



XAVIER  
KNIGHT

30<sup>th</sup> November 2023

Roche Group Pty Ltd  
365 New South Head Road,  
Double Bay NSW 2028

Attn: Andreas Brohl

## FLOOD RISK MANAGEMENT REPORT

469-483 Balmain Road, Lilyfield NSW 2040  
Project Number 221004

### 1 INTRODUCTION

This report has been prepared to accompany a Concept Proposal and Detailed Development Application (DA) for a development comprising residential flat buildings, light industries and creative purposes at 469-483 Balmain Road, Lilyfield (the Site). The proposed development aims to incorporate character buildings on the Site and construct buildings that are complementary to the surrounding residential neighbourhood and light industrial zone.

The proposed development includes the demolition of the existing building and construction of a mixed-use development consisting of residential apartments, tenancies, and open courtyards and pedestrian laneways within the site.

The Site is legally described as Lot 2 DP1015843 and has an area of 6,824m<sup>2</sup>.

This report has been prepared in support of a DA application for the proposed development at 469-483 Balmain Road, Lilyfield by providing measures to safely manage risk posed during PMF events. It is noted the site is unaffected by 100 Year ARI storm events.

#### 1.1 PROJECT DESCRIPTION

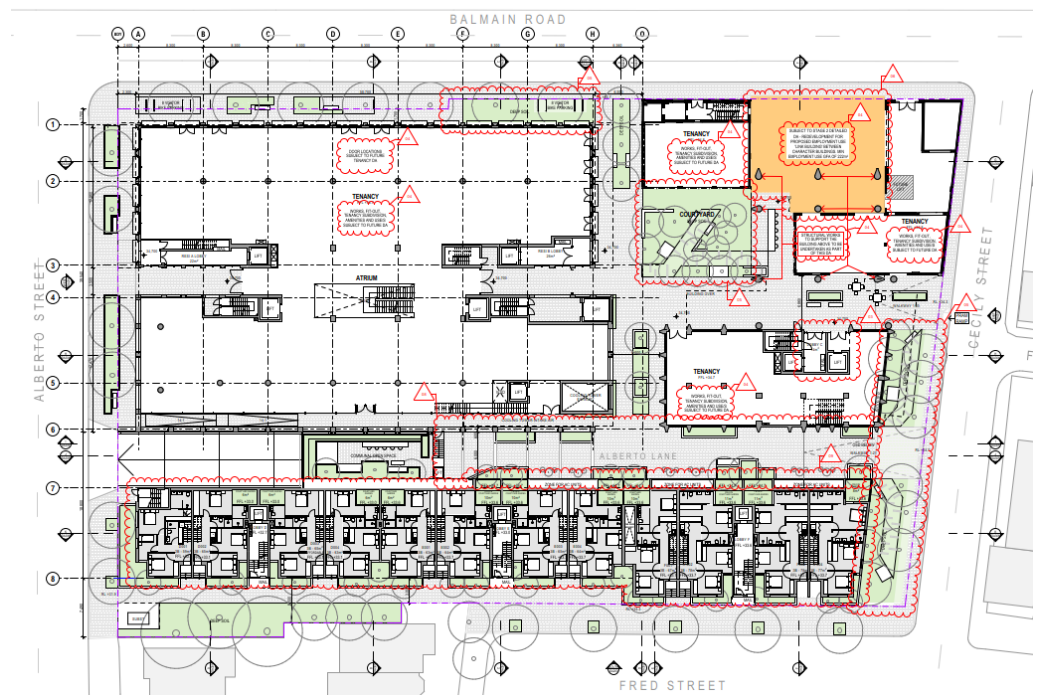
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The DA comprises the following elements:

- Concept Proposal (pursuant to Section 4.23 of the *Environmental Planning and Assessment Act 1979* and in satisfaction of Clause 6.25(4) of the *Inner West Local Environmental Plan 2022* [IWLEP 2022]) including:
  - Land uses consistent with those permitted under the IWLEP 2022, including for 'residential flat buildings', 'light industries' and 'creative purposes'.
  - Maximum building envelope.
  - Design principles and controls that address each of the requirements set out under Clause 6.25(4) or the IWLEP 2022.
- Detailed Development Application comprising:
  - Partial demolition of existing buildings and structures within the site.

- Site preparation works, including termination or relocation of site services and infrastructure, remediation, tree removal and the erection of site protection fencing.
- Construction and use of a new development comprising residential flat buildings and light industries, including adaptive reuse of existing buildings and erection of new buildings, for:
  - 6,000m<sup>2</sup> of light industrial uses, at least 1,200m<sup>2</sup> of which would be used for light industries associated with creative purposes
  - Residential apartments, of which a number would be used for the purpose of affordable housing
- Basement car parking for staff and residents, and a new loading dock for employment uses.
- Public domain, communal open space, landscaping, and tree planting.
- Publicly accessible through-site links, and footpath widening to Balmain Road and Alberto Street.

Fit out and use of the employment tenancies and business identification signage would be the subject of separate future DAs where required.



**Figure 1. Site Plan**

## 1.2 EXISTING CONDITIONS

The site is bordered by Balmain Road to the northwest, Cecily Street to the northeast, Alberto Street to the southwest and Fred St to the southeast. The existing structures on the site consist of multiple single and double storey light industrial buildings.

Inner West Council provided a Flood Certificate for the development on 15<sup>th</sup> February 2023, which identified the site being unaffected by the 100 Year ARI flood event. However, the site is affected by the PMF flood event. Refer to **Appendix A** for the Flood Certificate.

The highest elevation of the site is located on the west corner of the site (corner of Balmain Road and Alberto Street) at RL 35.07. The lowest elevation of the site is located on the south corner of the site along the Alberto Street site frontage at RL 31.58. Refer to **Appendix B** for site survey.

The Flood Planning Level can be determined by adding 500mm freeboard to the 100 Year ARI flood level. By overlaying Council's Flood Certificate onto the site survey, the maximum 100 Year ARI flood level can be conservatively determined as RL 31.50 at the gutter approximately 3.8m from the site boundary. Therefore, the Flood Planning Level of the site is determined as RL 32.00. Refer to **Figure 2** below. The road level in front of the proposed basement driveway on Alberto Street is approximately RL 33.00 and therefore above the Flood Planning Level.



**Figure 2. Inner West Council Flood Certificate Extract**

Council's Flood Certificate identified the PMF level of the site as RL 35.20 along the Balmain Road site frontage. Refer to **Section 4** below for flood risk management procedures.

