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**Our Ref: E322503**

# Lot 26 DP 228119, 283 HUDSON PARADE, CLAREVILLE

## FLOOD RISK MANAGEMENT REPORT

**DATE 21st June 2021**

**REVISION A**

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# INTRODUCTION

Donovan Associates has been engaged to prepare a Flood Risk Management Report for the Proposed development at No.283 Hudson Parade, Clareville in accordance with the requirements of the Northern Beaches Council (Former Pittwater Council) Development Control Plan (DCP).

## DEVELOPMENT SITE

Figure 1 shows the location of the subject site and represents the nature of the surrounding area. The general property surrounding the subject site is primarily residential with medium to low density type developments.

The development site is located east of the Hudson Parade and west of the Stromboli Pl (refer to Figure 1).

According to the survey information and council's online planning map, a stormwater easement runs adjacent to the western boundary of the property as shown in Figure 2 and Figure 3). As shown in Figure 2, part of the council's stormwater system runs within the subject site.


*Figure 1. Site Location Map*


*Figure 2. Stormwater Plan Around Subject Site (Source: https://services.northernbeaches.nsw.gov.au/icongis/index.html)*

According to the survey information, the site falls from a reduced level (RL) of 46.88m at the southern east corner of the site to an RL of 28.31m at the northern west side of the subject site (Refer to Figure 3).

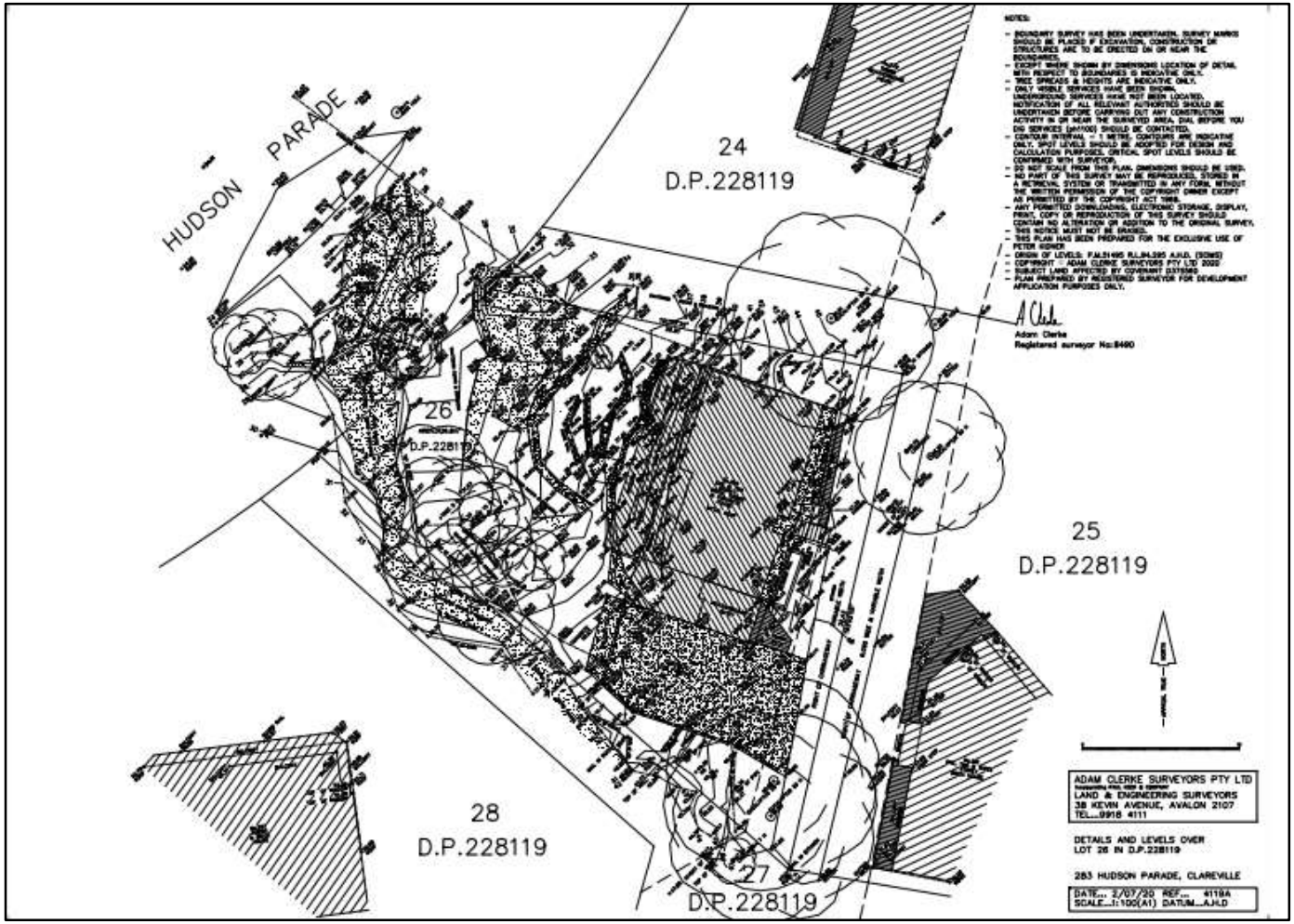



*Figure 3. Survey Plan*

## PROPOSED DEVELOPMENT

The proposal for the development site is for alteration and addition of the existing dwelling including:

- roof for existing carport;
- new floor area on ground floor (workshop with floor level at RL 46.35m);
- new deck and habitable area (floor level at RL 42.37) on basement; and
- extending existing deck on lower ground floor.

The proposed site plan is shown in Figure 4.

