

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

21 February 2023

**Development Application DA2021/1612 for Upgraded Coastal Protection Works at 1190-1196 and 1204 Pittwater Road Narrabeen – Safe Design Risk Assessment**

**1. INTRODUCTION AND BACKGROUND**

On 15 September 2022, Northern Beaches Council (in an email from Daniel Milliken to Peter Horton) requested the following:

A “safe design risk assessment considering any hazards to people using the proposed works or in the vicinity of the proposed works. This assessment shall include the following (numbering added for convenience):

1. the purpose(s) for which it was designed
2. hazard identification, risk assessment and risk control for the key lifecycle stages of the structure, including construction, operation and demolition.
3. any control measures necessary to ensure that the plant, substance or structure is without risks to health and safety when used for the purpose(s) for which it was designed or any reasonably foreseeable related activities.
4. any likely threats to public safety over the life of the works
5. an assessment of any change in likely threats to public safety over the life of the works in response to climate change
6. confirmation that any likely threats to public safety over the life of the works do not extend onto public land
7. what measures have been incorporated to manage any risk to life and public safety from coastal hazards.

If any hazards relating to the design of the structure that create a risk to the health or safety of persons who are to carry out any construction work on the structure, and are associated only with the particular design and not with other designs of the same type of structure, have been identified please provide the safe design report (obligations under section 295 of the *Work Health and Safety Regulation 2011* (NSW))”.

A response to the above is set out below.

## 2. RESPONSE TO REQUEST FOR INFORMATION

### 2.1 Item 1 – Purpose

The purpose of the proposed coastal protection works at 1190-1196 and 1204 Pittwater Road Narrabeen is to allow residential development to remain at the subject properties with an acceptably low risk of being damaged by coastal hazards (such as coastal erosion/recession and wave runup) over an acceptably long design life of 60 years. The subject properties already have rock boulder protection works at and seaward, but these are not adequate to provide sufficient protection for an immediate severe storm event, let alone over a design life of 60 years.

The works have also been designed to meet the requirements of relevant legislation, including Section 27(1)(a) of the *Coastal Management Act 2016*, namely that “the works will not, over the life of the works unreasonably limit or be likely to unreasonably limit public access to or the use of a beach or headland, or pose or be likely to pose a threat to public safety”. This has been achieved by proposing the placement of the works entirely on private property, and by designing the works to not be damaged by an acceptably rare storm occurring over an acceptably long life (and in fact substantially improving public access along the beach, and public safety, compared to the existing situation).

### 2.2 Item 2 - Hazard Identification, Risk Assessment and Risk Control

Key hazard identification, risk assessment and risk control considerations for the construction, operation and demolition stages of the works are outlined in Table 1, Table 2 and Table 3 respectively.

**Table 1: Hazard identification, risk assessment and risk control for construction stage of proposed works**

Hazard	Risk (prior to controls)	Controls	Residual Risk
Severe storm damaging works or existing development during construction	Medium	Construction of bund containing rock boulders excavated from the subject properties and seaward, plus removal of plant and equipment from beach if severe storm is forecast	Low
Severe storm damaging bund and exposing working platform material	High	Appropriate coastal engineering design of bund, including geotextile filter layer to reduce risk of washout of fine material landward of the bund, plus requirement for Contractor to maintain bund and clean up any material that escapes	Low
Injury to workers during construction activities	Medium	Contractor to implement project WHS Management Plan	Low
Damage to residential development from construction activities	Medium	Alignment of proposed works as far seaward as possible to satisfy public access and coastal processes requirements	Low
Member of public entering works area and being injured	Low-Medium	Bund and signage to delineate works area from public beach, plus ensuring no significant exposed and/or non-signaged or non-fenced hazards at the end of each work day	Low

**Table 2: Hazard identification, risk assessment and risk control for operation stage of proposed works**

Hazard	Risk (prior to controls)	Controls	Residual Risk
Severe coastal storm damaging works	High	Works have been designed for an acceptably rare storm occurring over an acceptably long life, plus the works are to be inspected after severe storms to assess if repairs are required	Low
Unacceptable deterioration of structure over design life	High	Structure has been designed with appropriate cover and concrete strength to satisfy the durability criteria over the design life in <i>AS 3600</i> for the marine environment, and allowance for corrosion of anchors, plus will be subject to a Maintenance Management Plan requiring that the owners maintain the works over the design life	Low
Beach user trapped on beach in coastal storm with elevated waves and water levels	Medium	In typical high tide conditions at times of low sand levels, members of the public could climb up the proposed two access stairs if required, or at the Clarke Street, Mactier Street or South Narrabeen SLSC locations (assuming that Council would provide safe access at these locations). The longest distance to an access out is likely to be about 30m. It is unlikely that the public would be on the beach in severe storms, which are foreseeable in advance, and Council would generally be expected to close public beach accessways at these times. If a member of the public had made the decision to ignore the risks and to enter the beach in a severe storm, access out may be possible at the stairs at the subject properties or other locations as noted above. The owners would consider installation of permanent stainless steel ladders attached to the seawall below the base of the stairs to enable egress at times of exceptionally low sand levels	Low
Fall from top of seawall to beach below	High	Barrier to prevent falls at top of seawall complying with <i>Building Code of Australia</i>	Low
Fall on stairs	Medium	Riser and going of stairs, plus handrail, complying with <i>Building Code of Australia</i> . The fall risk at the end of the stairs at times of exceptionally low sand levels would largely be managed through the owners being educated on the issue, plus having lockable safety gates at the top of the stairs (where required) to exclude children and other unsuitable people from going down the stairs at these times	Low

