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8 January 2024

## **Coastal Engineering Advice on 138 Lagoon Street Narrabeen**

### **1. INTRODUCTION AND BACKGROUND**

It is proposed to undertake alterations and additions to a dwelling at 138 Lagoon Street Narrabeen (hereafter denoted as the 'site'). A Development Application (DA) has been submitted to Northern Beaches Council for these works, but was returned as Council requires that a coastal assessment report is prepared as part of the DA. This report is set out herein.

The report author, Peter Horton [BE (Hons 1) MEngSc MIEAust CPEng NER], is a professional Coastal Engineer with 32 years of coastal engineering experience. He has postgraduate qualifications in coastal engineering, and is a Member of Engineers Australia and Chartered Professional Engineer (CPEng) registered on the National Engineering Register. He is also a member of the National Committee on Coastal and Ocean Engineering (NCCOE) and NSW Coastal, Ocean and Port Engineering Panel (COPEP) of Engineers Australia.

Peter has prepared DA coastal engineering reports at many locations in Narrabeen, and has inspected the area in the vicinity of the site on numerous occasions, in the last few decades. He undertook a specific recent inspection of the site on 31 December 2023.

All levels given herein are to Australian Height Datum (AHD). Zero metres AHD is approximately equal to mean sea level at present in the ocean immediately adjacent to the NSW mainland.

### **2. INFORMATION PROVIDED**

Horton Coastal Engineering was provided with 18 drawings (Drawing Nos DA.01 to 18) of the proposed development prepared by JJ Drafting, all dated July 2023. A site survey completed by C & A Surveyors (Ref No 25637-23 DET/ID, dated 26 July 2023) was also provided.

### **3. EXISTING SITE DESCRIPTION**

The site is located at the NW corner of Lagoon Street and Malcolm Street in Narrabeen. It has no water frontage, being located a minimum of 60m from Narrabeen Lagoon, and about 240m from the landward edge of dune vegetation at Collaroy-Narrabeen Beach (and about 340m from the typical shoreline there at mean seal level). An oblique aerial view of the site and surrounds is provided in Figure 1, with a site photograph in Figure 2.





**Figure 1: Oblique aerial view of site (at arrow) on 19 March 2023, facing north**



**Figure 2: View of site (at arrow) from Malcom Street on 31 December 2023, facing ENE**



Based on the survey provided, ground levels at the site vary from about 5.8m AHD at the SE corner, 4.5m AHD at the NE corner, 2.5m to 2.6m AHD on the eastern side of the dwelling, and 2.4m to 2.5m AHD at the western boundary. The two storey dwelling has a ground floor level of 2.40m AHD (workshop on eastern side), 2.53m AHD (garage on western side) or 2.64m AHD (main dwelling).

#### **4. PROPOSED DEVELOPMENT**

It is proposed to undertake alterations and additions to the dwelling at the site, including a third level addition on the eastern side, first floor balcony (with roof) on the western side, garage extension about 815mm south, entry roof on the southern side, and demolished and rebuilt retaining walls on the eastern side with steps up to the dwelling. Existing floor levels are to be maintained, with the eastern addition having a proposed floor level of 7.6m AHD.

#### **5. COASTAL HAZARDS**

The site is well landward of Collaroy-Narrabeen Beach erosion/recession and oceanic inundation processes for an acceptably rare storm and over an acceptably long life (well exceeding 100 years).

The site is subject to flooding from Narrabeen Lagoon, as considered in a report by Northern Beaches Consulting Engineers Pty Ltd dated 11 December 2023. Based on the definition of 'coastal hazard' in Section 4 of the *Coastal Management Act 2016*, it is considered that this flooding process is not a coastal hazard, as it is mostly driven by rainfall-runoff processes propagating from upstream to downstream, and not oceanic inundation or wave action<sup>1</sup>.

Land levels on the site are above 2.4m AHD, and the 1% AEP ocean water level including 0.9m of sea level rise is at this level. The site is thus not subject to coastal inundation (in isolation from rainfall-runoff) propagating out of the Lagoon for an acceptably rare storm and over an acceptably long life.

Therefore, the site is not subject to coastal hazards (as defined in Section 4 of the *Coastal Management Act 2016*) for an acceptably rare storm and over an acceptably long life.