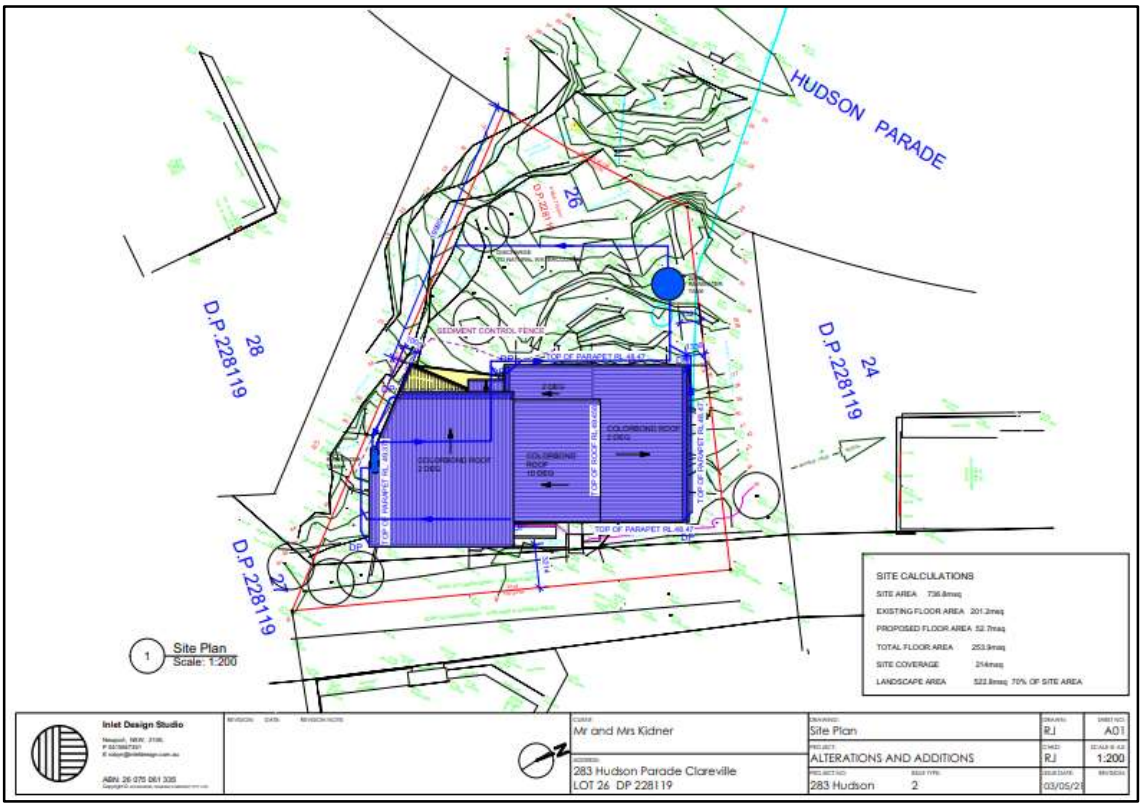



*Figure 4. Proposed Site Plan*

## REFERENCE DOCUMENTS

The following documents have been used to prepare this Report:

- Northern Beaches Council Flood Information Letter Dated 16th June 2021
- Northern Beaches Council DCP (Former Pittwater Council DCP 2014- Part B3.11- Flood Prone Land)
- Architectural Plans by Inlet Design Studio Published 3rd May 2021
- Survey Plan by Adam Clerke Surveyors Pty Ltd Dated 2nd July 2020
- Avalon to Palm Beach Floodplain Risk Management Study and Plan by Manly Hydraulics Laboratory Dated June 2017
- NSW Government Floodplain Development Manual – The Management of Flood Liable Land (2005)
- Australian Disaster Resilience Handbook Collection, GUIDELINE 7-3

## COUNCIL FLOOD INFORMATION

Northern Beaches Council has provided a flood information letter for the subject site.

This information includes the peak 1% Annual Exceedance Probability (AEP) and peak Probable Maximum Flood (PMF) water depth and level results that affects the subject site. This information is presented in Table 1 and Figure 5.

Council's flood information confirms the peak 1% AEP flood depth at subject site is estimated to be 0.51m at location with ID 10.

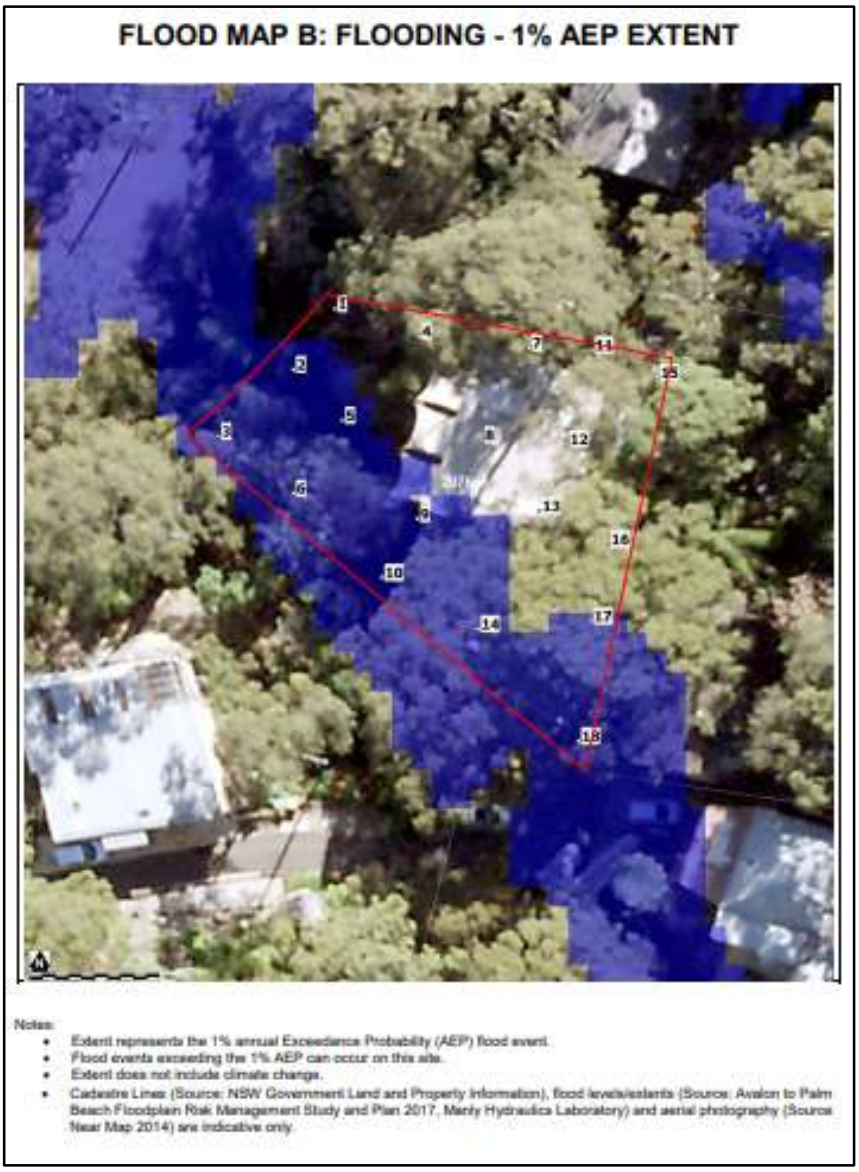



*Figure 5. 1% AEP Flood Extent (Extracted from Northern Beaches Council's Flood Information Letter)*

