FLOOD RISK MANAGEMENT PLAN

FLOOD RISK MANAGEMENT REPORT

23 King Street
Newport

April 2021

"Seascape" Suite 7 22-26 Fisher Rd Dee Why NSW 2099 | T 02 9982 7092 | F 02 9982 5898 | enquire@taylorconsulting.net.au | www.taylorconsulting.net.au

TABLE OF CONTENTS

APPENDICES

Appendix A:	Locality Map
Appendix B:	Site & Architectural Plans
Appendix C:	Council Flood Maps & Data
Appendix D:	Flood Sign & Emergency Assembly Point Plan
Appendix E:	Flood Actions Checklist
Appendix F:	Emergency Contacts List
Appendix G:	Flood Compatible Materials & Building Components

1. INTRODUCTION

The site has been identified by Northern Beaches Council as being flood affected for the 1 in 100 year storm event. This document details the measures to be taken to ensure that the risks to both the site buildings and occupants are minimised and managed in accordance with Council's DCP requirements.

It is the intention of the author that copies of this Flood Risk Management Report are kept by The Owner where it can be used to manage and prepare the site for a significant flood event.

It is also the intention that the Emergency Response Plan and associated signage be fixed to the wall in a clearly visible location in the existing dwelling.

The Owner will ultimately be responsible for the implementation of this plan and is responsible for ensuring tasks are undertaken or the delegation of those tasks.

2. SITE

The site is located in the Newport area and is situated to the west of Pittwater Road in a catchment that drains into Salt Pan Cove. A site locality map is included in Appendix A.

The site covers 784 m^2 of area and contains a Council pipeline which follows the line of an historical watercourse which traverses the site and drains catchment flows to the low point in the south-western corner of the site. A site detail survey is attached in Appendix B.

The site currently contains an existing 2 level brick and timber dwelling. An existing garage is situated to the east of the dwelling and in the highest portion of the site.

Catchment flows in excess of the Council piped system capacity built and overtop the kerb and gutter in Irrubel Road to the north and travel overland across the site, inundating both the subject and adjacent sites for the 1 in 100 year storm event.

3. PROPOSED DEVELOPMENT

It is proposed to demolish the existing garage and provide a new secondary dwelling in the very eastern (upper) portion of the site.

It is also proposed to provide a new carport slab in ground and associated roof structure in the western portion of the site and which is to be accessed off King Street at the wetern end of the site.

Architectural details for the proposed works are contained in Appendix B.

4. FLOOD EVENTS

The site is identified as being flood affected for the 1 in 100 year storm event and maps illustrating the Council flood designations and data for the site are contained within Appendix C.

4.1 FORECASTS & WARNINGS

There are usually no specific warnings issued by the Bureau of Meteorology for Newport and as such the monitoring of general warnings for the Sydney metropolitan area with respect to severe weather warnings will be critical in the process of managing risks to the site.

The Bureau of Meteorology website (www.bom.gov.au) has rainfall forecast maps and also any warnings for predicted severe weather events.

The Owner & other relevant occupants should have his/her mobile phone number added to

the SES contact list for the issue of SMS alerts for severe weather warnings.

4.2 FLOOD DATA FOR THE SITE

The site is defined by the Newport Flood Study Review 2019 as being affected by the 1 in 100 year flood event.

A summary of the mainstream flood information for the area of the proposed secondary dwelling is as follows:

- 1 in 100 year Hazard Classification: **Low**
- Flood Life Hazard Classification: **H1**
- 1% Flood Hydraulic Category : **Flood Fringe**
- 1% overland depth at proposed ground-floor addition: **N/A**
- Maximum Flood Planning Level: **N/A**
- Probable Maximum Flood Level**: RL 16.54**

A summary of the mainstream flood information for the area of the proposed carport is as follows:

- 1 in 100 year Hazard Classification: **High**
- Flood Life Hazard Classification: **H4-H5**
- 1% Flood Hydraulic Category : **Storage/Floodway**
- 1% overland depth at proposed carport: **300mm**
- Maximum Flood Planning Level: **RL 14.12**
- Probable Maximum Flood Level**: RL 14.49**

The relevant Council issued flood data is contained within an Appendix attached to this report.

4.3 FLOOD BEHAVIOUR

In a major storm event, the site will experience minor inundation from the primary overland flow from Irrubel road to the north, as stormwater runs down and along the line of the Council stormwater pipe traversing the site.

As the site of the proposed carport addition is designated as floodway, management of the site with respect to potential flooding is required to ensure the ongoing protection of life and property.

4.4 EMERGENCY RESPONSE

This Flood Risk Emergency Assessment Report recognises that protection of life is of primary importance, followed by a secondary philosophy of attempting to minimise damage and disruption to the site's proposed domestic operation.

The emergency response to a potential flood event will be initiated upon the occurrence of a certain 'trigger' threshold, upon which the emergency response plan will be actioned.

4.5 THE EMERGENCY TRIGGER(S)

It is critical to the success of this plan that during extremely heavy & intense rainfall events, The Owner/ is able to closely monitor the drainage conditions in the yard at the front of the site.

The initial trigger for commencement of the emergency response plan follows the observation of overland stormwater flows inundating the roadway and adjacent site following extremely heavy and intense rainfall events.

Upon the visual confirmation of this trigger event, the emergency response described in Section 5 is to be enacted.

4.6 TIME NEEDED TO RESPOND

It is considered that a total period of 5 minutes would be required for The Owner to secure the ground floor doors, turn off the relevant mains and services and ensure that all persons within the premises have been notified and are located to the nominated emergency assembly point.

4.7 THE EMERGENCY ASSEMBLY POINT

Consistent with the H1 flood life hazard classification, an appropriate emergency response to a flood event is to 'shelter-in-place' in the upper levels of the existing dwelling.

5 OWNERS RESPONSIBILITIES

5.1 BEFORE THE FLOOD

Trigger for action: Always

- The Owner will ultimately be responsible for the implementation of this plan. The Owner will be responsible for ensuring tasks are undertaken or delegating those tasks.
- Through a systematic induction process, The Owner, occupants & other relevant persons are to be made aware of the possibility of flooding and the procedures to be followed if a flood were to occur.
- The Owner should continue to develop detailed procedures to support the actions required by this plan. Procedures will include clear responsibilities in the event of a flood, and back up resources should key persons not be present.
- The emergency response sign is to be permanently affixed to a wall in a highly visible location.

5.2 WHEN A FLOOD IS LIKELY

Trigger for action: When the forecasts predict severe weather or significant amounts of rainfall (land is saturated) are observed

- The Owner will monitor weather forecasts and warnings.
- The Owner should prepare for the potential emergency assembly at the nominated point.

5.3 DURING A FLOOD

Trigger for action: When flood waters are observed either inundating the road reserve across the Waratah Street roadway or as overland flows in the adjacent site to the east:

- The phases of the emergency response shall be:
- The Owner is to request all occupants to evacuate to the emergency assembly area in the upper levels of the existing dwelling.
- The Owner is to sweep the premises following emergency response to ensure that all occupants have sought refuge to the emergency assembly area.
- The Owner is to evacuate to the emergency assembly area.

➢ Emergency services to be notified by The Owner of the situation at the site (Appendix F).

5.4 AFTER A FLOOD

Trigger for action: When emergency services give the all clear to return

- No persons should be allowed to leave the site while flooding is still occurring or has recently occurred.
- Occupants can leave the site only after the all clear has been given by emergency services or Council
- Where necessary, the site is to be checked by professionals before any re-use of the site or it's utility services.
- A de-brief is to be held between The Owner and other occupants and may involve emergency services and/or council employees. The flood event and response procedures, including the use of this plan, are to be reviewed.
- Changes may be made to the plan and the requirements for future emergency emergency responses should the review identify any improvements which may be made.

6.0 FLOOD COMPLIANCE

It is proposed to develop the site such that the objectives of Council's Flood Risk Management Policy are met.

6.1 SPECIFIC CONTROLS

Section B3.11 of the Pittwater 21 DCP controls are to be applied to each of the lots.

The proposed secondary dwelling is to be situated in an area not affected by the Flood Planning Level or Probable Maximum flood and as such no special planning requirements apply.

Conversely the proposed carport is situated in an area denoted as high flood risk and has such will need to satisfy council's deemed to comply flood controls as follows:

High Flood Risk Matrix – Residential Category

		High Flood Risk Precinct				
		Vulnerable & Critical Use	Residential Use	Business & Industrial Use	Recreational & Environmental Use	Subdivision & Civil Works
A	Flood effects caused by Development	A1 A2	A1 A2	A1 A2	A1 A2	A1 A2
B	Building Components & Structural	B1 B2 B3	B1 B2 B3	B1 B2 B3	B1 B2 B3	
C	Floor Levels	C2 C3	C1 C3 C4 C6	C1 C3 C4 C6 C7	C3	C5
D	Car Parking	D1 D2 D3 D4 D7	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1
E	Emergency Response	E1 E2	E1	E1	E1	E3
F	Fencing	F1	F1	F1	F1	F1
G	Storage of Goods	G1	G1	G1	G1	
H	Pools	H1	H1	H1	H1	H1

Flood Effects Caused By Development

A1 – ***Development shall not be approved unless it can be demonstrated in a Flood Management Report that it has been designed and can be constructed so that in all events up to the 1% AEP event:***

a) There are no adverse impacts on flood levels or velocities caused by alterations to the flood conveyance; and

b) There are no adverse impacts on surrounding properties; and

c) It is sited to minimise exposure to flood hazard

Major developments and developments likely to have a significant impact on the PMF flood regime will need to demonstrate that there are no adverse impacts in the Probable Maximum Flood.

Outcome – The provisions of this Flood Risk Management Report demonstrate that the flood risks have been adequately addressed in accordance with the provisions of the *Flood Prone Land Design Standard.*

A2 – ***Development shall not be approved unless it can be demonstrated in a Flood Management Report that in all events up to the 1% AEP event there is no net loss of flood storage.***

Consideration may be given for exempting the volume of standard piers from flood storage calculations.

If Compensatory Works are proposed to balance the loss of flood storage from the development, the Flood Management Report shall include detailed calculations to demonstrate how this is achieved.

Outcome – The proposed carport slab is to be constructed on the ground to match to the existing surface levels and as such there will be no significant loss of flood storage following it's construction.

Building Components & Structural Soundness

B1 - All buildings shall be designed and constructed with flood-compatible materials in accordance with "Reducing Vulnerability of Buildings to Flood Damage: Guidance for Building in Flood-Prone Areas", Hawkesbury-Nepean Floodplain Management Steering Committee (2006).

Outcome – Carport structure is to be constructed for flood compatibility and able to withstand forces associated with floodwaters impacts and from and floating debris.

B2 – All new development must be designed and constructed to ensure structural integrity up to the Flood Planning Level, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. Where shelter-in-place refuge is required, the structural integrity for the refuge is to be up to the Probable Maximum Flood level. Structural certification shall be provided confirming the above.

Outcome – Carport structure is to be constructed for flood compatibility and able to withstand forces associated with floodwaters impacts and from and floating debris.

Secondary dwelling is above the PMF level and as such no flood proofing is required for shelter-in-place within the secondary dwelling.

B3 – All new electrical equipment, power points, wiring, fuel lines, sewerage systems or any other service pipes and connections must be waterproofed and/or located above the Flood Planning Level. All existing electrical equipment and power points located below the Flood Planning Level within the subject structure must have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.

Outcome – This requirement is not applicable to the secondary dwelling as it is above the PMF level.

Services and utilities provided to the new carport will need to comply with these requirements and be lifted above the Flood Planning Level of R.L. 14.12 where necessary.

Floor Levels

C1 – New floor levels within the development shall be at or above the Flood Planning Level.

Outcome – The secondary dwelling floor level of Rl 16.65 is above the Flood Planning Level for this area of the site and as such complies with Council requirements.

C3 – ***All new development must be designed and constructed so as not to impede the floodway or flood conveyance on the site, as well as ensuring no net loss of flood storage in all events up to the 1% AEP event.***

For suspended pier/pile footings:

a) The underfloor area of the dwelling below the 1% AEP flood level is to be designed and constructed to allow clear passage of floodwaters, taking into account the potential for small openings to block; and
b) At least 50% of the perimeter of the underfloor area is of an open design from the natural ground level up to the 1% AEP flood level; and
c) No solid areas of the perimeter of the underfloor area would be permitted in a floodway

Outcome – This requirement not applicable as proposed secondary dwelling is constructed out of the flood extents for the site.

Alternatively the carport slab will be constructed at the existing ground surface levels so as to not affect the existing flood regime through the site.

C4 - A one-off addition or alteration below the Flood Planning Level of less than 30 square metres (in total, including walls) may be considered only where:

a) It is an extension to an existing room; and
b) The Flood Planning Level is incompatible with the floor levels of existing room; and
c) Out of the 30sqm, not more than 10sqm is below the 1% AEP flood level

This control will not be permitted if this provision has previously been utilised since the making of this Plan.

The structure must be flood-proofed to the Flood Planning Level, and the Flood Management Report must demonstrate that there is no net loss of flood storage in all events up to the 1% AEP event.

Outcome - Not applicable as no new habitable floor levels below the Flood Planning Level are proposed.

C6 - Consideration may be given to the retention of an existing floor level below the Flood Planning Level when undertaking a first-floor addition provided that:

a) It is not located within a floodway; and
b) The original foundations are sufficient to support the proposed final structure above them. The Flood Management Report must include photos and the structural certification required as per Control B2 must consider whether the existing foundations are adequate or should be replaced; and
c) none of the structural supports/framing of existing external walls of are to be removed unless the building is to be extended in that location; and
d) the ground floor is flood-proofed

Outcome - Not applicable as no new habitable floor levels below the Flood Planning Level are proposed.

Car Parking

D1 – ***Open car park areas and carports shall not be located within a floodway.***

Outcome – Complies as the proposed carport is to be located in an area which is designated as predominantly a flood storage area.

D2 – The lowest floor level of open car parks and carports shall be constructed no lower than the natural ground levels, unless it can be shown that the car park of carport is free-draining with a grade greater than 1% and that flood depths are not increased.

Outcome – Complies as significant changes to the existing surface levels in and around the new carport area are not proposed.

D3 - Carports must be of open design, with at least two sides completely open such that flow is not obstructed up to the 1% AEP flood level. Otherwise it will be considered to be enclosed. When undertaking a like-for-like replacement and the existing garage/carport is located on the street boundary and ramping is infeasible, consideration may be given for dry flood-proofing up to the 1% AEP flood level.

Outcome - Complies as the proposed carport will have open sides to allow for the unobstructed flow of floodwater through the site

D4 - Where there is more than 300mm depth of flooding in a car park or carport during a 1% AEP flood event, vehicle barriers or restraints are to be provided to prevent floating vehicles leaving the site. Protection must be provided for all events up to the 1% AEP flood event.

Outcome - Flood water depth at proposed carport is not more than 300mm and as such no vehicle restraints are required.

D5 - Enclosed garages must be located at or above the 1% AEP level.

Outcome - Not applicable as no new enclosed garage is proposed.

D6 - All enclosed car parks (including basement car parks) must be protected from inundation up to the Flood Planning Level. All access, ventilation, driveway crests and any other potential water entry points to any enclosed car parking shall be above the Flood Planning Level.

Where a driveway is required to be raised it must be demonstrated that there is no net loss to available flood storage in any event up to the 1% AEP flood event and no impact on flood conveyance through the site.

Council will not accept any options that rely on electrical, mechanical or manual exclusion of the floodwaters from entering the enclosed car park.

Outcome - Not applicable as no new enclosed garage is proposed.

Flood Emergency Response

E1 – If the property is affected by a Flood Life Hazard Category of H3 or higher, then Control E1 applies and a Flood Emergency Assessment must be included in the Flood Management Report.

If the property is affected by a Flood Life Hazard Category of H6, then development is not permitted unless it can be demonstrated to the satisfaction of the consent authority that the risk level on the property is or can be reduced to a level below H6 or its equivalent.

If the property is flood affected but the Flood Life Hazard Category has not been mapped by Council, then calculations for its determination must be shown in the Flood Management Report, in accordance with the "Technical Flood Risk Management Guideline: Flood Hazard", Australian Institute for Disaster Resilience (2012).

