

Maggie & Johan Hundertmark
C/- Jane Edwards Architecture
Attention: Tho Nguyen
(sent by email only to nguyen.thiytho1001@gmail.com)

10 January 2024

Estuarine Risk Management Report on 130 Prince Alfred Parade Newport

1. INTRODUCTION AND BACKGROUND

It is proposed to construct a new boatshed and adjacent deck, ramp (skid) and stairs at 130 Prince Alfred Parade Newport (hereafter denoted as the 'site'). A Development Application is to be submitted to Northern Beaches Council for these works. The skid is to extend seaward of the site, so will also require Landowner's Consent from Crown Lands.

As the site is potentially affected by estuarine hazards, it is subject to the *Pittwater 21 Development Control Plan (DCP)*¹, in particular Chapter B3.7. It is also subject to the *Estuarine Risk Management Policy for Development in Pittwater* ('Estuarine Policy', which is Appendix 7 of the DCP). As boatshed works are proposed, Chapter D15.15 of the DCP is also addressed herein, and as the boatshed and adjacent works would be in the foreshore area, Clause 7.8 of *Pittwater Local Environmental Plan 2014* is addressed. *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP Resilience) is also considered herein.

Horton Coastal Engineering Pty Ltd was engaged to complete the estuarine risk management report required by Council, and to be submitted as part of the application to Crown Lands, as set out herein. The report author is Peter Horton [BE (Hons 1) MEngSc MIEAust CPEng NER]. Peter has postgraduate qualifications in coastal engineering and 32 years of coastal engineering experience, and has completed numerous estuarine risk management studies along the Pittwater shoreline, including at Newport. He is a Member of Engineers Australia and Chartered Professional Engineer (CPEng) registered on the National Engineering Register. Peter 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. He has inspected the area in the vicinity of the site on several occasions in the last few decades, including a specific recent inspection of the site on 10 November 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, and also within Pittwater.

2. INFORMATION PROVIDED

Horton Coastal Engineering was provided with 15 drawings of the proposed works prepared by Jane Edwards Architecture (Drawing Nos DA00 to DA14), all dated 9 January 2024 and

¹ The version up to Amendment 27 (effective from 18 January 2021) was considered herein.

Revision B. A site survey by CMS Surveyors (Drawing 9871Adetail, Issue 1 and dated 5 April 2023) was also provided.

3. EXISTING SITE DESCRIPTION

The site is located north of Salt Pan Point and adjacent to Salt Pan Cove (and adjacent to the northern end of Old Mangrove Bay) on the eastern shoreline of Pittwater, with a broad aerial view in Figure 1, zoomed aerial view in Figure 2, and photograph of the site in Figure 3. The site is most exposed to a wind-wave fetch from the west to WNW, with a fetch length of about 1.8km to 2.6km, and obliquely exposed to a 3.3km fetch from the NNW. Tidal flats seaward of the site generally attenuate wave action before reaching the site, except at higher tidal levels.



Figure 1: Aerial view of site (red outline) on 9 February 2023



Figure 2: Zoomed aerial view of site (approximate red outline) on 19 March 2023



Figure 3: View of foreshore at site (corners of seaward boundary approximately between arrows) on 10 November 2023, facing NE

Based on the survey, the sandstone seawall at the site has a crest level of about 2.7m AHD, with bedrock levels at the base of the seawall at about 0.9m to 1.2m AHD, making the visible part of the seawall about 1.5m to 1.8m high. Levels then rise up a steeply vegetated slope with various retaining walls to about 11.7m AHD at a paved area seaward of the dwelling (which has a minimum floor level of about 11.9m AHD), and about 20m AHD at Prince Alfred Parade.

Tidal flats extend offshore of the seawall, with the seabed level at about 0.05m AHD at 8m to 10m offshore.

4. PROPOSED DEVELOPMENT

It is proposed to construct a new boatshed with a finished floor level of 2.67m AHD, which is to straddle the existing seawall within the site. An adjacent deck is also proposed over a 3.4m × 4.3m footprint, located immediately seaward of the seawall and within the site (with a floor level of 2.61m AHD). A ramp (hereafter denoted as a 'skid'²) is to extend seaward of the deck for a distance of 7.3m, to seaward of the site, with a slope angle of about 20°. Stairs are proposed adjacent to the boatshed and deck, extending landward to a level of 4.94m AHD. No changes to the existing seawall are proposed. The existing timber stairs seaward of the seawall are to be demolished.

