From:	Corinne Lamont
Sent:	Friday, 28 June 2024 4:45 PM
To:	Portfolio Committee 7
Cc:	
Subject:	Re: Inquiry into the planning system and the impacts of climate change on the environment and communities - Post-hearing responses - 17 June 2024
Attachments:	MARSDEN JACOB ASSOCIATES 2017 Cost Benefit Analysis.pdf; 20211115 _mara_phase_2_community_engagement_report_final_0 (1).pdf; consultation_report_wamberal_beach_erosion_phase_1_approved.pdf; final_consultation_report_for_the_wamberal_beach_draft_engineering_design_requirements.doc (1).pdf; MEG CEO Response - Mark and Corinne Lamont (6) (1).pdf; Administrator Response - Amendments to Environmental Planning and Assessment Act 1979 - Mr & Mrs Lamont (4).pdf; Email to Rik Hart 2 April 2024 re sand nourishment solution.pdf; Seawall underbelly F2024 .pdf

Dear Mr Rodwell,

We are pleased to provide the following Post-hearing responses comprising documents and commentary as requested by the Inquiry during our appearance on 17 June 2024.

We confirm the transcript provided, thank you.

Our Post-hearing response submission has three Sections:

- **SECTION 1** includes all documents specifically requested
- **SECTION 2** is supporting commentary on those (Section 1) documents, and
- **SECTION 3** comprises additional documents relevant to the Inquiry.

SECTION 1 Requested documents

The following documents are provided as requested:

- **Attachment 1. "The Marsden Jacob Associates Report"**

  The report's full name is *The Marsden Jacob and Associates Wamberal Beach Cost Benefit and Distributional Analysis 2017*.

- **Attachment 2. Council's 2021 seawall community consultation report**

  This report's full name is Central Coast Council *Wamberal Beach Terminal Protection and Sand nourishment – Investigation and Concept Design Consultation Report 2021*. Commentary regarding this is provided below in "Attachment 2 Commentary"

- **Attachment 3: Council's 2022 EDR community consultation report**

  This report's full name is Central Coast Council *"Wamberal Beach Terminal Protection & Sand Nourishment: Draft Design Requirements Consultation Report 2022".* Commentary regarding this is provided below in "Attachment 3 Commentary"

- **Attachment 4: Mara Consulting Phase 2 Seawall Community Engagement Report 2021**

  Commentary regarding this report is provided below in "Attachment 4 Commentary".

SECTION 2 Commentary on the requested documents

The following commentary is provided to support above-referenced Attachments 1 to 4.

Attachment 1 Commentary

The Marsden Jacob and Associates *"Wamberal Beach Cost Benefit and Distributional Analysis"*. Please note this Cost Benefit Analysis that found no evidence to support any significant risk of "ocean breakthrough", that is, no evidence of material ocean surge risk to public infrastructure along Ocean View Drive in the absence of a seawall. Note also the report's Cost Benefit Analysis (CBA) showed seawall options scored worst of all options. As mentioned, this report was buried. Note earlier commentary in our submission regarding this Report and attempts by seawall engineer Peter Horton to change the CBA calculation method to change the result.

Attachment 2 Commentary

Central Coast Council's *"Wamberal Beach Terminal Protection and Sand nourishment – Investigation and Concept Design March 2021"*. This document states in the Executive Summary (Page 3) that "Council initiated a Wamberal coastal engineering study to progress with seawall investigations, as per several CZMP actions." As stated in the hearing, this claim is misleading as there were in fact no CZMP actions to build a vertical seawall at Wamberal Beach and this was stated by former Council Director of Environment and Planning, Mr Cox at a 2021 Wamberal Beach Seawall Advisory Taskforce meeting, minuted as such, that "the CZMP Action is not an action to build a seawall."

Despite an assortment of data set out in the report, the Council survey was tellingly designed not to ask the community the most obvious question, that is whether the community preferred a seawall or other options at Wamberal Beach. That important data is therefore not reported.

The Page 5 Introduction characterises the 2020 storm, beachfront property damage and associated media coverage as some sort of basis for Council and NSW Government spending ($2M) on emergency work to drop rocks along the beach even though the emergency management plan for the beach at the time stipulated the private owners were entirely responsible for the management of their properties, not Council or NSW Government. There is also mention of the formation of the Wamberal Beach Taskforce which was pushed through by Adam Crouch MP, and it is worth noting that Mr Crouch and WPA members were central figures in whipping up media interest regarding sand loss and property damage from the 2020 storm. None of the comments by Mr Crouch or WPA members clarified that the owners had all along known and signed deeds accepting the risks of storm damage along the foredune. Page 5 leaves no doubt that Council, under the influence of the Taskforce, Mr Crouch and the WPA media campaign, were advancing straight to a seawall, a so-called "permanent solution", that being a WPA catch phrase, and they did not hesitate at that time to reinterpret the CZMP as some sort of action to build a seawall, whereas there was no such CZMP action.

Page 19 reveals the most common comments the community offered in the Council survey. An enormous 45% of all survey responses were concerns about "Loss of beach" (14.9%), the "Seawall" (8.3), "Natural solutions" (7.1%) and "(managed voluntary) retreat" (8.5%) and Costs (5.9%). It also appears from the comments detailed later in the report nearly all responses were in fact statements of concern about the proposed seawall. Tellingly, Council gave no commentary on this, rather pasting their standard line about trying to meet the requests of the community, but not being able to do that for technical and safety reasons, those being unspecified and, in our opinion, bogus.

Page 20 (which oddly is numbered as Page 1) and for pages and pages thereafter is a litany of community expressions of valid concern for the proposed seawall.

The report is loaded with community opposition to the seawall juxtaposed with Council confirming their commitment to press on with the seawall regardless.

Attachment 3 Commentary

Central Coast Council's *"Wamberal Beach Terminal Protection & Sand Nourishment: Draft Design Requirements Consultation Report September 2022".*

Once again, this report is loaded with overwhelming community objection to the proposed seawall at Wamberal. The commentary mirrors that of the abovementioned 2021 report. Beach amenity, loss of sand, the need for sand nourishment and outright rejection of the proposed seawall dominates the report, yet Council states their enduring commitment to the seawall design.

Council initiated a Wamberal coastal engineering study to progress with seawall investigations, as per several CZMP actions.

Attachment 4 Commentary

Mara Consulting "Phase 2 Seawall Community Engagement Report 2021" was commissioned by Central Coast Council. The following aspects are relevant to the Inquiry request:

- It only becomes evident on Page 15 that the overwhelming majority of survey respondents "did not want a seawall", that is, they did not want any type of seawall, yet they were only asked their preference for five seawall and revetment options noted on Page 7 of the report.

- It is stunning the way the report dances around all manner of community responses about their use of the beach, where they live, what was important at the beach, what type of seawall they prefer, who should pay for it and so on, but the report's Executive Summary is silent on the fact that the overwhelming majority of respondents stated the did not want or support a seawall at all, and that is only evident from data mentioned in passing on Page 15 for which there is no elaboration. To us, the report looks like it was compiled to minimise the glaring issue that the seawall was not preferred by most of the community at all.

- We understand Council has additional information showing that many survey respondents asked in the survey comments why there was no survey non seawall option.

SECTION 3 Additional documents of relevance

We provide the following additional documents and commentary:

1. **Letter from CEO NSW Government, Mining Exploration and Geoscience** confirming that "the Government will consider applications for offshore mineral exploration and mining of sand for the purpose of beach nourishment, provided it can be demonstrated that it is for a broader public benefit.

2. **Email from Rik Hart Administrator Central Coast Council** refusal to consider sand nourishment for broader public benefit

3. **Our rebuttal to Rik Hart's response** stating sand nourishment is a better option for Wamberal than a seawall which would provide a broader public benefit and incidentally also provide private property protection.

4. Link to all the **Adam Crouch MP-established Wamberal Seawall Taskforce Minutes**. https://www.centralcoast.nsw.gov.au/wamberal-seawall-advisory-taskforce?field_ex_co_cat_target_id=36086&page=1

The Minutes reveal that there was never a doubt that the seawall solution was going to be adopted for Wamberal Beach even if a sand nourishment source was not found as required under the CZMP, and building a seawall was never a CZMP action. The State Taskforce ran the seawall project without any oversight or checks from Councillors or any community elected representatives.

5. Updated version of Corinne Lamont's Original Inquiry submission (*Underbelly report*). This document was previously sent but was not confirmed as received by the Inquiry.

Thanks and kind regards,

Corinne and Mark Lamont

The Cost Benefit and Distributional Analysis was prepared by Marsden Jacob Associates for and on instruction from the NSW Office of Environment and Heritage (OEH). OEH has requested that the proactive release of that document include the following statement, which reflects the position of OEH but not necessarily the position of Council:

"This report is a preliminary cost benefit analysis (CBA) for options identified in the Gosford Beaches Coastal Zone Management Plan, which has been certified and gazetted by the Minister. The CBA considers the economic merits of different protection and management scenarios compared to the 'business as usual' or 'base case'. The CBA has investigated different management options from a broad economic standpoint. This work is an initial step to inform the consideration of future cost sharing arrangements and associated funding models to implement protection works. None of these options were progressed to either a fully developed concept or detailed design stage."

