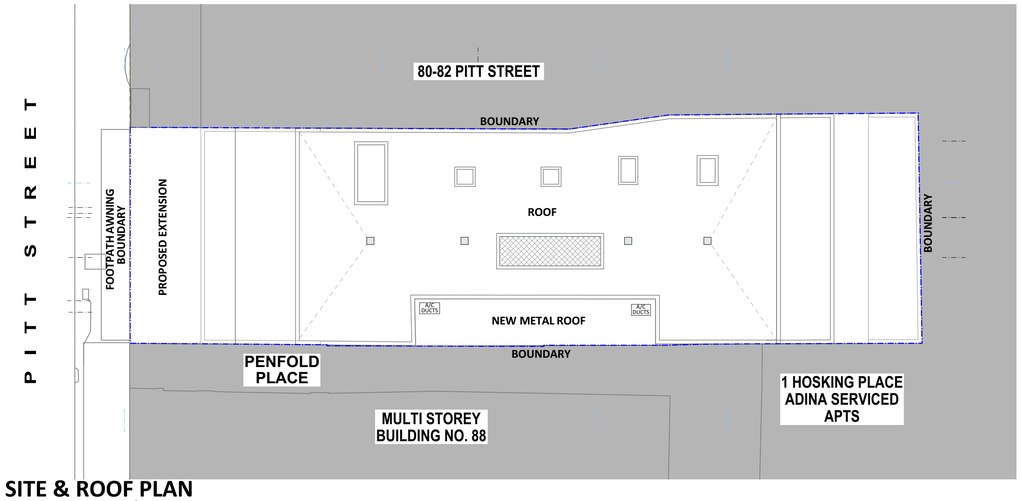
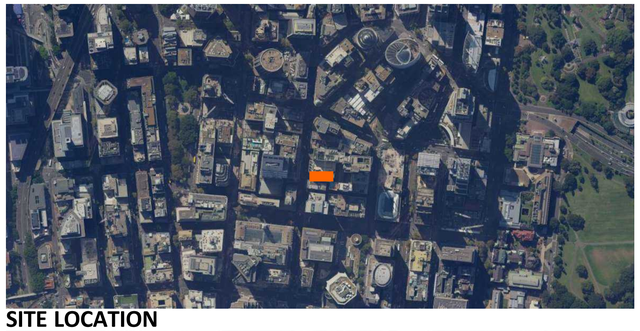
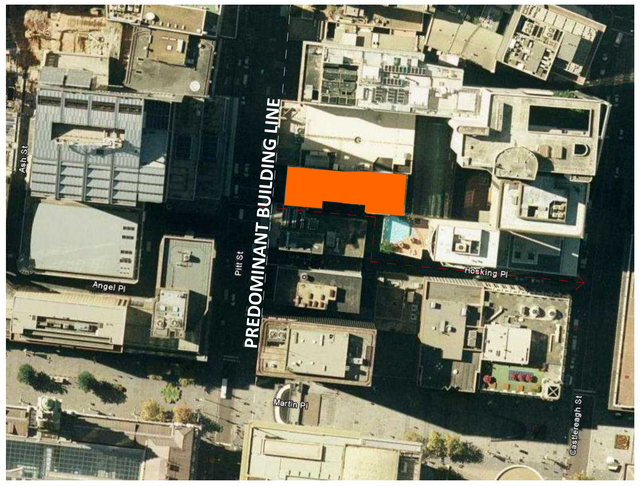


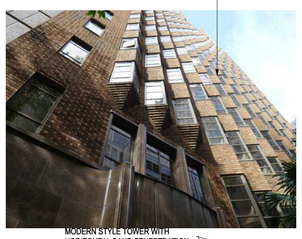
SITE & ROOF PLAN
1:100 @ A1 / 1:200 @ A3



SITE LOCATION



BRICKWORK AND FENESTRATION DETAILING



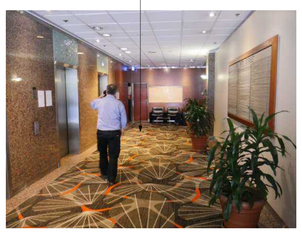
TRANSITION HERITAGE DETAIL TO 1960/1970 MODERNIST STYLE

GAP IN STREETSCAPE CREATES LOSS OF CONTINUITY AND BLANK WALLS

COLLONADE NO LONGER RELEVANT IN THE STREET

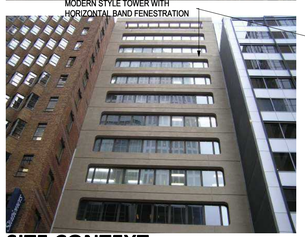
SIDE LANE

LOW CEILING



PENFOLD PLACE

MODERN STYLE TOWER WITH HORIZONTAL BAND FENESTRATION

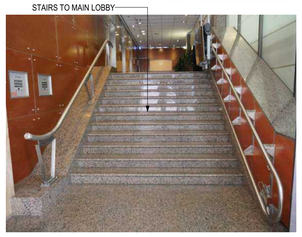


DEEP SETBACK OF MAIN ENTRY AND SHOP

SIGNAGE DETRACTS FROM MAIN FOYER ENTRY

RETAIL FLOOR BELOW STREET LEVEL

STAIRS TO MAIN LOBBY



LANE SETBACK

SITE CONTEXT

GENERAL NOTES

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F	AMENDED DA PLANS 24/08/2021

CONSULTANTS

City Plan - Planning & Heritage
AE Structural Engineers
STS Geo Environmental - Geotechnical Eng
JHA Building Services Engineers - Mechanical, Hydraulic & Communications
BCA Logic - NCC & Access
Code Performance - Fire Engineers
Certified Energy - Section J
Cardno - Flood Engineers

DRAWING LIST

KEY

FL	FLOOR LEVEL
FE	FIRE EXTINGUISHER
FHR	FIRE HOSE REEL
FCR	FIRE CONTROL ROOM
CL	CEILING
SF	
WT	WALL TILES
GB	GLASS BALUSTRADE
FC	FIBRE CEMENT
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Nominated architect:
David Epstein
BArch/MCPUD ARB NSW Reg No.: 9072

PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

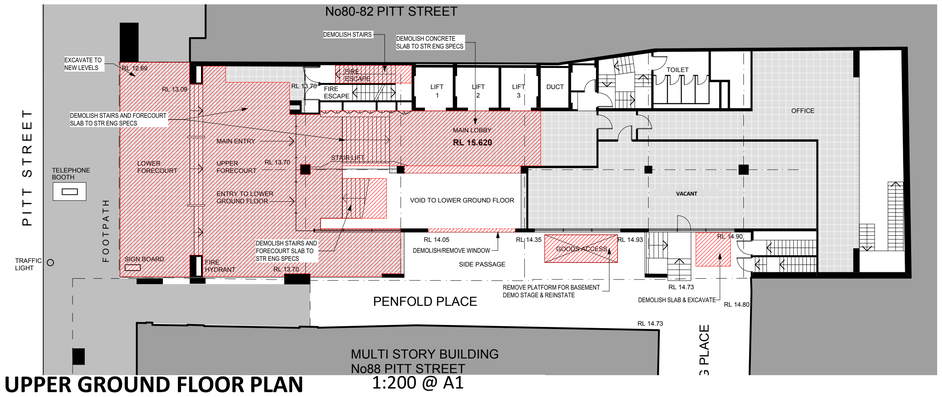
DRAWING TITLE :
CONTEXT + GENERAL INFO

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

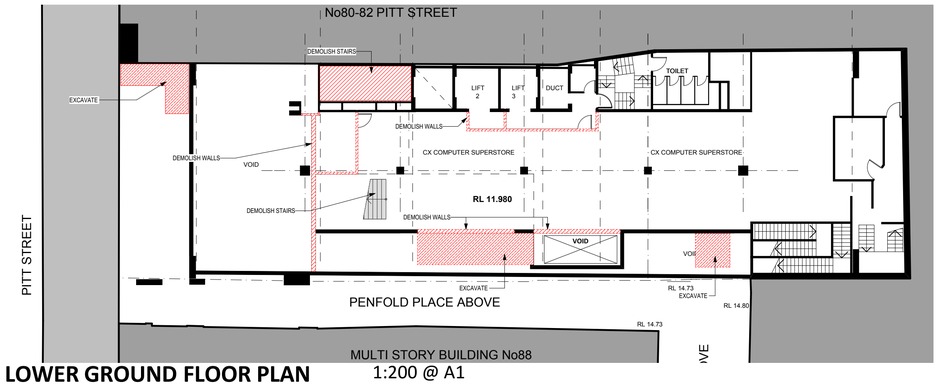
JOB NO.:
0348

DRAWING NO.
DA-00

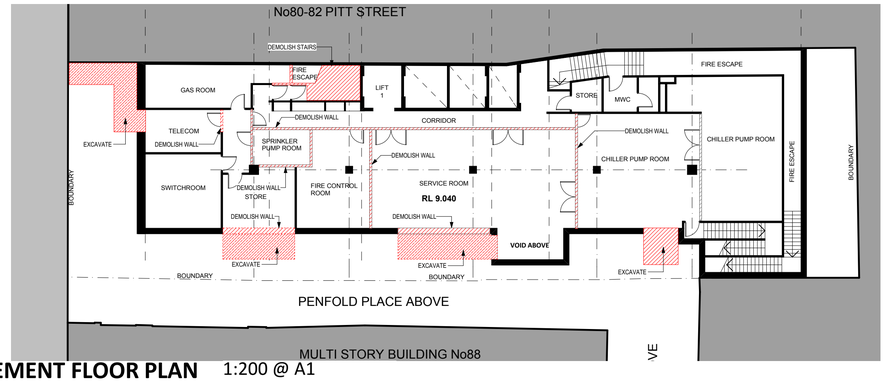
rev:
F



UPPER GROUND FLOOR PLAN 1:200 @ A1



LOWER GROUND FLOOR PLAN 1:200 @ A1



BASEMENT FLOOR PLAN 1:200 @ A1

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DRAWING LIST

KEY

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FHR	FIRE HOSE REEL
FCR	FIRE CONTROL ROOM
CL	CEILING
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Nominated architect:
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PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY
CLIENT :
SP50723

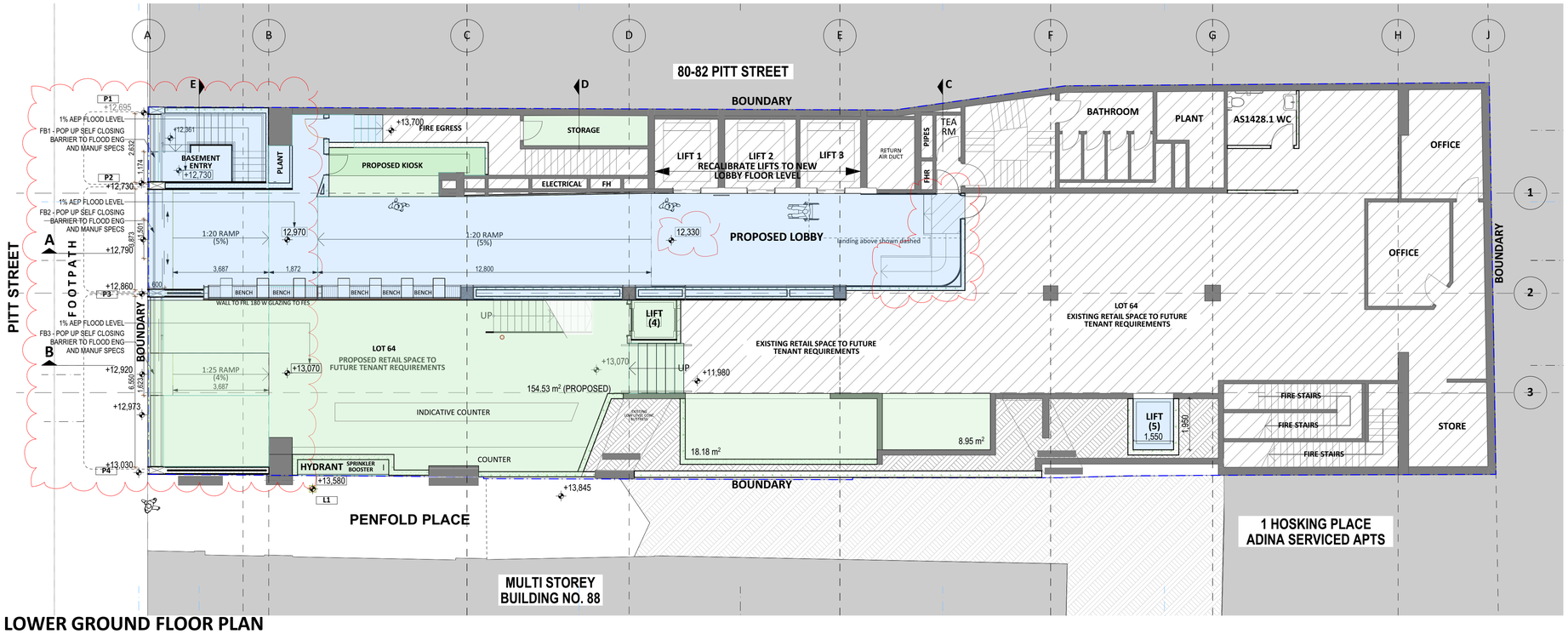
DRAWING TITLE :
EXISTING/DEMOLITION PLANS

SCALE : 1:200 @ A1
DATE : 20 JULY 2021

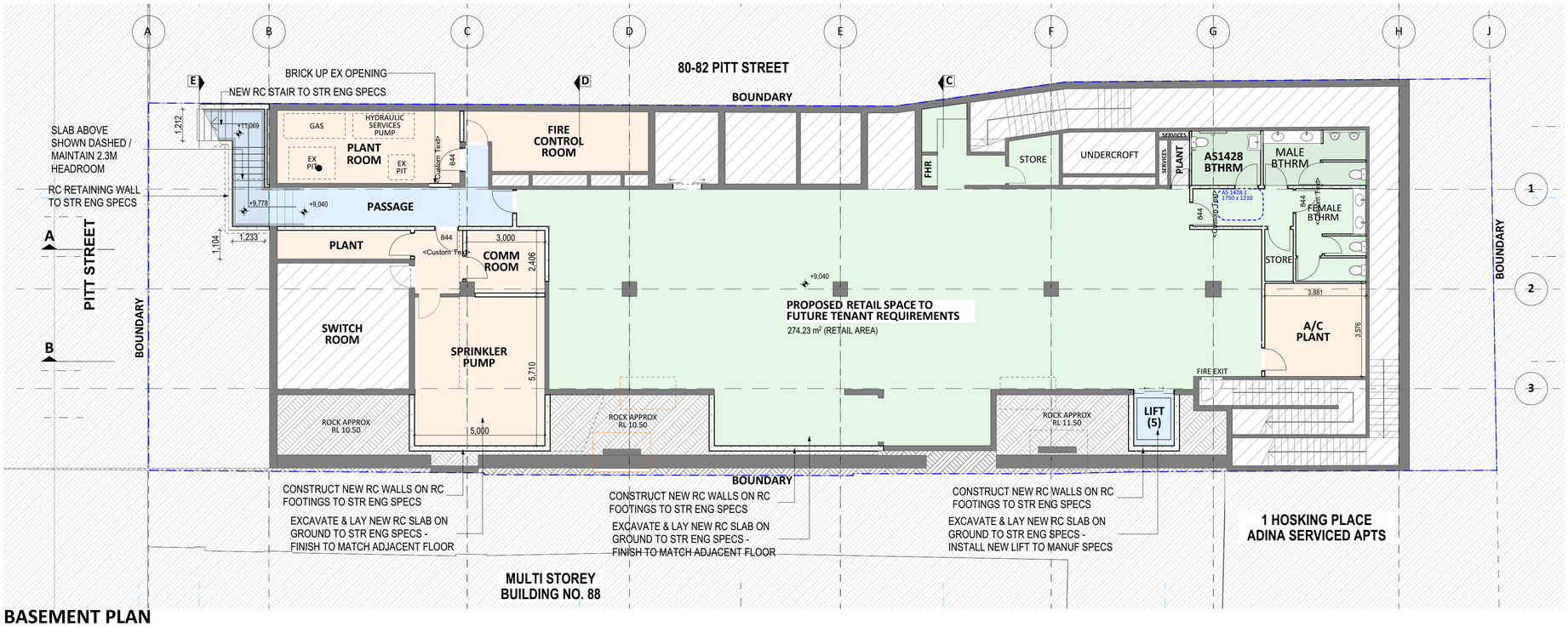
JOB NO.:
0348

DRAWING NO.
DA-01

rev:
F



LOWER GROUND FLOOR PLAN



BASEMENT PLAN

KEY

- EXISTING
- PROPOSED COMMON AREA
- PROPOSED RETAIL
- NEW OR MODIFIED PLANT RM

GENERAL NOTES

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DRAWING LIST

DA-00 CONTEXT + GENERAL INFO
DA-01 EXISTING/DEMO PLANS
DA-02 PLANS BSMNT + LWR GRND
DA-03 PLANS UPPER GRND + 1ST FL
DA-04 ELEVATIONS
DA-05 SECTIONS
DA-06 AREA CALCULATIONS
DA-07 DETAILS (1:20)
DA-08 STREET MONTAGES MATERIALS

KEY

FL	FLOOR LEVEL
FE	FIRE EXTINGUISHER
FHR	FIRE HOSE REEL
FCR	FIRE CONTROL ROOM
CL	CEILING
SF	
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Nominated architect:
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PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

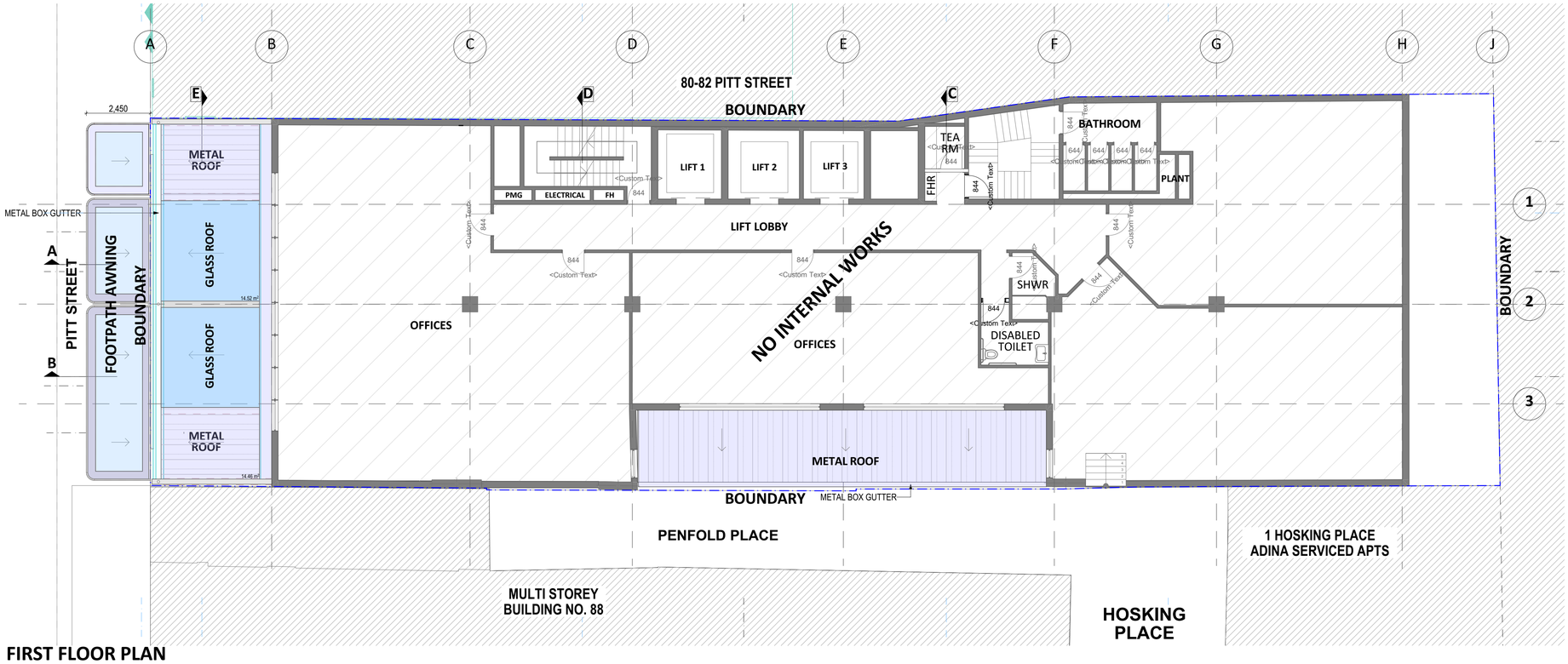
DRAWING TITLE :
PLANS - Basement + Lwr Grnd Fl

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

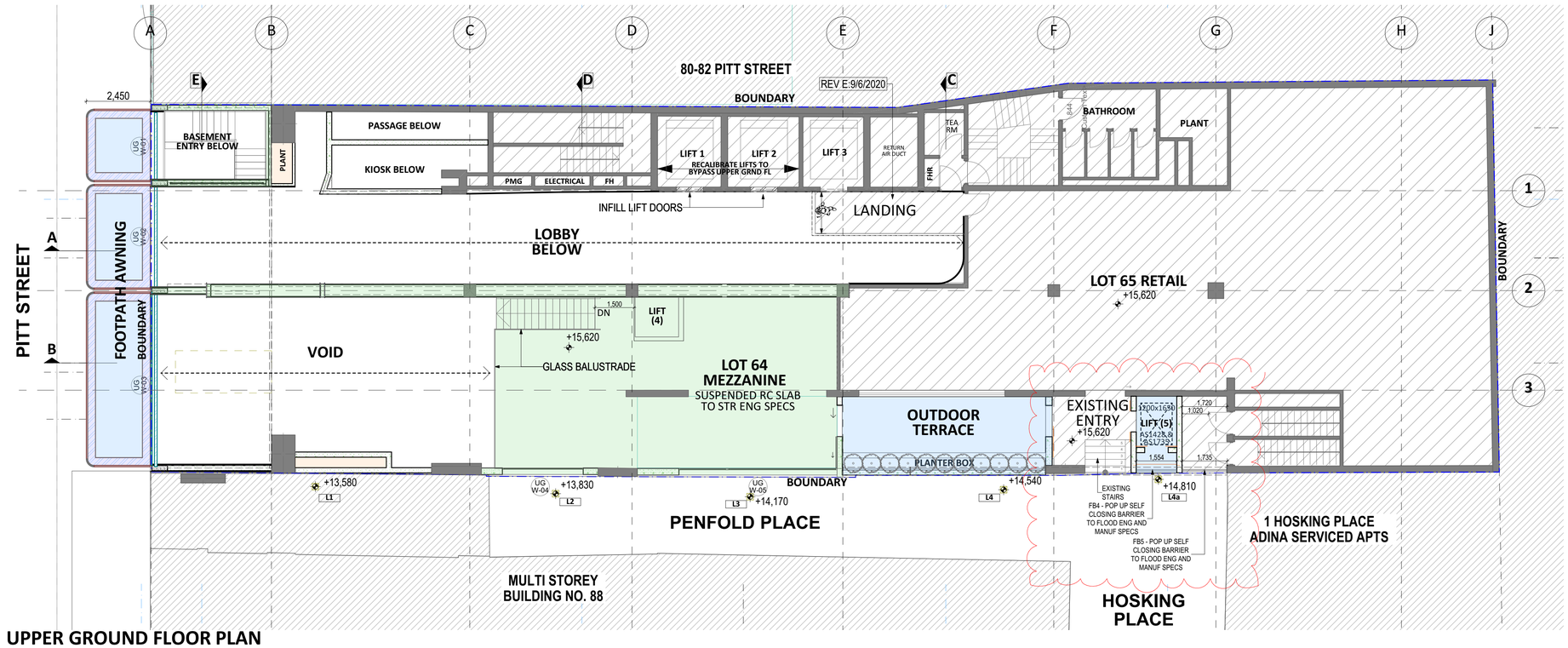
JOB NO.:
0348

DRAWING NO.
DA-02

rev:
F



FIRST FLOOR PLAN



UPPER GROUND FLOOR PLAN

KEY

- EXISTING
- PROPOSED COMMON AREA
- PROPOSED RETAIL
- NEW OR MODIFIED PLANT RM

GENERAL NOTES

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REV:

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Cardno - Flood Engineers

DRAWING LIST

KEY

FL	FLOOR LEVEL
FE	FIRE EXTINGUISHER
FHR	FIRE HOSE REEL
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CL	CEILING
SF	
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Nominated architect:
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BArch/MCPUD ARB NSW Reg No.: 9072

PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

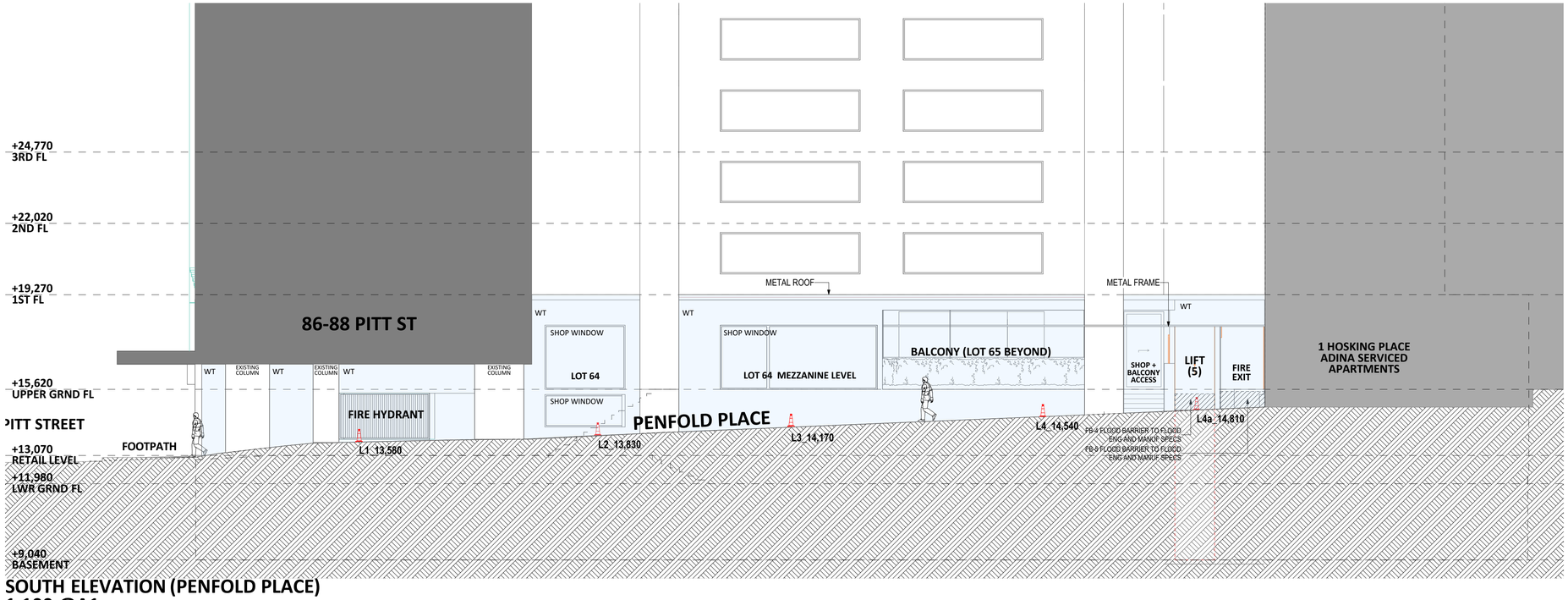
DRAWING TITLE :
PLANS - Upper Grnd Fl + First Fl

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

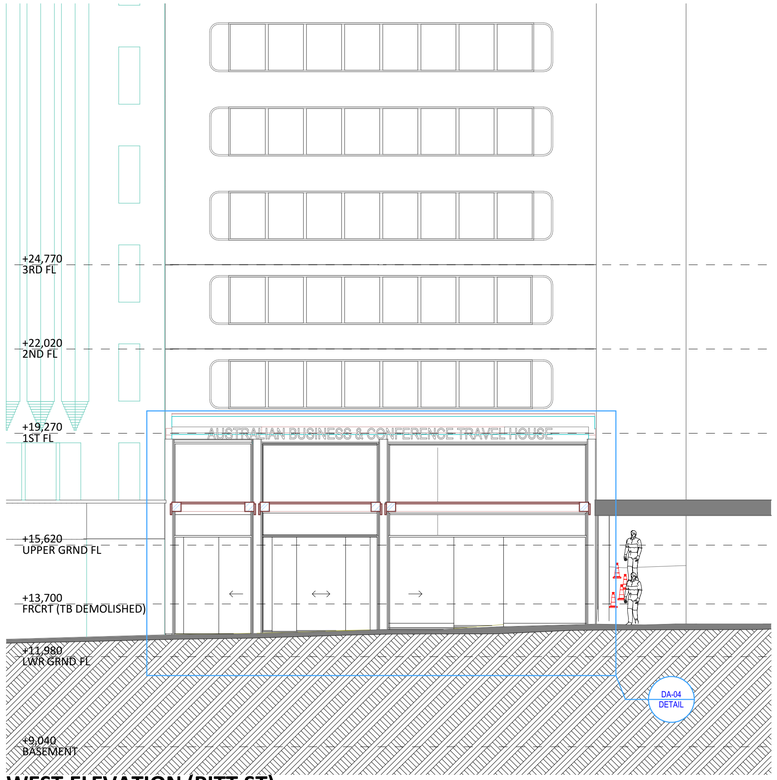
JOB NO.:
0348

DRAWING NO.
DA-03

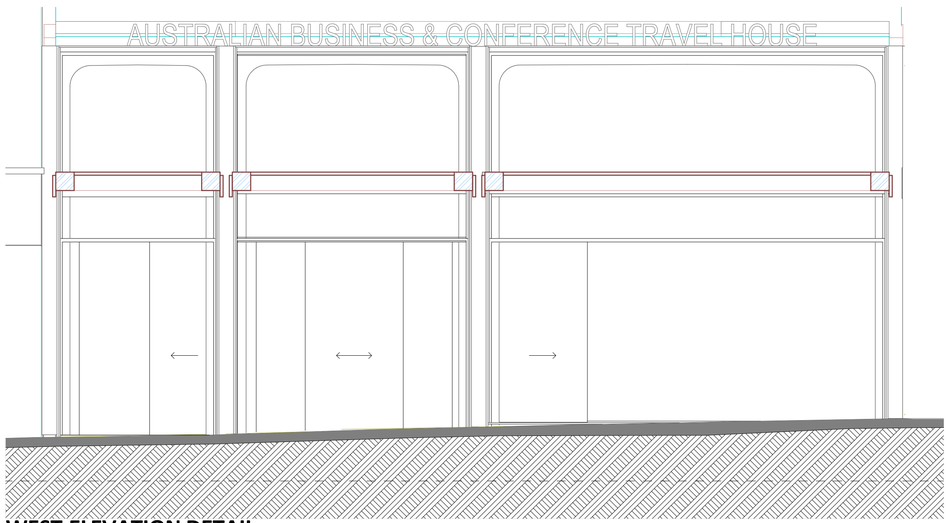
rev:
F



SOUTH ELEVATION (PENFOLD PLACE)
1:100 @A1



WEST ELEVATION (PITT ST)
1:100 @A1



WEST ELEVATION DETAIL
1:50 @A1

GENERAL NOTES

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F	AMENDED DA PLANS	24/08/2021

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DRAWING LIST

KEY

FL	FLOOR LEVEL
FE	FIRE EXTINGUISHER
FHR	FIRE HOSE REEL
FCR	FIRE CONTROL ROOM
CL	CEILING
SF	
WT	WALL TILES
GB	GLASS BALUSTRADE
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Nominated architect:
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BArch/MCPUD ARB NSW Reg No.: 9072

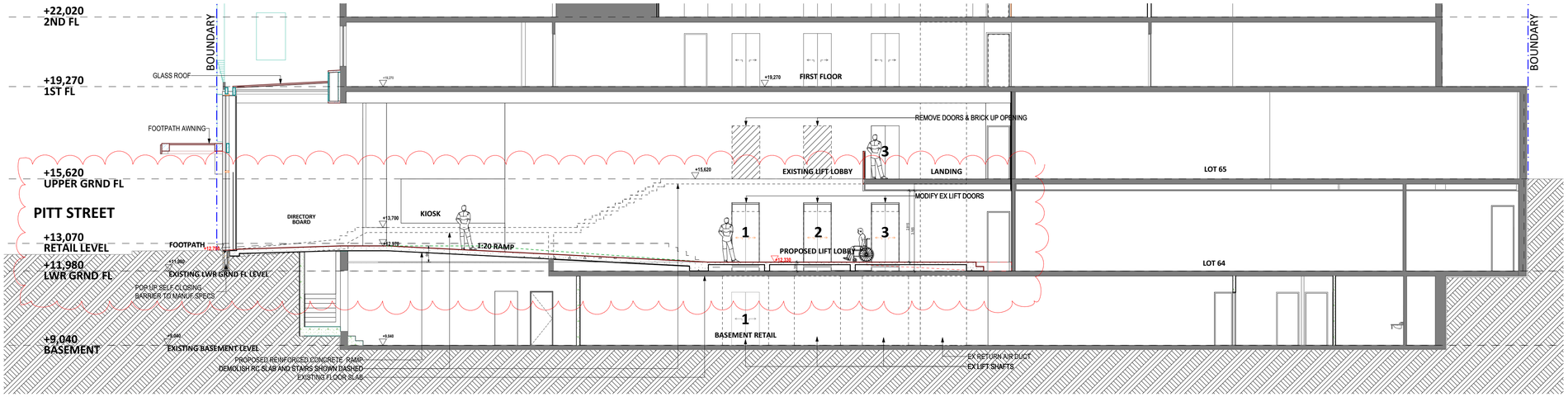
PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY
CLIENT :
SP50723

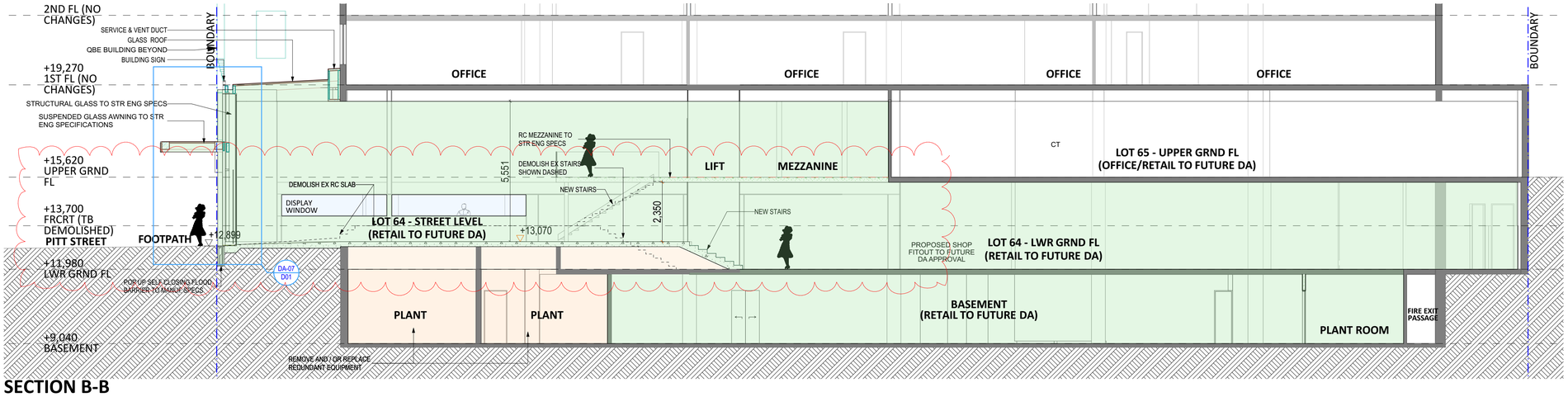
DRAWING TITLE :
ELEVATIONS - West + South

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

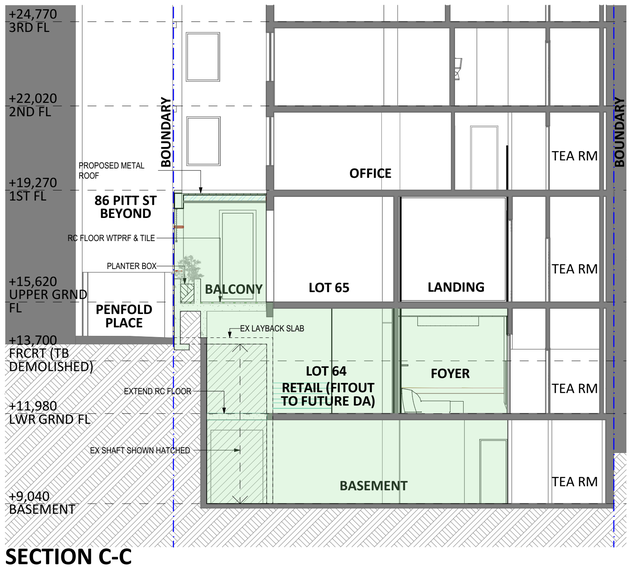
JOB NO.:
0348
DRAWING NO.
DA-04
rev:
F



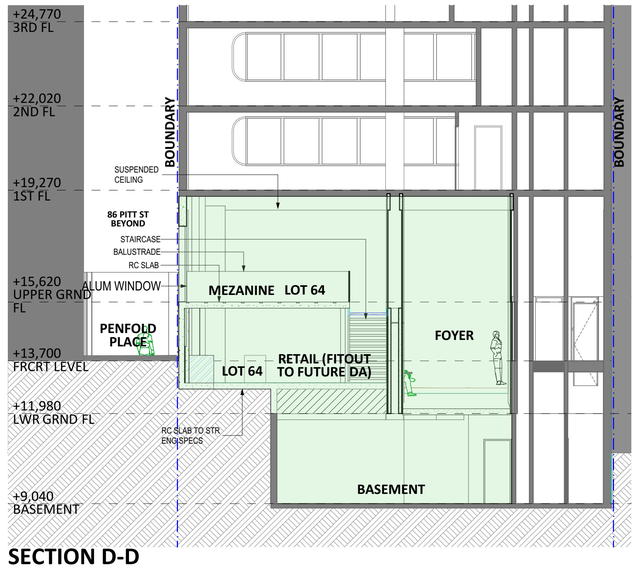
SECTION A-A



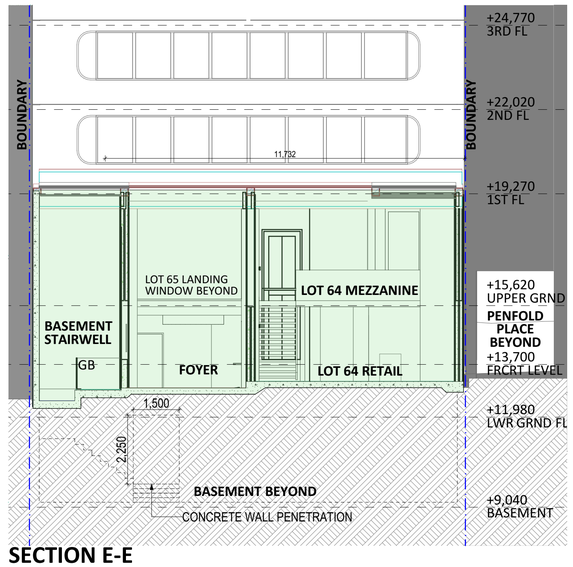
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

GENERAL NOTES

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DRAWING LIST

KEY

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Nominated architect:
David Epstein
BArch/MCPUD ARB NSW Reg No.: 9072

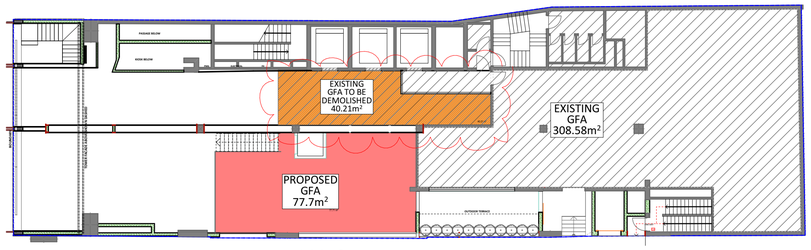
PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY
CLIENT :
SP50723

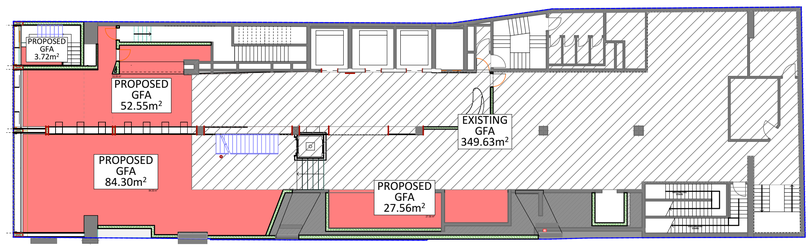
DRAWING TITLE :
SECTIONS A, B, C, D & E

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

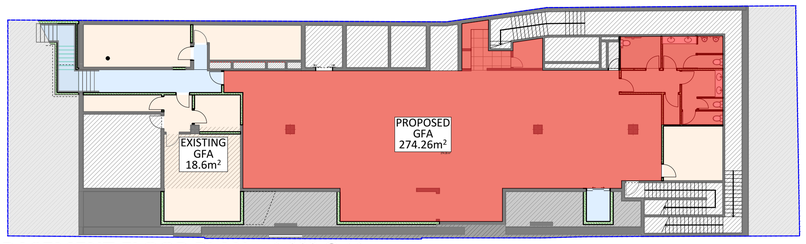
JOB NO.:
0348
DRAWING NO.
DA-05
rev:
F



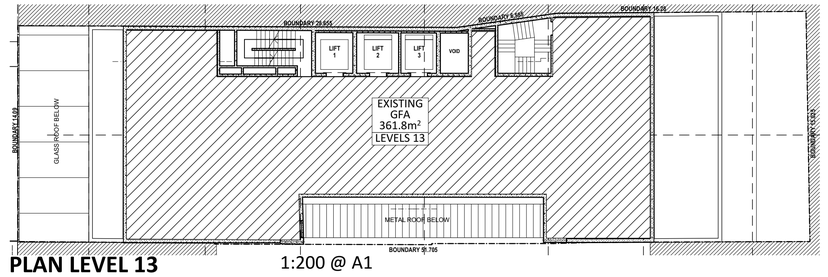
UPPER GRND FL PLAN 1:200 @ A1



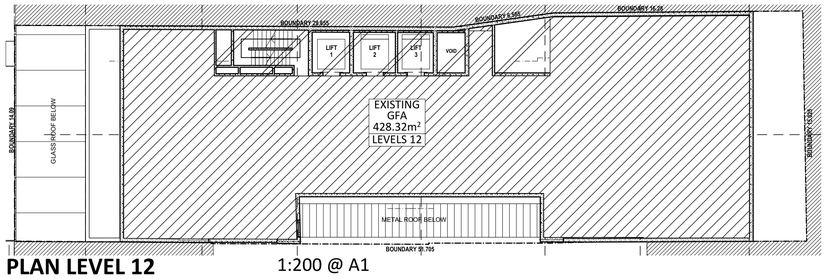
LOWER GRND FL PLAN 1:200 @ A1



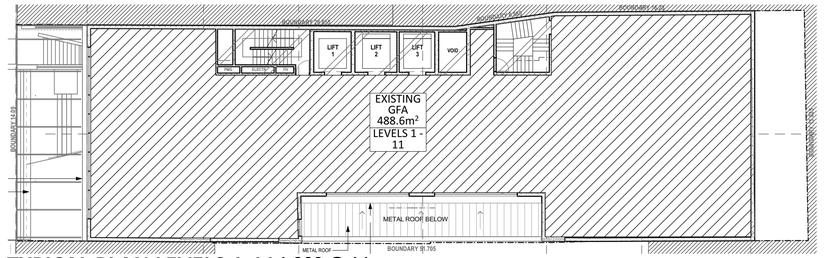
BASEMENT FLOOR PLAN 1:200 @ A1



PLAN LEVEL 13 1:200 @ A1



PLAN LEVEL 12 1:200 @ A1



TYPICAL PLAN LEVELS 1-11 1:200 @ A1

AREA CALCULATIONS

SITE AREA:	**746m²**
EXISTING GFA:	**6,827.81m²**
APPROVED GFA in DA1847/2014:	**7,182.25m²**
PROPOSED GFA:	**7,305.7m²**
PROPOSED FSR:	**9.793:1**
PROPOSED ADDITIONAL GFA - 477.89m²	
1. BASEMENT:	**274.26m²**
2. LOWER GRND FL:	**166.13m²**
3. UPPER GRND FL:	**37.50m²**

GENERAL NOTES

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DRAWING LIST

KEY

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Nominated architect:
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PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

DRAWING TITLE :
AREA CALCULATIONS

SCALE : 1:200 @ A1
DATE : 17 MARCH 2020

JOB NO.:
0348

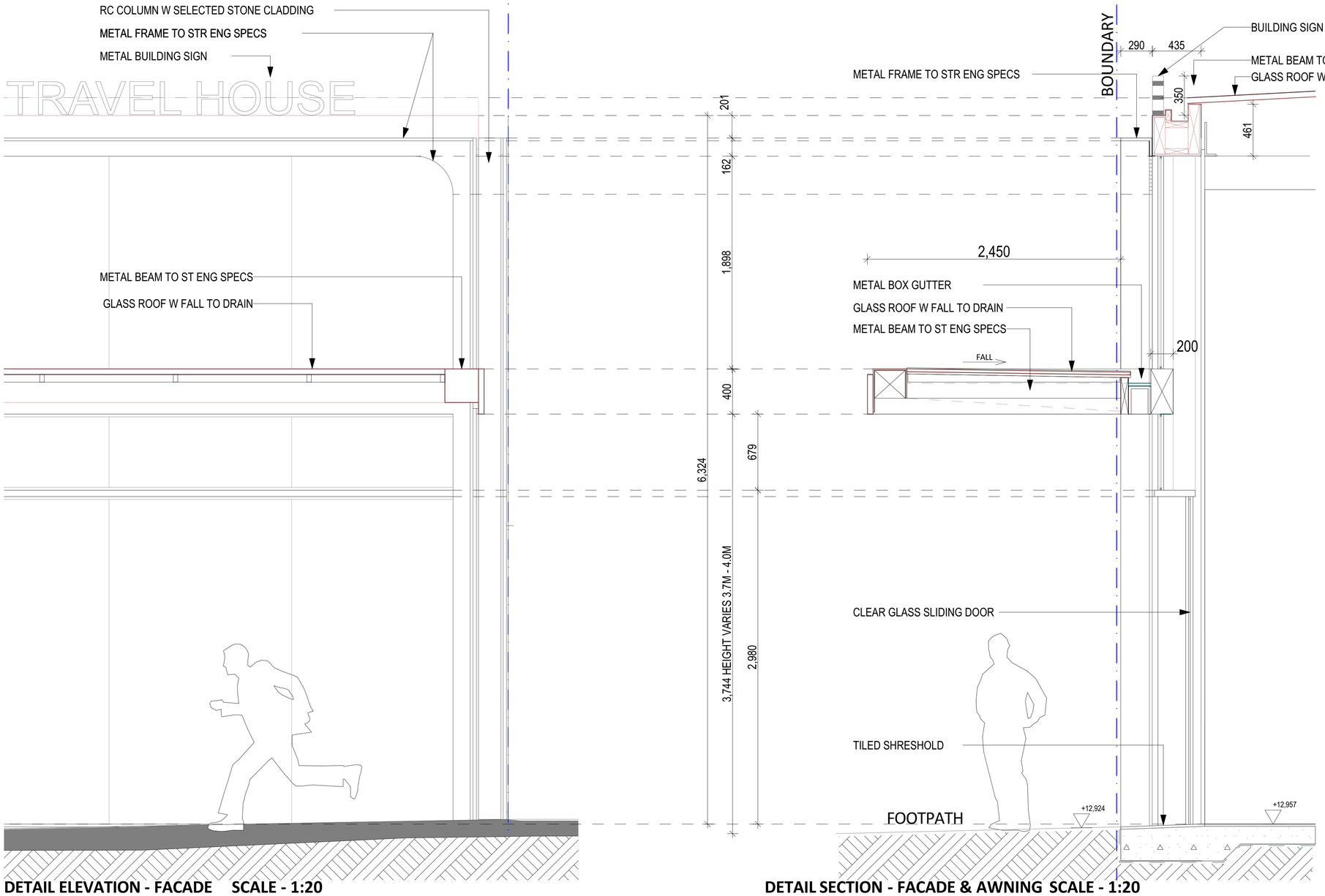
DRAWING NO.
DA-06

rev:
F 1

BUILDING SIGN ELEVATION SCALE - 1:20

BUILDING SIGN PLAN SCALE - 1:20

BUILDING SIGN 3D VIEW N.T.S



DETAIL ELEVATION - FACADE SCALE - 1:20

DETAIL SECTION - FACADE & AWNING SCALE - 1:20

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REV:

C	PRE-DA FOR CONSULTANT INPUT 06/12/2019
D	DEVELOPMENT APPLICATION 18/02/2020
E	REVISED DA PLANS 09/06/2020
F	AMENDED DA PLANS 24/08/2021

CONSULTANTS

City Plan - Planning & Heritage
AE Structural Engineers
STS Geo Environmental - Geotechnical Eng
JHA Building Services Engineers - Mechanical, Hydraulic & Communications
BCA Logic - NCC & Access
Code Performance - Fire Engineers
Certified Energy - Section J
Cardno - Flood Engineers

DRAWING LIST

KEY

FL	FLOOR LEVEL
FE	FIRE EXTINGUISHER
FHR	FIRE HOSE REEL
FCR	FIRE CONTROL ROOM
CL	CEILING
SF	
WT	WALL TILES
GB	GLASS BALUSTRADE
FC	FIBRE CEMENT
BK	BRICK
RC	REINFORCED CONCRETE
MR	METAL ROOF
CR	CONCRETE ROOF

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Architecture Urban Design
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QUEENS PARK NSW 2022
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Nominated architect:
David Epstein
BArch/MCPUD ARB NSW Reg No.: 9072

PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

DRAWING TITLE :
DETAILS (1:20)

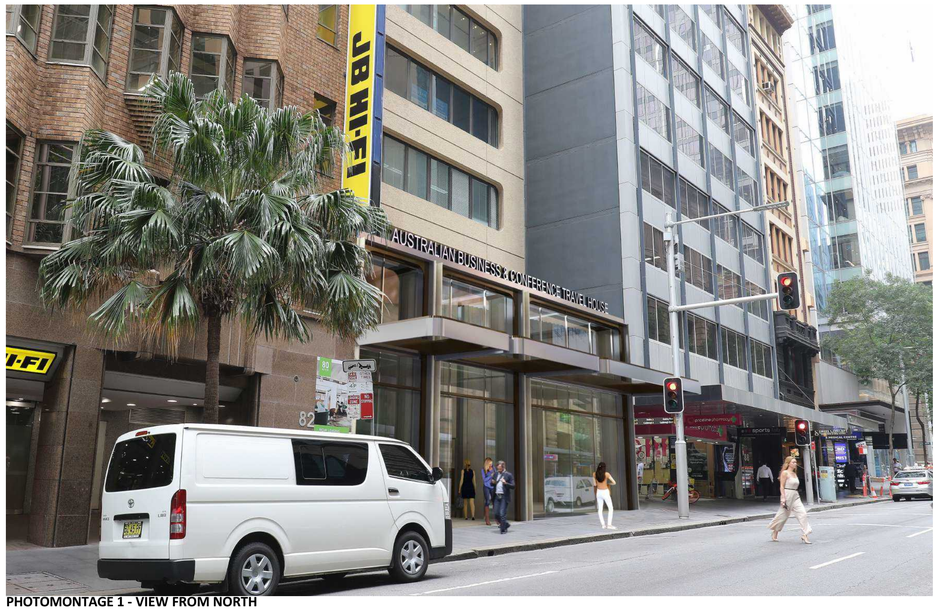
SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

JOB NO.:
0348

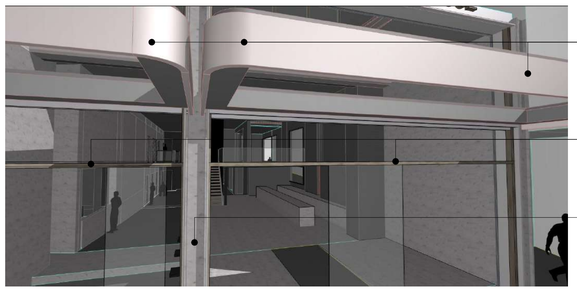
DRAWING NO.
DA-07

rev:
F

PHOTOMONTAGE 2 - VIEW FROM SOUTH WEST



PHOTOMONTAGE 1 - VIEW FROM NORTH



MATERIALS & FINISHES

Facade framing - Concrete/steel with Travertine tile and quartz-zinc cladding.
Internal floor and wall tiles - Travertine 600x1200.
Internal and external trim - Quartz-Zinc and black metal
Window Frames - Satin Light Bronze metal framing with clear glass panels.
Footpath awning - Quartz-Zinc lined metal framing with clear glass inserts.

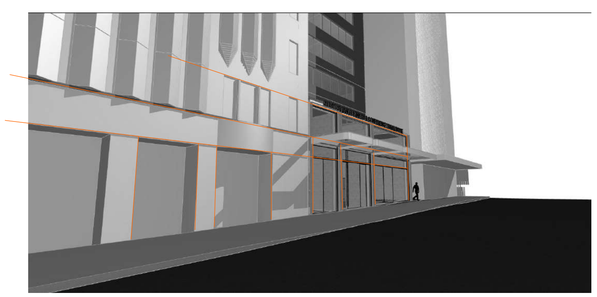
SAMPLE COLOURS (INDICATIVE ONLY)

QUARTZ - ZINC

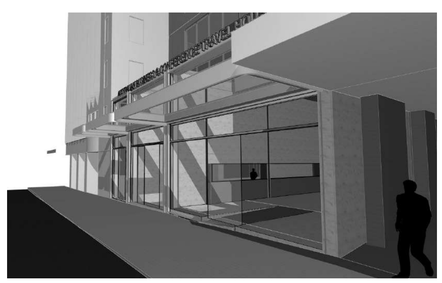
SATIN LIGHT BRONZE

STONE - TRAVERTINE/ LIMESTONE

1. VIEW FROM PITT STREET SHOWING NEW EXTENSION WITH FOOTPATHAWNING



2. LINES SHOWING THE RELATIONSHIP OF THE PROPOSED FACADE TO THE LOWER LEVELS OF 82 PITT STREET



3. VIEW LOOKING NORTH WITH AWNING RELATIVE TO 82 & 88 PITT STREET

GENERAL NOTES

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STREET MONTAGES MATERIALS

SCALE : 1:100 @ A1 & 1:200 @ A3
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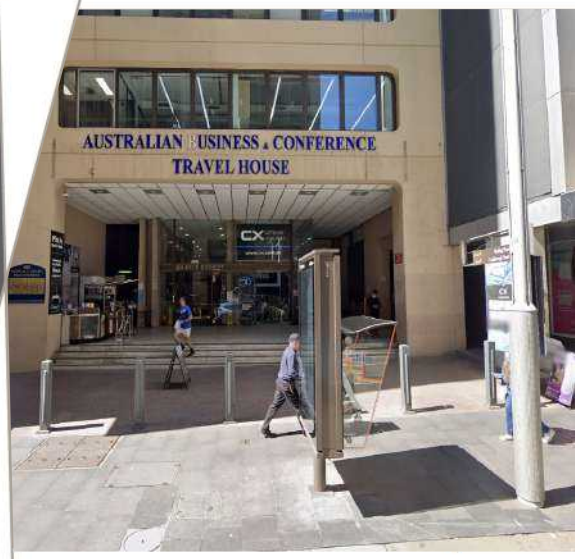
JOB NO.:
0348
DRAWING NO.
DA-08
rev:
F

Flood Impact Assessment

84 Pitt Street, Sydney

NW30156



Prepared for
The Owners Corporation SP50723

14 September 2021

Cardno
Shaping the Future

Contact Information

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Document Control

Version	Date	Description of Revision	Prepared By	Prepared (Signature)	Reviewed By	Reviewed (Signature)
1	14/9/2021	Final	SY, YL, BCP		BCP	Brett C. Phillips

Version	Reason for Issue	Approved for Release By	Approved (Signature)	Approved Release Date
1	Final Report	BCP	Brett C. Phillips	14/9/2021

Document Reference: *Y:\2304\Projects_AWE\FY21\NW30156 FIA, 84 Pitt St, Sydney\4_ISSUED_DOCS\2_Report\NW30156 84 Pitt Street R001 14Sep21.docx*

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Executive Summary

This report details a site-specific flood risk assessment of modified external alterations to the existing commercial building on 84-84b Pitt Street including a proposed extension including an awning to the Pitt Street property boundary, the lowering of the existing ground floor level and inclusion of structural features and self-actuating flood barriers that address overland flow flooding up to the PMF level.

The approach adopted to the hydrological and hydraulic assessments was based on the approach adopted in the 2016 City Area Catchment Flood Risk Management Study.

Detailed flood modelling has been completed to estimate flood behaviour in existing and future conditions.

It is concluded that the planned development has a negligible impact on 1% AEP and PMF levels and peak velocities.

The modified external alterations to the existing commercial building on 84-84b Pitt Street include:

- A proposed extension to the Pitt Street property boundary including an awning,
- The inclusion of a ramp with a crest level set at the 1% AEP flood level leading to a Lobby with a lowered floor level;
- The setting of the floor level for Lot 64 at the 1% AEP flood level;
- The installation of a self-actuating flood barrier (FB1) to exclude overland flow flooding in Pitt Street from the basement entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier to exclude overland flow flooding in Pitt Street from the pedestrian entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier(FB3) to exclude overland flow flooding in Pitt Street from Lot 64 up to the PMF level;
- The installation of a self-actuating flood barrier in front of Lift No 5 on Penfold Place (FB4) to exclude overland flow flooding in Hosking Place / Penfold Place up to the PMF level;
- At the fire escape to Penfold Place, installation of a 24/7 flood door (FB5);

The adoption of the ramp crest level and the floor level of Lot 64 at the 1% AEP flood level complies with the minimum FPL requirement for Commercial Development. The inclusion of flood barriers FB2 and FB3 provides a PMF level of protection which exceeds the minimum CoS FPL requirement and has the advantage of also protecting against future increases in the 1% AEP flood level due to climate change.

The installation of self-actuating flood barriers FB1 and FB4 and of flood door FB5 together protect the basement from the ingress of any floodwaters but also serve to protect the lower ground floor and Lot 64 against floodwaters outflanking the adopted flood protection measures.

It is concluded that the proposed modified external alterations to the existing commercial building on 84-84b Pitt Street satisfy the City of Sydney Flood Planning Level Requirements.

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Existing Conditions

Future Conditions

Flood Impact

1 Introduction

This report provides a site-specific flood risk assessment of modified external alterations to the existing commercial building on 84-84b Pitt Street including a proposed extension including an awning to the Pitt Street property boundary, the lowering of the existing ground floor level and inclusion of structural features and self-actuating flood barriers that address overland flow flooding up to the PMF level.

1.1 Background

DA D/2020/235 was submitted to the City of Sydney for alterations and additions to existing commercial building on 84-84b Pitt Street, Sydney (Lot 1 DP 852540, Lots 1-66 SP 50723).

The proposed alterations and additions to the existing commercial building included alterations to basement, lower ground and upper ground floors to accommodate new retail tenancies, services and an outdoor terrace. External alterations included extension of the lower ground floor to the building boundary on Pitt Street, inclusive of a new glass awning, commercial lobby entrance and building identification signage.

As described in the City of Sydney's report on the assessment of DA D/2020/235:

1. *The site has a legal description of Lot 1 DP 852540 and Lots 1- 66 SP 50723 and is commonly known as the Australian Business and Conference Travel House at 84 – 84B Pitt Street. It is rectangular in shape with an area of approximately 747sqm. It has a primary street frontage to Pitt Street, and secondary street frontage to Hosking Place. The site is located 50m north of the intersection of Pitt Street and Martin Place.*

2. *The site contains a 13 storey commercial building. Currently, a retail tenancy occupies the lower ground floor whilst a takeaway food and drink business occupies part of the ground floor forecourt. The floors above are occupied by a mix of commercial tenants.*

3. *The surrounding area is characterised by predominantly commercial land uses, given the site's location within the heart of the Sydney CBD. The site is located on Pitt Street, which is a key corridor linking Circular Quay in the north to Central Station in the south. Pitt Street is a one-way street, providing two lanes for southbound vehicular traffic. Pitt Street experiences a high degree of pedestrian movement throughout the day and night. …….*

32. *The site has been identified as being affected by flooding, with Pitt Street being the major flow path to the Sydney Harbour Catchment. Indicative flood levels along the sites Pitt Street frontage are 200mm in the 1% AEP storm event and 700mm in the Probable Maximum Flood (PMF).*

33. *The survey information provided with the application indicates that the likely flood levels at the site's boundary may be 12.9m AHD in the 1% AEP event and 13.4m AHD in the PMF. The proposal includes demolition of the existing raised ground floor level and its replacement with new floor entry levels that are lower than existing and that lead to the commercial floor space and below basement levels at 12.64m and 12.7m AHD. These proposed levels are below the recommended flood planning levels.*

34. *A site-specific flood risk assessment was requested from the applicant; however this report was unable to be provided to the City within the assessment time frame.*

35. *It is noted that the entrance steps on the existing slab are identified at 13.67m AHD, which is above the flood level indicators, thereby negating flooding issues. As such, bar the external alterations and new basement entrance stairs, the proposal is satisfactory from a flooding perspective should the existing slab height be retained.*

1.2 Location

The location of property is indicated in **Figure 1**.

Figure 1 Location of 84 Pitt Street, Sydney (Source: nearmap, accessed 4 May 2021)

1.3 Flooding Considerations

It is noted that flooding investigations have been previously completed for the Sydney CBD as follows:

- 2014 City Area Catchment Flood Study;
- 2017 City Area Catchment Floodplain Risk Management Study and Plan

1.4 Objectives

The objectives were to:

- Undertake a flood risk assessment of flooding in the vicinity of the subject site and its impact or otherwise on the preferred development;
- Identify any measures that might be incorporated into the proposed works to address Council's concerns and/or meet the intent of Council's flood planning controls as needed.

1.5 Our Approach

The approach adopted to the hydrological and hydraulic assessments was based on the approach adopted in the 2016 City Area Catchment Flood Risk Management Study.

2 Previous Studies

The proposed development on 84 Pitt Street, Sydney is subject to flooding by overland flow spilling down Hosking Place, Penfold Place and Pitt Street. Consequently, previous studies of overland flow flooding in the Sydney CBD are relevant to the subject site.

2.1 2014 City Area Flood Study

As described, in part, in the 2014 City Area Catchment Flood Study[1]*:*

> *The primary objective of the Flood Study is to define the flood behaviour within the City rea catchment through the establishment of appropriate numerical models. The study has produced information on flood flows, velocities, levels and extents for a range of flood event magnitudes under existing catchment conditions. Specifically, the study incorporates:*
>
> - *Compilation and review of existing information pertinent to the study;*
> - *Development and calibration of appropriate hydrologic and hydraulic models;*
> - *Determination of design flood conditions for a range of design events including the 2 year, 5 year, 10% EP, 5% EP, 2% EP, 1% EP, 0.2% EP and PMF event; and*
> - *Presentation of study methodology, results and findings in a comprehensive report incorporating appropriate flood mapping.*
>
> *….. The catchment is fully developed and comprises predominantly high-density housing and commercial development. There are some large open spaces within the catchment including Observatory Park and part of Hyde Park.*
>
> *The catchment covers an area of about 199 ha and drains into the Sydney Harbour at various locations with the majority of the catchment discharging to Sydney Cove via Sydney Water's main trunk drainage system. This trunk drainage network is connected to Council's minor stormwater drainage system which comprises covered channels, pipes, culverts and pits. There are no open channel reaches within the City rea catchment.*
>
> *The topography within the City area catchment varies from steep surface slopes in excess of 15% on the western sides to the near flat lower catchment near Circular Quay and the other Sydney Harbour shoreline locations. The catchment therefore has regions where surface water runoff within the road network has high velocity with shallow depths, whilst in the lower catchment surface water is more likely to pond in sag points with typically lower flow velocities. The lower reaches of the catchment fringing Sydney Harbour are potentially affected by elevated water levels within the Harbour.*
>
> *Within the catchment there are various excavation and cuttings, resulting in some vertical drops of over 10m. The entire catchment is highly developed with little opportunity for water to infiltrate due to the high degree of impervious surfaces. It has been calculated that the combined area of roofs and roads is in excess of 50% of the catchment area. As a sign of the age of the region and high density nature, most residential properties are brick or sandstone construction with common walls to neighbours. In the central business district area numerous high rise buildings are built above the surrounding ground levels providing clear flow obstructions. There are very few opportunities for flow to pass through or between properties and as a result the roads form the primary overland flow paths.*

[1] BMT WBM (2014) “City Area Catchment Flood Study”, *Final Report*, Rev 2, prepared for The City of Sydney, October.

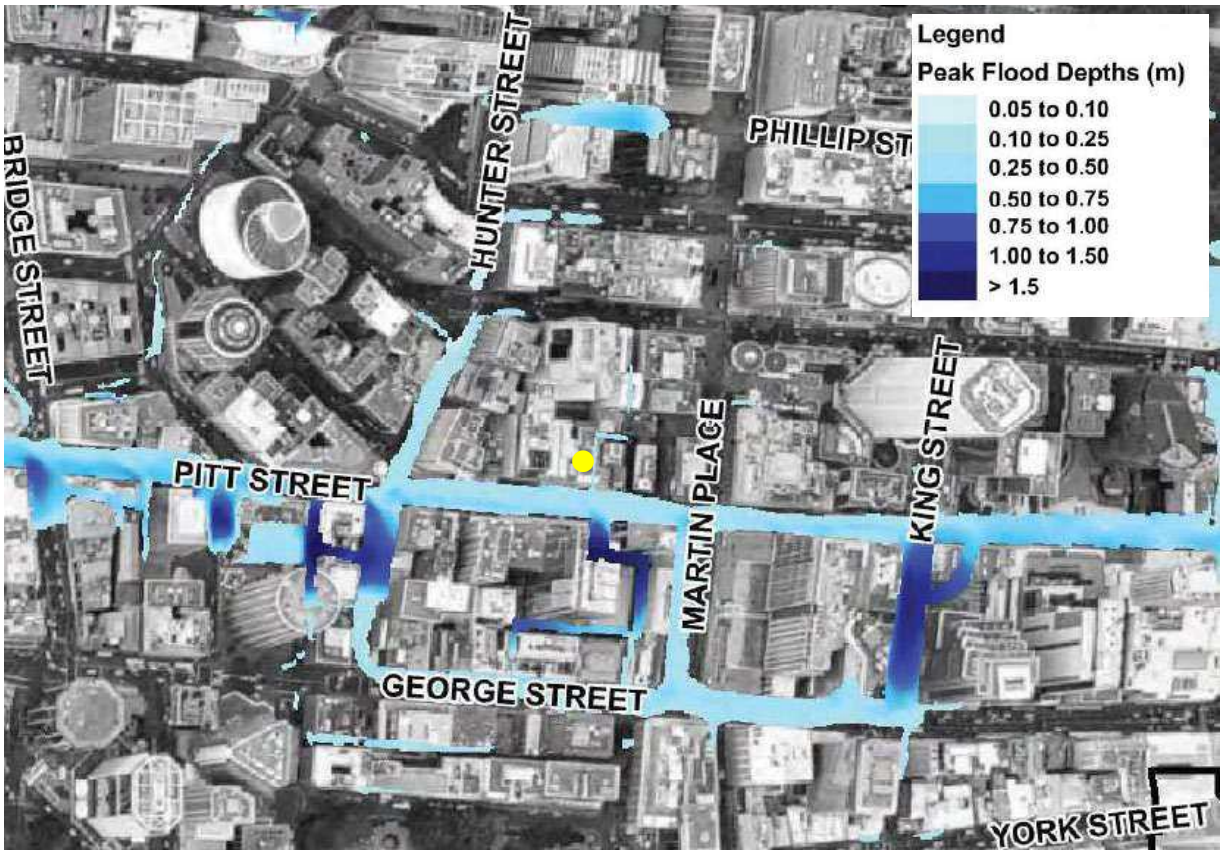


Figure 2 1% AEP Flood Depth (Source: BMT WBM., 2014)

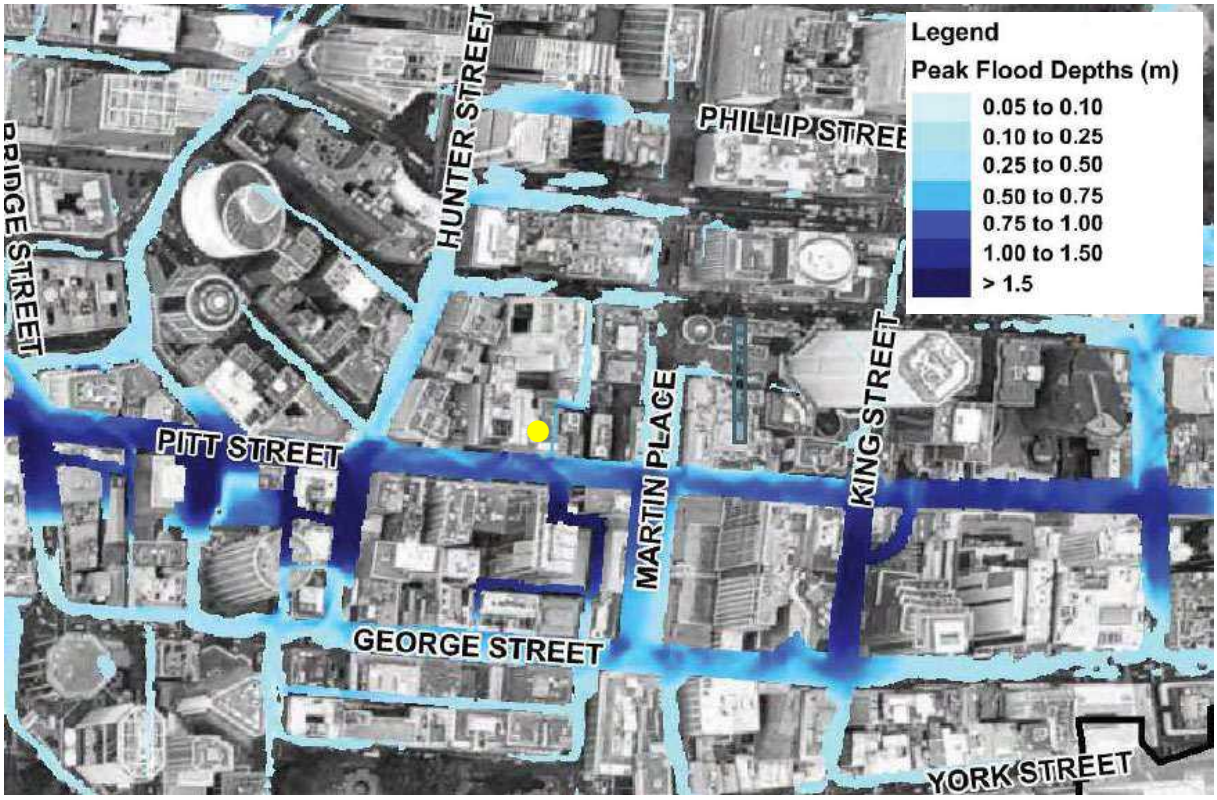


Figure 3 Probable Maximum Flood Depth (Source: BMT WBM., 2014)