5. DESIGN LIFE

In the Estuarine Policy, it is noted that a design project life of 100 years should be adopted, unless otherwise justified. A 25-year design life (that is, at 2049) has been adopted for the proposed development. This is consistent with *Australian Standard AS 4997 - Guidelines for the Design of Maritime Structures*, in which the recommended design life for a small craft facility (which is consistent with the proposed boatshed, deck and skid) is 25 years. Furthermore, in *AS 4997* it is noted that generally timber would not be used as the principal structural medium for a facility with a design life greater than 25 years (and the boatshed, deck and skid are all proposed to be constructed from timber).

Based on *AS 4997*, and classifying the boatshed (and other proposed structures) as a 'normal structure', the required design event for a 25 year life is 200 year Average Recurrence Interval (ARI). Therefore, a 200 year ARI design event has been adopted herein.

6. ESTUARINE PROCESSES

6.1 Design Still Water Level at End of Design Life

In Cardno (2015), the 100-year Average Recurrence Interval (ARI) present day water level in the region covering the site is reported as 1.53m AHD. This includes the effects of astronomical tide and storm surge (combined level of 1.44m AHD), plus local wind setup (0.09m). Wave action can temporarily and periodically increase water levels above this level, particularly in severe storms if they generate wind-waves that propagate towards the site.

Based on Department of Environment, Climate Change and Water [DECCW] (2010) and using linear-log extrapolation, the 200 year ARI elevated still water level at the site is 1.47m AHD, ignoring local wind setup. It is considered unlikely that 0.09m of local wind setup would be realised at the site, as extreme water levels are expected to be caused by meteorological events

² A skid is "an inclined ramp used for the manual launching of small craft but does not include a slipway" (NSW Maritime, 2005).

that generate winds from the south to east quadrant, which the site is not particularly exposed to. Nonetheless, local wind setup has been conservatively included in the design 200 year ARI water level, which is thus 1.56m AHD.

Cardno (2015) estimated a 2050 Estuarine Planning Level (EPL) of 2.67m AHD (based on 0.4m of sea level rise), and 3.13m AHD at 2100 (based on 0.9m of sea level rise), at the foreshore³. These EPL's include wave runup and overtopping effects and a freeboard of 0.3m⁴, but do not include any reduction with distance landward of the foreshore.

At present at the site, Mean High Water is approximately 0.5m AHD and Mean High Water Springs is about 0.6m AHD. The combined astronomical tide and storm surge level for a monthly and bi-annual event is about 1.0m and 1.2m AHD respectively. Corresponding water levels only increase slightly for rarer events, eg 1 year ARI level of 1.24m AHD, 10 year ARI level of 1.34m AHD and 50 year ARI water level of 1.41m AHD (DECCW, 2010).

In Cardno (2015), sea level rise values of 0.4m at 2050 and 0.9m at 2100 were applied relative to 2010 (based on DECCW, 2010), which is not correct as those values were derived relative to 1990, and historical sea level rise has not been discounted. Appropriate equivalent sea level rise values (relative to 2010) with discounting of historical sea level rise would be 0.34m at 2050 and 0.84m at 2100.

For the proposed design life of 25 years (at 2049), it would be possible to approximate this with the 2050 sea level rise value noted above. However, to allow for a probabilistic assessment, it is considered to be most appropriate to directly derive sea level rise values from Intergovernmental Panel on Climate Change [IPCC] (2021), which is widely accepted by competent scientific opinion.

Using the same methodology applied in the acceptable risk assessment in the *Coastal Zone Management Plan for Bilgola Beach (Bilgola) and Basin Beach (Mona Vale)*, and using a base year of 2010 as Cardno (2015) water levels were derived at 2010, the sea level rise values presented in Table 1 (at 2049) were determined for the five illustrative scenarios (shared socioeconomic pathways, SSP's⁵) considered in IPCC (2021)⁶.

