

HORTON COASTAL ENGINEERING PTY LTD
18 Reynolds Cres
Beacon Hill NSW 2100
+61 (0)407 012 538
peter@hortoncoastal.com.au
www.hortoncoastal.com.au
ABN 31 612 198 731
ACN 612 198 731

Northern Beaches Council
Attention: Bernard Koon
(sent by email only to Bernard.Koon@northernbeaches.nsw.gov.au)

1 February 2023

Coastal Engineering Advice on South Curl Curl SLSC Storeroom

1. INTRODUCTION AND BACKGROUND

It is proposed to construct a new storeroom at South Curl Curl SLSC. Northern Beaches Council requires that a coastal engineering assessment is prepared as part of a Development Application (DA) for the works, as set out herein.

The report author, Peter Horton [BE (Hons 1) MEngSc MIEAust CPEng NER], is a professional Coastal Engineer with 30 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.

In previous employment, Peter was the main author of the *Coastal Zone Management Plan for Collaroy-Narrabeen Beach and Fishermans Beach (CZMP)* prepared for Warringah Council in 2014, and the *Coastal Erosion Emergency Action Subplan for Beaches in Warringah* prepared for Warringah Council in 2012. He has also prepared coastal engineering assessments for DA's at numerous locations in the former Warringah Local Government Area over the last 15 years or so. Peter has inspected the area in the vicinity of South Curl Curl SLSC on numerous occasions over the last 15 years or so, and undertook a specific site inspection for this project on 21 November 2022.

Note that all levels given herein are to Australian Height Datum (AHD). Zero metres AHD is approximately equal to mean sea level at present.

2. INFORMATION PROVIDED

Horton Coastal Engineering was provided with five drawings (Drawing Nos DA00 to DA04) of the proposed works prepared by Northern Beaches Council, all dated November 2022 and Revision C. A site survey (Reference 21857) completed by C.M.S. Surveyors and dated 26 October 2022 (Issue 1) was also provided.

3. EXISTING SITE DESCRIPTION

South Curl Curl SLSC is located about 100m from the southern end of South Curl Curl Beach. Based on the survey provided, the top of the seawall at the seaward edge of the concrete promenade is at a level of about 6.0m AHD seaward of the proposed works. The promenade is about 5m wide at this location, with a stairway extending between two buildings up to

9.2m AHD. The location of the proposed storeroom is currently a concreted area at a level of about 9.2m to 9.4m AHD. Photographs of the proposed development location are provided in Figure 1 and Figure 2.

As described in the *Coastal Erosion Emergency Action Subplan for Beaches in Warringah*, the current SLSC building was constructed in 1937. A sandstone blockwork seawall (still visible today) with timber sheeting toe protection was also constructed seaward of the clubhouse. These coastal protection works were upgraded by Council in 2006, with replacement of the timber sheeting with a vertical seawall (generally buried under sand), and a sloping rock blanket located landward (that is, between the new seawall and original sandstone blockwork seawall).

It can be assumed that the coastal protection works seaward of the clubhouse provide an acceptably low risk of damage to the clubhouse from erosion/recession in coastal storms over an acceptably long life, noting that it is the expectation that Council would maintain these coastal protection works over the design life, with a design life of 60 years being assumed herein.



Figure 1: Oblique aerial view of South Curl Curl SLSC on 24 January 2021, facing SW, with location of proposed works at arrow



Figure 2: View of location of proposed works (at arrow), facing SSE, on 21 November 2022

4. PROPOSED DEVELOPMENT

It is proposed to construct a storeroom at the SW corner of the South Curl Curl SLSC clubhouse near Carrington Parade (as depicted in Figure 1 and Figure 2), with a finished floor level of 9.45m AHD at the door entry which would face approximately south. There is to be a 360mm step down (two steps with 180mm risers) outside the door entry, down to 9.09m AHD.

