



AKUNA

ENGINEERING

3 November 2021

Group Architects
3.09/55 Miller Street
Pyrmont NSW 2009

Attention: Michael Munro

Dear Michael

1.0 Introduction

Akuna Engineering was engaged to assess the proposed Alterations and Additions at 95 Wimbledon Avenue, North Narrabeen in reference to potential risks and impacts connected with flooding. This report relies upon flooding information specific for the subject site provided by Council and uses architectural drawings to assess any impacts and risks.

1.1 Information Relied Upon

The following documentation has been used in the preparation of this overland flow assessment report:

- Survey and architectural drawings listed in Appendix A
- Council provided flood information in Appendix B

1.2 Description of the Site and Proposed Development

The subject site is located at 95 Wimbledon Avenue, North Narrabeen. The site (645m²) slopes to the West, away from Wimbledon Avenue and down to Narrabeen Lagoon.

The proposed works consist of the construction of a new in-ground pool towards the rear of the site, refer attached architectural plans.

2.0 Flooding

Council flood information (Appendix B) for the site identifies the property as being flood affected during the 1% annual exceedance probability (AEP) storm event. Council supplied flood information was used to determine flooding extents, impacts, and assess the associated risks to the development.

The development site is located within the High-Risk precinct flood hazard zone as identified within Northern Beaches (Pittwater) Council's Flood Hazard Map (Appendix B). Therefore, the site requires a Flood Management Report to be completed in accordance with Pittwater 21 Development Control Plan B3.11 Flood Prone Land to support the development.

2.1 Assessment of Impacts

All aspects of the proposed development are categorised as concessional and located within the High-Risk precinct. In accordance with Pittwater Council 21DCP sB3.11, flood controls are applicable to the development.

Based on the flood information contained within Appendix B, the predicted flood levels are summarised below:

- 1% AEP: 3.05 mAHD (Appendix B, Flood Map B)
- FPL: 3.55 mAHD (1% AEP flood level + 500mm)
- PMF: 5.03 mAHD (Appendix B, Flood Map D)

Table 1. DCP flood controls, High flood risk precinct, Residential

#	Prescriptive controls	Compliance with controls			Relevant Controls
		NA	Yes	No	
A	Flood effects caused by development		✓		A1, A2
B	Building components and structural		✓		B1,B2,B3
C	Floor levels		✓		C1, C3, C4, C6
D	Car parking	✓			D1, D2, D3, D4, D5, D6
E	Emergency response		✓		E1
F	Fencing		✓		F1
G	Storage of goods		✓		G1
H	Pools		✓		H1

NA – Not applicable

3.0 Addressing the Controls

Control A - Flood effects caused by development

- A1. Complies - The development is not expected to adversely impact surrounding properties with regard to flood levels, velocities or hazard during 1% AEP event.

The proposed pool will be constructed to match the existing levels shown in the attached survey.

- A2. Complies – No net filling is proposed within the 1% AEP extent, refer Control H1.

Control B – Building components and structural

- B1. Complies - Pool will be below ground, fencing to comply with Control H1 and be constructed of flood compatible materials.
- B2. Achievable - All new structures impacted by 1% AEP flood levels (below 3.05 mAHD) must be designed and constructed to ensure structural integrity up to the 1% AEP Flood event, taking into account the forces of floodwater, wave action,

flowing water with debris, buoyancy and immersion. Certification from a structural engineer must be provided as part of the CC works.

- B3. Achievable - 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 FPL.

Control C – Floor Levels

- C1. Not applicable
- C3. Complies – Pool will be in ground with surrounding levels constructed to match existing surface levels shown in the attached survey.
- C4. Not applicable
- C6. Not applicable

Control D – Car Parking

Not applicable

Control E – Flood emergency response

- E1. In the event that floodwaters overtop the foreshore boundary at any point on the property, the recommended actions are:
- Emergency services shall be contacted stating the property's location; the situation faced, number of people on the property and any evacuation measures to be carried out.
 - The occupants of the property shall evacuate the site and proceed up Wimbledon Avenue to the Wakehurst Parkway/ Wimbledon Avenue intersection. This area is approximately 5m above the PMF level.

Control F – Fencing

- F1. Achievable – Any proposed new fencing within the 1% AEP flood extent must be designed to have at least 50% openings from the natural ground level up to 1% AEP flood level (3.05 mAHD) to allow the passage of floodwater through the fence. Any opening must be a minimum of 75mm x 75mm.

Control G – Storage of goods

- G1. Complies – Refer control H1
- G2. Complies – Refer control H1

Control H – Pools

- H1. Complies – the proposed pool will be generally constructed with the pool coping and surround levels design to match the existing levels shown in the attached survey. A small area of the pool surround to the south will require some minor fill of 150 to 200mm, it is anticipated that this fill would be offset by the flood storage created by the pool due to the difference in the working water level of the pool and surrounding FFL (typically 100mm).

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.

4.0 Conclusion

Council's flood data predicts that during the 1% AEP rain event, the site will be completely inundated with floodwaters arising from Narrabeen Lagoon. The floodwaters on and surrounding the site are classified as High Hazard and Flood Storage (Map J & Map F respectively, refer to Appendix B).

The proposed development has been assessed against the relevant Council flood controls and provided that the recommendations contained within this report are adopted:

- The proposed development complies with the applicable flood controls outlined in sB3.11 of Northern Beaches Council's Development Control Plan (Pittwater21 DCP).
- No additional adverse flooding impacts are expected to occur to the neighbouring upstream and downstream properties as a result of the proposed development.
- The proposed development is consistent with the flood risk hazard of the land.

Please contact me if you have any questions.

Kind regards,

A handwritten signature in black ink, appearing to read 'Logan English-Smith'.

Logan English-Smith
Senior Engineer – Flooding & Stormwater

Appendix A – Survey and Architectural Plans

Appendix B – Council Flood Information