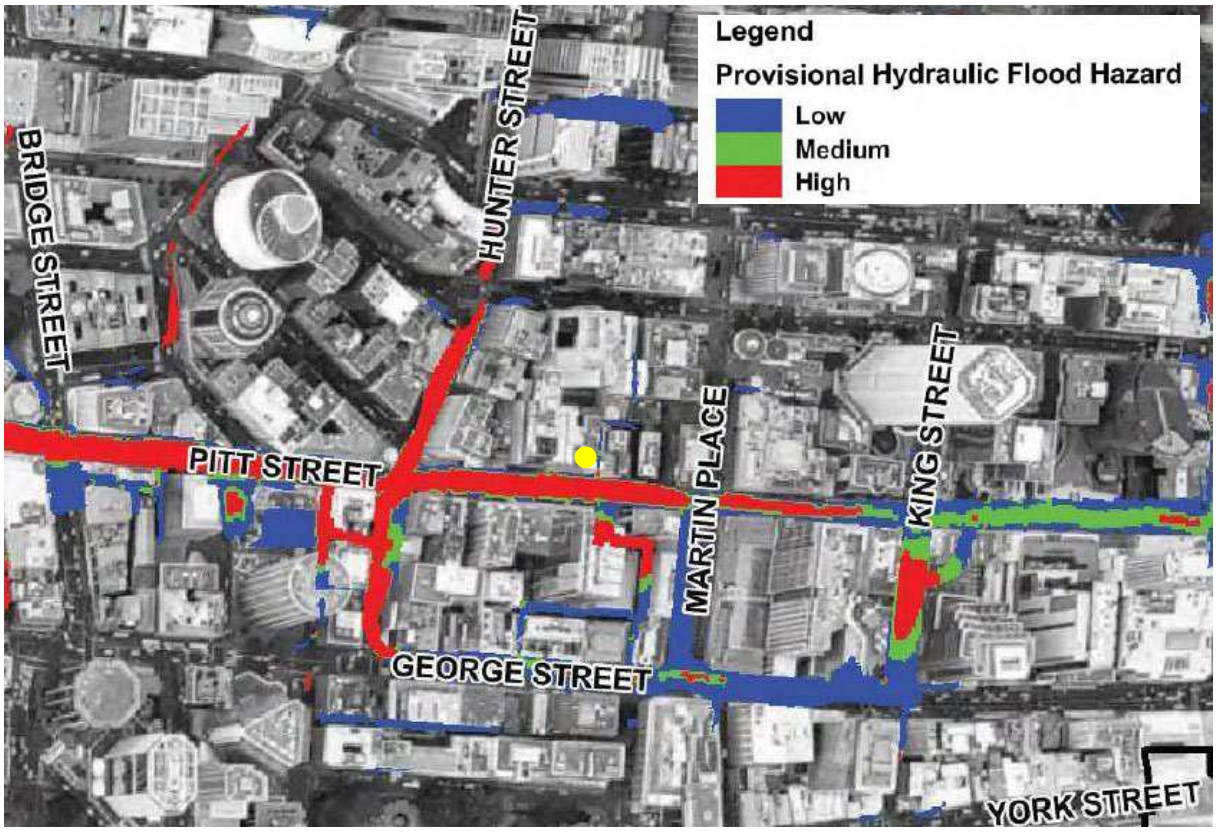


Figure 4 1% AEP Flood Depth (Source: BMT WBM., 2014)

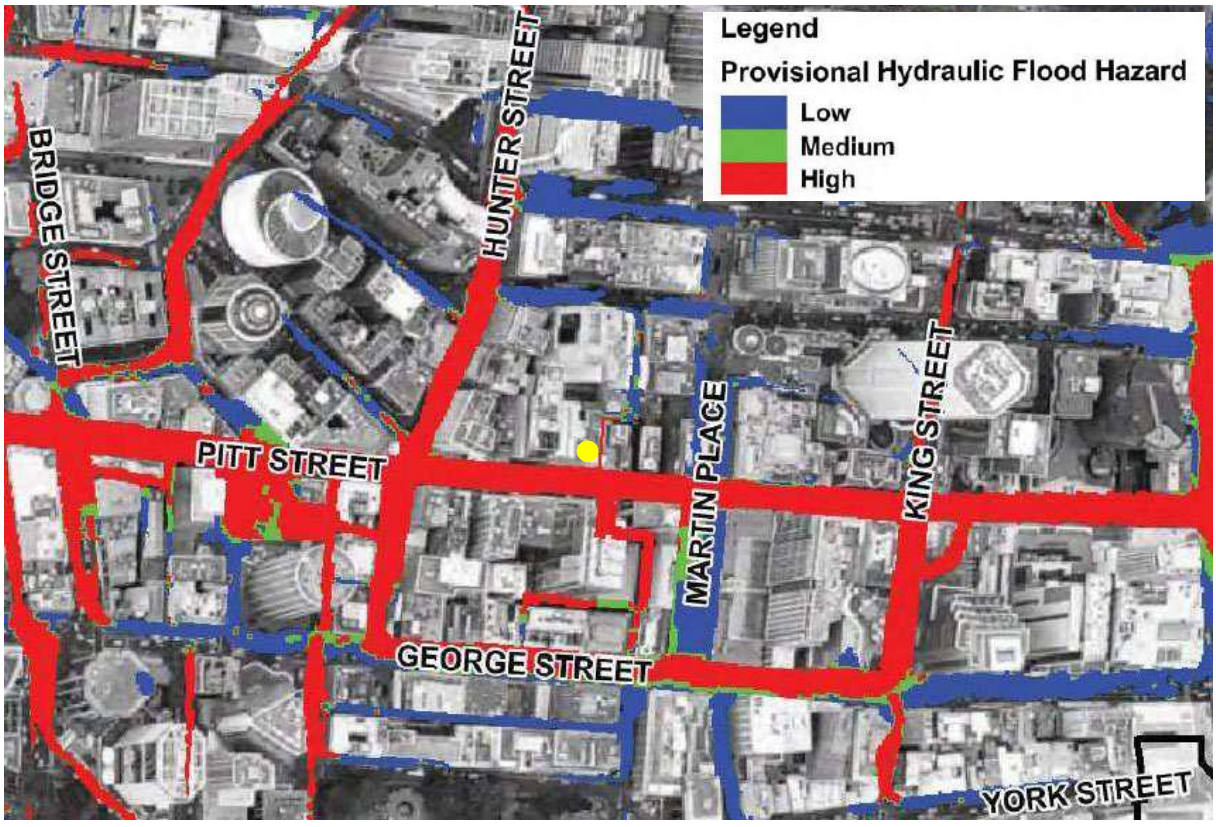


Figure 5 Probable Maximum Flood Depth (Source: BMT WBM., 2014)

The Flood Study includes plots flood depths, velocities and water levels for the 2 year ARI, 5 year ARI, 10% AEP, 5% AEP, 2% AEP, 1% AEP, 0.2% AEP floods as well as the PMF.

Extracts from the plots of 1% AEP flood depth, PMF depth, 1% AEP flood hazard and PMF hazard in the area of interest respectively are given in **Figures 2, 3, 4** and **5**. These Figures also disclose overland flows down Hosking Place and Penfold Place that may be also problematic for 84 Pitt Street.

2.2 2017 City Area Catchment Floodplain Risk Management Study and Plan

As described by WMAwater, 2016[2]:

> *This Floodplain Risk Management Study assesses floodplain management issues in the City Area catchment, and investigates potential management options for the area. The study, which follows on from the City Area Catchment Flood Study (Reference 2), has been undertaken in accordance with the NSW Government's Flood Policy. A full assessment of the existing flood risk in the catchment has been carried out, including flood hazard across the catchment, overfloor flooding of residential, commercial and industrial properties, road flooding and emergency response during a flood event. A range of options aimed at managing this flood risk were also assessed for their efficacy across a range of criteria, which allowed certain options to be recommended, forming the basis of the Floodplain Risk Management Plan for the area. Assessed options included upgraded pit and pipe networks, emergency management options and various property modification options.*
>
> *… WMAwater have carried out a review of the City Area model established as part of the 2014 Flood Study (Reference 2). This was carried out with the aim of establishing that the model developed was suitable for carrying out FRMS&P work. The review consisted of checking the model system and approach, the schematisation of the catchment, including model parameters and the base data, as well as the model results.*
>
> *….. Updates to the previously established model were made where new data was available and where the model review identified areas of improvement. Overall, the model updates that were made are considered to be small refinements, and there were no major revisions. The following updates were made:*
>
> 1. *Minor revision to the Mannings 'n' representation in Martin Place. The model review identified the area as requiring a slightly smoother hydraulic roughness than was previously used.*
> 2. *Revision to the pit/pipe data based on recent survey from SWC. Survey data was provided that had revised dimensions and alignments of some pits and pipes. Changes were minimal and were mainly located in the northern half of the catchment. There were no widespread effects on design flood behaviour.*
> 3. *Minor changes to the buildings in the model where the previous model did not represent a building. These were located at Australia Square on Pitt Street, at the northern end of Macquarie Street and a small building in Walsh Bay.*

[2] WMAwater (2016) "City Area Catchment Floodplain Risk Management Study", *Final Report*, Rev 5, prepared for The City of Sydney, September.

3 Flooding Assessment

The assessment of the impact or otherwise of updated development on 84 Pitt Street was undertaken using the floodplain model assembled for the 2016 City Area Catchment Floodplain Risk Management Study.

3.1 2016 City Area Floodplain Model

3.1.1 The Floodplain Model

A copy of the floodplain model files and results for the 2016 City Area Catchment Floodplain Risk Management Study were obtained from the City of Sydney. It was noted that:

(i) All supplied model results only refer to the 90 minute storm burst for all ARIs including PMF for Existing Conditions and all flood mitigation options (no other storm duration results were supplied);

(ii) Hydrological modelling was by rainfall on grid;

(iii) The adopted roughness zones and rainfall losses are mapped in **Figure 6**;

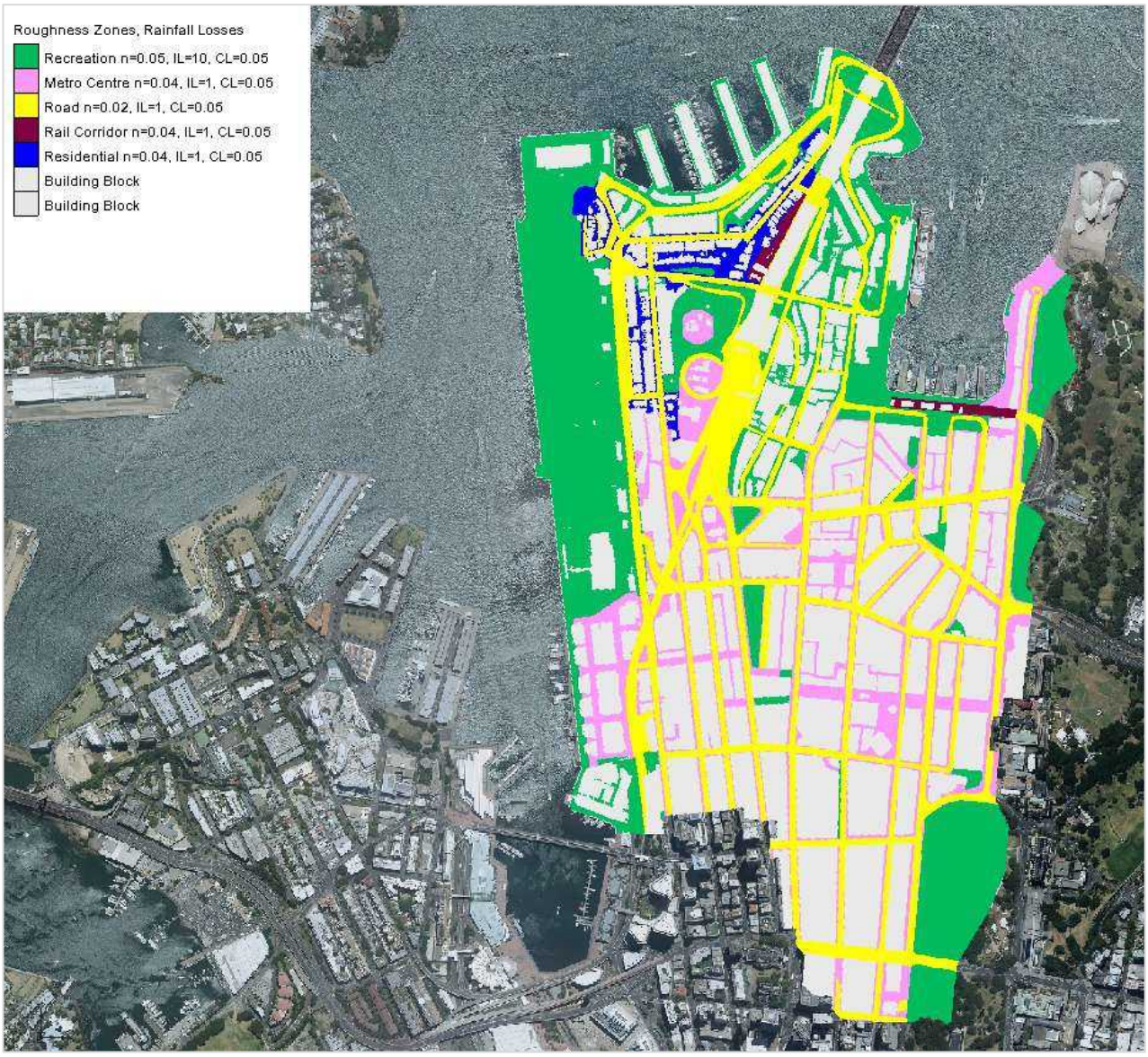


Figure 6 Adopted Roughness Zones and Rainfall Losses for the City Area Catchment

Figure 7 Adopted Distribution of Roof Runoff across the City Area Catchment

(iv) All the buildings are blocked in the model. However, roof runoff from the blocked buildings was calculated based on roof area, rainfall depth, and rainfall losses (IL=1 mm, CL=1 mm/h) which discharged on the ground distributed around the perimeter of the buildings or blocks of buildings. This approach is illustrated in **Figure 7**.

3.1.2 Comparison of Survey and Model Levels

A comparison of four survey levels along the Pitt Street frontage with the ground levels adopted for modelling purposes was undertaken in order to establish if there is a consistent difference between these levels or otherwise.

The location of the surveyed levels is indicated in F**igure 8.** The comparison is given in **Table 1**.

Table 1 Comparison of Surveyed Levels and adopted Ground Levels

Location	Survey Level	Model Ground Level	Difference
	(m AHD)	(m AHD)	(m)
1	12.695	12.62	-0.075
2	12.730	12.73	0.000
3	12.860	12.81	-0.050
4	13.000	13.03	0.030

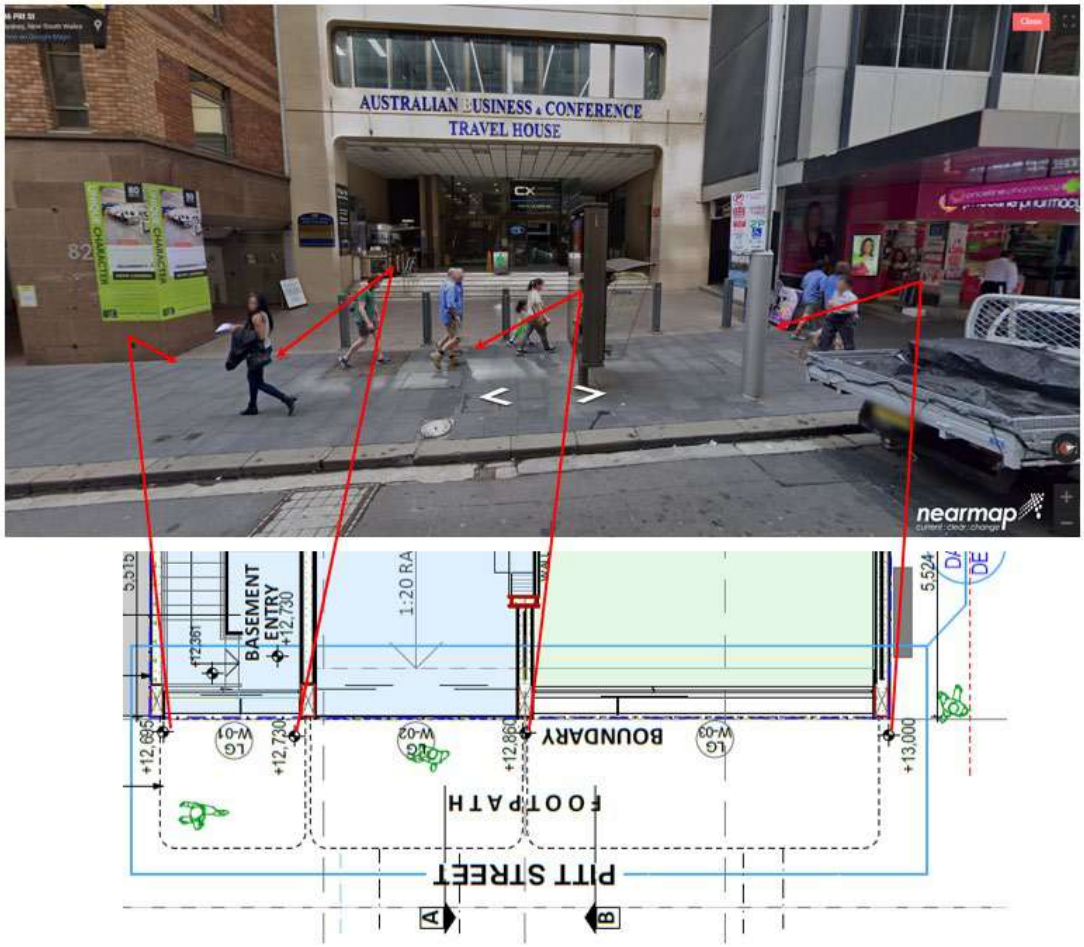


Figure 8 Location of Survey Levels

It was found that the differences were minor between the surveyed ground levels and the ground levels adopted in the floodplain model (based on LiDAR data). The average difference is 2.4 cm.

3.2 Existing Conditions

The location of property is indicated in **Figure 1**.

The 1% AEP flood levels, depths, velocities under Existing Conditions are mapped in **Figures E01, E02** and **E03** in **Appendix A**.

The Probable Maximum Flood (PMF) levels, depths, velocities are mapped in **Figures E05, E06** and **E07** in **Appendix A.**

Table 2 Flood Levels and Depths along the Frontage of 84 Pitt Street and along Penfold Place

Location	Model Ground Level (m AHD)	1% AEP		PMF	
		Flood Level (m AHD)	Flood Depth (m)	Flood Level (m AHD)	Flood Depth (m)
P1	12.62	12.75	0.13	13.04	0.42
P2	12.73	12.86	0.13	13.17	0.44
P3	12.81	12.92	0.11	13.20	0.39
P4	13.03	13.07	0.04	13.26	0.23

Location	Survey Level (m AHD)	1% AEP		PMF	
		Flood Level (m AHD)	Flood Depth (m)	Flood Level (m AHD)	Flood Depth (m)
P1	12.695	12.83	0.13	13.12	0.42
P2	12.730	12.86	0.13	13.17	0.44
P3	12.860	12.97	0.11	13.25	0.39
P4	13.000	13.04	0.04	13.23	0.23

Location	Model Ground Level (m AHD)	1% AEP		PMF	
		Flood Level (m AHD)	Flood Depth (m)	Flood Level (m AHD)	Flood Depth (m)
L1	13.58	13.80	0.22	13.90	0.32
L2	13.83	14.06	0.23	14.15	0.32
L3	14.17	14.40	0.22	14.49	0.32
L4	14.54	14.77	0.22	14.87	0.32
L5	15.10	15.27	0.17	15.43	0.33

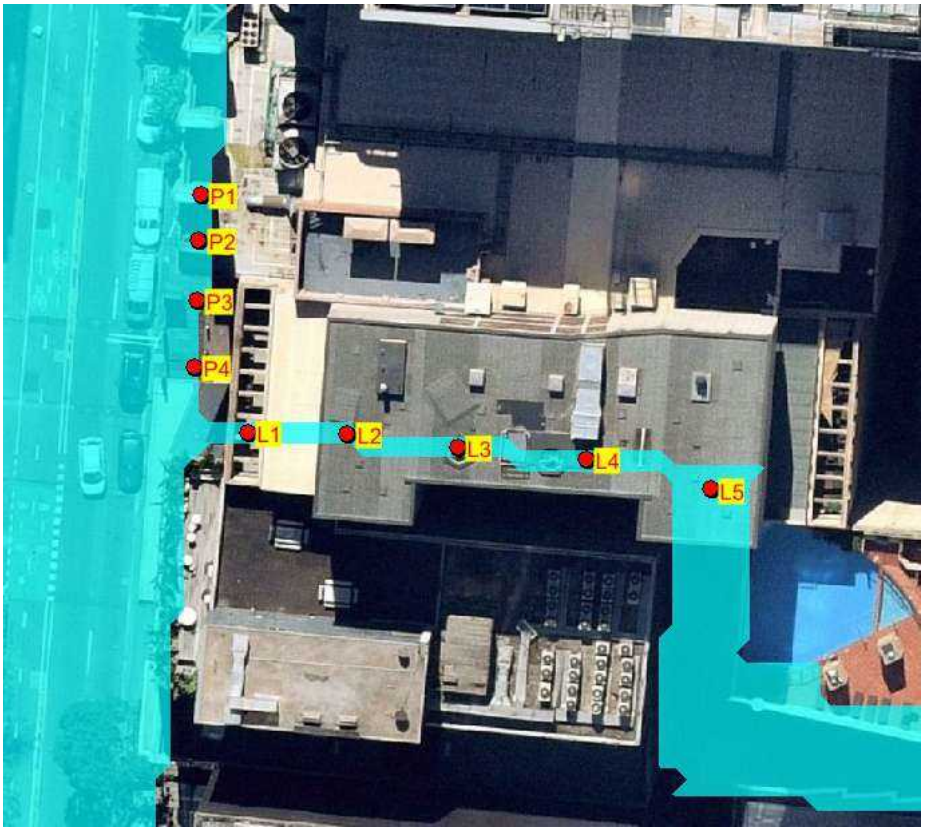
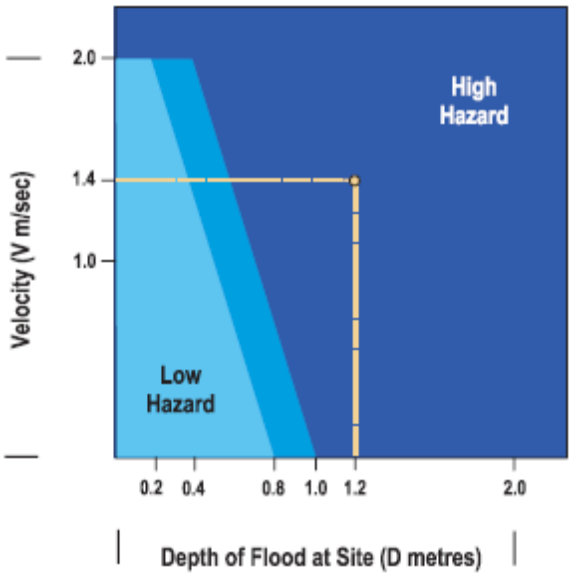


Figure 9 Reference Locations

The flood levels and depths along the frontage of 84 Pitt Street are summarised in **Table 2.** Table 2 includes the flood levels reported by the floodplain model as well as flood levels calculated by adding the flood depth to the surveyed ground level at the four locations. For assessment purposes the higher of the two estimated flood levels at each reference location was adopted for assessment purposes.

Table 2 also reports the flood levels and calculated flood depths at five reference locations along Penfold Place.

Experience from studies of floods throughout NSW and elsewhere has allowed authorities to develop methods of assessing the hazard to life and property on floodplains. This experience has been used in developing the NSW Floodplain Development Manual to provide guidelines for managing this hazard. These guidelines are shown schematically blow.



Provisional Hazard Categories (after Figure L2, NSW Government, 2005)

To use the diagram, it is necessary to know the average depth and velocity of floodwaters at a given location. If the product of depth and velocity exceeds a critical value (as shown below), the flood flow will create a **high hazard** to life and property. There will probably be danger to persons caught in the floodwaters, and possible structural damage. Evacuation of persons would be difficult. By contrast, in **low hazard** areas people and their possessions can be evacuated safely by trucks. Between the two categories a transition zone is defined in which the degree of hazard is dependent on site conditions and the nature of the proposed development.

This calculation leads to a provisional hazard rating. The provisional hazard rating may be modified by consideration of effective flood warning times, the rate of rise of floodwaters, duration of flooding and ease or otherwise of evacuation in times of flood.

The estimated 1% AEP and PMF hazards under Existing Conditions are plotted respectively in **Figures E04** and **E08**.

