FLOOD IMPACT ASSESSMENT

22-24 RODLEY AVENUE, PENRITH NSW 2750

PROPOSED RESIDENTIAL FLAT BUILDING DEVELOPMENT

Prepared For: Olsson Property Group

Project No: MBR21092

Issue: A

Date: 30/07/2021

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Issue	Date	Description	Prepared By	Checked By
A	30/07/2021	Issue for DA	Michael Bou Rada	Kamyar Eivazzadeh BE, MIE Aust, CP Eng NER 3443237

TABLE OF CONTENTS

1. Introduction & Background

Smart Structures Australia has been engaged by Olsson Property Group to prepare a Flood Impact Assessment for the proposed residential flat building development at 22-24 Rodley Avenue, Penrith NSW 2750 to be submitted to Penrith City Council.

This report has been produced in collaboration between MBR Consulting Engineers and Smart Structures Australia. For any future enquiries, Smart Structures Australia is to be contacted.

The primary objectives of this report are to:

- Review the available reports and information on flooding at this site;
- Determine the existing stormwater characteristics of the overland flow path hydraulics and capacity;
- Define the flood risk for the proposed development in accordance with Penrith City Council's Floodplain Risk Management Policy;
- Prepare additional flood modelling deemed necessary;
- Assess this information against the development proposal and development controls;
- Discuss risk management in accordance with Council's Flood Risk Management Guidelines.

This report is prepared generally in accordance with:

- Australia Government, Bureau of Meteorology Website http://www.bom.gov.au/;
- Penrith City Council – Development Control Plan;
- New South Wales Government – Floodplain Development Manual – The management of flood liable land, April 2005;
- LiDAR Data – Collected by 'Land and Property Information';
- Australia Rainfall and Runoff 2016.

2. Site Details

2.1 Location

The proposed development site is located within the municipality of Penrith City Council and identified as Lots 51 and 52 on DP 32844. The site has a total site area of approximately 1,112.8m^2 by title and is bounded by residential allotments to the east and west, Rodley Avenue to the north, and a drainage channel to the south.

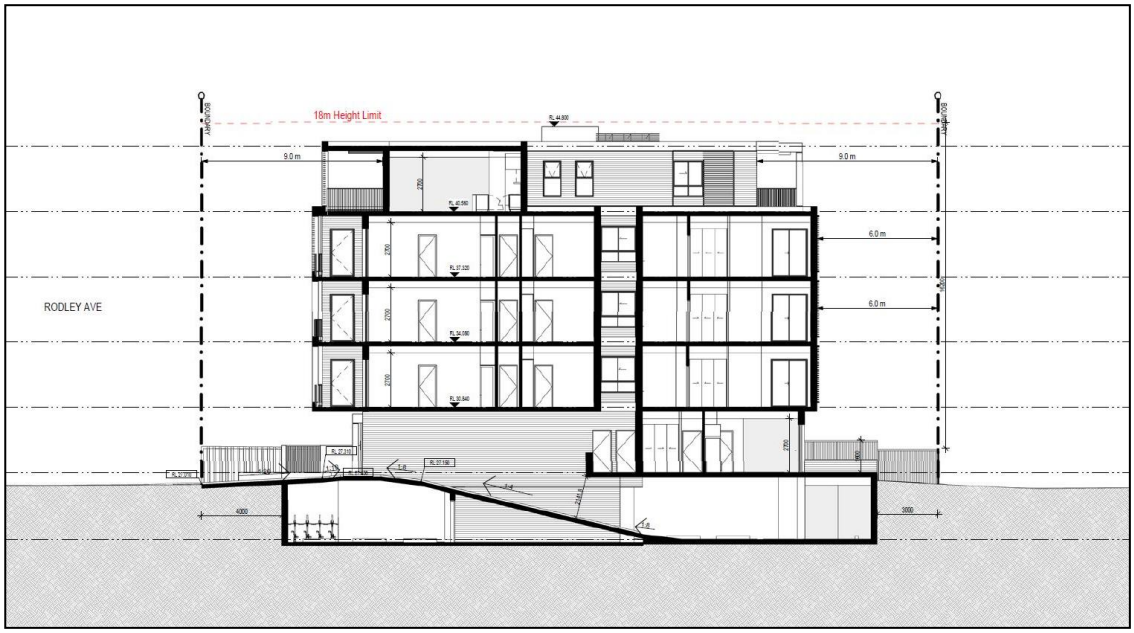
The site is currently occupied by a two-storey dwelling and a single storey dwelling with a separate hardboard garage.

Figure 2.1 below shows the site's location outlines in red.

2.2 Proposed Development

The site owner proposes to demolish all existing structures on site and construct an apartment building consisting of five levels with a basement carpark. Refer to **Appendix D** for the architectural plans of the proposed development.

Figure 2.2 below shows the proposed development plan.



3. Flood Model Set-up & Results

3.1 Published Flood Data & Model Set-up

A flood study 'Penrith CBD Floodplain Risk Management Study and Plan' was previously prepared by Molino Stewart in March 2020 and has been adopted by Penrith City Council as their base flood model for the catchment.

As part of the Pre-Lodgement Advice provided by Council (Ref PL21/0014, dated 19/03/2021), it was suggested to the applicant to purchase Council's Flood Model for the Penrith CBD to assist with the pre- and post-development flood modelling.

Once purchased, Council's flood model was modified and adjusted to suit the requirements of the subject site:

- The 'log', 'results' and 'check' output folders were appropriately referenced in the '.tcf' file;
- The survey details (ground survey level + building outlines) were incorporated within the '.tgc' file in order to properly represent the site-specific ground levels;
- Both the pre- and the post-development scenarios have incorporated the survey levels into the design in order to maintain the 'apple-to-apple' comparison.

3.2 Building Footprint

As a method to reduce the impact on the neighbouring sites, the proposed development is modelled as a blockage.

3.3 Hazard Vulnerability Category

The attribute of the Hazard Vulnerability Classification is a function of hydraulic hazard (relating to the depth and velocity of floodwaters) and takes into account the vulnerability of the community and community assets to damage or danger when interacting with floodwaters. Hazard Vulnerability Classifications are determined based on the guidelines provided in 'Technical flood risk management guidelines: Flood hazard' (Attorney-General's Department 2014) and in particular Figure 6.

Hazard Vulnerability Classification	Description
H1	Generally safe for people, vehicles and buildings.
H2	Unsafe for small vehicles. Generally, safe for people and buildings.
H3	Unsafe for vehicles, children and the elderly. Generally safe for able-bodies adults.
H4	Unsafe for vehicles and people.
H5	Unsafe for vehicles and people. All building types vulnerable to structural damage. Less robust building types vulnerable to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

Flows within the subject site pose H1 category conditions.

3.4 Provisional Flood Hazard

The attribute of the Provisional Flood Hazard for the subject site is a function of hydraulic hazard (relating to the depth and velocity of floodwaters) and is takes into account the following factors:

- Size of flood
- Flood awareness
- Effective warning time
- Evacuation problems
- Duration of flooding
- Type of development
- Rate of rise of floodwater
- Effective flood access

Provisional Hazard categories are defined as either high, intermediate or low hazard and are based on the guidelines outlined in the Floodplain Development Manual (NSW DIPNR 2005) and particular figure L2.

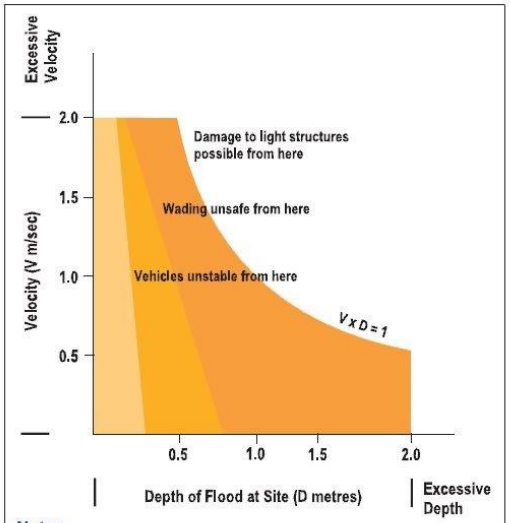


FIGURE L1 - Velocity & Depth Relationships

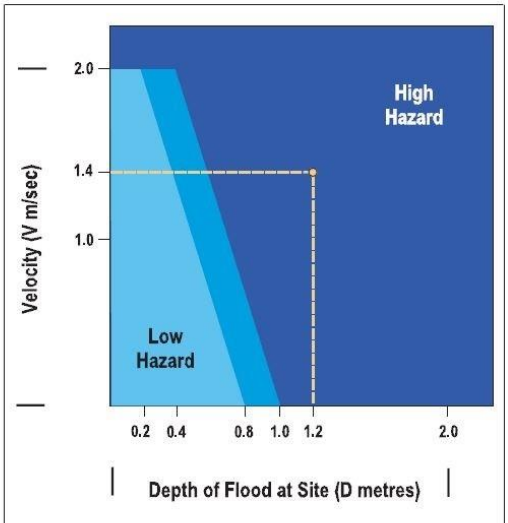


FIGURE L2 - Provisional Hydraulic Hazard Categories

Flows within the subject site pose low hazard conditions.