## 2 REFERENCE INFORMATION

The following has been reviewed and considered in the preparation of this plan:

- Leichhardt DCP 2013 Part E: Water, Section E1.3.1
- Flood Certificate ENCF/2023/0008 by Inner West Council dated 15/02/2023

## 3 Flooding Emergency Response Strategy (FERS)

The FERS sets out the potential consequences of flooding, the time at which action should be taken to evacuate and the procedures to be followed in a possible flood event. The FERS should be provided as part of the contract for all development lots and should be conditioned to be mounted in prominent locations throughout the future development where it can be seen by the occupants/patrons (for example: in hallways, the garage, where medical provisions are kept, electrical switchboard box, etc...)

The FERS outlines that the occupants move outdoor equipment, garbage, chemicals and poisons to higher locations and also plan which indoor items they will raise or empty if water threatens the home (e.g. freezers and refrigerators), check their emergency kit and safeguard their pets. They need to communicate with friends, family and neighbours about their plans etc...

The FERS also describes what should be done after a flood event.

A copy of the FERS for the development should be used as a guideline for the occupants/patrons as they may wish to adjust some of the items included in the document.

*It is noted that the site resides at the PMF flood level, but above the 1% AEP flood level. It is therefore advised that during any potential flood event, any occupants on the site at this time should take shelter in place at the first-floor level of the closest building (min FFL 36.80 mAHD, approximately 1.2m above the PMF level of RL 35.20 mAHD. At this time, further advice should be sought from the relevant authorities outlined below.*

### 3.1 PROCEDURE IN CASE OF FLOODING

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- The procedure outlined below is in accordance with the NSW Government – NSW State Emergency Services (SES) 'Flood Safe' guidelines.
- In lieu of any flood event, a 'Business Flood Safe Toolkit' should be undertaken and regularly updated.
- The primary goal of the 'Business Flood Safe Toolkit' may assist you in reducing the impact flooding may have on your business. The 'Toolkit' can be completed online at: (<http://floodsafe.ses.org.au/floodsafe/businesstoolkit/>)

### 3.2 STEPS TO BE FOLLOWED IN THE EVENT OF POSSIBLE FLOODING

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1. Flood information including 'Flood Watches' and 'Flood Warnings' issued by the Bureau of Meteorology (BOM), road closures and advice on evacuations and property protection will be updated on the BOM website (<http://www.bom.gov.au/nsw/warnings/>), broadcast

over ABC, other national, state and local radio stations. The ABC is the Emergency Services Broadcaster.

2. The NSW SES issue Flood Bulletins to radio stations which inform people about what is expected to happen during flooding. SES Flood Bulletins provide information on likely flood consequences and what actions are required to protect yourself and your property. Radio stations are asked to read the Flood Bulletin 'word for word' over a period of time.
3. Other ways you may be informed of possible flooding is through doorknocking by emergency services, through word of mouth or the SES may issue an Emergency Alert. An Emergency Alert is a message that is sent to your landline or mobile phone as a voice or text message. The SES advises people to always follow instructions given by the emergency services and make sure neighbours, family friends are aware of possible flooding.

*In the event that the State Emergency Services have not provided an emergency alert message or are unable to be contacted, the following instructions should be followed. However, any message and instructions received by state emergency services should govern the trigger levels outlined below.*

1. During floods many local and major streets and roads may be cut off by floodwaters that may make the escape by vehicle extremely difficult. Travelling through floodwaters on foot or in a vehicle can be very dangerous as obstructions can be hidden under the floodwaters, or you could be swept away, even if in a car, or the water may be polluted. It is recommended staying within the building as much as practical as this is the safest option. If you urgently need to leave the building, do so early in the flood event.
2. In the unlikely event that flood waters have risen up to the building, do not evacuate the building at this time unless instructed to do so by the SES or the Police. Floodwaters are much deeper, run much faster and are more dangerous outside. Any disabled person/s should be assisted and moved to the nominated level in the building as outlined above.
3. In the case of a medical or life-threatening emergency ring '000' as normal but explain about the flooding.
4. Stay tuned on a battery powered radio for official advice and warnings.
5. Don't return home until authorities have said it is safe to do so.
6. Stay away from drains, culverts and water over knee-deep in depth.
7. Do not turn on gas and electricity until it has been checked by a professional/licensed repairer.
8. Avoid using gas or electrical appliances which have been in flood water until checked by for safety by a suitably qualified person.
9. Take photos for insurance purposes.

### 3.3 AFTER THE FLOOD

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Stay tuned to ABC 702 on a battery powered radio for official advice and warnings

- Don't return home until authorities have said it is safe to do so.
- Don't allow children to play in or near flood waters.

- Avoid entering flood waters, as it is dangerous. If you must, wear solid shoes and check depth and current with a stick.
- Stay away from drains, culverts and water over knee-deep in depth.
- Don't turn on your gas and electricity until it has been checked by a professional/licensed repairer.
- Avoid using gas or electrical appliances which have been in flood water until checked for safety.
- Boil tap water until supplies have been declared safe.
- Watch for trapped animals.
- Beware of fallen power lines.
- Take many photos for all damage for insurance purposes.
- Notify family and friends of your whereabouts.

Important Phone Numbers	
State Emergency Service	Emergency: 132 500 General Enquires: 4251 6111
Police, Fire, Ambulance	Emergency: 000
Bureau of Meteorology (Website)	<a href="http://www.bom.gov.au/weather">http://www.bom.gov.au/weather</a>
Land, Weather and Flood Warnings	Phone: 1300 659 215
Inner West Council	Phone: 02 9392 5000
Manager	
Strata Manager	
Other	

### 3.4 FLOOD EVACUATION PLAN

The emergency evacuation procedure should include the following:

- Emergency Wardens or authorised individuals to warn occupants about the flood hazard once flood warning is received.

- In the event that flash flooding occurs without prior warning, it is recommended that staff and patrons shelter in place within Level 01 or above of the building they are within or closest to.
- Should a flood evacuation order occur, all staff and patrons are to evacuate from the facility through the Balmain Road, Cecily Street, or Fred Street frontages in accordance with emergency services and SES directions.
- In the event of flooding, any valuable goods or hazardous materials to be stored on the above the 100 Year ARI Flood level + 500mm = RL 32.00 (i.e. the Ground Floor of any building), and away from any sheltering occupants.

**Disclaimer**

Xavier Knight Consulting Engineers gives notice that the particulars set out in this report are for the exclusive use of Client and that no responsibility or liability is accepted as a result of the use of this report by any other party. This report shall not be construed as a certificate or warranty.