This includes regional sea level rise variations at Sydney as reported by the Physical Oceanography Distributed Active Archive Center (PO.DAAC), a NASA Earth Observing System Data and Information System data centre operated by the Jet Propulsion Laboratory in Pasadena, California. The sea level rise values were determined at 2049, relative to the average sea level from a 1995-2014 baseline (taken to be at 2005).

Table 1: Sea level rise (m) at Sydney from a 1995-2014 average level (taken at 2005) to 2049 derived from IPCC (2021) and PO.DAAC

Emissions Scenario (Shared Socioeconomic Pathway)	Exceedance Probability		
	95% exceedance	Median	5% exceedance
SSP1-1.9	0.09	0.16	0.28
SSP1-2.6	0.08	0.17	0.31
SSP2-4.5	0.10	0.19	0.33

³ Assuming that the seawall has a crest level of 2.0m AHD.

⁴ Use of a freeboard is not necessarily considered to be appropriate in a wave runup scenario.

⁵ Known as representative concentration pathways in the previous IPCC (2013) assessment.

⁶ The five illustrative scenarios represent varying projected greenhouse gas emissions, land use changes and air pollutant controls in the future.

Emissions Scenario (Shared Socioeconomic Pathway)	Exceedance Probability		
	95% exceedance	Median	5% exceedance
SSP3-7.0	0.12	0.21	0.34
SSP5-8.5	0.13	0.23	0.37
Average	0.10	0.19	0.32

Taking the median exceedance probability and average of the 5 SSP's, a sea level rise value of 0.19m at 2049 (relative to 2005) was derived. Given that Cardno (2015) water levels were derived at 2010, the sea level rise should be determined relative to 2010. Watson (2020) found that the rate of sea level rise from satellite altimetry in the SE Australia region was 3.5mm/year from 1992-2019. Applying this rate from 2005 to 2010, the projected sea level rise from 2010 to 2049 at Sydney is 0.17m.

Therefore, the design 200 year ARI estuarine still water level at 2049 is 1.73m AHD. This still water level is about 0.94m below the proposed boatshed floor, and 0.88m below the proposed deck floor.

6.2 Wave Action

Cardno (2015) estimated that the 100 year ARI wave climate in the region covering the site was a significant wave height of 0.80m (average of the highest one-third of waves) and mean wave period of 2.4s (or peak spectral wave period of 3.4s assuming a 1.4 multiplier).

Based on stream function wave theory, at a plunging distance (approximately half a wavelength, equal to 6m) seaward of the seawall (for a design still water level of 1.73m AHD, bed level of 0.3m AHD and hence local depth of 1.43m, and peak spectral wave period of 3.4s) the 100 year ARI wave height of 0.8m would have a crest elevation of 0.58m above the still water level, that is to 2.31m AHD. Therefore, it is considered reasonable to generally adopt an Estuarine Planning Level (EPL) of 2.31m AHD seaward of the seawall.

In the design event, waves would break at the face of the seawall, but would not be expected to overtop it. At the boatshed and deck, in the design event waves would propagate below the floor, with wave crests potentially impacting on the structure below the floor (if any elements extend down to 2.31m AHD or below), and potentially causing wave uplift forces on elements immediately seaward of the seawall where wave energy would be transferred upwards (on any elements below 2.53m AHD).

7. RISKS OF DAMAGE TO PROPOSED STRUCTURES AND MITIGATION OF THOSE RISKS

The floor levels of the boatshed and deck are above the EPL, so there are no specific requirements for these structures from a coastal engineering perspective, except that any components of the boatshed and deck below 2.31m AHD should comprise materials that are tolerant of inundation and be designed to resist horizontal hydrostatic and wave forces as provided by a coastal engineer as part of detailed design. Also, any components of the boatshed and deck below 2.53m AHD within 1.5m seaward of the seawall should be designed to resist vertical wave uplift forces as provided by a coastal engineer as part of detailed design.

The skid should be designed to resist buoyancy, hydrostatic and wave forces as provided by a coastal engineer as part of detailed design.

Requirements to consider wave forces noted above also apply to the piles supporting the boatshed, deck and skid.