FINAL REPORT AUGUST 2017

Wamberal Beach Management Options: Cost Benefit and Distributional Analysis

Report prepared for NSW Office and Environment and Heritage

MARSDEN JACOB ASSOCIATES

Marsden Jacob Associates
Financial & Economic Consultants

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Executive summary

Wamberal is a coastal community located near Gosford on the central coast of NSW. Wamberal beach has a history of impacts from coastal processes, with consequential impacts on properties, beach visitation and public infrastructure.

Probabilistic modelling of the coastal processes affecting Wamberal beach has been carried out by the Office of Environment and Heritage (OEH) for this report and shows the impacts of coastal processes such as erosion, deposition, beach recession and sea level rise are complex and interact with Terrigal beach and Terrigal lagoon.

A range of structural engineering approaches have been considered to protect beachfront properties and other infrastructure at Wamberal beach and the surrounding lagoon properties from the effects of coastal processes. However, these options in isolation are unlikely to provide complete protection from these effects, and in the longer-term, sea level rise may have a more serious impact on properties at Wamberal beach, and especially around Terrigal lagoon.

This report uses a standard Cost-benefit Analysis (CBA) framework to estimate the direct and indirect costs and benefits of these options that may accrue to a range of key stakeholders.

The CBA reports the benefit-cost ratio and the net present value of each option compared to a base case of 'business as usual'[1]. The analysis is based on the Office of Environment and Heritage (OEH) CBA Coastal Guidelines and has been undertaken to inform local government decision-making on seawall options. The material, methodology, assumptions and findings used in this report are taken from a cost benefit analysis of coastal recession management options commissioned from Marsden Jacobs and Associates, and managed by OEH on behalf of the Local Council.

The CBA concludes that none of the engineering options considered (Options 2-7) are expected to provide a net public benefit for the local community and for visitors to the area, under base assumptions. Only a Planned Retreat option (Option 8) provides greater benefits than a continuation of the current approach of no specific managed intervention (Option 1, maintaining current, status quo approaches).

The analysis concludes that the net costs imposed on residents, visitors and other parties from the loss of the beach and construction of a seawall, exceed the net benefits stakeholders would receive from the effects of a seawall. The key beneficiaries from construction of a seawall are the approximately sixty owners of beachfront properties at Wamberal.

It is estimated that there will be a marginal reduction in the number of beach visits to Wamberal due to the consequent loss of the beach for recreation and other enjoyment under the seawall options (Options 2-8), compared to the base case. Although beach nourishment has been considered as a means of restoring beach areas lost because of a seawall, sand replenishment is not an economically feasible strategy for restoring this beach.

The cost of sand replenishment is very high and outweighs the benefits of retaining a beach in front of a seawall. This means that seawall only options (Options 2, 4 and 6) result in a lower net public cost than seawall plus sand replenishment options (Options 3, 5 and 7). This CBA considered a number of sand replenishment options currently available for implementation. However, alternative sources of sand may become feasible in the future and replenishment costs may change as a result. The speed

[1] In this case, representing a situation with no specific intervention to mitigate the impacts of coastal processes

with which the beach will be lost will vary depending on the type and physical location of the seawall involved. A rubble mound revetment (Option 2 and 3) is likely to result in near immediate loss of most of the beach in winter based on the extensive assumed plan footprint and alignment of the wall. Vertical seawall designs (Option 6 and 7) have a much smaller plan footprint (possibly up to only 2 – 3 metres), but the characteristics of the wall results in increased reflection of wave energy and general lowering of the beach for longer periods following storms compared to rubble mound structures.

It is not certain which alternative form of protection (and alignment) considered would result in the fastest loss of the useable beach in the absence of sand nourishment, however under these circumstances, it is expected that the value of the beach for recreation will be near non-existent by 2064. Options with a seawall plus beach replenishment are likely to prolong beach use compared to seawall-only options. However, rising sea levels means that by 2064 the value of the beach for recreation will be similar to seawall-only options.

The loss of the beach will impact negatively on beach users (visitors and the local community), local businesses and property values.

As well as Wamberal businesses, Terrigal businesses may also be impacted, as Wamberal beach acts as an overflow area for visitors to Terrigal beach (the Central Coast's most popular beach) during the peak season.

As noted above, the trade-off from protecting some sixty beachfront properties with a seawall would be the potential loss of visits due to the loss of the beach. This loss of visitors may create some concern in the wider Central Coast Local Government Area, especially as 32% of the beach-front properties that would potentially be protected by a seawall (at the expense of the beach) are only occupied occasionally (i.e. they are owned by people who use them from time to time as holiday homes, rather than for permanent occupation).

The trade-off from protecting beachfront properties with a seawall plus beach replenishment would be to delay when loss of beach visitation will commence however this is offset by the additional cost of beach replenishment.

In the very long term, it is expected that Wamberal property values will be negatively impacted by increased flooding from sea level rise, which will result in the inundation of many, if not most properties surrounding Terrigal lagoon, the loss of Wamberal beach, and impacts on council assets such as water, electricity, sewerage and roads.

The geotechnical data available to inform this economic analysis concludes that a seawall along Wamberal beach will not mitigate the risk of this inundation around the lagoon, but will only mitigate the risk of damage to properties sitting on the Wamberal beach dune. However, the extent of damage risk to built assets faced by beachfront properties is largely mitigated where building stock is commensurate with piled foundations to bedrock. Thus, sand can be eroded from underneath these properties during storm events, and will only involve utility reconnection costs.

In summary, the seven engineering (seawall) options considered in this report (Options 2-7) all impose a net economic cost on the community, compared to continuing with the current status quo approach of no specific attempt to prevent the effects of coastal erosion (Option 1). The benefits of the engineering options (Options 2-7), which accrue mainly to beach-front property owners, will be outweighed by their net costs to the wider community. Each of the engineering options has a cost

benefit ratio (BCR) of less than 1 and a negative Net Present Value (NPV).[2] The only option with a BCR greater than 1 and a positive NPV is Option 8: Planned Retreat (see Table 1).

The limitations of any analysis should be clearly understood. Various assumptions have been detailed in this report that underpin the desktop assessment of the various engineering options.

There is significant uncertainty around how coastal processes will impact into the future and how engineering options may mitigate risks associated with those coastal processes. In particular, sand nourishment is a highly uncertain component (i.e., when it would be done, what quantities, how often and from what source site) with numerous variables affecting availability and cost.

This work was undertaken as an initial step to inform consideration of potential future cost sharing arrangements and associated funding models for implementation of protection works. It is envisaged that the work contained herein provides an authoritative framework for considering more authoritative and definitive detailed designs when they are sufficiently advanced.

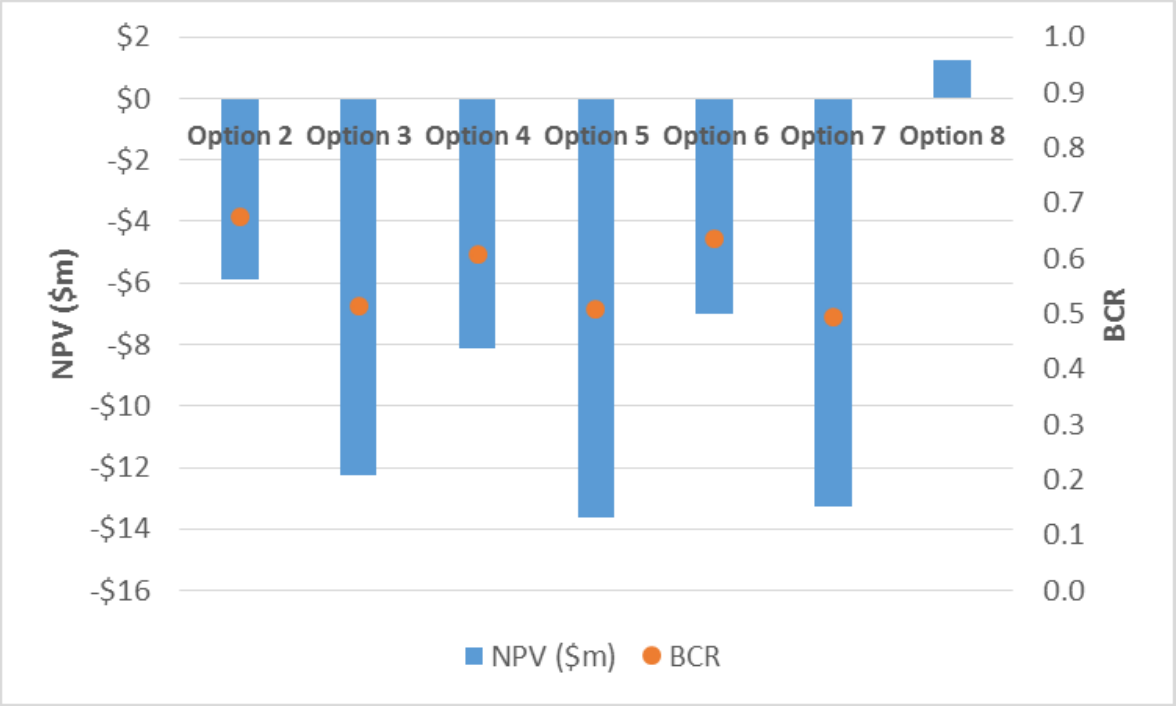
Table 1: Results of Cost-benefit Analysis relative to base case

Option	BCR	NPV
Option 1: "Business-as-usual" conditions at Wamberal beach if none of the proposed management options are implemented.	Base case	Base case
Option 2: A rubble mound revetment	0.70	-$5.378 m
Option 3: A rubble mound revetment combined with beach nourishment	0.54	-$11.688 m
Option 4. A Seabee revetment	0.55	$-$9.217 m
Option 5: A Seabee revetment combined with beach nourishment	0.49	-$14.23 m
Option 6: A vertical seawall	0.49	-$9.79 m
Option 7: A vertical seawall combined with beach nourishment	0.47	-$13.975 m
Option 8: Planned retreat by managing the duration, type and intensity of future development within the coastal hazard area	5.03	$1.178 m

The relative NPVs and BCRs of the options are shown in Table 2, and clearly indicate the difference between Option 8, with an NPV of $1.17m and a BCR of 5, and the other options.