3.3 Future Conditions

The modified external alterations to the existing commercial building on 84-84b Pitt Street are detailed in **Appendix B** and include:

- A proposed extension to the Pitt Street property boundary including an awning,
- The inclusion of a ramp with a crest level set at the 1% AEP flood level leading to a Lobby with a lowered floor level;
- The setting of the floor level for Lot 64 at the 1% AEP flood level;
- The installation of a self-actuating flood barrier (FB1) to exclude overland flow flooding in Pitt Street from the basement entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier to exclude overland flow flooding in Pitt Street from the pedestrian entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier(FB3) to exclude overland flow flooding in Pitt Street from Lot 64 up to the PMF level;
- The installation of a self-actuating flood barrier in front of Lift No 5 on Penfold Place (FB4) to exclude overland flow flooding in Hosking Place / Penfold Place up to the PMF level;
- At the fire escape to Penfold Place, installation of a 24/7 flood door (FB5);

The adoption of the ramp crest level and the floor level of Lot 64 at the 1% AEP flood level means that the development does not rely on the flood barriers FB2 and FB3 to meet the City of Sydney (CoS) floor level requirement but that instead the inclusion of flood barriers FB2 and FB3 provides a level of protection which exceeds the CoS requirement and has the advantage of protecting against future increases in the 1% AEP flood level due to climate change.

The estimated 1% AEP flood levels and extent, depths, velocities and hazards under Future Conditions are plotted respectively in **Figures F01, F02, F03** and **F04** in **Appendix A**.

The estimated PMF levels and extent, depths, velocities and hazards under Future Conditions are plotted respectively in **Figures F05, F06, F07** and **F08** in **Appendix A**.

3.4 Flood Impact Assessment

The estimated 1% AEP and PMF level differences under Future Conditions in comparison with Existing Conditions are plotted in **Figures F09** and **F11** respectively. It is concluded that the planned development has a negligible impact on 1% AEP and PMF levels.

The estimated 1% AEP and PMF peak velocity differences under Future Conditions in comparison with Existing Conditions are plotted in **Figures F10** and **F12** respectively. It is concluded that the planned development has a negligible impact on 1% AEP and PMF peak velocities.

4 Assessment of Council Requirements

The modified external alterations to the existing commercial building on 84-84b Pitt Street include:

- A proposed extension to the Pitt Street property boundary including an awning,
- The inclusion of a ramp with a crest level set at the 1% AEP flood level leading to a Lobby with a lowered floor level;
- The setting of the floor level for Lot 64 at the 1% AEP flood level;
- The installation of a self-actuating flood barrier (FB1) to exclude overland flow flooding in Pitt Street from the basement entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier to exclude overland flow flooding in Pitt Street from the pedestrian entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier(FB3) to exclude overland flow flooding in Pitt Street from Lot 64 up to the PMF level;
- The installation of a self-actuating flood barrier in front of Lift No 5 on Penfold Place (FB4) to exclude overland flow flooding in Hosking Place / Penfold Place up to the PMF level;
- At the fire escape to Penfold Place, installation of a 24/7 flood door (FB5).

The requirements of the City of Sydney regarding Flood Planning Levels are presented below in **Table 3**.

The adoption of the ramp crest level and the floor level of Lot 64 at the 1% AEP flood level complies with the minimum FPL requirement for Commercial Development. The inclusion of flood barriers FB2 and FB3 provides a PMF level of protection which exceeds the minimum CoS FPL requirement and has the advantage of also protecting against future increases in the 1% AEP flood level due to climate change.

The installation of self-actuating flood barriers FB1 and FB4 and of flood door FB5 together protect the basement from the ingress of any floodwaters but also serve to protect the lower ground floor and Lot 64 against floodwaters outflanking the adopted flood protection measures.

It is concluded that the proposed modified external alterations to the existing commercial building on 84-84b Pitt Street satisfy the City of Sydney Flood Planning Level Requirements.

Table 3 City of Sydney Flood Planning Level Requirements

Development		Type of Flooding	Flood Planning Level (FPL) Criteria
Residential	Habitable Rooms	Mainstream Flooding	1% AEP flood level + 0.5m
		Local Drainage Flooding	1% AEP flood level + 0.5 m or Two times the depth of flow with a minimum of 0.3 m above the surrounding surface if the depth of flow in the 1% AEP flood is less than 0.25 m
	Non-habitable rooms such as a laundry or garage (excluding below-ground car parks)	Mainstream or local drainage flooding	1% AEP flood level
Industrial or Commercial	Business	Mainstream or local drainage flooding	Merits approach presented by the applicant with a minimum of the 1% AEP flood level.
	Schools and Childcare Facilities	Mainstream or local drainage flooding	Merits approach presented by the applicant with a minimum of the 1% AEP flood level + 0.5m.
	Retail Floor Levels	Mainstream or local drainage flooding	Merits approach presented by the applicant with a minimum of the 1% AEP flood level. The proposal must demonstrate a reasonable balance between flood protection and urban design outcomes for street level activation.
Below ground/ garage car park*	All other below-ground car parks	Mainstream or local drainage flooding	1% AEP flood level + 0.5m or the PMF (whichever is the higher)
	Below-ground car park outside floodplain	Outside floodplain	0.3 m above the surrounding surface

* *The below ground garage/car park level applies to all possible ingress points to the car park such as vehicle entrances and exits, ventilation ducts, windows, light wells, lift shaft openings, risers and stairwells.*

5 Conclusions

This report details a site-specific flood risk assessment of modified external alterations to the existing commercial building on 84-84b Pitt Street including a proposed extension including an awning to the Pitt Street property boundary, the lowering of the existing ground floor level and inclusion of structural features and self-actuating flood barriers that address overland flow flooding up to the PMF level.

The approach adopted to the hydrological and hydraulic assessments was based on the approach adopted in the 2016 City Area Catchment Flood Risk Management Study.

Detailed flood modelling has been completed to estimate flood behaviour in existing and future conditions.

It is concluded that the planned development has a negligible impact on 1% AEP and PMF levels and peak velocities.

The modified external alterations to the existing commercial building on 84-84b Pitt Street include:

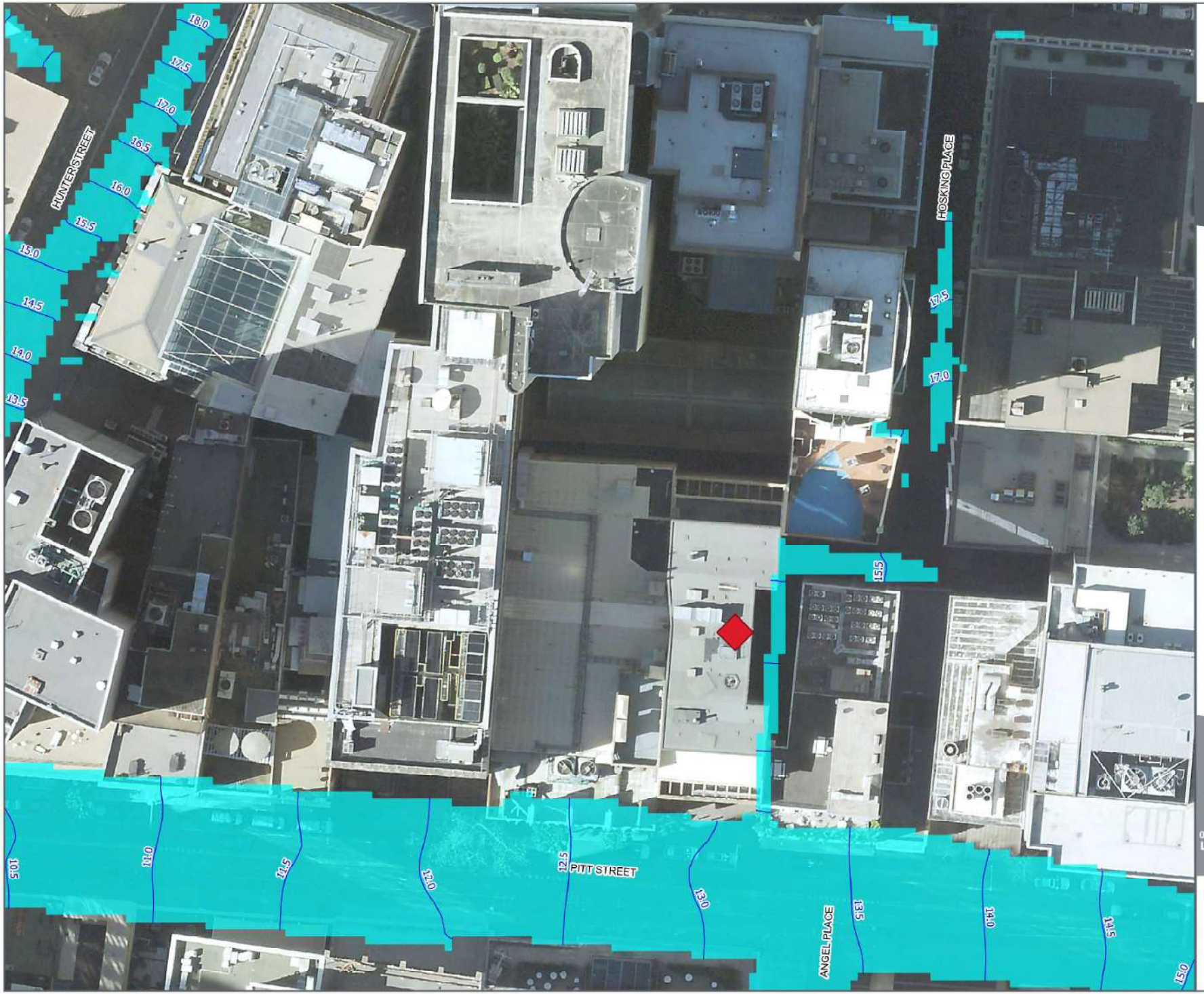
- A proposed extension to the Pitt Street property boundary including an awning,
- The inclusion of a ramp with a crest level set at the 1% AEP flood level leading to a Lobby with a lowered floor level;
- The setting of the floor level for Lot 64 at the 1% AEP flood level;
- The installation of a self-actuating flood barrier (FB1) to exclude overland flow flooding in Pitt Street from the basement entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier to exclude overland flow flooding in Pitt Street from the pedestrian entry from Pitt Street up to the PMF level;
- The installation of a self-actuating flood barrier(FB3) to exclude overland flow flooding in Pitt Street from Lot 64 up to the PMF level;
- The installation of a self-actuating flood barrier in front of Lift No 5 on Penfold Place (FB4) to exclude overland flow flooding in Hosking Place / Penfold Place up to the PMF level;
- At the fire escape to Penfold Place, installation of a 24/7 flood door (FB5);

The adoption of the ramp crest level and the floor level of Lot 64 at the 1% AEP flood level complies with the minimum FPL requirement for Commercial Development. The inclusion of flood barriers FB2 and FB3 provides a PMF level of protection which exceeds the minimum CoS FPL requirement and has the advantage of also protecting against future increases in the 1% AEP flood level due to climate change.

The installation of self-actuating flood barriers FB1 and FB4 and of flood door FB5 together protect the basement from the ingress of any floodwaters but also serve to protect the lower ground floor and Lot 64 against floodwaters outflanking the adopted flood protection measures.

It is concluded that the proposed modified external alterations to the existing commercial building on 84-84b Pitt Street satisfy the City of Sydney Flood Planning Level Requirements.

APPENDIX A
FIGURES



84 Pitt Street
Flood Impact Assessment

Existing Conditions
1% AEP
Flood Extents and Flood Levels

Legend

- Site Location
- 0.5m Flood Contour (mAHD)
- Flood Extent

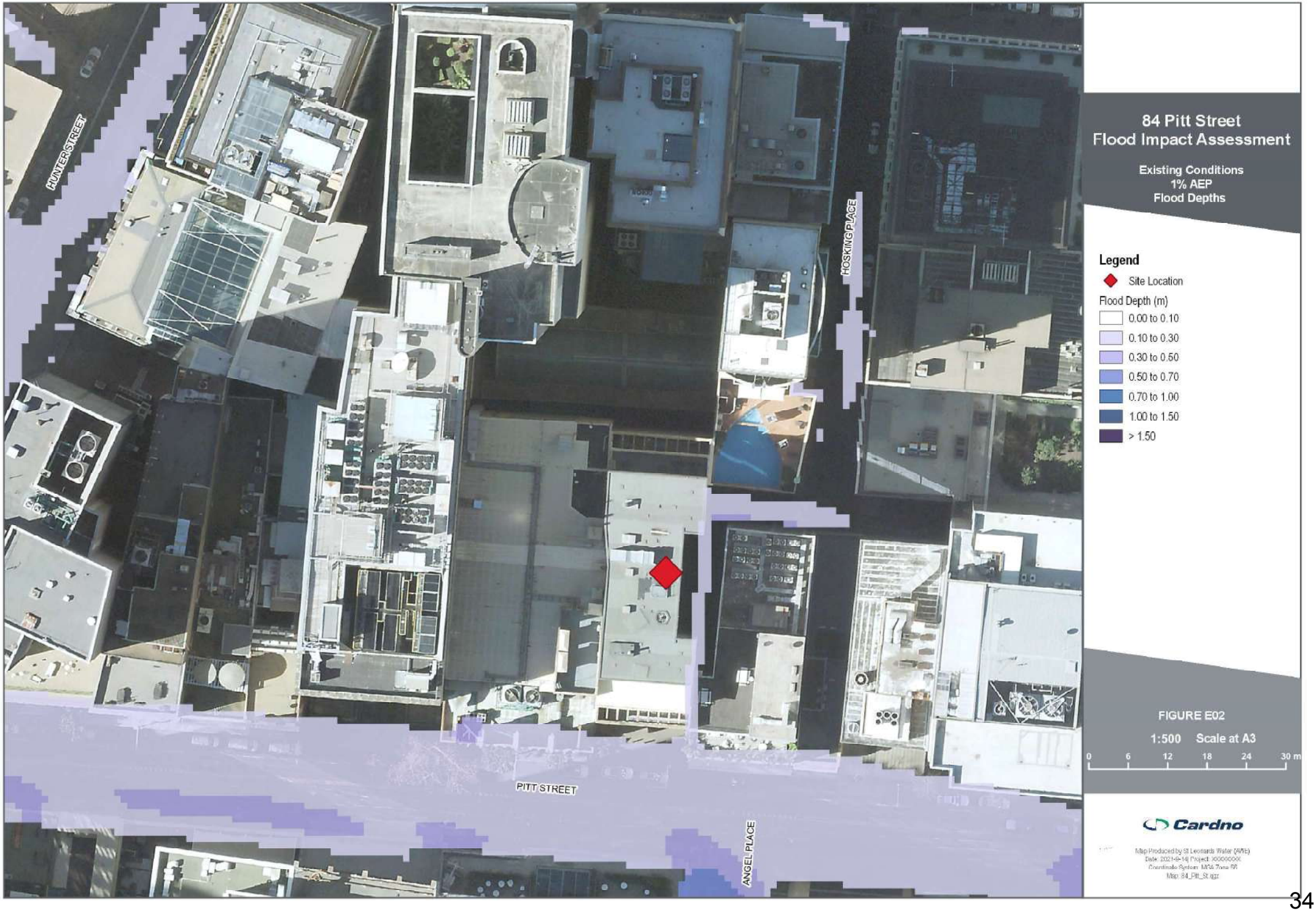
FIGURE E01

1:500 Scale at A3

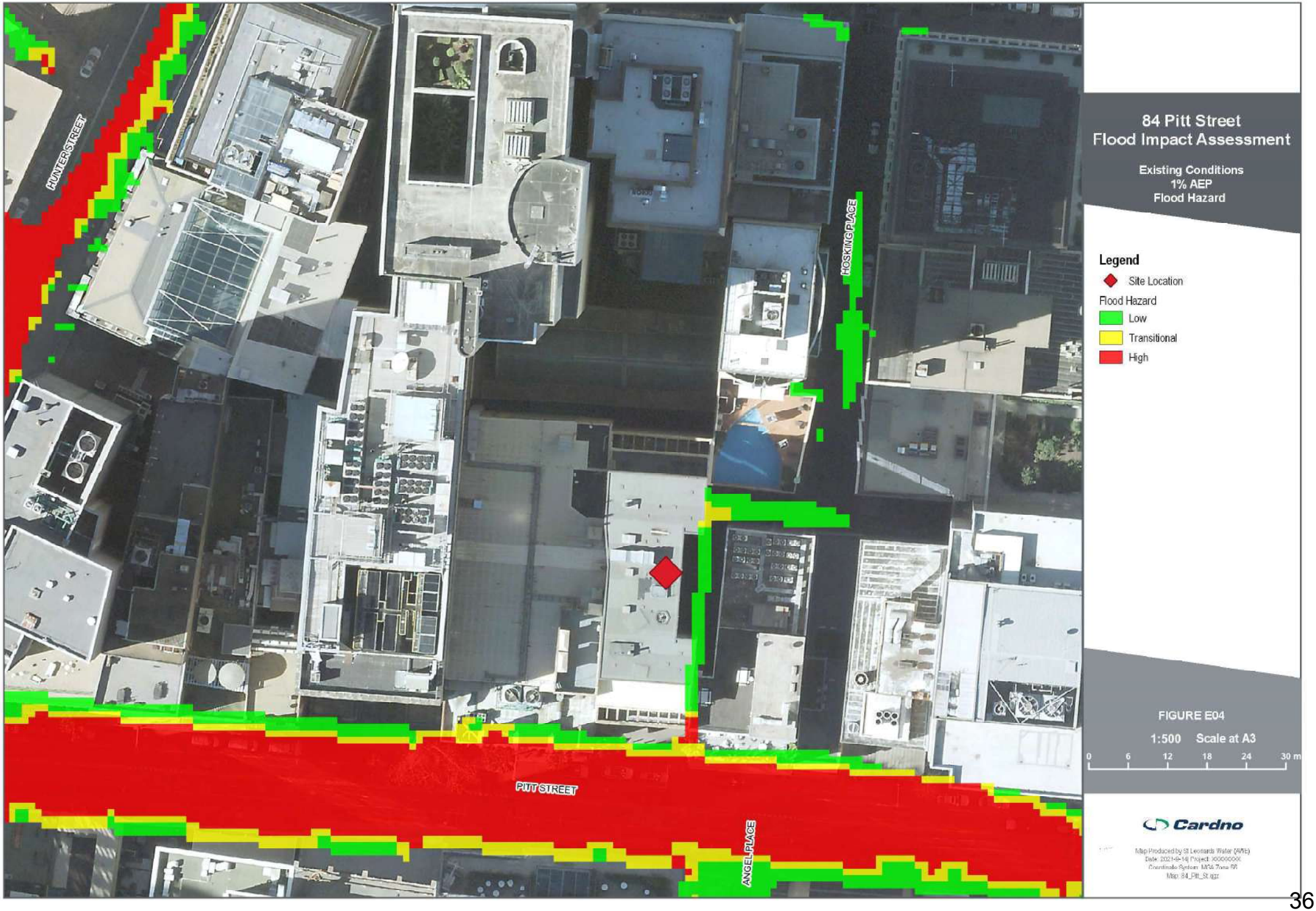
0 6 12 18 24 30 m

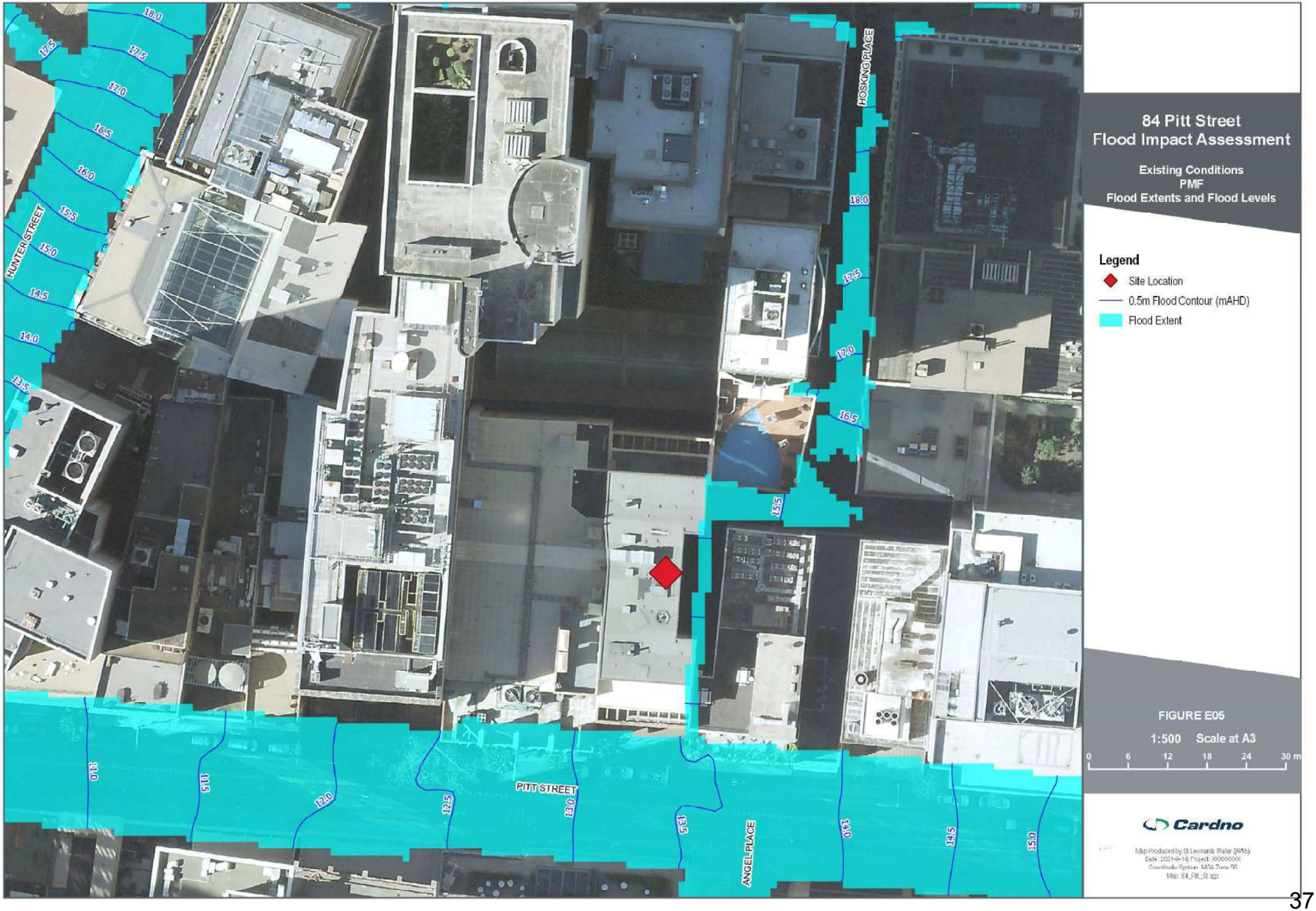
Cardno

Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Existing Conditions
1% AEP
Flood Depths
Legend
Site Location
Flood Depth (m)
0.00 to 0.10
0.10 to 0.30
0.30 to 0.50
0.50 to 0.70
0.70 to 1.00
1.00 to 1.50
> 1.50
FIGURE E02
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Existing Conditions
1% AEP
Flood Velocities
Legend
Site Location
Flood Velocity (m/s)
0.00 to 0.50
0.50 to 1.00
1.00 to 1.50
1.50 to 2.00
2.00 to 3.00
> 3.00
FIGURE E03
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Existing Conditions
1% AEP
Flood Hazard
Legend
Site Location
Flood Hazard
Low
Transitional
High
FIGURE E04
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


