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Royal Motor Yacht Club
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26 April 2023

Estuarine Risk Management Report on Royal Motor Yacht Club at 46 Prince Alfred Parade Newport

1. INTRODUCTION AND BACKGROUND

It is proposed to extend the dining and lounge facilities at the Royal Motor Yacht Club, located at 46 Prince Alfred Parade Newport, hereafter denoted as the 'site'. A Development Application (DA) is to be submitted to Northern Beaches Council for these works. As the site is potentially affected by estuarine hazards, it is subject to the *Pittwater 21 Development Control Plan* (DCP)¹, in particular Chapter B3.9. It is also subject to the *Estuarine Risk Management Policy for Development in Pittwater* (Estuarine Policy), which is Appendix 7 of the DCP. *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP Resilience) should also be considered.

Horton Coastal Engineering Pty Ltd was engaged to complete the estuarine risk management report required by Council, 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 31 years of coastal engineering experience, including numerous studies along the Pittwater shoreline and particularly 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 two decades or so, including a specific recent inspection of the site on 2 February 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 33 drawings of the proposed development prepared by MCHP Architects (Drawing Nos. DA000 to 032), various revisions and dates up to Revision F and 28 March 2023. A site survey by SDG (reference 5742, Issue C and dated 21 December 2022) was also provided.

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

3. EXISTING SITE DESCRIPTION

The site is located towards the SE end of the Pittwater waterway, south of Salt Pan Point, with a broad aerial view depicted in Figure 1, zoomed aerial view in Figure 2, and oblique aerial view in Figure 3. Photographs of the site are provided in Figure 4 to Figure 6.

