corrosion within the development site and also need to be implemented to minimize the extent to which the development serves as a pick-up point for stray DC current that might then cause corrosion at other locations interconnected via conductive services.

Hence the assessment of the proposed development works for this site will emphasize the isolation of services entering the site while also maximizing the resistance of the conductive interface between the reinforced foundations and the greater mass of earth.

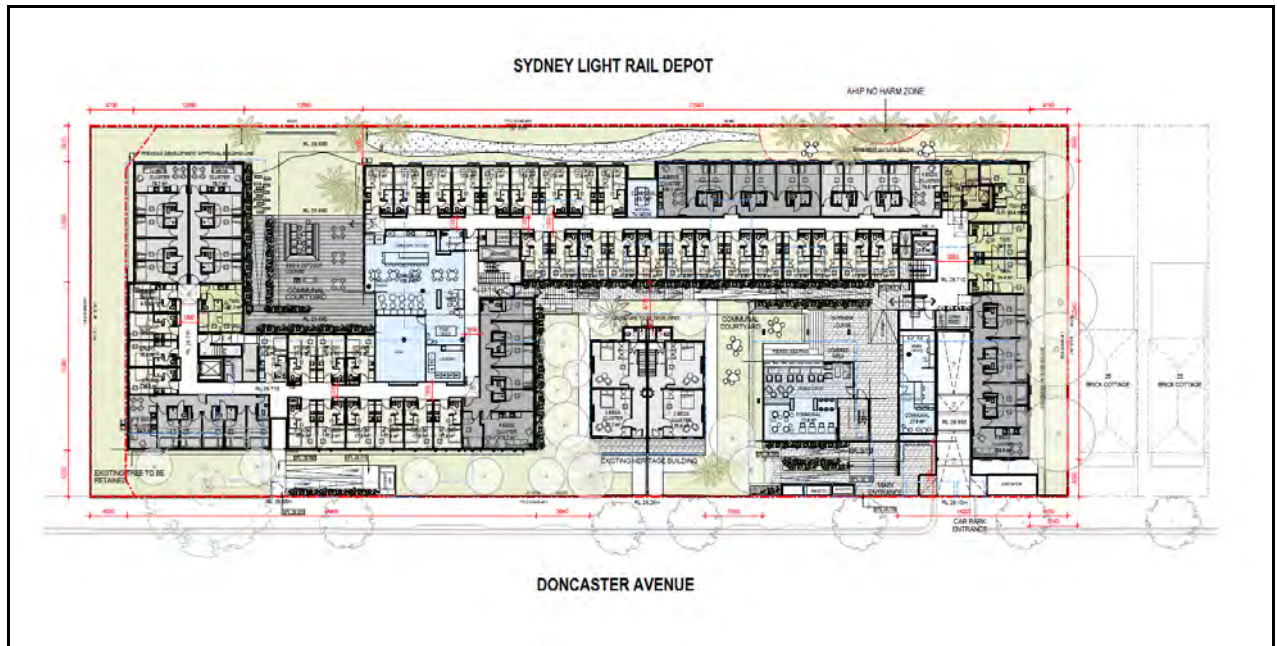
3.3 Assessment of Construction Details

The proposed development works involves the construction of a multi-storey residential building at 4 – 18 Doncaster Avenue in Kensington. The key features of the development are as follows:

- It is not anticipated that any rock/ground anchors will be used, permanent or temporary;
- It is not anticipated that any bare metallic structural elements will be embedded directly into the greater mass of earth (no sheet piles etc);
- The major components of the proposed structure that will potentially form a conductive interface with the greater mass of earth are as follows:
 - o The steel reinforced concrete floor slabs;
 - o The steel reinforced basement walls; and
 - o The steel reinforced concrete foundations.

Figure 3.2 below is an extract from the design drawings presenting an overview of the proposed layout of the development site.

Figure 3.2 Ground Floor Layout of the Proposed Development Site [9]



As can be seen in Figure 3.2, the development will consist of one continuous structure constructed around an existing heritage building.

While there will be no significant structural interfaces between the proposed development and the existing heritage building the electrical supply to the existing heritage building is to be rerouted via the supply to the proposed development.

4 Recommendations

Based on the assessment of the proximity of the proposed development to the Sydney Light Rail depot and the construction techniques proposed, it is recommended that the following measures are incorporated into the final design and implemented during construction:

- All conductive services are to be electrically isolated where they enter/exit the boundary of the proposed development is to be located using suitable insulating joints, including water, gas and communications services. It is recommended that these measures are also applied to any services associated with the existing heritage building;
- It is strongly recommended that the embedded earthing arrangement on site (that is bonded to the wider Ausgrid MEN network via the screens of the incoming HV cables) is monitored closely for signs of corrosion through periodic measurement of individual electrode impedances and monitoring of stray DC current propagation through the screens of the incoming HV cables to the MEN network;
- It is recommended that the steel reinforcement within all reinforced concrete structural elements (including but not limited to floor slabs, basement walls, foundations and blockwork retaining wall) is made electrically continuous in a manner that enables demonstration of compliance with Clause 5.2 of AS 2832.5-2008:
 - o Ensure electrical continuity between all reinforcement within the proposed development works such that the maximum electrical resistance between any two points is less than or equal to 2 Ω ;
 - o Install two electrolysis monitoring terminals (Erico DB12CS701 or equivalent) to be installed flush with the finished surface of the equipotentially bonded reinforced concrete in locations that are as far apart as possible while being accessible for future monitoring/testing if required and not in a position where they will be exposed to direct contact with local soil or pooling water;
- It is highly recommended that any temporary ground anchors used in the construction are configured such that:
 - o The ground anchors are electrically isolated from the steel reinforcement and all other conductive elements (preferred method, ensuring 100 mm clearance between the anchors and any conductive part of the building structures); or
 - o The ground anchors are isolated from the greater mass of earth in which they are embedded using electrically insulating treatments such as epoxy coating (not as desirable due to cost/complexity and risk of failure of insulating coating).
- It is recommended that the minimum compressive strength of concrete (where interfacing with the greater mass of earth) is maintained at 40 MPa (higher compressive strength ratings typically result in higher electrical resistivity due to the hydrophobic nature) and that the minimum depth of cover of concrete (between steel reinforcement elements and the greater mass of earth) should have a minimum value of 50 mm;
- It is recommended that a non-conductive moisture barrier is incorporated into the installation of the all reinforced concrete elements where there would otherwise be a direct interface with the greater mass of earth (where practical);
- That bare metallic structural components are not to be permitted to be installed in direct contact with the local soil (E.g. sheet piles); and
- It is recommended that a minimum 2000 mm clearance is maintained between the depot noise wall and any conductive features that could be considered to be remotely earthed (MEN-bonded features, conductive features of significant length such as handrails, continuous reinforced hard stand surfaces and fencing etc).

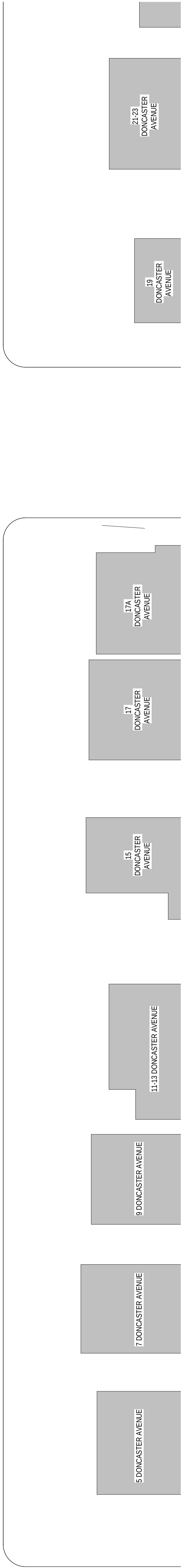
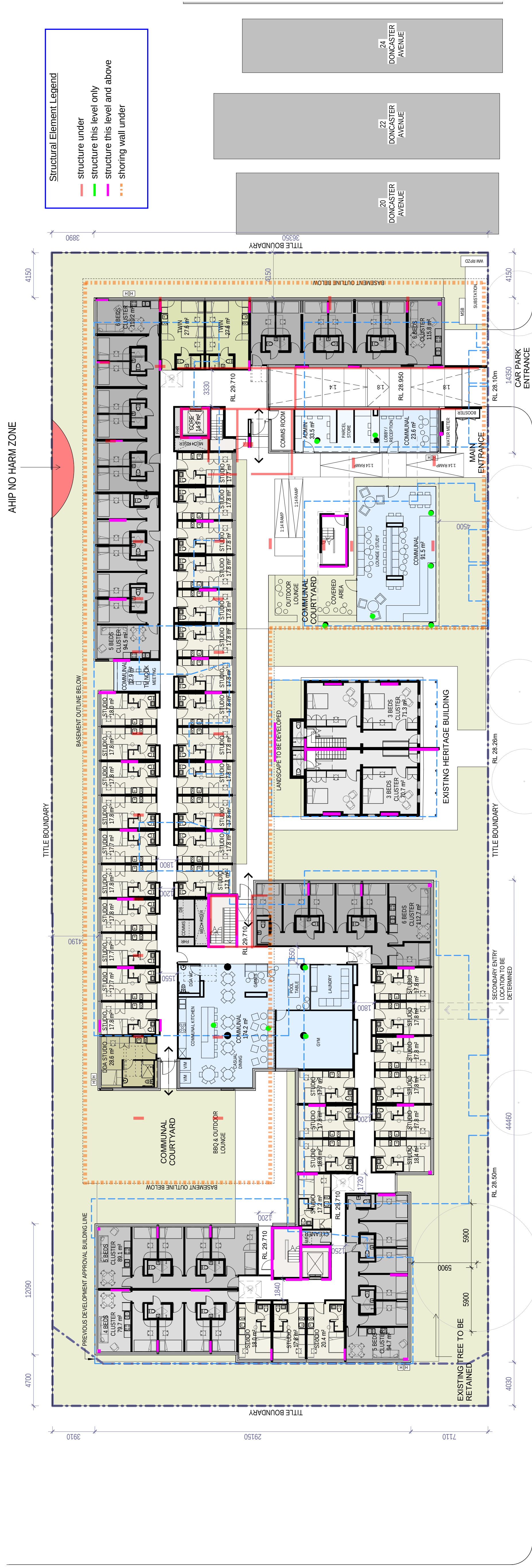
APPENDIX A. REFERENCE DRAWINGS



Structural Element Legend

Proposed structure

Shoring wall



Rev	Date	Description
1	09/11/2018	FOR INFORMATION
2	16/11/18	FOR INFORMATION

Drawn By FS / JY
Checked By EC
Date Printed 16/11/18 5:53:19 PM
Scale 1 : 200@ A1