For and on behalf of the Xavier Knight team.

Kind regards,

**Scott Sharma**

Principal Civil Engineer

**APPENDIX A**

**Inner West Council Flood Certificate**





Roche Group Pty Ltd  
365 New South Head Road  
DOUBLE BAY NSW 2028  
ABROHL@ROCHEGROUP.COM.AU

15 February 2023

**FLOOD CERTIFICATE**  
**469-483 Balmain Road LILYFIELD NSW 2040**  
**ENCF/2023/0008**

I am pleased to advise that the Flood Certificate for the above address has been prepared and is attached.

The information contained in the certificate is derived from the Leichhardt Flood Study (Cardno, 2017).

The information is provided in good faith and in accordance with the provisions of s.733 of the Local Government Act.

Yours faithfully

A handwritten signature in black ink, appearing to read 'James Ogg', with a long horizontal stroke extending to the right.

James Ogg

**COORDINATOR – STORMWATER & ASSET PLANNING**



Applicant Name: Roche Group Pty Ltd  
Property Address: 469-483 Balmain Road  
LILYFIELD NSW 2040

Certificate No: ENCF/2023/0008  
Date: 15-Feb-2023

## About this Certificate

This certificate provides flooding information for the area in the vicinity of the above property. This information can be used to assist in understanding the extent of flooding affecting this property and can be used to assist in preparation of a Flood Risk Management Report to support a development application. It is recommended that the information in this report be interpreted by a suitably qualified professional.

This report includes two pages; this cover page with an explanation of the information provided, and the second page is a figure providing information on the flooding behaviour in the area. The figure includes peak water levels, depths and flow rates for the 100 year ARI and peak water levels for the Probable Maximum Flood event.

The flood levels provided are based on available information including numerical modelling results from flood studies prepared for Council. All flood levels and depths are provided to the nearest 0.05 metres.

## Definitions

The following provides a brief definition of some of the key terms utilised in this report:

Average Recurrence Interval (ARI)	The long-term average number of years between the occurrences of a flood as big as or larger than the selected event. The 100 year ARI flood event can be expressed as having a 1% chance of occurrence in any given year or as the flood that could occur once every 100 years.
Probable Maximum Flood (PMF)	The PMF is the largest flood that could conceivably occur at a particular location. This event is used to determine what might occur in events larger than a 100 year ARI.
100 year ARI Flow Path/Extent	The area of land expected to be inundated by either a flow path or mainstream flooding during a 100 year ARI flood event. The extents are limited to the areas where depths of flow are greater than 150mm.
100 year ARI High Hazard	Areas within the 100 year ARI flood extents where the depth and/or velocity of flow is likely to represent a possible danger to personal safety; evacuation by trucks is difficult; able-bodied adults would have difficulty wading to safety; and/or potential for structural damage to buildings.
Flood Planning Level (FPL)	The Flood Planning Level is calculated by adding freeboard onto the 100 year ARI flood level in accordance with Council's DCP.
Freeboard	The freeboard is incorporated into the Flood Planning Level to provide a factor of safety to the flood levels. It accounts for a number of factors, including wave action, localised obstructions to flows, and model uncertainty.
Australian Height Datum (AHD)	A common national surface level datum approximately corresponding to mean sea level.

## Notes

The ground levels shown on the attached figure are based on aerial survey data. The ground levels should be verified by a suitably qualified surveyor.

The location of stormwater pits and pipes on the attached figure are indicative only. The location and dimensions of pipelines should be verified by a suitably qualified surveyor.

The water depths shown are provided at the location shown and are indicative only. They do not necessarily represent the maximum depth in the area. For example, where a point is located on the centreline of a road, the depths will be higher within the road gutter.

The information is provided in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.

## Flood Certificate

Applicant Name: Roche Group Pty Ltd  
Property Address: 469-483 Balmain Road  
LILYFIELD NSW 2040

Certificate No: ENCF/2023/0008  
Date: 15-Feb-2023



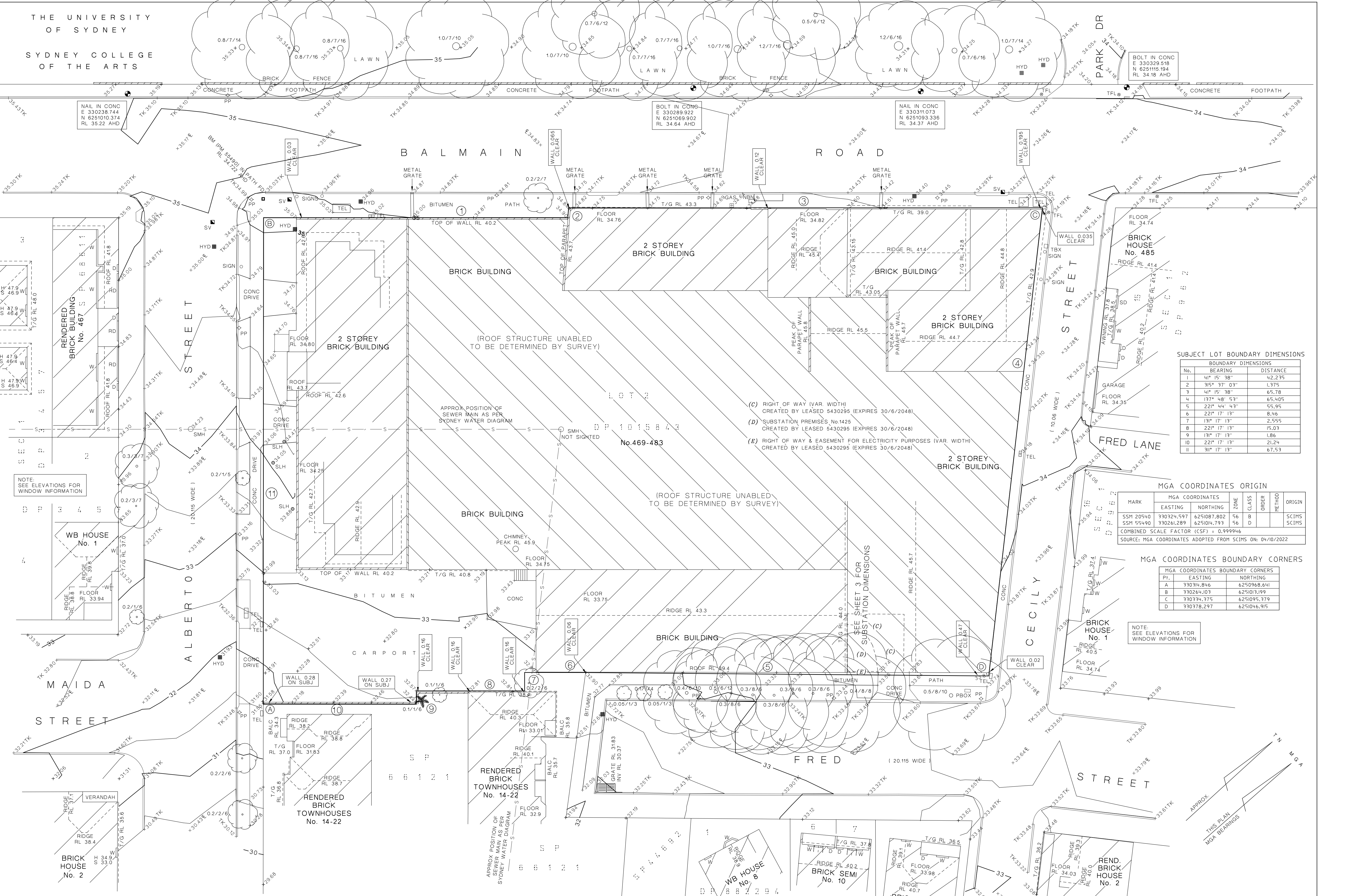
The information provided is in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.