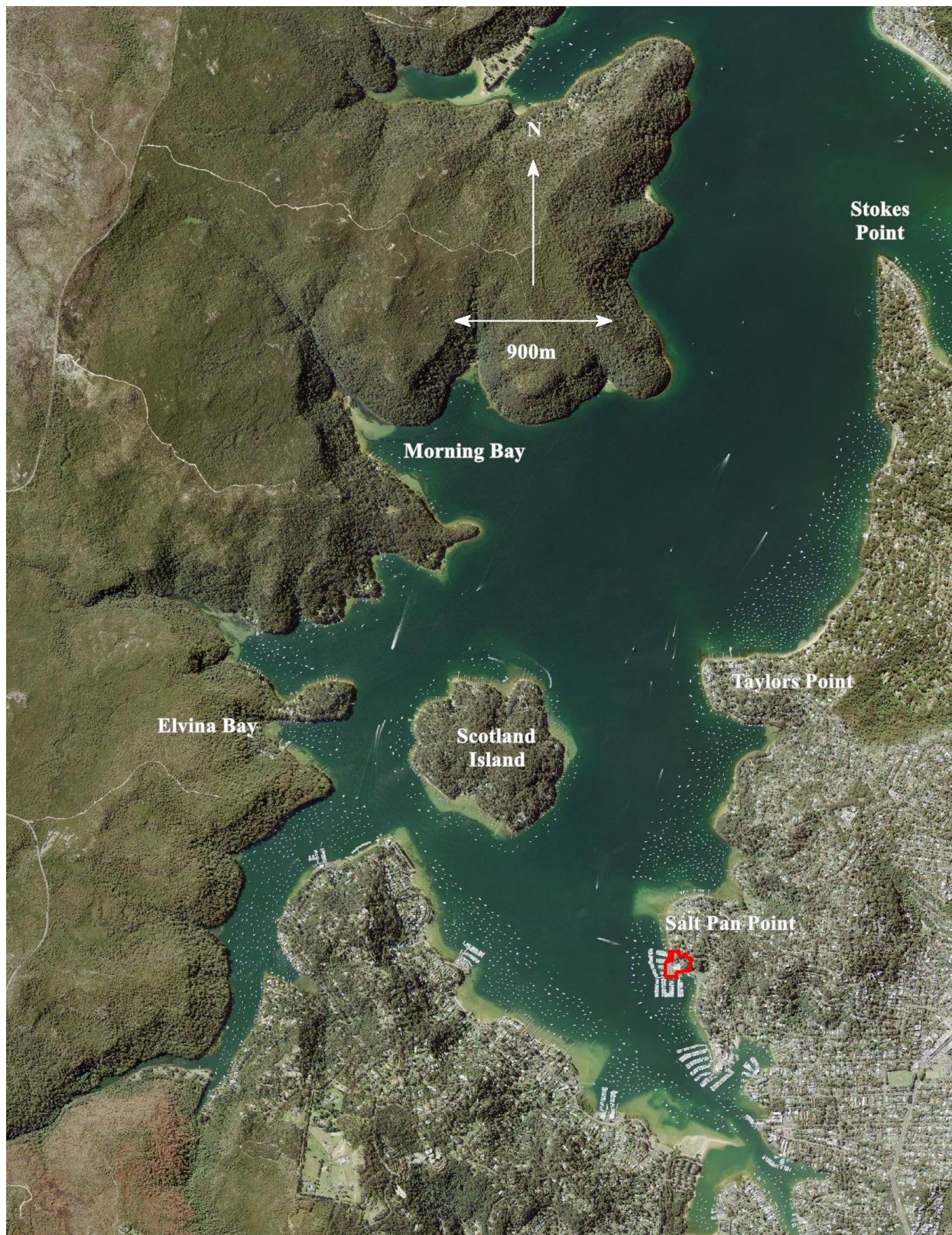


Figure 1: Aerial view of site (red outline) on 30 August 2018



Figure 2: Zoomed aerial view of site (approximate red outline) on 19 March 2023, with proposed extension (roof outline) in green