3.5 Flood Results & Level Recommendations

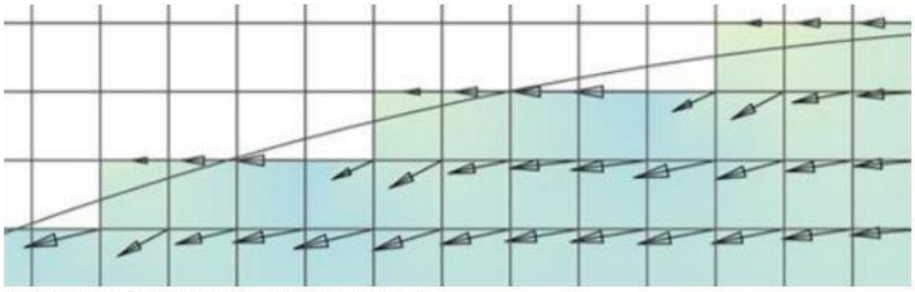
The results of the hydraulic modelling approach need to be filtered to show only the cells that genuinely represent areas of catchment flooding. This was achieved by only mapping inundation at cells with a flood depth greater than 100mm as water shallower than 100mm is considered to be sheet flow.

The water level, depth, velocity and hazard of the 1% AEP floodwaters in the vicinity of the subject site were mapped for both pre- and post-development scenarios. The following maps are enclosed under **Appendix A**:

- SK02: 1% AEP pre-development flood depth & level plan;
- SK03: 1% AEP pre-development flood velocity plan;
- SK04: 1% AEP pre-development flood velocity-depth product plan;
- SK07: 1% AEP post-development flood depth & level plan;
- SK08: 1% AEP post-development flood velocity plan;
- SK09: 1% AEP post-development flood velocity-depth product plan;
- SK12: 1% AEP flood level difference plan;
- SK13: 1% AEP flood velocity-depth difference plan.

The 1% AEP pre- and post-development flood depth and level plans show the floodwaters ramping up next to the buildings (within the site and outside). We believe this is due to the application of the grid size and the grid alignment in the original flood model provided by Council and considered as an error. In addition, our office has contacted TUFLOW support to get their assessment on the matter, their response was as follows:

> The depths around buildings can come from a few sources and it kind of comes down to how they're represented, although I should note raising the building footprint is a very acceptable means of doing this. It can also be from the raised footprint in terms of grid orientation or cell size. Water flowing around the building if the grid is not aligned to the building (which is obviously very common!!) you can get a saw tooth effect like below, which will slow water due to artificial losses and therefore increase head. However, if the flow is slow around buildings this won't be of significant issue.



Example of saw tooth effect on a bend.

As a result of this, we believe the resultant flood level increases around the obstructions in both pre- and post-development scenarios to be disregarded due to the incorrect TUFLOW modelling set up in the model provided by Council.

To ensure that the risk of flood impacts is minimised, Penrith City Council DCP sets the development flood planning levels as follows:

- 500mm above the 1% AEP flood level for all habitable floor areas;
- 300mm above the 1% AEP flood level for the crest of the access ramp into the basement.

Table 3.2 shows the minimum floor levels for the proposed development in accordance with Council's DCP.

Building Pad	Design Requirement	100yr ARI Level	Flood Planning Level
Minimum Habitable Floor Level	1 in 100yr ARI plus 0.5m freeboard	RL 27.10m AHD	RL 27.60m AHD
Minimum Basement Ramp Crest Level	1 in 100yr ARI plus 0.3m freeboard	RL 27.10m AHD	RL 27.40m AHD

4. Flood Risk Management

4.1 Flood Classification

The Floodplain Development Manual developed by New South Wales Government specifies three flood classifications. They are as follows:

- **High Flood Risk Precinct**
  This precinct is defined where high flood damages, potential risk to life or evacuation problems would be anticipated without compliance with flood related building and planning controls.
- **Medium Flood Risk Precinct**
  This precinct is defined where a significant risk of flood damage is still existing, but these damages can be minimised by the application of appropriate development controls.
- **Low Flood Risk Precinct**
  This precinct is where the risk of damages is low for most land uses. This area is above the 100yr ARI Flood Level and most land uses would be permitted.

The post-development model has identified this site to be within **Low Flood Risk Precinct**.

4.2 Proposed Floor Levels

All proposed floor levels to be in accordance with **Table 3.2** above providing adequate freeboard for the habitable and the non-habitable areas meeting the minimum floor level requirements of the flood control matrix of Penrith Council DCP. Additionally, the proposed floor levels (including first floor) provide an area of refuge above the PMF Flood Level.

4.3 Proposed Building Components

The proposed development is depicted as being constructed as a solid structure. This construction method will maintain the existing flood storage volume on site and minimise the disturbance to the existing flood regime, within the subject site and the neighbouring properties, for all flood events up to and including the PMF.

The proposed development is to be constructed from flood compatible materials below RL 27.60m AHD. Extensive guidance on flood compatible building materials and methods is provided in 'Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas'.

The proposed structure should be designed to withstand the forces, including hydrostatic, hydrodynamic, buoyancy and debris impact forces imposed by the 100yr ARI floodwaters plus 0.5m freeboard (RL 27.60m AHD). The structural design must be undertaken by a suitably qualified Structural Engineer with relevant experience designing structures on flood prone lands.

All electrical wiring, switches, outlets connections to main power supplies, switch boards and metering equipment should be located above the 100yr ARI flood level of RL 27.60m AHD. Earth core leakage systems or safety switches are to be installed. All wiring connections and conduits below RL 27.60m AHD should be suitable for submergence in water. Conduits shall be installed so they will be self-draining in the event of flooding.

Heating and air-conditioning systems, including fuel supply and ducting, must be installed above RL 27.60m AHD. Where this is not possible, they should be installed in a manner to minimise damage from submersion. This may be achieved through measures such as access for cleaning and draining of water after flood events, manually operated cut off valves for fuel supply lines and

ducts, securely fastening heating equipment and fuel storage tanks to prevent movement, and venting of fuel supply tanks.

A structural assessment is required prior to occupation of building by an accredited Structural Engineer.

4.4 Climate Change

Due to the climate change and the potential increase in rainfall intensities, it is recommended to review this Flood Risk Management every 5 years and assess the new risks and findings.

4.5 Car Parking & Driveway Access

The proposed access ramp crest level of RL 27.40m AHD provides adequate freeboard in accordance with the requirements of Penrith Council DCP. In this regard, the proposed basement is protected from inundation by the 1% AEP floodwaters. The proposed driveway access is expected to provide reliable vehicular access during the 1% AEP storm event.

4.6 Flood Warning Signs

It is recommended that a floodway warning sign be installed on the boundary fence to warn occupants of the hazard posed by the floodwaters. The sign should be in accordance with Penrith Council standard drawing.

4.7 Evacuation Procedures

The State Emergency Service of New South Wales (SES) is responsible for providing flood updates and issuing Flood Evacuation Warnings and Flood Evacuation Orders. Flood information issued by the SES may be received by local radio, television news, SMS messaging and door-knocking in affecting communities. The timing for the evacuation of persons is to be established in consultation with the SES.

To increase the flood-readiness of the occupants of the proposed dual occupancy, owners/occupiers of the site should be made aware of FloodSafe kits developed by the NSW SES which aid household development of a Flood Emergency Plan. Information regarding FloodSafe kits is available from https://www.ses.nsw.gov.au/disaster-tabs-header/flood/.