Where flood-free evacuation above the Probable Maximum Flood level is not possible, new development must provide a shelter-in-place refuge where:

- ***a) The floor level is at or above the Probable Maximum Flood level; and***
- ***b) The floor space provides at least $2m^2$ per person where the flood duration is long (six or more hours) in the Probable Maximum Flood event, or $1m^2$ per person for less than 6 hours;***
- ***c) It is intrinsically accessible to all people on the site, plainly evident, and self-directing, with sufficient capacity of access routes for all***

occupants without reliance on an elevator; and

d) It must contain as a minimum: sufficient clean water for all occupants; portable radio with spare batteries; torch with spare batteries; and a first aid kit

Class 10 classified buildings and structures (as defined in the Building Codes of Australia) are excluded from this control.

In the case of change of use or internal alterations to an existing building, a variation to this control may be considered if justified appropriately by a suitably qualified professional.

Note that in the event of a flood, occupants would be required to evacuate if ordered by Emergency Services personnel regardless of the availability of a shelter-in-place refuge.

Outcome – The emergency response as detailed in this report is to 'shelter-in-place' within the secondary dwelling for significant flood events.

The owner of the site should provide items as per d) to provide for a shelter-in-place scenario in potential extreme storm event.

Fencing

F1 – Fencing (including pool fencing, boundary fencing, balcony balustrades and accessway balustrades) shall be designed so as not to impede the flow of flood waters and not to increase flood affectation on surrounding land. At least 50% of the fence must be of an open design from the natural ground level up to the 1% AEP flood level. Less than 50% of the perimeter fence would be permitted to be solid. Openings should be a minimum of 75mm x 75mm.

Outcome – Fencing along the flood affected boundaries of the site is to be provided as per requirements above.

Storage Of Goods

G1 - Hazardous or potentially polluting materials shall not be stored below the Flood Planning Level unless adequately protected from floodwaters in accordance with industry standards.

Outcome – This requirement is not applicable to the new secondary dwelling as is above Flood Planning Level.

For the carport all new electrical equipment, power points, wiring, fuel lines, sewerage systems or any other service pipes and connections must be waterproofed and/or located above the Flood Planning Level of RL 14.12.

Pools

H1 - Pools located within the 1% AEP flood extent are to be in-ground, with coping flush with natural ground level. Where it is not possible to have a pool coping flush with natural ground level, it must be demonstrated that the development will result in no net loss of flood storage and no impact on flood conveyance on or from the site.

All electrical equipment associated with the pool (including pool pumps) is to be waterproofed and/or located at or above the Flood Planning Level.

Outcome – No new pool is proposed.

7.0 SUMMARY

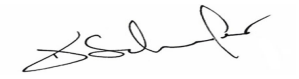
This report is a plan for the site for major flood events to be incorporated by The Owners into the on-going management protocols for the site to manage the flood risks.

The report contains procedural information to ensure the safety of occupants during flood events. It also contains information regarding the nature of the proposed works and measures to be incorporated to ensure the satisfactory performance of any new building elements.

The recommendations and strategies within this report ensure compliance with Pittwater 21 DCP Part B3.11 'Flood Prone Land'.

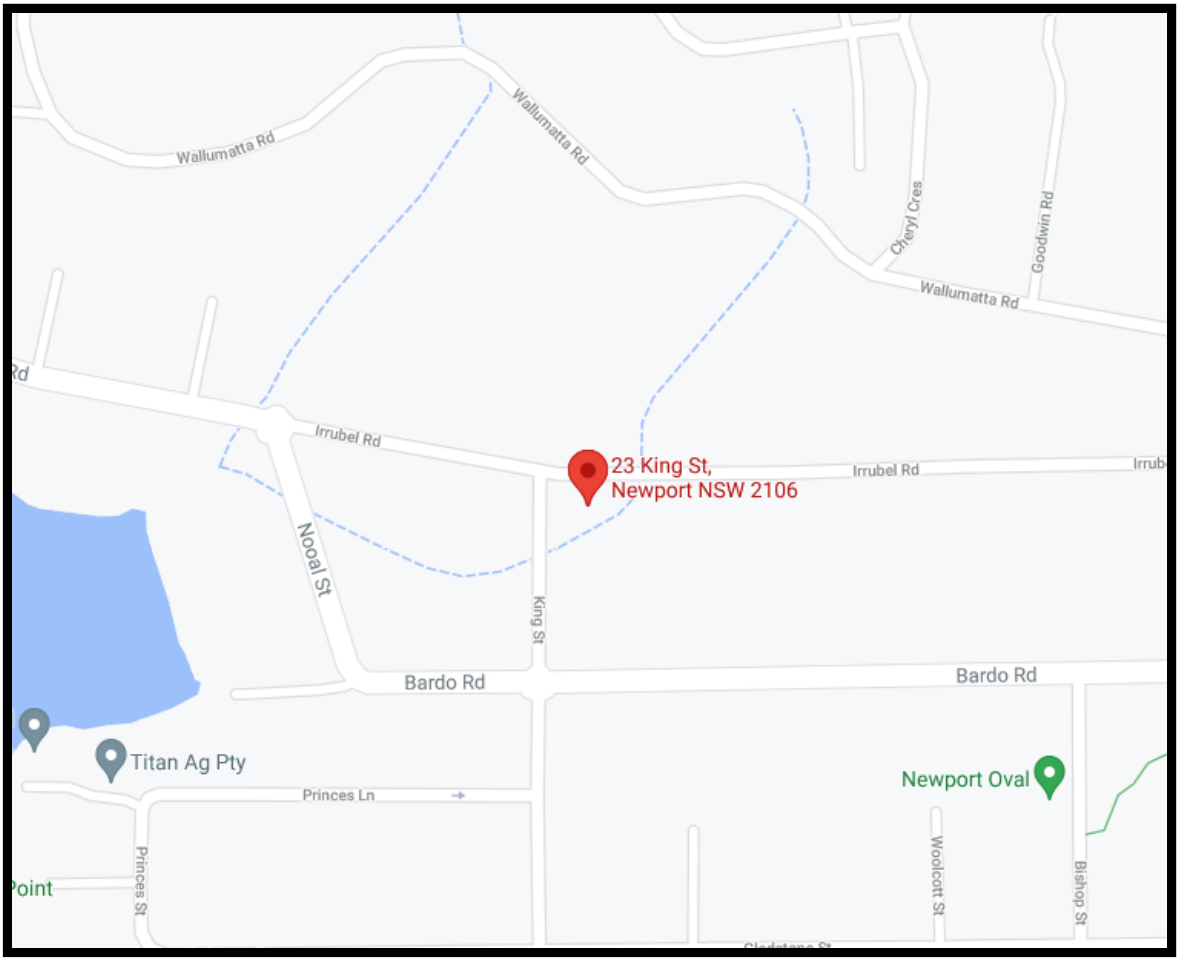
Should you have any questions or queries please do not hesitate to contact the undersigned.

TAYLOR CONSULTING



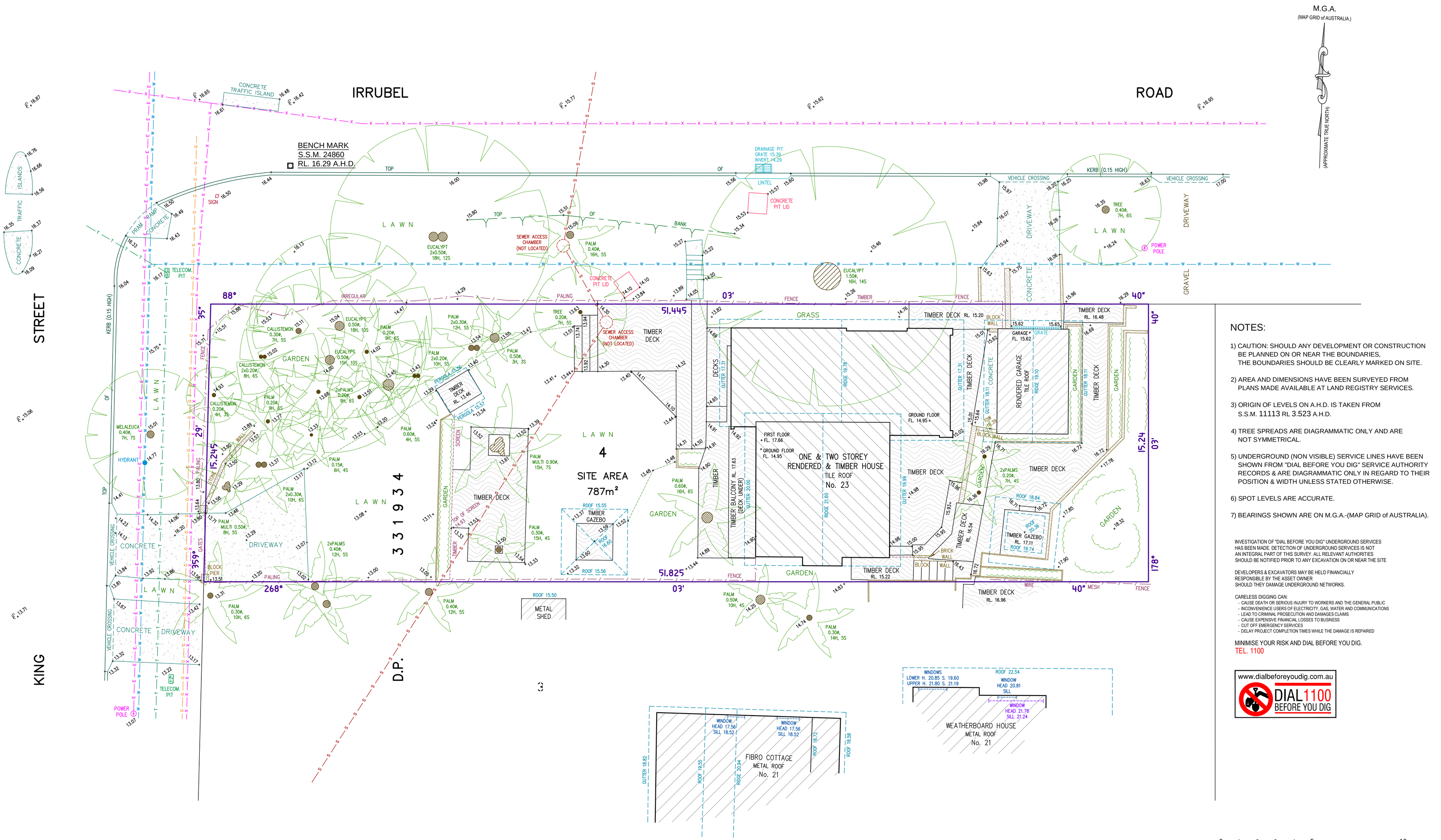
D M SCHAEFER - Director
B.E. Civil (Hons) M.I.E. Aust. (22 years)

Appendix A



Locality Map - 23 King Street, Newport

Appendix B



NOTES:

1) CAUTION: SHOULD ANY DEVELOPMENT OR CONSTRUCTION BE PLANNED ON OR NEAR THE BOUNDARIES, THE BOUNDARIES SHOULD BE CLEARLY MARKED ON SITE.

2) AREA AND DIMENSIONS HAVE BEEN SURVEYED FROM PLANS MADE AVAILABLE AT LAND REGISTRY SERVICES.

3) ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM S.S.M. 11113 RL 3.523 A.H.D.

4) TREE SPREADS ARE DIAGRAMMATIC ONLY AND ARE NOT SYMMETRICAL.

5) UNDERGROUND (NON VISIBLE) SERVICE LINES HAVE BEEN SHOWN FROM "DIAL BEFORE YOU DIG" SERVICE AUTHORITY RECORDS & ARE DIAGRAMMATIC ONLY IN REGARD TO THEIR POSITION & WIDTH UNLESS STATED OTHERWISE.

6) SPOT LEVELS ARE ACCURATE.

7) BEARINGS SHOWN ARE ON M.G.A.-(MAP GRID of AUSTRALIA).

INVESTIGATION OF "DIAL BEFORE YOU DIG" UNDERGROUND SERVICES HAS BEEN MADE. DETECTION OF UNDERGROUND SERVICES IS NOT AN INTEGRAL PART OF THIS SURVEY. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:
- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG.
TEL. 1100

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

0 1 2 3 4 5 10 METRES

SCALE 1:100

LEGEND

TREE 0.10ø, 8H, 4S — DENOTES APPROX. 0.1m DIAMETER OF TREE; DENOTES APPROX. 5m HEIGHT OF TREE; DENOTES APPROX. 4m SPREAD OF TREE
℄ — DENOTES CENTRE LINE OF ROAD
GUTTER — DENOTES TOP OF GUTTER
TOW — DENOTES TOP OF WALL
DENOTES TIMBER WALL

UNDERGROUND ELECTRIC LINES
OVERHEAD ELECTRIC LINES
BOARDS SEWER
TELECOMMUNICATION LINES
WATER LINES
GAS LINES

Bee & Lethbridge
Quality Surveying & Development Solutions

Bee & Lethbridge Pty Ltd
Suite 2, 14 Starkey Street,
PO Box. 330, Forestville, NSW 2087
Phone: 9451 6757 Fax: 9975 3535
Email: survey@beeleth.com.au
ABN: 13 003 194 447
www.beeleth.com.au

PLAN SHOWING BOUNDARIES, RELATIVE HEIGHTS & PHYSICAL FEATURES OVER LOT 4 IN D.P. 331934 KNOWN AS No. 23 KING STREET, NEWPORT.

L.G.A.: NORTHERN BEACHES

CLIENT	Ms N, Ms T. & Mr J. HEERS			REF No. 21327
PROPERTY	No. 23 KING STREET, NEWPORT			
DATUM	A.H.D.	SCALE 1:100 @ A1	DATE 21/06/2019	SHEET No. 1 of 1
SURVEYED	S.P.	DRAWN S.C.	DWG No. 21327	REV No. 00

NUMBER	SHEET NAME	REVISION
DA000	COVER PAGE & COMPLIANCE	A
DA050	3D VIEWS	A
DA100	EXISTING SITE PLAN	A
DA102	EXISTING GROUND FLOOR PLAN	A
DA103	EXISTING LEVEL 1 PLAN	A
DA104	EXISTING ROOF PLAN	A
DA112	DEMOLITION - GROUND FLOOR PLAN	A
DA113	DEMOLITION - LEVEL 1 PLAN	A
DA120	PROPOSED SITE PLAN	A
DA121	PROPOSED GROUND FLOOR PLAN	A
DA122	PROPOSED LEVEL 1 PLAN	A
DA123	PROPOSED ROOF PLAN	A
DA200	SECTIONS	A
DA201	SECTIONS	A
DA202	SECTIONS	A
DA300	ELEVATIONS	A
DA301	ELEVATIONS	A
DA302	ELEVATIONS	A
DA401	AREA CALCULATIONS	A
DA501	SHADOW DIAGRAMS - JUNE 21 - 9AM	A
DA502	SHADOW DIAGRAMS - JUNE 21 - 12PM	A
DA503	SHADOW DIAGRAMS - JUNE 21 - 3PM	A
DA800	EXTERNAL FINISHES	A
DA900	8M HEIGHT PLANE	A