[2] See Glossary for an explanation of BCR and NPV

Figure 1: Visual Comparison of Results of Cost-Benefit Analysis



A seawall will provide benefits to beachfront properties by reducing the impacts of coastal processes. However, in the longer term, more properties in this area are likely to experience greater damage and loss of property values from the increased flooding of Terrigal lagoon associated with sea level rise. Higher sea levels will result in the increasingly frequent inundation of hundreds of properties surrounding the Terrigal lagoon, the loss of the beach, and impacts on council assets such as water, electricity, sewerage and roads.

The report contains eight main sections.

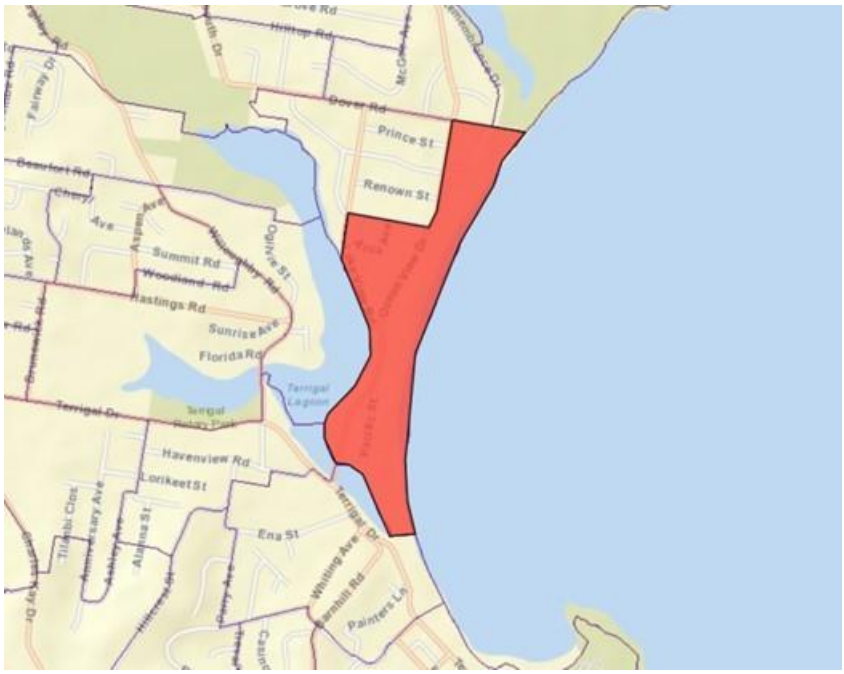
1. Introduction: the issue
2. Forecast physical impacts
3. Proposed management responses
4. Physical impacts of management options
5. Economic analysis of costs and benefits of management options
6. Results of the CBA
7. Distributional analysis
8. Conclusion

These sections follow below.

1. Introduction: the issue

Wamberal beach has a history of coastal processes causing damage to properties, beach visitation and public infrastructure. The area considered in this study is the foreshore area shown in Figure 2. The extent of foreshore considered is from the entrance to Wamberal lagoon (northern limit) to the entrance to Terrigal Lagoon (southern limit).

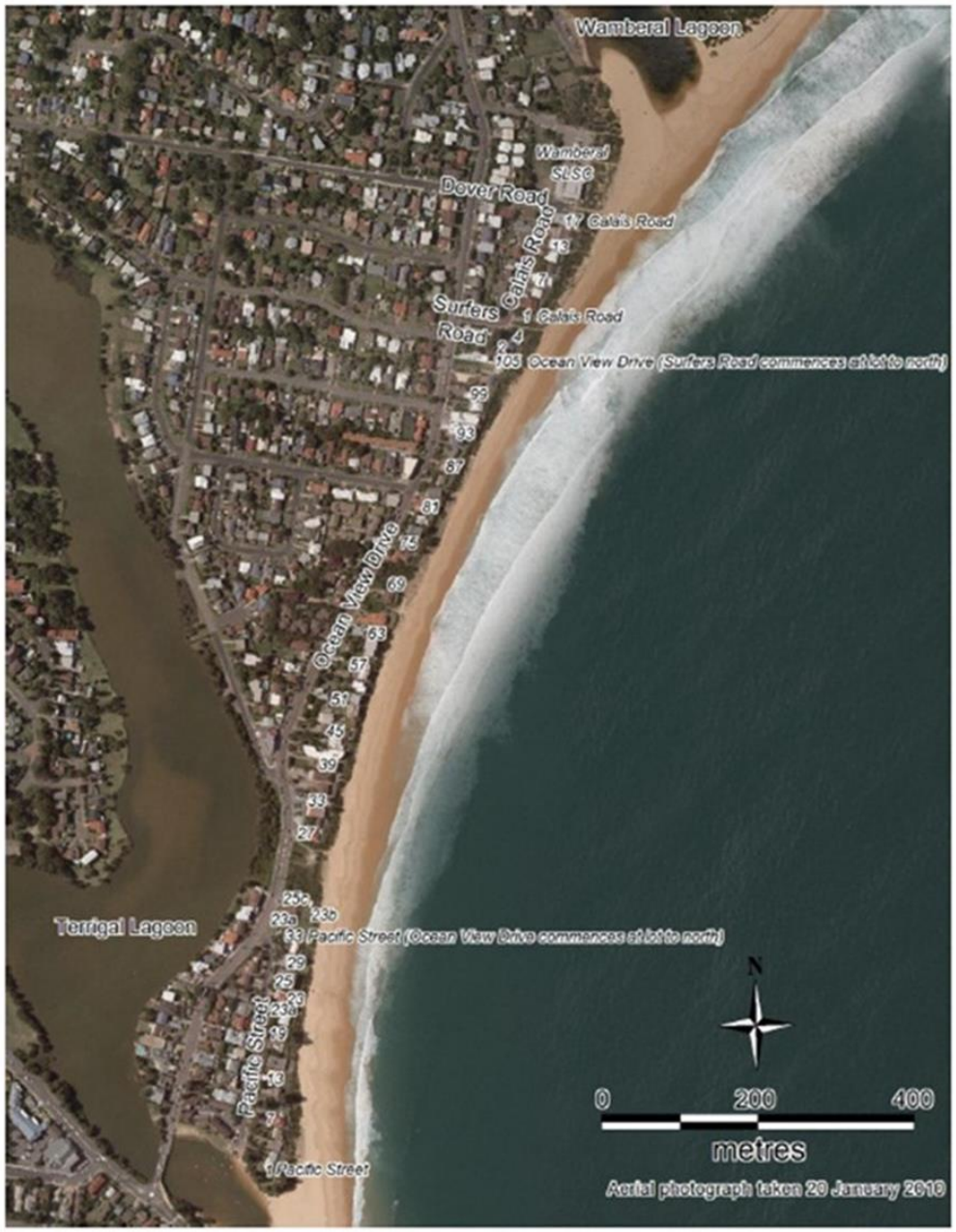
Figure 2: The study area



Most of the study foreshore is composed of a dune with a varying height and width. Much of the dune at Wamberal beach contains a modified substrate along its seaward face, due to past works attempting to stabilise the dune after storms. These works comprise dumped rock, ad hoc timber walls and remnants of wind fences, all of which have negligible dune stabilising capacity. Most of these works occurred after the 1974 storm and although common practice at the time, it is assumed that this type of work will not be repeated. The deleterious impacts of the ad hoc 1974 works on adjoining properties, including creation of 'the ruins', ultimately led to a 1989 Supreme Court action.

Detailed probabilistic modelling was carried out for this study to assess the likelihood of coastal processes affecting property owners and other stakeholders in the study area (see Figure 3).

Figure 3: Wamberal beach, with streets and house numbers



Source: Worley Parsons, 2015

This modelling was carried out by the Office of Environment and Heritage (OEH) to better understand the potential impacts of coastal processes on beachfront properties in the study area, and help estimate the economic costs and benefits of different options for addressing these impacts.

The modelling shows that the impacts of coastal processes such as erosion, deposition, beach recession and sea level rise are complex and interact with Terrigal beach and Terrigal lagoon (see Appendices A1-2). The modelling defined a potential impact zone for coastal properties at Wamberal based on a range of factors, including severe storm events, sand compartments along the beach, sea level rise and the dune system.

The modelling indicates that 82 properties in the study area are likely to be affected by coastal processes over a 20-year timeframe, and 92 properties over a 50-year timeframe, with some properties affected more than others, depending on their location along the beachfront.

Several properties in the study area have piled foundations (20 properties) required as a condition of their development consent. It is assumed that these structures are less likely to be undermined by coastal processes than the unpiled properties along the beachfront. Piled properties may be affected by sand washing away from under the property and by damage to access and services, well into the analysis timeframe.