84 Pitt Street
Flood Impact Assessment
Existing Conditions
PMF
Flood Extents and Flood Levels
Legend
Site Location
0.5m Flood Contour (mAHD)
Flood Extent
HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
18.0
17.5
17.0
16.5
16.0
15.5
15.0
14.5
14.0
13.5
11.0
11.5
12.0
12.5
13.0
13.5
14.0
14.5
15.0
FIGURE E05
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
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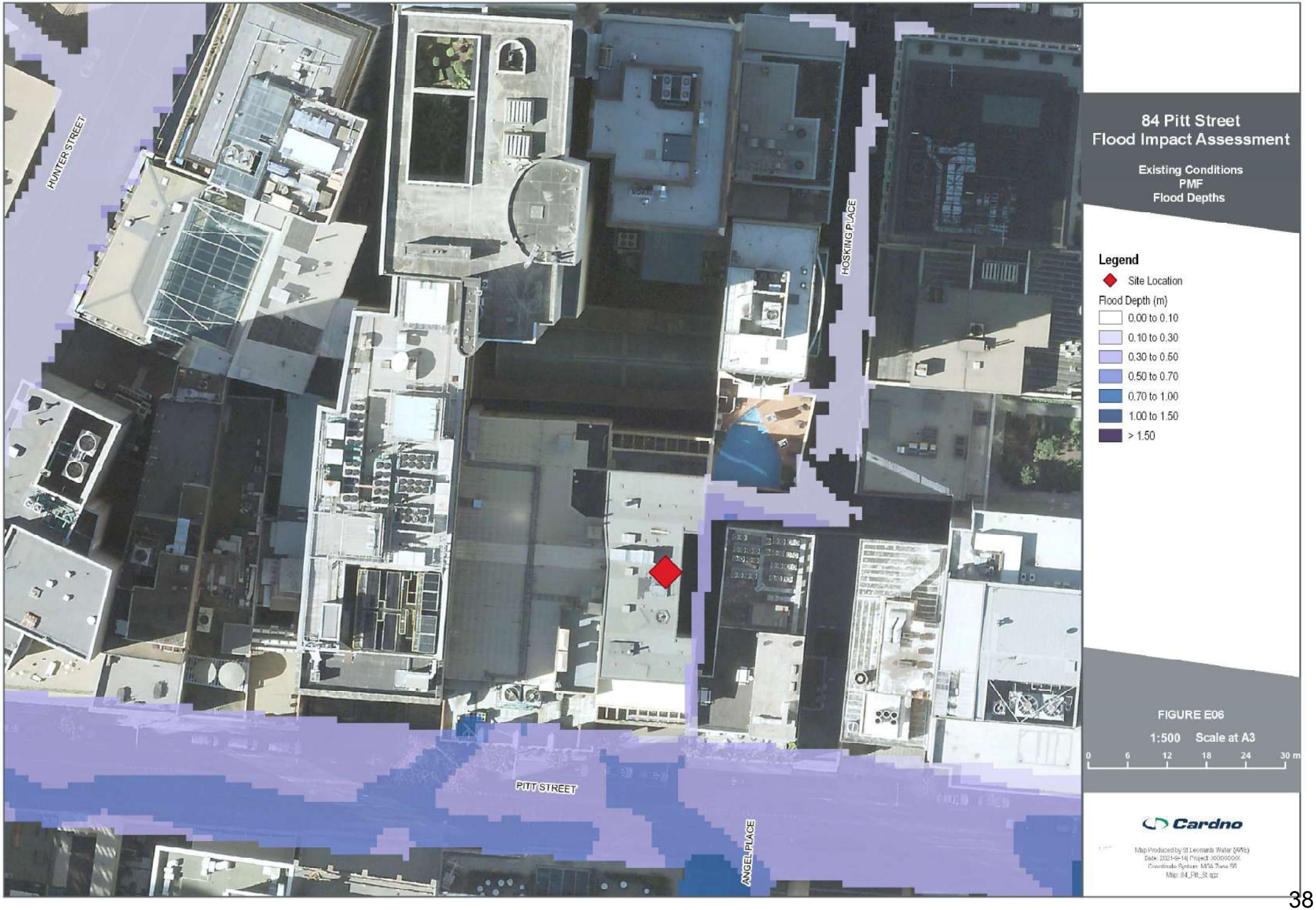
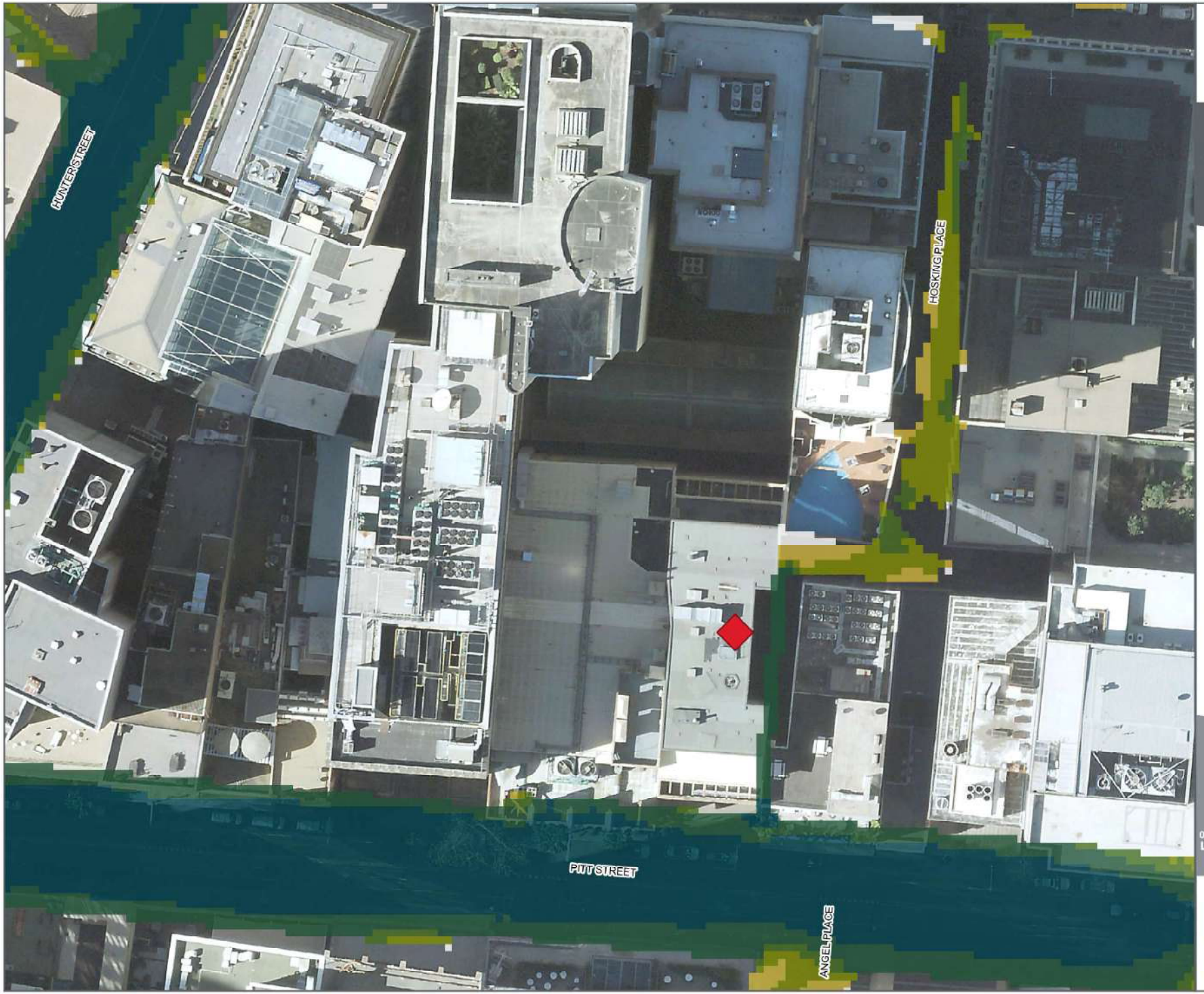
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Existing Conditions
PMF
Flood Depths
Legend
Site Location
Flood Depth (m)
0.00 to 0.10
0.10 to 0.30
0.30 to 0.50
0.50 to 0.70
0.70 to 1.00
1.00 to 1.50
> 1.50
FIGURE E06
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz



84 Pitt Street
Flood Impact Assessment

Existing Conditions
PMF
Flood Velocities

Legend

- Site Location

Flood Velocity (m/s)

- 0.00 to 0.50
- 0.50 to 1.00
- 1.00 to 1.50
- 1.50 to 2.00
- 2.00 to 3.00
- > 3.00

FIGURE E07

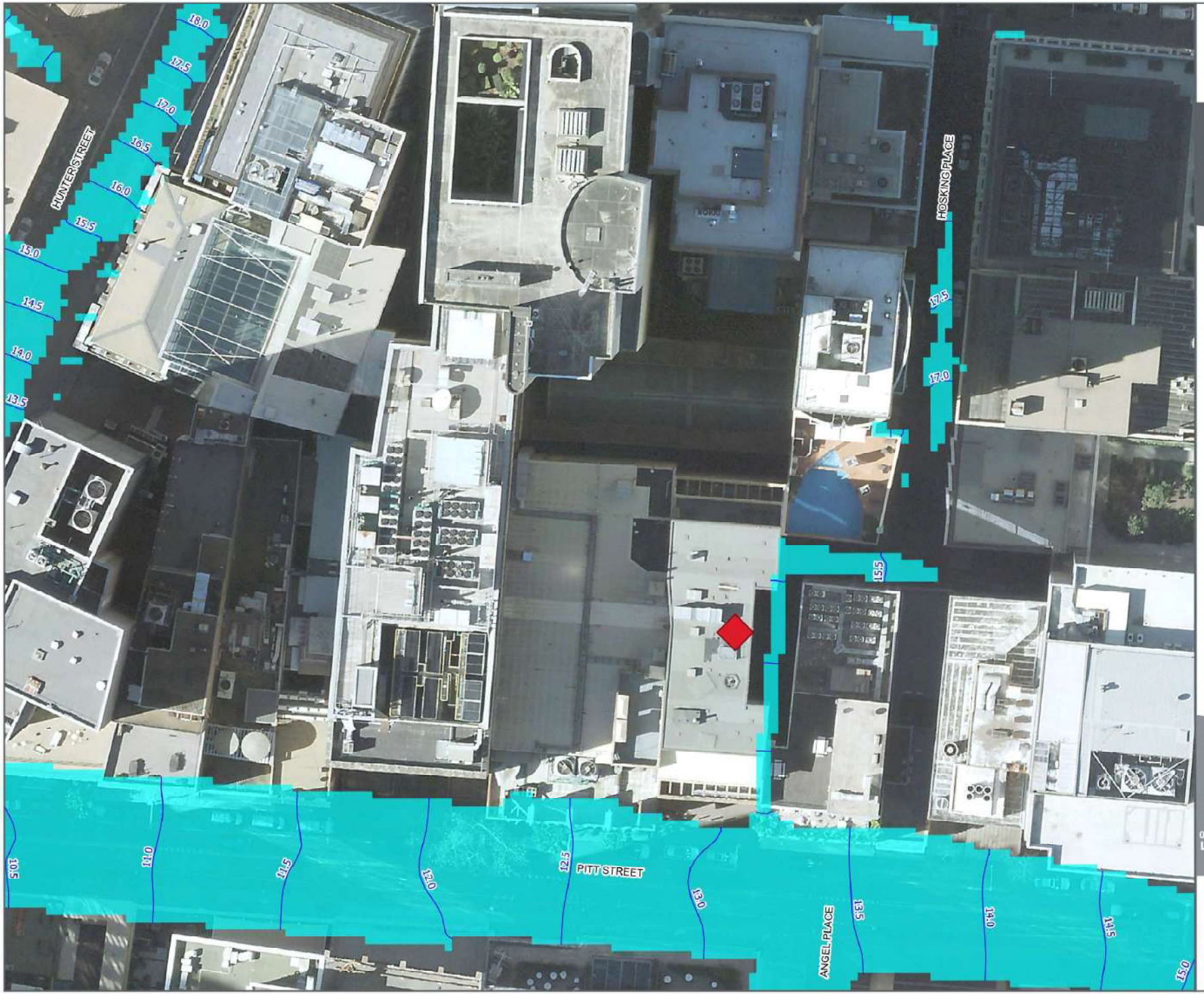
1:500 Scale at A3

0 6 12 18 24 30 m

Cardno

Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Existing Conditions
PMF
Flood Hazard
Legend
Site Location
Flood Hazard
Low
Transitional
High
FIGURE E08
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz



84 Pitt Street
Flood Impact Assessment

Future Conditions
1% AEP
Flood Extents and Flood Levels

Legend

- Site Location
- 0.5m Flood Contour (mAHD)
- Flood Extent

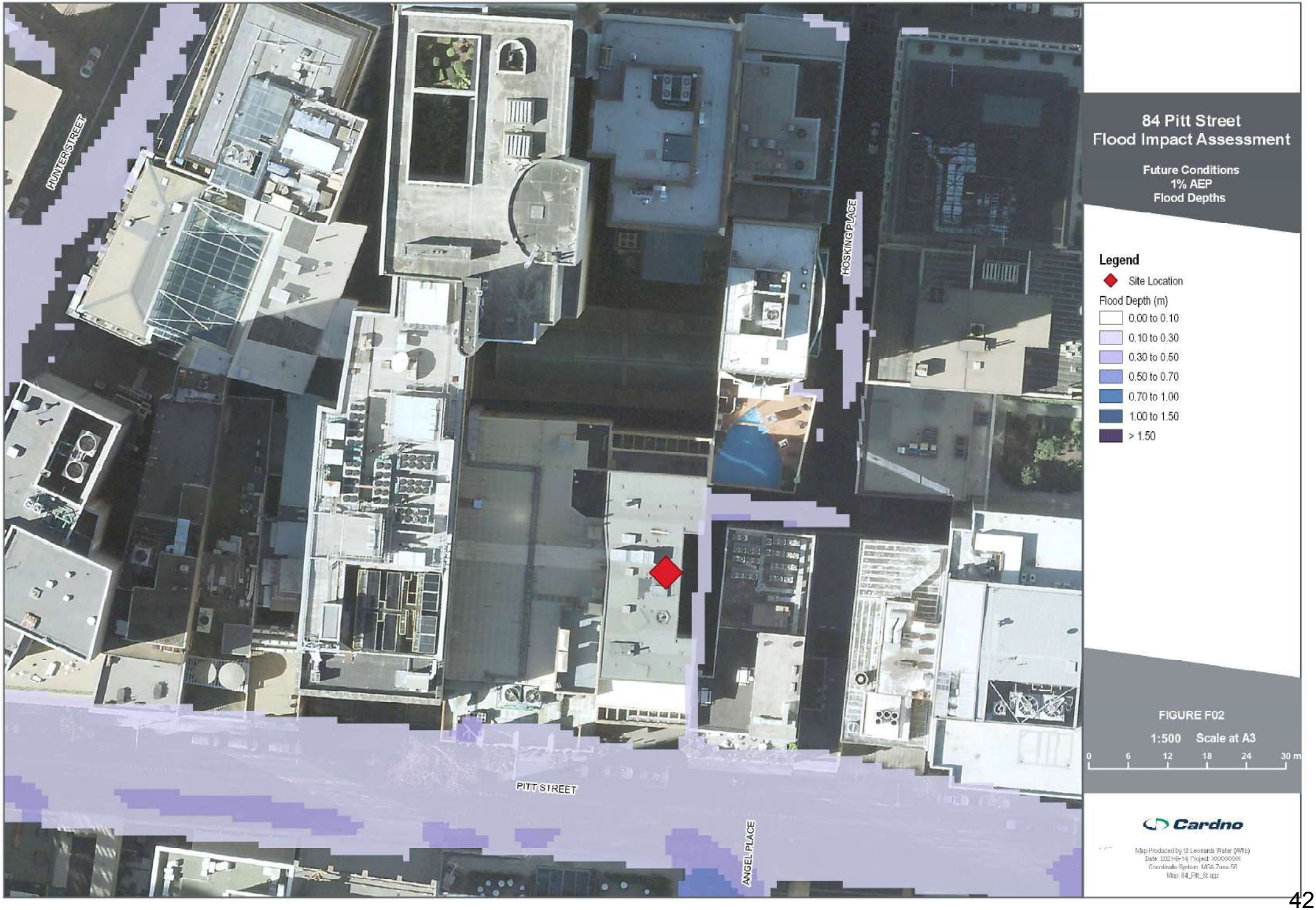
FIGURE F01

1:500 Scale at A3

0 6 12 18 24 30 m

Cardno

Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future Conditions
1% AEP
Flood Depths
Legend
Site Location
Flood Depth (m)
0.00 to 0.10
0.10 to 0.30
0.30 to 0.50
0.50 to 0.70
0.70 to 1.00
1.00 to 1.50
> 1.50
FIGURE F02
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future Conditions
1% AEP
Flood Velocities
Legend
Site Location
Flood Velocity (m/s)
0.00 to 0.50
0.50 to 1.00
1.00 to 1.50
1.50 to 2.00
2.00 to 3.00
> 3.00
FIGURE F03
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
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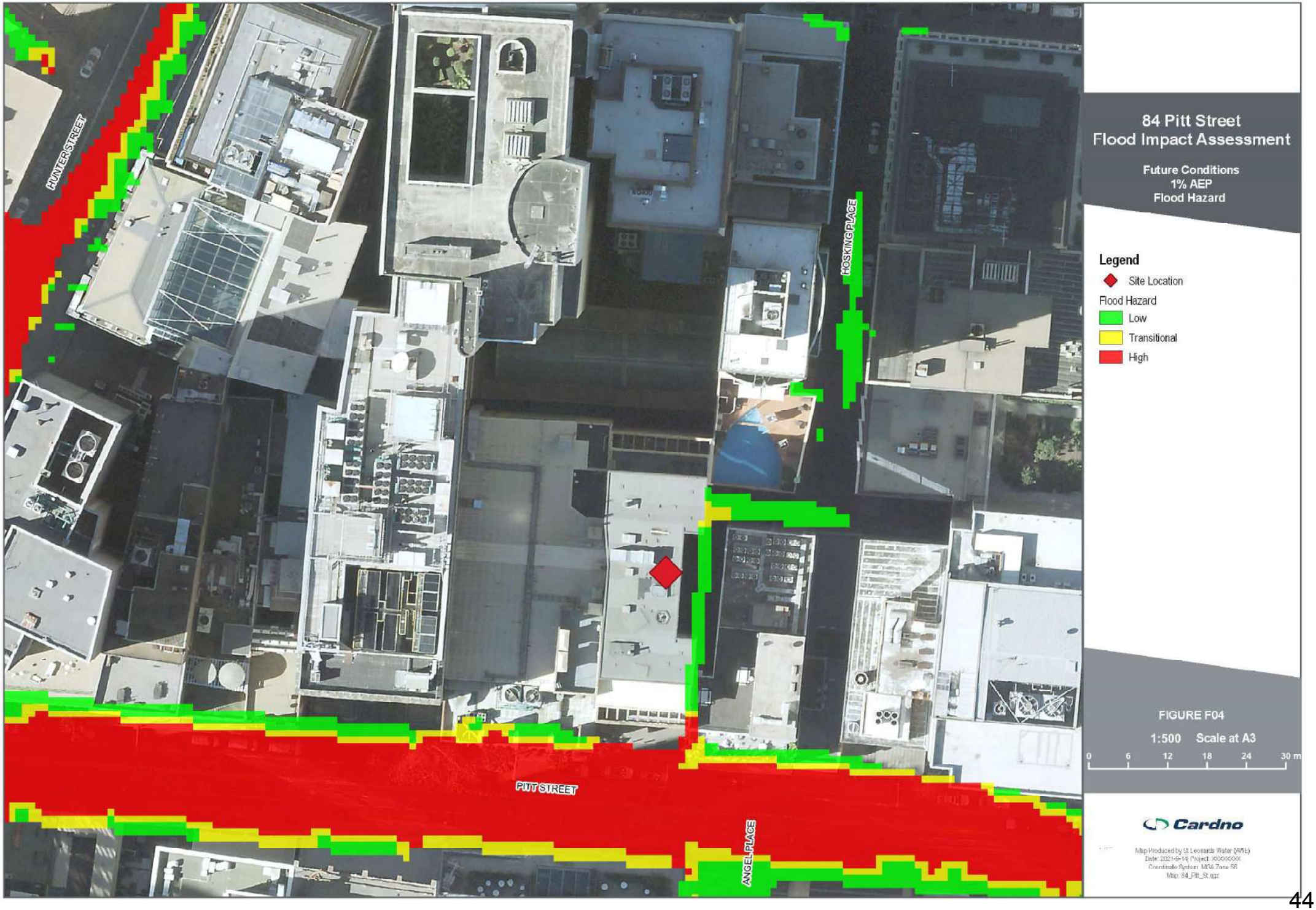
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future Conditions
1% AEP
Flood Hazard
Legend
Site Location
Flood Hazard
Low
Transitional
High
FIGURE F04
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
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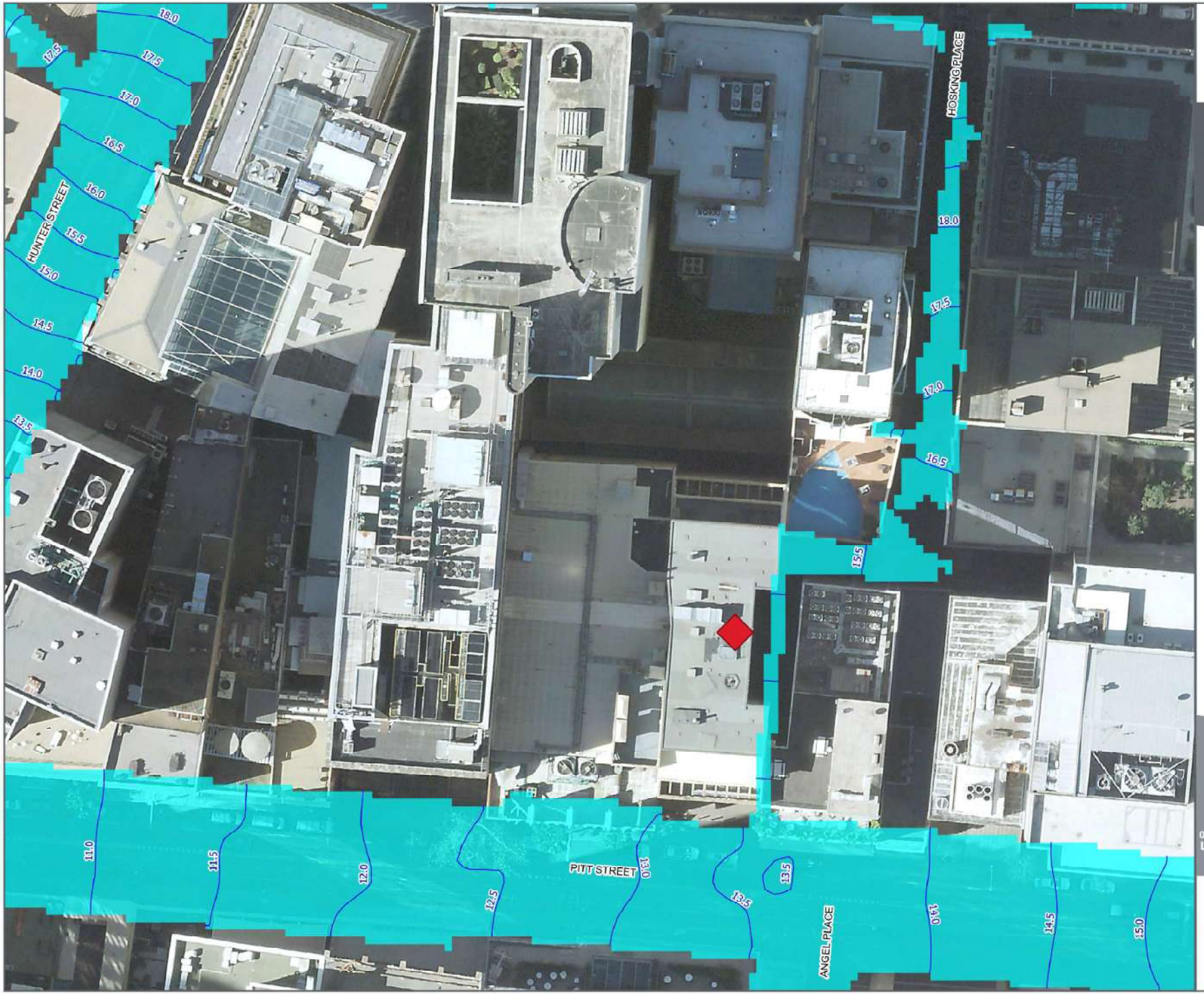