The aerial photo is historical and may not reflect the current structures and features of this area.

## **APPENDIX B**

### **Site Survey**





SUBJECT LOT BOUNDARY DIMENSIONS

No.	BEARING	DISTANCE
1	41° 15' 38"	42.235
2	315° 37' 03"	1.375
3	41° 15' 38"	65.78
4	137° 48' 53"	65.405
5	221° 44' 43"	55.95
6	221° 17' 13"	8.46
7	131° 17' 13"	2.555
8	221° 17' 13"	15.03
9	131° 17' 13"	1.86
10	221° 17' 13"	21.24
11	311° 17' 13"	67.53

MGA COORDINATES ORIGIN

MARK	EASTING	NORTHING	ZONE	CLASS	ORDER	METHOD	ORIGIN
SSM 20540	330924.597	6251087.802	56	B	D		SCIMS
SSM 55490	330261.289	6251014.793	56	B	D		SCIMS

COMBINED SCALE FACTOR (CSF) = 0.9999946  
SOURCE: MGA COORDINATES ADOPTED FROM SCIMS ON: 04/10/2022

MGA COORDINATES BOUNDARY CORNERS

Pt.	EASTING	NORTHING
A	330314.846	6250968.641
B	330264.103	6251013.199
C	330334.375	6251095.379
D	330378.297	6251046.915

20/1-5 Jacobs Street  
Bankstown NSW 2200  
Ph: 9708 3790  
Fax: 9708 4382  
admin@geometra.com.au  
www.geometra.com.au  
ABN 69 074 616 087

**PLAN SHOWING SITE DETAILS AND BOUNDARY INFORMATION AT 469-483 BALMAIN ROAD LILYFIELD**

LOT 2 IN DP 1015843  
TOTAL SITE AREA: 6823m<sup>2</sup>

**A1+**  
1:200  
units:metres

DATUM OF LEVELS: ( AHD )  
AUSTRALIAN HEIGHT DATUM  
ORIGIN OF LEVELS: PM 55490  
ADOPTED VALUE: 34.722  
SURVEY DATE: 04/10/2022  
OUR REFERENCE: 9179-2

**LEGEND**

12,3	LEVEL
D	DOOR
W	WINDOW
T/G	TOP OF GUTTER
SV	STOP VALVE
HYD	HYDRANT
SMH	SEWER MANHOLE
TRUNK DIAMETER	
SPREAD /RADIUS/ APPROX HEIGHT	
SEWER LINE	
CENTRELINE	
TOP OF KERB	
WM	WATER METER
PP	POWER POLE
TFL	TRAFFIC LIGHTS

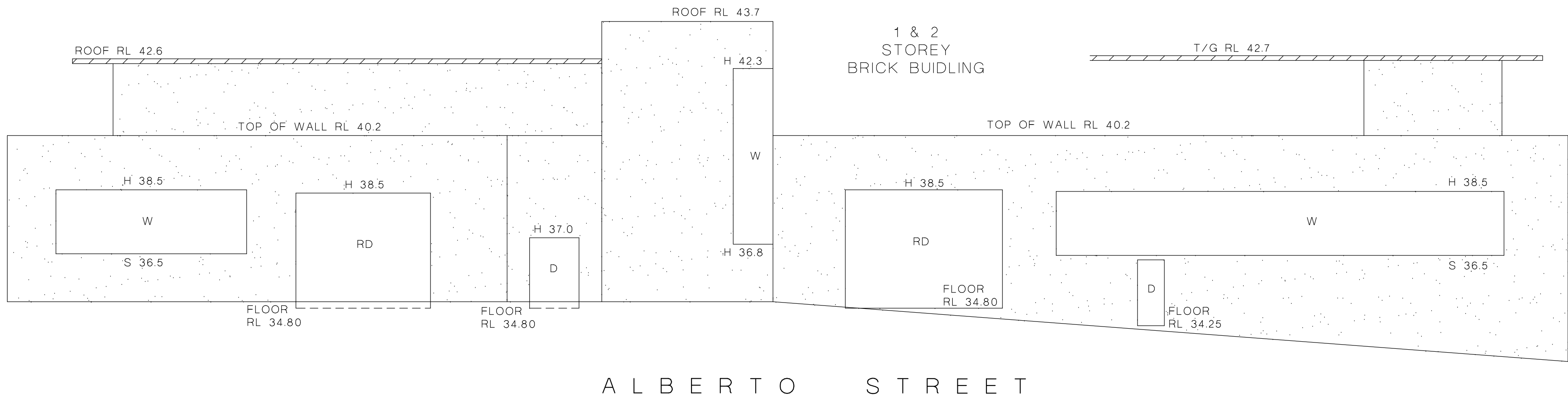
**NOTES:**

- Underground Services have not been searched at the relevant authorities
- Boundary dimensions shown are taken from the subject DP1015843 and survey field measurements made in the field
- Site area shown is calculated using the boundary dimensions shown
- The orientation of north shown on this plan has been derived from established MGA Co-ordinated Survey Marks found on site. The true north is then orientated from the field survey observed MGA bearings which are derived from the MGA Co-ordinated survey marks found in the field.