The likelihood of physical impacts on activities and stakeholders in the potential impact zone was used to estimate expected changes in property values over the 20 and 50 year timeframes used in the modelling (see Appendices A2-4). A very significant proportion of the market value of properties on Wamberal beach relates to their proximity to the beach, i.e. a 'coastal premium value'. This coastal premium value would be affected in the event of shoreline erosion, since there are constraints on availability of coastal land within the LGA, i.e. there is no coastal greenfield land on which development could take place in the future. Costs associated with loss of coastal premium land value were derived from:

- estimates of the numbers of properties impacted in each year for each of the coastal erosion percentile bands;
- the probability that each property will be impacted in that year; and
- the coastal premium values of the affected properties.

Appendices 2-4 provide further details of the approach used to estimate expected changes in property values.

The next section of the report provides background information on demography, income and employment, housing and property ownership, and other features of the study area. This information is relevant to an analysis of the relative impact of the costs and benefits of the different options considered in the study on different stakeholder groups.

1.1. The study area: Socio-economic characteristics

In 2011, the total population of the Wamberal community was 390 people, living in 158 dwellings (Census data, Wamberal Statistical Area Level 1).[3] Of these, 92 properties are at risk from coastal recession, with 82 of these properties currently occupied, and 10 vacant.

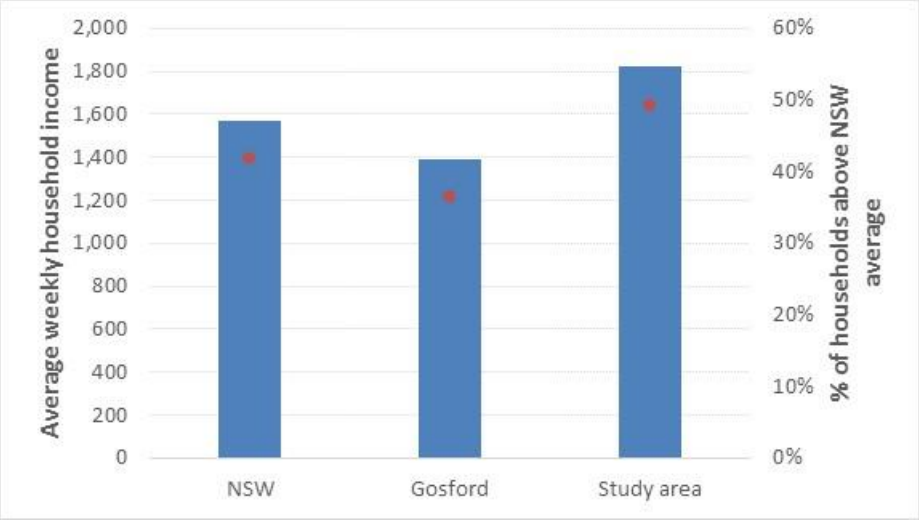
The average age of Wamberal residents in 2011 was 38 years, the same as the NSW average but lower than the average for the former Gosford LGA (41 years). The proportion of residents who were children (15 years and younger) was 19%, slightly lower than in Gosford and NSW (both 20%). On the other hand, the proportion of residents 65 years and over was only 11%, substantially lower than in Gosford (19%) and lower than in NSW (14%).

[3] At the time of the 2011 Census, Wamberal was in the Gosford Shire Local Government Area. Gosford council has now been amalgamated with Wyong council to form the new Central Coast Local Government Area.

1.2. Income and employment

In 2011 the average weekly household income of Wamberal residents was $1,823; significantly higher than average incomes in Gosford ($1,392) and NSW ($1,572) (see Figure 4). Furthermore, 49% of households in Wamberal had incomes above the average NSW household income, compared to 36% in Gosford and 42% in NSW.

Figure 4: Average weekly household incomes, 2011 - NSW, Gosford and Wamberal community



Source: ABS 2011

The high incomes of Wamberal households relative to Gosford and NSW in part reflect the employment status of householders, with 52% of householders in the study area being in full-time or part-time employment, compared to 41% of householders in Gosford and 43% in NSW. Also, of those employed in Wamberal 59% are either managers, professionals, technicians or in trades. This compares with 48% in Gosford and 47% in NSW.

1.3. Attributes of properties in the study area

A comprehensive database of properties exposed to shoreline erosion at Wamberal beach has been compiled for this study. The database covers 98 properties, and builds on cadastre data provided by Central Coast Council. The database includes information for each property on:

- location
- unimproved value
- capital improved value
- coastal land premium value[4]
- annual rates
- land area
- zoning (residential, commercial, other/council reserve)

[4] This is the estimated premium value that is attached to a property due to its location immediately adjacent or close to Wamberal beach (see Appendix A4).

- building type
- building setback distance[5].

Summary information on some of these attributes, including property values, is provided in Table 3. A noteworthy aspect of this information is the average improved property value of $2.8 million. This compares to a median price of houses in the Central Coast LGA approximately $X million and in Sydney of approximately $1.0 million. Three factors would appear to explain this situation. Firstly, the average residential allotment size in the study area (820m2) is significantly greater than the average in Gosford and Sydney (estimated to be about 500m2). Secondly, the average size of houses in the study area appears to be greater than average size of houses in Gosford and in Sydney. Finally, but most importantly, location of properties on or near the coast adds a premium to their value, estimated at approximately $1.1 million per property. In effect, this represents the value that residents living adjacent to Wamberal beach place on the availability of the beach for their recreation and other non-consumptive uses.[6]

Table 2: Summary of the attributes of properties in the study area

Attribute	Value
Number of properties zoned 'residential' (R2, low density)	84
Number of properties zoned 'commercial' (B1, neighbourhood centre)	9
Number of properties zoned 'other' (RE1, council reserve)	5
Average unimproved value ($m)	2.0
Average capital improved value ($m)	2.8
Average coastal land premium value ($m)	1.1
Average annual rates ($)	9,340
Average land area (m^2)	820
Average setback distance of back of house from seaward property boundary (metres)	13

Source: Worley Parsons Economics, 2015

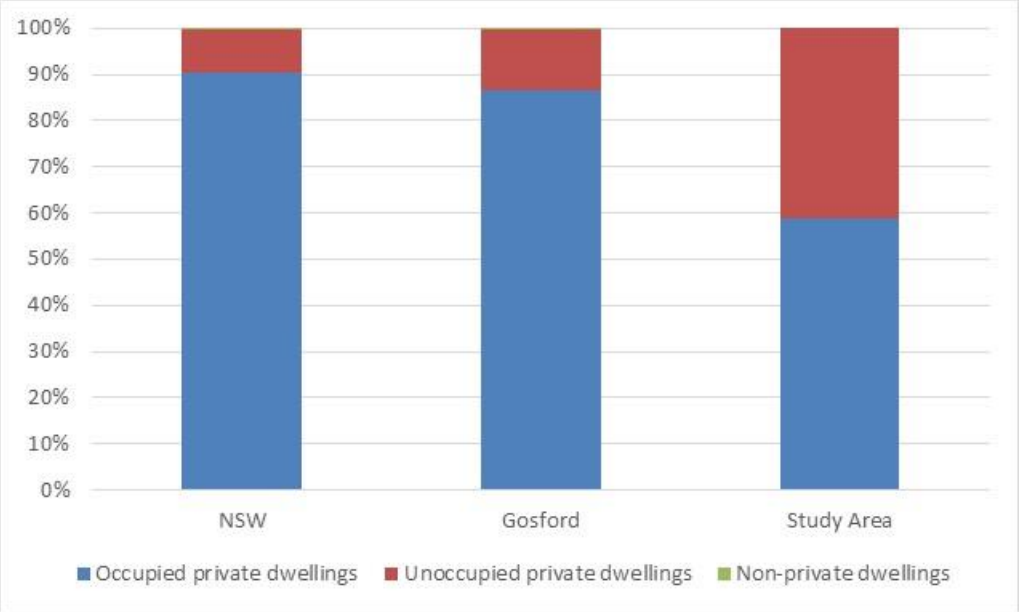
[5] Measured as the average distance of the back edge of the building from the seaward property boundary.

[6] See Appendices A3-4.

1.4. Occupation status of residential properties

In 2011, 41% of all dwellings were not occupied all year, a substantially greater proportion of unoccupied dwellings than in either Gosford (13%) or NSW (9%). It is reasonable to assume that a large proportion of the unoccupied dwellings in the study area are used as holiday homes and/or holiday rentals (see Figure 5). Data is not available on which individual properties are owner occupied, or holiday homes. The implications of the above assumption about permanent versus temporary occupation of properties are discussed further in Section 7.1.

Figure 5: Housing status - NSW, Gosford and Study area, 2011



Source: ABS 2011

1.5. Visitation and recreation

The beaches of the Central Coast LGA of NSW are highly valued by residents, and are an important asset in attracting visitors to the area. In 2015, the Central Coast received five million visitors who stayed almost nine million days, spending an estimated $917 million in the LGA. Approximately 52% of days spent in the LGA and more than over 60% of expenditure came from domestic overnight visitors (see Table 4).

Table 3: Central Coast visitor data, 2015

Central Coast							
Visitor type	Number of visitors	Average length of stay (days)	Number of days	Total Expenditure ($)	Percentage of days primarily beach driven	Beach visits	Beach-related expenditure ($)
Domestic overnight	1,371,000	3.4	4,608,604	$567,000,000	31%	1,430,971	$176,053,500
Domestic day	3,569,000	1	3,569,000	$298,000,000	14%	510,367	$42,614,000
Overseas	45,000	16.1	725,192	$52,000,000	19%	137,061	$9,828,000
Total	4,985,000		8,902,796	$917,000,000		2,078,400	$228,495,500

Source: Destination NSW, 2016; Marsden Jacob analysis

Data from surveys of visitors compiled by Destination NSW (2016) indicates that for approximately 23% of visitors, the region's beaches were the primary factor behind a visit to the region. This equates to more than two million visits to the region's beaches.