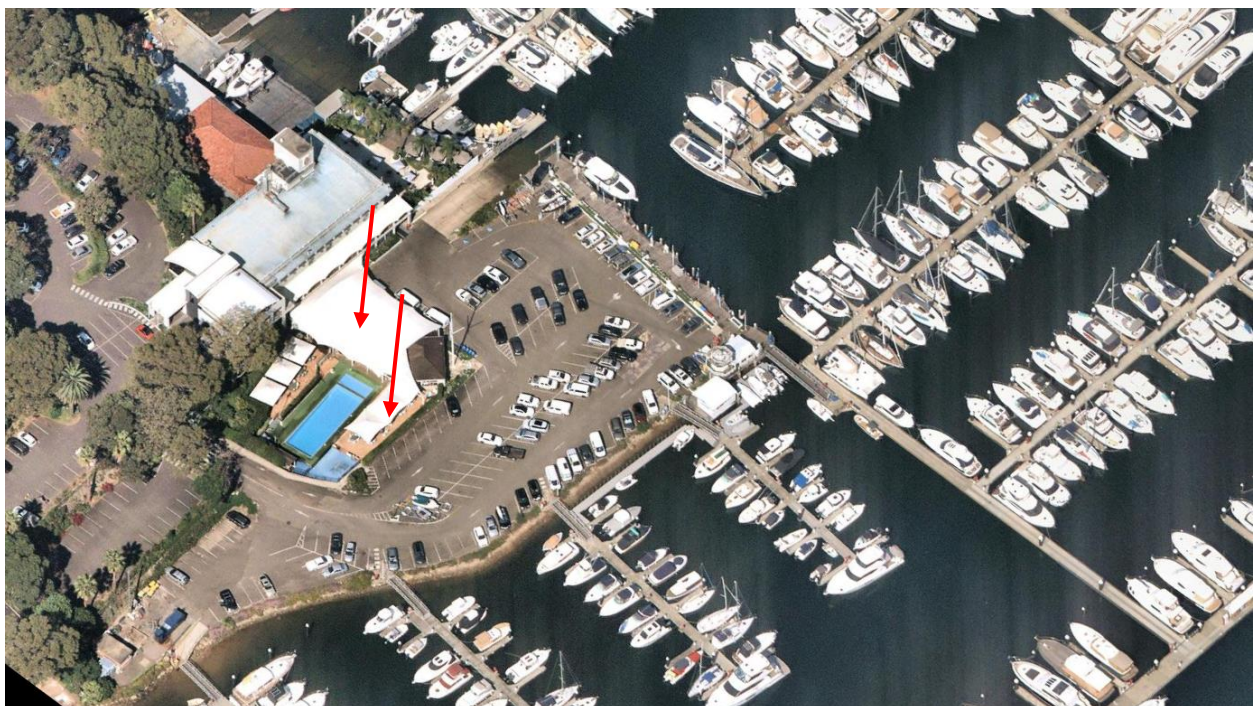


Figure 3: Oblique aerial view of site to SE (proposed development area at arrows) on 5 April 2022



Figure 4: View of proposed development area (in background) at site on 2 February 2023, facing NE



Figure 5: Foreshore west of car park and proposed development area on 2 February 2023, facing N



Figure 6: View over part of proposed development area on 2 February 2023, facing WSW

The site boundary depicted in Figure 2 excludes the marina portion (Lot 329 DP 824292 and Lot 1 DP 1239516), and is approximate.

The site is most exposed to wind-wave fetches from the NNW (fetch length of 3.6km towards the head of Morning Bay, although oblique) and WNW (fetch length of 2.6km towards Elvina Bay).

Based on the survey, the top of the rock rubble foreshore (western edge of the car park) at the site is at a level of about 1.8m AHD, with levels increasing moving east to about 2.1m to 2.2m AHD at the eastern edge of the kerbed car park (over a distance of about 30m to the paved area west of the pool, or 65m to the main club building), with the adjacent top of kerb at about 2.3m AHD. Ground levels increase moving further landward at the site, to about 26m AHD at Prince Alfred Parade.

The paved area west of the pool is at a level of about 2.5m AHD, with the pool surrounds at about 2.4m AHD, and the main club building having a finished ground floor level of 2.52m AHD.

4. PROPOSED DEVELOPMENT

It is proposed to extend the dining and lounge facilities to the west of the existing main building at the site, over two storeys, plus a rooftop terrace. The pool is to be retained, with the extension located south and west of the pool. The finished ground floor level of the extension is to be 2.50m AHD.

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 60-year design life (that is, at 2083) has been adopted for the

proposed development. This is the same design life as adopted in the *Coastal Zone Management Plan [CZMP] for Bilgola Beach (Bilgola) and Basin Beach (Mona Vale)* that was prepared by the author for Council and gazetted on 14 July 2017. Although this CZMP does not geographically apply at the site, it is the only gazetted CZMP in the former Pittwater Council area, and hence is relevant to consider in the selection of design life.

As justified in the CZMP, a 60 year life is considered to be appropriate for infill commercial development as it is consistent with the design life used in various Australian Standards (eg *AS 3600 – Concrete structures*), tax legislation, and community expectations.

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 property.

Cardno (2015) determined Estuarine Planning Levels (EPLs) at the site for various foreshore types, including a rocky shoreline (1:5 slope, vertical:horizontal [V:H]) and a vertical wall. Neither is applicable at the site, with the actual rocky foreshore slope being about 1:1.5 (V:H). However, the EPLs are the same for both foreshore types.

For a crest level of 2.0m AHD (close to the actual crest level of 1.8m AHD), Cardno (2015) determined EPLs of 2.67m AHD at 2050 and 3.13m AHD at 2100 at the foreshore, for both foreshore types. These EPL's include wave runup and overtopping effects and a freeboard of 0.3m², and do not include any reduction with distance landward of the foreshore.

In Pre-lodgement Meeting Notes (PLM2022/016) dated 30 August 2022, Council stated that an EPL of 3.14m AHD had been adopted by Council at the subject site³. This includes no reduction with distance from the foreshore, and applying the reduction stipulated in Cardno (2015) of 0.05m for every 5m distance from the foreshore, with 30m distance to the proposed development the Council EPL reduces to 2.84m AHD.

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 (Department of Environment, Climate Change and Water [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 benchmarks were derived relative to 1990, and historical sea level rise has not been discounted. Appropriate 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.