23 KING STREET NEWPORT

ALTERATION AND ADDITION - GRANNY FLAT

Walsh Architects

Registered Architect
ACT 2624 NSW 10366

scott@walsharchitects.com.au
0466 049 880

1 PROPOSED GRANNY FLAT - VIEW FROM IRRUBEL ROAD

2 PROPOSED NEW DECKING / LANDSCAPING - VIEW FROM KING STREET

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT

Client: NADIA HEERS

Walsh Architects

Registered Architect
ACT 2624 NSW 10366

scott@walshархitects.com.au
0466 049 880

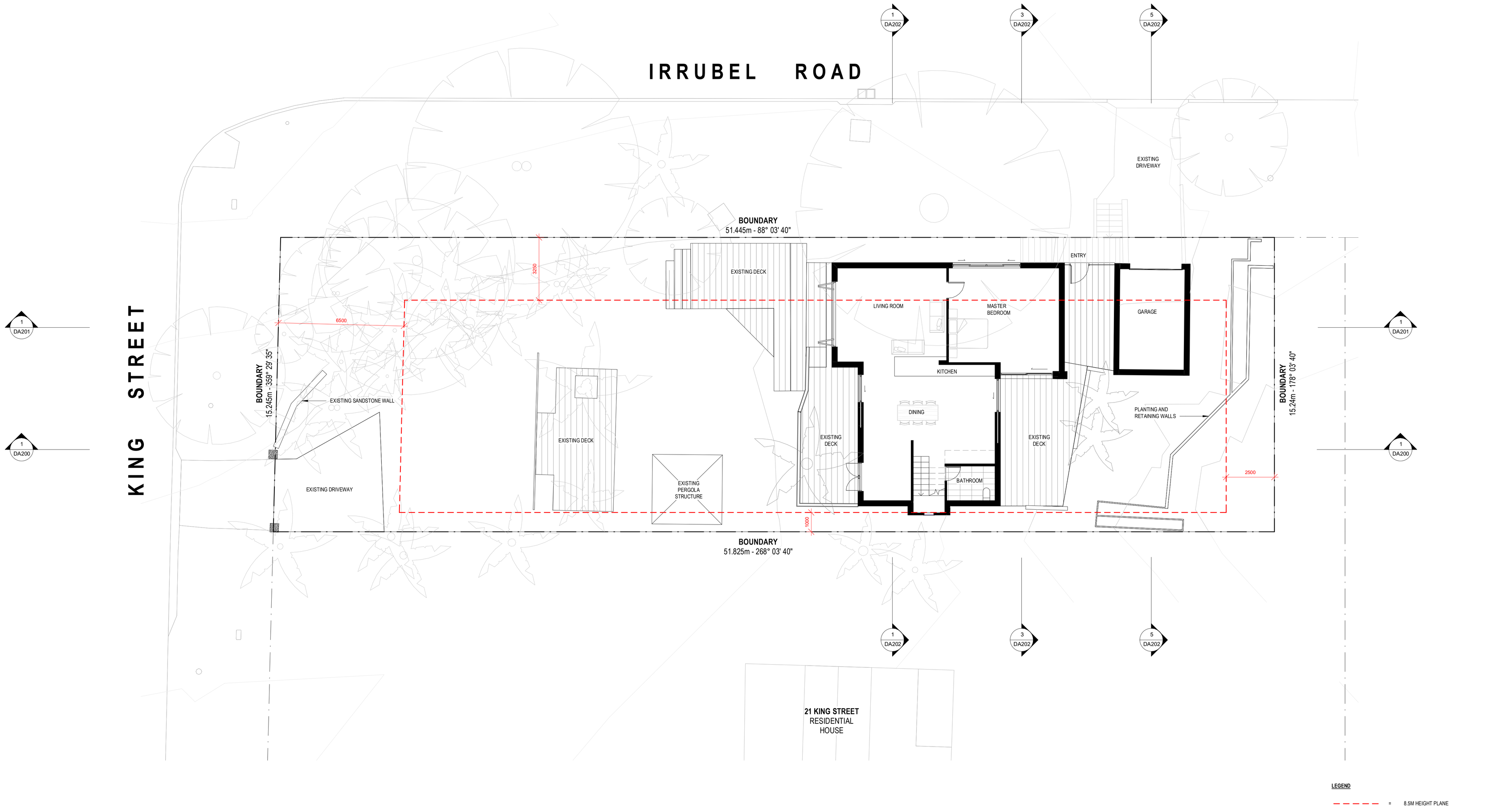
Scale
@ A1

Sheet Name
3D VIEWS

Number
DA050

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A



Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT

Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

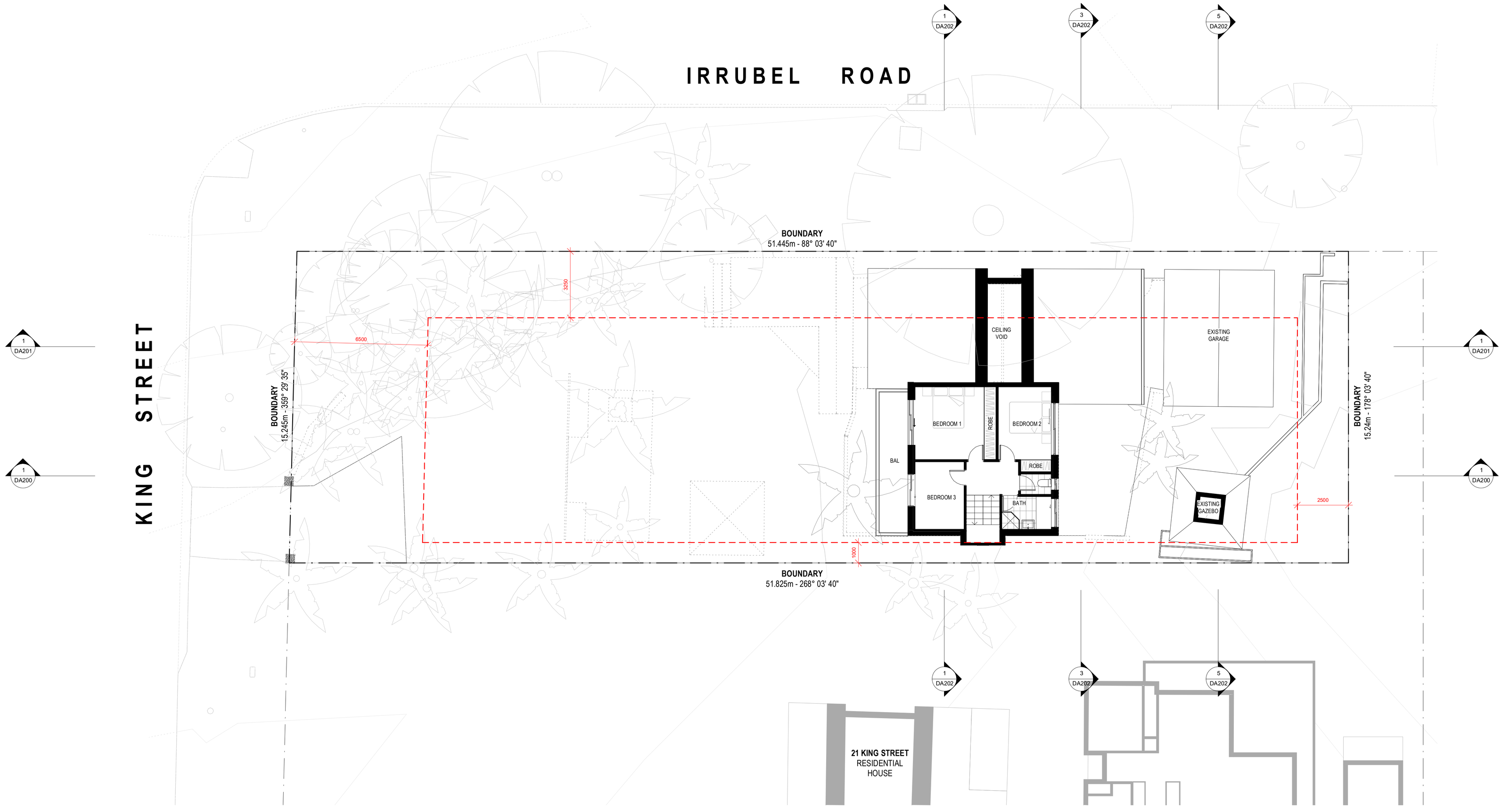
Scale
1 : 100 @ A1

Sheet Name
EXISTING GROUND FLOOR PLAN

Number
DA102

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A



Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT

Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

Scale
1 : 100 @ A1

Sheet Name
EXISTING LEVEL 1 PLAN

Number
DA103

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A

IRRUBEL ROAD

KING STREET

BOUNDARY
51.445m - 88° 03' 40"

BOUNDARY
15.245m - 359° 29' 35"

BOUNDARY
15.24m - 178° 03' 40"

BOUNDARY
51.825m - 268° 03' 40"

EXISTING RESIDENCE

EXISTING GARAGE

EXISTING RESIDENCE

EXISTING GAZEBO

21 KING STREET
RESIDENTIAL
HOUSE

6500

3250

2500

1000

1 DA202

3 DA202

5 DA202

1 DA201

1 DA200

LEGEND

= 8.5M HEIGHT PLANE

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT

Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walshachitects.com.au
0466 049 880