The Surf Life Saving Clubs (SLSC) at Terrigal and Wamberal beaches have compiled visitation data for Terrigal and Wamberal beaches over the course of the 2014-15 season (September to April). Data has also been compiled by SLSCs for other beaches in Gosford. As shown in Table 4, there were an estimated 126,000 visitors to Wamberal beach in the 2014-15 season, at an average of over 500 per day. This represents about one quarter of the visitors to the adjoining Terrigal beach (Gosford's most popular beach), and 6% of all visits to Gosford's beaches.[7] There will have been additional beach visits during the off-season (May to August), but based on visitation numbers in April, these are likely to be relatively small.

Unconfirmed reports suggest that a significant proportion of visitors to Wamberal beach are surfers, but that Wamberal beach also gets spillover visitation from Terrigal beach on crowded days (e.g.

[7] The total number visitations to Gosford's beaches of 2.2 million is broadly consistent with beach visitor numbers shown in

, noting that the visitor numbers do not include visits by residents, or account for multiple visits by visitors, but include visits to other Central Coast beaches (e.g. Wyong).

weekends and public holidays). If so, this could explain the very significant jump in visits to Wamberal beach (in percentage terms) in January relative to other beaches.

Table 4: Visits to Terrigal, Wamberal and Gosford beaches, 2014-2015

	Terrigal	Wamberal	All Gosford beaches	Wamberal/ Gosford (%)
September	36,350	10,575	171,185	6.2%
October	59,980	13,269	201,840	6.6%
November	64,430	14,073	209,587	6.7%
December	105,260	18,450	396,733	4.7%
January	142,780	32,955	587,002	5.6%
February	45,860	13,280	208,357	6.4%
March	45,100	18,840	296,366	6.4%
April	20,650	4,190	83,294	5.0%
Total season	520,410	125,632	2,154,364	5.8%
Total off season	66,126	15,964	273,747	5.8%
Total annual	586,536	141,596	2,428,111	5.8%

Marsden Jacob analysis

Expenditure data from Table 4 and Wamberal beach visitation data from Table 4 can be used to estimate the proportion and expenditure of visitors to Wamberal beach from outside of Central Coast LGA as approximately $9 million in 2014-15. This estimate is important for understanding the value that visitors place on the existence of Wamberal beach.

Expenditure by residents in Central Coast that can be specifically attributed to visiting Wamberal beach is assumed to be minimal. In any case, if residents chose to visit another Central Coast beach in preference to Wamberal beach any related expenditure would continue to occur within the LGA.

Note: this report assumes no increase in visitation over time. This impacts on how nourishment options are assessed. Costs of nourishment outweigh benefits. If visitation increases, then nourishment options improve relative to non-nourishment options.

1.6. Visitation-related businesses

Several local businesses in Wamberal provide goods and services to visitors and local residents as part of their experience of using the beach. Changes which affect levels of visitation to the beach will influence the revenue these businesses receive.

1.7. Beach maintenance

Management of beach recession is currently carried out by the Central Coast Council through land use planning, development control and protection of public assets. The council has several measures in place to respond to recession including the following.

Development controls

Council has implemented new planning controls to mitigate the impacts of coastal processes, as set out in the Gosford Development Control Plan (DCP) 2013. Key controls include the following.

- All new development must be constructed landward of the coastal building line (DCP Section 6.2.7).
- Subdivisions and intensification of development of properties seaward of the Coastal Hazard Line are not permitted (DCP Section 6.2.8.1).
- New buildings and structures are not permitted on, over or below land seaward of the coastal building line (DCP Section 6.2.8.2a).
- Redevelopment of existing buildings within the coastal hazard area is only permitted if the foundation design is demonstrated to have been constructed to withstand coastal processes (i.e. buildings are constructed as 'piled' buildings).

In 2016 there were 20 piled houses in the study area. The number of piled houses is assumed to increase by an average of one each year in the future (~2% of the housing stock) in line with the requirements for redevelopment outlined above.

Ongoing maintenance

It is understood that the two maintenance activities undertaken by Council are:

- Opening of the entrances to Terrigal lagoon when the water level reaches pre-determined levels set to minimise flooding along the developed foreshores of the lagoon (an average of twelve openings per year are assumed in the OEH modelling).
- Erection of wind fencing to assist with dune rebuilding after storms, predominantly along the northern Wamberal beach area. There are likely to be some ongoing costs associated with maintaining this fencing.

In addition, the Central Coast Council issues evacuation notices for unsafe properties, and implements actions needed to ensure site safety. Demolition of unsafe properties is carried out within specified time periods depending on the ability and/ or willingness of home owners to pay for demolition. Lengthy delays may occur. If properties are left in a 'dangerous' condition for several years, Council may be forced to close off sections of the beach for long periods, during which the benefits of beach access/ visitation will be foregone.

As noted above, modelling was commissioned for this project to predict the physical impacts of coastal processes on Wamberal beach over the next fifty years, assuming no preventative measures

are taken to mitigate their effects.[8] Expected physical impacts under modelled conditions are discussed in Section 2.

[8] These conditions reflect the views of MJA and Water Technology using information from OEH, Council and other sources. The coastal processes are highly uncertain and the best information has been used to inform the predicted impacts.

2. Physical impacts predicted by modelling

This section of the report discusses the physical impacts of coastal processes on features of Wamberal beach over the next fifty years, based on the above OEH p modelling, which assumes that no specific interventions are made to prevent the effects of coastal processes.

2.1. Beach and dune response

A considerable amount of work has been undertaken to define the existing coastal processes and the beach response to storm events, with the most recent relevant studies being:

- Worley Parsons (2014): Open Coast and Broken Bay Beaches Coastal Processes and Hazard Definition Study; and
- NSW Office of Environment & Heritage (OEH)(2016): Forecast of Potential Shoreline Change - Wamberal beach (Gosford City Council).[9]

Information from these reports has been used in the following discussion of the impacts of coastal processes affecting Wamberal beach.

2.2. Shoreline recession

The statistical Monte Carlo modelling used to forecast shoreline recession change uses an 'alongshore averaged beach-dune profile for Wamberal beach'. Based on the averaged beach-dune profile, the potential for shoreline change has been defined in Appendix A1 (taken from Figure 3 and Figure 4 of OEH, 2016) for the 2034 and the 2064 sea level change estimates. These shoreline change estimates have been used to predict the extent of recession in 2034 and 2064 for each of the coastal recession percentile bands (i.e. 10, 20, 30, 40 … 99.9), assuming that any underlying historical rock and timber structures will have no measurable impact on limiting recession.

The above information has in turn been used to estimate the numbers of properties impacted in 2034 and 2064 for each of the percentile bands. This has been done by overlaying the percentile bands on the Wamberal beach cadastre (see Appendix A2).

It is assumed in the modelling that no beach nourishment will take place, in the short-term. This assumption is based on available documentation and studies that define the beach as a relatively closed system with no net sediment losses. That is, sand that enters the lagoons is flushed out again when the lagoons open, and sand that is eroded and moved offshore during storms, returns to the beach during ambient conditions and aeolian (wind-driven) sand movement returns the sand to re-build dunes.

It is assumed that the active system will move landward over time at a rate of 0.2m/year (based on a Worley Parsons recommendation that has already been built into the OEH Monte Carlo modelling of shoreline change, described in Appendices 1-2). As well, in the longer-term under sea level rise, there

[9] Based on statistical modelling of the eroded beach-dune sand volume using the Monte Carlo sampling technique.

will be a further recession based on the Bruun Rule.[10] This has also been built into the OEH Monte Carlo modelling.

2.3. Dune breakthrough and overtopping

Potential for dune breakthrough has been assessed, but is considered highly unlikely over the timescale of the present study (to 2064).[11]

Based on available information, it is highly unlikely that a dune breakthrough (itself an unlikely event), will result in a new channel into Terrigal Lagoon. The breakthrough will be a result of run-up washing over the dune and cutting through it, but the base level of any cut is unlikely to extend down to the level of the Ocean View Drive. The breakthrough is more likely to result in a sand washover and deposition on the road and on the lagoon side of the road. Should all the sand be washed over the road, the road would still be a barrier to breakthrough. That is, although a single storm (even the 100 year ARI event in 2064) may erode the dune back to the road, it is unlikely to have the duration at high water levels to breach the road. Hence a new channel would not be created.

Therefore, any impacts will primarily relate to the impact of the breakthrough on the dune itself. In any case, it is likely that any breach in the dune will be rectified after it occurs to re-establish the present-day configuration.

Some services may also be affected by a breakthrough. (However, although the potential for breakthrough is most likely between [redacted], there is no sewer connection at this location which could be ruptured). Another possible impact of dune breakthrough would be temporary road blockage due to sand deposition.

2.4. Beach condition

Wamberal beach is an active beach system which is assumed to move landward at a rate of 0.2 m/year. Further beach/ dune recession in the long- term is expected from sea level rise[12],which by 2034 is projected to be about 8 metres and by 2064 about 20 metres[13].

