



# Civil & Structural Engineering Design Services Pty. Ltd.

ABN: 62 051 307 852

3 Wanniti Road BELROSE NSW 2085

Email: [hited@bigpond.net.au](mailto:hited@bigpond.net.au)

Tel: 02 9975 3899 Fax: 02 99751943

Web: [www.civilandstructural.com.au](http://www.civilandstructural.com.au)

17<sup>th</sup> July 2019

Roy Kee  
9 Wingara Grove  
BELROSE NSW 2085

D-11-267323

Dear Sir & Madam,

Re: Flood Report – Residential Alterations & Additions at 9 Wingara Grove, Belrose

## ***INTRODUCTION***

I, Edward A Bennett, practising Civil, Structural, Geotechnical & Environmental Engineer, confirm that one of our engineers inspected the above property for the purpose of carrying out a flood report for this property in respect to flood levels for ARI 1:100 rainfall events and the final overland flow levels to be adopted for the residential development above.

## ***REPORT***

Our company has been engaged to inspect and carry out a flood study for the purpose of Alterations and Additions at 9 Wingara Grove, Belrose. (refer Appendix "A")

We have received the flood information from the Northern Beaches Council for the above-mentioned property on 29<sup>th</sup> April 2019. The Flood Level received from the council are shown in Fig 1, Fig 2 & Fig 3, refer Appendix "A".

According to the council document the property will be affected by 1% AEP flood and is categorised as "Medium risk precinct".

## ***Flood Information:***

1% Annual Exceedance Probability (1% AEP): RL 136.39 (See Flood Map A)

Flood Planning Area: See Flood Map C

Flood Planning Level: 136.89m AHD

Proposed FFL: 136.91m (greater than  $136.39 + 0.5 = \text{RL } 136.89$ )

## ***CONCLUSIONS***

I have reviewed the proposal in consideration SEPP (Exempt & Complying Codes) 2008 Part 3, Subdivision 9, Clause 3.36C, sub clauses 1-5 and certify that the subject development, as proposed, doesn't impact on the following:

- (a) a flood storage area

- (b) a floodway area
- (c) a flow paths
- (d) a high hazard area
- (e) a high-risk area

The proposed rear timber deck is required to be suspended and supported on piers to prevent blockage to the flood flow paths and when the flood recedes, in will be unimpeded without impact on the structure or neighbouring properties.

It is also noted, where applicable, that the development must satisfy the requirements of sub-clauses 3 & 4 relating to construction standards, minimum flood planning levels and increased flood affectation.

Yours faithfully,



E.A. Bennett M.I.E. Aust. CPEng. NPER 198230 BPB 0820

## **Appendix A:**



### **FLOOD INFORMATION REQUEST - COMMON**

**Property:** 9 Wingara Grove, Belrose

**Issue Date:** 29/04/2019

**Flood Study Reference:** Frenchs Creek Flood Study 2010, DHI

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#### **Flood Information for lot:**

##### **1% AEP – See Flood Map A**

**1% AEP Maximum Water Level<sup>3</sup>:** 136.39 m AHD

**1% AEP Maximum Peak Depth from natural ground level<sup>3</sup>:** 1.18 m

**1% AEP Maximum Velocity:** N/A m/s

**1% AEP Provisional Flood Hazard:** N/A

**1% AEP Hydraulic Categorisation:** N/A

##### **Flood Planning Area – See Flood Map B**

**Flood Planning Level (FPL)<sup>1,2, 3 &4</sup>:** 136.89 m AHD

##### **Probable Maximum Flood (PMF) – See Flood Map C**

**PMF Maximum Water Level<sup>2</sup>:** 136.69 m AHD

**PMF Maximum Depth from natural ground level:** 1.42 m

**PMF Maximum Velocity:** N/A m/s

##### **Flood Risk Precinct – See Map D**

<sup>1</sup>The flood information does not take into account any local overland flow issues nor private stormwater drainage systems.

<sup>2</sup>Overland flow/mainstream water levels may vary across a sloping site, resulting in variable minimum floor/flood planning levels across the site.

<sup>3</sup>Intensification of development in the former Pittwater LGA requires the consideration of climate change impacts which may result in higher minimum floor levels than those indicated on this flood advice.

<sup>4</sup>Vulnerable/critical developments require higher minimum floor levels using the higher of the PMF or Flood Planning Level

## FLOOD MAP A: 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: Frenchs Creek Flood Study) and aerial photography (Source Near Map 2014) are indicative only.

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Fig 1: FLOOD MAP B: Flooding -1% AEP Extent

## FLOOD MAP C: FLOOD PLANNING AREA EXTENT



### Notes:

- Extent represents the 1% annual Exceedance Probability (AEP) flood event + freeboard.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: Frenchs Creek Flood Study) and aerial photography (Source: Near Map 2014) are indicative only.