Status	Project No
PRELIMINARY ISSUE	2309

Drawing Title

GROUND FLOOR PLAN

Project Title

4-DONCASTER AVE

KENSINGTON SYDNEY

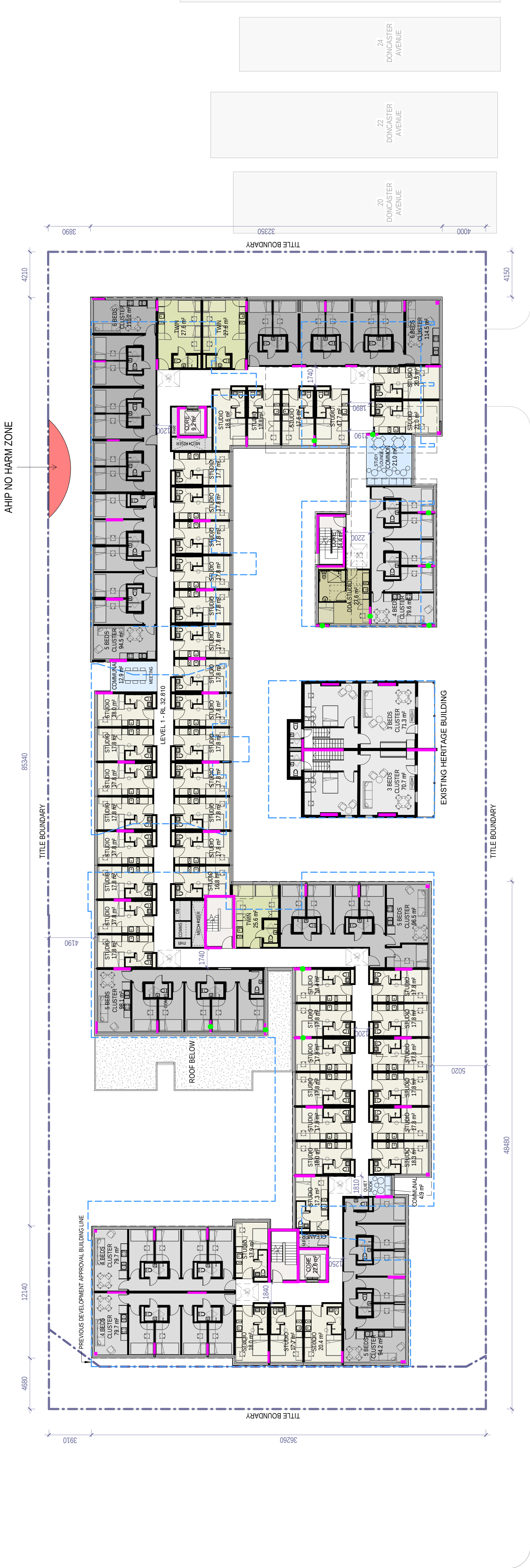
Structural Element Legend

—

structure under

—

structure this level and above



DONCASTER AVENUE



Project Title

4-DONCASTER AVE

KENSINGTON SYDNEY

Drawing Title

LEVEL 1 PLAN

Status

PRELIMINARY ISSUE

Project No

2309

Drawing No

TP02

Revision

2

Drawn By

EC

Checked By

16/11/18 5:53:31 PM

Date Printed

1:200@A1

Scale

Rev

Date

Description

FOR INFORMATION

1

09/11/2018

FOR INFORMATION

2

16/11/18

FOR INFORMATION

Melbourne

: 4/135 Sturt Street Southbank VIC 3006 T +61 3 9699 3644

Sydney

: GroundFloor11-1 Buckingham Street Surry Hills NSW 2010T +61 2 9660 9329

Brisbane

: Level 12/324 Queen Street Brisbane Qld 4000 T +61 7 3211 9821

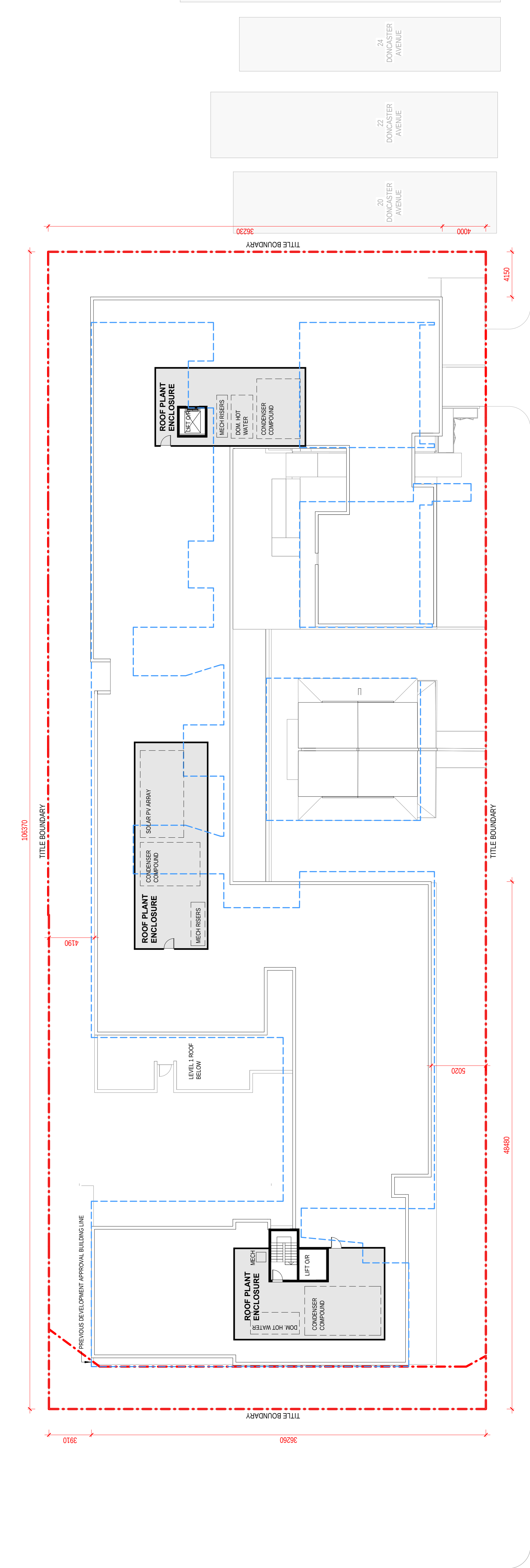
ASH 8400694261 NSW Nominated Architects Tom Jordan 7521,

Richard Leonard 7522, David Tordoff 8028

Halpall



Builders/Contractors shall verify job dimensions before any job commences. Figured dimensions shall take precedence over scaled work. Work shall also conform to the specification, other drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant and manufacture shall not commence prior to the return of inspected shop drawings signed by the Architect/Consultant. © Copyright 2008 All rights reserved



DONCASTER AVENUE

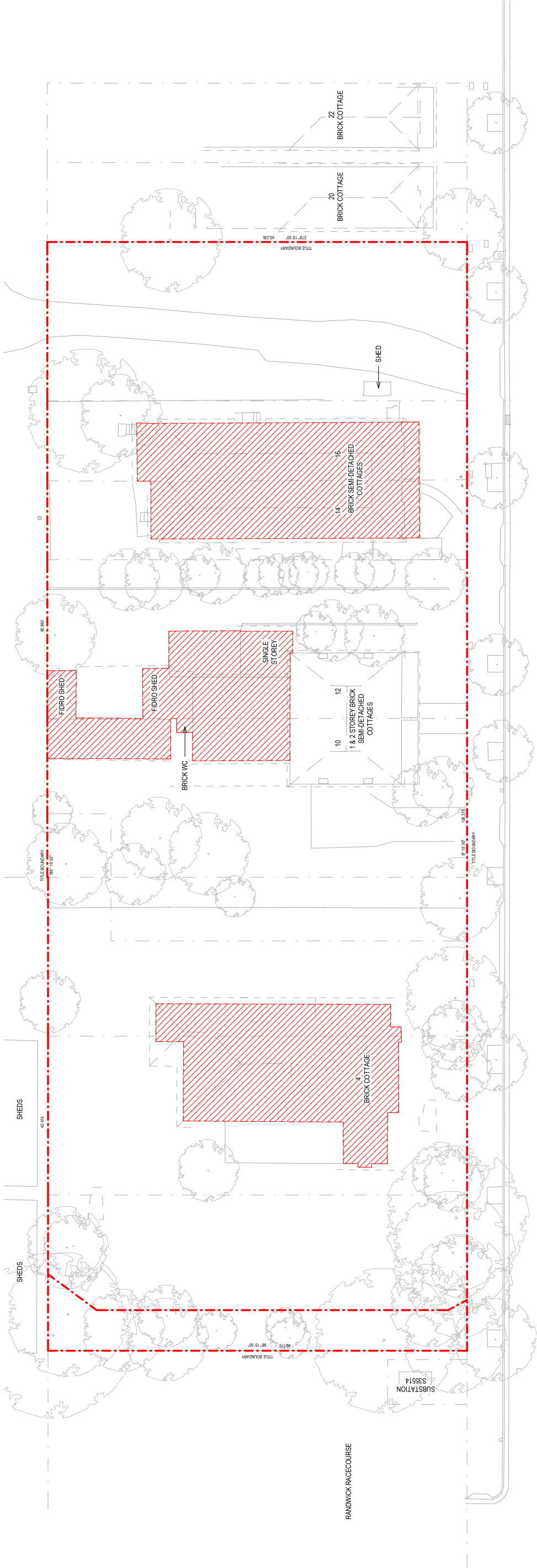


Project Title	Drawing Title	Status	Project No	Drawing No	Revision	Drawn By	Checked By	FS / J / Y	Rev	Date	Description
4-DONCASTER AVE KENSINGTON SYDNEY	LEVEL ROOF	PRELIMINARY ISSUE	2309	TP04	1	EC	16/11/18	16/11/18 5:53:47 PM	1	16/11/18	FOR INFORMATION

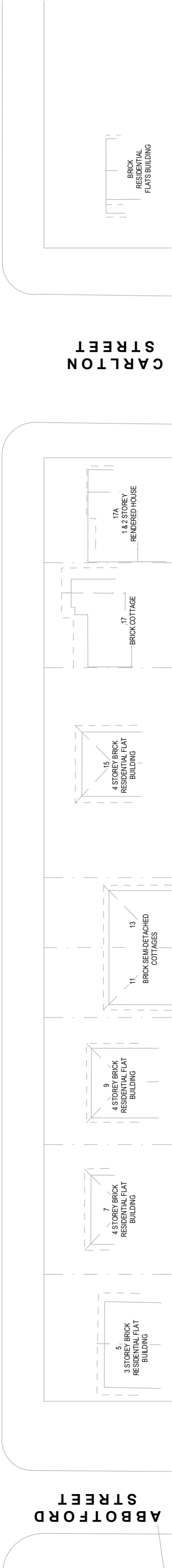
Melbourne : 4/135 Sturt Street Southbank VIC 3006 T +61 3 9699 3644
Sydney : GroundFloor11+ Buckingham Street Surry Hills, NSW 2010T +61 2 9660 9329
Brisbane : Level 12/324 Queen Street Brisbane Qld 4000 T +61 7 3211 9821
ASH 8/006924/261 NSW Nominated Architects Tom Jordan 7521,
Richard Leonard 7522, David Tordoff 8028



EXISTING BUILDINGS TO
BE DEMOLISHED

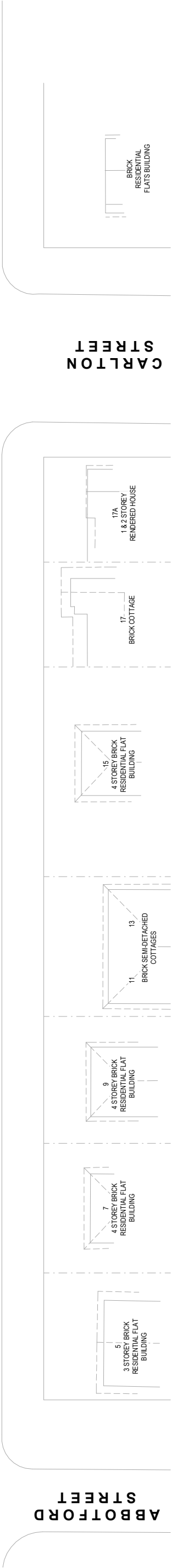
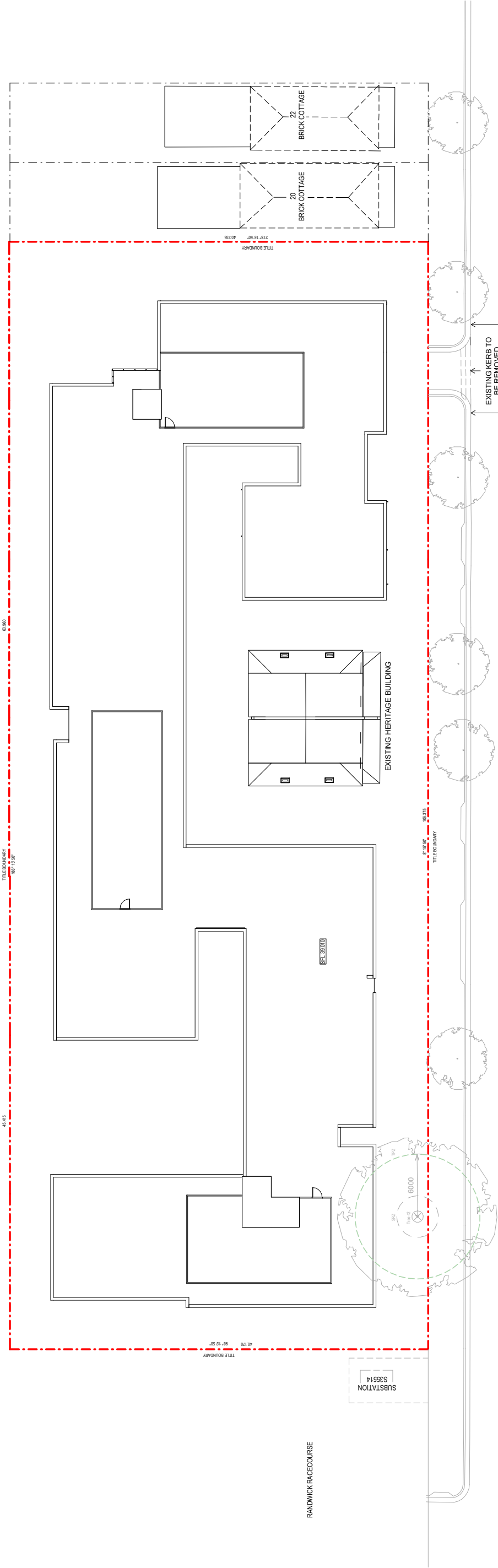