² Use of a freeboard is not necessarily considered to be appropriate in a wave runup scenario.

³ Council determined the adopted EPL at Location 12 (Salt Pan Point) of Cardno (2015), but the proposed development area is actually within Location 13 (Horseshoe Cove).

For the proposed design life of 60 years (at 2083), it would be possible to interpolate between the 2050 and 2100 sea level rise values. However, given the non-linear rate of sea level rise, 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)* prepared by the author for Council in 2017, 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 2083) were determined for the five illustrative scenarios (shared socioeconomic pathways, SSP's⁴) considered in IPCC (2021)⁵.

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 2083, relative to the average sea level from a 1995-2014 baseline (taken to be at 2005).

Table 1: Mean sea level rise (m) at Sydney from a 1995-2014 average level (taken at 2005) to 2083 derived from IPCC (2021) and PO.DAAC

Emissions Scenario (Shared Socioeconomic Pathway)	Exceedance Probability		
	95% exceedance	Median	5% exceedance
SSP1-1.9	0.12	0.27	0.52
SSP1-2.6	0.16	0.32	0.60
SSP2-4.5	0.24	0.41	0.71
SSP3-7.0	0.30	0.49	0.81
SSP5-8.5	0.35	0.56	0.92
Average	0.23	0.41	0.71

Taking the median exceedance probability and average of the 5 SSP's, a sea level rise value of 0.41m at 2083 (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 2083 at Sydney is 0.39m.

Therefore, the design 100 year ARI estuarine still water level at 2083 is 1.92m AHD. This still water level is about 0.12m above the foreshore crest, and 0.58m below the proposed ground floor level.

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).

⁴ Known as representative concentration pathways in the previous IPCC (2013) assessment.

⁵ The five illustrative scenarios represent varying projected greenhouse gas emissions, land use changes and air pollutant controls in the future.

However, the design wave height is unlikely to apply at the foreshore, as it is understood that the pontoons comprising the western edge of the marina are floating breakwaters or floating attenuators (achieved by being 3m deep with a W-shaped bottom acting as keels) that reduce wave heights transmitted into the marina so as to generally satisfy a 'good' wave climate for a small craft harbour as per AS 3962. This reduction in wave heights approaching the site has conservatively not been allowed for herein.

In the design event and ignoring the floating wave attenuators, waves would break at and overtop the foreshore crest, and propagate landward across the car park. Using the methodology outlined in Cardno (2015) with the adopted still water level of 1.92m AHD, the design wave runup level is 2.32m AHD at the foreshore. There is the expectation that wave overtopping of the foreshore will propagate landward at shallow depth, so this level of 2.32m AHD can be adopted as the EPL at the proposed development.

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

With the proposed ground floor level of the extension of 2.50m AHD being above the EPL of 2.32m, there are no specific measures required within the development floor area to satisfy estuarine risk considerations. The risk of damage to the proposed development from estuarine inundation is acceptably low over an acceptably long life with that adopted floor level.

Any structural elements below the EPL, if any, shall be designed to withstand inundation. Any items (presumably outside the development floor area) that are below the EPL, if any, should be designed to withstand inundation. Electrical items below the EPL, if any, should be waterproofed, or raised above the EPL. Items that could be damaged by inundation or become polluting should be stored above the EPL.

If required, it is recommended that the western edge of the existing car park is cordoned off from use in severe storm events (in the order of 100 year ARI towards the end of the design life), to reduce the risk of damage to vehicles or injury to people.

The stormwater system should be designed to surcharge at appropriate locations that do not impact on development, if the design rainfall event occurs at the same time as an elevated tailwater level in Pittwater of 1.92m AHD. Martens & Associates has advised that surcharging in such a scenario would occur at the pit downstream of the StormFilter chamber, with this pit having a surface level of 2.06m AHD, and that the surcharge would travel as overland flow towards the foreshore, meeting this requirement.

8. MERIT ASSESSMENT

8.1 Chapter B3.9 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
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 offshore and landward of the foreshore would not be significantly altered. With the proposed floor level above the EPL, the development is at an acceptably low risk of being adversely affected by estuarine processes over an acceptably long life. Therefore, Item 1 is satisfied.