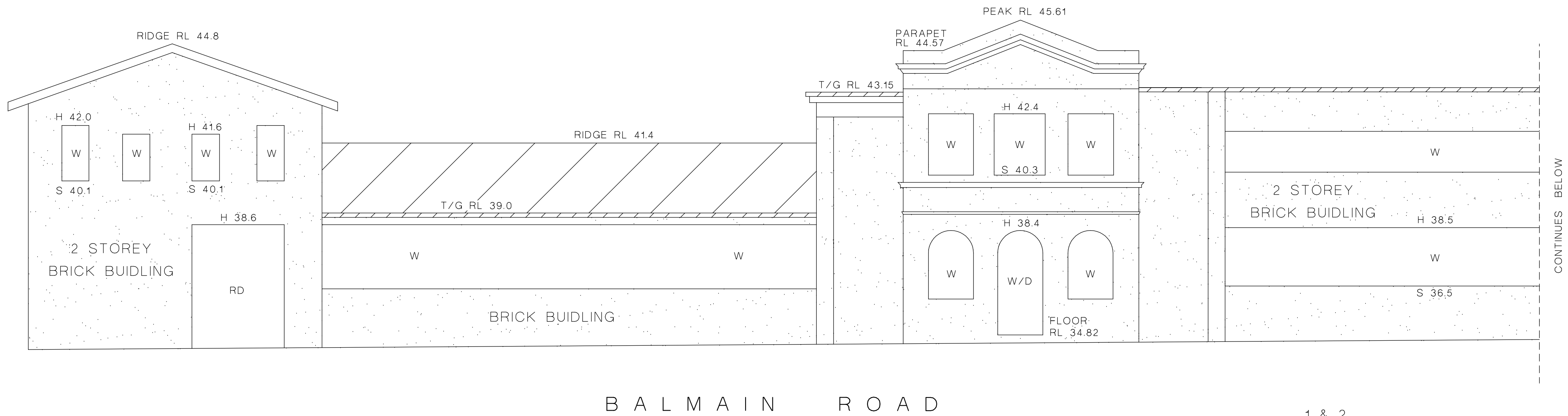
**NOTE:**  
SEE ELEVATIONS FOR WINDOW INFORMATION