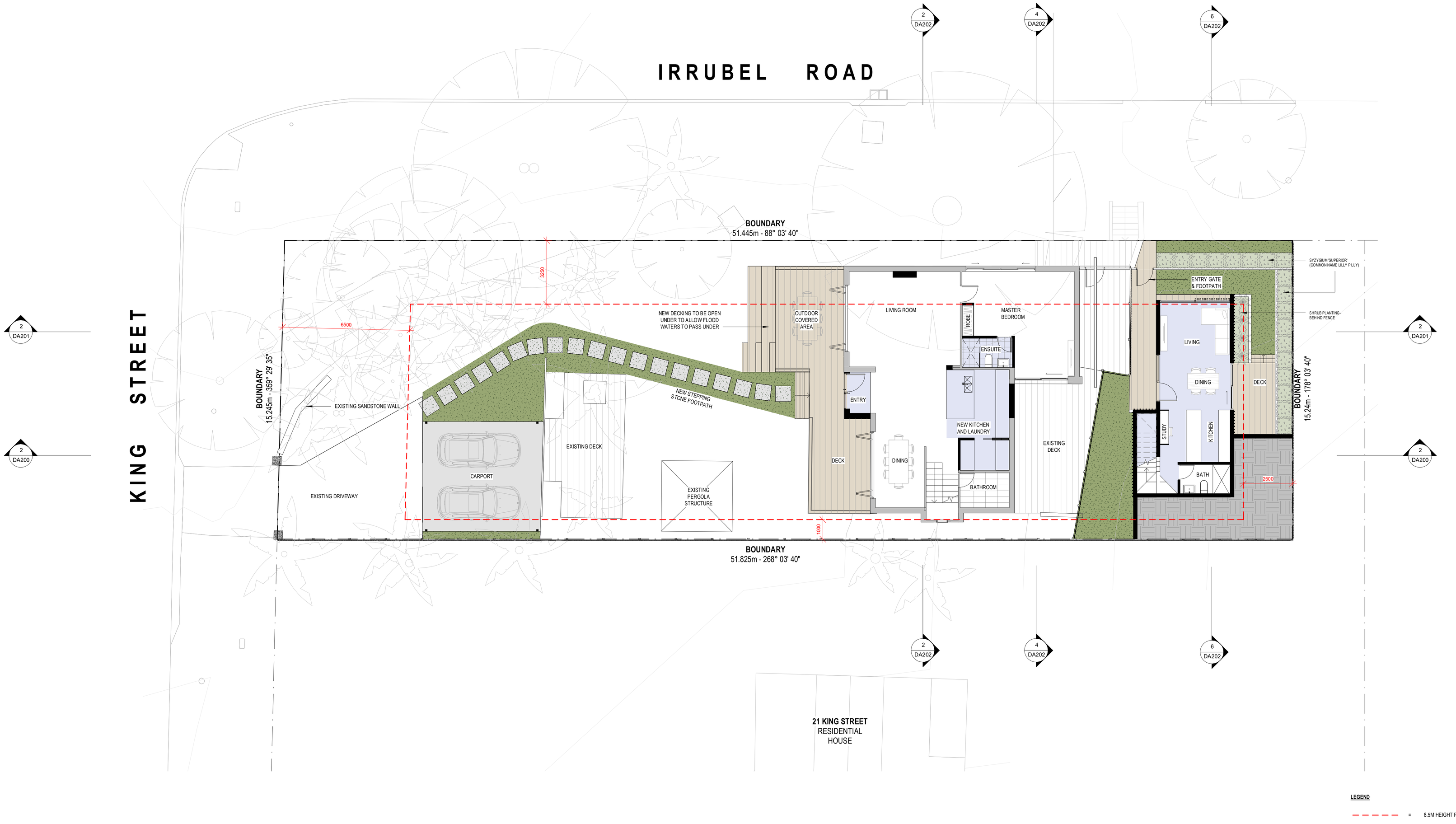
Scale
1 : 100 @ A1

Sheet Name
EXISTING ROOF PLAN

Number
DA104

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A



LEGEND

= 8.5M HEIGHT PLANE

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT

Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

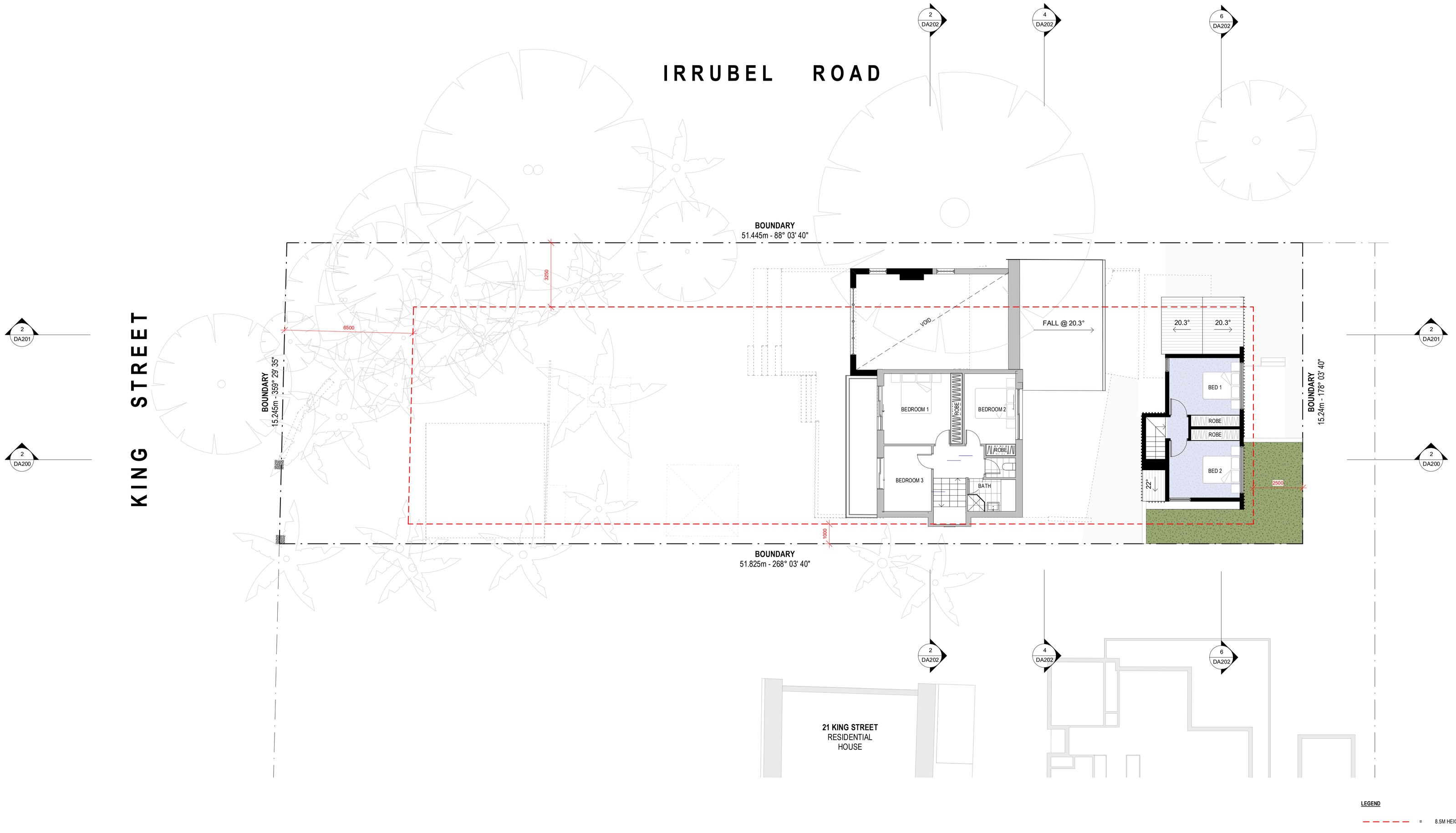
Scale
1 : 100 @ A1

Sheet Name
PROPOSED GROUND FLOOR PLAN

Number
DA121

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A



LEGEND

= 8.5M HEIGHT PLANE

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT

Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

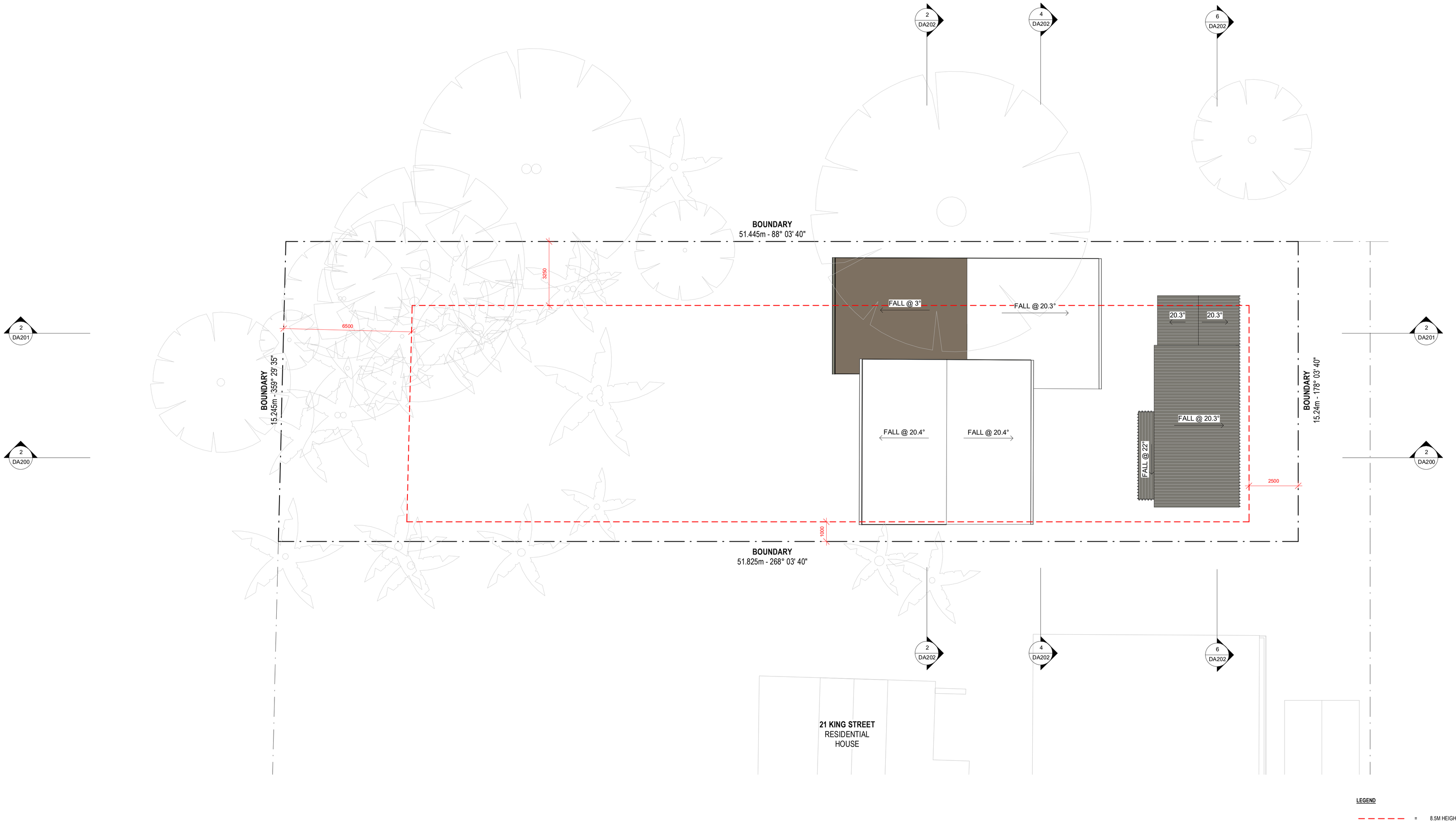
Scale
1 : 100 @ A1

Sheet Name
PROPOSED LEVEL 1 PLAN

Number
DA122

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A



LEGEND

= 8.5M HEIGHT PLANE

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT

Client: NADIA HEERS

Walsh Architects

Registered Architect
ACT 2624 NSW 10366

scott@walsharchitects.com.au
0466 049 880

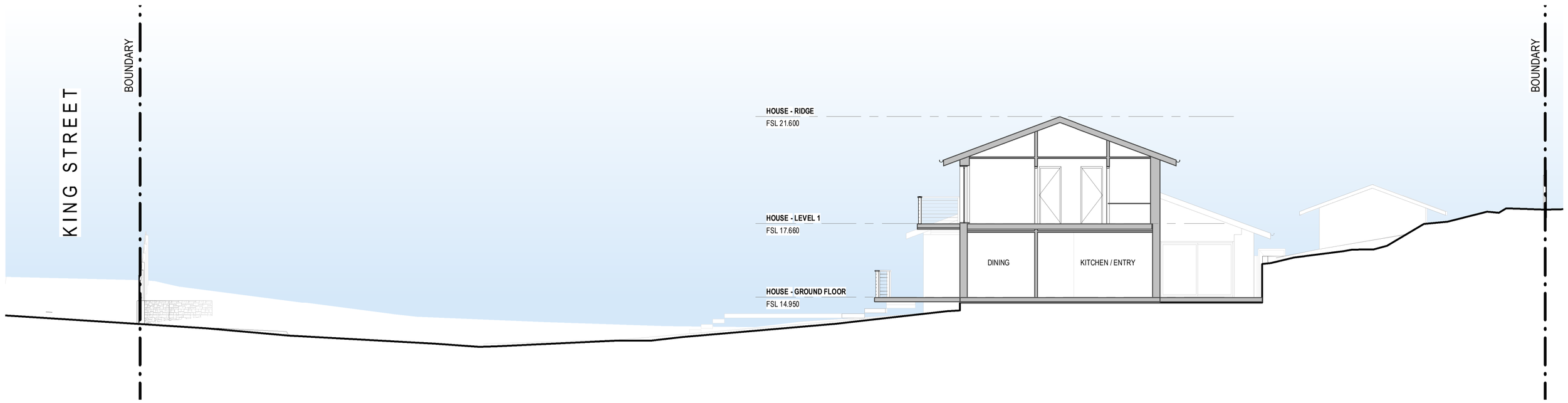
Scale
1 : 100 @ A1

Sheet Name
PROPOSED ROOF PLAN

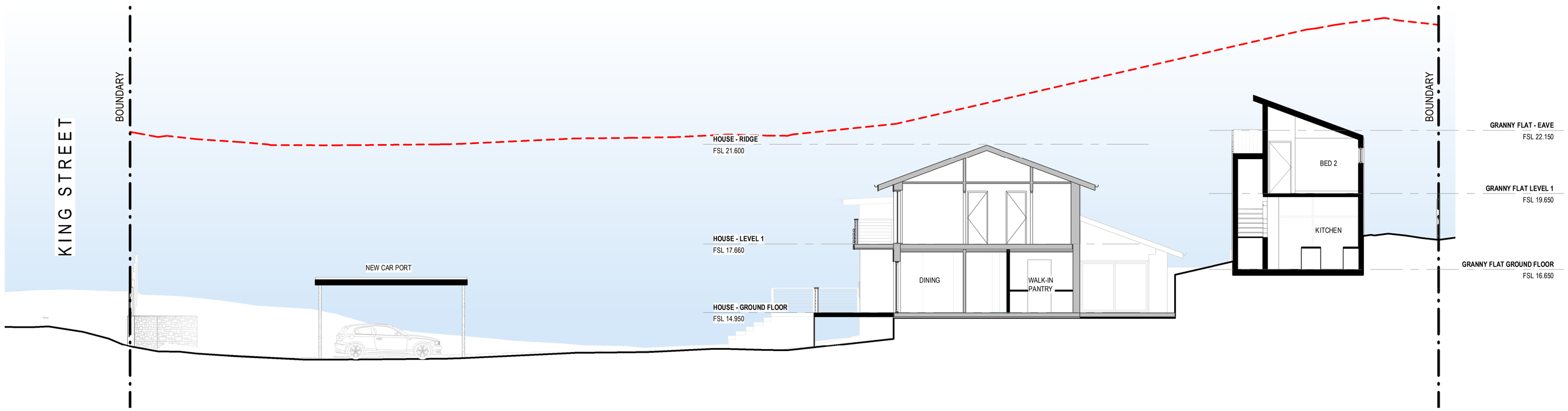
Number
DA123

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A



1 DA200 **LONG SECTION 1 - EXISTING**
1 : 100 @ A1



2 DA200 **LONG SECTION 1 - PROPOSED**
1 : 100 @ A1

LEGEND

= PITTWATER DCP SETBACKS

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT
Client: NADIA HEERS

Walsh Architects

Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

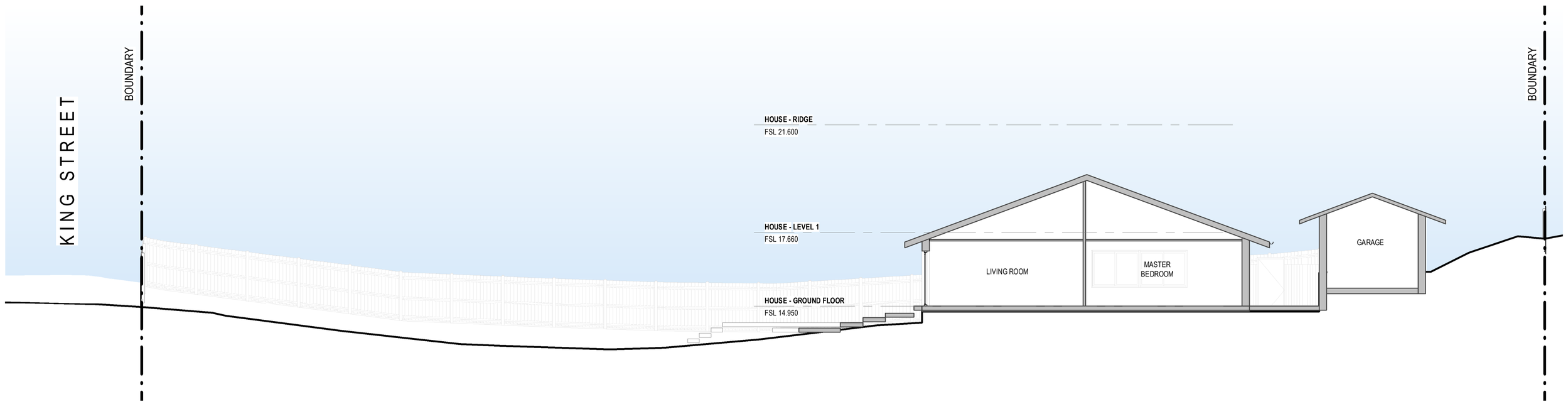
Scale: 1 : 100 @ A1

Sheet Name: SECTIONS

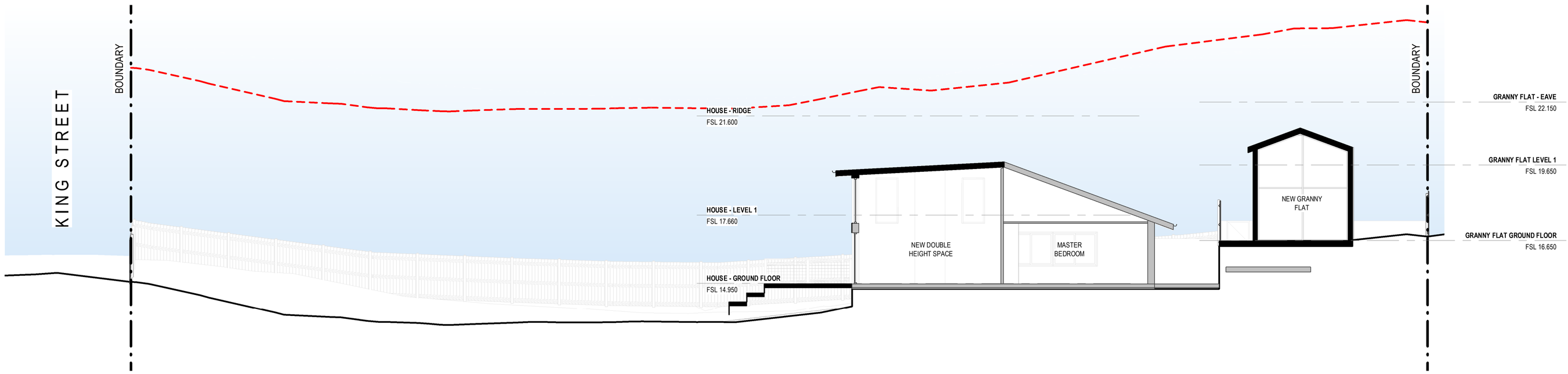
Number: DA200

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.: A



1 DA201 **LONG SECTION 2 - EXISTING**
1 : 100 @ A1



2 DA201 **LONG SECTION 2 - PROPOSED**
1 : 100 @ A1

LEGEND

= PITTWATER DCP SETBACKS

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT
Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

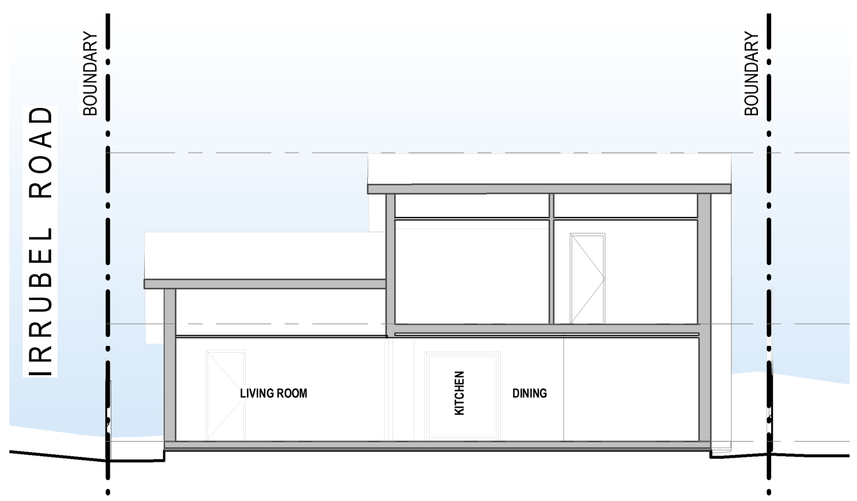
Scale: 1 : 100 @ A1

Sheet Name: SECTIONS

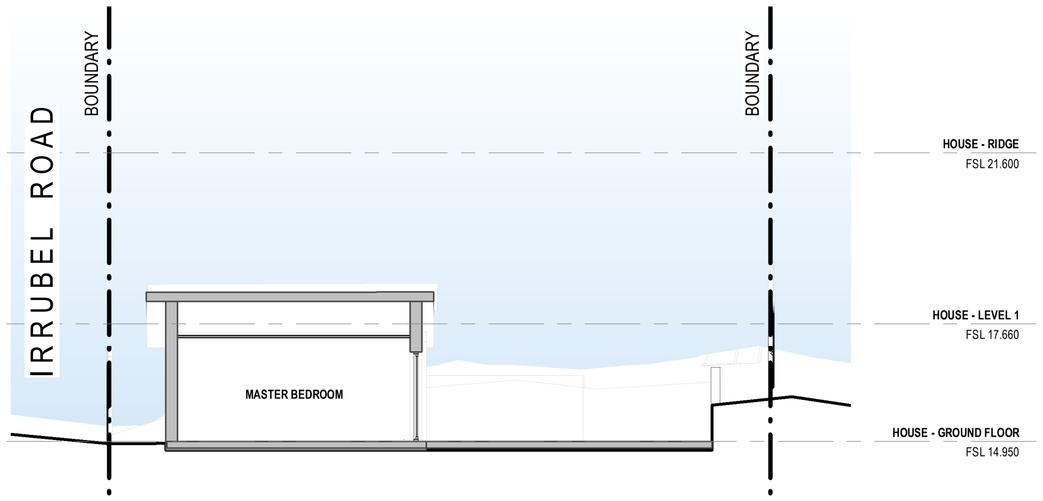
Number: DA201

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

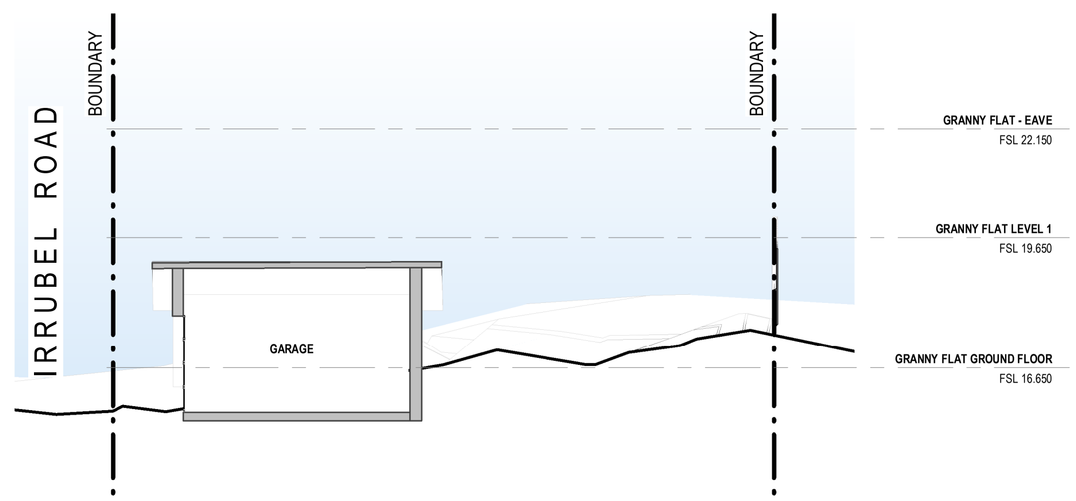
Rev.: A



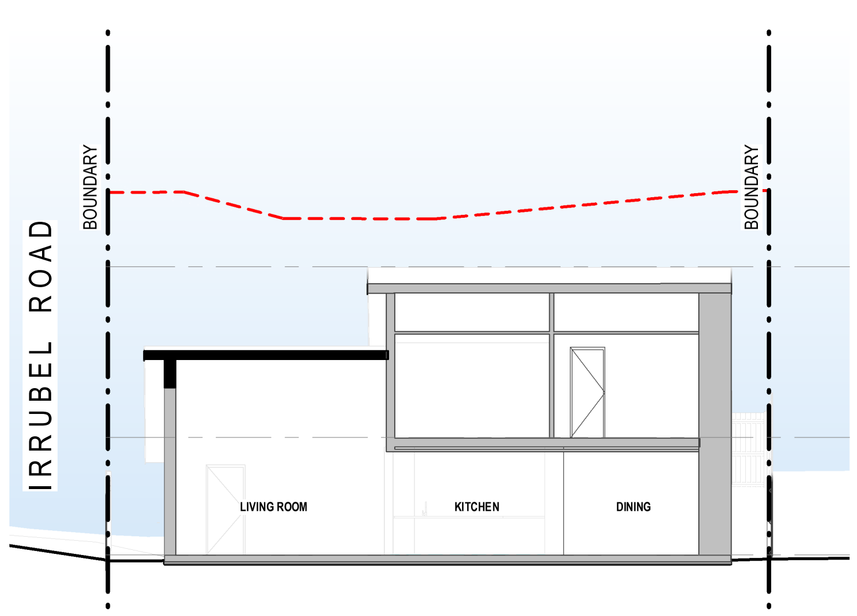
1 DA202 **CROSS SECTION 1 - EXISTING**
1 : 100 @ A1