DONCASTER AVENUE

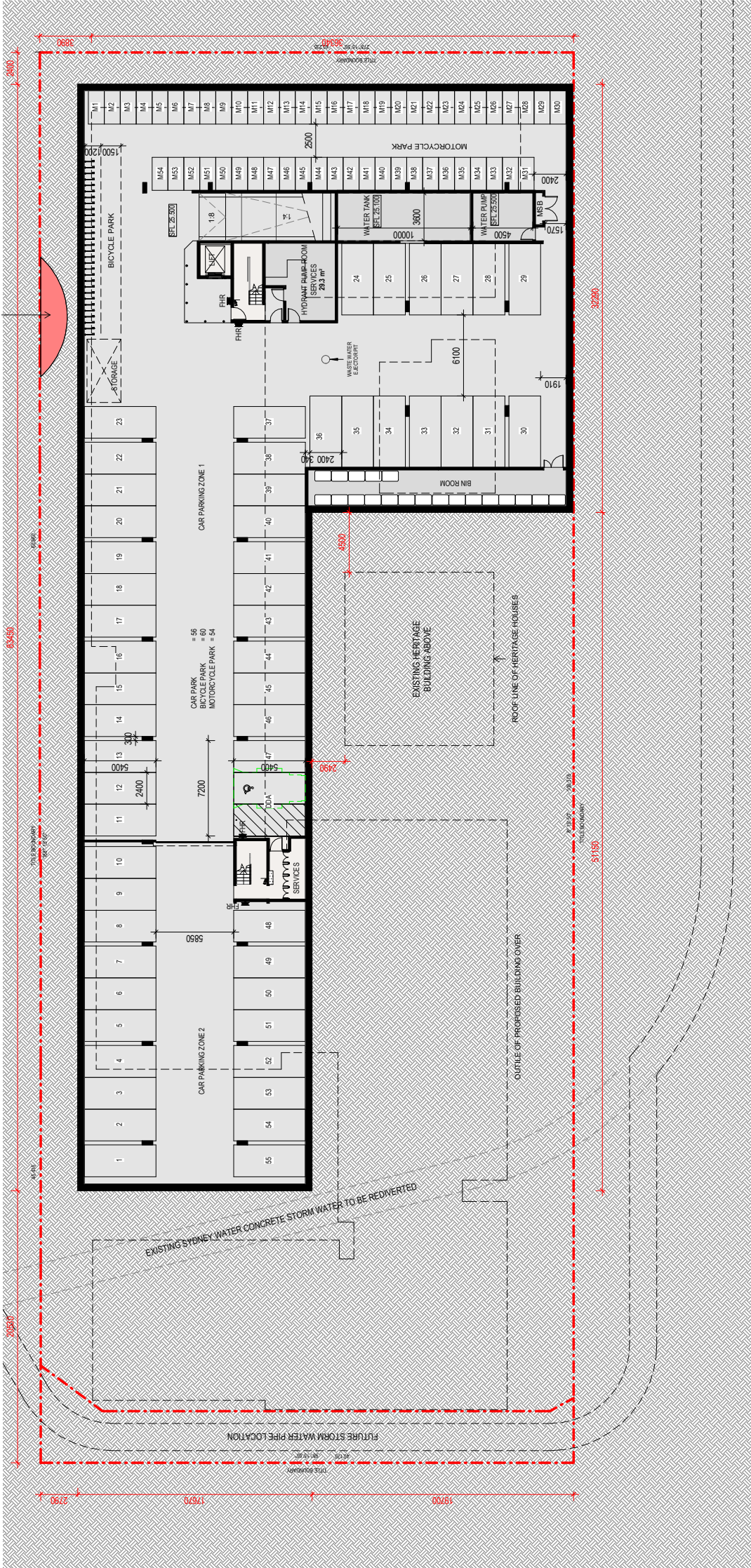


Project Title	Status	Drawing Title	Revision	Drawn By	Author	Rev	Date	Description
4-DONCASTER AVE KENSINGTON SYDNEY	PRELIMINARY ISSUE	EXISTING SITE PLAN	TP01.01	2309	TP01.01	5/12/2018 1:48:45 PM	1: 200@ A1	Melbourne : 4/135 Slurt Street Southbank, VIC 3006 T +61 3 9669 3644 Sydney : GroundFloor 1-1 Buckingham Street, Surry Hills, NSW 20101 +61 2 9660 9329 Brisbane : Level 12/324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821 AS/NZS 8406:2015 NSW Notified Architect: Tom Jordan 7521, Richard Leonard 7522, David Tordoff 8028

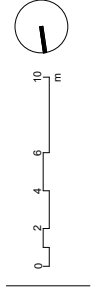




Project Title	Drawing Title	Status	Revision		Drawn By	Author	Rev	Date	Description
	4-DONCASTER AVE KENSINGTON SYDNEY	PROPOSED SITE PLAN	PRELIMINARY ISSUE	TP01.02	2309	5/12/2018 1:48:46 PM 1: 200@ A1		Melbourne : 4/135 Slurt Street Southbank, VIC 3006 T +61 3 9699 3644	
								Sydney : GroundFloor 1-1 Buckingham Street, Surry Hills, NSW 2010T +61 2 9660 9329	
								Brisbane : Level 12/324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821	
								ABN: 84006394261 NSW Notified Architects Tom Jordan 7521, Richard Leonard 7522, David Tordoff 8028	
									



Rev	Date	Description
1	08/11/2018	FOR INFORMATION
2	16/11/18	FOR INFORMATION



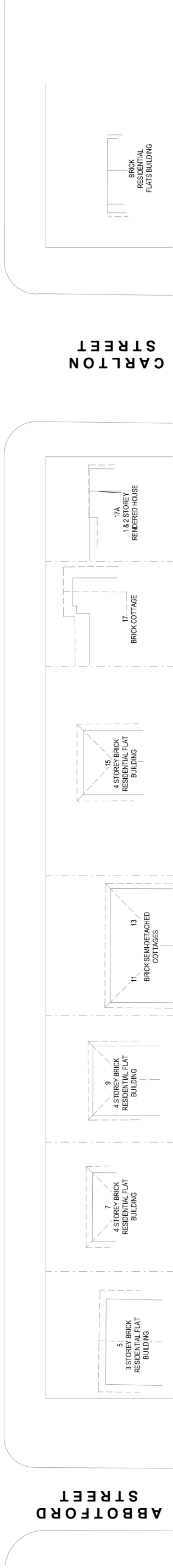
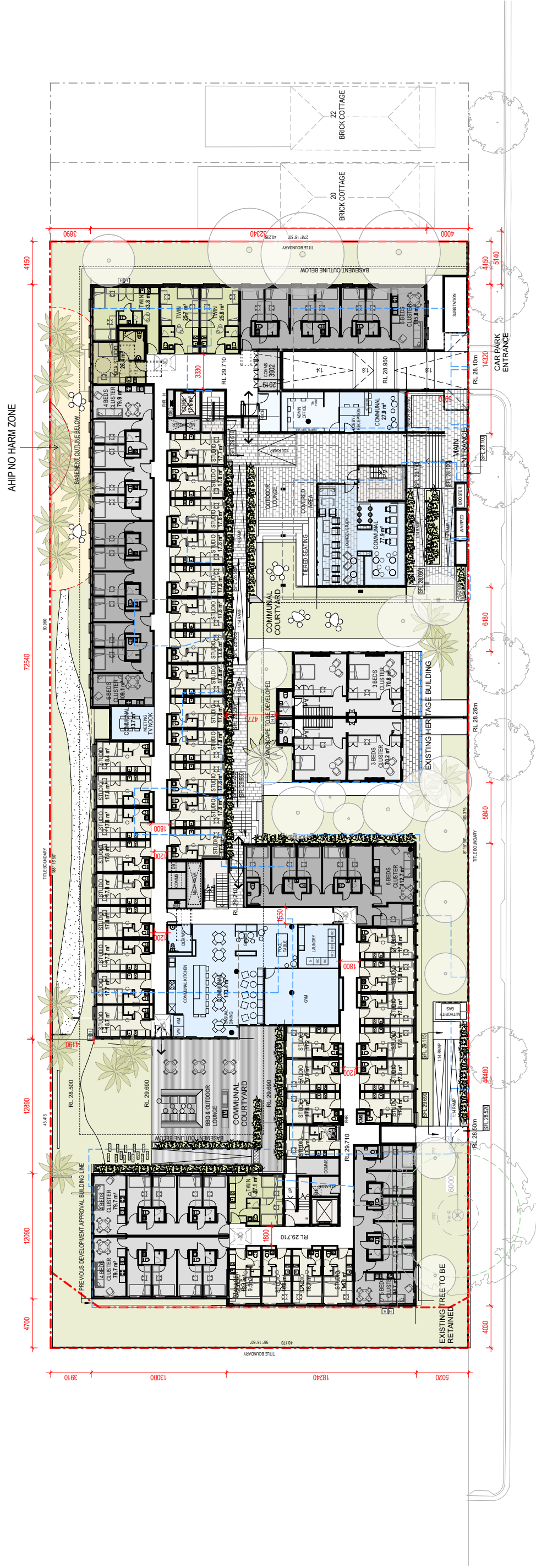
Rev	Date	Description
1	08/11/2018	FOR INFORMATION
2	16/11/18	FOR INFORMATION

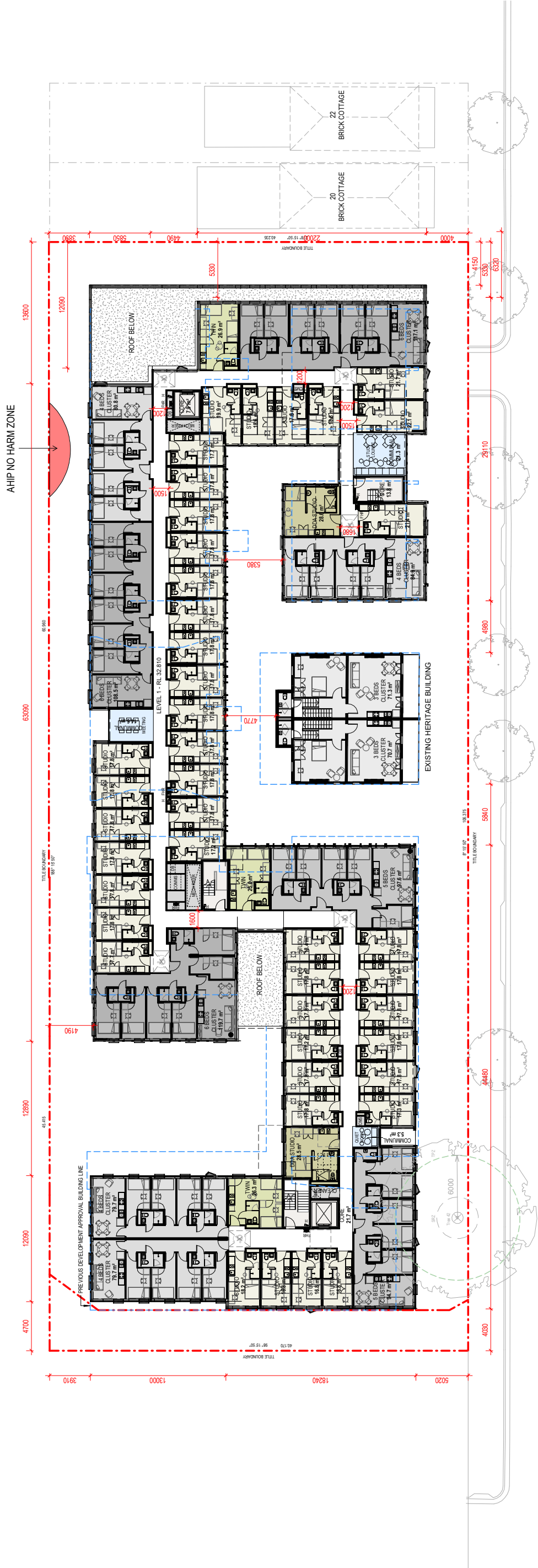
Rev	Date	Description
1	08/11/2018	FOR INFORMATION
2	16/11/18	FOR INFORMATION

Rev	Date	Description
1	08/11/2018	FOR INFORMATION
2	16/11/18	FOR INFORMATION

Rev	Date	Description
1	08/11/2018	FOR INFORMATION
2	16/11/18	FOR INFORMATION

Rev	Date	Description
1	08/11/2018	FOR INFORMATION
2	16/11/18	FOR INFORMATION





ABBOTTFORD STREET

5
3 STOREY BRICK
RESIDENTIAL FLAT
BUILDING

7
4 STOREY BRICK
RESIDENTIAL FLAT
BUILDING

9
4 STOREY BRICK
RESIDENTIAL FLAT
BUILDING

11
BRICK SEMI-DETACHED
COTTAGES

13
BRICK SEMI-DETACHED
COTTAGES

15
4 STOREY BRICK
RESIDENTIAL FLAT
BUILDING

17
BRICK COTTAGE

17A
1 & 2 STOREY
RENDERED HOUSE

CARLTON STREET

BRICK
RESIDENTIAL
FLATS BUILDING

DONCASTER AVENUE

Project Title

4-DONCASTER AVE
KENSINGTON SYDNEY

Drawing Title

LEVEL 1 PLAN

Status

PRELIMINARY ISSUE

Project No

2309

Drawing No

TP02.03

Revision

3

Drawn By

Checked By

Date Printed

Scale

FS / JY

EC

5/12/2018 1:49:16 PM

1:200@A1

Rev

Date

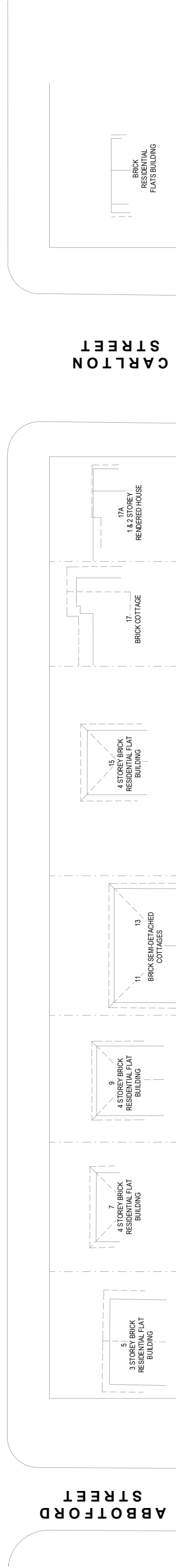
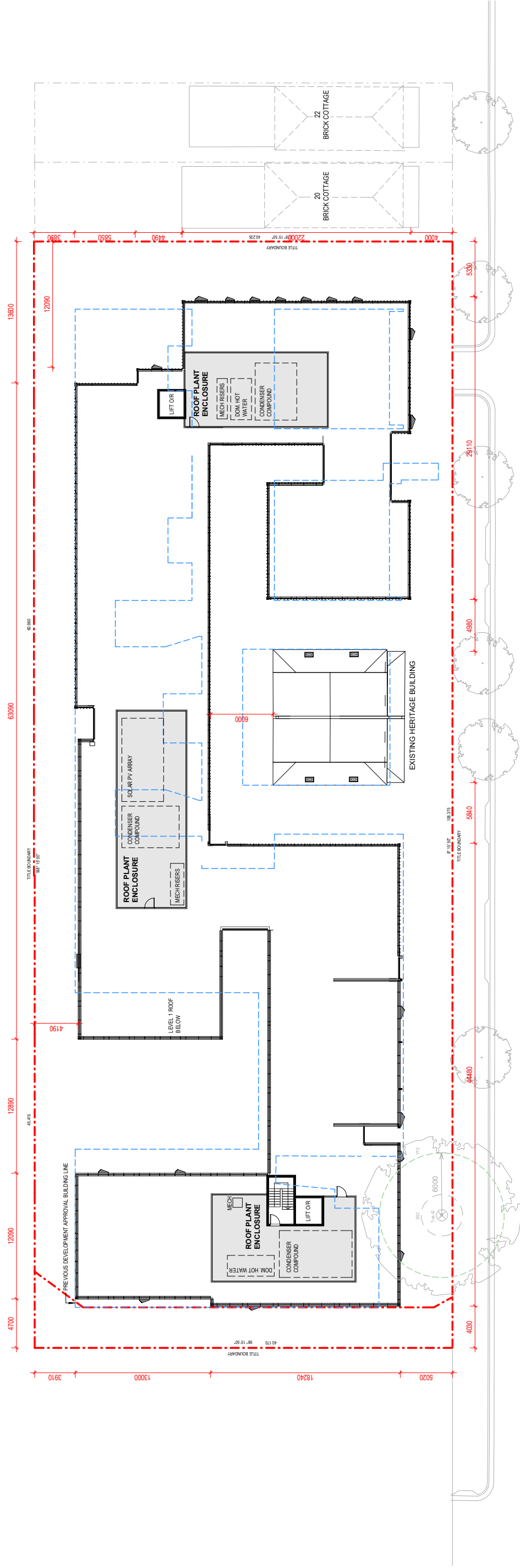
Description