Timber used in the boatshed, deck and skid should be suitable for the marine environment. Examples of suitable species include tallowwood, white mahogany, grey box, blackbutt, yellow stringybark and turpentine (NSW Maritime, 2005). Timber of Class 1 or 2 natural durability should be used as per *AS 4997*. Timber structures should generally be designed in accordance with the requirements of *Australian Standard AS1720.1 - Timber Structures*. The materials used for construction should not be deleterious to marine life, for example antifouling paints or treated woods must not be used.

Any electrical items should be located above 2.31m AHD (or above 2.53m AHD with 1.5m seaward of the seawall) or waterproofed below this. No potentially polluting items should be stored below 2.53m AHD at the site, and no items should be stored below 2.53m AHD that could float away or be damaged by inundation.

If the above requirements are adopted, the risks of damage to the proposed development from estuarine inundation would be suitably mitigated, and it would have an adequately low risk of failure.

There are no requirements for the stairs from a coastal engineering perspective.

Based on *Australian Standard AS 1657 – Fixed platforms, walkways, stairways and ladders - Design, construction and installation*, the skid should be at a slope angle of 20° (or flatter). Cleats will be required on the skid at this slope⁷. Based on *AS 1657*, cleats shall be of metal, not less than 10mm × 10mm and evenly spaced at 350mm intervals for slope angles exceeding 18°. In areas that can become slippery due to marine growth (ie, below mean high water mark⁸), *AS 4997* says to reduce this cleat spacing to 300mm.

8. MERIT ASSESSMENT

8.1 Chapter B3.7 of the Pittwater 21 DCP

Based on the DCP (numbering added herein for convenience):

1. “All development or activities must be designed and constructed such that they will not increase the level of risk from estuarine processes for any people, assets or infrastructure in surrounding properties; they will not adversely affect estuarine processes; they will not be adversely affected by estuarine processes; and
2. All structural elements below the Estuarine Planning Level shall be constructed from flood compatible materials; and
3. All structures must be designed and constructed so that they will have a low risk of damage and instability due to wave action and tidal inundation; and
4. All electrical equipment, wiring, fuel lines or any other service pipes and connections must be waterproofed to the Estuarine Planning Level; and
5. The storage of toxic or potentially polluting goods, materials or other products, which may be hazardous or pollute the waterway, is not permitted to be stored below the Estuarine Planning Level; and

⁷ Based on *AS 1657*, cleats are required wherever the slope is steeper than 10°.

⁸ At present, mean high water in Sydney is about 0.55m AHD (Manly Hydraulics Laboratory, 2023). Allowing for 0.17m sea level rise over the design life, this increases to 0.72m AHD. Therefore, a 300mm cleat spacing should be adopted below 0.72m AHD.

6. For existing structures, a tolerance of up to minus 100mm may be applied to the Estuarine Planning Level in respect of compliance with these controls.
7. To ensure Council's recommended flood evacuation strategy of 'shelter in place' it will need to be demonstrated that there is safe pedestrian access to a 'safe haven' above the Estuarine Planning Level”.

With regard to Item 1, the proposed development would not significantly change estuarine processes nor increase the level of risk in surrounding areas for the design event, as the movement of water and waves over the area seaward of the site would not be significantly altered. If the requirements in Section 7 are followed, the risk of the proposed development being adversely affected by estuarine processes would be suitably mitigated. That is, the development is at an acceptably low risk of being adversely affected by estuarine processes with the measures outlined in Section 7 adopted. Therefore, Item 1 is satisfied.

Item 2 and Item 3 are satisfied with the measures outlined in Section 7 adopted.

Items 4 and 5 were noted as being required in Section 7.

Item 6 has not been applied.

With regard to Item 7, occupants are not at significant risk of injury at the site for the design coastal storm event, and can shelter-in-place in the dwelling without any need for evacuation. It is further noted that the largest component of elevated water level is astronomical tide, which is entirely predictable and independent of the storm event, so early warning is available. The inundation peak would also only have a duration of around 2 hours (at high tide).