JOHN BOTTARO  
REGISTERED SURVEYOR  
GEOMETRA CONSULTING P/L  
BOSSI ID : SU000564

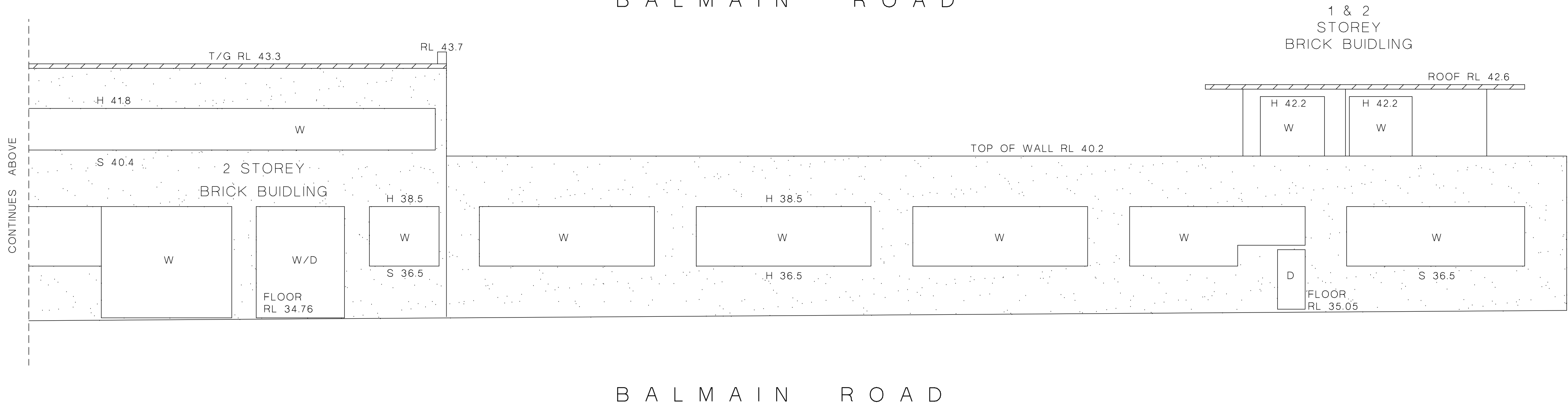
WESTERN ELEVATION - SUBJECT PROPERTY



NORTHERN ELEVATION - SUBJECT PROPERTY

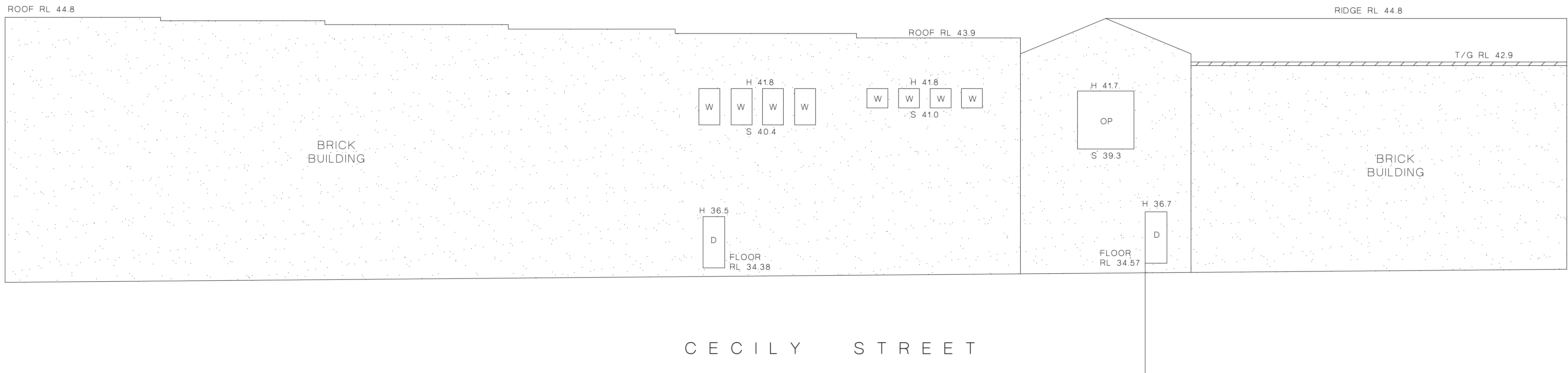


BALMAIN ROAD

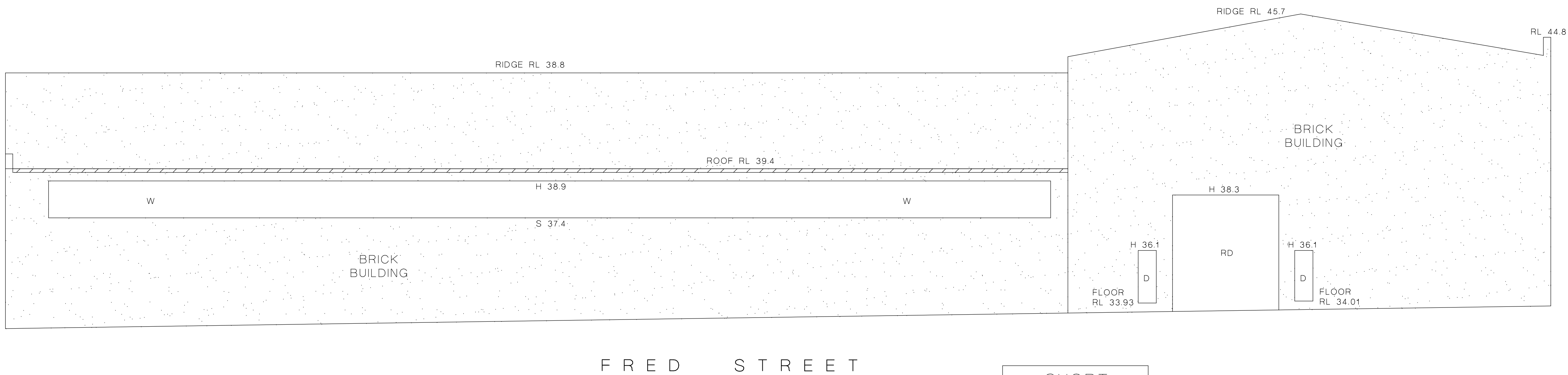


BALMAIN ROAD

EASTERN ELEVATION - SUBJECT PROPERTY



SOUTHERN ELEVATION - SUBJECT PROPERTY

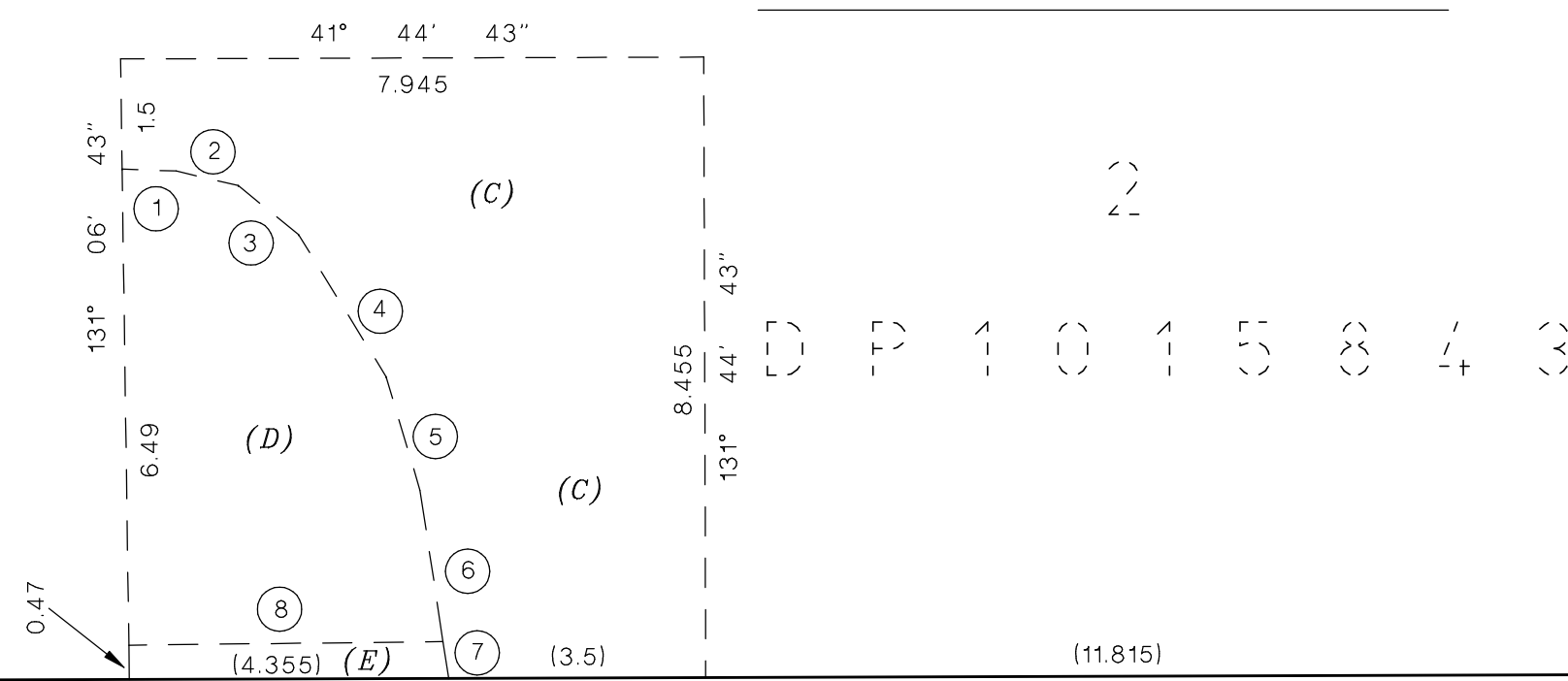


SHORT EASEMENT LINES