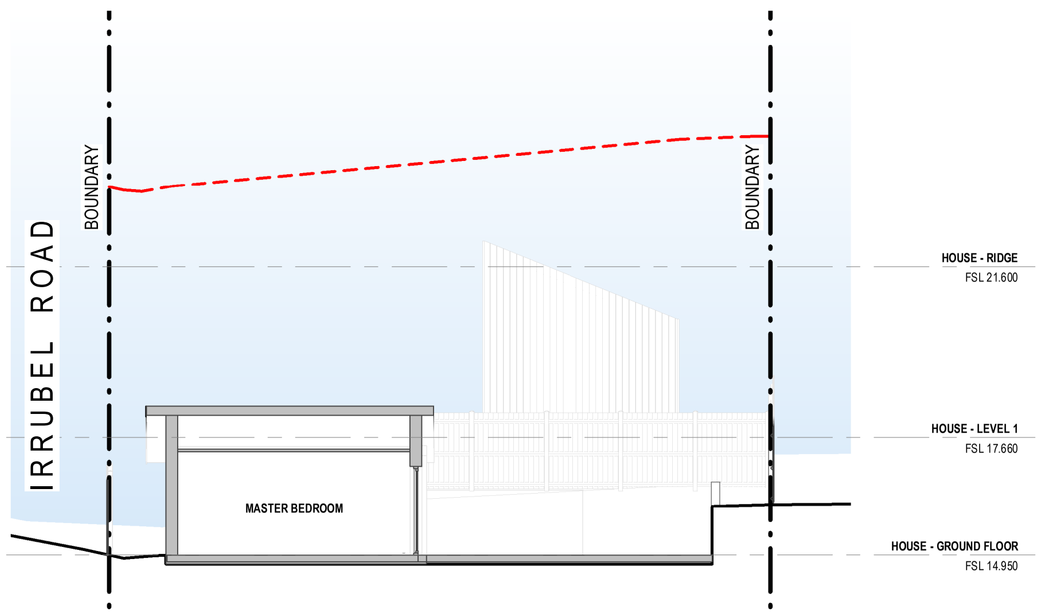
3 DA202 **CROSS SECTION 2 - EXISTING**
1 : 100 @ A1



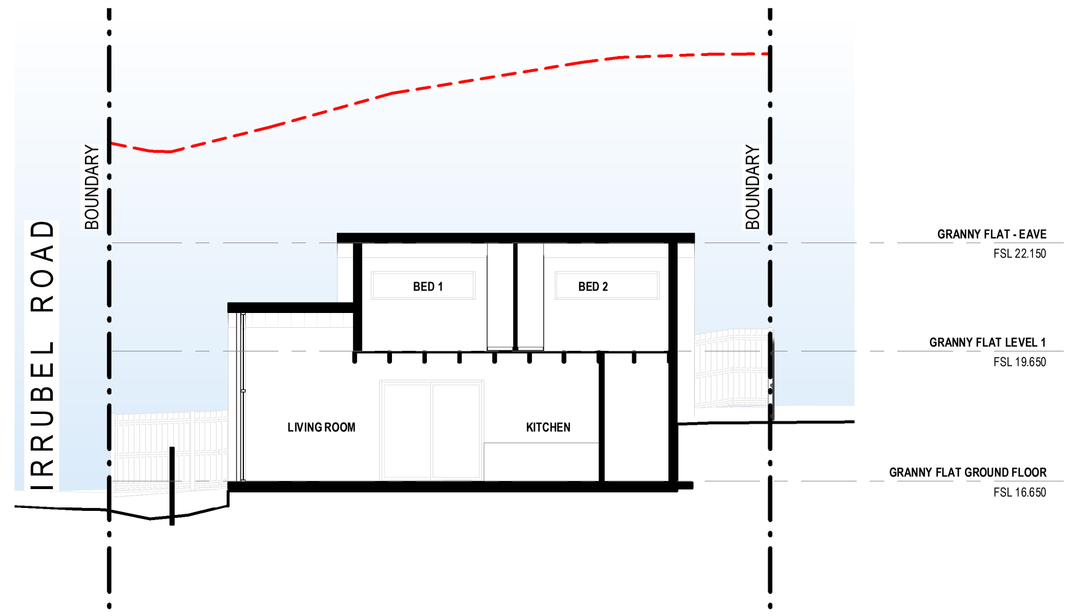
5 DA202 **CROSS SECTION 3 - EXISTING**
1 : 100 @ A1



2 DA202 **CROSS SECTION 1 - PROPOSED**
1 : 100 @ A1



4 DA202 **CROSS SECTION 2 - PROPOSED**
1 : 100 @ A1



6 DA202 **CROSS SECTION 3 - PROPOSED**
1 : 100 @ A1

LEGEND

= PITTWATER DCP SETBACKS

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT
Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

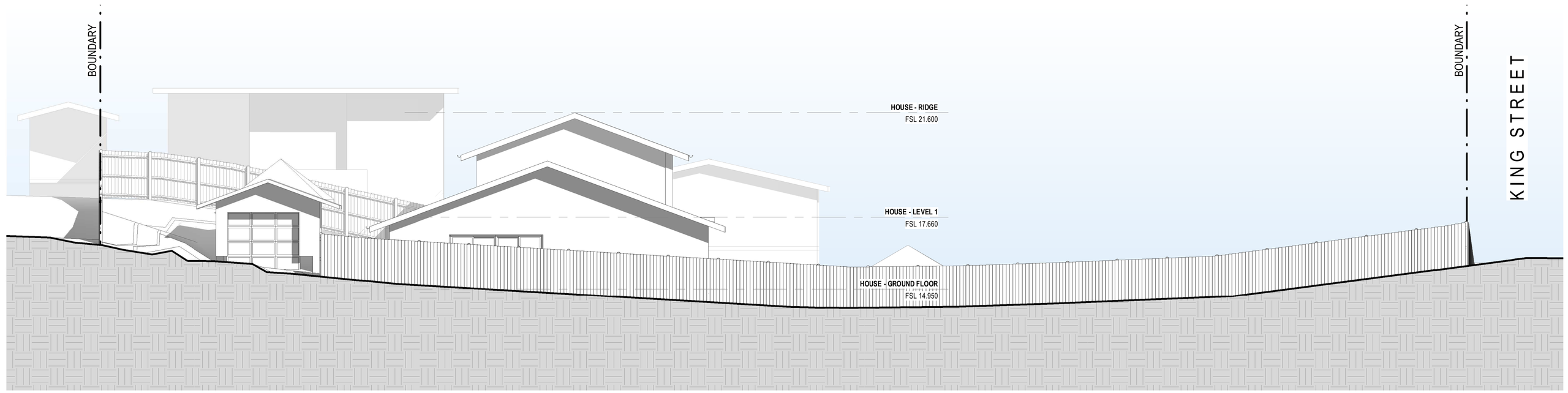
Scale
1 : 100 @ A1

Sheet Name
SECTIONS

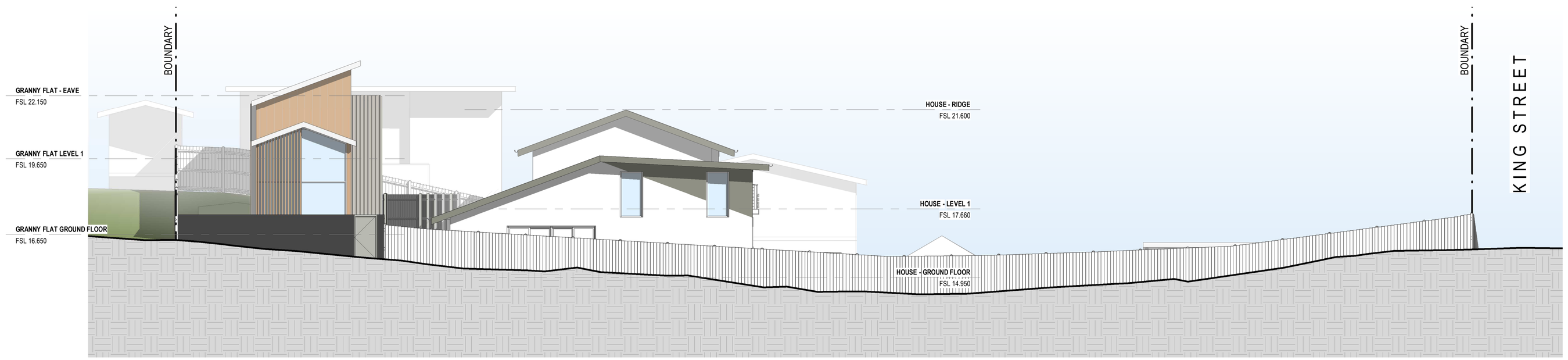
Number
DA202

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A



1 DA300 **NORTH ELEVATION - EXISTING**
1 : 100 @ A1



2 DA300 **NORTH ELEVATION - PROPOSED**
1 : 100 @ A1

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT
Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