84 Pitt Street
Flood Impact Assessment

Future Conditions
PMF
Flood Extents and Flood Levels

Legend

- Site Location
- 0.5m Flood Contour (mAHD)
- Flood Extent

FIGURE F05

1:500 Scale at A3

0 6 12 18 24 30 m

Cardno

Map Produced by St Leonards Water (AME)
Date: 2021-09-14 | Project: 30000000
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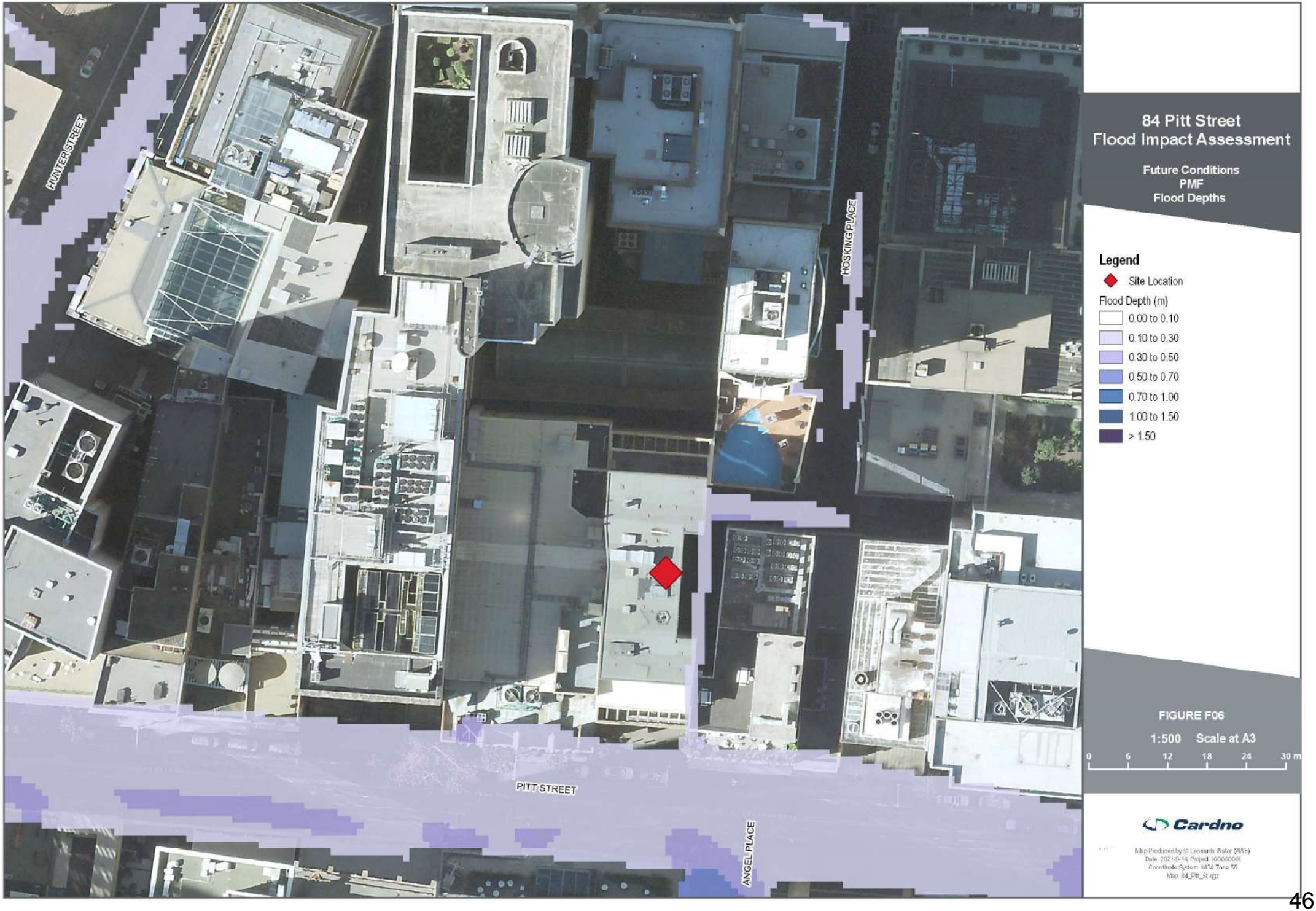
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future Conditions
PMF
Flood Depths
Legend
Site Location
Flood Depth (m)
0.00 to 0.10
0.10 to 0.30
0.30 to 0.50
0.50 to 0.70
0.70 to 1.00
1.00 to 1.50
> 1.50
FIGURE F06
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future Conditions
PMF
Flood Velocities
Legend
Site Location
Flood Velocity (m/s)
0.00 to 0.50
0.50 to 1.00
1.00 to 1.50
1.50 to 2.00
2.00 to 3.00
> 3.00
FIGURE F07
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
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Date: 2021-09-14 | Project: 30000000
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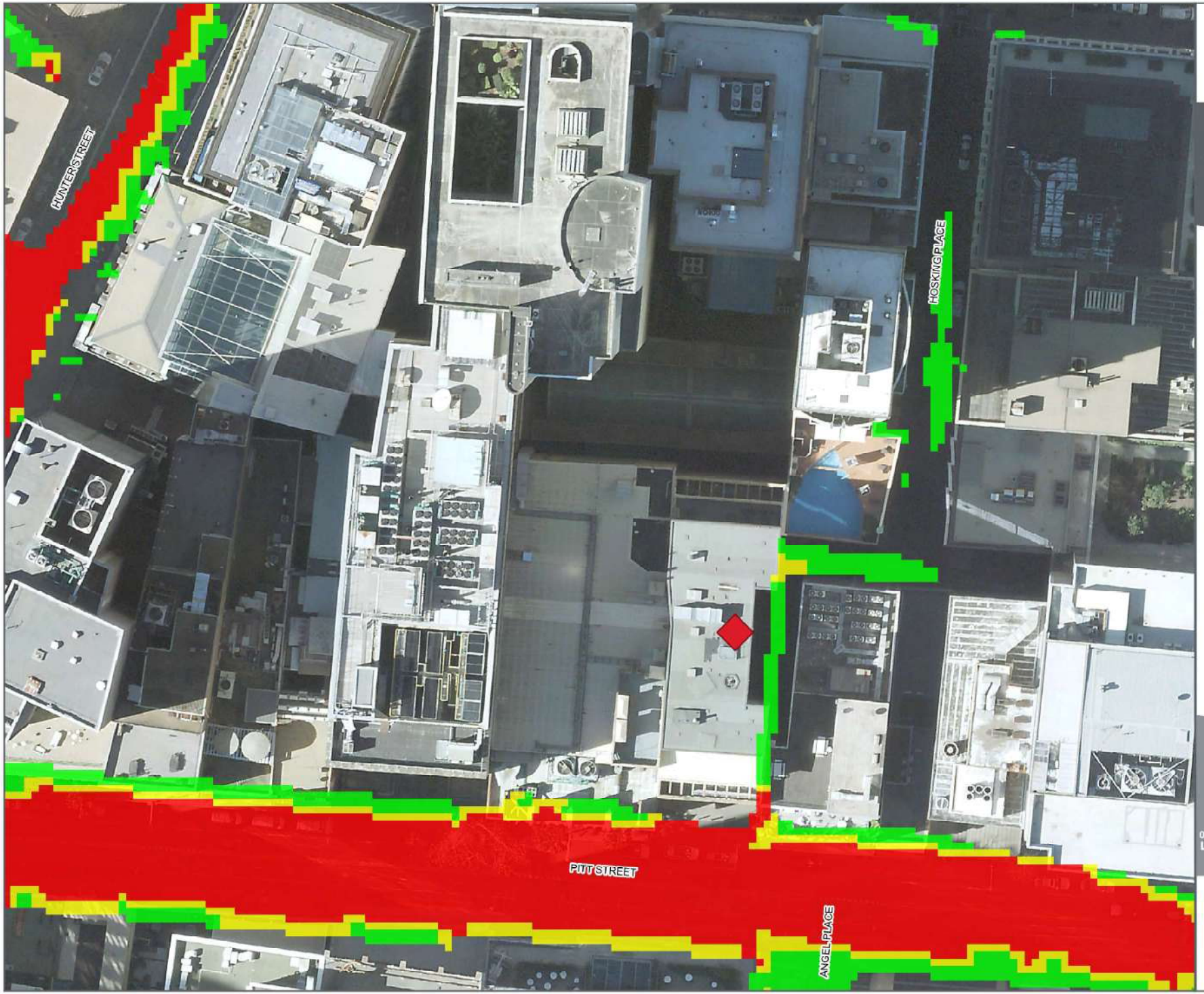


84 Pitt Street
Flood Impact Assessment

Future Conditions
PMF
Flood Hazard

Legend

- Site Location

Flood Hazard

- Low
- Transitional
- High

FIGURE F08

1:500 Scale at A3

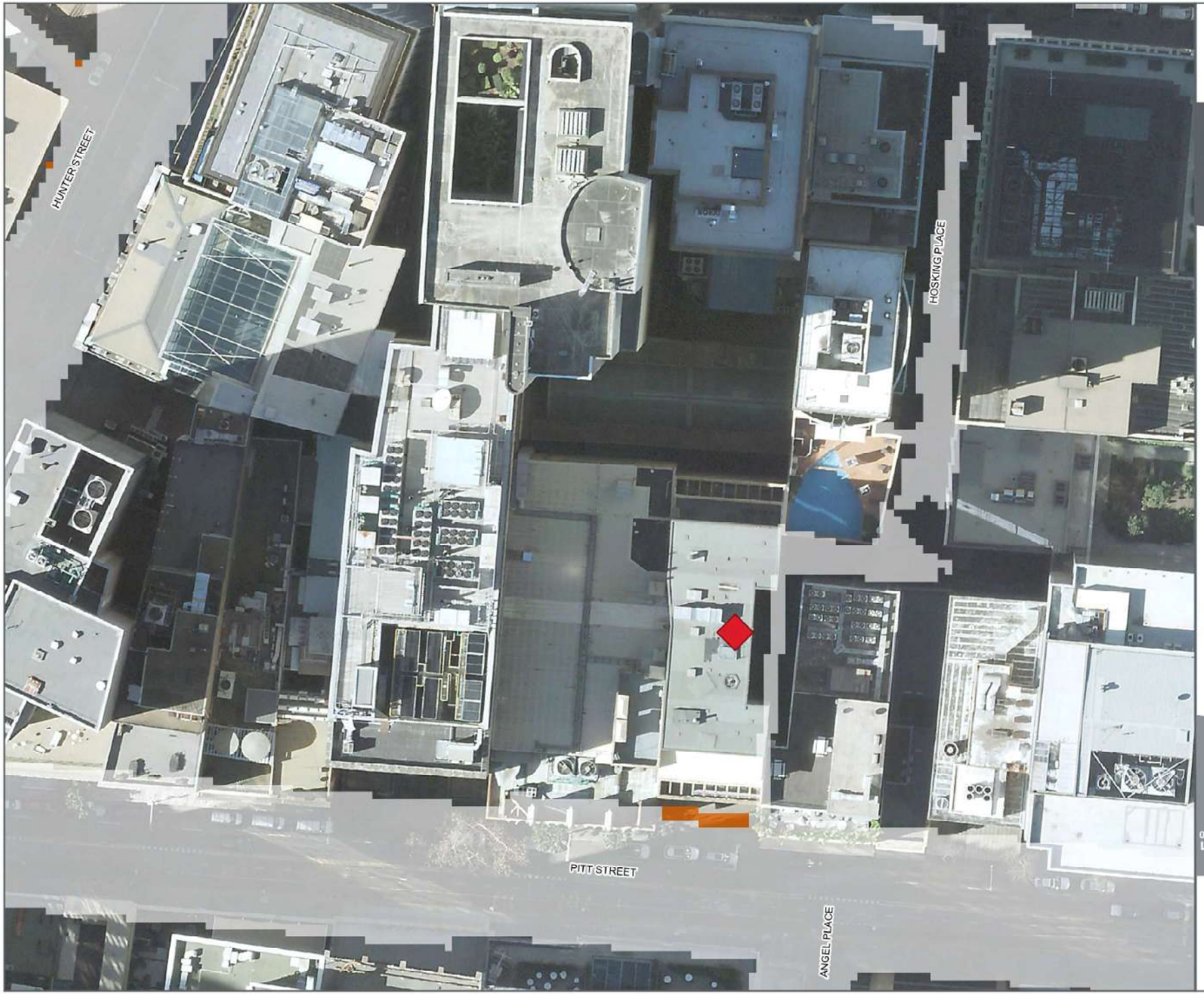
0 6 12 18 24 30 m

Cardno

Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future - Existing Conditions
1% AEP
Flood Level Differnces
Legend
Site Location
Water Level Difference (m)
< -0.50
-0.50 to -0.20
-0.20 to -0.10
-0.10 to -0.05
-0.05 to -0.01
-0.01 to 0.01
0.01 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.50
> 0.50
Wet & Dry Analysis
Was Wet, Now Dry
Was Dry, Now Wet
FIGURE F09
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future - Existing Conditions
1% AEP
Flood Velocity Differnces
Legend
Site Location
Velocity Difference (m/s)
< -0.50
-0.50 to -0.20
-0.20 to -0.10
-0.10 to -0.05
-0.05 to -0.01
-0.01 to 0.01
0.01 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.50
> 0.50
FIGURE F10
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz



84 Pitt Street
Flood Impact Assessment

Future - Existing Conditions
PMF
Flood Level Differnces

Legend

- Site Location

Water Level Difference (m)

- < -0.50
- -0.50 to -0.20
- -0.20 to -0.10
- -0.10 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.10
- 0.10 to 0.20
- 0.20 to 0.50
- > 0.50

Wet & Dry Analysis

- Was Wet, Now Dry
- Was Dry, Now Wet

FIGURE F11

1:500 Scale at A3

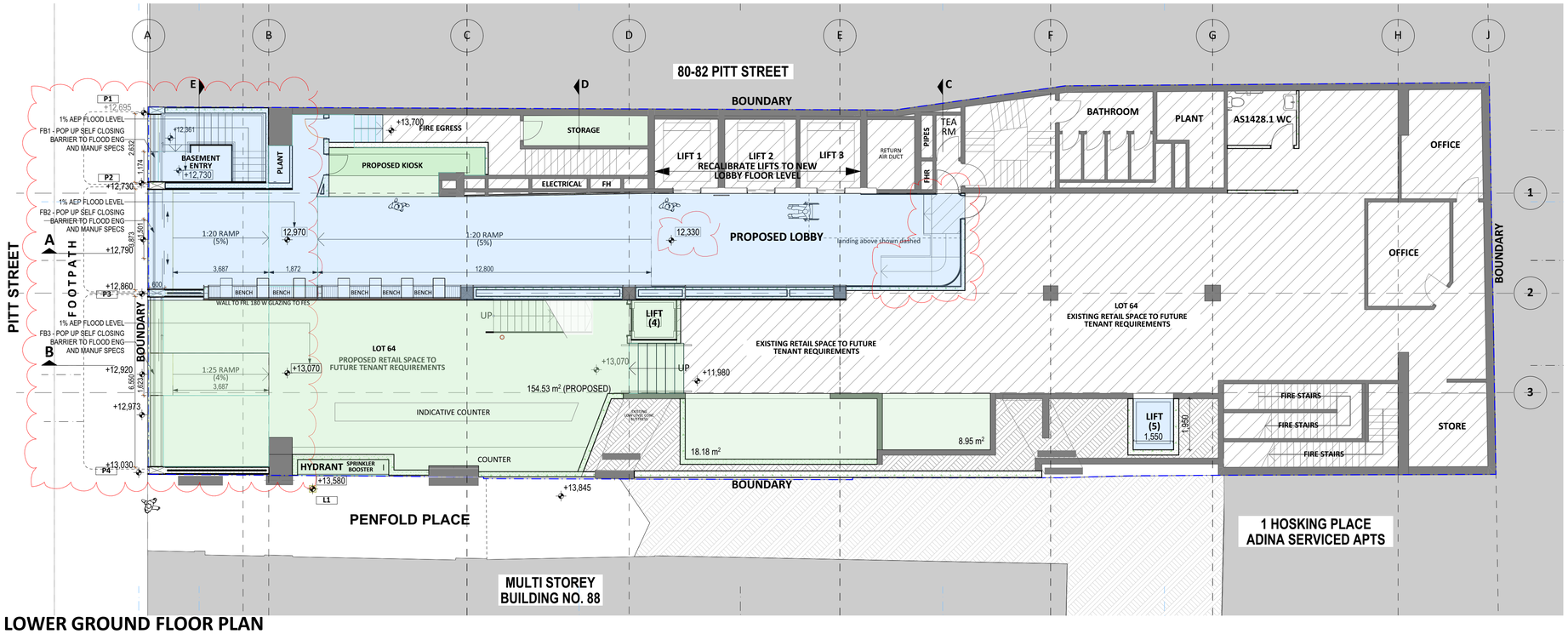
0 6 12 18 24 30 m

Cardno

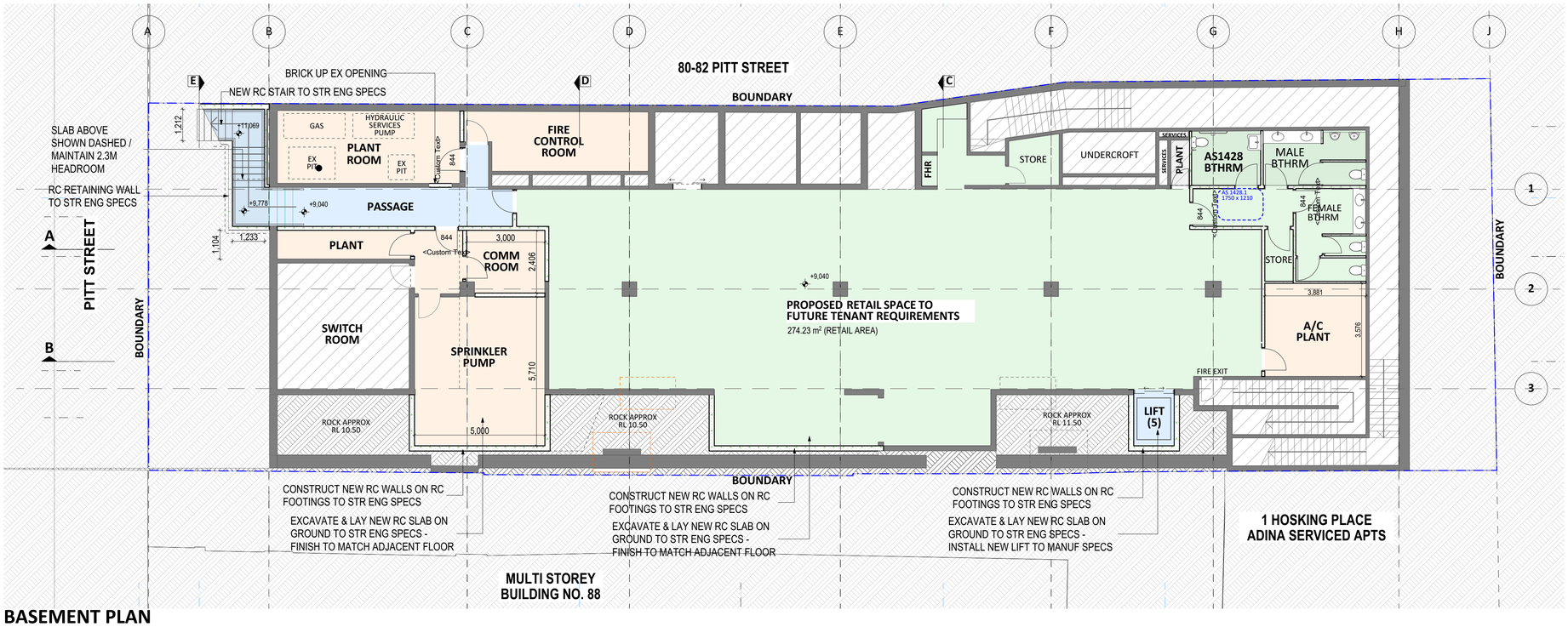
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz


HUNTER STREET
HOSKING PLACE
PITT STREET
ANGEL PLACE
84 Pitt Street
Flood Impact Assessment
Future - Existing Conditions
PMF
Flood Velocity Differnces
Legend
Site Location
Velocity Difference (m/s)
< -0.50
-0.50 to -0.20
-0.20 to -0.10
-0.10 to -0.05
-0.05 to -0.01
-0.01 to 0.01
0.01 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.50
> 0.50
FIGURE F12
1:500 Scale at A3
0 6 12 18 24 30 m
Cardno
Map Produced by St Leonards Water (AWE)
Date: 2021-09-14 | Project: 30000000
Coordinate System: MGA Zone 56
Map: 84_Pitt_St.qgz

APPENDIX B
SELECTED ARCHITECTURAL DRAWINGS



LOWER GROUND FLOOR PLAN



BASEMENT PLAN

KEY

- EXISTING
- PROPOSED COMMON AREA
- PROPOSED RETAIL
- NEW OR MODIFIED PLANT RM

GENERAL NOTES

Drawings shall not be used for construction purposes until issued for construction. Do not scale drawings.