**Table 3: Hazard identification, risk assessment and risk control for demolition stage of proposed works**

Hazard	Risk (prior to controls)	Controls	Residual Risk
Debris remaining on beach from demolished structures	High	Requirement for contractor to appropriately sieve beach material and prepare a demolition methodology for review of Council, including details on measures to reduce risk of deleterious material ending up on beach	Low

Hazard	Risk (prior to controls)	Controls	Residual Risk
Severe storm damaging works area	Medium	Removal of plant and equipment from beach if severe storm is forecast	Low
Injury to workers during construction activities	Medium	Contractor to implement project Work Health and Safety Management Plan	Low

### 2.3 Item 3 – Control Measures

The wording of this item is considered to more appropriately be “any control measures necessary to ensure that the plant, substance or structure *has acceptably low* risks to health and safety when used for the purpose(s) for which it was designed or any reasonably foreseeable related activities” (change in italics).

Control measures to reduce risks to health and safety during construction, operation and demolition stages of the works were outlined in Table 1, Table 2 and Table 3 respectively.

### 2.4 Item 4 – Public Safety

There are no likely threats to public safety over the life of the works. The works have been designed for an acceptably rare storm occurring over an acceptably long life, plus the works are to be inspected after severe storms to assess if repairs are required.

The structure has been designed with appropriate cover and concrete strength to satisfy the durability criteria over the design life in AS 3600 for the marine environment, and allowance for corrosion of anchors, plus will be subject to a Maintenance Management Plan requiring that the owners maintain the works over the design life.

Various controls were listed in Table 2 to address risks associated with a beach user being trapped on the beach in a coastal storm.

### 2.5 Item 5 – Public Safety under Climate Change

Climate change (in particular sea level rise) was allowed for in the design of the works. That is, the works have been designed for an acceptably rare storm occurring over an acceptably long life, including consideration of climate change.

### 2.6 Item 6 – Threats to Public Safety on Public Land

As noted in Section 2.4, there are no likely threats to public safety over the life of the works, which by definition means that there are no likely threats to public safety over the life of the works on public land.

It can also be noted that with the works entirely on private property, the risk identified in Table 2 of a beach user trapped on the beach in a coastal storm arises from hazards on public land (namely elevated waves and water levels), that would occur irrespective of whether the proposed works

were carried out or not. This risk arises with the beach user located on public land, not the subject properties.

There are no stairs exiting the beach at the subject properties or adjacent public areas of Clarke Street, Mactier Street or South Narrabeen SLSC at present. That is, the proposed works are creating safer egress from the beach in emergencies than the present situation of climbing over haphazard and potentially mobile boulders.

## **2.7 Item 7 – Measures to Manage any Risk to Life and Public Safety from Coastal Hazards**

Control measures to manage risks to life and public safety during construction, operation and demolition stages of the works were outlined in Table 1, Table 2 and Table 3 respectively, including risks related to coastal hazards.

During construction, identified risks related to coastal hazards comprised a “severe storm damaging works or existing development during construction”, and a “severe storm damaging bund and exposing working platform material”.

During operation, identified risks related to coastal hazards comprised a “severe coastal storm damaging works”, and a “beach user trapped on beach in coastal storm with elevated waves and water levels”.

During demolition, an identified risk related to coastal hazards comprised “a severe storm damaging works area”.

The control measures were outlined in the respective tables above as noted.

## **2.8 Safe Design Report**

The request as follows is addressed in this section:

If any hazards relating to the design of the structure that create a risk to the health or safety of persons who are to carry out any construction work on the structure, and are associated only with the particular design and not with other designs of the same type of structure, have been identified please provide the safe design report (obligations under section 295 of the *Work Health and Safety Regulation 2011 (NSW)*<sup>1</sup>).

It is considered that the particular design of the proposed works has the same sort of risks to the health or safety of persons who are to carry out any construction work, as other designs of the same type of structure (ie different forms of seawall designs). For example, the construction risks identified in Table 1 (namely a “severe storm damaging works or existing development during construction”, a “severe storm damaging bund and exposing working platform material”, “injury to workers during construction activities”, and “members of public entering works area and being injured”) would be common to any seawall project. “Damage to residential development from construction activities” may not be common to all seawall projects, but the risk of damage to infrastructure located landward of the seawall would be.

---

<sup>1</sup> Note that this should have been written as the *Work Health and Safety Regulation 2017*.

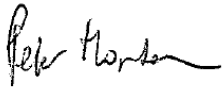
Therefore, the particular design of the proposed works has the same sort of risks to the health or safety of construction workers as other seawall designs, and there is no requirement to consider Section 295 of the *Work Health and Safety Regulation 2017* in this particular matter.

### **3. SALUTATION**

Should you require any additional information or clarification, please do not hesitate to contact Peter Horton via mobile on 0407 012 538, or via email at [peter@hortoncoastal.com.au](mailto:peter@hortoncoastal.com.au).

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 Narrabeen Seawall Construction Pty Ltd (the client), and is subject to and issued in accordance with an agreement between the client and Horton Coastal Engineering. Horton Coastal Engineering 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 is not permitted.