In addition to the beach response described above, it is important to consider the likely form/condition of the beach in terms of the 2034 and 2064 sea level rise estimates used in the modelling. It needs to be appreciated that the beach can have a range of visual and use attributes under any sea level rise estimate, depending on the season and when the last storm event occurred. The historical severe storm events of 1974, 1978, 1986 and 2016 occurred in winter (June to August). The implication here is that in general the beach will be narrower, at high tide, over winter than over summer. During the project site visit of April 2016, the beach was very wide, reflecting that at the end of summer the

[10] See Glossary

[11] Dune breakthrough is a highly complex and rare physical process. Even with the extent of modelling undertaken by OEH, the impacts of breakthrough are expected to be highly uncertain and unlikely. Modelling suggests that the likelihood of this event is only ≤1% at 2034 and ≤ 5% at 2064 (see Appendices A1-2). Given this, the effects of dune breakthrough are only considered as a coarse parameter in the economic analysis.

[12] Sea level rise is estimated at 0.2 metres in 2034 and 0.45 metres in 2064 relative to 1990.

[13] Under the Bruun Rule about 200m3 of sand will be eroded per metre length of beach by 2064.

beach will, under normal conditions, be in a 'full' state. This is due to the predominance of mild wave conditions over the summer months. During mild wave conditions, there is a tendency for sand to move onshore, and warm onshore winds tend to dry the sand and move it to the upper beach and dune by aeolian action. During storms, which predominantly occur over the winter months, sand moves offshore and the beach will tend to be much narrower than in summer.

Projected long-term beach recession due to sea level rise will exacerbate this seasonal change (i.e. a 2034, sea level rise of 0.2m by 2034). Over summer it is expected that a beach berm would build up in front of the eroded dune providing a reasonable area for beach use, however during winter this could be substantially reduced by severe storm events.

2.5. Lagoon processes

Current lagoon processes are expected to continue under the modelled conditions. This means that properties affected by the flooding of the lagoon will continue to be inundated as water tends to rise in the lagoon. Coastal recession will have no impact on these processes.

Because of development at low levels around Terrigal lagoon, Council periodically opens the lagoon entrance to maintain lagoon water at a level that avoids unacceptable flooding.[14] The trigger level for opening is 1.23m AHD.

As sea level rises, it is expected that there will be more onshore movement of sand towards the lagoon entrance, resulting in a more rapid closure of the entrance due to sand build up. The difference in water level between the lagoon and the ocean will lessen as sea level rise results in a lower volume of water being discharged from the lagoon each time it is opened. Assuming rainfall stays approximately constant with time, the lagoon will reach its trigger level more rapidly; hence the need for an increase in the number of openings. Therefore, under the modelled conditions, there are expected to be more times that the entrance will need to be opened.

2.6. Dune system

Although the dune system at Wamberal beach has largely been developed, there are some small sections of native vegetation in areas of public land that do not contain houses or major infrastructure. Although Council and a local Bushcare group aim to maintain and revegetate these areas through fencing and other maintenance works, it is assumed in the modelling that these areas will eventually be lost from the action of coastal processes.

2.7. Impacts on properties under the modelled forecasts

As noted above, detailed probabilistic modelling was carried out for this study to assess the likelihood of coastal processes affecting property owners and other stakeholders in the study area (see Figure 9). The modelling has defined a potential impact zone for coastal recession at Wamberal based on a range of factors, including severe storm events, sand compartments along the beach, sea level rise and the dune system (see Appendix A1).

[14] Some flooding still occurs however when storm events correspond with high tides.

The likelihood of physical impacts on activities and stakeholders in this zone is then used to estimate the expected changes in property values over the timeframes used in the analysis, i.e. 20 and 50 years (see Appendices A2-3).

It is estimated that 82 beachfront properties in the study area may be affected by coastal processes over a 20-year timeframe, and 92 beachfront properties over a 50-year timeframe, with some properties affected more than others depending on the location of the properties along the beachfront.

- Shoreline recession extending to private properties will impact on the coastal premium land value of those properties, proportional to the extent of land lost to recession.[15]
- When shoreline recession reaches the seaward edge of unpiled buildings they will be lost. Piled buildings will remain, but from time to time their owners will incur costs for reconnecting services and accessing the property. Also, once impacted by recession, the value of piled buildings will decline over time in proportion to the area of land lost to recession.
- In the short to medium term (e.g. 2034), loss of land and dwellings from recession will primarily be driven by severe storms.
- In the longer term (e.g. 2064) land and buildings will be impacted (due to sea level rise) even without severe storm activity.

Several properties in the study area have piled foundations (20 properties) required as condition of their development approval (see Section 1.2.5.). It is assumed that these structures are less likely to be undermined by shoreline recession than the unpiled properties along the beachfront. Piled properties may be affected by sand washing away from under the properties, and damage to access and services well into the analysis timeframe.

2.8. Impacts on beach use under the modelling

The appearance and use of the beach will depend on the season and when the last storm event occurred. In general, the beach will be narrower at high tide, over winter than over summer. During mild wave conditions, sand is likely to move onshore, and warm winds would tend to dry the sand and move it to the upper beach and dune. During storms, which predominantly occur in winter, sand moves offshore, and the beach will tend to be much narrower than in summer.

The modelling assumes that no beach nourishment occurs, but sand that is eroded and moved offshore during storms, will return to the beach during ambient conditions and wind action will return the sand to rebuild dunes.

However, under the forecasted conditions, the beach will continue to move landward at a rate of 0.2 m/year. Additional recession is expected to occur in the long term from sea level rise. By 2034 the beach may lose significant quantities of sand during the winter storm season, but over summer will recover sufficiently to provide reasonable to good beach availability for recreation.

[15] Costs associated with loss of coastal premium land value were derived from: estimates of the numbers of properties impacted in each year for each of the coastal erosion percentile bands; the probability that each property will be impacted in that year; and the coastal premium values of the affected properties. Appendix A4 provides further details of the approach used to estimating the expected values.

Thus, over the forecast period, and assuming no major programs are undertaken to remediate the impact of coastal processes on beachfront properties, beach users will still be able to access the beach over summer, but not in winter. Over time there will be less beach available even in summer due to beach recession and sea level rise.

3. Proposed management responses to physical impacts

Several options have been proposed by the Council and OEH to protect beachfront properties from the effects of coastal processes, although there will still be some processes that cannot be addressed by these options, particularly sea-level rise. An alternative option has also been considered, which aims to allow natural coastal processes to take place without building engineering structures to counteract those processes. This planned retreat would allow the temporary use and occupation of coastal lands until coastline hazards threaten life and property; then once the erosion escarpment encroaches within a certain distance of a development, the development is required to be relocated further back from the escarpment or removed where relocation is not possible.

For the purposes of this study, and based on discussion between the Central Coast Council and OEH, the following options have been considered as ways to respond to the impacts of coastal processes.

- Option 1: No specific preventative measures
- Option 2: A rubble mound revetment
- Option 3: A rubble mound revetment combined with beach nourishment
- Option 4. A Seabee revetment
- Option 5: A Seabee revetment combined with beach nourishment
- Option 6: A vertical seawall
- Option 7: A vertical seawall combined with beach nourishment
- Option 8: Planned Retreat by managing the duration, type and intensity of future development in the coastal hazard area.

Each management option proposes a way of addressing the physical impacts of coastal processes predicted under the modelling. However, each option will have its own combination of physical impacts on the beach and surrounds, and economic impacts on stakeholders.

As noted above, it is difficult to accurately predict the behaviour of the coastal processes affecting coastline recession, and thus their physical impacts on stakeholders under the different options. Key assumptions about the impacts of the above management options have been subject to sensitivity testing (see Section 6).

3.1. Overview Option 1

Option 1 involves a continuation of current management approaches to coastal processes, with no specific planned program of interventions to prevent the impacts of coastal processes on beachfront properties. The impacts of implementing Option 1 are the impacts predicted in the modelling forecasts as described in Section 2.

3.2. Overview Options 2-7

Options 2-7 involve different types of revetment, with and without beach nourishment, i.e. a rubble mound (rock) seawall, a Seabee (concrete unit) seawall; and a vertical seawall.

A 1998 final design report by the Water Research Laboratory (WRL) (Design Study for Wamberal beach Terminal Protective Structure in October 1998) included an assessment and capital cost estimates for rubble mound, Seabee and Contiguous piled (Vertical) seawall options.

The designs proposed by WRL appear to be technically reasonable, and provide an appropriate starting point for the CBA. The designs are suitable for the purposes of comparing seawall options in a CBA, but more up-to-date documentation would be required for detailed engineering purposes.

Two design factors have changed since the 1998 report: the allowance for sea level rise by 2064, and the adopted toe design for Seabee seawall. At the time of the study, the nominated allowance for sea level rise for a 50-year horizon was 155mm. In contrast, the nominated value for sea level rise to 2064 (the 50-year planning used in this study) is 350mm. The current nominated value for 2034 is 125mm.

In general, the unit costs applied by WRL (1998) have been adopted with a nominal 70% construction cost index (CCI) increase to 2016. Details of costs and updates to the above estimate made for this study are given in Section 5.

