

Northern Beaches Council
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5 October 2022

Second Response to Sydney North Planning Panel on Items Raised in Deferral Letter dated 26 September 2022 in Relation to Newport SLSC (PPSSNH-301 – DA2021/2173)

1. INTRODUCTION AND BACKGROUND

In a letter dated 26 September 2022, the Sydney North Planning Panel requested a response on 12 items on the above matter. A response to these items was provided by Horton Coastal Engineering in a letter dated 4 October 2022.

However, in that letter, one of the items (Item 4 – Coastal Hazard Mapping) was not fully responded to as it had not been possible to discuss the matter with WRL. It has now been possible to discuss the matter with WRL, and a revised response to Item 4 is set out below.

2. REVISED RESPONSE TO ITEM 4

WRL derived their hazard lines using a different methodology to the Council derived hazard lines in Figure 20 of the clubhouse DA report. The Council hazard lines were derived using a particularly conservative methodology, with every parameter being conservative.

The Council methodology can be described as a traditional summated hazard definition technique. This is because each parameter is defined individually (generally conservatively), and then summated to give the hazard line extent, without any consideration of the combined likelihood or probability of the realisation of that line.

Gordon (2015) has described this summated technique as “last century’s thinking”. As noted by Gordon (2015), this is due to the “compounding conservatism” of the technique, and its disconnection from probability. To quote Gordon (2015):

Over the last three decades the market values of coastal properties have escalated dramatically, and hence the potential economic and social impacts of hazard lines that cut through existing development resulted in scientific risk being supplanted by political risk, meaning the simplistic hazard lines of the past have outlived their credibility and hence usefulness. To now be effective and credible the methodologies for determining coastal vulnerability and management require a more sophisticated approach that focuses on risk management....It became important to develop a new paradigm based on an approach that would allow for assessment of the probability to which coastal property, assets and infrastructure may be vulnerable in future years. Communities needed to be empowered and equipped to make rational risk management decisions to determine their acceptable risk level for different types of

developments, different design/economic lives and different management options, rather than being subjected to the overly conservative risk avoidance regime generated by the traditional “hazard line” approach.

As one of the key developers of alternative probabilistic approaches to hazard definition, Horton Coastal Engineering did undertake a simplistic probabilistic risk assessment at Newport SLSC as per Section 6 of Attachment 1 that was provided on 4 October.

Rather than adopting “last century’s thinking” (Gordon, 2015), WRL chose to estimate their hazard lines (see Figure 1) using more realistic parameters.