REV:

C	PRE-DA FOR CONSULTANT INPUT 06/12/2019
D	DEVELOPMENT APPLICATION 18/02/2020
E	REVISED DA PLANS 09/06/2020
F	AMENDED DA PLANS 24/08/2021

CONSULTANTS

City Plan - Planning & Heritage
AE Structural Engineers
STS Geo Environmental - Geotechnical Eng
JHA Building Services Engineers - Mechanical, Hydraulic & Communications
BCA Logic - NCC & Access
Code Performance - Fire Engineers
Certified Energy - Section J
Cardno - Flood Engineers

DRAWING LIST

KEY

FL	FLOOR LEVEL
FE	FIRE EXTINGUISHER
FHR	FIRE HOSE REEL
FCR	FIRE CONTROL ROOM
CL	CEILING
SF	
WT	WALL TILES
GB	GLASS BALUSTRADE
FC	FIBRE CEMENT
BK	BRICK
RC	REINFORCED CONCRETE
MR	METAL ROOF
CR	CONCRETE ROOF

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E info@dredesign.com.au

Nominated architect:
David Epstein
BArch/MCPUD ARB NSW Reg No.: 9072

PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

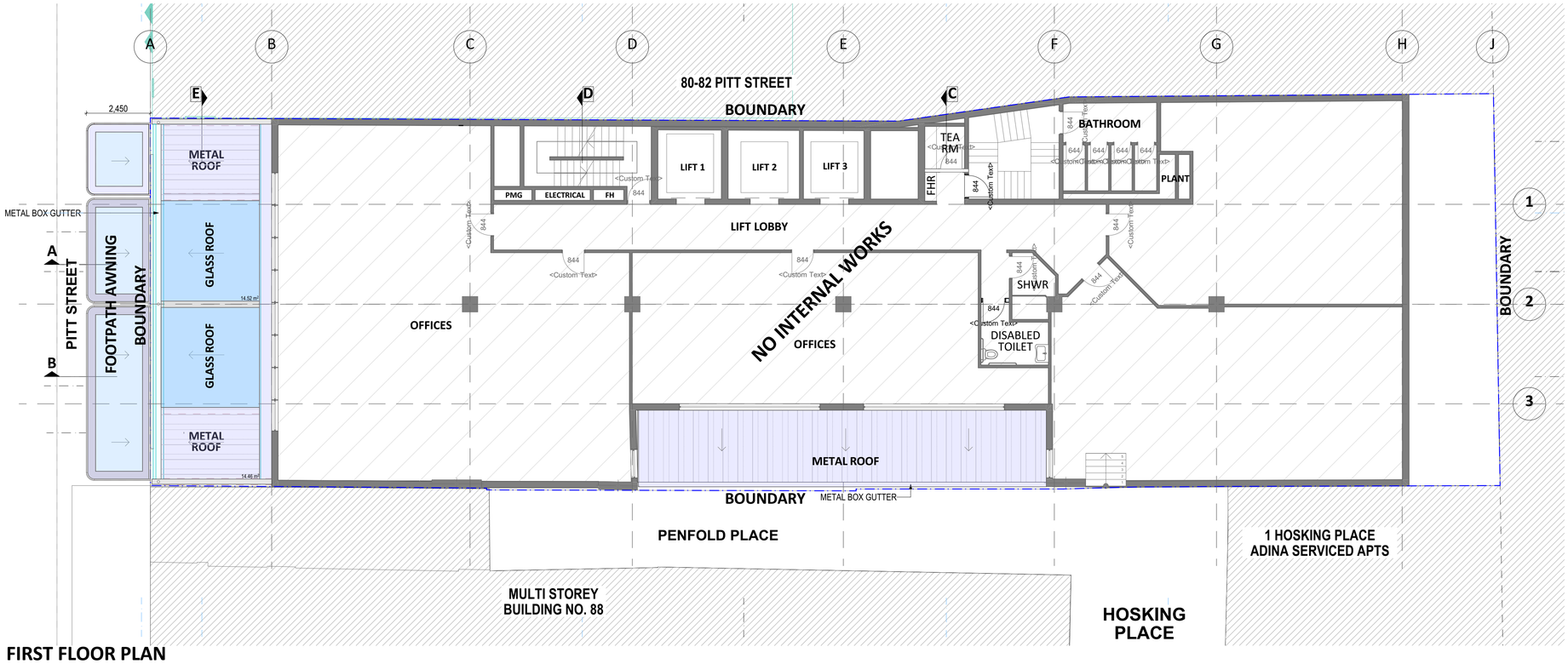
DRAWING TITLE :
PLANS - Basement + Lwr Grnd Fl

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

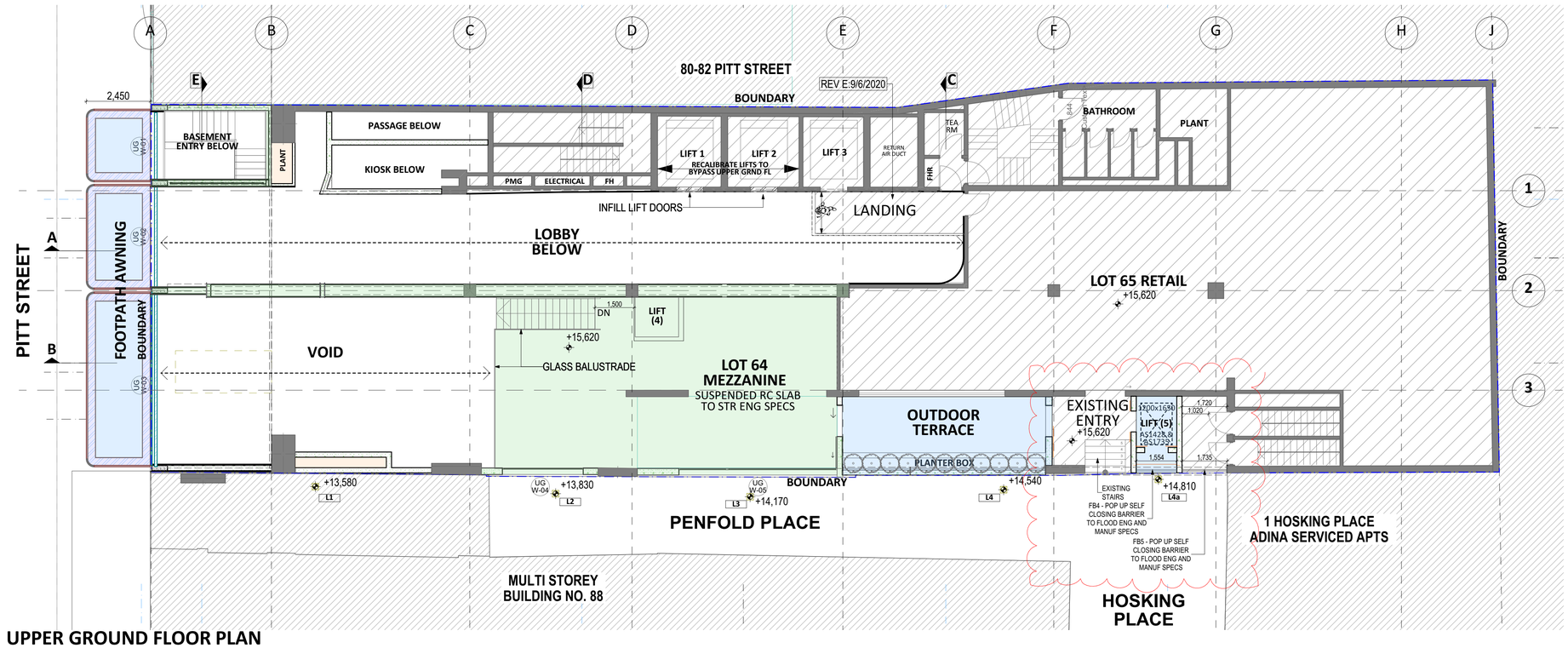
JOB NO.:
0348

DRAWING NO.
DA-02

rev:
F



FIRST FLOOR PLAN



UPPER GROUND FLOOR PLAN

KEY

- EXISTING
- PROPOSED COMMON AREA
- PROPOSED RETAIL
- NEW OR MODIFIED PLANT RM

GENERAL NOTES

Drawings shall not be used for construction purposes until issued for construction. Do not scale drawings.

REV:

C	PRE-DA FOR CONSULTANT INPUT 06/12/2019
D	DEVELOPMENT APPLICATION 18/02/2020
E	REVISED DA PLANS 09/06/2020
F	AMENDED DA PLANS 24/08/2021

CONSULTANTS

City Plan - Planning & Heritage
AE Structural Engineers
STS Geo Environmental - Geotechnical Eng
JHA Building Services Engineers - Mechanical, Hydraulic & Communications
BCA Logic - NCC & Access
Code Performance - Fire Engineers
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DRAWING LIST

KEY

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Nominated architect:
David Epstein
BArch/MCPUD ARB NSW Reg No.: 9072

PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

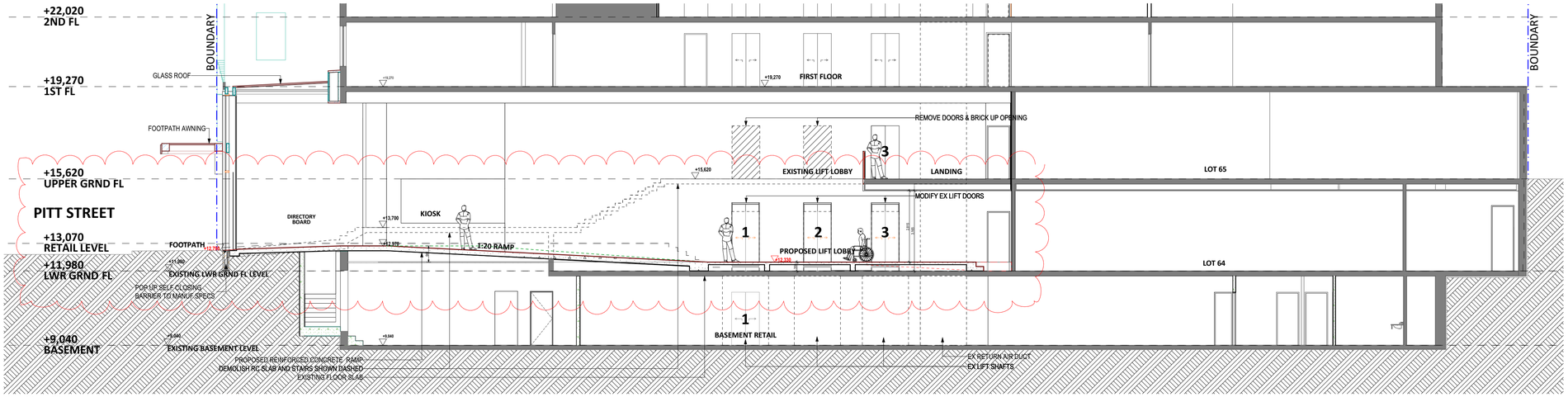
DRAWING TITLE :
PLANS - Upper Grnd Fl + First Fl

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

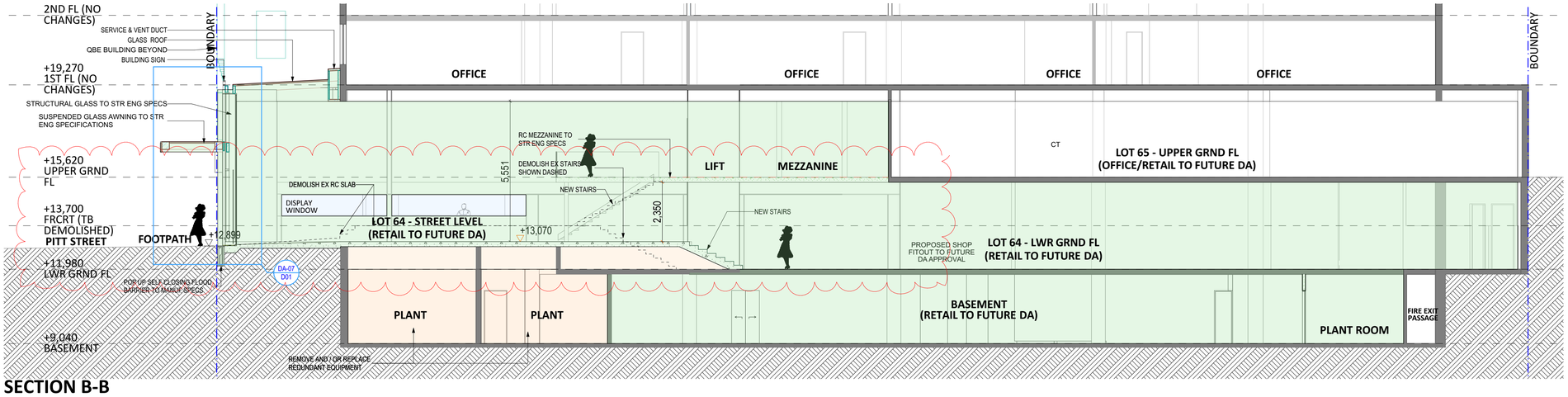
JOB NO.:
0348

DRAWING NO.
DA-03

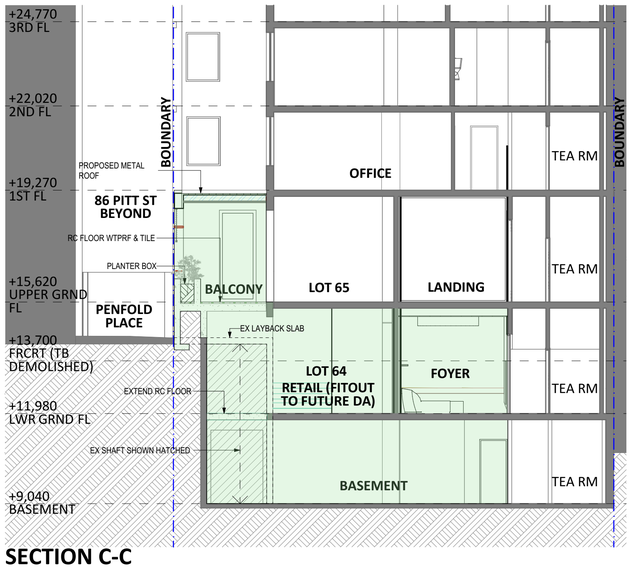
rev:
F



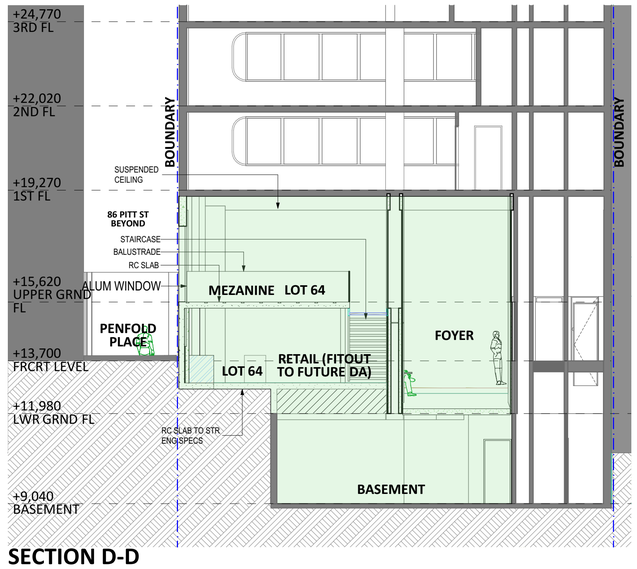
SECTION A-A



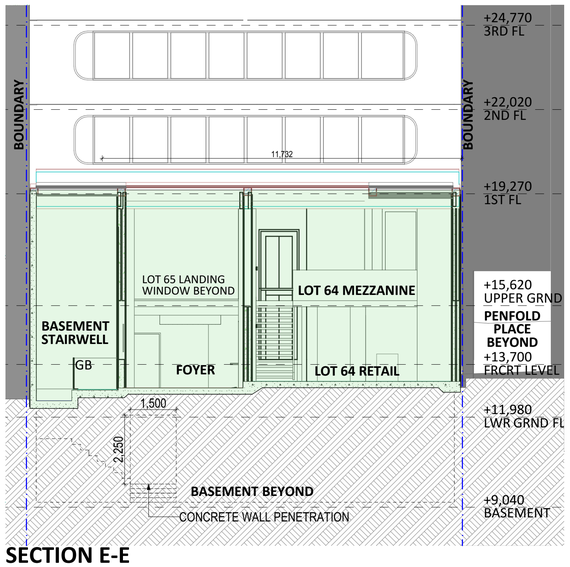
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

GENERAL NOTES

Drawings shall not be used for construction purposes until issued for construction. Do not scale drawings.

REV:

C	PRE-DA FOR CONSULTANT INPUT 06/12/2019
D	DEVELOPMENT APPLICATION 18/02/2020
E	REVISED DA PLANS 09/06/2020
F	AMENDED DA PLANS 24/08/2021

CONSULTANTS

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JHA Building Services Engineers - Mechanical, Hydraulic & Communications
BCA Logic - NCC & Access
Code Performance - Fire Engineers
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DRAWING LIST

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Nominated architect:
David Epstein
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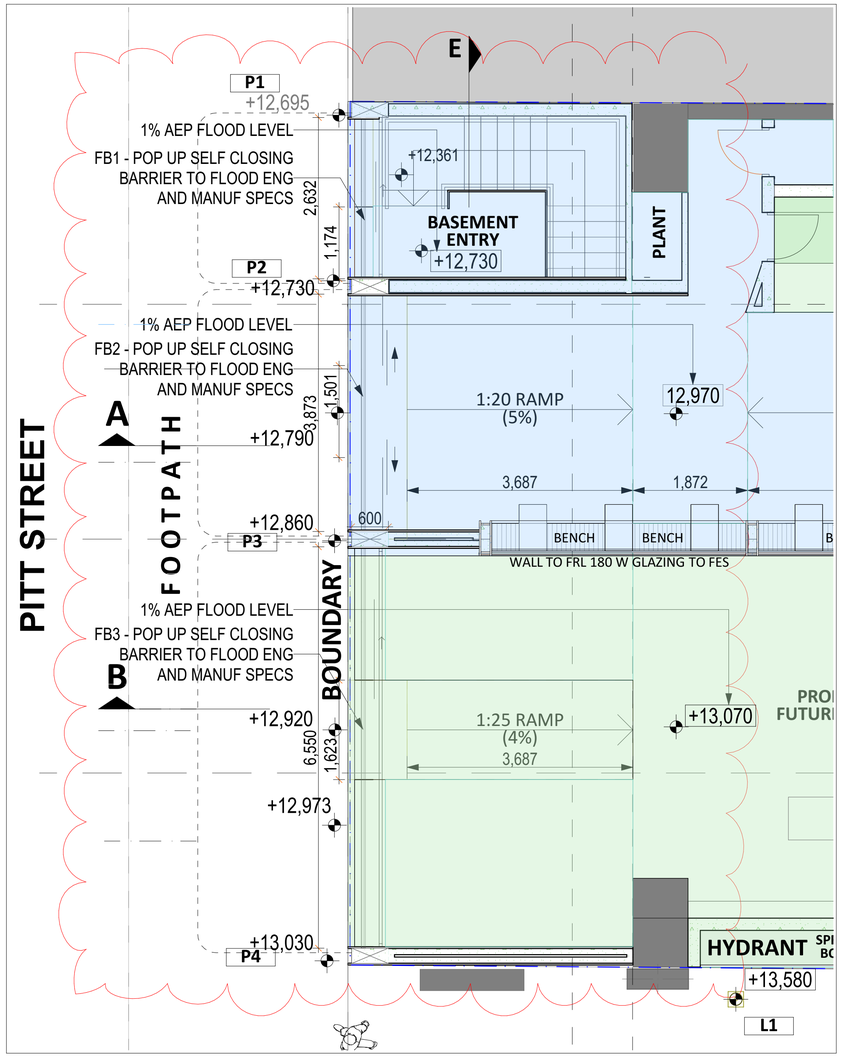
PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

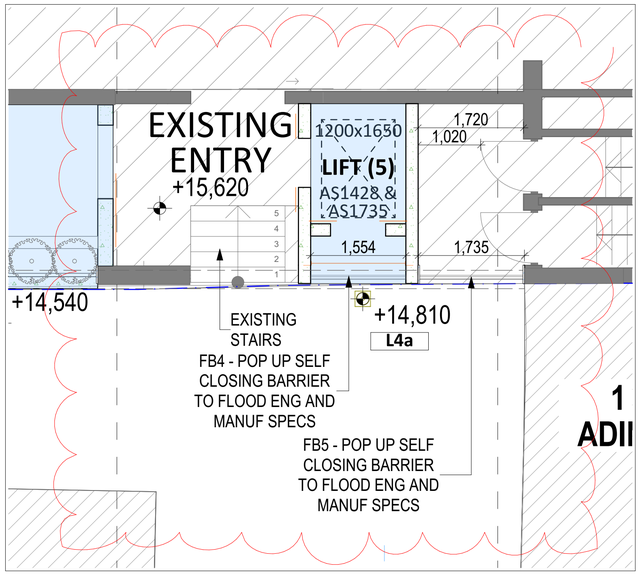
SITE :
84 PITT ST, SYDNEY
CLIENT :
SP50723

DRAWING TITLE :
SECTIONS A, B, C, D & E

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

JOB NO.:
0348
DRAWING NO.
DA-05
rev:
F





No.	Position	Type	Wide (mm)	Ht (mm)
FB1 -	Basement entry	SCFD	2632mm	
FB2 -	Main entry	SCFD	3873mm	
FB3 -	Retail entry	SCFD	6550mm	
FB4 -	Lane lift	SCFD	1554mm	
FB5 -	Lane fire exit	SCFD	1735mm	

GENERAL NOTES

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REV:

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D	DEVELOPMENT APPLICATION 18/02/2020
E	REVISED DA PLANS 09/06/2020
F	AMENDED DA PLANS 24/08/2021

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Cardno - Flood Engineers

DRAWING LIST

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Nominated architect:
David Epstein
BArch/MCPUD ARB NSW Reg No.: 9072

PROJECT:
PROPOSED ALTERATIONS & ADDITIONS

SITE :
84 PITT ST, SYDNEY

CLIENT :
SP50723

DRAWING TITLE :
FLOOD MITIGATION DETAILS

SCALE : 1:100 @ A1 & 1:200 @ A3
DATE : 20 JULY 2021

JOB NO.:
0348

DRAWING NO.
DA-09

rev:
F

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The general Manager
City of Sydney Council
Town Hall House
Level 2, 456 Kent Street
SYDNEY NSW 2000

14 September 2021

Dear Ms Barone

PROPOSED AMENDMENTS TO D/2020/235 FOR SP50723 AT 84 PITT STREET, SYDNEY

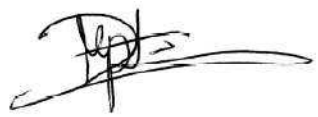
On behalf of the Owners SP50723, please find attached amended plans by DRE Design numbered DA00-DA08 Revision F Dated 20 July 2021.

The amended plans include the following design changes:

1. Retain the proposed extension to the Pitt Street front boundary west of gridline B including the new entrance to the building at the Pitt Street boundary, the extension of Lot 64 retail space with entry doors at the Pitt Street boundary, the stair to the basement with entry from Pitt Street, the glass roof over the extension and the footpath awning;
2. To negate flood issues;
    a. Install a self-actuating flood barrier (FB1) at the entrance to the basement from Pitt Street.
    b. Reconfigure the 1:20 pedestrian entrance ramp with a landing at RL12.97 and install a self-actuating flood barrier (FB2) at the entrance to the building from Pitt Street.
    c. Raise the lower ground floor lobby area by 350mm to RL12.33 to maintain the 1:20 ramp gradient.
    d. Raise the floor level of the shop at Lot 64 to RL13,07 and install a self-actuating flood barrier (FB3) at the entrance to the shop from Pitt Street.
    e. Install a self-actuating flood barrier (FB4) at the entrance to Lift No.5 in Hosking Place.
    f. Install a 24/7 flood door (FB5) at the exit from the fire escape to Hosking Place.

For further details please refer to the attached Addendum to Statement of Environmental Effects by Stephen Kerr of GYDE dated 14 September 2021 and the Flood Impact Assessment report by Cardno (NSW/ACT) Py Ltd dated 14 September 2021.

Yours sincerely



David Epstein Principal DRE Design
Barch, MCPUD |Architect | Planner | Urban Designer
ARB NSW Reg No. 9072

Gyde Consulting

14 September 2021

The General Manager
City of Sydney Council
Town Hall House
Level 2, 456 Kent Street
SYDNEY NSW 2000

Dear Ms Barone

84 PITT STREET, SYDNEY - ADDENDUM TO STATEMENT OF ENVIRONMENTAL EFFECTS - D/2020/235

This letter has been prepared on behalf of DRE Design Pty Ltd to accompany amended plans and details that relate to the above development application. The amended plans include design changes to address the risk of flooding at 84 Pitt Street (the **site**).

The following plans and details are included with this letter:

- Amended architectural plans by DRE Design.
- Flood Advice Discussion Paper by Cardno

Background

Development consent was granted in respect of D/2020/235 on 18 September 2020. The development consent is subject to a number of conditions, but of note is condition number 3, which requires certain design modifications for purposes including '*to negate flood issues*'.

Regarding the flooding issue, the delegated assessment report stated the following:

> *"The site has been identified as being affected by flooding, with Pitt Street being the major flow path to the Sydney Harbour Catchment. Indicative flood levels along the sites Pitt Street frontage are 200mm in the 1% AEP storm event and 700mm in the Probable Maximum Flood (PMF).*
>
> *The survey information provided with the application indicates that the likely flood levels at the site's boundary may be 12.9m AHD in the 1% AEP event and 13.4m AHD in the PMF. The proposal includes demolition of the existing raised ground floor level and its replacement with new floor entry levels that are lower than existing and that lead to the commercial floor space and below basement levels at 12.64m and 12.7m AHD. These proposed levels are below the recommended flood planning levels.*
>
> *A site-specific flood risk assessment was requested from the applicant, however this report was unable to be provided to the City within the assessment time frame.*
>
> *It is noted that the entrance steps on the existing slab are identified at 13.67m AHD, which is above the flood level indicators, thereby negating flooding issues. As such, bar the external alterations and new basement entrance stairs, the proposal is satisfactory from a flooding perspective should the existing slab height be retained."*

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ABN 58 133 501 774

Flood Advice Discussion Paper

The purpose of the Flood Advice Discussion Paper prepared by Cardno (the **Flood Advice**) is to quantify the risk of flooding at the site and inform design changes which will ensure the proposal satisfies the relevant flood planning controls, and in particular clause 5.12 of the *Sydney Local Environmental Plan 2012* (the **LEP**) which provides that:

> *"(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development—*
>
> *(a) is compatible with the flood function and behaviour on the land, and*
>
> *(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and*
>
> *(c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and*
>
> *(d) incorporates appropriate measures to manage risk to life in the event of a flood, and*
>
> *(e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses."*

The Flood Advice determines the flood levels and depths (1% AEP and PMF) at four points along the frontage of the property. The 1% AEP flood level ranges between 12.75m AHD at the northern most end of the street frontage, to 13.07m at the southern end. The food depth ranges from 13cm at the northern end, to 4cm at the southern end.

Amended Architectural Plans

The amended architectural plans respond to the Flood Advice and incorporate changes to the ramp grade to the main commercial lobby to increase the finished floor level height at the entry threshold and the lift lobby; introducing a slight ramp at the entrance to the proposed retail space (lot 64) to increase the finished floor level of this retail tenancy; and the incorporation of three self-closing flood barriers.

Conclusion

We trust that the Flood Advice and the amended architectural plans satisfy the requirements of clause 5.12 of the LEP. The amendments do not change the substance of the proposal or affect the calculation of gross floor area or any other matter addressed previously in the statement of environmental effects which accompanied the development application.

Yours sincerely

Executive Director
Stephen Kerr