Future owners and/or occupiers of the site should prepare, regularly review and update a household Flood Emergency Plan. A copy of the household Flood Emergency Plan should be kept on the inside door of a kitchen or laundry cupboard, alongside instructions for operating any shut-off valves.

Future owners and/or occupiers of the site should also prepare, maintain and replace (if necessary) the following items for any expected emergency that may happen:

- First aid kit and prescription medicines
- Radio with batteries and spare batteries
- Home-prepared emergency plan
- Store basic food items and bottled water
- Torch
- Local map
- Wet weather clothing
- Mobile phone

During the heavy rainfall event, residents should raise all electrical items and high value items within the garage to avoid any damages. In addition, all large electrical items that cannot be raised must be turned off and disconnected. Furthermore:

- Do not try to evacuate and travel through floodwaters on foot;
- Do not stay inside any vehicles on the street and in the garage;
- Residents and their pets should move and stay in the highest level within the building (such as first floor);
- Residents needing to leave the site must check and follow the instructions from SES.

The proposed floor level of RL 27.60m AHD for proposed development will provide a minimum 500mm freeboard to the 100yr ARI floodwaters. In this regard, occupants may remain on site within the proposed dwellings during any flood event.

In the event that the 100yr ARI flood event is expected to be exceeded, strategies should be adopted in accordance with NSW Government operational guidelines and SES Emergency Evacuation operational guidelines.

The emergency contact details are as follows:

Name	Phone Number	Info
SES Parramatta	132 500	27 Fowler St Claremont Meadows NSW 2747
Energy Australia	131 535	
Telstra	1800 687 829	
Jemena Gas	131 909	
Local Radio Stations	1300 222 702	Freq 702 ABC Sydney

5. Conclusion

A site-specific flood study assessment was undertaken to determine the 1% AEP flood behaviour in the vicinity of the subject site. The development of the flood model is described in Section 3 of this report, and the flood modelling results are presented in Section 3.

The flood planning level recommended is RL 27.60m AHD for the habitable areas and RL 27.40m AHD for the crest of the basement ramp providing adequate freeboard meeting the minimum floor level requirements of the flood control matrix of Penrith City Council DCP.

Based on the above, we are of the view that the proposed apartment building will generally comply with the requirements of the flood planning policies contained within Penrith DCP.

6. Glossary

Terminology in this Glossary has been derived or adapted from the Floodplain Development Manual (NSW DIPNR 2005), where appropriate.

- **Annual Exceedance Probability (AEP)**
  The chance of a flood of a given or larger size occurring in any one year, expressed as a percentage.
- **Australian Height Datum (AHD)**
  A common national surface level datum approximately corresponding to sea level.
- **Average Recurrence Interval (ARI)**
  The long-term average number of years between the occurrence of a flood as big as or larger than the selected event.
- **Hydrograph**
  A graph that shows how the discharge changes with time at any particular location.
- **Hydrology**
  The term given to the study of the rainfall and runoff process as it relates to the derivation of hydrographs for given floods.
- **Local Overland Flooding**
  Inundation by local runoff rather than overbank discharge from a stream, river, estray, lake or dam.
- **Mainstream Flooding**
  Inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estray, lake or dam.
- **Peak Discharge**
  The maximum discharge occurring during a flood event.
- **Probable Maximum Flood (PMF)**
  The PMF is the largest flood that could conceivably occur at a particular location.
- **Risk**
  Chance of something happening that will have an impact. It is measured in terms of consequences and likelihood.
- **Runoff**
  The amount of rainfall that actually ends up as stream or pipe flow, also known as rainfall excess.
- **Design Flood**
  A flood event to be considered in the design process.
- **Catchment**
  The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.
- **Flood**
  Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.
- **Flood Hazard**
  A measure of the floodwaters potential to cause harm or loss. Full definitions of hazard categories are provided in Appendix L of the Floodplain Development Manual (NSW Government, 2005). In summary:

a- High: conditions that pose a possible danger to personal safety, evacuation by trucks difficult, able-bodied adults would have difficulty wading to safety, potential for significant structural damage to buildings.

b- Low: conditions such that people and their possessions could be evacuated by trucks, able-bodied adults would have little difficulty wading to safety.

- **Flood Planning Area**

  The area of land below the FPL and subject to flood related development controls.

- **Flood Planning Levels (FPLs)**

  Combinations of flood levels (derived from significant historical flood events or floods of specific ARIs) and freeboard selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans.

- **Floodplain, Flood-prone Land**

  Land susceptible to inundation by the probable maximum flood (PMF) event, i.e. the maximum extent of flood liable land.

- **Floodplain Risk Management Options**

  The measures that might be feasible for the management of a particular area of the floodplain.

- **Freeboard**

  Provides reasonable certainty that the risk exposure selected in deciding on a particular flood chosen as the basis for the FPL is actually provided. It is a factor of safety typically used in relation to the setting of floor levels, levee crest levels etc… (see Section K5 of Floodplain Development Manual).

- **Geographic Information Systems (GIS)**

  A system of software and procedures designed to support the management, manipulation, analysis and display of spatially referenced data.

- **Hydraulics**

  The term given to the study of water flow in a river, channel or pipe, in particular, the evaluation of flow parameters such as stage and velocity.

- **Hydraulic Category**

  A classification of floodwater hydraulic behaviour. The categories are:

  a- Floodway: those areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with naturally defined channels. Floodways are areas that, even if only partially blocked, would cause a significant redistribution of flood flow, or a significant increase in flood levels.

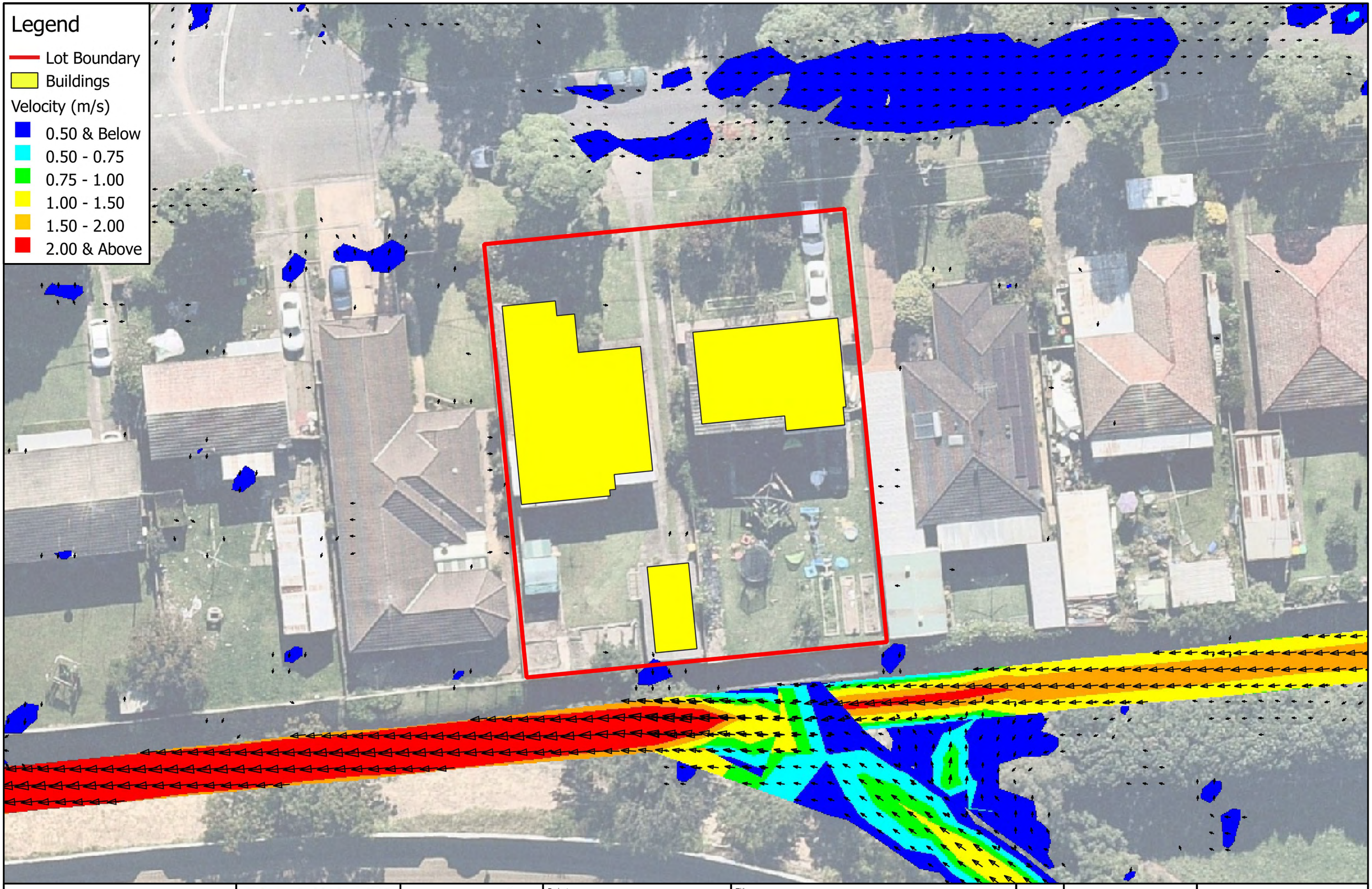
  b- Flood storage: those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. Loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation.