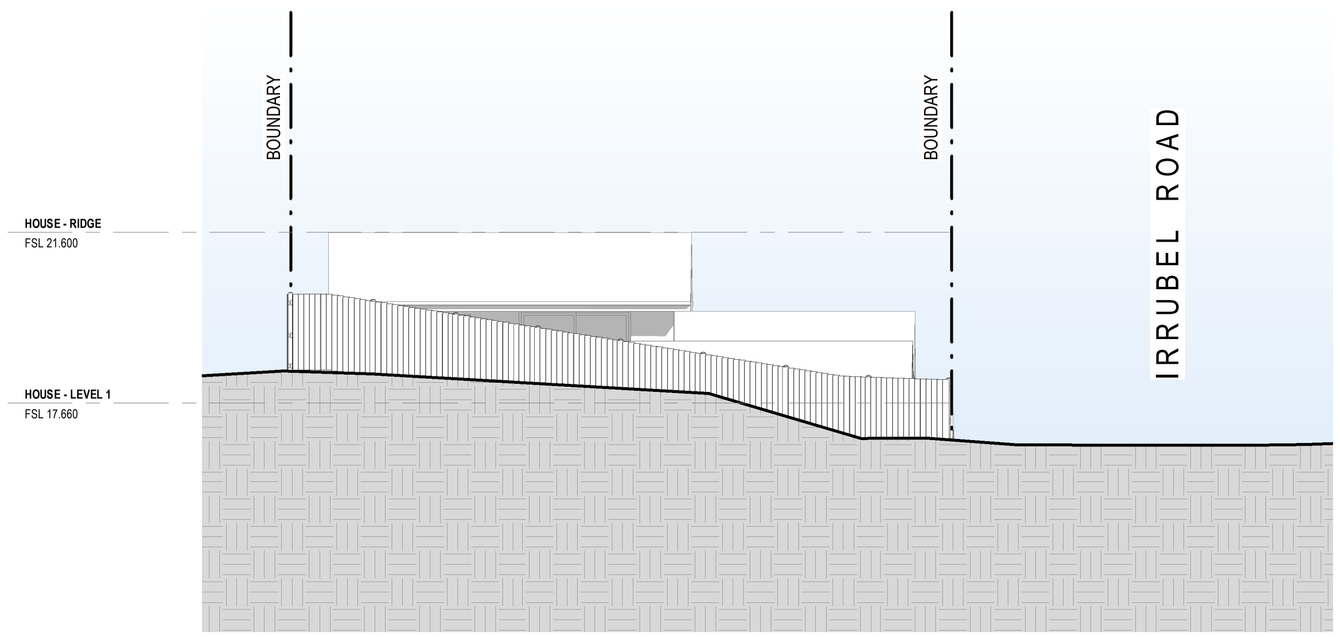
Scale
1 : 100 @ A1

Sheet Name
ELEVATIONS

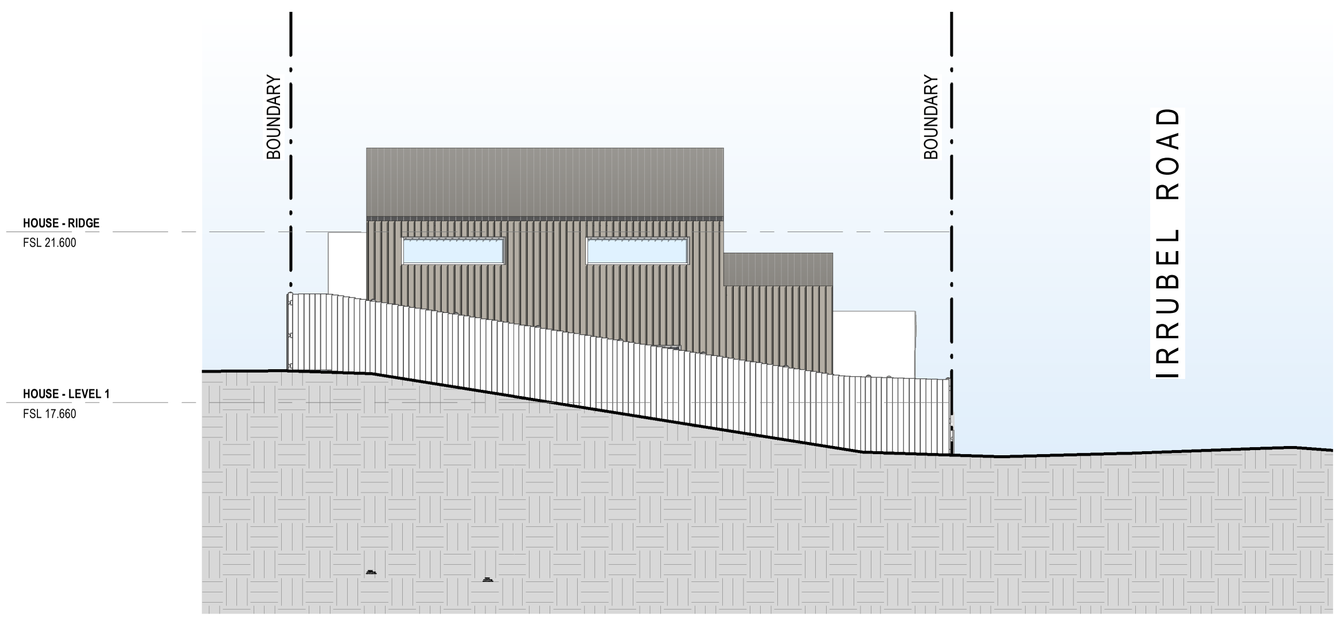
Number
DA300

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

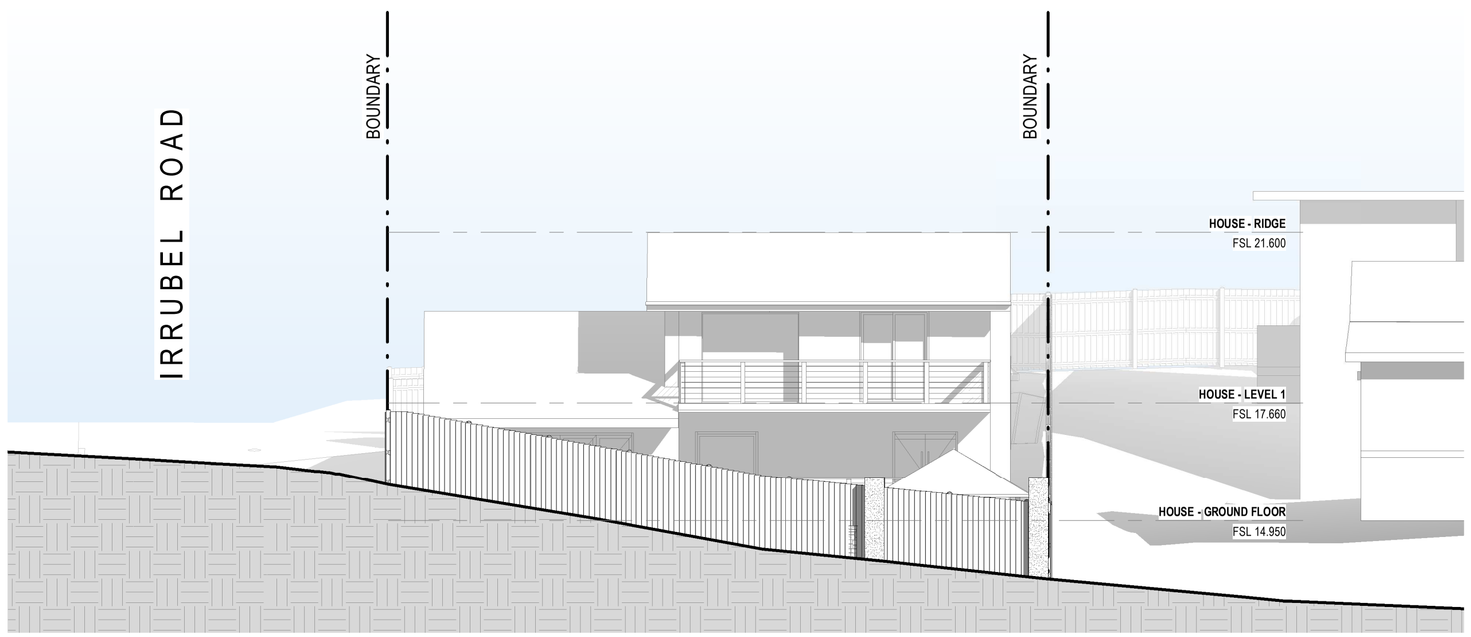
Rev.
A



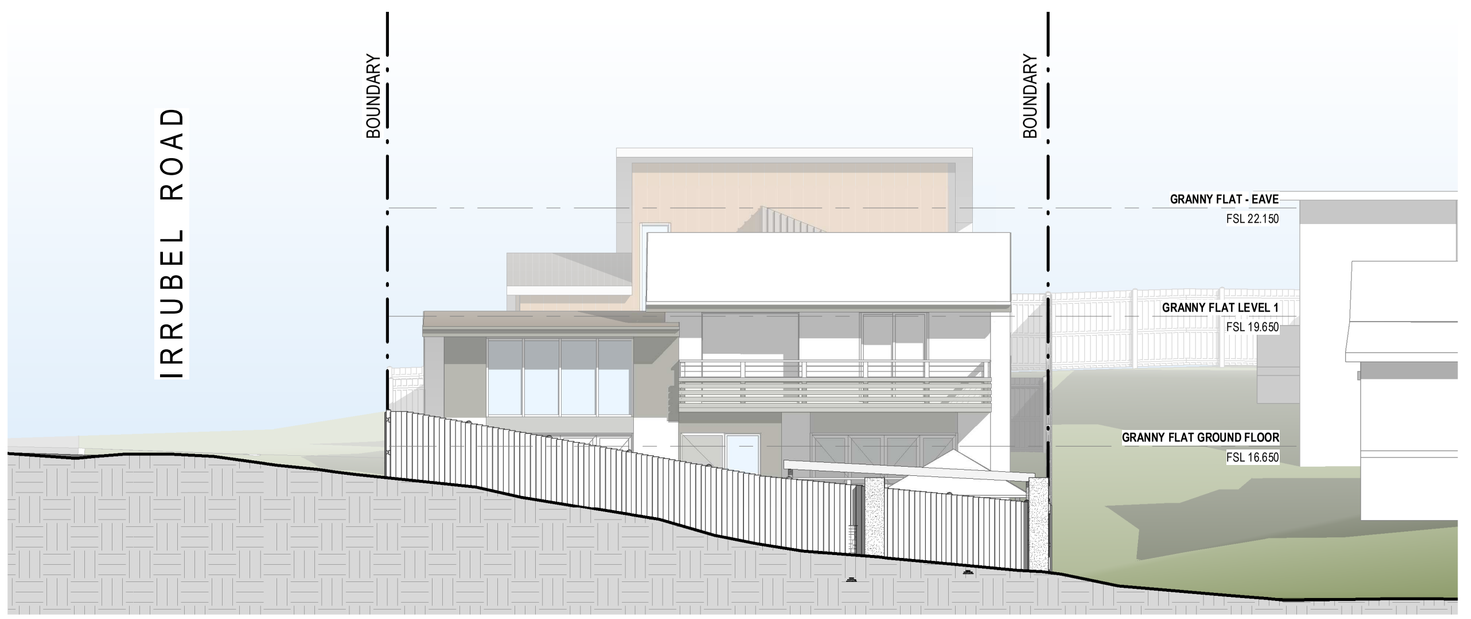
1 DA302 **EAST ELEVATION - EXISTING**
1 : 100 @ A1



2 DA302 **EAST ELEVATION - PROPOSED**
1 : 100 @ A1



3 DA302 **WEST ELEVATION - EXISTING**
1 : 100 @ A1



4 DA302 **WEST ELEVATION - PROPOSED**
1 : 100 @ A1

Project: ALTERATIONS AND ADDITIONS
23 KING STREET NEWPORT
Client: NADIA HEERS

Walsh Architects
Registered Architect
ACT 2624 NSW 10366
scott@walsharchitects.com.au
0466 049 880

Scale
1 : 100 @ A1

Sheet Name
ELEVATIONS

Number
DA302

No.	Description	Date
A	FOR DA APPROVAL	01.04.21

Rev.
A

Appendix C

FLOOD INFORMATION REQUEST – COMPREHENSIVE

Property: 23 King Street NEWPORT NSW 2106
Lot DP: Lot 4 DP 331934
Issue Date: 09/10/2020
Flood Study Reference: Newport Flood Study 2019, Catchment Simulation Solutions

---

Flood Information for lot [1]:

Flood Risk Precinct – See Map A

Flood Planning Area – See Map A

Maximum Flood Planning Level (FPL) [2, 3, 4]: 15.33 m AHD

1% AEP Flood – See Flood Map B

1% AEP Maximum Water Level [2, 3]: 14.36 mAHD

1% AEP Maximum Peak Depth from natural ground level[3]: 0.76 m

1% AEP Maximum Velocity: 7.49 m/s

1% AEP Provisional Flood Hazard: High **See Flood Map D**

1% AEP Hydraulic Categorisation: Floodway **See Flood Map E**

Probable Maximum Flood (PMF) – See Flood Map C

PMF Maximum Water Level [4]: 16.54 m AHD

PMF Maximum Depth from natural ground level: 1.74 m

PMF Maximum Velocity: 7.81 m/s

PMF Flood Hazard: High **See Flood Map F**

PMF Hydraulic Categorisation: Floodway **See Flood Map G**

Flooding with Climate Change (See Flood Map H)

The following is for the 30% Rainfall intensity increase and 0.9m Sea Level Rise Scenario:

1% AEP Maximum Water Level with Climate change [3]: 15.04 m AHD

1% AEP Maximum Depth with Climate Change[3]: 0.91 m

1% AEP Maximum Velocity with Climate Change[3]: m/s

Flood Life Hazard Category – See Map I

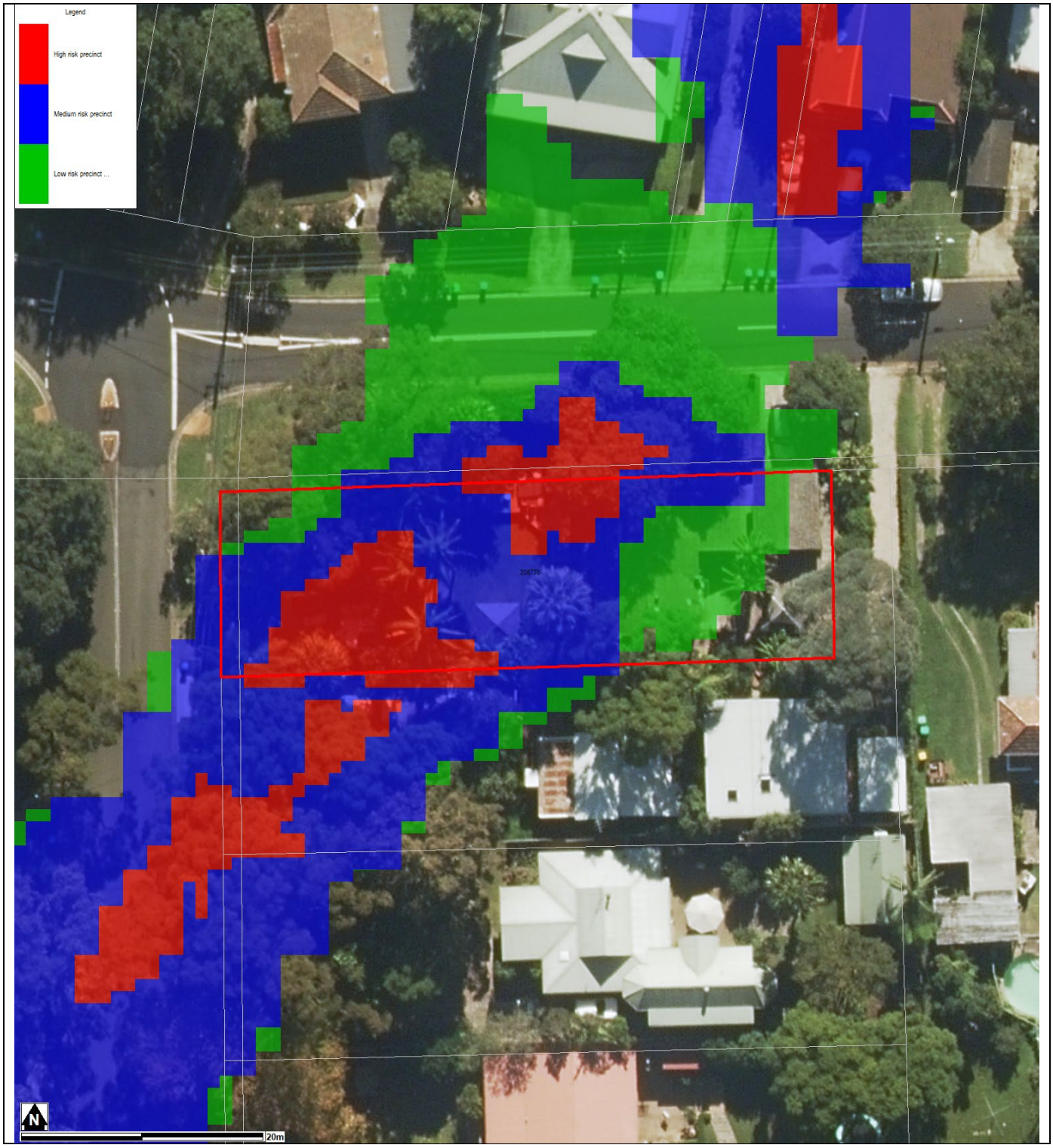
Indicative Ground Surface Spot Heights – See Map J

[1] The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.
[2] Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/ flood planning levels across the site. The maximum Flood Planning Level may be in a different location to the maximum 1% AEP flood level.
[3] Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels.
[4] Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or FPL.

General Notes:

- All levels are based on Australian Height Datum (AHD) unless otherwise noted.
- This is currently the best available information on flooding; it may be subject to change in the future.
- Council recommends that you obtain a detailed survey of the above property and surrounds to AHD by a registered surveyor to determine any features that may influence the predicted extent or frequency of flooding. It is recommended you compare the flood level to the ground and floor levels to determine the level of risk the property may experience should flooding occur.
- Development approval is dependent on a range of issues, including compliance with all relevant provisions of Northern Beaches Council's Local Environmental Plans and Development Control Plans.
- Please note that the information contained within this letter is general advice only as a detail survey of the property as well as other information is not available. Council recommends that you engage a suitably experienced consultant to provide site specific flooding advice prior to making any decisions relating to the purchase or development of this property.
- The Flood Studies on which Council's flood information is based are available on Council's website.

FLOOD MAP A: FLOOD RISK PRECINCT MAP



Notes:

- **Low Flood Risk precinct** means all flood prone land not identified within the High or Medium flood risk precincts.
- **Medium Flood Risk precinct** means all flood prone land that is (a) within the 1% AEP Flood Planning Area; and (b) is not within the high flood risk precinct.
- **High Flood Risk precinct** means all flood prone land (a) within the 1% AEP Flood Planning Area; and (b) is either subject to a high hydraulic hazard, within the floodway or subject to significant evacuation difficulties (H5 or H6 Life Hazard Classification).
- The **Flood Planning Area** extent is equivalent to the Medium Flood Risk Precinct extent, and includes the High Flood Risk Precinct within it. The mapped extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- None of these mapped extents include climate change.

FLOOD LEVEL POINTS

Note: Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source: NearMap 2014) are indicative only.

Flood Levels

ID	5% AEP Max WL (m AHD)	5% AEP Max Depth (m)	1% AEP Max WL (m AHD)	1% AEP Max Depth (m)	1% AEP Max Velocity (m/s)	Flood Planning Level (m)	PMF Max WL (m AHD)	PMF Max Depth (m)	PMF Max Velocity (m/s)
1	N/A	N/A	N/A	N/A	N/A	15.33	15.88	1.03	0.58
2	N/A	N/A	N/A	N/A	N/A	N/A	16.54	0.15	0.05
3	14.31	0.12	14.33	0.14	2.05	14.83	15.98	1.79	2.40
4	N/A	N/A	14.19	0.02	1.02	14.69	15.65	1.49	1.29
5	13.88	0.25	13.93	0.29	1.13	14.43	14.88	1.25	1.30
6	13.70	0.16	13.76	0.23	0.50	14.26	14.48	0.94	1.21
7	13.59	0.28	13.69	0.38	0.55	14.19	14.52	1.21	0.62
8	13.94	0.20	13.97	0.23	0.01	14.47	14.49	0.74	0.09
9	13.56	0.24	13.66	0.34	0.09	14.16	14.49	1.17	0.66

Climate Change Flood Levels (30% Rainfall intensity and 0.9m Sea Level Rise)

ID	CC 1% AEP Max WL (m AHD)	CC1 % AEP Max Depth (m)
1	15.04	0.18
2	N/A	N/A
3	14.91	0.72
4	14.42	0.25
5	14.05	0.42
6	13.87	0.33
7	13.83	0.51
8	14.01	0.27
9	13.78	0.47

WL – Water Level
PMF – Probable Maximum Flood
N/A = no peak water level/depth/velocity available in flood event

A variable Flood Planning Level might apply. Freeboard is generally 0.5m above the maximum 1% AEP water level. However for overland flow with a depth less than 0.3m and a VelocityxDepth product less than $0.3m^2/s$, a freeboard of 0.3m may be able to be justified.

In the table above, the Flood Planning Levels assume a freeboard of 0.5m.

FLOOD MAP B: FLOODING - 1% AEP EXTENT

Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source Near Map 2014) are indicative only.