*Table 1. Council's Flood information at Subject Site (Locations are shown in Figure 5)*

| ID | 1% AEP Flood Level (m AHD) | PMF Flood Level (m AHD) | Climate Change Scenario - 1% AEP Flood Level (m AHD) | Flood Planning Level (m AHD) |
|---|---|---|---|---|
| 1 | N/A | N/A | N/A | N/A |
| 2 | 30.42 | 30.6 | 30.48 | 31.1 |
| 3 | 30.92 | 31.03 | 30.96 | 31.62 |
| 4 | N/A | N/A | N/A | N/A |
| 5 | 33.85 | 33.98 | 33.89 | 34.22 |
| 6 | 33.9 | 34.06 | 33.93 | 34.54 |
| 7 | N/A | N/A | N/A | N/A |
| 8 | N/A | N/A | N/A | N/A |
| 9 | 38.48 | 38.46 | 38.4 | N/A |
| 10 | 38.11 | 38.33 | 38.16 | 38.73 |
| 11 | N/A | N/A | N/A | N/A |
| 12 | N/A | N/A | N/A | N/A |
| 13 | N/A | N/A | N/A | N/A |
| 14 | 42 | 42.12 | 42.03 | 42.62 |
| 15 | N/A | N/A | N/A | N/A |
| 16 | N/A | N/A | N/A | N/A |
| 17 | 45.62 | 45.59 | 45.57 | 46.12 |
| 18 | 46.54 | 46.73 | 46.59 | 47.15 |

Council's flood information letter also includes the 1% AEP hydraulic category results at subject site. Results indicate that parts of the subject site located at southeast, south and southwest are identified as floodway during the 1% AEP flood event (refer to Figure 6).

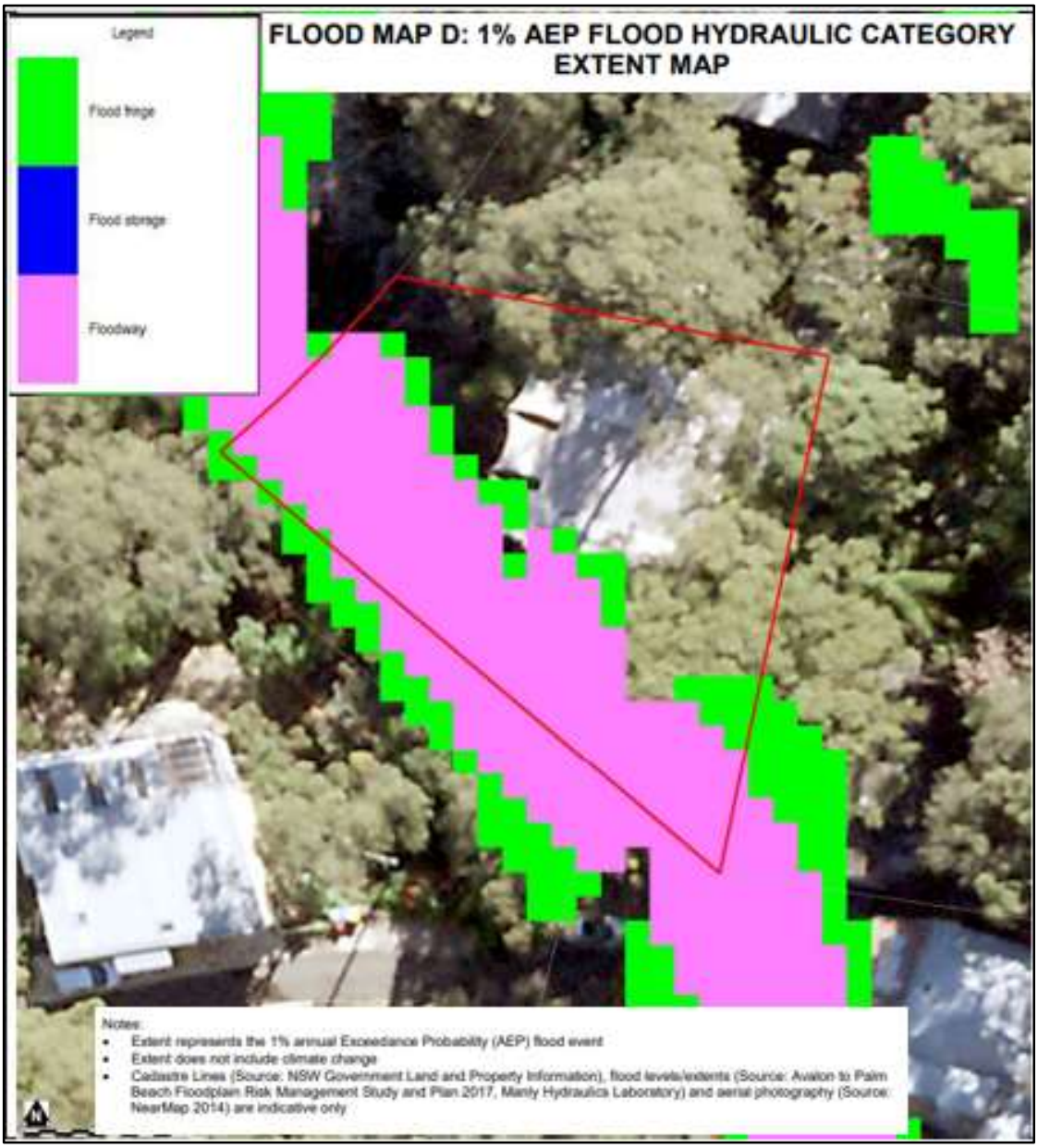



*Figure 6. 1% AEP Flood Hydraulic Category Results (Extracted from Northern Beaches Council's Flood Information Letter)*

Council's flood information letter also includes results for the 1% AEP flood risk precincts at subject site. Results indicate that parts of the subject site located at southeast, south and southwest are identified to be on high flood risk precinct during the 1% AEP flood event (refer to Figure 7).