  c- Flood fringe: remaining area of the flood-prone land after floodway and flood storage areas have been defined.

Appendix A

Flood Results: Pre- & Post-Development Flood Maps

MBR CONSULTING ENGINEERS **MBR Consulting Engineers Pty Ltd** 0424 711 117 info@mbrconsulting.com.au www.mbrconsulting.com.au PO Box 8288, Blacktown NSW 2148 ABN: 61 625 079 923	SMART STRUCTURES AUSTRALIA	PENRITH CITY COUNCIL	Project 22-24 RODLEY AVENUE, PENRITH NSW 2750 PROPOSED RESIDENTIAL FLAT BUILDING	Title 1% AEP PRE-DEVELOPMENT FLOOD DEPTH & LEVEL PLAN	N	Project No: 21092 Drawing No: SK-02	Revision No: A Revision Date: 30/07/2021



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PENRITH CITY COUNCIL

Project
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Title
1% AEP PRE-DEVELOPMENT
FLOOD VELOCITY PLAN

N

Project No: 21092	Revision No: A
Drawing No: SK-03	Revision Date: 30/07/2021

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FLOOD VELOCITY-DEPTH
PRODUCT PLAN

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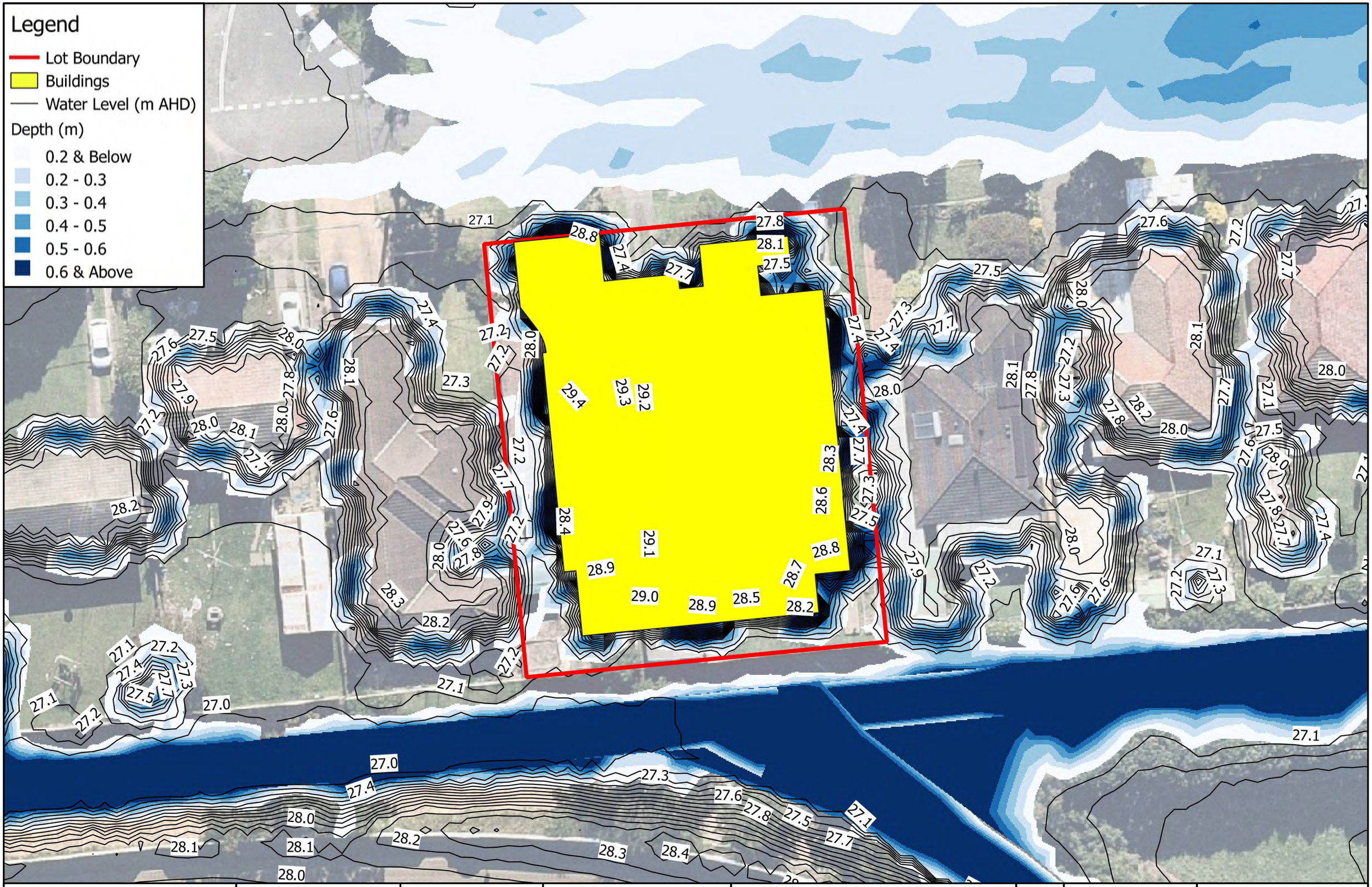
Project No: 21092	Revision No: A
Drawing No: SK-04	Revision Date: 30/07/2021