FOR INFORMATION

FOR INFORMATION

FOR INFORMATION

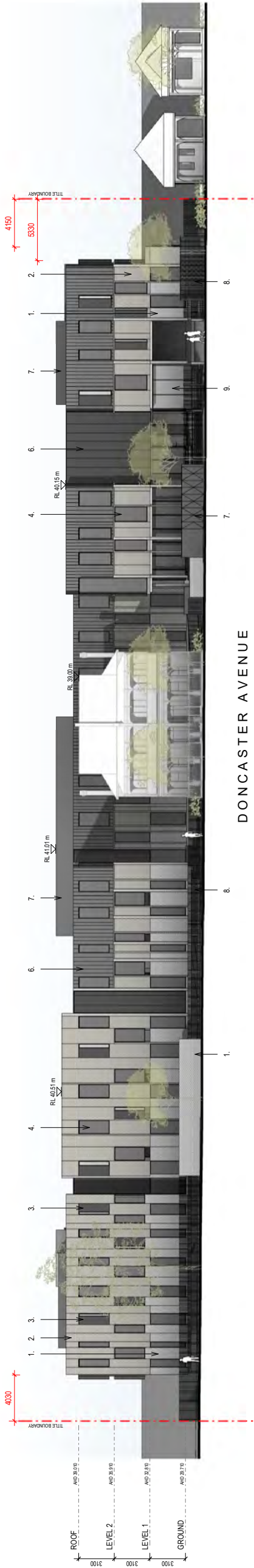




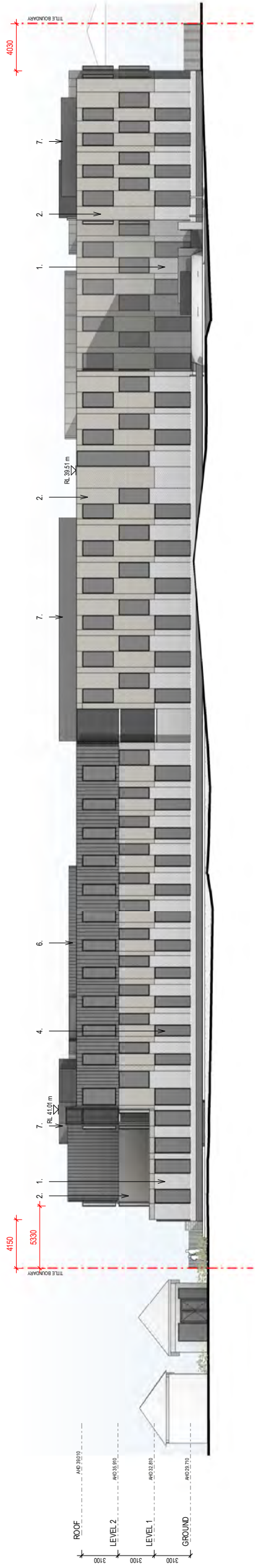
Project Title	Drawing Title	Status	Project No	Drawing No	Revision	Drawn By	FS / JY
4-DONCASTER AVE KENSINGTON SYDNEY	ROOF PLAN	PRELIMINARY ISSUE	2309	TP02.05	1	Checked By Date Printed Scale	EC 5/12/2018 1:49:23 PM 1:200@ A1

Rev Date Description

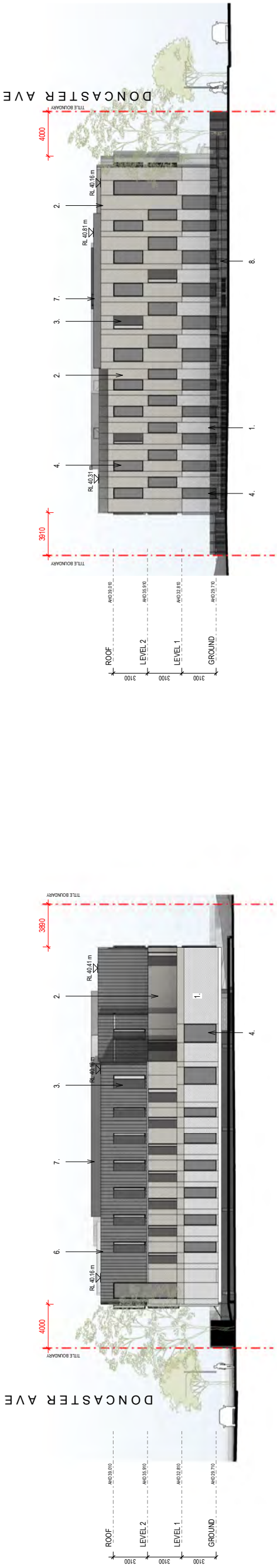
1	30/11/18	FOR INFORMATION
---	----------	-----------------



ELEVATION WEST



ELEVATION EAST



ELEVATION SOUTH

ELEVATION NORTH



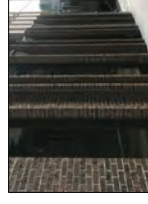
1. AUSTRAL BRICKS LA PALOMA CASTELLANA



2. AUSTRAL BRICKS LA PALOMA MIRO



3. POWDER COATED ALUMINIUM WITH DULUX DURALLOY, MONUMENT MATT FINISH (BLACK).



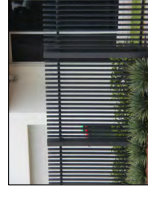
4. GREY BODY TINT GLASS WITH '3' FINISH.



6. METAL PANEL SYSTEM WITH MONUMENT MATT FINISH (BLACK).



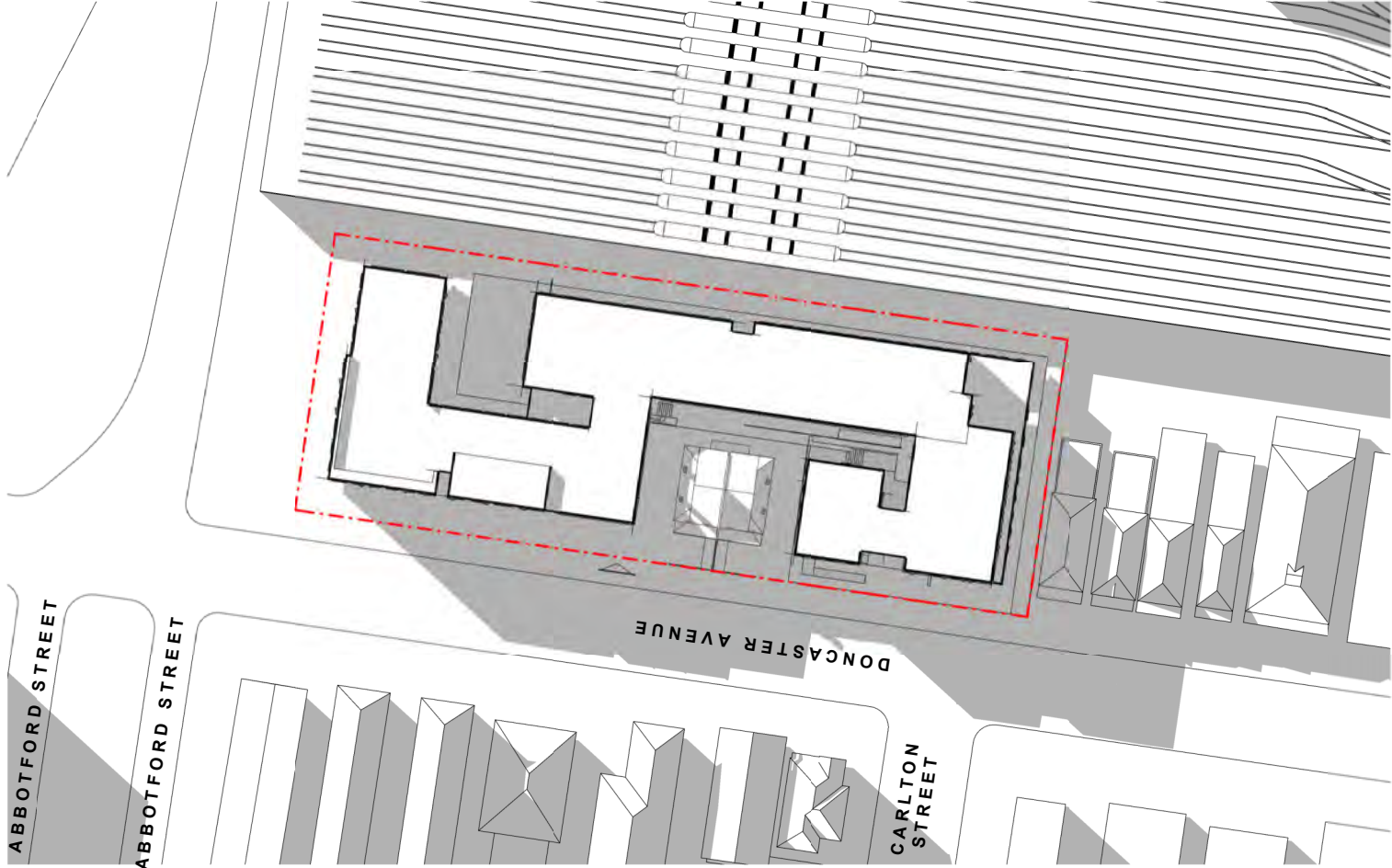
7. FULLY OPAQUE MONUMENT MATT FINISH (BLACK).



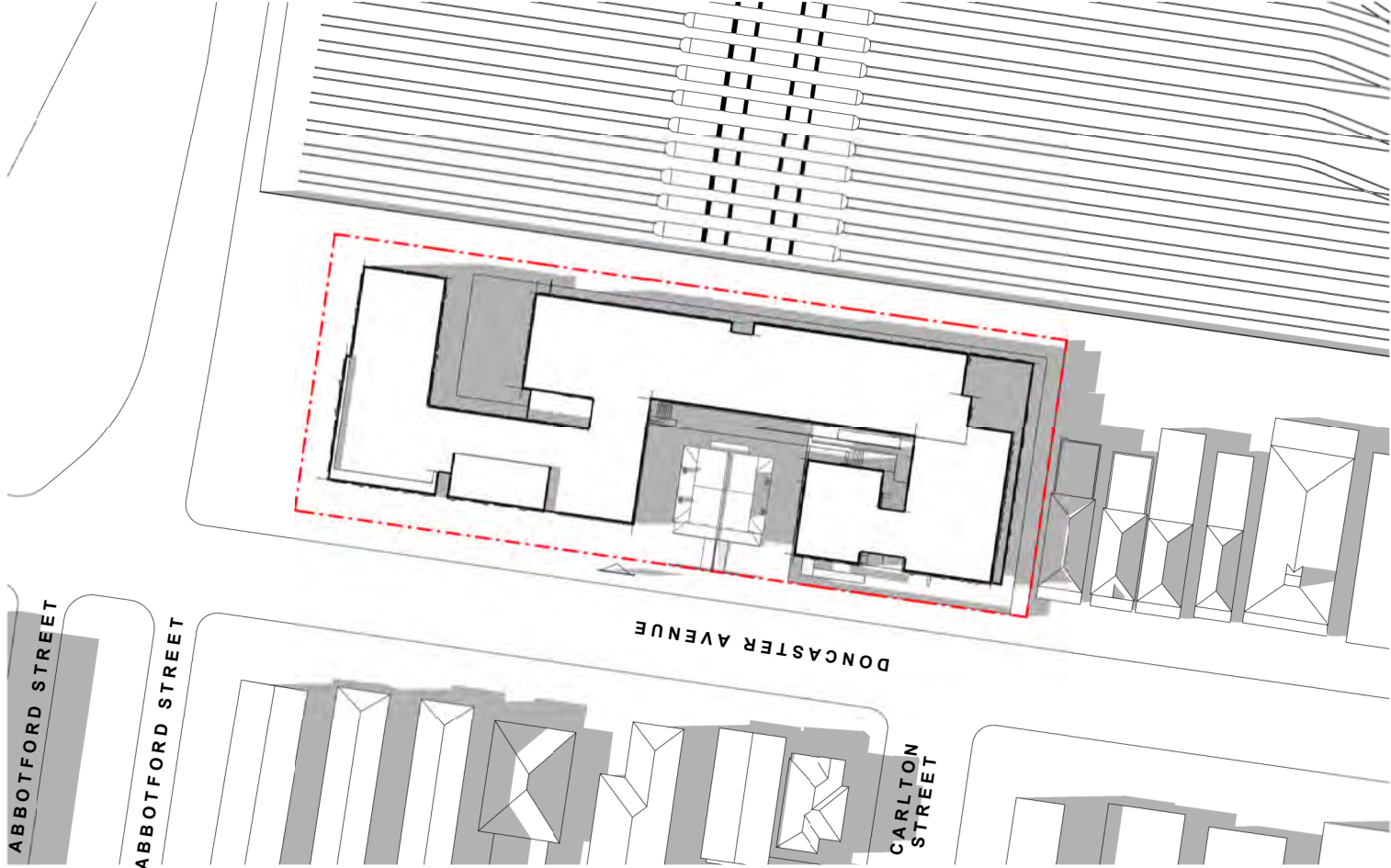
8. FENCE COLOUR TO MATCH '7'.