With regard to another item in Chapter B3.7 of the DCP, no mitigation works are proposed that would significantly modify the wave action or tidal inundation behaviour within the development site (including the filling of land, the construction of retaining structures and the construction of wave protection walls).

8.2 Estuarine Risk Management Policy for Development in Pittwater

The requirements of the *Estuarine Risk Management Policy for Development in Pittwater* (Estuarine Policy) have been met herein by consideration of:

- estuarine processes and the Estuarine Planning Level in Section 6; and
- the controls in Chapter B3.7 of the Pittwater 21 DCP in Section 8.1.

Furthermore, although the current Estuarine Policy does not have a form that is required to be filled in, Council has in the past requested that a form provided in a former Estuarine Policy be completed, as provided at the end of the document herein.

8.3 Chapter D15.15 of the Pittwater 21 DCP

Based on Chapter D15.15 of the DCP, “boatsheds shall meet the following criteria:

- i) Boatsheds shall be located above mean high water mark on freehold land, where practicable. Where this cannot realistically be achieved, as much of the proposed boatshed as is practical must be located above mean high water mark to minimise encroachment onto the littoral zone below mean high water mark.

- ii) Boatsheds shall be one storey and no greater than 4.5 metres in building height above the platform on which it is built, 4.0 metres in width and 6.0 metres in length, as illustrated in Diagram 4. The use of lofts or similar design concepts shall not be permitted.
- iii) Boatsheds shall not prevent or hinder public foreshore access. Alternative access must be provided where a proposed boatshed is likely to make existing foreshore access below mean high water mark difficult.
- iv) Boatsheds cannot be used for any other purpose than the storage of small boats and/or boating equipment. The incorporation [sic] any internal kitchen facilities, habitable rooms, shower or toilet facilities shall not be permitted. Roof areas of boatsheds shall not be used for recreational or observational purposes.
- v) Boatsheds shall be constructed of low maintenance materials that are of a tone and colour which is sympathetic to the surrounding setting. Structures proposed along the western foreshores, McCarrs Creek, Horseshoe Cove, Salt Pan Cove, Refuge Cove, Clareville and Careel Bay are to have specific regard for the natural landscaped character of the area. Reflective materials and finishes for private boatsheds shall not be permitted.
- vi) The minimum floor level for proposed boatsheds shall be in accordance controls for foreshore development around the Pittwater Waterway.
- vii) Boatsheds shall be able to be entirely enclosed. Boatsheds which either partially or wholly do not incorporate appropriate wall cladding shall not be permitted, as such structures tend to become visually obtrusive when viewed from the waterway.
- viii) All electrical equipment and wiring shall be water tight below the designed flood/tidal inundation level”.

With regard to (i), the proposed boatshed is above mean high water mark and on freehold land.

With regard to (ii), the boatshed is single storey as required and has dimensions of 4.6m × 5.8m (similar to the recommended 4m × 6m), and a height of 4.4m (which is below the required limit of 4.5m).

With regard to (iii), the boatshed is entirely on private property and would not prevent or hinder foreshore access on public land.

With regard to (iv), this requirement is noted.

With regard to (v), this is not a coastal engineering matter so is not considered herein.

With regard to (vi), the floor level is above the EPL.

With regard to (vii), it is understood that the boatshed is to be completely enclosed.

With regard to (viii), this requirement was noted in Section 7.

8.4 Clause 7.8 of Pittwater Local Environmental Plan 2014

8.4.1 Preamble

The proposed boatshed and deck are located in the Foreshore Area, so Clause 7.8 of *Pittwater Local Environmental Plan 2014* (LEP 2014) should be considered⁹.

8.4.2 Clause 7.8(1)

In Clause 7.8(1) of LEP 2014, it is stated that the “objectives of this clause are as follows:

- (a) to ensure that development in the foreshore area will not impact on natural foreshore processes or affect the significance and amenity of the area,
- (b) to ensure continuous public access along the foreshore area and to the waterway”.

The proposed boatshed and deck are entirely on private property and have floor levels above the EPL, and would not affect public access nor significantly impact on natural foreshore processes.