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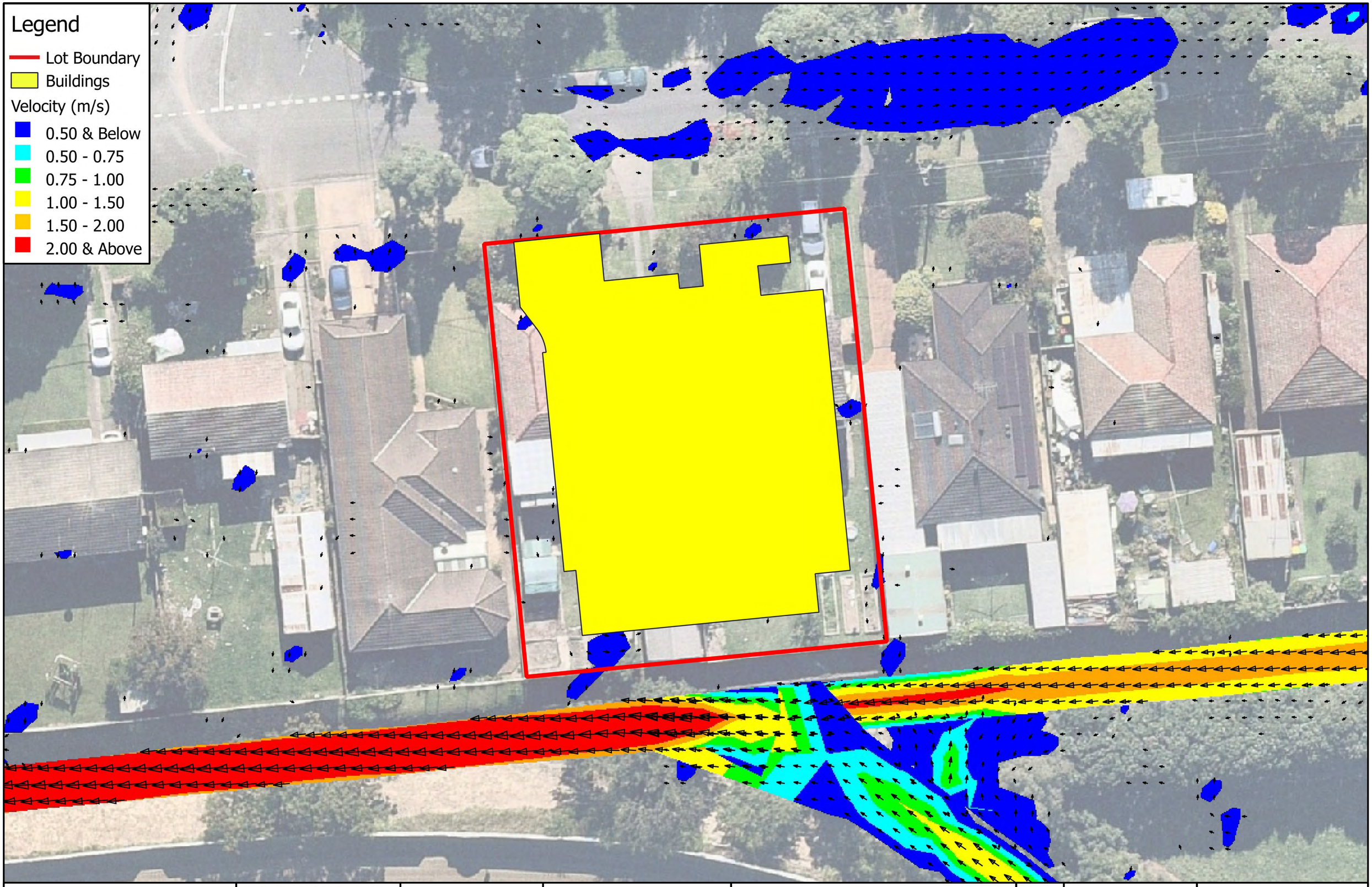
Project No: 21092	Revision No: A
Drawing No: SK-07	Revision Date: 30/07/2021



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Drawing No: SK-08	Revision Date: 30/07/2021

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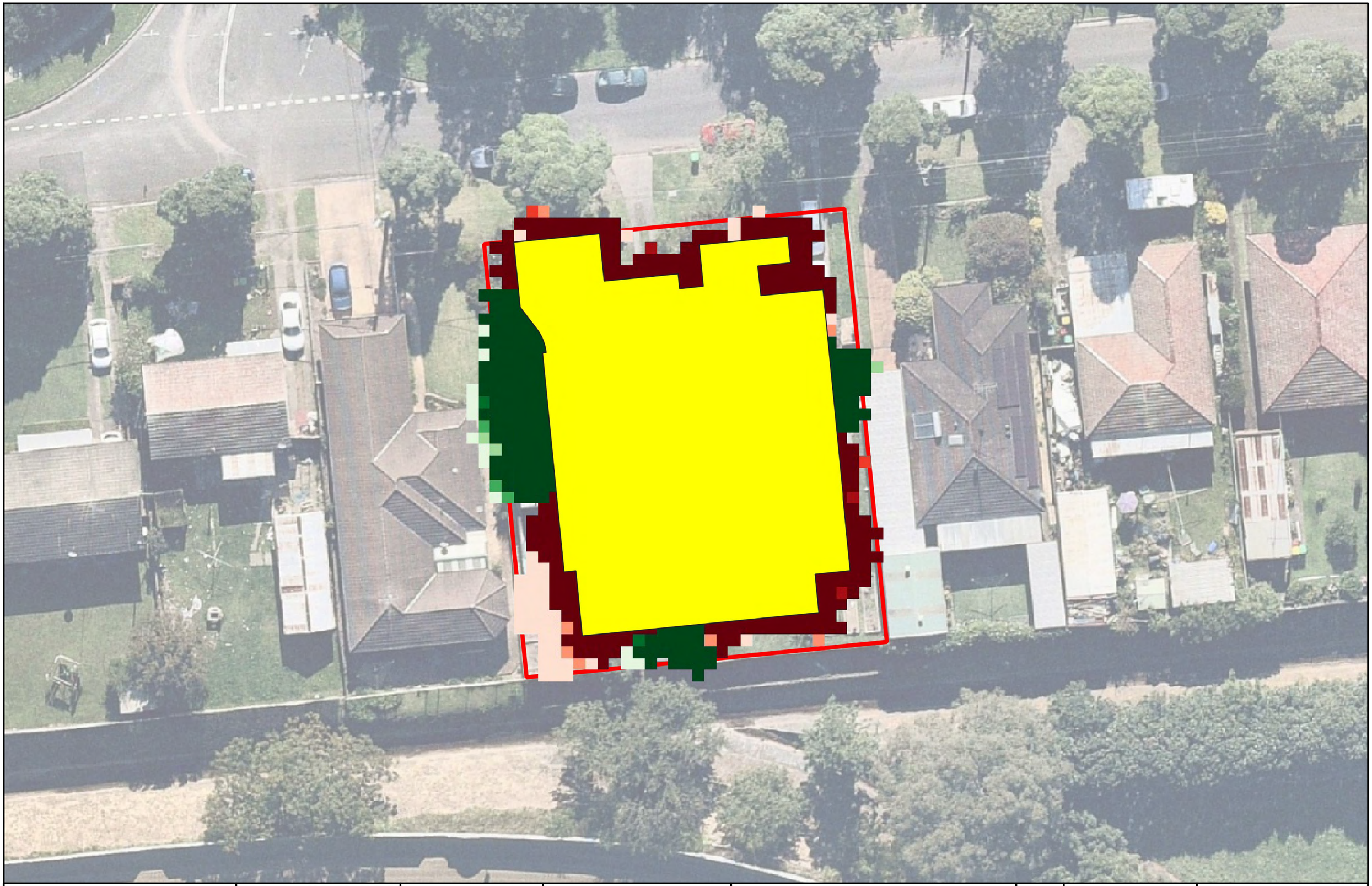
Drawing No: SK-09	Revision Date: 30/07/2021



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Drawing No: SK-12	Revision Date: 30/07/2021