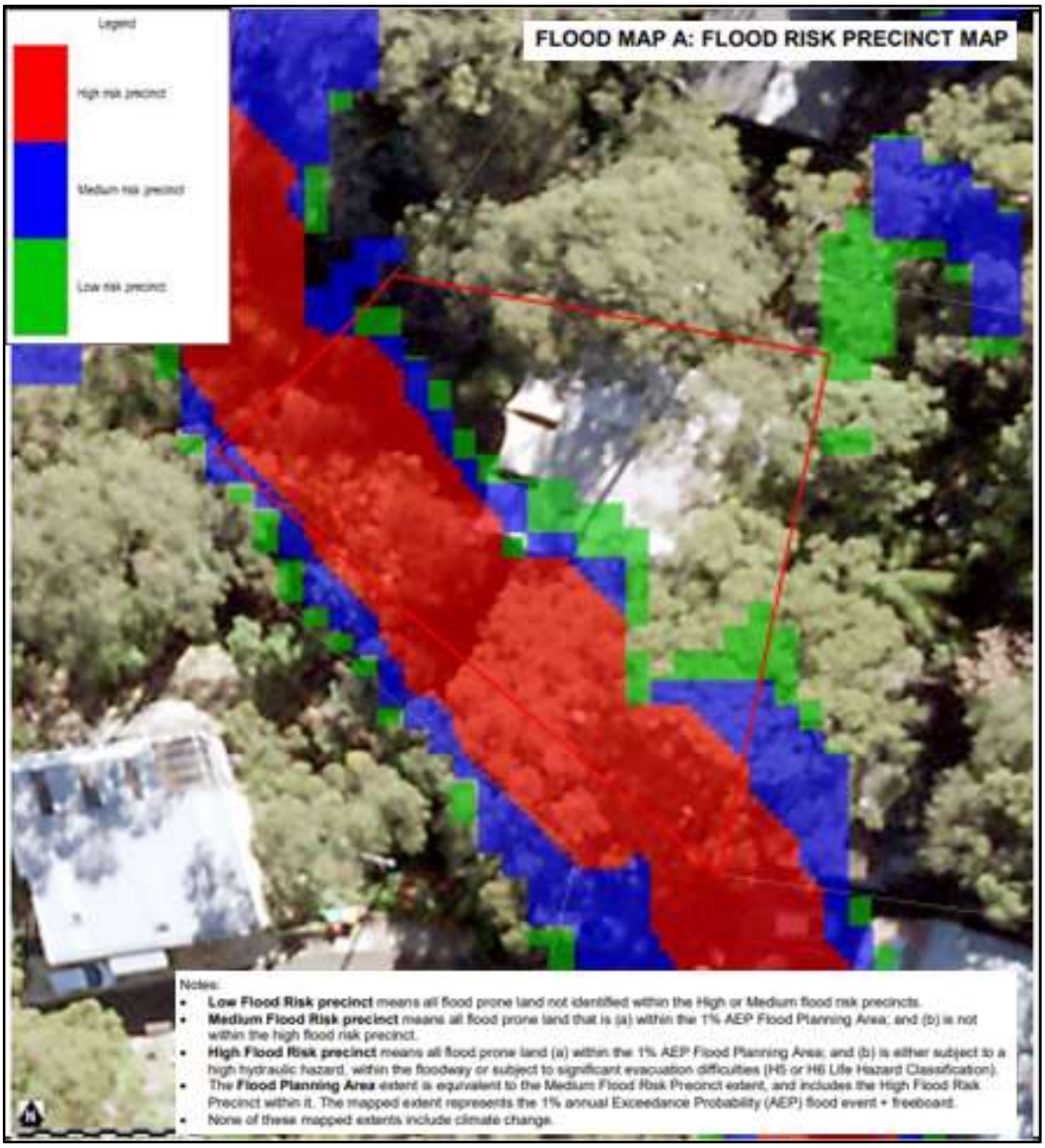



*Figure 7. 1% AEP Flood Risk Precinct Results (Extracted from Northern Beaches Council's Flood Information Letter)*

# SITE SPECIFIC FLOOD INFORMATION

Northern Beaches Council has undertaken a floodplain risk management study called '*Avalon to Palm Beach Floodplain Risk Management Study and Plan'* which identified existing flood behaviour at the subject site. This study report has been used for preparing this report.

## Existing 1%AEP Flood Event Results

## Maximum Flood Depth Results

Maximum Flood depth map during the 1% AEP flood event is extracted from the '*Avalon to Palm Beach Floodplain Risk Management Study and Plan'* report and is shown in Figure 8. The council's peak flood depth map shows peak flood depths greater than 0.05m (refer to Figure 8).

Results confirm that the site is flood affected by 1% AEP flood event. It is estimated flood depth around 0.5m can occur at the subject site and its surrounding area during the 1% AEP flood event.


***Figure 8. Existing Maximum Flood Depth Results during the 1% AEP Storm Event (Extracted from '*Avalon to Palm Beach Floodplain Risk Management Study and Plan' *Report)***

## Maximum Flood Level Results

Maximum Flood level map during the 1% AEP flood event is extracted from the '*Avalon to Palm Beach Floodplain Risk Management Study and Plan'* report and is shown in Figure 9.

According to the Figure 9, the peak flood levels across the development site approximately vary from around 30m AHD to around 50m AHD.


***Figure 9. 1% AEP Flood Extent (Extracted from* 'Avalon to Palm Beach Floodplain Risk Management Study and Plan' *Report)***

## Provisional Flood Hazard Results

Provisional flood hazard map during the 1% AEP flood event is extracted from the '*Avalon to Palm Beach Floodplain Risk Management Study and Plan'* report and is shown in Figure 10.

The flood hazard results are presented in Figure 10, results confirm that parts of the subject site adjacent to the existing stormwater easement is identified to be a 'high hazard precinct'.