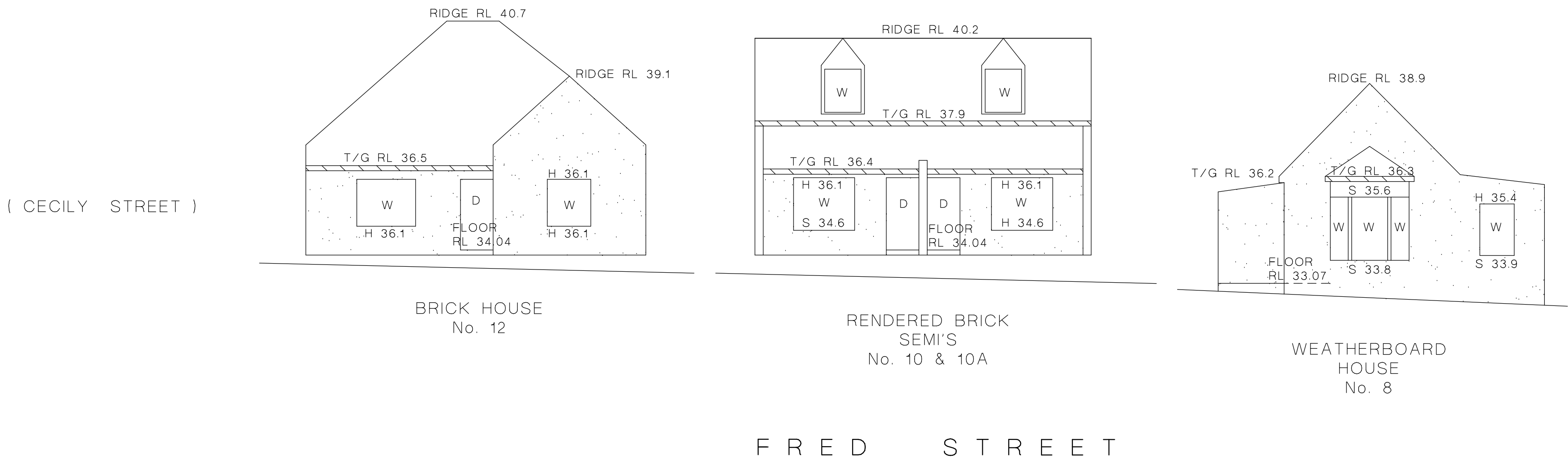
- ① 43° 59' 43" - 0.735
- ② 54° 57' 43" - 0.87
- ③ 81° 10' 43" - 1.06
- ④ 100° 15' 43" - 2.275
- ⑤ 115° 17' 43" - 1.615
- ⑥ 123° 17' 43" - 2.085
- ⑦ 123° 17' 43" - 0.515
- ⑧ 41° 15' 43" - 4.28

- (C) RIGHT OF WAY (VAR. WIDTH)  
CREATED BY LEASE 5430295 (EXPIRES 30/6/2048)
- (D) SUBSTATION PREMISES No.1425  
CREATED BY LEASE 5430295 (EXPIRES 30/6/2048)
- (E) RIGHT OF WAY & EASEMENT FOR ELECTRICITY PURPOSES (VAR. WIDTH)  
CREATED BY LEASE 5430295