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PRODUCT DIFFERENCE PLAN

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Project No: 21092

Revision No: A

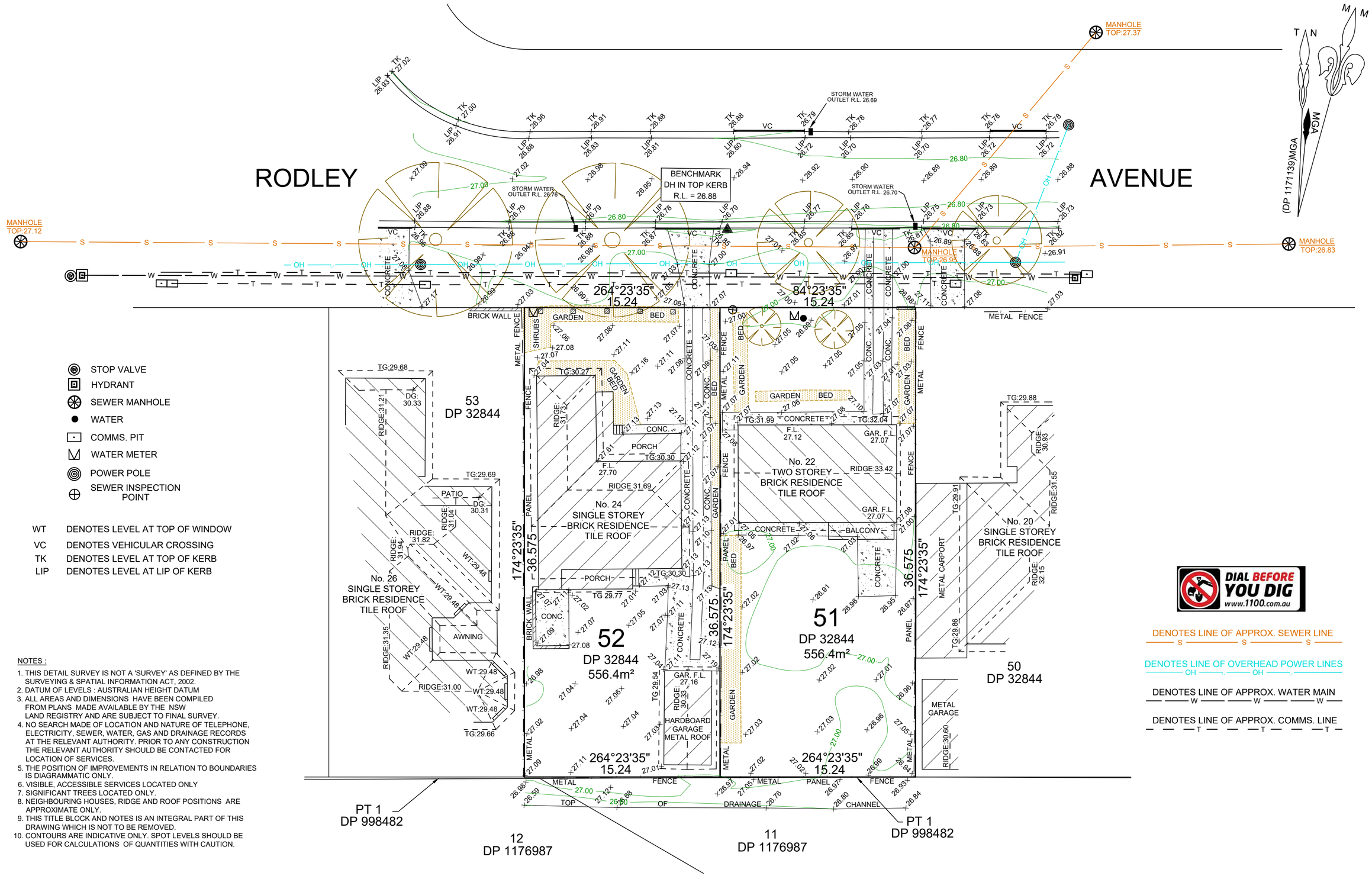
Drawing No: SK-13

Revision Date: 30/07/2021

Appendix B

Survey Plan prepared by RHCO Surveying & Development Consultants

A2



- STOP VALVE
- HYDRANT
- SEWER MANHOLE
- WATER
- COMMS. PIT
- WATER METER
- POWER POLE
- SEWER INSPECTION POINT

WT	DENOTES LEVEL AT TOP OF WINDOW
VC	DENOTES VEHICULAR CROSSING
TK	DENOTES LEVEL AT TOP OF KERB
LIP	DENOTES LEVEL AT LIP OF KERB

NOTES :

1. THIS DETAIL SURVEY IS NOT A 'SURVEY' AS DEFINED BY THE SURVEYING & SPATIAL INFORMATION ACT, 2002.
2. DATUM OF LEVELS : AUSTRALIAN HEIGHT DATUM
3. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY THE NSW LAND REGISTRY AND ARE SUBJECT TO FINAL SURVEY.
4. NO SEARCH MADE OF LOCATION AND NATURE OF TELEPHONE, ELECTRICITY, SEWER, WATER, GAS AND DRAINAGE RECORDS AT THE RELEVANT AUTHORITY. PRIOR TO ANY CONSTRUCTION THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR LOCATION OF SERVICES.
5. THE POSITION OF IMPROVEMENTS IN RELATION TO BOUNDARIES IS DIAGRAMMATIC ONLY.
6. VISIBLE, ACCESSIBLE SERVICES LOCATED ONLY
7. SIGNIFICANT TREES LOCATED ONLY.
8. NEIGHBOURING HOUSES, RIDGE AND ROOF POSITIONS ARE APPROXIMATE ONLY.
9. THIS TITLE BLOCK AND NOTES IS AN INTEGRAL PART OF THIS DRAWING WHICH IS NOT TO BE REMOVED.
10. CONTOURS ARE INDICATIVE ONLY. SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

DIAL BEFORE YOU DIG www.1100.com.au

DENOTES LINE OF APPROX. SEWER LINE

DENOTES LINE OF OVERHEAD POWER LINES

DENOTES LINE OF APPROX. WATER MAIN

DENOTES LINE OF APPROX. COMMS. LINE

1:200

5 0 5 10 15 20 25

METRES

RHCO RICHARD HOGAN & CO.
SURVEYING & DEVELOPMENT CONSULTANTS
ABN 59 082 453 165
P.O. BOX 4365, Penrith Plaza, NSW 2750.
Phone: (02) 4732 6599
Web: www.rhco.com.au Email: admin@hoganco.com.au

SURVEYOR: RHUSS
DRAWN: DG
REDUCTION RATIO: 1:200 @ A2
CONTOUR INTERVAL: 0.2m
SHEET 1 OF 1

ORIGIN OF LEVELS:
SSM 10978
RL = 27.63 (SCIMS)
DATUM: AUSTRALIAN HEIGHT DATUM
DATE: 25/06/2020
VERSION No.: B

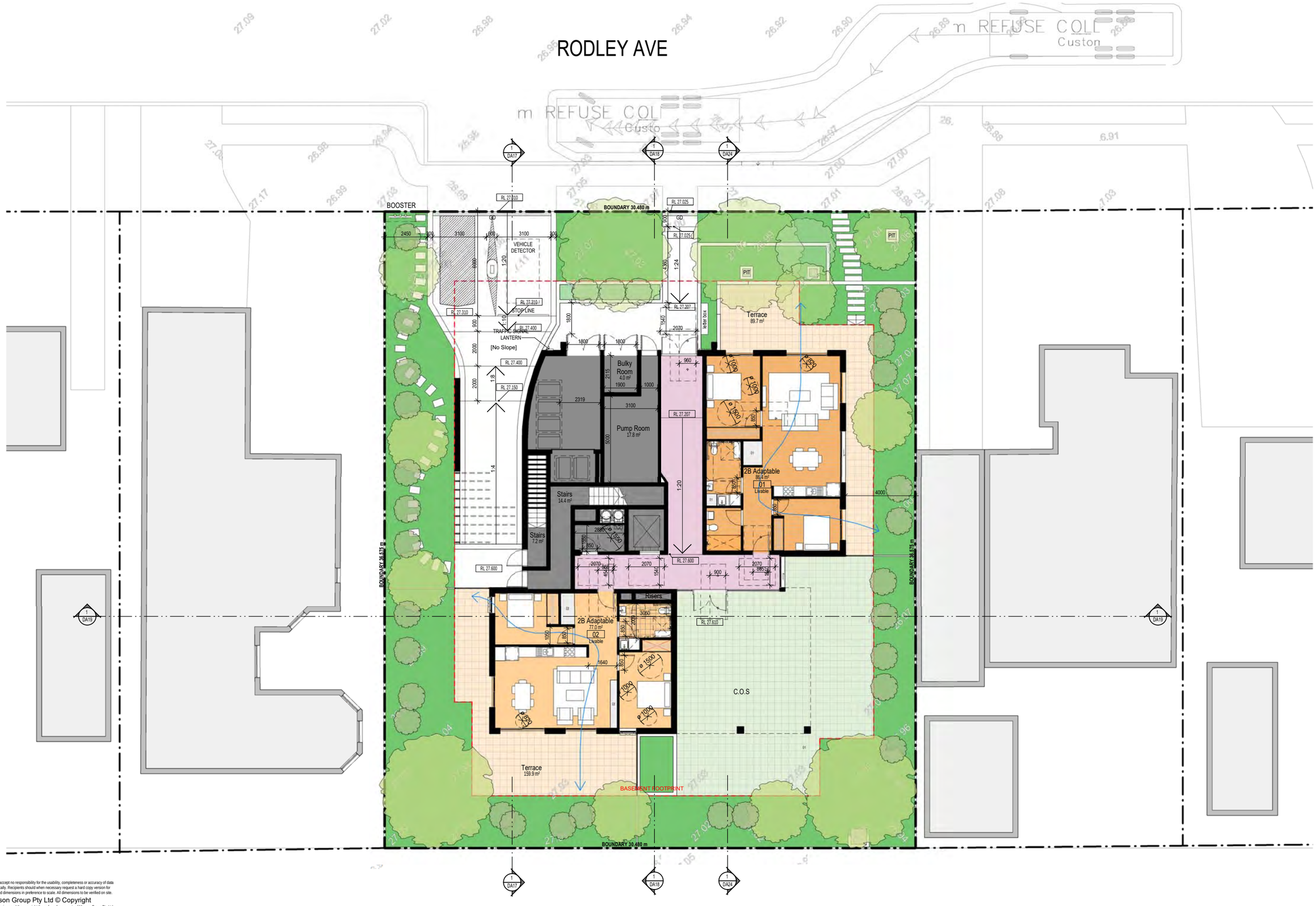
PLAN OF DETAIL AND LEVELS OVER LOTS 51 & 52 IN DP 32844, No. 22 & 24 RODLEY AVENUE, PENRITH.