FLOOD MAP C: PMF EXTENT MAP

Notes:

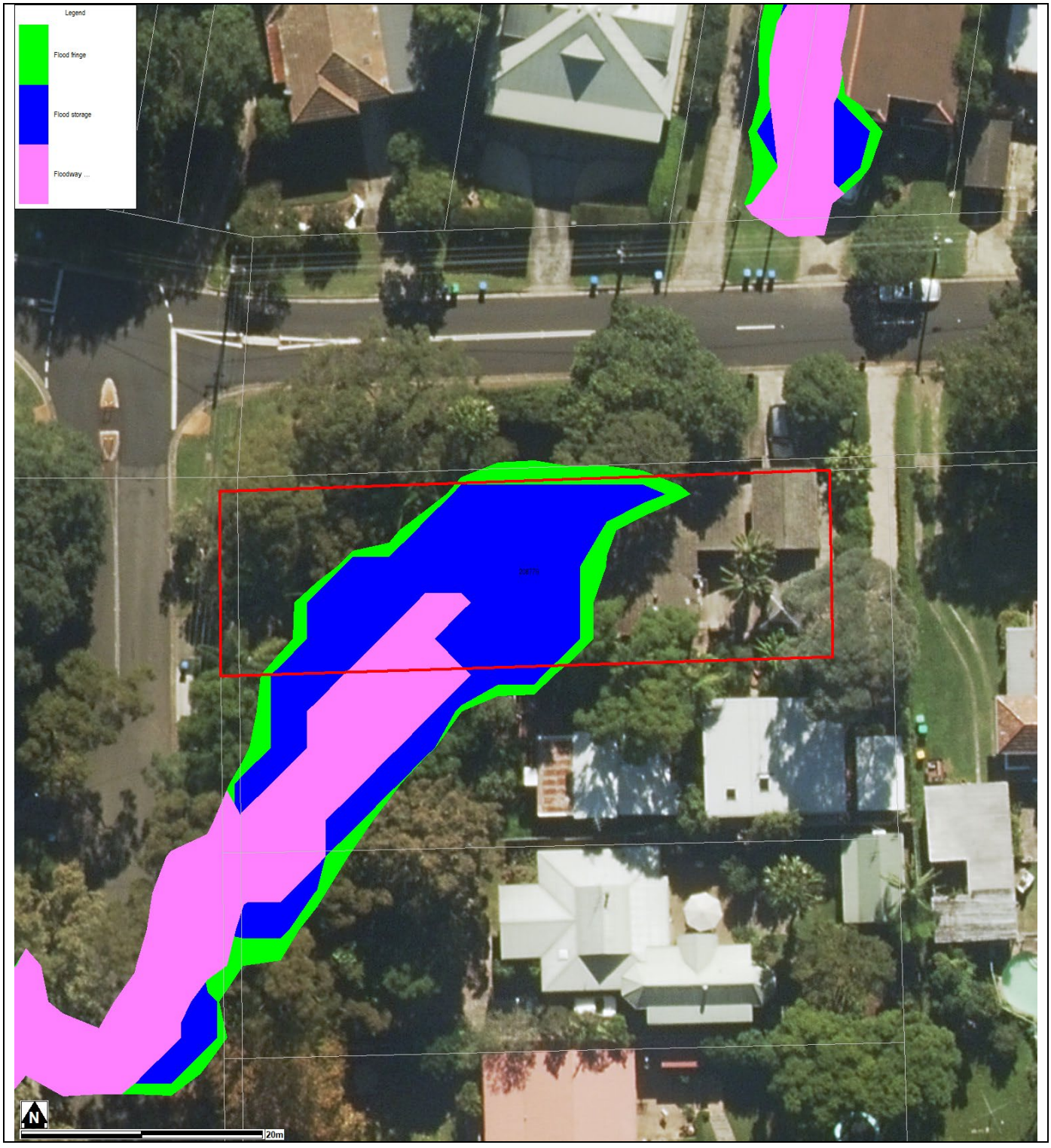
- Extent represents the Probable Maximum Flood (PMF) flood event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP D: 1% AEP FLOOD HAZARD EXTENT MAP

Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source: NearMap 2014) are indicative only

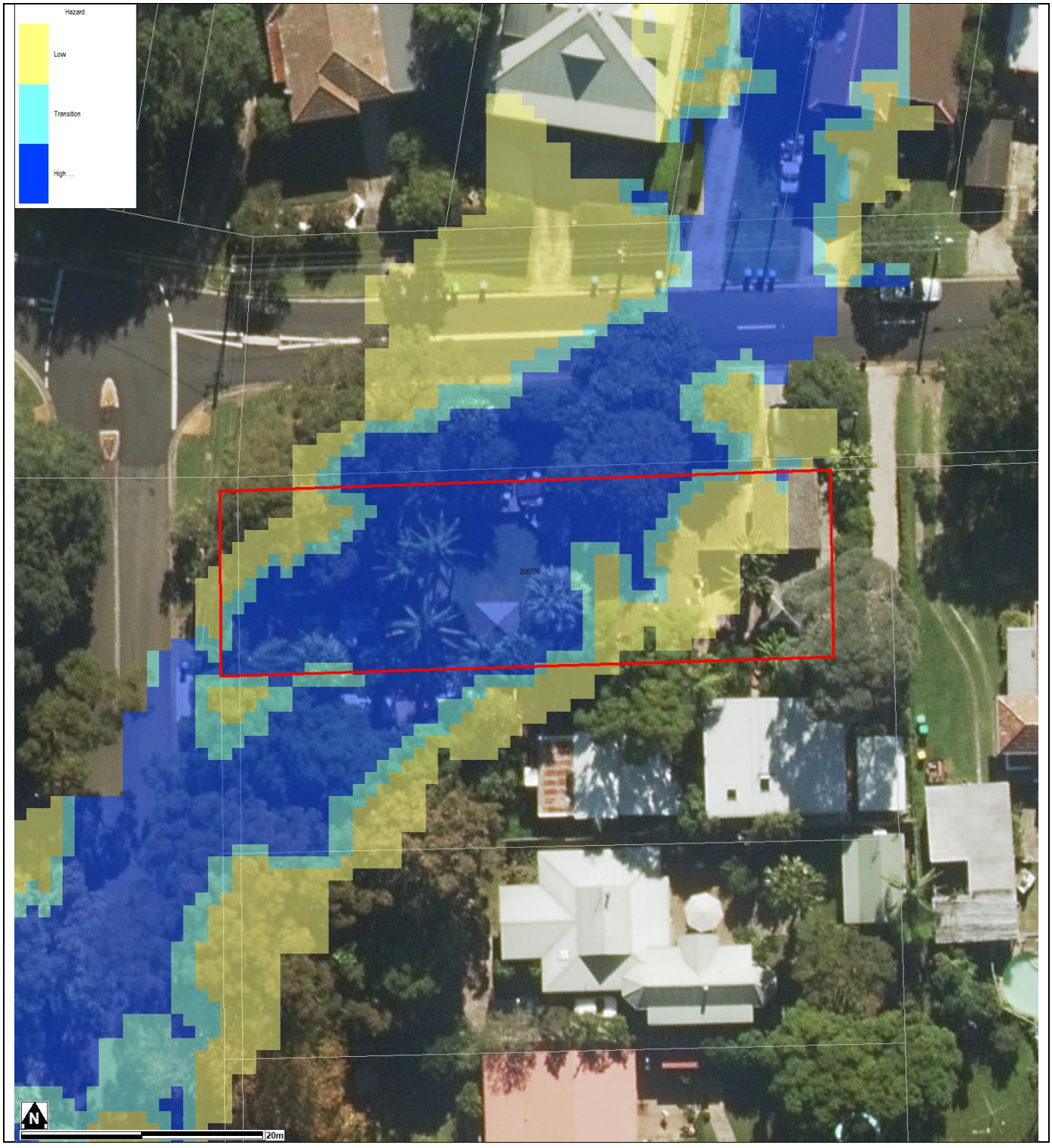
FLOOD MAP E: 1% AEP FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source: NearMap 2014) are indicative only

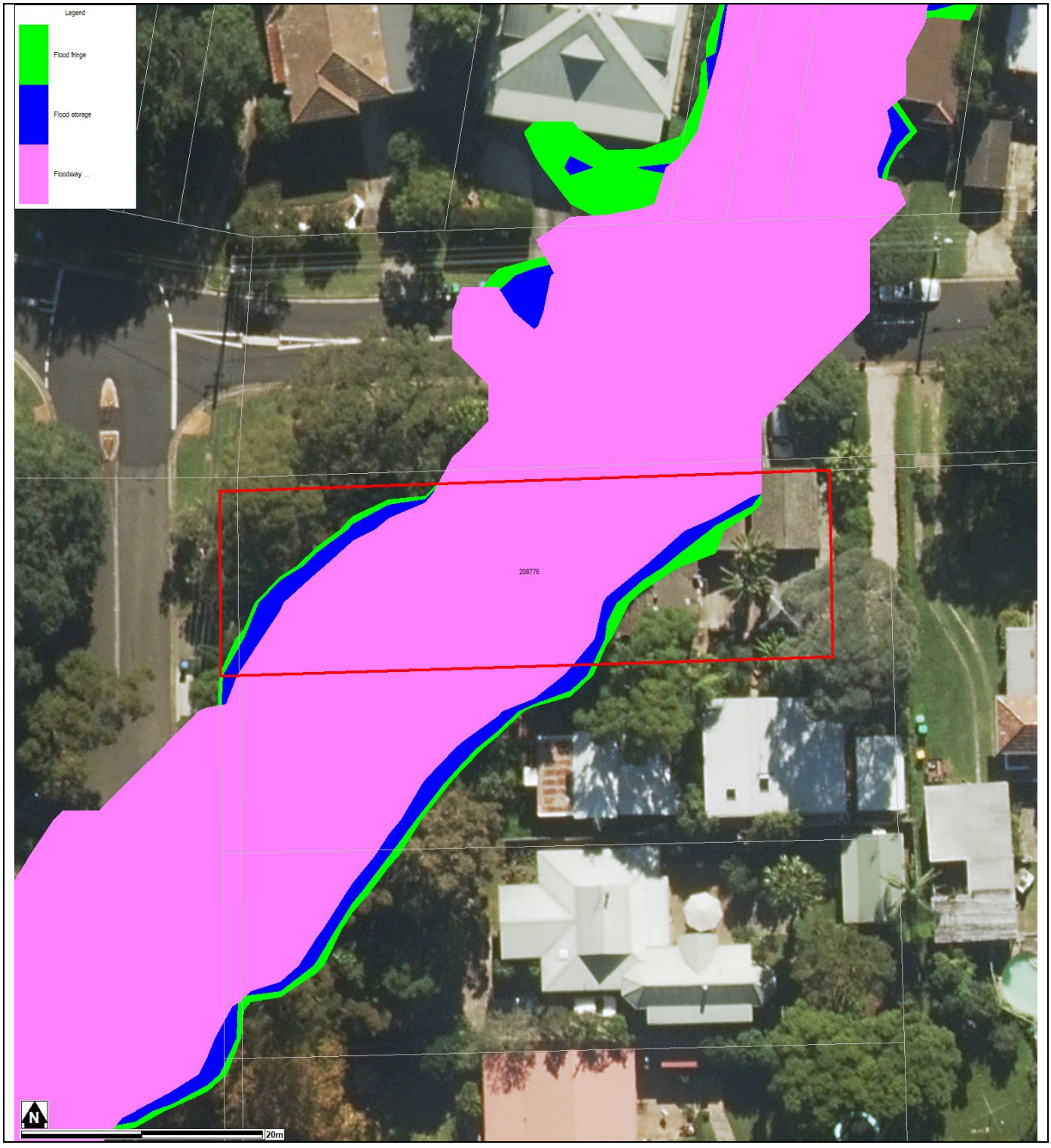
FLOOD MAP F: PMF FLOOD HAZARD EXTENT MAP



Notes:

- Extent represents the Probable Maximum Flood (PMF) event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP G: PMF FLOOD HYDRAULIC CATEGORY EXTENT MAP



Notes:

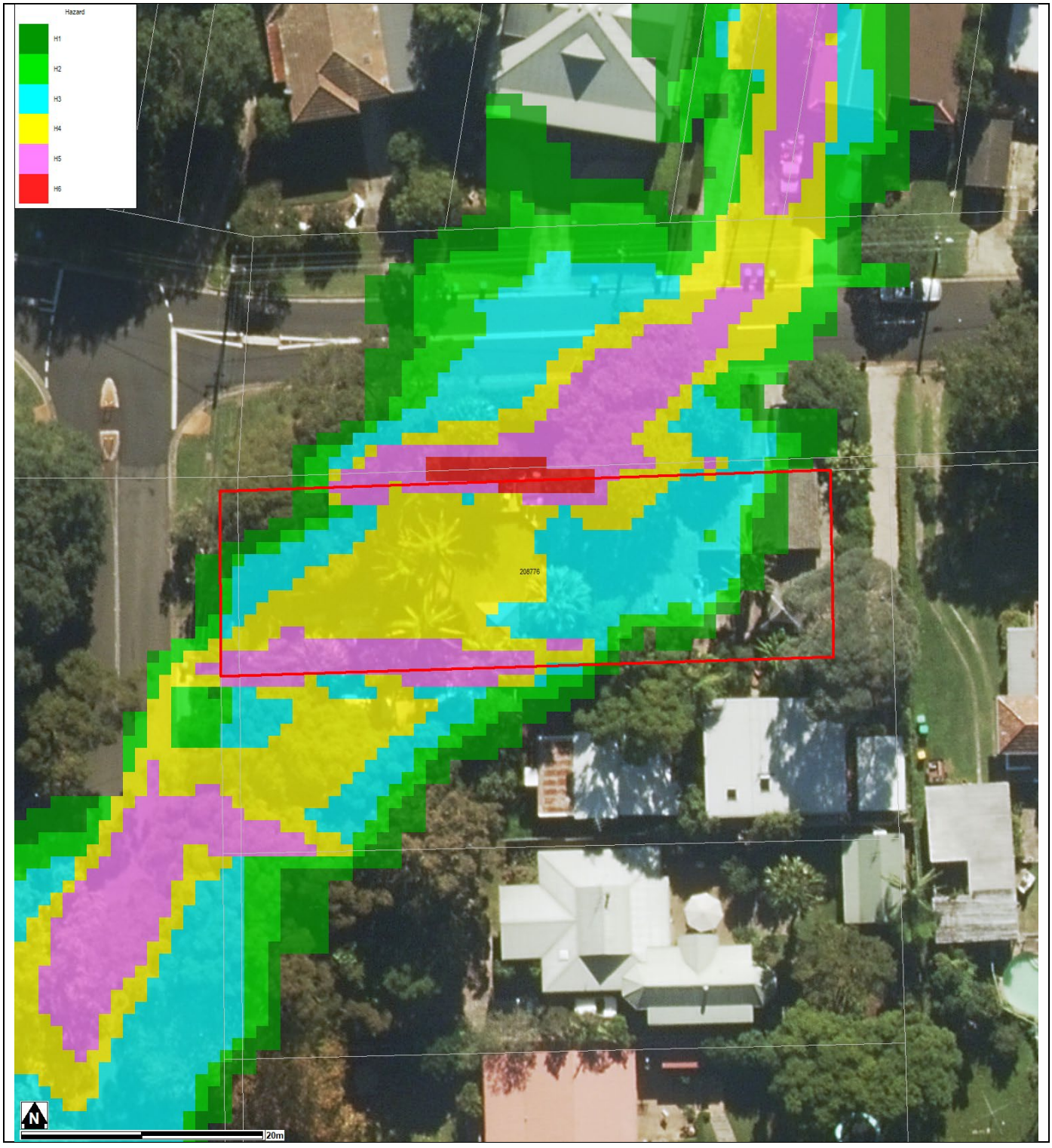
- Extent represents the Probable Maximum Flood (PMF) event
- Extent does not include climate change
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source: NearMap 2014) are indicative only

FLOOD MAP H: FLOODING – 1% AEP EXTENT PLUS CLIMATE CHANGE

Note:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event including 30% rainfall intensity and 0.9m Sea Level Rise climate change scenario
- Flood events exceeding the 1% AEP can occur on this site.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source: NearMap 2014) are indicative only