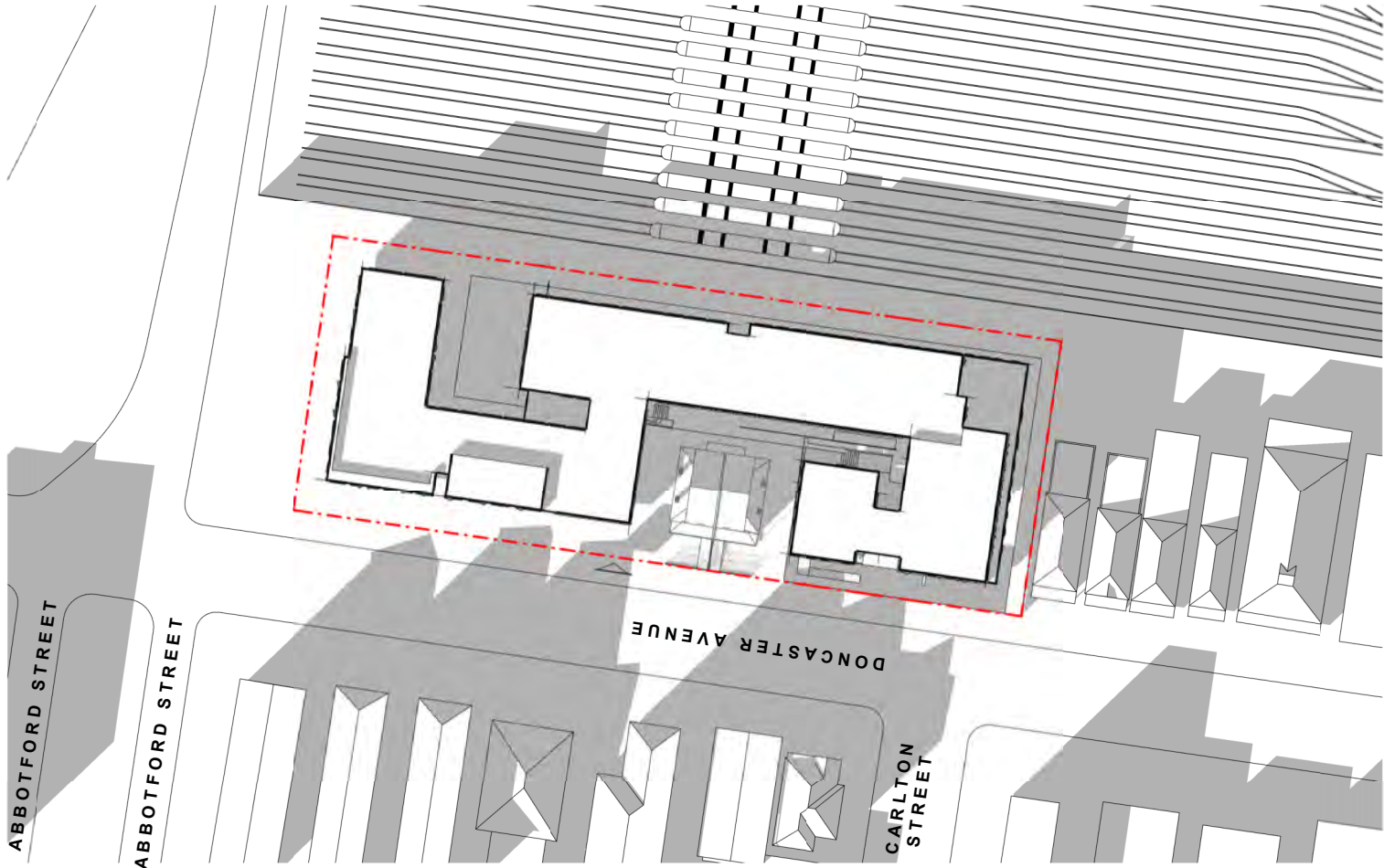
9. CLEAR VISION GLASS.



SHADOW DIAGRAM - 21ST JUNE 9AM



SHADOW DIAGRAM - 21ST JUNE 12PM



SHADOW DIAGRAM - 21ST JUNE 3PM

Project Title
4-DONCASTER AVE
KENSINGTON SYDNEY

Drawing Title
SHADOW DIAGRAMS

Status
CONSTRUCTION ISSUE

Project No
2309

Revision

Drawing No
TP06.01

Drawn By
Checked By
Date Printed
Scale

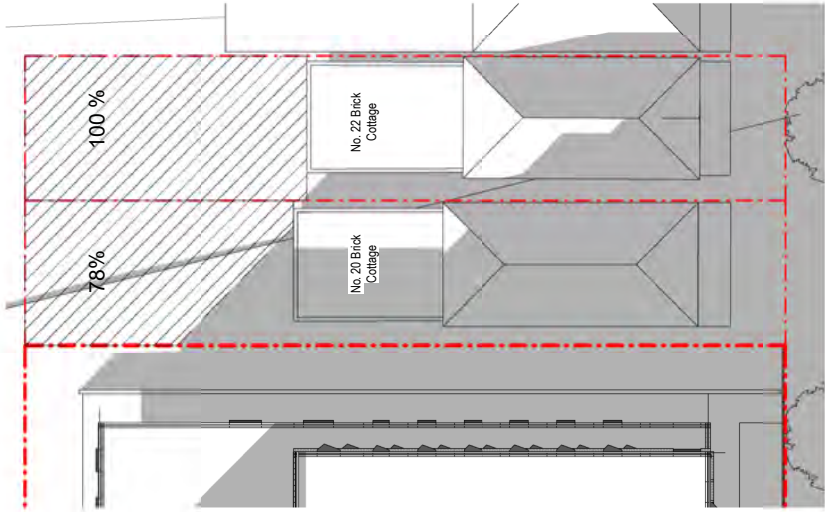
Author
Checker
5/12/2018 1:50:58 PM
1: 500@ A1

Rev
Date
1
m

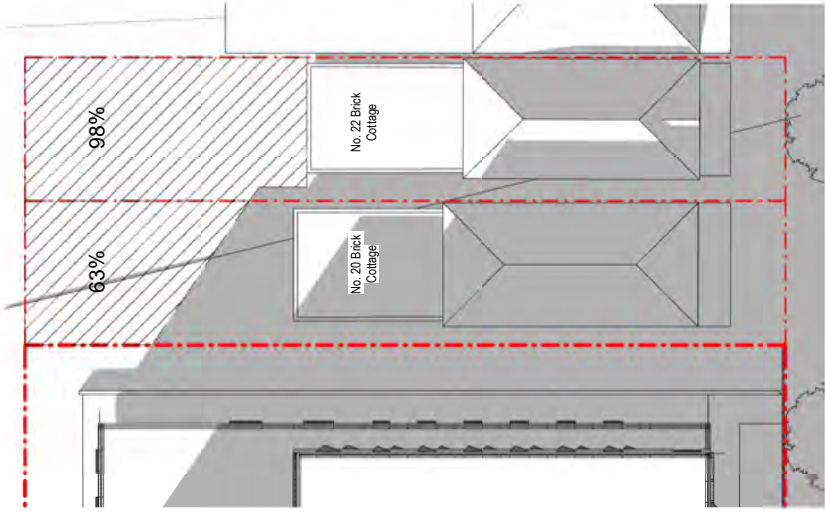
Description

Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644
Sydney : GroundFloor 1-1 Buckingham Street, Surry Hills, NSW 20101 +61 2 9660 9329
Brisbane : Level 12/324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821
AS/NZS 8406:2015 NSW Notified Architects: Tom Jordan 7521,
Richard Leonard 7522, David Tordoff 8028