CLIENT: OLSSON PROPERTY GROUP
L.G.A.: PENRITH
JOB REF: 20383

CAD FILENAME: C:\Users\Daniel\RICHARD HOGAN & CO P L\Company - Documents\2020 - RHCO\20383 - 22-24 Rodley Ave Penrith\ACAD\20383 - No 22 & 24 Rodley Avenue Penrith - DETAIL SURVEY (Ver B).dwg

Appendix C

Architectural Plans prepared by Morson Group



ABN 41 159 480 056 NOMINATED ARCHITECT: P Morson(8100)

ISSUE	DATE	AMENDMENT
A	15-06-2021	DA SUBMISSION

GENERAL LEGEND:

BR Bedroom	GAS Gas Cupboard	RWO Rainwater Outlet
COM Comms Cupboard	GD Grated Drain	SWP Storm Water Pit
DP Downpipe	GEX Garbage Exhaust	TOH Top Of Hob
E Electrical Cupboard	MBX Mailbox	TOW Top Of Wall
FHR Fire Hose Reel	RL Relative Level	TTI Tactile Indicators

PROJECT
20023 - PROPOSED RESIDENTIAL DEVELOPMENT
ADDRESS
22-24 RODLEY AVENUE, PENRITH 2750

PROJECT No. **20026**
CLIENT
OLSSON PROPERTY GROUP

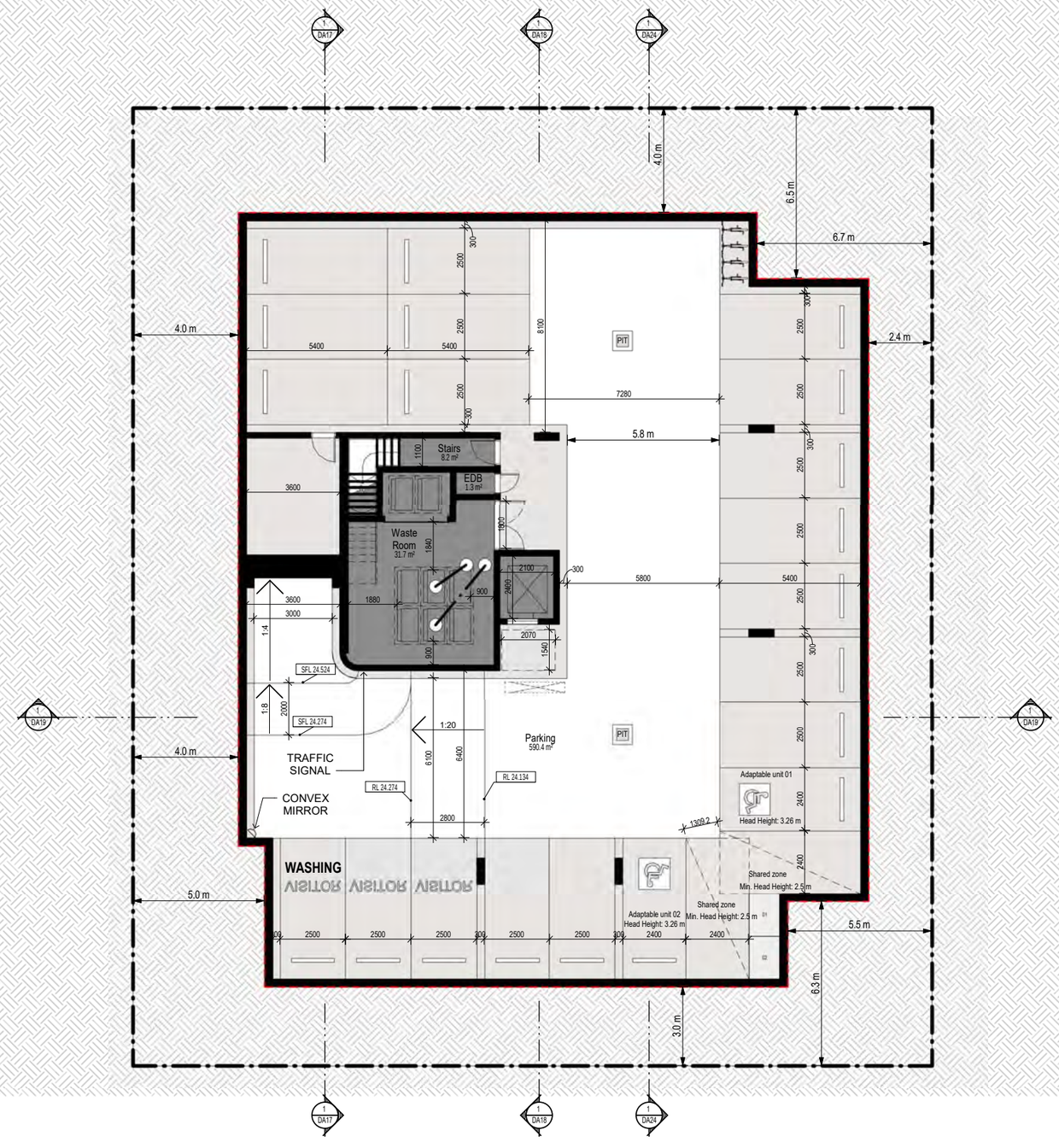
MORSON GROUP
NOMINATED ARCHITECT - P F MORSON REGISTRATION NUMBER 8100
ACN 159 480 056, ABN 41 159 480 056
www.morsongroup.com.au
(02) 9380 4946
PO Box 170, Potts Point, NSW 1335

SHEET SIZE: A1
SCALE: 1 : 100

SHEET NAME: **FLOOR PLAN - GROUND LEVEL**

DRAWING No. **DA06**
ISSUE No. **A**

14/06/2021 12:12:29 C:\Users\danie\Dropbox (Morson Group)\PROJECTS\PENRITH\20026 - 22-24 Rodley Ave\Architecture\CAD\20026_22-24 Rodley_DA_DC20210614.rvt



ABN 41 159 480 056 NOMINATED ARCHITECT: P Morson(8100)

ISSUE	DATE	AMENDMENT
A	15-06-2021	DA SUBMISSION

GENERAL LEGEND:

BR Bedroom	GAS Gas Cupboard	RWO Rainwater Outlet
COM Comms Cupboard	GD Grated Drain	SWP Storm Water Pit
DP Downpipe	GEX Garbage Exhaust	TOH Top Of Hob
E Electrical Cupboard	MBX Mailbox	TOW Top Of Wall
FHR Fire Hose Reel	RL Relative Level	TTI Tactile Indicators