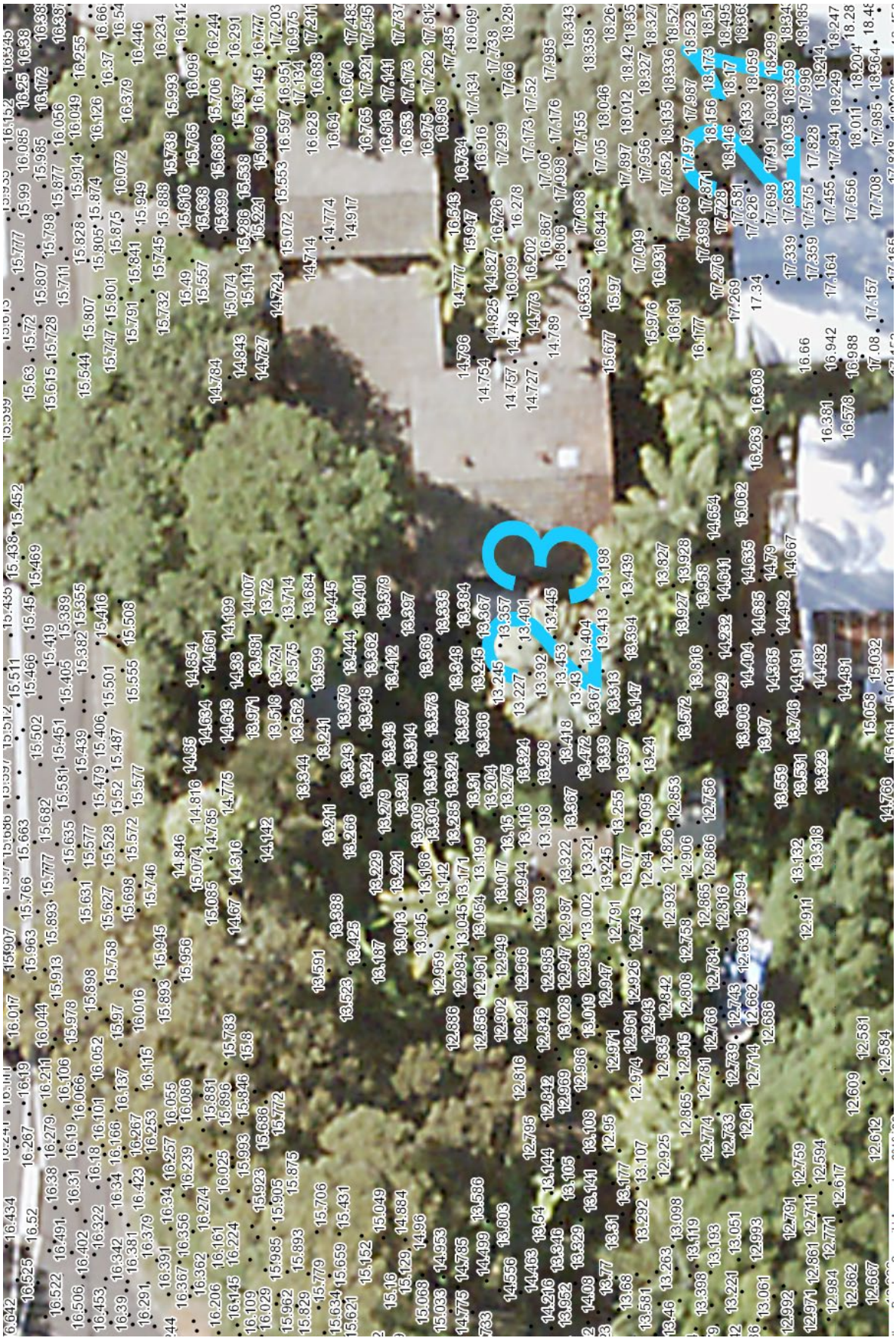
FLOOD MAP I: FLOOD LIFE HAZARD CATEGORY



Notes:

- For additional information on Flood Life Hazard Categories, refer to 'Flood Emergency Response Planning for Development in Pittwater Policy' and Pittwater 21 DCP Control B3.13.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Newport Flood Study 2019, Catchment Simulation Solutions) and aerial photography (Source Near Map 2014) are indicative only.

MAP J: INDICATIVE GROUND SURFACE SPOT HEIGHTS



Notes:

- The surface spot heights shown on this map were derived from Airborne Laser Survey and are indicative only.
- Accuracy is generally within ± 0.2m vertically and ± 0.15m horizontally, and Northern Beaches Council does not warrant that the data does not contain errors.
- If accuracy is required, then survey should be undertaken by a registered surveyor.

Attachment A

NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: 23 KING ST NEWPORT

Declaration made by hydraulic engineer or professional consultant specialising in flooding/flood risk management as part of undertaking the Flood Management Report:

I, DAMIEN SCHAEFER on behalf of TAYLOR CONSULTING ENGINEERS
(Insert Name) (Trading or Business/ Company Name)

on this the 27 APRIL 2021 certify that I am engineer or a
(Date)

professional consultant specialising in flooding and I am authorised by the above organisation/ company to issue this document and to certify that the organisation/ company has a current professional indemnity policy of at least $2 million.

***Flood Management Report* Details:**

Report Title: FLOOD RISK MANAGEMENT PLAN

Report Date: 27 APRIL 2021

Author: DAMIEN SCHAEFER

Author's Company/Organisation: TAYLOR CONSULTING ENGINEER

I: DAMIEN SCHAEFER
(Insert Name)

Please tick all that are applicable (more than one box can be ticked)

☑ have obtained and included flood information from Council (must be less than 12 months old) **(This is mandatory)**

☑ have followed Council's Guidelines for Preparing a Flood Management Report

☐ have requested a variation to one or more of the flood related development controls. Details are provided in the *Flood Management Report*.

Signature .....

Name D. SCHAEFER AS 4306

Appendix D

EMERGENCY FLOOD RESPONSE PROCEDURE

Flood waters can rise very rapidly on this site

Once a warning is received for a possible flood or floodwaters start to inundate the roadway areas bounding the site:

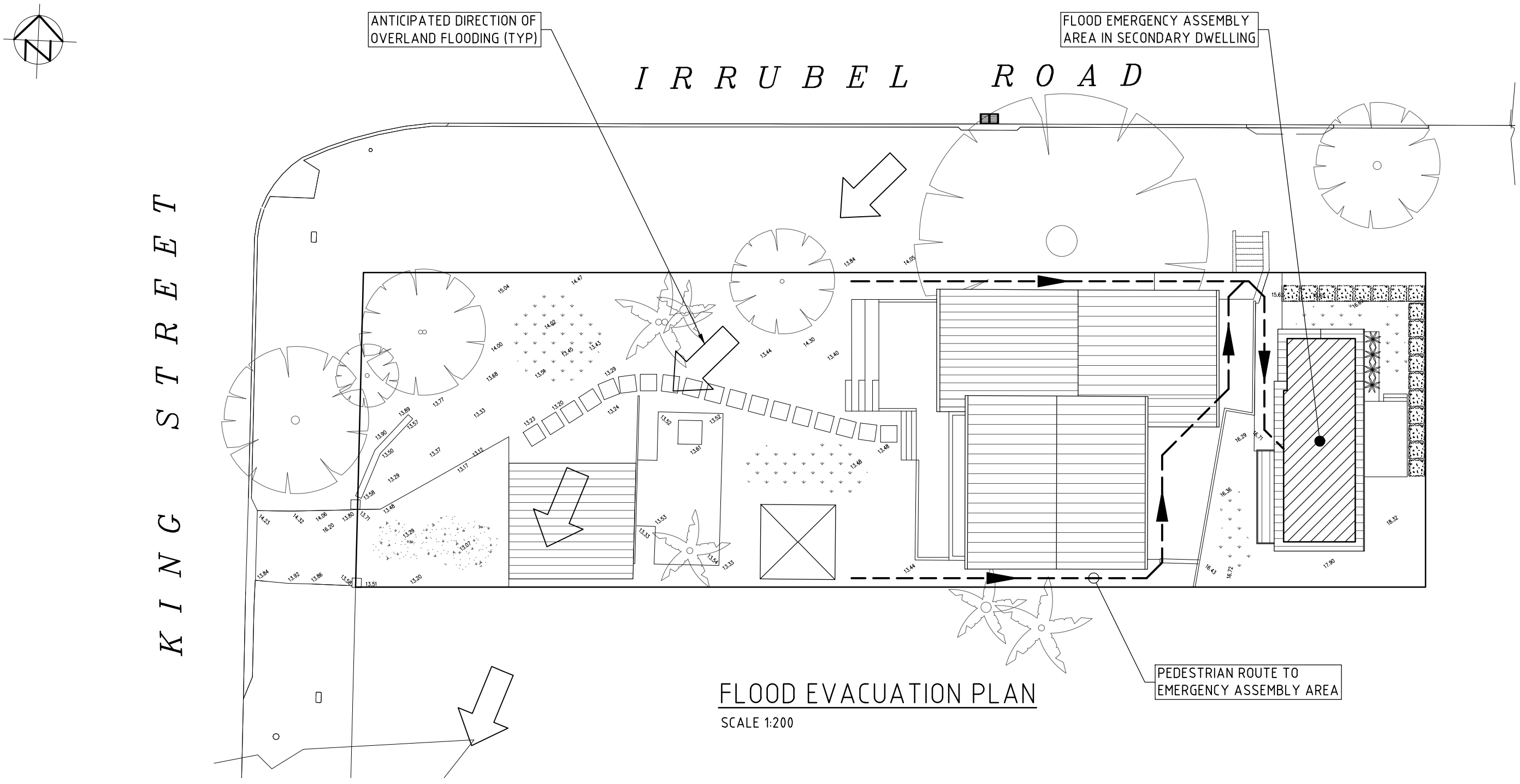
1. All residents should be at the emergency assembly point by the time the flood waters are observed starting to inundate Mundara Crescent or otherwise to have started to inundate the western portion of the site as overland flow.
2. The Owner is to turn off all power, water and other relevant services and close off all flood doors.
3. Nominated occupants to sweep the premises to ensure that all occupants have left the site to seek refuge at the emergency assembly point.
4. Emergency services to be notified by The Owner of the situation at site.

THIS SITE CAN FLOOD

NEVER DRIVE, WALK OR RIDE THROUGH FLOODWATERS

When emergency services give the all clear to return:

The site will only be opened for Occupants to return once floodwaters have subsided and the emergency services have given the all clear.



FLOOD EVACUATION PLAN

SCALE 1:200

ISSUE DATE	REVISION

TITLE

FLOOD EVACUATION PLAN
23 KING STREET, NEWPORT

DRAWN	DATE	CHECKED	SCALE @ A3
MDB	27 APRIL 2021	BE Civil (Hons) MIE Aust.	1:200

TAYLOR CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING NO
SHEET–2

"Seascape" Suite 7 22-26 Fisher Rd Dee Why NSW 2099 | T 02 9982 7092 | F 02 9982 5898 | enquire@taylorconsulting.net.au | www.taylorconsulting.net.au

Appendix E

Attachment A

NORTHERN BEACHES COUNCIL STANDARD HYDRAULIC CERTIFICATION FORM

FORM A/A1 – To be submitted with Development Application

Development Application for

Address of site: _____

Declaration made by hydraulic engineer or professional consultant specialising in flooding/flood risk management as part of undertaking the Flood Management Report:

I, _____ on behalf of _____
(Insert Name) (Trading or Business/ Company Name)

on this the _____ certify that I am engineer or a
(Date)

professional consultant specialising in flooding and I am authorised by the above organisation/ company to issue this document and to certify that the organisation/ company has a current professional indemnity policy of at least $2 million.

Flood Management Report **Details:**

Report Title: …….

Report Date: …….

Author: …….

Author's Company/Organisation: …….

I: _____
(Insert Name)

Please tick all that are applicable (more than one box can be ticked)

☐ have obtained and included flood information from Council (must be less than 12 months old) **(This is mandatory)**

☐ have followed Council's Guidelines for Preparing a Flood Management Report

☐ have requested a variation to one or more of the flood related development controls. Details are provided in the *Flood Management Report*.

Signature …….

Name ……..

Flood Checklists

BEFORE A FLOOD

Trigger for action: Always

Action	Status
• All Occupants to be made aware of site flooding potential	
• Develop detailed emergency procedures, responsibilities and resources	
• Provide all Occupants with an emergency response plan and advise of their responsibilities and delegations	
• Maintain an emergency contacts list	
• Update emergency response procedures annually	

WHEN A FLOOD IS LIKELY

Trigger for action: When the forecasts predict severe weather or significant amounts of rainfall are observed:

Action	Status
• Monitor the severe weather forecasts and predictions	
• The Owners to monitor conditions at the rear of the site	
• The Owners to notify Occupants to proceed to the emergency response area	
• The Owners to shut off nominated services	

DURING A FLOOD

Trigger for action: When water is sighted ponding across the rear of the site:

Action	Status
● Evacuation to be undertaken in an orderly fashion	
● The phases of the evacuation shall be:	
➢ The Owners to request all occupants to proceed to the emergency assembly point.	
➢ All occupants should be at the assembly point by the time the flood waters reach the rear boundary of the site.	
➢ The Owners to sweep premises for remaining persons	
➢ The Owners to retreat to the emergency assembly area.	
● Emergency services to be notified by The Owners of the situation at site.	

Appendix F

Emergency Contacts

Organisation	Role	Contact
Emergency Services	Fire/ambulance/police	000
Pittwater Council	Disaster Co-ordination Centre	9970 1111
State Emergency Service	SES Local Controller	132 500
Northern Beaches Hospital		9105 5000

Appendix G

Flood Compatible Materials & Building Components For New Works

BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL	BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL
Flooring and Sub-floor Structure	▪ concrete slab-on ground monolith construction ▪ suspended reinforced concrete slab	Doors	▪ solid panel with water-proof adhesives ▪ flush door with marine ply filled with closed cell foam ▪ painted metal construction ▪ aluminium or galvanised steel frame
Floor Covering	▪ clay tiles ▪ concrete, precast or in situ ▪ concrete tiles ▪ epoxy, form-in-place ▪ mastic flooring, formed in-place ▪ rubber sheets or tiles with chemical-set adhesives ▪ silicone floors formed in-place ▪ vinyl sheets or tiles with chemical-set adhesive	Wall and Ceiling Linings	▪ fibro-cement board ▪ brick, face or glazed ▪ clay tile glazed in waterproof mortar ▪ concrete ▪ concrete block ▪ steel with waterproof applications ▪ stone, natural solid or veneer, waterproof grout ▪ glass blocks ▪ glass ▪ plastic sheeting or wall with

	▪ ceramic tiles, fixed with mortar or chemical-set adhesive ▪ asphalt tiles, fixed with water resistant adhesive ▪ linoleum		waterproof adhesive
Wall Structure	▪ solid brickwork, blockwork, reinforced, concrete or mass concrete	Insulation Windows	▪ foam (closed cell types) ▪ aluminium frame with stainless steel ▪ rollers or similar corrosion and water resistant material
Roofing Structure (for Situations where the Relevant Flood Level is Above the Ceiling)	▪ reinforced concrete construction ▪ galvanised metal construction	Nails, Bolts, Hinges and Fittings	▪ brass, nylon or stainless steel ▪ removable pin hinges ▪ hot dipped galvanised steel wire, nails or similar.

Electrical and Mechanical Equipment For buildings constructed on land to which this Plan applies, the electrical and mechanical materials, equipment and Installation should conform to the following requirements.	**Heating and Air Conditioning Systems** Heating and air conditioning systems should, to the maximum extent possible, be installed in areas and spaces of the building above the relevant flood level. When this is not feasible every precaution should be taken to minimise the damage caused by submersion according to the following guidelines.
Main power supply Subject to the approval of the relevant authority the incoming main commercial power service equipment including all metering equipment, shall be located above the relevant flood level. Means shall be available to easily disconnect the building from the main power supply.	**Fuel** Heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off.
Wiring All wiring, power outlets, switches, etc, should to the maximum extent possible, be located above the relevant flood level. All electrical wiring installed below the relevant flood level should be suitable for continuous submergence in water and should contain no fibrous components. Earth core linkage systems (or safety switches) are to be installed. Only submersible-type splices	**Installation** The heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. All storage tanks should be vented to the FPL.

should be used below the relevant flood level. All conducts located below the relevant designated flood level should be so installed that they will be self draining if subjected to flooding.	
Equipment All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.	**Ducting** All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, the ductwork should be protected by a closure assembly operated from above relevant flood level.
Reconnection Should any electrical device and/or part of the wiring be flooded it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.	**Ancillary Structures (steps, pergolas, etc)** Suitable water tolerant materials should be used, such as reinforced concrete, masonry, sealed hardwood and corrosive resistant metals. Copper Chrome Arsenate (CCA) treated timber is not a suitable material.