#### **6. CONSENT MATTERS**

##### **6.1 Preamble**

In a letter dated 20 December 2023, Council noted that the following had to be considered herein:

1. *Coastal Management Act 2016*;
2. *State Environmental Planning Policy (Resilience and Hazards) 2021*<sup>2</sup>;
3. Clause 5.7 of *Warringah Local Environmental Plan 2011* (LEP 2011);
4. Clause 6.5 of LEP 2011; and
5. Part E9 of *Warringah Development Control Plan 2011*.

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<sup>1</sup> It is recognised that elevated ocean water levels, and the state of the Lagoon entrance (amount of sand in the entrance and level of the beach berm), affect flooding in the Lagoon. However, the driving process for flooding is rainfall-runoff, and the 1% Annual Exceedance Probability present-day flood level at the site is 3.02m AHD, which is well (in the order of 1.5m) above ocean still water levels for a corresponding probability event.

<sup>2</sup> Encompassing the former *State Environmental Planning Policy (Coastal Management) 2018*.

These matters are addressed in turn below.

## **6.2 Coastal Management Act 2016**

As no coastal protection works are proposed as per Section 27 of the *Coastal Management Act 2016*, this Act can be addressed by consideration of coastal management areas as per *State Environmental Planning Policy (Resilience and Hazards) 2021* in Section 6.3 below.

## **6.3 State Environmental Planning Policy (Resilience And Hazards) 2021**

### **6.3.1 Preamble**

Based on *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP Resilience) and its associated mapping, the site is within a “coastal environment area” (see Section 6.3.2) and “coastal use area” (see Section 6.3.3).

### **6.3.2 Clause 2.10**

Based on Clause 2.10(1) of SEPP Resilience, “development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

- (a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,
- (b) coastal environmental values and natural coastal processes,
- (c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,
- (d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,
- (e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
- (f) Aboriginal cultural heritage, practices and places,
- (g) the use of the surf zone”.

With regard to (a), the proposed works are in a developed residential area, and would not be expected to adversely affect the biophysical and hydrological (surface and groundwater) environments. Based on Drawing DA.14, new downpipes are to be connected to existing stormwater pipes that discharge to a kerb outlet in Malcolm Street, consistent with existing drainage arrangements. The proposed development would not be a source of pollution as long as appropriate construction environmental controls are applied.

Assuming that there is no native vegetation or fauna and their habitats at the site that would be impacted by the works, the proposed works would not be expected to adversely affect the ecological environment.

With regard to (b), the proposed development would not be expected to adversely affect coastal environmental values or natural coastal processes over its design life, as it is at an acceptably low risk of interacting with erosion/recession and inundation processes for an acceptably rare storm and over an acceptably long life.

With regard to (c), the proposed development would not adversely impact on water quality as long as appropriate construction environmental controls are applied.

With regard to (d), there are no undeveloped headlands nor rock platforms in proximity to the proposed development, no marine vegetation in the area to be developed, and no known native vegetation of significance at the site. No significant impacts on marine fauna and flora would be expected as a result of the proposed development, as the development would not be expected to interact with subaqueous areas over the design life.

With regard to (e), the proposed development would not impact on public open space and access to and along the foreshore, being entirely within private property.

With regard to (f), a search of the Heritage NSW “Aboriginal Heritage Information Management System” (AHIMS) was undertaken on 8 January 2024. This resulted in no Aboriginal sites nor Aboriginal places being recorded or declared within at least 200m of the site.

With regard to (g), the proposed development is in the order of 240m landward of Collaroy-Narrabeen Beach, and would not be expected to interact with the surf zone over its design life, so would not impact on use of the surf zone.

Based on Clause 2.10(2) of SEPP Resilience, “development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:

- (a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or
- (b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- (c) if that impact cannot be minimised—the development will be managed to mitigate that impact”.

The proposed development has been designed and sited to avoid the adverse impacts referred to in Clause 2.10(1).

### 6.3.3 *Clause 2.11*

Based on Clause 2.11(1) of SEPP Resilience, “development consent must not be granted to development on land that is within the coastal use area unless the consent authority:

- (a) has considered whether the proposed development is likely to cause an adverse impact on the following:
  - (i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
  - (ii) overshadowing, wind funnelling and the loss of views from public places to foreshores,
  - (iii) the visual amenity and scenic qualities of the coast, including coastal headlands,
  - (iv) Aboriginal cultural heritage, practices and places,
  - (v) cultural and built environment heritage, and
- (b) is satisfied that:
  - (i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or
  - (ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or

- (iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and
- (c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development”.

With regard to (a)(i), the proposed development would not impact on foreshore or beach access, as discussed previously.