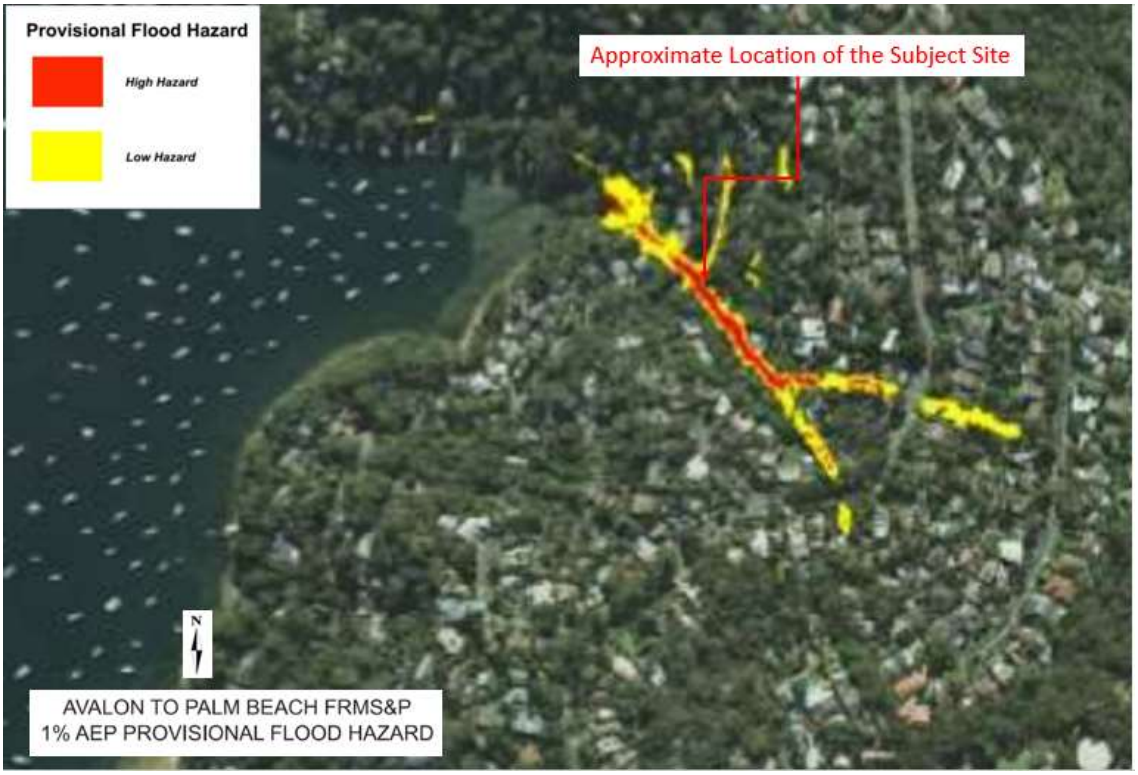



***Figure 10. Hazard Condition at the Development Site (Extracted from '*Avalon to Palm Beach Floodplain Risk Management Study and Plan' *Report)***

Flood hazard result at subject site is also extracted from the Northern Beaches Public Planning Maps and presented in Figure 11.

Northern Beaches Council's online flood hazard map indicates that parts of the subject site are identified to be on 'high risk precinct' and 'medium risk precinct' (Refer to Figure 11).

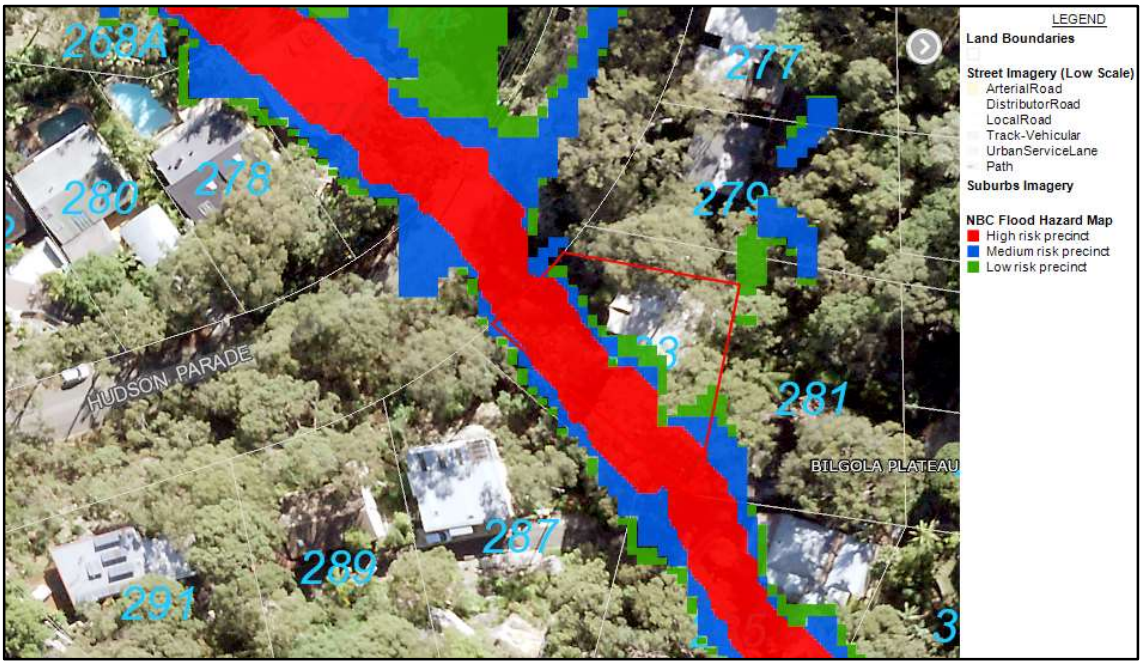



*Figure 11. Hazard Condition at the Development Site (Extracted from 'Northern Beaches Council Public Planning Maps' https://services.northernbeaches.nsw.gov.au/icongis/index.html)*

## Hydraulic Category Results

Hydraulic category map during the 1% AEP flood event is extracted from the '*Avalon to Palm Beach Floodplain Risk Management Study and Plan'* report and is shown in Figure 12.

Results confirm that parts of the subject site are located on floodway.


***Figure 12. Hydraulic Categories Results at the Development Site (Extracted from '*Avalon to Palm Beach Floodplain Risk Management Study and Plan' R*eport)***

## FLOOD PLANNING REQUIREMENTS

The Northern Beaches Council's DCP (Former Pittwater Council DCP 2014- Part B3.11- Flood Prone Land) specifies a number of controls relating to developments in lands identified as being affected by flooding on the Council's Flood Risk Precinct Maps to minimise flood risks to people, natural environment and private and public infrastructure and assets.

- 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:
  - There are no adverse impacts on flood levels or velocities caused by alterations to the flood conveyance; and
  - There are no adverse impacts on surrounding properties; and
  - It is sited to minimise exposure to flood hazard.

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

Lands on 'high hazard precinct' is not suitable for residential developments. For lands are on 'medium hazard precinct' below controls for ***floor levels*** must apply:

- New floor levels within the development shall be at or above the Flood Planning Level.
- 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:

- 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
- 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
- No solid areas of the perimeter of the underfloor area would be permitted in a floodway

- 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 the existing room; and
c) out of the 30 square metres, not more than 10 square metres 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 floodproofed 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.

Council's DCP requirements for ***fencing and pools*** for those lands are flood affected and located in 'Medium Flood Risk Precinct" are as below:

- 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 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. All chemicals associated with the pool are to be stored at or above the Flood Planning Level.
- 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 75 mm x 75mm.