Item 2 was noted as being required in Section 7.

With regard to Item 3, the proposed development is above the EPL, so does not need to be designed to resist the effects of wave action or tidal inundation.

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 main building without any need for evacuation, or can exit the site if required towards the elevated Prince Alfred Parade. 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).

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 B3.9 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 filled in, as provided at the end of the document herein.

8.3 Clause 7.8 of *Pittwater Local Environmental Plan 2014*

The proposed development is located in the Foreshore Area, as it extends west of the Foreshore Building Line, so Clause 7.8 of *Pittwater Local Environmental Plan 2014* (LEP 2014) should be considered. This has generally been addressed in the Statement of Environmental Effects submitted with the DA.

However, it is noted that from a coastal engineering perspective, the extension of the building into the Foreshore Area has no effect on coastal processes, or natural foreshore processes as per Clause 7.8(1)(a) of LEP 2014.

Furthermore, with regard to Clause 7.8(3)(h) of LEP 2014, namely “development consent must not be granted under this clause unless the consent authority is satisfied that sea level rise, coastal erosion and recession, or change of flooding patterns as a result of climate change, have been considered”:

- sea level rise has been considered herein (see Section 6);
- coastal erosion and recession are not significant issues at the site over the design life; and
- the effects of an elevated tailwater level due to climate change on flooding have been considered, as discussed in Section 7.

8.4 *State Environmental Planning Policy (Resilience and Hazards) 2021*

8.4.1 *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 8.4.2) and a “coastal use area” (see Section 8.4.3).

8.4.2 *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 commercial area. The works would not be expected to adversely affect the biophysical, hydrological (surface and groundwater)

and ecological environments, with conventional stormwater management features such as a StormFilter chamber and pits and pipes draining to the foreshore. The proposed works would not be a source of pollution as long as appropriate construction environmental controls are applied.

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), this is not a coastal engineering matter so is not definitively considered herein. That stated, there are no undeveloped headlands or rock platforms in proximity to the proposed development, and no impacts on marine vegetation would be expected as the proposed works are generally located at least 30m from the foreshore.

With regard to (e), the proposed works would not impact on public open space and access to and along the foreshore.

With regard to (f), a basic search of the Heritage NSW “Aboriginal Heritage Information Management System” (AHIMS) was undertaken on 26 April 2023. This resulted in no Aboriginal sites being recorded nor Aboriginal places being 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 offshore 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).

8.4.3 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 recorded nor Aboriginal places declared within at least 200m of the site, as noted in Section 8.4.2.

With regard to (a)(v), the closest environmental heritage items to the site as per Schedule 5 of *Pittwater Local Environmental Plan 2014* are the World War II tank traps below mean high water mark adjacent to 1734 Pittwater Road Bayview, which are located about 870m from the site (on the opposite side of Pittwater). The closest heritage item along the same foreshore as the site is Newport Wharf at 1a Queens Parade Newport, which is located about 1km from the site. The proposed development is not 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).

8.4.4 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.

8.4.5 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 extend the dining and lounge facilities at the Royal Motor Yacht Club in Newport. For a design life of 60 years, the adopted Estuarine Planning Level (EPL) is

2.32m AHD, which is likely to be conservative as this ignores the effect of the floating wave attenuators on the western side of the marina at the site.

If the recommendations 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 B3.9 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

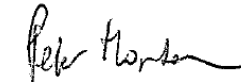
Watson, Phil J (2020), "Updated Mean Sea-Level Analysis: Australia", *Journal of Coastal Research*, Volume 36, Issue 5, September, pp. 915-931

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 Royal Motor Yacht Club (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 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.

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 Royal Motor Yacht Club

Name of Applicant

Address of site 46 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 26th April 2023 (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 Royal Motor Yacht Club at 46 Prince Alfred Parade Newport

Report Date:

26 April 2023

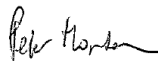
Author: Horton Coastal Engineering Pty Ltd

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