5. EROSION/RECESSION COASTLINE HAZARDS

Without coastal protection works in place, South Curl Curl SLSC would be expected to be completely undermined and severely damaged in a major coastal erosion event in the order of 100 year Average Recurrence Interval (ARI) at present. This underlies the importance of Council maintaining the coastal protection works at this location, which is the expectation as noted in Section 3.

6. FOUNDATION DESIGN REQUIREMENTS

Given its location landward of coastal protection works, there are no foundation design requirements for the proposed development from a coastal engineering perspective. Therefore, the foundations may be designed by structural and geotechnical engineers as part of detailed design in a conventional manner.

7. COASTAL INUNDATION COASTLINE HAZARDS

In the *Coastal Erosion Emergency Action Subplan for Beaches in Warringah*, a present-day 100 year ARI wave runup level of 8m AHD for exposed areas of the then Warringah Local Government Area was adopted.

Wave runup and overtopping behaviour would be relatively complex in the vicinity of the proposed development. For waves to reach the proposed development area they would have to overtop the seawall promenade at 6.0m AHD, runup the stairwell (about 2.4m wide) to over 9.2m AHD, and then have sufficient depth (over 360mm) to flow into the door entry to the storeroom.

There is therefore considered to be an acceptably low risk of wave overtopping inundating the storeroom over a design life of at least 60 years.

8. CONSENT MATTERS AND MERIT ASSESSMENT

8.1 *Warringah Local Environmental Plan 2011*

Clause 6.5(3) of *Warringah Local Environmental Plan 2011* (LEP 2011) does not apply to the proposed development, as this clause only applies at Collaroy-Narrabeen Beach. However, it is considered to be relevant in-principle to apply at South Curl Curl Beach.

Based on Clause 6.5(3) of LEP 2011, “development consent must not be granted unless the consent authority is satisfied that the development:

- (a) will not significantly adversely affect coastal hazards, and
- (b) will not result in significant detrimental increases in coastal risks to other development or properties, and
- (c) will not significantly alter coastal hazards to the detriment of the environment, and
- (d) incorporates appropriate measures to manage risk to life from coastal risks, and
- (e) avoids or minimises exposure to coastal hazards, and
- (f) makes provision for relocation, modification or removal of the development to adapt to coastal hazards and NSW sea level rise planning benchmarks”.

With regard to Clauses 6.5(3)(a), (b) and (c), the proposed development is unlikely to have a significant impact on coastal hazards or increase the risk of coastal hazards in relation to any other land (or the environment), as it is landward of a seawall and on the landward side of the clubhouse beyond the expected limit of wave runup in a severe 100 year ARI storm over the design life. The proposed development has an acceptably low risk of being affected by coastal hazards given the seawall that is in place, and Clauses 6.5(3)(d) and (e) are therefore satisfied.

With regard to Clause 6.5(3)(f), the proposed development has been designed to not be damaged by coastline hazards for an acceptably rare storm and acceptably long design life, rather than relocated or removed.

Based on Clause 6.5(4), “development consent must not be granted unless the consent authority is satisfied that the foundations of the development have been designed to be constructed having regard to coastal risk”. As noted in Section 6, given the seawall that is in place, there are no foundation design requirements for the proposed development from a coastal engineering perspective.

8.2 State Environmental Planning Policy (Resilience and Hazards) 2021

8.2.1 Preamble

Based on *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP Resilience) and its associated mapping, the subject site is within a “coastal environment area” (see Section 8.2.2) and “coastal use area” (see Section 8.2.3).

8.2.2 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”.

This is not a coastal engineering matter, but it can be noted that with regard to (a), the proposed development would not be expected to adversely affect the biophysical, hydrological (surface and groundwater) and ecological environments, being in an existing developed area. Stormwater that currently flows off the development area as overland flow would be captured in the roof gutters and a downpipe that would discharge into a garden bed to the west of the storeroom in the proposed development.