8.4.3 Clause 7.8(2)

Based on Clause 7.8(2) of LEP 2014, “development consent must not be granted for development on land in the foreshore area except for the following purposes:

- (a) the extension, alteration or rebuilding of an existing building wholly or partly in the foreshore area, if the levels, depth or other exceptional features of the site make it appropriate to do so,
- (b) boat sheds, sea retaining walls, wharves, slipways, jetties, waterway access stairs, swimming pools, fences, cycleways, walking trails, picnic facilities or other recreation facilities (outdoors)”.

It is evident that boatsheds and waterway access stairs are permissible within the Foreshore Area. Given that wharves and jetties are permissible, decks may also be considered as permissible.

8.4.4 Clause 7.8(3)

Based on Clause 7.8(3) of LEP 2014, “development consent must not be granted under this clause unless the consent authority is satisfied that:

- (a) the development will contribute to achieving the objectives for the zone in which the land is located, and
- (b) the appearance of any proposed structure, from both the waterway and adjacent foreshore areas, will be compatible with the surrounding area, and
- (c) the development will not cause environmental harm such as:
 - i) pollution or siltation of the waterway, or
 - ii) an adverse effect on surrounding uses, marine habitat, wetland areas, fauna and flora habitats, or
 - iii) an adverse effect on drainage patterns, or

⁹ Note that the skid is not in the Foreshore Area, as it is entirely seaward of the site (entirely seaward of the mean high water mark).

- iv) the removal or disturbance of remnant riparian vegetation, and
- (d) the development will not cause congestion or generate conflict between people using open space areas or the waterway, and
- (e) opportunities to provide continuous public access along the foreshore and to the waterway will not be compromised, and
- (f) any historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the land on which the development is to be carried out and of surrounding land will be maintained, and
- (g) in the case of development for the alteration or rebuilding of an existing building wholly or partly in the foreshore area, the alteration or rebuilding will not have an adverse impact on the amenity or aesthetic appearance of the foreshore, and
- (h) sea level rise, coastal erosion and recession, or change of flooding patterns as a result of climate change, have been considered”.

For Item (a), the site is zoned as C4 Environmental Living, for which the objectives in *Pittwater Local Environmental Plan 2014* are as follows:

- to provide for low-impact residential development in areas with special ecological, scientific or aesthetic values;
- to ensure that residential development does not have an adverse effect on those values;
- to provide for residential development of a low density and scale integrated with the landform and landscape; and
- to encourage development that retains and enhances riparian and foreshore vegetation and wildlife corridors.

The proposed development does not impact on any of these objectives from a coastal engineering perspective.

Items (b) and (f) are not coastal engineering matters so are not considered herein.

For Item (c), the proposed development would not cause any significant pollution or siltation of the waterway and would not adversely impact on adjacent areas, if appropriate construction environmental controls are applied. Also, no remnant riparian vegetation is to be removed as part of the proposed works.

In an Arboricultural Impact Appraisal and Method Statement completed by Ezigrow Arboricultural Consulting and dated 16 October 2023, it was noted that no high category trees and two low category trees (both exempt from protection under Council’s tree protection order) will need to be removed due to the proposed development. They also noted that the proposed development may adversely affect five high category trees, with an arboricultural method statement provided to reduce the risk that the development would adversely impact on these trees.

In a report by Waterfront Surveys Australia (2023), it was found that the potential impacts on the aquatic ecology at and offshore of the site during construction of the proposed works were expected to be minimal, temporary and unlikely to cause significant damage to any marine life. They also considered that the potential impacts from the loss of a small area of intertidal rock platform due to the proposed works were negligible as the majority of the rock platform is devoid of intertidal biota.

For Item (d), the proposed boatshed and deck would not affect public use of the foreshore and would not cause any conflict with waterway uses, as they are entirely on private property.

For Item (e), the proposed boatshed and deck would not compromise any (if any) public access seaward of the site.

For Item (h), sea level rise was considered in Section 6.

Item (g) is not applicable.