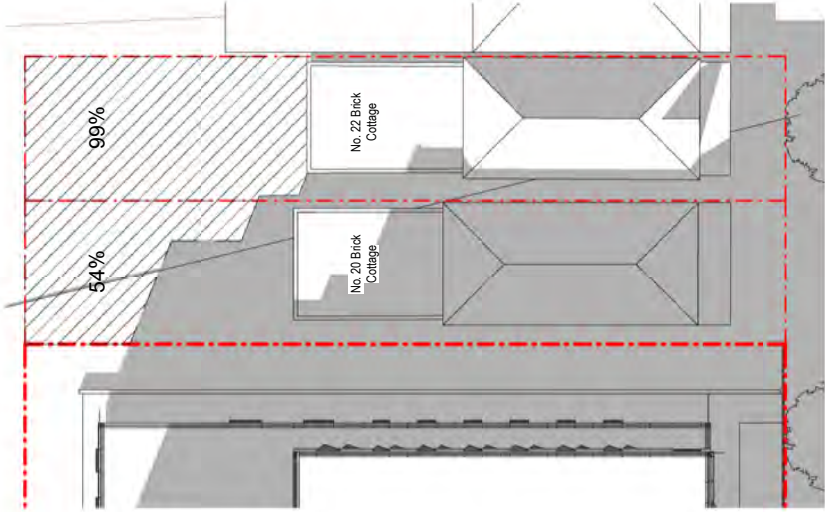
halpall



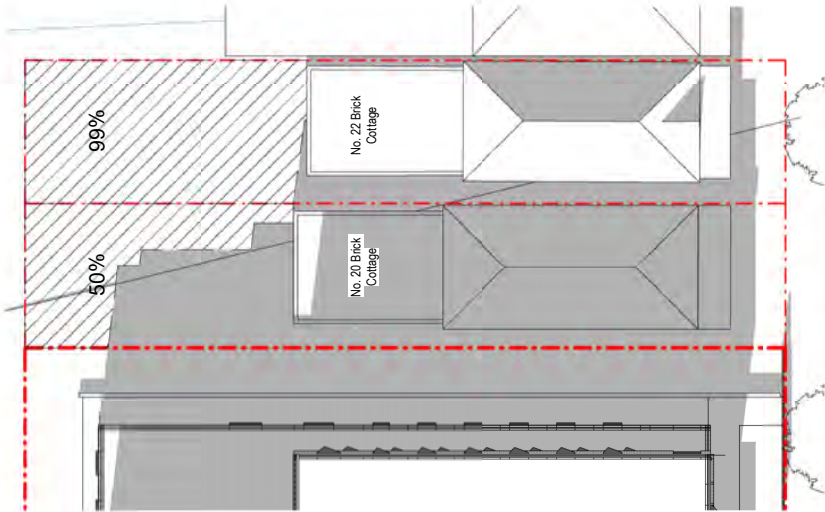
COURTYARD SUN STUDY - 21ST JUNE 8AM



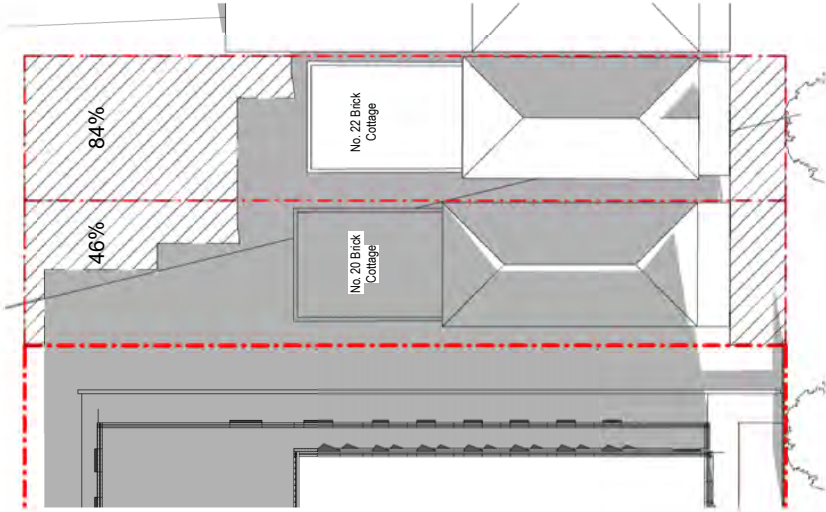
COURTYARD SUN STUDY - 21ST JUNE 9AM



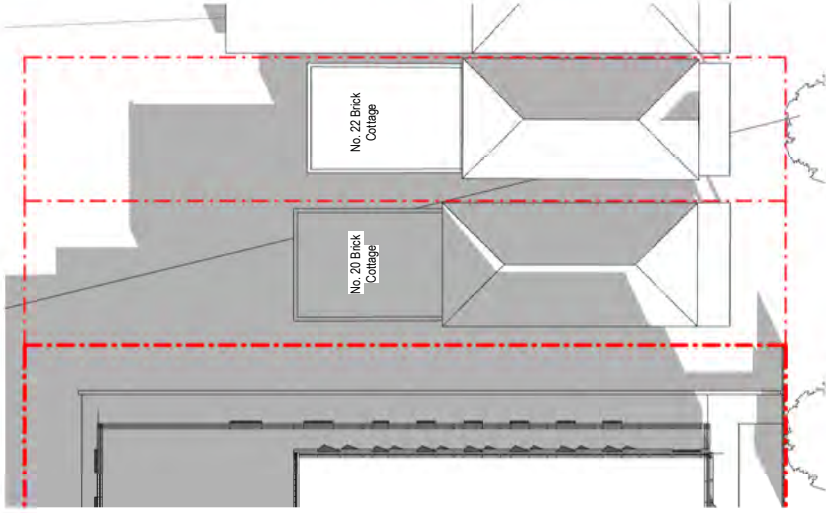
COURTYARD SUN STUDY - 21ST JUNE 10AM



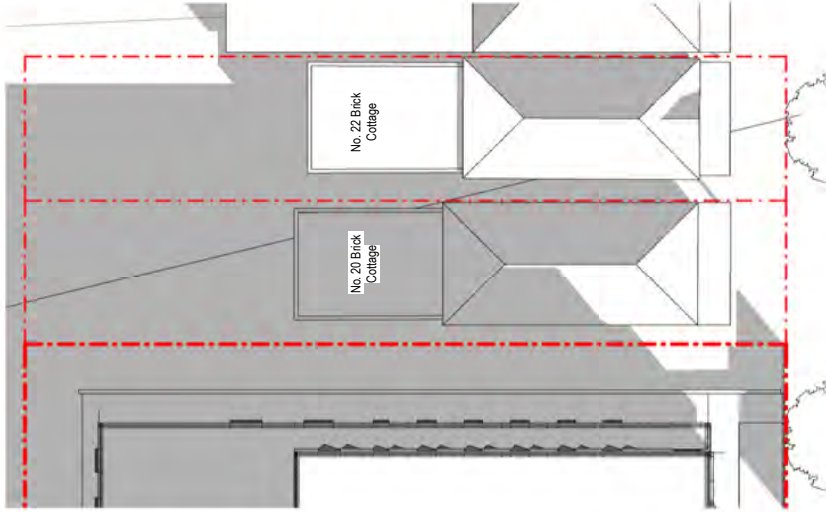
COURTYARD SUN STUDY - 21ST JUNE 11AM



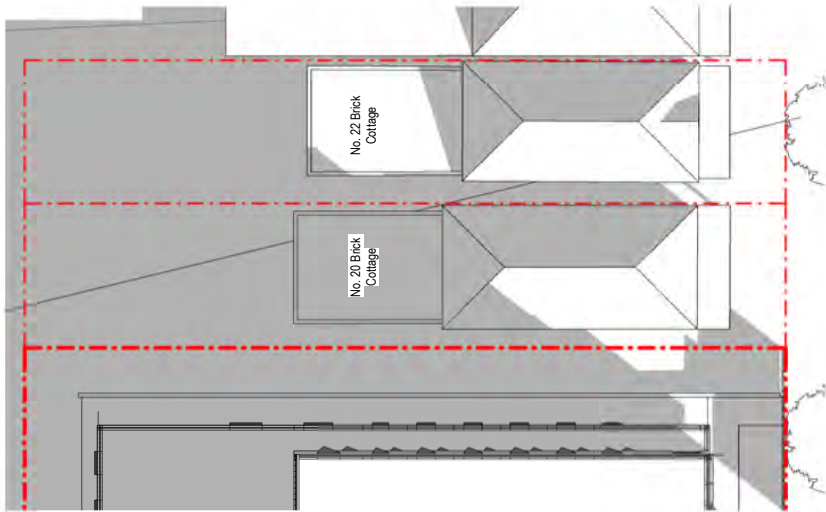
COURTYARD SUN STUDY - 21ST JUNE 12PM



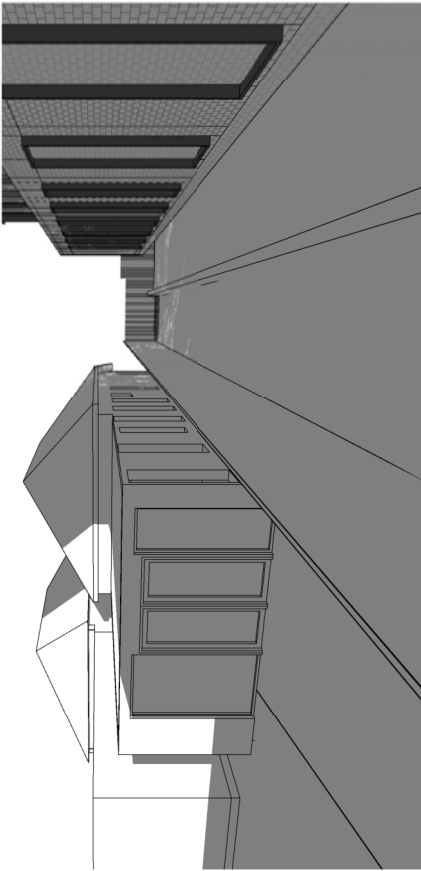
COURTYARD SUN STUDY - 21ST JUNE 1PM



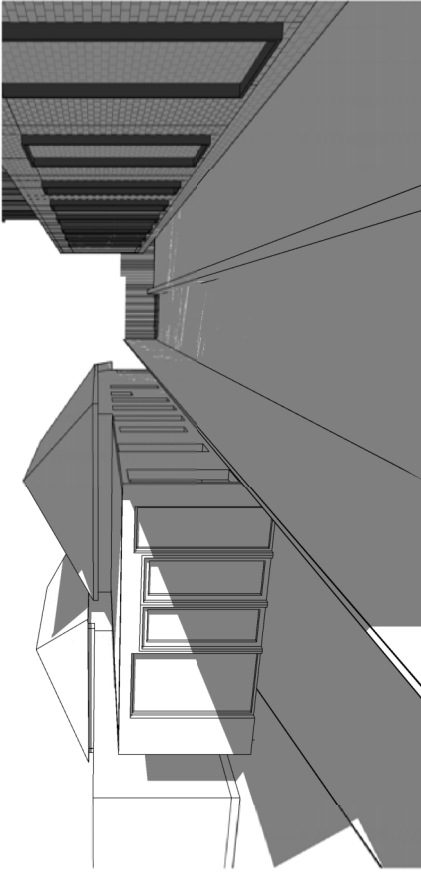
COURTYARD SUN STUDY - 21ST JUNE 2PM



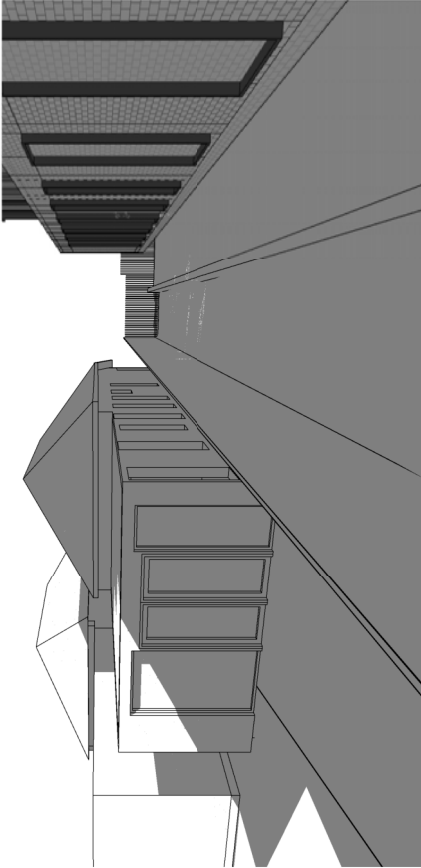
COURTYARD SUN STUDY - 21ST JUNE 3PM



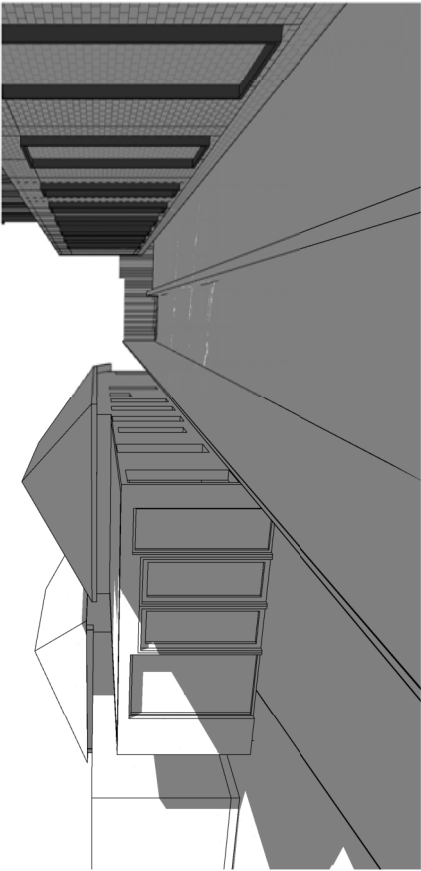
SHADOW STUDY_20 DONCASTER AVE - 8AM



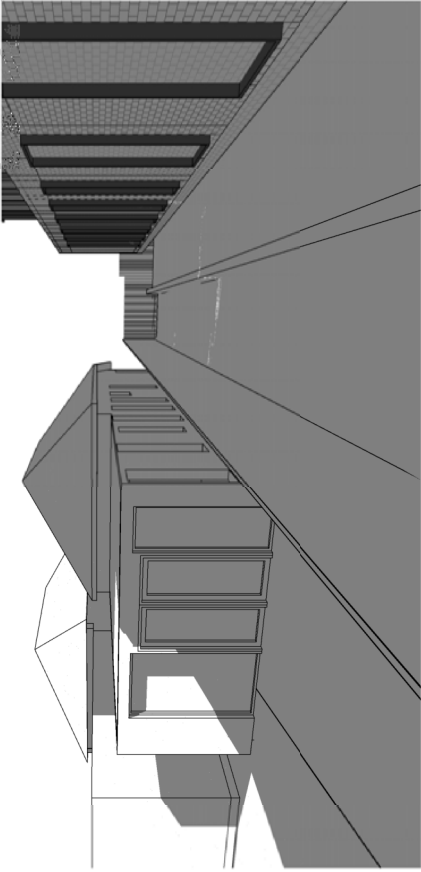
SHADOW STUDY_20 DONCASTER AVE - 9AM



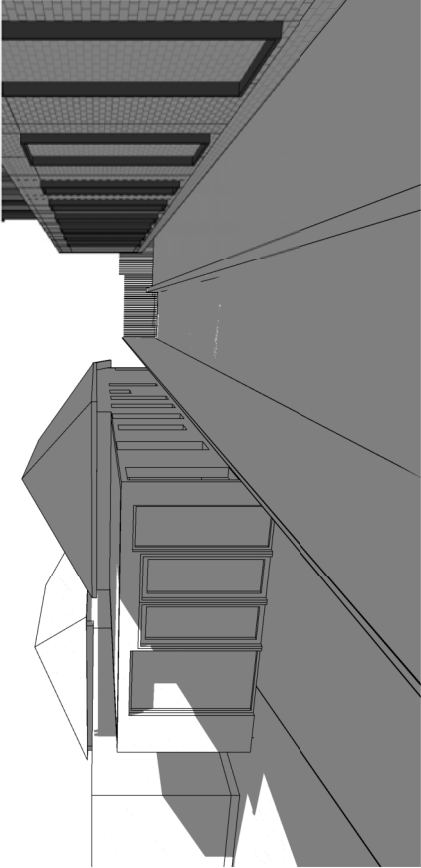
SHADOW STUDY_20 DONCASTER AVE - 10AM



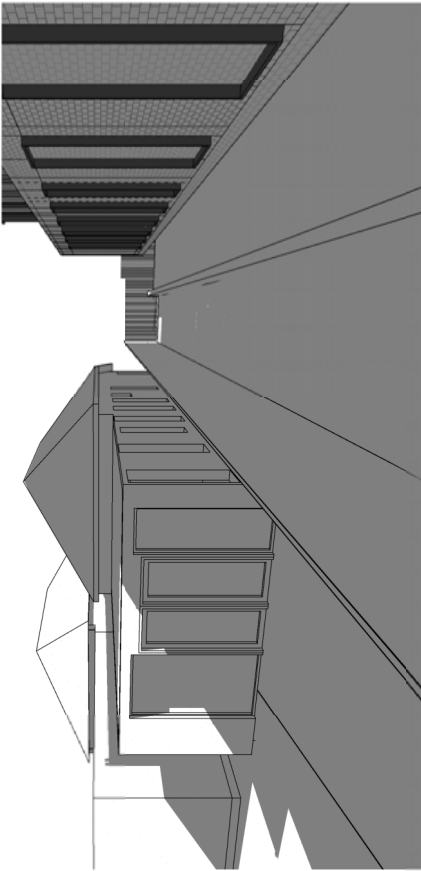
SHADOW STUDY_20 DONCASTER AVE - 10.15AM



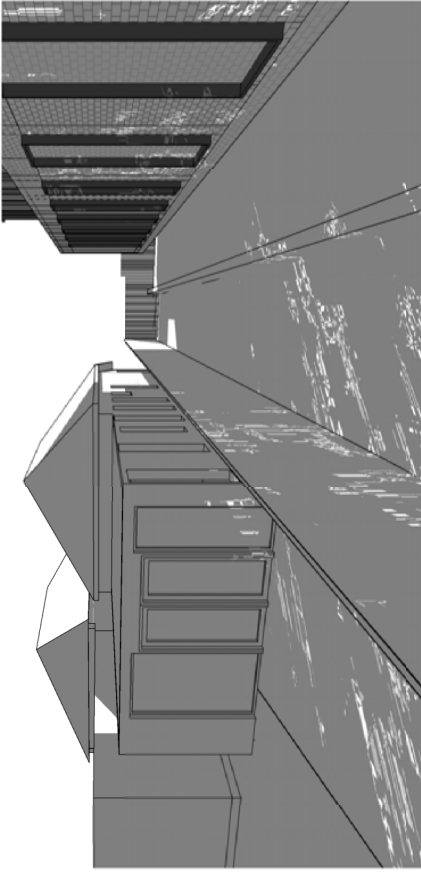
SHADOW STUDY_20 DONCASTER AVE - 10.30AM



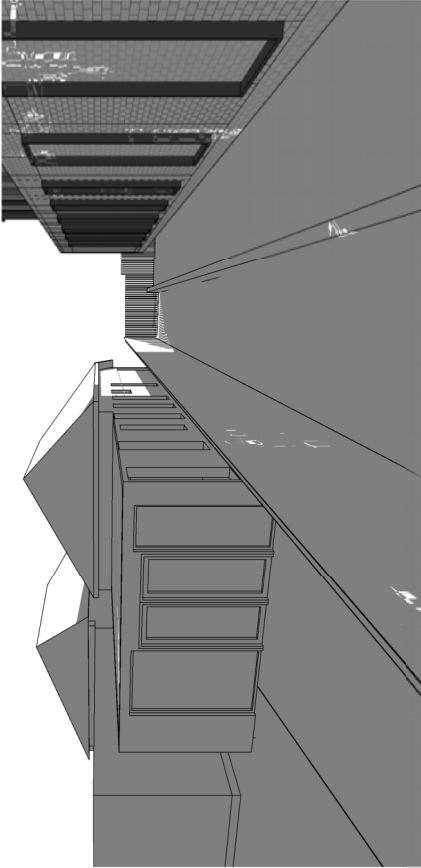
SHADOW STUDY_20 DONCASTER AVE - 10.45AM



SHADOW STUDY_20 DONCASTER AVE - 11AM



SHADOW STUDY_20 DONCASTER AVE - 3PM



SHADOW STUDY_20 DONCASTER AVE - 4PM

Project Title	Status	Project No	Revision	Drawn By	Author	Rev	Date	Description
4-DONCASTER AVE KENSINGTON SYDNEY	PRELIMINARY ISSUE	2309	TP06.03	Checked By Date Printed Scale	Checker 5/12/2018 1:53:35 PM @ A1			
SHADOW STUDY - SOUTHERN INTERFACE								
Melbourne : 4/135 Sturt Street Southbank, VIC 3006 T +61 3 9699 3644								
Sydney : GroundFloor 1-1 Buckingham Street, Surry Hills, NSW 20107 +61 2 9660 9329								
Brisbane : Level 12/324 Queen Street, Brisbane Qld 4000 T +61 7 3211 9821								
ASH: 8406964261 NSW Nominated Architects: Tom Jordan 7521, Richard Leonard 7522, David Tordoff 8028								
halqobai								