With regard to (b), the proposed development would not be expected to adversely affect coastal environmental values or natural coastal processes over an acceptably long design life, as it is located landward of a seawall on an already developed site.

With regard to (c), the proposed development would not be expected to adversely impact on water quality, with the same land use, as long as appropriate construction environmental controls are applied. No sensitive coastal lakes are located in the vicinity of the proposed development.

With regard to (d), the proposed development would not impact marine vegetation, native vegetation and fauna and their habitats (of significance, which are not known to exist at the site), undeveloped headlands and rock platforms, with none of these items in proximity. No significant impacts on marine fauna and flora would be expected as a result of the proposed development, as the development would not interact with subaqueous areas with the seawall in place for an acceptably rare storm.

With regard to (e), it can be noted that the proposed development would not alter existing public access arrangements at the clubhouse, with the adjacent stairway to the promenade, and adjacent footpath to the west, unaltered.

With regard to (f), a search of the Heritage NSW “Aboriginal Heritage Information Management System” (AHIMS) was undertaken on 1 February 2023. This resulted in no Aboriginal sites nor Aboriginal places being recorded or declared within at least 200m of the proposed development.

With regard to (g), the proposed development would not interact with the surf zone for an acceptably rare storm occurring over an acceptably long life with the seawall in place, 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 any potential adverse impacts referred to in Clause 2.10(1).

8.2.3 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 Clause (a)(i), the proposed development will not affect public beach access.

Clauses (a)(ii) and a(iii) are not coastal engineering matters so are not considered herein.

With regard to (a)(iv), there are no Aboriginal sites nor Aboriginal places recorded or declared within at least 200m of the proposed development, as noted in Section 8.2.2.

With regard to (a)(v), the nearest environmental heritage items listed in Schedule 5 of LEP 2011 are the building known as “Stewart House” (located opposite the SLSC and at least 60m from the proposed development) and South Curl Curl (ocean) Pool (located at least 140m from the proposed development). The proposed development would not be expected to impact on these 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) for the matters considered herein.

Clause (c) is not a coastal engineering matter so is not considered herein.

8.2.4 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”.

The proposed development is unlikely to have a significant impact on coastal hazards or increase the risk of coastal hazards in relation to any other land, as it is located landward of a seawall and on the landward side of the clubhouse beyond the expected limit of wave runup in a severe 100 year ARI storm over the design life.

8.2.5 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 certified coastal management program applies at the subject site.

9. CONCLUSIONS

It is proposed to construct a new storeroom at the SW corner of the South Curl Curl SLSC clubhouse near Carrington Parade. It can be assumed that the coastal protection works seaward of the clubhouse provide an acceptably low risk of damage to the clubhouse from erosion/recession in coastal storms over an acceptably long life, noting that it is the expectation that Council would maintain these coastal protection works over the design life, with a design life of 60 years being assumed herein.

Given its location landward of coastal protection works, there are no foundation design requirements for the proposed development from a coastal engineering perspective.

There is considered to be an acceptably low risk of wave overtopping inundating the storeroom over a design life of at least 60 years.

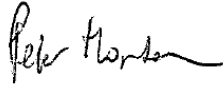
The proposed development satisfies the requirements of Clause 6.5 of *Warringah Local Environmental Plan 2011* and *State Environmental Planning Policy (Resilience and Hazards) 2021* for the matters considered herein.

10. SALUTATION

If you have any further queries, please do not hesitate to contact Peter Horton via email at 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

This report has been prepared by Horton Coastal Engineering Pty Ltd on behalf of and for the exclusive use of Northern Beaches Council (the client), and is subject to and issued in accordance with an agreement between the client and Horton Coastal Engineering Pty Ltd. Horton Coastal Engineering Pty Ltd accepts no liability or responsibility whatsoever for the report in respect of any use of or reliance upon it by any third party. Copying this report without the permission of the client or Horton Coastal Engineering Pty Ltd is not permitted.