8.4.5 Clause 7.8(4)

Based on Clause 7.8(4) of LEP 2014, “in deciding whether to grant consent for development in the foreshore area, the consent authority must consider whether and to what extent the development would encourage the following:

- (a) continuous public access to and along the foreshore through or adjacent to the proposed development,
- (b) public access to link with existing or proposed open space,
- (c) public access to be secured by appropriate covenants, agreements or other instruments registered on the title to land,
- (d) public access to be located above mean high water mark,
- (e) the reinforcing of the foreshore character and respect for existing environmental conditions”.

As stated above, the proposed works would not compromise public access along the foreshore seaward of the site. Public access alongshore is not currently practical and is non-existent within the site and surrounding area¹⁰.

8.5 State Environmental Planning Policy (Resilience and Hazards) 2021

8.5.1 Preamble

Based on *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP Resilience) and its associated mapping, the site and seaward is within a “coastal environment area” (see Section 8.5.2) and partly within a “coastal use area” (see Section 8.5.3).

8.5.2 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,

¹⁰ There are jetties at each of the 4 properties north of the site that limit any practical pedestrian access in this area, plus the tidal flats are muddy and difficult to traverse by foot without sinking.

- (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. The works would not be expected to adversely affect the biophysical and hydrological (surface and groundwater) environments, as existing stormwater drainage pathways to Pittwater are not to be significantly altered. The proposed works would not be a source of pollution as long as appropriate construction environmental controls are applied. The works would not be expected to adversely affect the ecological environment based on a report by Waterfront Surveys Australia (2023), as discussed in Section 8.4.4.

With regard to (b), the proposed works would not be expected to adversely affect estuarine processes in Pittwater.

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

With regard to (d), Waterfront Surveys Australia (2023) has noted that the site and offshore in the works area is devoid of marine vegetation (including mangroves and seagrass). As discussed in Section 8.4.4, Waterfront Surveys Australia (2023) found that the impacts of the proposed works on the rock platform at and adjacent to the site were negligible. There are no undeveloped headlands in the vicinity of the site. The proposed works would not be expected to impact on marine vegetation as long as appropriate construction environmental controls are applied.

With regard to (e), the proposed works would not impact on public open space and access to and along the foreshore. The majority of the works are on private property, and the skid on public land is in an area devoid of pedestrian access, and would not impact on any public use of or navigation of the waterway.

With regard to (f), a search of the Heritage NSW “Aboriginal Heritage Information Management System” (AHIMS) was undertaken on 3 December 2023. This resulted in no Aboriginal sites nor Aboriginal places being recorded or declared within at least 200m of the site.

With regard to (g), there is no significant or practical surf zone offshore of the site, so this is not applicable. That stated, the proposed works would not be expected to alter wave and water level processes seaward of the site.

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).

8.5.3 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 works would not impact on foreshore 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 Aboriginal sites nor Aboriginal places recorded or declared within at least 200m of the site, as noted in Section 8.5.2.

With regard to (a)(v), the closest environmental heritage item to the site as per Schedule 5 of *Pittwater Local Environmental Plan 2014* is Angophora Reserve in Avalon Beach, which is located about 1.1km from the site. The proposed development would not be expected to impact on this 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).

8.5.4 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 discussed in Section 8.1, the proposed development is unlikely to have a significant impact on estuarine (coastal) hazards nor increase the risk of estuarine (coastal) hazards in relation to any other land.

8.5.5 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 site.

9. CONCLUSIONS

It is proposed to construct a new boatshed and adjacent deck, ramp (skid) and stairs at 130 Prince Alfred Parade Newport. The skid is to extend seaward of the site, so will also require Landowner’s Consent from Crown Lands.

For a design life of 25 years, the adopted Estuarine Planning Level (EPL) is 2.53m AHD within 1.5m seaward of the seawall, and 2.31m AHD further seaward. The floor levels of the boatshed and deck are above the EPL. If the requirements in Section 7 are followed, the risk of the proposed development being adversely affected by estuarine processes would be suitably mitigated.

The proposed development satisfies the requirements of Chapter B3.7 and Chapter D15.15 of the Pittwater 21 DCP, the *Estuarine Risk Management Policy for Development in Pittwater*, Clause 7.8 of *Pittwater Local Environmental Plan 2014*, and *State Environmental Planning Policy (Resilience and Hazards) 2021* for the matters outlined herein.