PROJECT
20023 - PROPOSED RESIDENTIAL DEVELOPMENT
ADDRESS
22-24 RODLEY AVENUE, PENRITH 2750

PROJECT No. **20026**

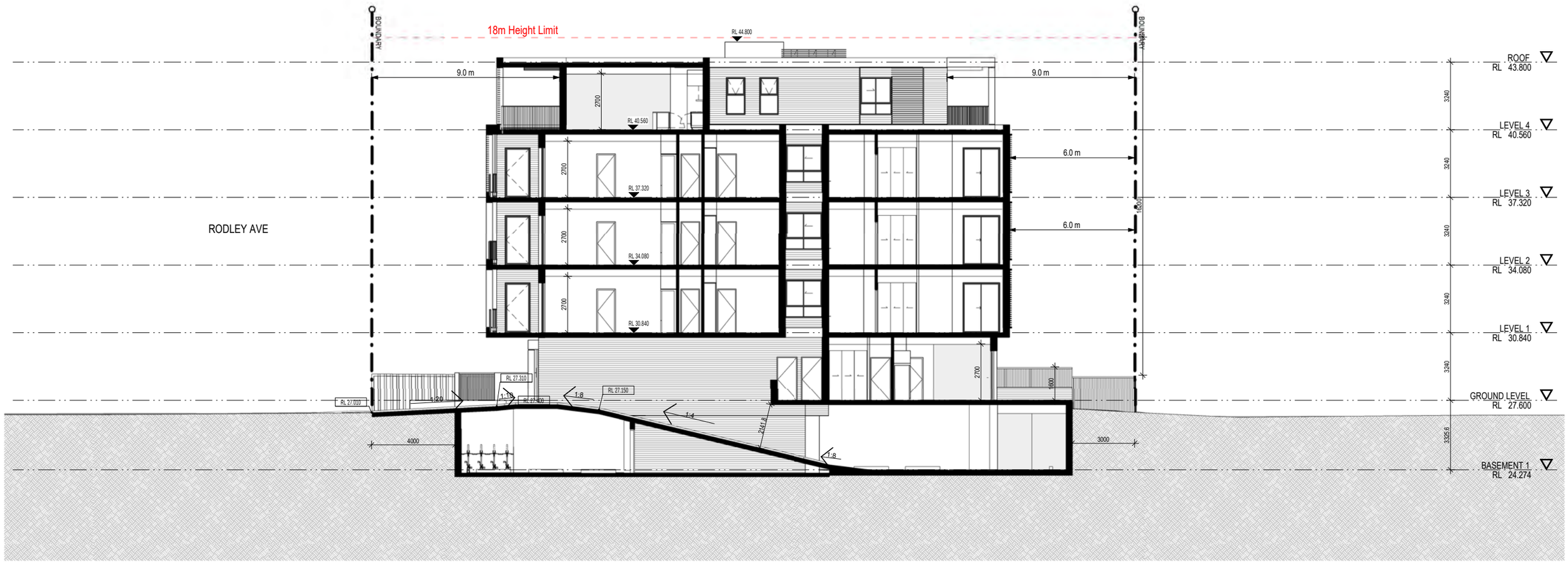
CLIENT
OLSSON PROPERTY GROUP

MORSON GROUP
NOMINATED ARCHITECT - P F MORSON REGISTRATION NUMBER 8100
ACN 159 480 056, ABN 41 159 480 056
www.morsongroup.com.au
(02) 9380 4946
PO Box 170, Potts Point, NSW 1335

SHEET SIZE: A1
SCALE: 1 : 100

SHEET NAME: **FLOOR PLAN - BASEMENT LEVEL -1**

DRAWING No. **DA12**
ISSUE No. **A**



ISSUE	DATE	AMENDMENT
A	15-06-2021	DA SUBMISSION

ELEVATIONS & SECTIONS LEGEND:
RL Relative Level
TOH Top of Hob
TOW Top of Wall

NOTES:
1. Read in conjunction with Window Schedule for glass types & frame finishes.

PROJECT
20023 - PROPOSED RESIDENTIAL DEVELOPMENT
ADDRESS
22-24 RODLEY AVENUE, PENRITH 2750

PROJECT No. **20026**
CLIENT
OLSSON PROPERTY GROUP

MORSON GROUP
NOMINATED ARCHITECT - P F MORSON REGISTRATION NUMBER 8100
ACN 159 480 056, ABN 41 159 480 056
www.morsongroup.com.au
(02) 9380 4946
PO Box 170, Potts Point, NSW 1335

SHEET SIZE: A1
SCALE: 1 : 100

SHEET NAME: **OVERALL SECTIONS - SECTION 1**

DRAWING No. **DA17**
ISSUE No. **A**

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Appendix D

Flood Advice Letter issued by Penrith City Council

Our reference: ECM 9253530
Contact: Dr Elias Ishak
Telephone: 4732 7579

24 August 2020

Mr Peter Morson
4/94 Oxford Street
DARLINGHURST NSW 2010

Dear Mr Morson

Flood Level Enquiry
Lot 51 & 52 DP 32844 - No. 22 & 24 Rodley Avenue Penrith

Please find enclosed Flood Level information for the above property.

Should you require any further information please do not hesitate to contact me on 4732 7579

Yours sincerely

Dr Elias Ishak
Senior Engineer – Floodplain Management

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrithcity.nsw.gov.au

Flood Information
Lot 51 DP 32844 No. 22 Rodley Avenue Penrith

Date of issue: 24 August 2020

The 1%AEP local overland flow flood level affecting the above property is estimated to be RL27.1m AHD.

Property less than 0.5m above the 1% AEP flood level is subject to Penrith Development Control Plan 2014 Section C3.5 Flood Planning. The Penrith Development Control Plan 2014 is available from Council's website www.penrithcity.nsw.gov.au.

Definitions

AEP – *Annual Exceedance Probability* – the chance of a flood of this size occurring in any one year.

AHD – *Australian Height Datum* – A standard level datum used throughout Australia, approximately equivalent to mean sea level.

Legend

	Extent of 1% AEP local catchment overland flow path. Generally depths less than 150mm is not shown.

Notes:

1. The contours shown above in yellow numbering are at 0.5m intervals and are based on Aerial Laser Scanning (ALS) Survey undertaken in 2002. The contour levels are approximate and for general information only. Accurate ground levels should be obtained by a Registered Surveyor.
2. The flood level is based on current information available to Council at the date of issue. The flood level may change in the future if new information becomes available. The 1% AEP flood is the flood adopted by Council for planning controls. Rarer and more extreme flood events will have a greater effect on the property.
3. Council's studies are reflected in flood mapping for the City which show properties potentially affected by overland flows in excess of 150mm.
4. This property is shown on Council's flood mapping as potentially so affected.
5. Council imposes flood related development controls where, in its opinion, such controls are justified. Such controls may or may not be imposed with respect to this property in the event of an application for development consent.
6. If a development proposal is submitted with respect to this property, Council will consider the possibility of flood or overland flow in the context of the application. Council may impose a requirement that the applicant for development consent carry out a detailed assessment of the possible overland water flows affecting the property (a flood study) and/or may impose other controls on any development designed to ameliorate flood risk.
7. You are strongly advised if you propose to carry out development upon the property, that you retain the assistance of an experienced flooding engineer and have carried out a detailed investigation.
8. Council accepts no liability for the accuracy of the flood levels (or any other data) contained in this certificate, having regard to the information disclosed in Notes "1" to "4". As such you should carry out and rely upon your own investigations.

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrithcity.nsw.gov.au

Dr Elias Ishak
Senior Engineer – Floodplain Management

Flood Information
Flood Level Information
Lot 52 DP 32844 No. 24 Rodley Avenue Penrith

Date of issue: 24 August 2020

The 1%AEP local overland flow flood level affecting the above property is estimated to be RL27.1m AHD.

Property less than 0.5m above the 1% AEP flood level is subject to Penrith Development Control Plan 2014 Section C3.5 Flood Planning. The Penrith Development Control Plan 2014 is available from Council's website www.penrithcity.nsw.gov.au.

Definitions

AEP – *Annual Exceedance Probability* – the chance of a flood of this size occurring in any one year.

AHD – *Australian Height Datum* – A standard level datum used throughout Australia, approximately equivalent to mean sea level.

Legend

	Extent of 1% AEP local catchment overland flow path. Generally depths less than 150mm is not shown.

Notes:

9. The contours shown above in yellow numbering are at 0.5m intervals and are based on Aerial Laser Scanning (ALS) Survey undertaken in 2002. The contour levels are approximate and for general information only. Accurate ground levels should be obtained by a Registered Surveyor.
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11. Council's studies are reflected in flood mapping for the City which show properties potentially affected by overland flows in excess of 150mm.
12. This property is shown on Council's flood mapping as potentially so affected.
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14. If a development proposal is submitted with respect to this property, Council will consider the possibility of flood or overland flow in the context of the application. Council may impose a requirement that the applicant for development consent carry out a detailed assessment of the possible overland water flows affecting the property (a flood study) and/or may impose other controls on any development designed to ameliorate flood risk.
15. You are strongly advised if you propose to carry out development upon the property, that you retain the assistance of an experienced flooding engineer and have carried out a detailed investigation.
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