With regard to (a)(ii), (a)(iii) and (c), these are not coastal engineering matters so are not considered herein.

With regard to (a)(iv), there are no particular Aboriginal sites nor Aboriginal places within 200m of the proposed development, as noted in Section 6.3.2.

With regard to (a)(v), the nearest environmental heritage items listed in Schedule 5 of LEP 2011 are the group of Washington Palms (*Washingtonia robusta*) near Narrabeen Lagoon between 144 Lagoon Street and 232 Ocean Street (at least 50m from the site), and the stone wall on Ocean Street between Malcolm Street and the Ocean Street bridge (at least 150m from the site). The proposed development would not be expected to impact on these or more distant heritage items.

With regard to (b), the proposed development has been designed and sited to avoid any potential adverse impacts referred to in Clause 2.11(1).

#### 6.3.4 Clause 2.12

Based on Clause 2.12 of SEPP Resilience, “development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land”.

As noted in Section 5, the site is not subject to coastal hazards for an acceptably rare storm and over an acceptably long life, so could not give rise to any increased coastal hazard on that land or adjacent land.

#### 6.3.5 Clause 2.13

Based on Clause 2.13 of SEPP Resilience, “development consent must not be granted to development on land within the coastal zone unless the consent authority has taken into consideration the relevant provisions of any certified coastal management program that applies to the land”.

No coastal management program applies at the site.

#### 6.3.6 Synthesis

The proposed development satisfies the requirements of SEPP Resilience for the matters considered herein.

## **6.4 Warringah Local Environmental Plan 2011**

### **6.4.1 Clause 5.7**

Clause 5.7 of LEP 2011 applies to development below mean high water mark, ie development below approximately 0.5m AHD. No such development is proposed at the site, which is well above tidal processes, so Clause 5.7 is not applicable at the site.

### **6.4.2 Clause 6.5**

Clause 6.5 of LEP 2011 applies to land immediately adjacent to Collaroy-Narrabeen Beach as shown on the Coastline Hazard Map as 'Area of Wave Impact and Slope Adjustment' and 'Area of Reduced Foundation Capacity'. The site is located about 220m landward of land so mapped, so Clause 6.5 is not applicable at the site.

## **6.5 Warringah Development Control Plan 2011**

Part E9 of the *Warringah Development Control Plan 2011* (DCP 2011)<sup>3</sup> applies to land identified on the LEP 2011 Coastline Hazard Map. As discussed in Section 6.4.2, the site is located about 220m landward of land identified on this map. Therefore, Part E9 of DCP 2011 is not applicable at the site.

## **7. CONCLUSIONS**

It is proposed to undertake alterations and additions to a dwelling at 138 Lagoon Street Narrabeen.

The site is well landward of Collaroy-Narrabeen Beach erosion/recession and oceanic inundation processes for an acceptably rare storm and over an acceptably long life (well exceeding 100 years).

The site is subject to flooding from Narrabeen Lagoon. Based on the definition of 'coastal hazard' in Section 4 of the *Coastal Management Act 2016*, this flooding process is not a coastal hazard, as it is mostly driven by rainfall-runoff processes, and not oceanic inundation or wave action.

Land levels on the site are above 2.4m AHD, and the 1% AEP ocean water level including 0.9m of sea level rise is at this level. The site is thus not subject to coastal inundation (in isolation from rainfall-runoff) propagating out of the Lagoon for an acceptably rare storm and over an acceptably long life.

Therefore, the site is not subject to coastal hazards (as per the *Coastal Management Act 2016*) for an acceptably rare storm and over an acceptably long life.

The proposed development satisfies the requirements of *State Environmental Planning Policy (Resilience and Hazards) 2021* for the matters considered herein. Clause 5.7 and Clause 6.5 of *Warringah Local Environmental Plan 2011*, and Part E9 of *Warringah Development Control Plan 2011*, do not apply at the site.

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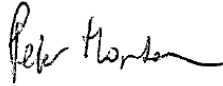
<sup>3</sup> Amendment 22 of the DCP was reviewed, which was approved on 1 June 2022.

## 8. SALUTATION

If you have any further queries, please do not hesitate to contact Peter Horton via email at [peter@hortoncoastal.com.au](mailto:peter@hortoncoastal.com.au) or via mobile on 0407 012 538.

Yours faithfully

HORTON COASTAL ENGINEERING PTY LTD



Peter Horton

Director and Principal Coastal Engineer

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