Council's DCP requirements for ***car parking*** for those lands are flood affected and located in 'Medium Flood Risk Precinct" are as below:

- Open carpark areas and carports shall not be located ***within a floodway***.
- The lowest floor level of open carparks and carports shall be constructed no lower than the natural ground levels, unless it can be shown that the carpark or carport is free draining with a grade greater than 1% and that flood depths are not increased.
- Carports must be of open design, with at least 2 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 floodproofing up to the 1% AEP flood level.
- 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

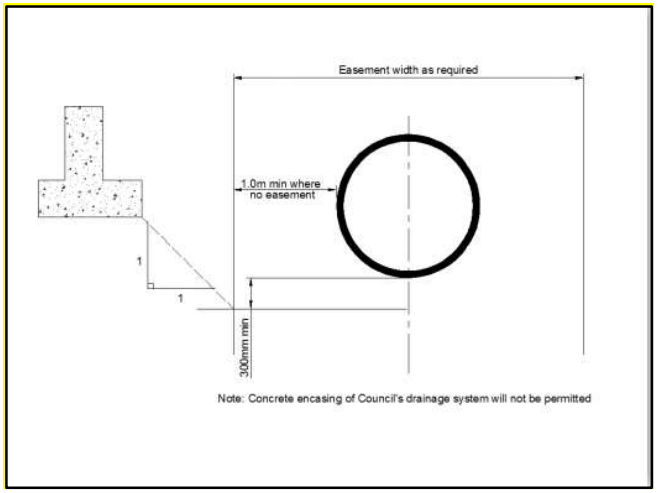
Northern Beaches Council has specified a few requirements for ***building Over or adjacent to constructed Council's drainage systems and easements*** as below:

- The construction of buildings or other permanent structures over constructed public drainage systems is not favoured and will generally not be approved by Council.
- Construction of buildings or other permanent structures under constructed public drainage systems is not permitted.
- Council's dimensional requirements for access are governed by the minimum horizontal and vertical clearances necessary for standard machinery to gain access to and undertake construction and maintenance of public drainage systems. These clearances include: i) The vertical height from the surface level over the public drainage system to the underside of the overlying structure. The minimum vertical height shall be 5.0 metres. ii) The horizontal distance between permanent obstructions along the line of the public drainage system. The horizontal clearance shall be the minimum of 3.0 metres or the pipe /channel diameter plus 2 metres.

Footings of any building located over or adjacent to an easement or constructed public drainage system ***are to be a minimum of 300mm below the invert*** of the public drainage system and may rise by 300mm for each 300mm removed there from.

Therefore, the proposed development needs to comply with the council's requirements as below:

- Minimum cover over Council's pipelines / culverts to be 600mm;
- A minimum horizontal clearance of 1.5 metres between the footings and the constructed drainage system is also required;
- The proposed structure needs to be a minimum of 300mm below the invert of the public drainage system and may rise at 1:1 from the edge of the easement or from 1.0m horizontal clearance if no easement is in place as shown in below image:




***Footing Placement in Relation to Pipe (Extracted from '***Building Over or Adjacent to Constructed Council Drainage Systems and Easements Technical Specification***')***

## ASSESSMENT OF FLOOD IMPACT

To assess the impact of the proposed development on existing flood behaviour and levels throughout the surrounding area, the following analysis has been undertaken.

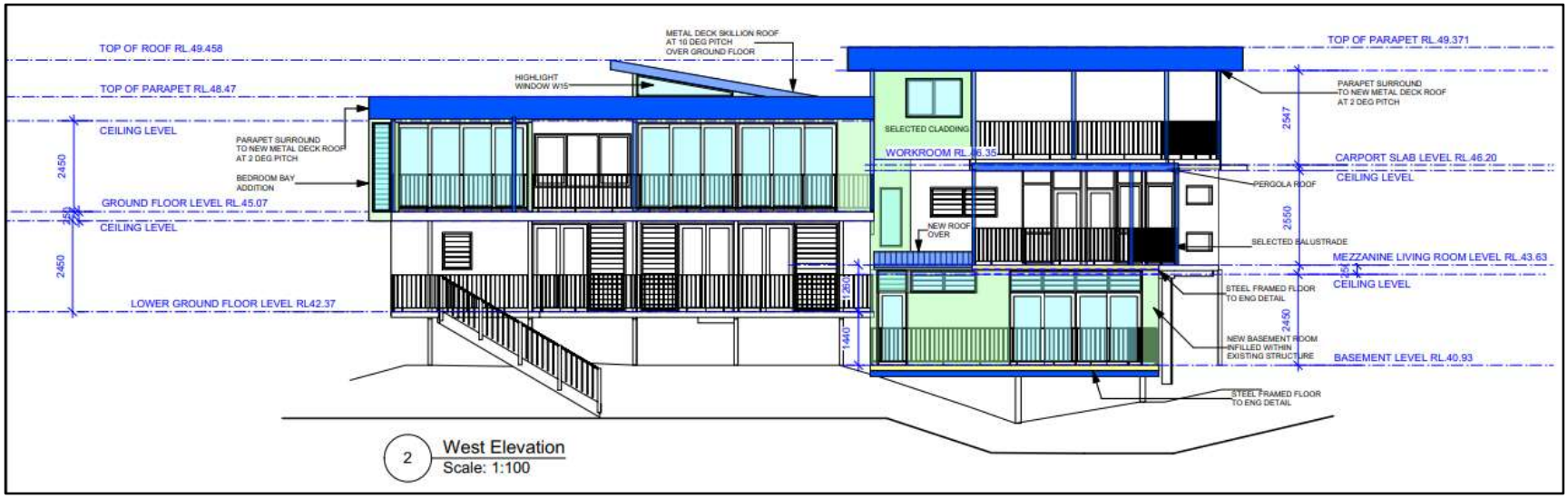
Based on the Council's flood information letter and flood study's results, the subject site is flood affected by the 1% AEP flood event.