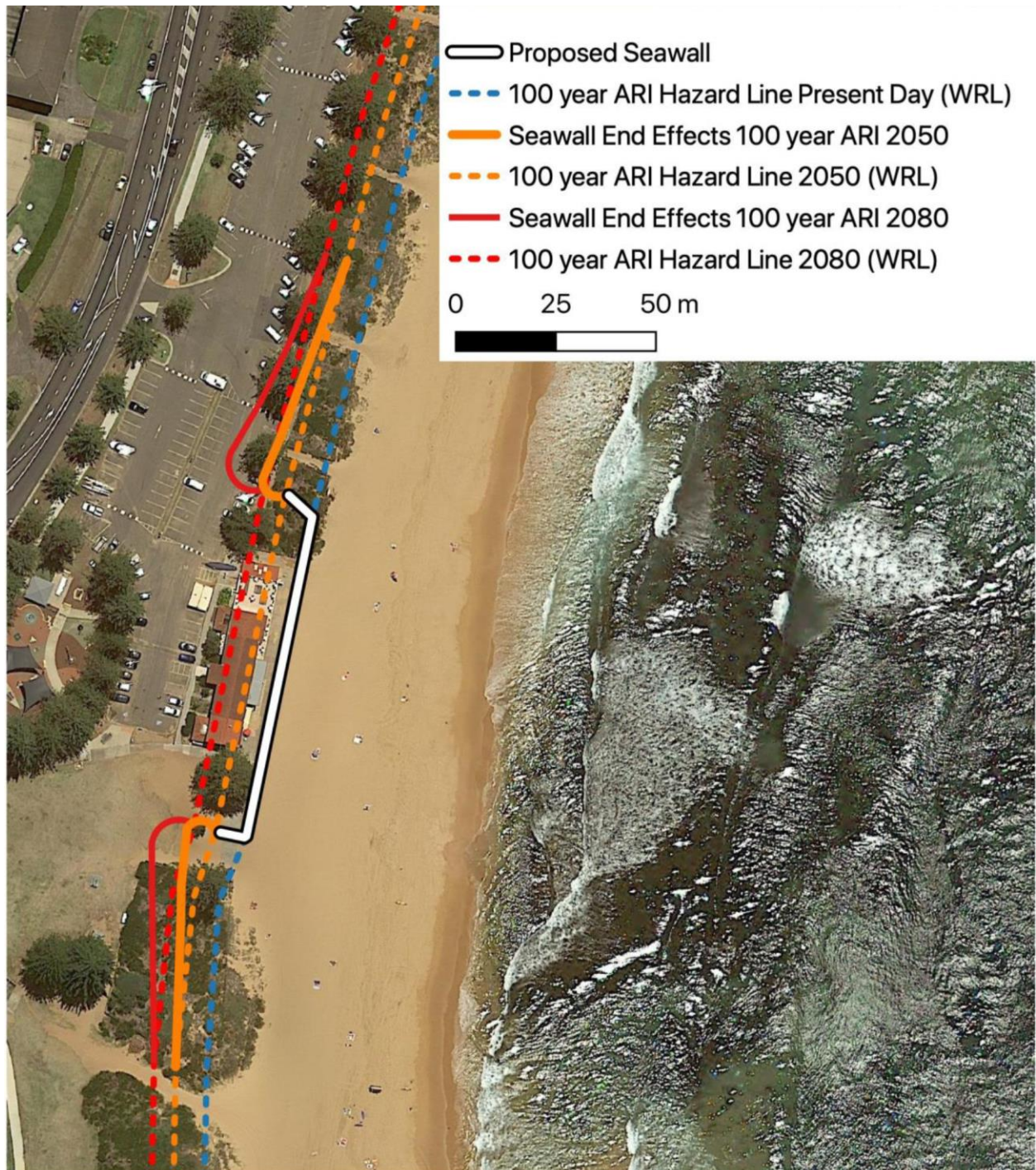


Figure 1: Hazard lines and corresponding end effects as reported by WRL

In particular, storm demand was estimated using SBEACH modelling, calibrated to the measured 1974 erosion and using a 2018 base profile. This gave a 100 year ARI Immediate Hazard Line approximately in line with the proposed seawall, which is consistent with measured historical behaviour over the last 81 years that has seen this location only exposed once by erosion.

Future hazard lines were estimated using median sea level rise projections of 0.25m at 2050 and 0.44m at 2080 (which is consistent with the values adopted by Horton Coastal Engineering) and applying a Bruun factor of 31 (again consistent with Horton Coastal Engineering). The 2080 hazard line of WRL is located around the landward edge of the existing SLSC.

These hazard lines of WRL are considered to be more realistic to use for assessment of end effects than the Council hazard lines. Therefore, the WRL assessment of end effects is considered to stand as is, and the comments on end effects in the seawall DA report remain valid, namely:

If these end effects were realised, the additional erosion would only affect Council's assets such as parkland and a car park, and would be short-term and relatively inconsequential. Council, the asset owner, has advised that it could accept such additional erosion if it occurred, given the benefit of protecting the SLSC asset. It would be far more catastrophic to Council's assets if the proposed coastal protection works were not undertaken.

Also, as discussed in the seawall DA report, end effects are not certain to occur, given that the relative volume of sand seaward of the works exceeds the Carley et al (2013) envelope indicated by NSW field data for end effects to occur, both at present and at the end of the design life.

3. CLOSING COMMENTS

The proposed works should be considered as a positive development that provides improved SLSC facilities and retention of a heritage structure. The proposed development has been demonstrated as having an acceptably low risk of being damaged by coastal hazards over the design life, at the same time as allowing a wide healthy beach to be maintained (on average) over the design life.

The proposed development will provide improved public access to the beach, vastly improved public amenity, and vastly improved public safety, while meeting the requirement of being in a coastal vulnerability area that the "works are engineered to withstand current and projected coastal hazards for the design life of the building or works".

The documentation provided has been assessed by coastal, geotechnical and two structural engineers, as well as being peer reviewed by WRL. The concept was developed over numerous iterations of Council, community and consultant review. It is considered that the development as proposed satisfies the required merit assessment tests and would be a highly valued and enjoyed community asset.

4. REFERENCES

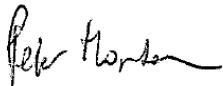
Carley, JT; Shand, TD; Mariani, A and RJ Cox (2013), "Technical Advice to Support Guidelines for Assessing and Managing the Impacts of Long-Term Coastal Protection Works", *WRL Technical Report 2010/32*, Final Draft, August, Water Research Laboratory, University of New South Wales, Manly Vale

Gordon, Angus (2015), "Coastal Hazard Lines – Last Century's Thinking", *Australasian Coasts & Ports Conference 2015*, Auckland, New Zealand

5. 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



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