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Fig 2: FLOOD MAP C: Flood Planning Area Extent



## FLOOD MAP D – 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 and or H6 Life Hazard Classification).

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Fig 3: FLOOD MAP G: Flood Risk Precinct Map  
Report

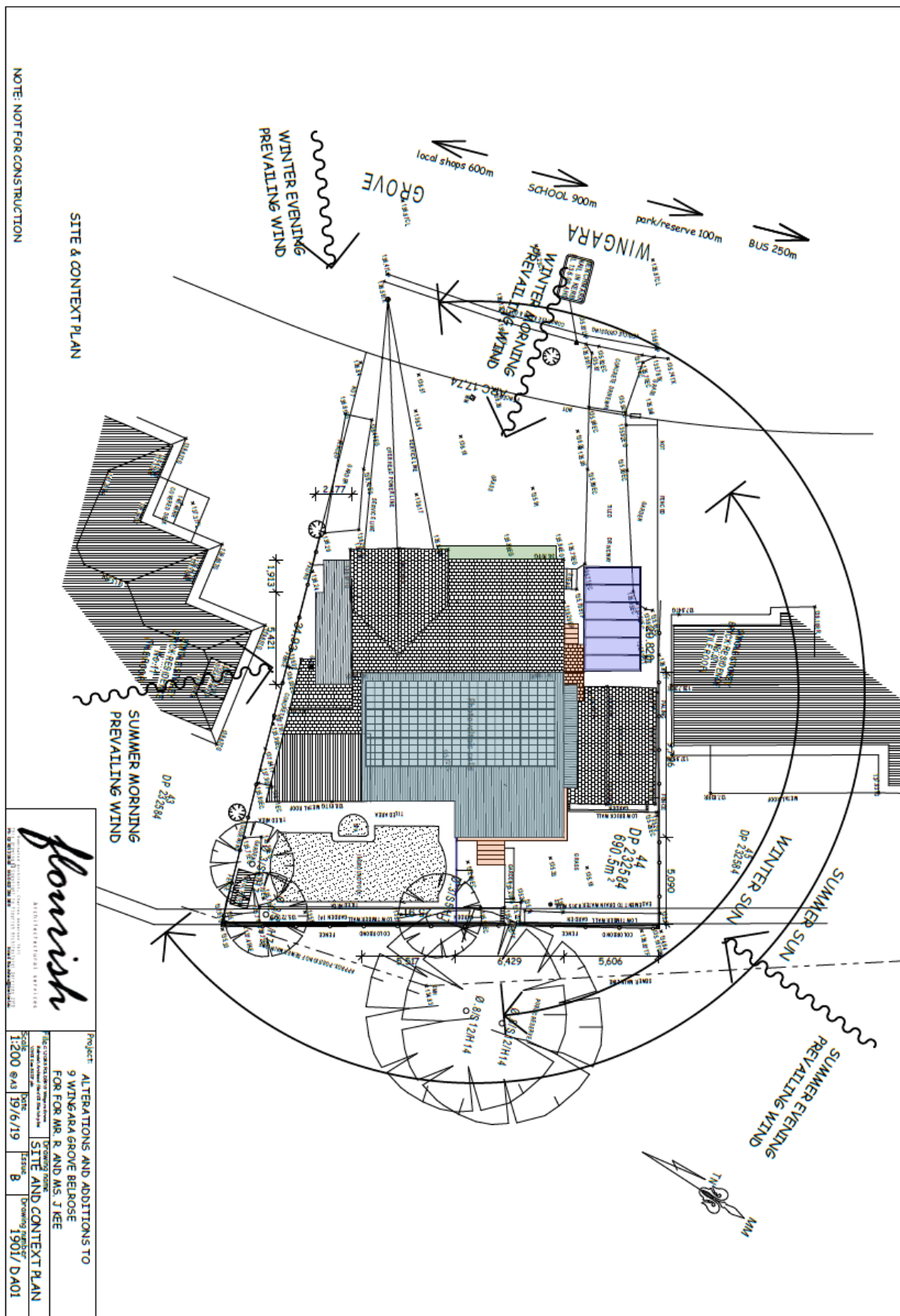


Fig 4: DEVELOPMENT SITE

**GROUND FLOOR PLAN**

**NOTE: NOT FOR CONSTRUCTION**

**Alterations and Additions to 9 WINKARA GROVE BELROSE FOR MR R AND MS J TEE**

**GROUND FLOOR PLAN**

**1:100 EAS 19/6/19**

**G**

**1901/DA02**