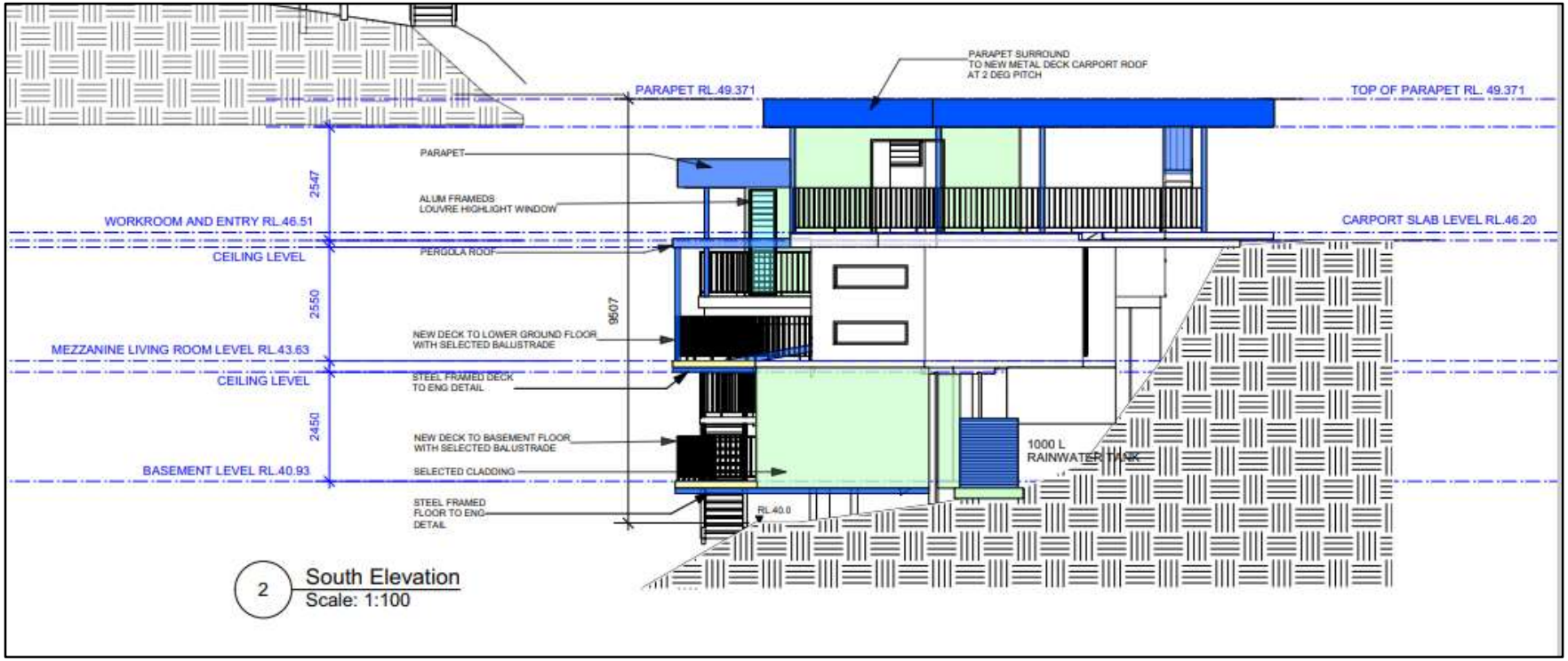
Council's flood information letter and Council's flood study results indicate that parts of the subject site are identified to be on floodway during the 1% AEP flood event.

Council's flood information letter and Council's flood study results also confirm that parts of the subject site are identified to be on high-risk precinct during the 1% AEP flood event.

Based on council's flood information letter and council's flood study results, Donovan Associates recommend:

- To minimize the adverse impacts of future development on the current flood behaviour, it is recommended any proposed plan to be in flood free zone within the subject site (refer to Figure 5 to Figure 7).
- Entrance for habitable area on ground floor level at south of the subject site is at RL 46.51m which is 0.89m above the peak flood level at vicinity of this entrance (point with ID 17) and basement floor level at south section is at RL 40.93m (ground surface at stairs' location to basement area is at RL 40m).
- Lower ground floor level is at RL 42.37m.
- A variable flood planning level is applying to this subject site due to significant differences between flood levels at different flood affected locations within the subject site. For example, flood planning level at location with ID 17 is defined to be 46.12 while flood planning level at location with ID 14 is defined to be at RL 42.62m (refer to Figure 5 and Table 1). According to the council's flood planning policy, flood planning level is equal to peak flood level at subject site plus 0.5m freeboard.
- 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.
- An appropriately qualified structural engineer needs to certify that the future proposed plan can withstand forces due to floodwater, buoyancy, and debris up to the flood planning level.
- The proposed development is to be constructed of flood compatible building components up to flood planning level.


TOP OF ROOF RL.49.458
TOP OF PARAPET RL.48.47
CEILING LEVEL
2450
PARAPET SURROUND TO NEW METAL DECK ROOF AT 2 DEG PITCH
BEDROOM BAY ADDITION
GROUND FLOOR LEVEL RL.45.07
CEILING LEVEL
2450
LOWER GROUND FLOOR LEVEL RL42.37
METAL DECK SKILLION ROOF AT 10 DEG PITCH OVER GROUND FLOOR
HIGHLIGHT WINDOW W15
SELECTED CLADDING
WORKROOM RL.46.35
NEW ROOF OVER
2800
1440
TOP OF PARAPET RL.49.371
PARAPET SURROUND TO NEW METAL DECK ROOF AT 2 DEG PITCH
2547
CARPORT SLAB LEVEL RL.46.20
CEILING LEVEL
PERGOLA ROOF
2550
SELECTED BALUSTRADE
MEZZANINE LIVING ROOM LEVEL RL.43.63
CEILING LEVEL
STEEL FRAMED FLOOR TO ENG DETAIL
2450
NEW BASEMENT ROOM INFILLED WITHIN EXISTING STRUCTURE
BASEMENT LEVEL RL.40.93
STEEL FRAMED FLOOR TO ENG DETAIL
2
West Elevation
Scale: 1:100


PARAPET SURROUND
TO NEW METAL DECK CARPORT ROOF
AT 2 DEG PITCH
PARAPET RL.49.371
TOP OF PARAPET RL. 49.371
PARAPET
ALUM FRAMEDS
LOUVRE HIGHLIGHT WINDOW
2547
WORKROOM AND ENTRY RL.46.51
CARPORT SLAB LEVEL RL.46.20
CEILING LEVEL
PERGOLA ROOF
2550
9607
NEW DECK TO LOWER GROUND FLOOR
WITH SELECTED BALUSTRADE
MEZZANINE LIVING ROOM LEVEL RL.43.63
CEILING LEVEL
STEEL FRAMED DECK
TO ENG DETAIL
2450
NEW DECK TO BASEMENT FLOOR
WITH SELECTED BALUSTRADE
1000 L
RAINWATER TANK
BASEMENT LEVEL RL.40.93
SELECTED CLADDING
STEEL FRAMED
FLOOR TO ENG
DETAIL
RL.40.0
2
South Elevation
Scale: 1:100

## MATERIAL TO USE

As part of the Flood Risk Assessment, recommendations are provided on the types of materials to be used in construction to ensure that structural integrity of the building is maintained during a flood event. Various types of loads must be considered in the design of the proposed buildings in relation to flood protection. These include:

- Impact loading caused by debris carried by flood waters
- Uplift or buoyancy forces
- Hydrostatic forces
- Hydrodynamic forces

The structure will be designed in accordance AS1170 for the types of loadings listed above for all flood events up to the PMF.