PLAN VIEW SUBSTATION



N O R T H E R N   E L E V A T I O N - F R E D   S T R E E T



N O R T H E R N   E L E V A T I O N - A D J O I N I N G   P R O P E R T I E S

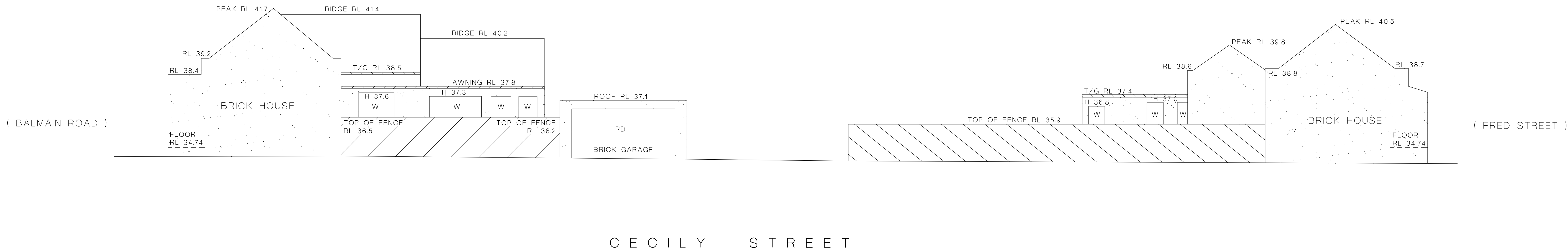


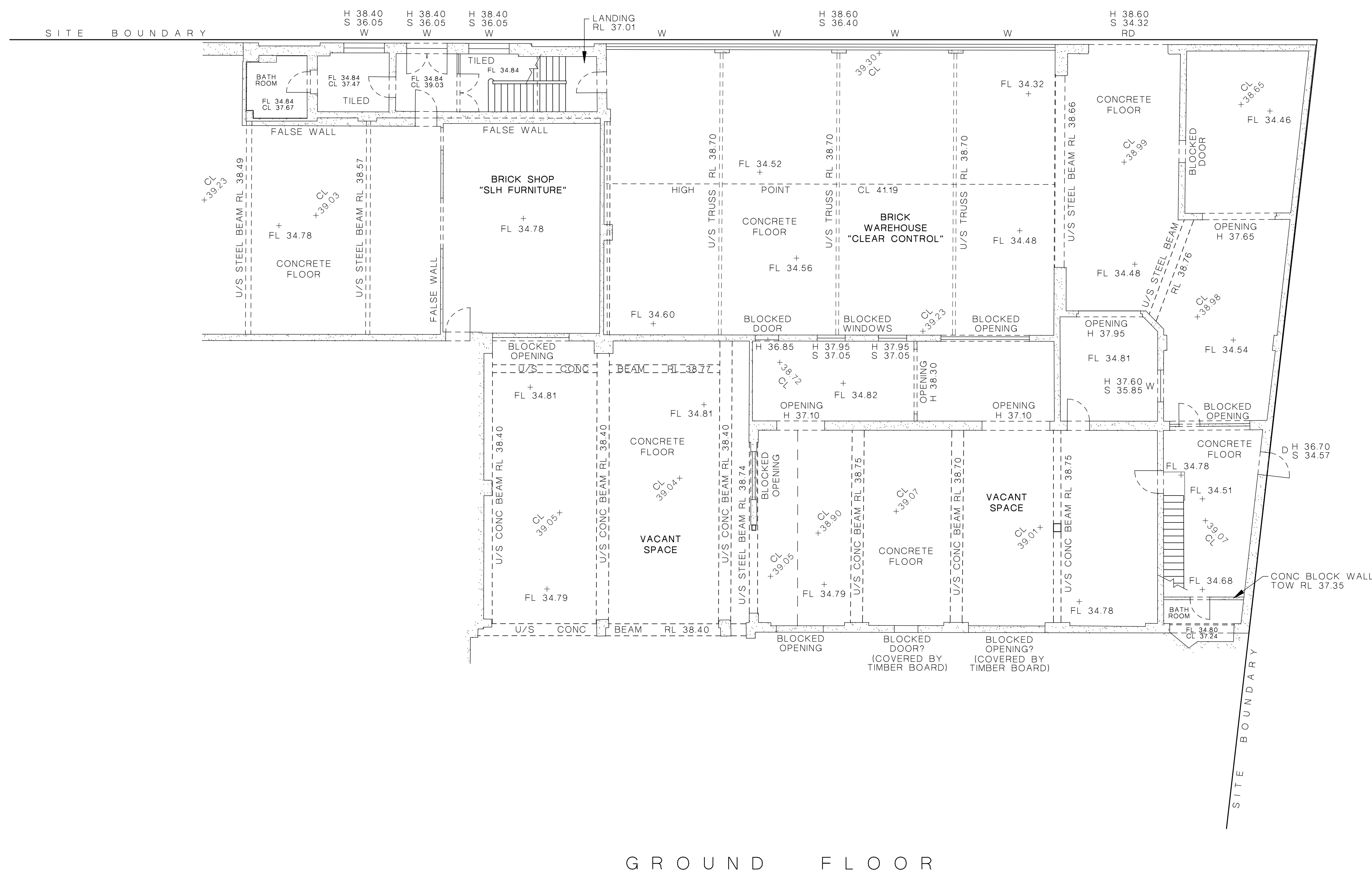


WESTERN ELEVATION - ALBERTO STREET

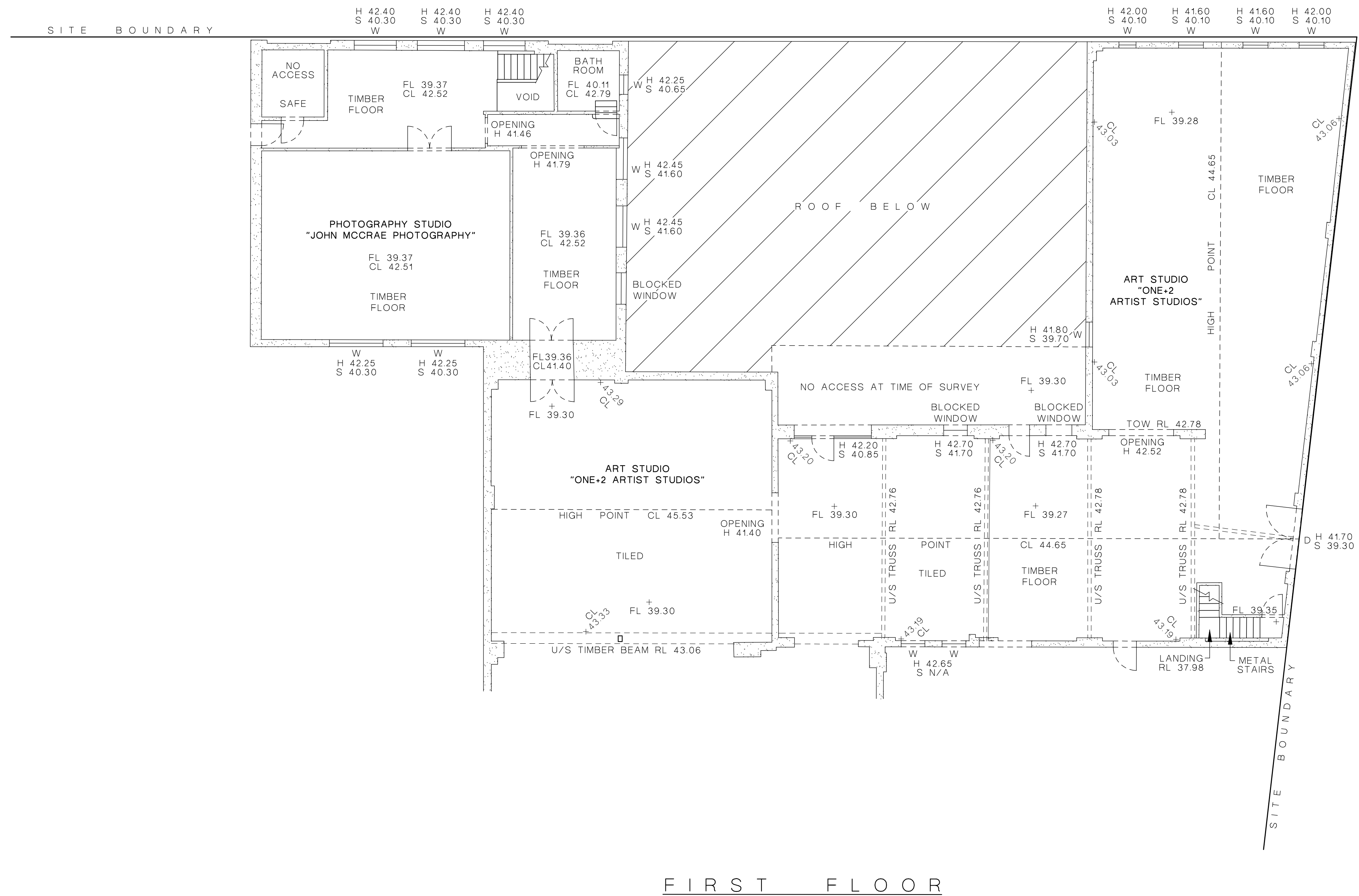
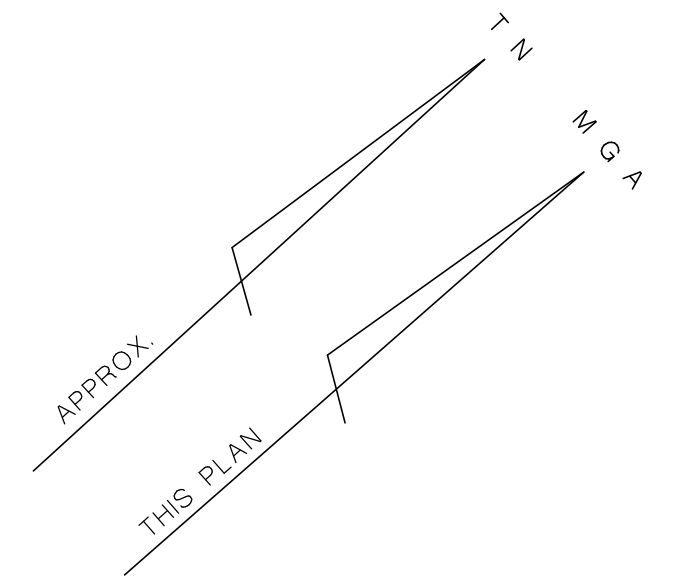


EASTERN ELEVATION - CECILY STREET





LAND SURVEYORS - DEVELOPMENT CONSULTANTS



C E C I L Y  
S T R E E T