NOTES :

- * BOUNDARIES HAVE NOT BEEN DEFINED BY SURVEY AND ARE DIAGRAMMATIC ONLY
- * LAND DIMENSIONS AND AREAS HAVE BEEN COMPILED FROM PLANS OBTAINED FROM LPMIA
- * BEARINGS RELATE TO MGA NORTH ORIGINATING FROM DP 1158928
- * THIS PLAN ORIGINATING FROM BENCHMARK LOCATED IN FRONT OF NO.14 DONCASTER AVE. RL 28.07
- * VISIBLE ACCESSIBLE SERVICES ONLY HAVE BEEN LOCATED. THIS PLAN DOES NOT PURPORT TO SHOW UNDERGROUND SERVICES.
- * THE EXISTENCE OF UNDERGROUND SERVICES HAS NOT BEEN ESTABLISHED.
- * EXISTENCE OF SERVICES MUST BE VERIFIED BY CONTACTING DIAL BEFORE YOU DIG (DBYD) 1100.COM.AU
- * CRITICAL SERVICES MUST BE EXPOSED AND LOCATED.
- * NEIGHBOURING HOUSES, WINDOWS AND ROOF POSITIONS ARE NOT TO BE CONSIDERED
- * FLOOR LEVELS GENERALLY SURVEYED AT DOOR THRESHOLDS. INTERNAL ROOMS NOT SURVEYED.
- * CONTOURS SHOWN ARE INDICATIVE OF LAND FORM. SPOT LEVELS SHOULD TAKE PRECEDENCE.
- * REFER TO FACE OF PLAN FOR SUBJECT TITLE NOTATIONS. THIS TITLEBLOCK IS AN INTEGRAL PART OF THIS DRAWING AND SHOULD NOT BE REMOVED.



Liability Limited by a
Scheme Approved under
Professional Standards
Legislation

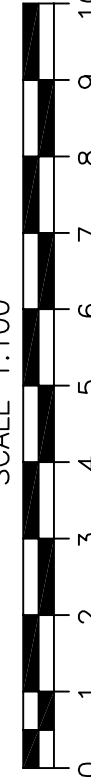


LEGEND

- ELP - ELECTRIC LIGHT POLE
- RF - TOP OF ROOF
- HYD - HYDRANT
- PPT - PARAPET
- TW - TOP WALL
- BW - BASE OF WALL
- TG - TOP KERB
- TG - TOP GUTTER
- PP - POWER POLE
- SMH - SEWER MANHOLE
- SP - SIGN POST
- ST - STREET LIGHT
- TEL - TELEPHONE
- VE - VEHICLE CROSSING
- WM - WATER METER
- RG - RIDGE

© PROJECT SURVEYORS-2018
REPRODUCTION WITHOUT WRITTEN
APPROVAL IS STRICTLY PROHIBITED

REV	AMENDMENTS	DATE



SHEET 1 OF 1 - DETAIL SURVEY

CLIENT : BLUESKY FUNDS

SURVEYOR :	EDYTA
DATUM :	AUSTRALIAN HEIGHT DATUM
ORIGIN :	BENCHMARK RL 28.07
JOB REF. :	B04394
DRAWING NO. :	B04394-DETAIL
CHECKED :	SCOTT D
DATE OF SURVEY :	20.11.2018
REDUCTION RATIO :	1:200

PLAN OF: 4-18 DONCASTER AVENUE
KENSINGTON
SHOWING: GENERAL DETAIL AND
SITE LEVELS
PURPOSE: ARCHITECTURAL DESIGN
COUNCIL SUBMISSION

BELLA VISTA

PO Box 7419 BAULKHAM HILLS NSW 2153
SUITE 405, LEVEL 4, 14 LEXINGTON DRIVE,
BELLA VISTA NSW 2153
PHONE : 9056 1900
email: office@projectsurveyors.com.au

www.projectsurveyors.com.au



PROJECT
SURVEYORS

Professional Innovative... Results.

ABBOTTFORD STREET



AVENUE

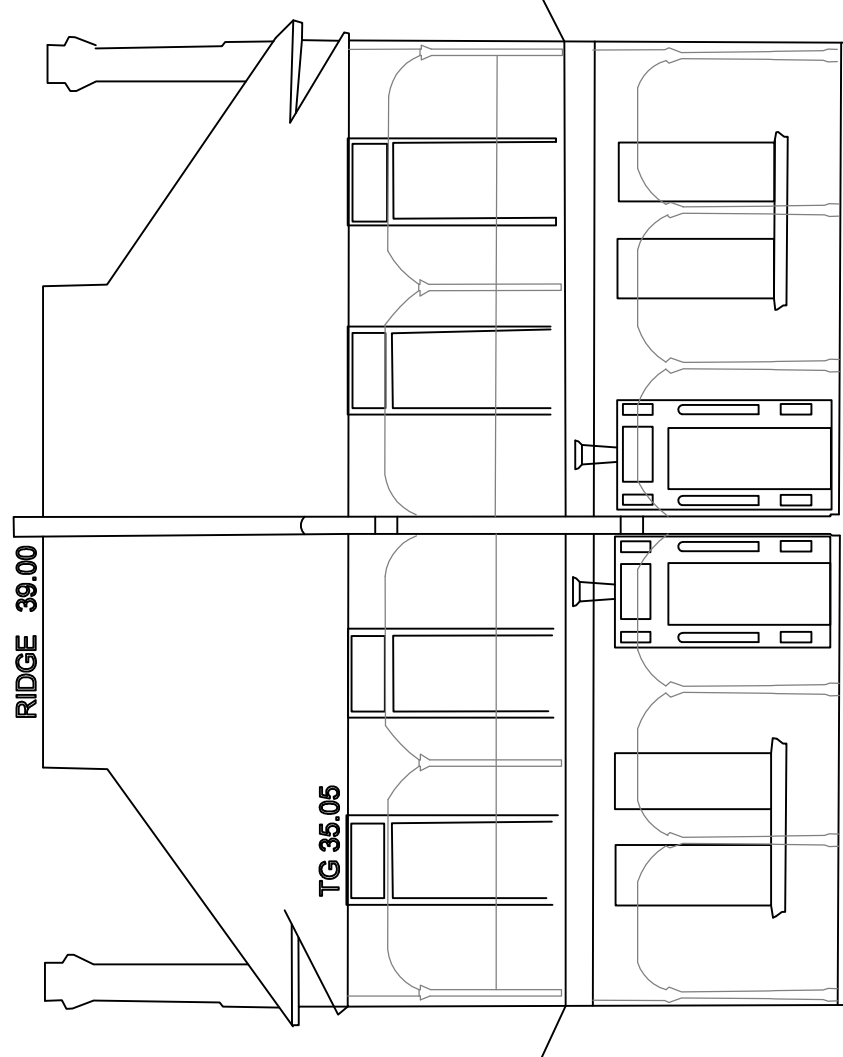
DONCASTER

ELEVATION 1

72
DP 1062908

73
DP 1062906

LIGHT RAIL
(UNDER CONSTRUCTION)



RL 28.00
ELEVATION 1
BUILDING NO 10-12
1:100

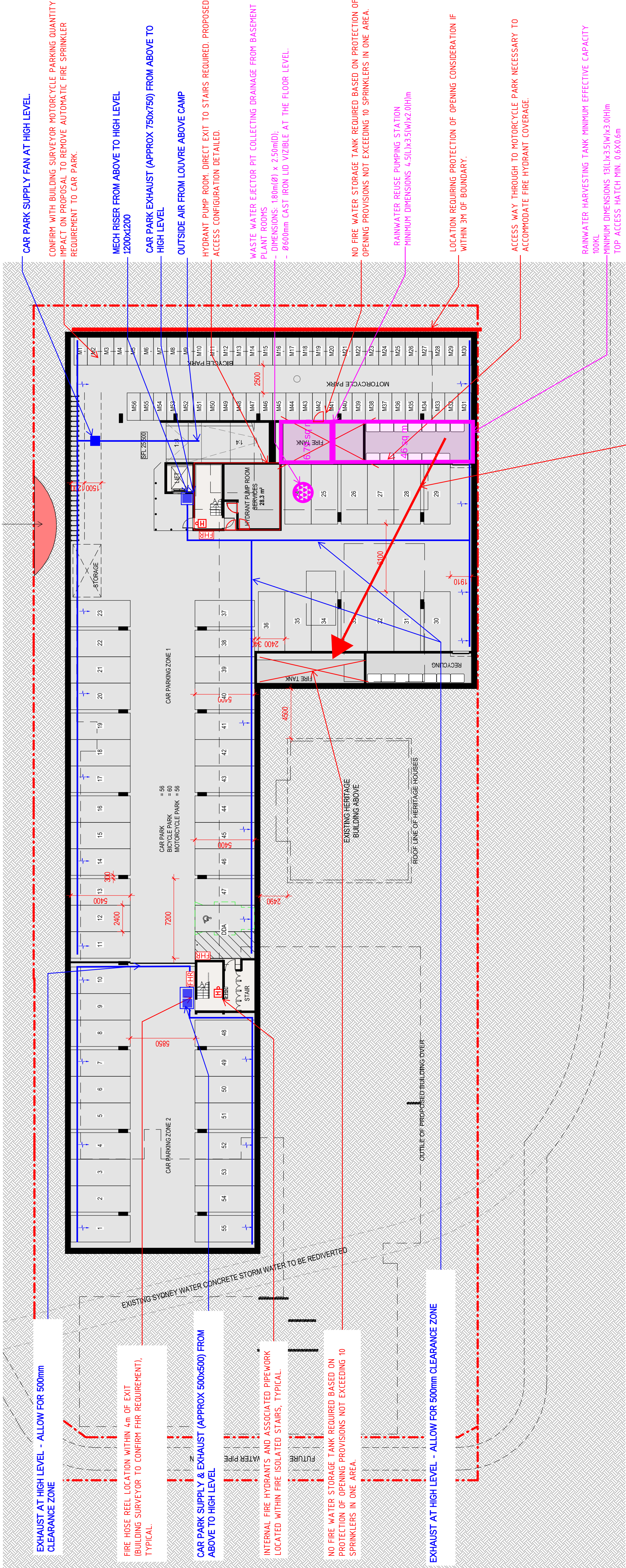
CARLTON STREET

Brick Residential
Flats Building

2009
DP 1169042

- * AUTO CONSOL 2816-208 BEING LOTS 2-3 SEC. 30 IN DP5549, LOT 1 IN DP974821, LOT 1 IN DP1094702
- 1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2. 233882 COVENANT
- 3. 274828 LAND EXCLUDES MINERALS BELOW A DEPTH FROM THE SURFACE OF 457.2 METRES AND IS SUBJECT TO RIGHTS TO MINE
- 4. 538275 COVENANT AS REGARDS LOTS 2 & 3 OF SECTION 30 IN DP6549 AND LOT 1 IN DP1094702
- 5. A5192511 RESTRICTIONS(S) ON THE USE OF LAND
- * LOT 52A IN DP400051 TITLE NOTES:
- 1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2. EXCEPTING LAND BELOW A DEPTH FROM SURFACE 457.2 METRES BY TRANSFER 257114
- 3. 257114 CONDITION(S) CONTAINED THEREIN
- 4. H494738 EASEMENT FOR DRAINAGE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN VOL 7928 FOL 137
- 5. H494738 CROSS EASEMENT (S181 B CONVEYANCING ACT, 1919) AFFECTING THE PARTY WALL(S) SHOWN ON THE COMMON BOUNDARY OF LOTS 52A AND 52B IN DP400051
- * LOT 52B IN DP400051 TITLE NOTES:
- 1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2. EXCEPTING LAND BELOW A DEPTH FROM SURFACE 457.2 METRES BY TRANSFER 257114
- 3. 257114 CONDITION(S) CONTAINED THEREIN
- 4. H494738 EASEMENT FOR DRAINAGE APPURTENANT TO THE LAND ABOVE DESCRIBED AFFECTING THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN VOL 7928 FOL 137
- 5. H494738 CROSS EASEMENT (S181 B CONVEYANCING ACT, 1919) AFFECTING THE PARTY WALL(S) SHOWN ON THE COMMON BOUNDARY OF LOTS 52A AND 52B IN DP400051