The hydrostatic and hydrodynamic forces caused by the rising flood water surrounding the structure are the most critical forces in terms of damage they can cause to the structure. Because on this, the structural engineer will need to ensure the building's structure retains integrity during flooding. Glass panels and doors will need to be protected from impact loads as debris floating in 100mm of water is more than capable of shattering glass.

In addition to potential loadings due to flooding, construction materials must be durable for short term duration immersion in flood waters. This would include all structural components being constructed from reinforced concrete, bricks, or reinforced masonry blocks.

The proposed extension includes concrete structural slab with polished concrete flooring (screed) for flooring, solid brickwork for the wall structure and Aluminium framed with corrosion-resistant rollers for the windows and doors. The above materials comply with Marrickville council DCP 2011 section 2.22.6 flood compatible material schedule.

**Note:** For reducing vulnerability of buildings to flood damage, "Guidance on Building in Flood Prone Areas" is a comprehensive document that anyone building or renovating a property in a flood affected area should consult. The link below will take you directly to the document:

https://www.ses.nsw.gov.au/media/2247/building_guidelines.pdf

## FLOOD EVACUATION STRATEGY

To minimise risk to personal safety of occupants, evacuation strategies shall be prepared and implemented to mitigate the flood water impacts due to the land use nature of the proposed buildings.

This section of the report identifies and discusses the strategies applicable to the subject site in accordance with Northern Beaches Council's DCP.

According to the available information to Donovan Associates the subject site is flood affected in the 1% AEP and greater flood events (Refer to Figure 5).

Results indicate peak flood levels between 30.6m AHD at location with ID 2 (refer to Figure 5) to 45.59m AHD at location with ID 17 are predicted to be experienced at subject site (area outside of the floodway) during the PMF event (refer to Figure 5 and Table 1).

Therefore, shelter-in-place strategy in a room on the ground floor of the proposed building shall be implemented during the extreme events to minimise the impact of flooding and liability on individual owners and occupiers of flood prone property and reduce private and public losses from floods. Ground floor level is at RL 46.51m which is above the PMF level (i.e., PMF level is 45.59m AHD at location with ID 17).

However, in the case that authorities concluded that evacuation is necessary, early evacuation and off-site evacuation must be executed. For this purpose, a flood evacuation plan has prepared and included in Appendix B.

## CONCLUSIONS & RECOMMENDATIONS

According to the council's flood information letter and '*Avalon to Palm Beach Floodplain Risk Management Study and Plan' report*, the subject site is flood affected during the 1% AEP flood event.

Parts of the subject site is identified to be on a floodway area and on a high-risk precinct.

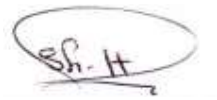
However, the following 'Risk Assessment Mitigation' measures needs to be implemented to mitigate any potential flood risk(s):

- To minimize the adverse impacts of future development on the current flood behaviour, it is recommended any proposed development to be in flood free zone within the subject site or on the existing dwelling footprint (refer to Figure 5).
- A variable flood planning level is applying to this subject site due to significant differences between flood levels at different flood affected locations within the subject site. For example, flood planning level at location with ID 17 is defined to be 46.12 while flood planning level at location with ID 14 is defined to be at RL 42.62m (refer to Figure 5 and Table 1). According to the council's flood planning policy, flood planning level is equal to peak flood level at subject site plus 0.5m freeboard.
- New floor levels within the development shall be at or above the Flood Planning Level (i.e., 1% AEP flood level + 0.5m freeboard).
- 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 flood event.
- Fencing (including pool fencing, boundary fencing, balcony balustrades and accessway balustrades) shall be open for passage of flood waters - All new fencing on the property must be design with a minimum of 50% open area between the 1% flood level and natural ground level, to allow flood waters to pass through.
- An appropriately qualified structural engineer is to certify that the future proposed plan can withstand forces due to floodwater, buoyancy, and debris up to the flood planning level.
- The proposed development is to be constructed of flood compatible building components up to flood planning level.

In addition, the proposed plan must comply with council's ***building Over or adjacent to constructed Council's drainage systems and easements*** requirements to minimise flood risks to the residents, natural environment, and council infrastructure.

Prepared by

**DONOVAN ASSOCIATES PTY LTD**



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**MIEAust**

## APPENDIX A - Flood Evacuation Plan

| Flood Evacuation Plan (FEP) | |
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| **PREPARE (Before a Flood Event)** | • Check bureau of Meteorology periodically for severe weather warnings and broadcast to your family members.<br>• Be aware of location of muster point<br>• Check if your home and contents insurance covers flooding.<br>• Keep list of emergency numbers<br>• Prepare an emergency kit which include everything you need in one place such as radio, torch, spare batteries, First Aid Kit, Gloves, Important Document, canned food at least 3 days' supply, water, prescriptions and medications and copy of your emergency plan |
| **Action (When You Hear A Flood Watch OR Weather Warning)** | • Listen to the radio and check the SES website for more information and advice.<br>• Go over your emergency plan Pack clothing and other extra items into your Emergency Kit and take this with you if you evacuate. |
| **When Flooding May Happen Soon (A Flood Warning)** | • Make sure your family members and neighbours are aware of what is happening.<br>• Be ready to evacuate. Act early. Conditions change rapidly. Roads and escape routes can be covered or blocked. Do not forget to take pets and medicine with you.<br>• Put household valuables and electrical items as high as possible.<br>• Turn off water, gas, and electricity at the mains<br>• Secure objects likely to float and cause damage. Raise chemicals and oils well above the forecast flood height. |
| **Action (During A Flood Event)** | • Remain calm<br>• For emergency assistance, call 132 500 for SES.<br>• Never drive, ride, or walk-through floodwater. This is the main cause of death during floods.<br>• Never allow children to play in floodwater. This is the main cause of death during floods for children and young people.<br>• Stay away from waterways. Water can flow quickly and have strong currents.<br>• If you must leave the site, exercise caution to fewer mobile persons seek assistance.<br>• Obey speed limit within the site and public roads.<br>• If evacuated, do not return until it is safe to do so.<br>• Follow the advice of authorities |
| **RECOVERY (After A Flood Event)** | • If your property has been flooded, check with Northern Beaches council for information and advice.<br>• Have all electrical and gas equipment professionally tested before use. |

## APPENDIX B- Council's Flood Information Letter