The design cross-section proposed and costed by WRL (1998) has been used for the revetment types i.e. the rubble mound and the vertical wall (Options 2-3 and 6-7). For the Seabee seawall (Options 4-5), the Gabion and Reno mattress toe has been replaced with a piled toe. The variations from WRL (1998) relate to seawall height. In the WRL (1998) a constant seawall height of 8m (AHD) was assumed, whereas the design height of the seawall varied from 6 to 8 metres (AHD), with most the wall at 8m.[16]

It is assumed that the engineering works for Options 2-7 would be carried out as a single continuous process, with component activities occurring at the same time, and not carried out as individual stages over time. Staging construction activities would cause different physical and economic impacts on stakeholders during the different phases of construction and complicate attempts to estimate the direct and indirect costs and benefits of the different options.

3.3. Options 2 and 3: Rubble Mound Revetment: description

Options 2 and 3 involve a standard rubble mound seawall slope form of two layers of four tonne armour rock underlain by two layers of secondary rock with a geotextile membrane separating the rock from the underlying trimmed sand slope. The geotextile prevents sand leaching out through the rock. Option 2 is a rubble mound revetment without sand nourishment; Option 3 is a rubble mound revetment with sand nourishment.

The toe of the seawall (under-layer) is set at 2m AHD to accommodate beach and dune recession so that the integrity of the seawall remains even after a 50 year ARI storm at elevated sea levels. Under an extreme event there may be some undermining of the toe of the structure, but the combination of the geotextile, under-layer rock and armour rock toe structure would be expected to slump without any significant settlement of the rubble mound wall itself.

[16] The construction and maintenance costs in Section 5 take account of the variable seawall height.

Height

The crest of the rubble mound is set at about 6.75m AHD. A recurved concrete wall with its top at 8m AHD is cast onto the top of the rubble mound wall to minimise wave overtopping.

Footprint

The footprint (width) of this structure is 17 ½ metres when it is fully exposed. When it is constructed, (presumably not in winter because of potential limited access and wave inundation of works), only about 50% of this total width would be exposed. The balance would be buried using sand excavated for construction purposes.

Under summer conditions, with present day sea level, much of the seawall will be buried under the upper beach and dune. As sea level rises, combined with the natural recession of the shoreline nominally estimated at 0.2m/year, (Worley Parsons, 2014), it is expected that the amount of the seawall exposed will increase as the beach width diminishes.

Preparatory earthworks, which entail the removal of sand and other materials to trim the dune face in preparation for the placing of rubble mound seawall materials, will require some 175,000 m3 to be rehandled. All sand excavated will be placed back on the beach.

The total amount of rock involved is almost 91,000 tonnes. All the rock will need to be transported via road to Wamberal beach. It is likely that storage and rehandling will need to be undertaken at both the Terrigal and Wamberal Lagoon ends of the beach. Materials will then need to be transported to the works area by off-road equipment.

The wave reflecting recurved wall requires some 1,900 tonnes of concrete, which equates to about 100 to 150 concrete trucks accessing the beach road.

The construction time is likely to be over 1 year (391 days of supervision and survey). It therefore may be necessary to stage the works over two years, to allow for work to stop over the busiest summer months and to allow for weather delays over winter.

3.4. Options 4 and 5: Seabee Revetment: description

A Seabee revetment is a sloped seawall constructed of concrete blocks with hexagonal or rectangular holes on the slope to discharge wave energy and assist with sand collection. For this analysis, the design proposed and costed by WRL (1998) has been adopted with the following exception – the Gabion and Reno mattress toe has been replaced with a piled toe. This increases its costs but will greatly improve its reliability.

If constructed, the Seabee revetment would comprise a standard Seabee seawall slope form of one layer of 800mm high Seabee units underlain by 2 layers of 250mm rock with a geotextile membrane separating the rock from the underlying trimmed sand slope. The geotextile prevents sand leaching out through the rock and the Seabees.

Option 3 is Seabee revetment without sand nourishment, Option 4 is a Seabee revetment with sand nourishment.

Height

The crest of the Seabee wall would be set at about 6.75m AHD. A recurved concrete wall with its top at 8m AHD would be cast onto the top of the Seabee wall to minimise wave overtopping.

Footprint

The footprint (width) of the structure would be 13 metres when fully exposed. When it is constructed only about 50% of this total width would be exposed. The balance would be buried using sand excavated for construction purposes.

In summer, with present day sea levels, much of the seawall would be buried under the upper beach and dune. As sea level rises it can be expected that the amount of the Seabee exposed will increase as the beach width diminishes.

Options 6 and 7: Vertical Revetment: description

The vertical seawall proposed under Options 6 and 7 is in effect a series of side-by-side reinforced concrete piles anchored back into the dune. For this analysis, the design proposed and costed by WRL (1998) has been used with the following exception. A constant seawall height of 8m (AHD) was used In the WRL (1998), but this study assumes a variable seawall height of 6 to 8 metres (AHD), although with much of the wall at 8m. There would effectively be no wall footprint, on the beach, implying that approximately an extra 15 metres width of dune and beach remains seaward of the wall.

Option 6 involves a vertical seawall without sand nourishment; Option 7 is a vertical seawall with sand nourishment

The seawall proposed under this option would be constructed by building up the dune area where the wall is constructed with compacted sand, and then drilling through the sand to create the concrete reinforced piles. Some excavation would also be required behind the piles to install the anchors. A recurved wave wall would be installed on top of the piling to limit wave overtopping. The piling depth and ground anchoring would be designed to allow for erosion at the toe of the wall down to -1m AHD.

In the summer, with present day sea level, most of the seawall would be covered by the upper beach and dune. As sea level rises it can be expected that the amount of the seawall exposed will increase as the beach width diminishes.

Negative features of the seawall compared to a sloped dissipative structure (the revetments) are likely to include:

- appearance: when the beach is eroded, the wall will be visually high and unattractive;
- access: access to the beach will require sets of steps from the top of the wall down to a beach level;
- Erosion: the rate of sand erosion will be greater for the vertical wall than other types of seawall because it does not include a dissipative structure, however the rate of erosion will be balanced by the extra distance of the wall from wave action resulting in erosion taking longer to occur.

Beach nourishment

Options 3, 5 and 7 involve construction of the above types of seawall accompanied by beach nourishment.

Beach nourishment is a highly uncertain component (i.e., when it would be done, what quantities, how often and from what source site) with numerous variables affecting availability and cost.

This work was undertaken as an initial step to inform consideration of potential future cost sharing arrangements and associated funding models for implementation of protection works. It is envisaged

that the work contained herein provides an authoritative framework for considering more authoritative and definitive detailed designs when they are sufficiently advanced.

A potential terrestrial sand source for nourishment for Wamberal beach was not identified in available documentation. [17] The 'Beach Sand Nourishment Scoping Study' for Sydney beaches by AECOM (2010) recommends that the initial sand nourishment required for Sydney beaches is equivalent to the beach lost due to a sea level rise of 0.3 metres. The 0.3 metres is composed of 0.2m attributable to sea level rise to 2010, and 0.1m to handle sea level rise over the next 10 years. The overall premise behind these numbers is that sea level rise over a planning period of 50 years is about 0.1m per 10 years and the beach loss attributable to sea level rise can be estimated by the Bruun Rule.[18] The sand volume required for initial beach nourishment at Wamberal is $300m^3/m$ length of beach, which equates to 408,000 for the full length of the beach. A detailed discussion of beach nourishment issues is given in Appendix A5.

3.5. Overview Option 8: Planned retreat

Planned Retreat is an approach that aims to allow natural coastal processes to take place without building engineering structures to prevent the impact of these processes. It is generally implemented through planning policies and related instruments. The physical processes would be assumed to be the same as in Option 1.

On an eroding coastline, such as Wamberal beach, Planned Retreat would allow the temporary use and occupation of coastal lands until coastline hazards threaten life and property. Once the erosion escarpment encroaches within a certain distance of a development, the development is required to be relocated further back from the escarpment or removed where relocation is not possible.

There are several possible models of Planned Retreat including:

- managing the duration, type and intensity of future development within the identified coastal hazard area;
- compulsory or voluntary property acquisition within the identified coastal hazard area, combined with tight restrictions on new developments; or
- property acquisition within the identified coastal hazard area, combined with lease back of properties for continued use while it is safe to do so, and tight restrictions on new development.

Taking these factors into account, we have assumed no construction cost differential between demountable houses and an equivalent fixed house under the base case.

Option 8: Planned retreat: description

The proposed Planned Retreat model comprises a series of actions aimed at controlling development to maintain a rolling development-free buffer along the Wamberal beach foreshore. The buffer is designed to accommodate natural coastal processes and reduce the level of risk associated with coastal erosion and inundation to persons, development and infrastructure. The Planned Retreat model assessed in this study includes the following features:

[17] Nevertheless, beach nourishment from non-terrestrial (i.e. offshore) sources is included in the analysis of these options.

[18] See Glossary

- Control of development on land within designated hazard areas for approvals under the provisions of the Environmental Planning and Assessment Act, 1979 via planning controls under Central Coast LEP, DCPs, and the Coastal Zone Management Plan. Controls would include:
- exclusion of development within the buffer zone of a property; nominally all land within the property boundary that is seaward of the assessed developable area (e.g. land seaward of the 2045 erosion line as detailed in the Gosford DCP, Section 6.2);
- all the structures receiving development consent are required to be built/rebuilt as demountable or relocatable structures;
- development consent is subject to a condition that once the erosion line moves within the developable area of the property, the consent lapses and the structure must either be moved back, relocated or demolished; and
- when a development consent lapses, a new consent is required, supported by a revised assessment of the property's developable area and buffer zone.
- Provision of advice to purchasers of property within coastal planning precincts on the hazard risk restrictions associated with that land via issue of Section 149 planning certificates at time of purchase.
- A structure built under earlier approvals processes, prior to introduction of the planned retreat policy, is treated the same as it would be under the base case (i.e. it can continue to be used for its intended purpose while it is safe to do so and can be serviced).
- Removal of unapproved structures.
- Development of supporting planning instruments and policies.