- * LOT 52A IN DP400051 TITLE NOTES:
- 1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2. 233882 COVENANT
- 3. 274828 LAND EXCLUDES MINERALS BELOW A DEPTH FROM THE SURFACE OF 457.2 METRES AND IS SUBJECT TO RIGHTS TO MINE
- 4. A512213 RESTRICTION(S) ON THE USE OF LAND
- * AUTO CONSOL 12411-51 BEING LOT1 IN DP981704 AND LOT 1 IN DP1033442
- 1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2. 274828 LAND EXCLUDES MINERALS BELOW A DEPTH FROM THE SURFACE OF 457.2 METRES AND IS SUBJECT TO RIGHTS TO MINE
- 3. A512511 RESTRICTION(S) ON THE USE OF LAND
- * LOT 51 IN DP2905 TITLE NOTES:
- 1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2. LAND EXCLUDES MINERALS AND IS SUBJECT TO RIGHTS TO MINE UNDER 457.2 METRES FROM THE SURFACE
- 3. A512511 RESTRICTION(S) ON THE USE OF LAND



Scale
1:200 @ A1

BASEMENT LEVEL

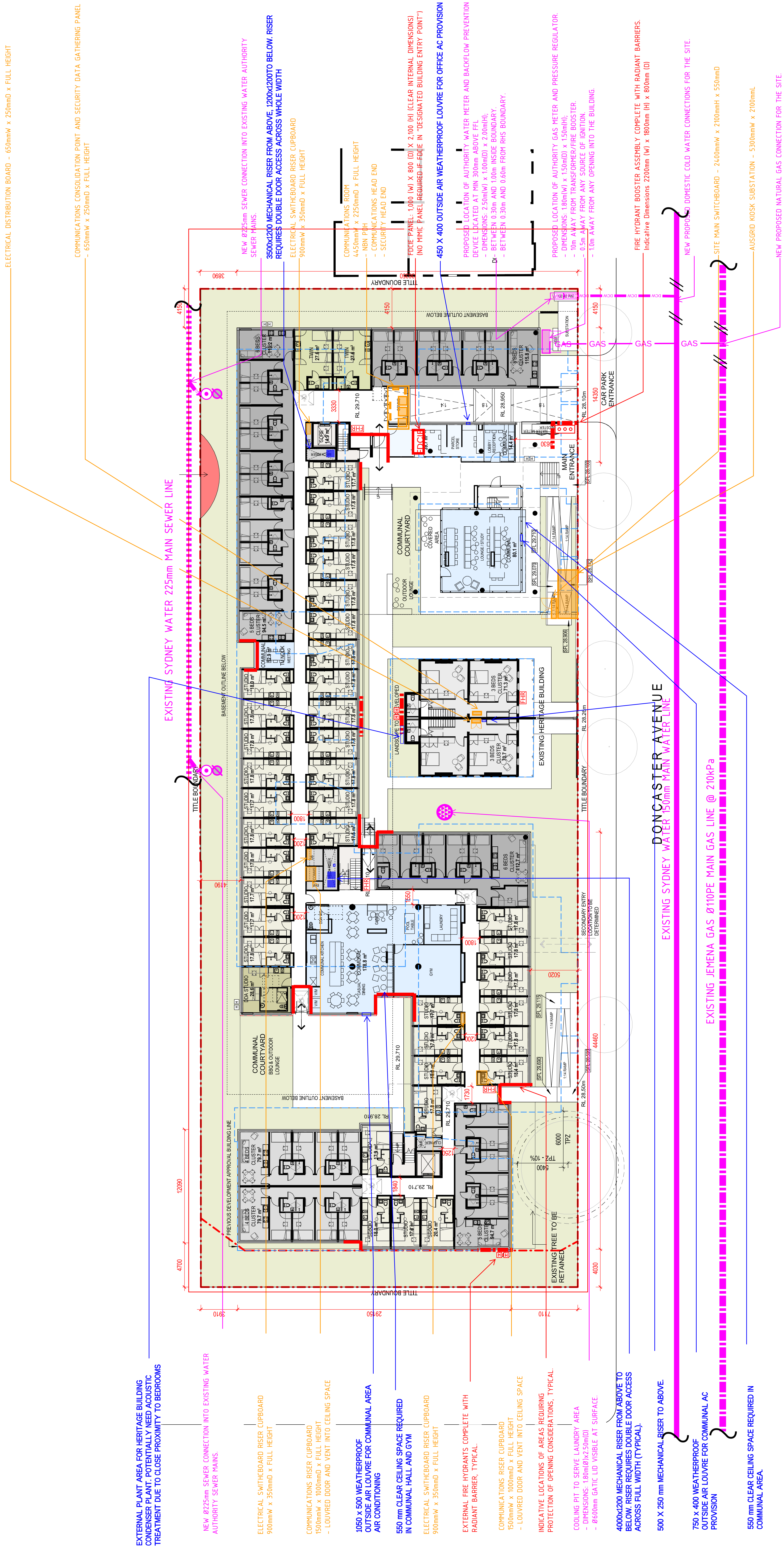
LEGEND

- FIRE SERVICES
- ELECTRICAL SERVICES
- HYDRAULIC SERVICES
- MECHANICAL SERVICES

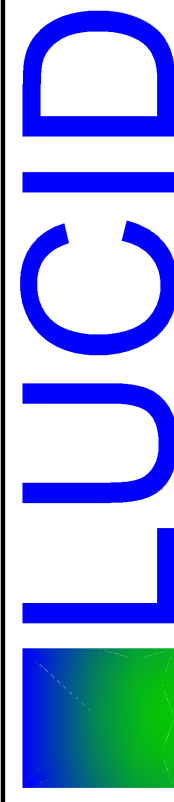


Title: Combined Services Spatials
Project: LCE15880 - Doncaster Ave
Engineer: AM/MR/PC/DSH
Date: 28.11.2018

Suite 7, Level 2, 12-16 Chippen St,
Chippendale NSW 2008
Phone: (02) 9080 9533
Email: sydney@lucidconsulting.com.au

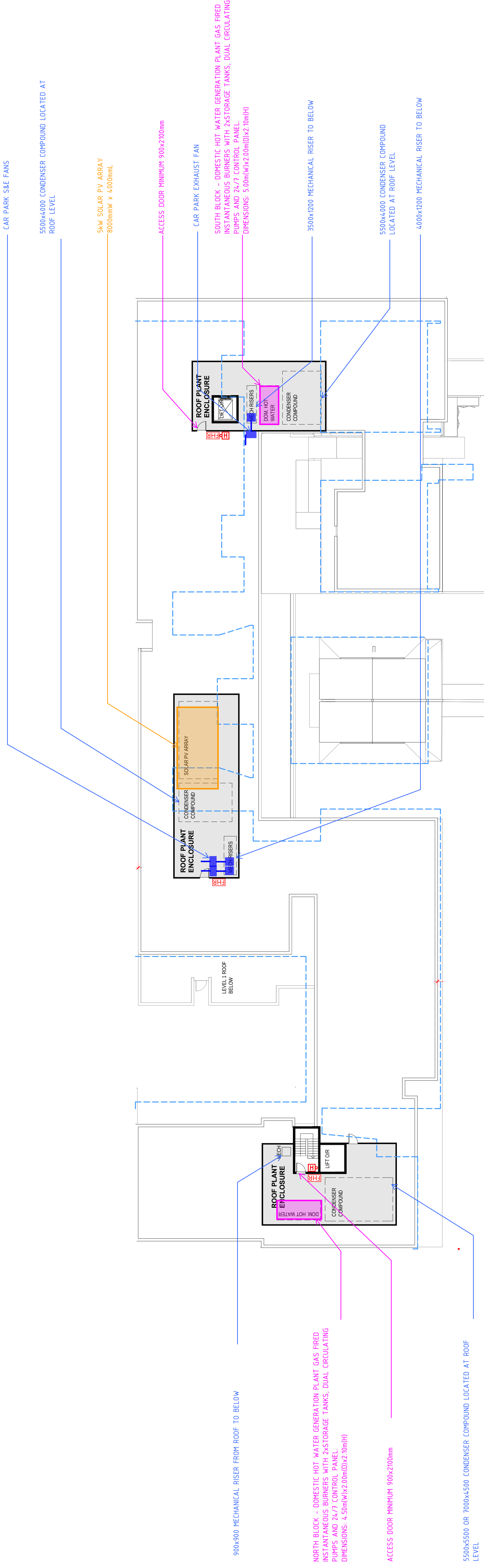


Scale
1:200 @ A1



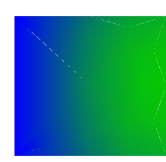
Title: Combined Services Spatial
Project: LCE1580 - Doncaster Ave
Engineer: AM/MR/PC/DSH
Date: 28.11.2018

Phone: (02) 9080 3333
Email: sydney@lucidconsulting.com.au



ROOF

Scale
1:200 @ A1

**LUCID**
CONSULTING AUSTRALIA

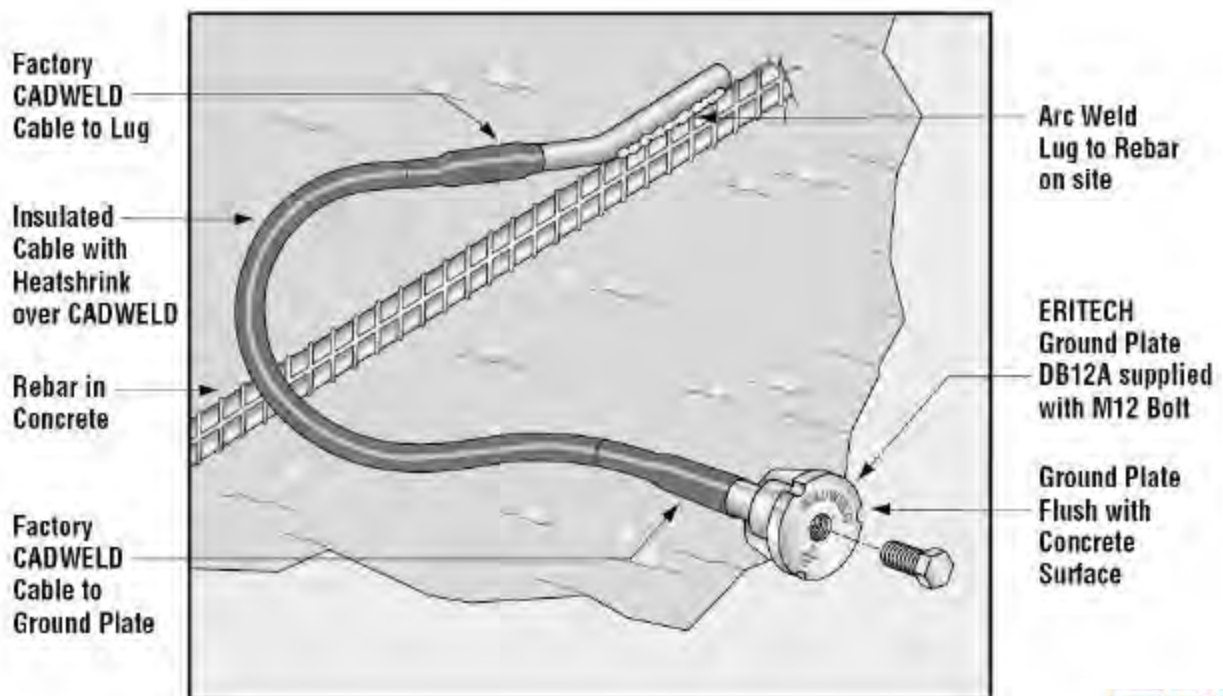
Title: Combined Services Spatials
Project: LCE15880 - Doncaster Ave
Engineer: AM/MR/PC/DSH
Date: 28.11.2018

Suite 7, Level 2, 12-16 Chippen St,
Chippendale NSW 2008
Phone: (02) 9080 5533
Email: sydney@lucidconsulting.com.au

APPENDIX B. ELECTROLYSIS MONITORING TERMINAL DETAILS

Installation Instruction for ERICO DB12CS701

1. The ERICO DB12CS701 is supplied as a prefabricated grounding plate and tail assembly for use as a solid grounding & bonding connection to reinforcement steel
2. Ensure that adequate planning goes in choosing the location of the DB12CS701. It should be installed close to the point where the earth connection is required. The construction of the formwork should take the installation of DB12CS701 into consideration
3. The mild steel bar at the end of the tail shall be welded to reinforcement steel along its full length and on both sides of the bar. The welding used should be a full weld and not tacks at various locations.
4. The distance between the welding location and the place where the ground plate will appear in the formwork shall be less than 800mm.
5. If the weld needs to be a greater distance away from the formwork, then a custom made tail shall be ordered with a longer piece of cable. DB12CS701 is supplied with 1000mm length of cable.
6. The plate is called DB12. It should be nailed on the inside of the form work at the desired location. Alternatively it may be bolted to the formwork from the outside of the formwork via the tapped hole. Precaution should be taken so that concrete does not block the tapped hole.
7. The concrete pour can occur once these steps are complete
8. Care should be taken not to damage the thread when the formwork is being removed. Once the formwork is removed, you will have a flush ground plate for your grounding or bonding application.



Document Record

Document Identification	Electrolysis Risk Assessment – 4-18 Doncaster Avenue, Kensington NSW
Document Number	11122018-024-001-01
Document Author	Ian Kennedy
Relates to	4 – 18 Doncaster Avenue, Kensington
Original Date Issued	11 th December 2018

Amendment Record

Rev	Date	Description	Prepared By	Approved By
1	11/12/2018	Initial Issue	I. Kennedy	I. Kennedy