10. REFERENCES

Cardno (2015), *Pittwater Estuary Mapping of Sea Level Rise Impacts*, LJ2882/R2658v7, Revised Draft, for Pittwater Council, February

Department of Environment, Climate Change and Water [DECCW] (2010), *Coastal Risk Management Guide: Incorporating sea level rise benchmarks in coastal risk assessments*, DECCW 2010/760, August, ISBN 978 1 74232 922 2

Intergovernmental Panel on Climate Change [IPCC] (2013), *Climate Change 2013, The Physical Science Basis, Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, [Stocker, TF; Qin, D; Plattner, G-K; Tignor, M; Allen, SK; Boschung, J; Nauels, A; Xia, Y; Bex, V and PM Midgley (editors)], Cambridge University Press, Cambridge, United Kingdom and New York, New York, USA

Intergovernmental Panel on Climate Change [IPCC] (2021), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, [V Masson-Delmotte, P Zhai, A Pirani, SL Connors, C Péan, S Berger, N Caud, Y Chen, L Goldfarb, MI Gomis, M Huang, K Leitzell, E Lonnoy, JBR Matthews, TK Maycock, T Waterfield, O Yelekçi, R Yu and B Zhou (editors)], Cambridge University Press, Cambridge, United Kingdom and New York, New York, USA

Manly Hydraulics Laboratory (2023), *NSW Tide Charts 2024, 23 November 2023 to 1 January 2025*,

NSW Maritime (2005), *Engineering Standards & Guidelines for Maritime Structures*, First Edition, March

Waterfront Surveys Australia (2023), *Marine Habitat Survey, Address: 130 Prince Alfred Parade, Newport, Client: Jane Edwards Architecture, Survey Date: 30 October 2023*, 2 November, Job Number 24-010-05

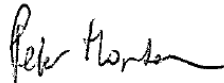
Watson, Phil J (2020), "Updated Mean Sea-Level Analysis: Australia", *Journal of Coastal Research*, Volume 36, Issue 5, September, pp. 915-931

11. 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 Maggie & Johan Hundertmark (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.

Estuarine Risk Management Policy for Pittwater Form No. 1 is provided overleaf

FORM NO. 1

To be submitted with Estuarine Risk Management Report

Development Application for Maggie & Johan Hundertmark Name of Applicant
Address of site 130 Prince Alfred Parade Newport

Declaration made by a Coastal Engineer as part of an Estuarine Risk Management Report

I, Peter Horton on behalf of Horton Coastal Engineering Pty Ltd
(Insert Name) (Trading or Company Name)

on this the 10th January 2024 (date)

certify that I am a Coastal Engineer as defined by the Estuarine Risk Management Policy for Development in Pittwater and I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least \$2 million.

Please mark appropriate box

- I have prepared the detailed Estuarine Risk Management Report referenced below in accordance with the Estuarine Risk Management Policy for Development in Pittwater
- I am willing to technically verify that the detailed Estuarine Risk Management Report referenced below has been prepared in accordance with the Estuarine Risk Management Policy for Development in Pittwater
- I have examined the site and the proposed development/alteration in detail and, as detailed in my report, am of the opinion that the Development Application only involves Minor Development/Alterations or is sited such that a detailed Estuarine Risk Management Report is not required.

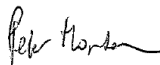
Estuarine Risk Management Report Details:

Report Title: Estuarine Risk Management Report on 130 Prince Alfred Parade Newport
Report Date: 10 January 2024
Author: Horton Coastal Engineering Pty Ltd

Documentation which relate to or are relied upon in report preparation:

See Section 2 and Section 10 of report

I am aware that the above Estuarine Risk Management Report, prepared for the above mentioned site is to be submitted in support of a Development Application for this site and will be relied on by Northern Beaches Council as the basis for ensuring that the estuarine risk management aspects of the proposed development have been adequately addressed to achieve an acceptable risk management level for the life of the structure, taken as at least 100 years unless otherwise stated and justified in the Report and that all reasonable and practical measures have been identified to remove foreseeable risk.

Signature	
Name	Peter Horton
Chartered Professional Status	MIEAust CPEng
Membership No.	452980