In effect, the proposed model modifies existing development controls, with controls requiring new developments in the hazard area to be piled being replaced by a requirement for new developments to be demountable/moveable.

Available information suggests that demountable houses are unlikely to be costlier to construct than equivalent sized fixed houses. Indeed, because demountable houses are by their nature 'kit homes' they could be cheaper (e.g. $1200-1800/ sq. metre compared to $1500 - $2200 / sq. metre for an on-site built house with equivalent fittings). This is particularly so, since, under Option 1 construction of a fixed house will require piling, which entails significant additional costs. On the other hand, because demountable houses are kit homes they are likely to lose out in comparison to an architect or purpose designed house where a home owner's preference is for a house with bespoke elements.

4. Physical impacts of management options

4.1. Physical impacts on coastal features

The potential physical impacts of Option 1 (which are the same as the impacts predicted by the probabilistic modelling commissioned for this study) have already been described in Section 2. The next part of this section discusses the potential physical impacts of Options 2-8 on the costal processes affecting Wamberal beach.

Beach condition Options 2-8

Wamberal beach can have a range of visual and recreational use characteristics at any sea level depending on the season and when the last storm event occurred. The historical severe storm events of 1974, 1978, 1986 and 2016 occurred in winter (June to August). The implication is that in general the beach will be narrower, at high tide, over winter than over summer.

During the mild wave condition expected in summer months there is a tendency for sand to move onshore and for warm onshore winds tend to dry the sand and move it to the upper beach and dune by Aeolian action. During storms, which predominantly occur over the winter months, sand moves offshore and the beach will tend to be much narrower than in summer.

Infrastructure Options 2, 4 and 6 are likely to increase the deterioration of the beach. In the short-term, the structures themselves (rubble mound, Seabee revetment or seawall) will be intrusive, resulting in some loss of beach area (more so with rubble mound and Seabee revetments). In the longer term, in the absence of beach nourishment, the infrastructure options are likely to accelerate loss of sand, with the toe of the seawall being exposed most winters to the extent that a full beach recovery of the beach will not occur in most summers.

Infrastructure options involving beach nourishment (Options 3, 5 and 7) are likely to significantly reduce the long term adverse impacts on the beach associated with Options 2, 4 and 6, and improve beach condition relative to Option 1. However, the cost of beach nourishment is high and could also involve negative environmental impacts associated with off-shore dredging (consideration of these impacts is beyond the scope of the present report).

Option 8 (Planned Retreat) is likely to have a slightly positive impact on the beach area.

Lagoon processes under Options 2-8

The lagoon processes are expected to continue as assumed in the modelling (and in Option 1) for all the options. Thus, properties affected by the flooding of the lagoon will continue to be inundated as water tends to rise in the lagoon.

Because of development at low levels around Terrigal lagoon, Council periodically opens the lagoon entrance to maintain lagoon water at a level that avoids unacceptable flooding[19]. The trigger level for opening is 1.23m AHD.

As sea level rises over time, it is expected that there will be more onshore movement of sand towards the lagoon entrance, resulting in a more rapid closure of the entrance after it has been opened. The

[19] However, some flooding still occurs when storm events correspond to high tides.

difference in water level between the lagoon and the ocean will reduce as sea level rises, resulting in a lesser volume of water being discharged from the lagoon each time it is opened. Assuming rainfall is approximately constant over time, the lagoon will reach its trigger level more rapidly; requiring the lagoon to be opened more frequently, with associated costs.

Dune system under Options 2-8

Under Options 1-7, it is expected that by 2034 there will be a reduced dune/ upper berm width, with the likelihood that in most years, sand will be removed over winter, exposing the top of the seawall toe. It is expected that sand would be restored to the beach to cover the toe of the seawall, and still provide a reasonable area for beach use during summer.

By 2064, the toe of the seawall is likely to be fully exposed in most winters under Options 2. 4 and 6. It is also likely that a full beach recovery will not occur in most years; and the beach area available for recreation will be negligible over winter and limited over summer.

Options 3, 5, and 7, involve beach nourishment, and thus will provide beach areas for recreation; however, following initial beach nourishment, further nourishment will be required after ten years.

It is anticipated that without beach nourishment, wave run-up and overtopping would become unacceptable after 2064, and Council will need to be consider raising the seawall crest to offset continuing sea level rise. This work is likely to require removing the recurved wall, raising the rubble mound to crest level, and rebuilding the recurved wall. If the recurved wall was still fully intact and functional at that time, it may be possible to cast a new wall and tie it to the old wall. These costs have not been included in the CBA.

The above issues will not apply under Option 8 as changes to the beach area will not be affected by the presence of a sea wall.

As noted in Section 2, there are some small sections of native vegetation in the dune area. Council and a local Bushcare group aim to maintain and revegetate these areas through fencing and other maintenance works. It is assumed that the infrastructure Options (2-7) would protect these remaining areas, but that they would be lost under Option 8 and Option 1.

4.2. Physical impacts on properties and beach use (Options 2-8)

The impacts of Option 1 on properties and beach use are discussed in Section 2, as they are the same as the modelled impacts (see Appendices A1-2).

Physical Impacts on properties (Options 2-7)

The impacts of Options 2-7 will be basically the same type for each option.

- Options 2-7 should significantly reduce the damage to beachfront properties from coastal processes in the short- to medium-term. However, seawall structures will have no effect on the longer-term impacts of sea level rise.
- As seawalls will limit the impacts of coastal processes on beachfront properties in general, properties with pilings will have not have the structural advantage over unpiled properties that they have under Option 1 and Option 8.
- In the short to medium term (i.e. to 2034) beach loss will primarily be driven by severe storms.

- In the longer term (i.e. to 2064) land and buildings will be impacted, even without severe storm activity, principally from the effects of sea level rise.

Physical impacts on beach use (Options 2-7)

The appearance and recreational value of the beach under all options will vary with the season and when the last storm event occurred.

The impacts of Option 1 for properties and beach use are discussed in Section 2, as they are the same as the modelled impacts (see Appendix A1).

In general, under Options 2-7, physical structures will lead to the gradual loss of the beach from hydrophysical action, exacerbated in winter by storm action.

Although beach use can continue (at gradually reducing rates, and times), the speed at which the beach and its use shrinks will vary with the type of seawall involved. The council-proposed rubble mound revetment (Options 2 and 3) will result in immediate loss of most of the beach in winter. Vertical seawall designs (Options 6 and 7) only have a two to three metre footprint, but their design means that the rate of sand erosion is faster than with a rubble mound revetment once erosion has reached the seawall – though this is offset by the fact that it will take longer for erosion to reach a vertical seawall than rubble mound or Seabee seawalls.

Options with a seawall plus beach replenishment are likely to prolong beach use compared to seawall-only options. However, rising sea levels means that by 2064 the value of the beach for recreation will be similar to seawall-only options.

It is not clear which design will lead to full beach loss the fastest, but it is expected that the beach area will be all but lost by 2064. The loss of the beach will impact negatively on beach users (visitors and the local community), local businesses and property values.

Options 3, 5, and 7 propose seawalls accompanied by beach nourishment as a means of restoring the lost beach. However, a potential terrestrial sand source for nourishment for Wamberal beach was not identified in available documentation. An assessment of offshore sand sourcing concludes that sand replenishment is not a financially feasible strategy for restoring this beach. This CBA considered a number of sand replenishment options currently available for implementation. However, alternative sources of sand may be feasible in the future and replenishment costs may change as a result.

Physical impacts on properties (Option 8)

Option 8 consists of a range of actions for managing the duration, type and intensity of future property development in the coastal hazard area. It includes modifying current development controls requiring developments in the hazard area to be piled, with requirements for new developments to be demountable/ moveable. Option 8 places restrictions on the size, nature, location and risk exposure of new, and existing developments in the hazard zone.

Option 8 is expected to have the following impacts on properties:

- Restrictions on development in the buffer zone of properties in the hazard zone
- all structures in the hazard zone receiving development consent will need to be built/rebuilt as demountable or relocatable structures;
- development consent will lapse and structures must either be moved back, relocated or demolished; once the erosion line specified in planning instruments reaches the developable area of the property in question.

- when a development consent lapses, a new consent is required subject to a revised (risk) assessment of the property's developable area and buffer zone.
- Prospective buyers of properties in affected areas must be advised of the risks associated with that land.
- A legal structure built before the introduction of the planned retreat policy, can only be used for its intended purpose while it is safe to do so and can be serviced.
- Unapproved structures will be removed.

Physical impacts on beach use (Option 8)

Planned Retreat would allow the continued use of the beach over the period of analysis by visitors and the local community, albeit given beach reduction from recession and sea level rise at the rates predicted in the modelling as outlined in Section 2.

5. Economic analysis of costs and benefits of management options

5.1. Types of costs and benefits considered

This CBA considers the following types of costs and benefits associated with each option:

- Construction
- Maintenance
- Property values
- Beach users and visitor related businesses

As noted above, Option 1 represents a continuation of the existing approach of no specific interventions to prevent the impacts of coastal processes on beachfront properties (i.e. the status quo). The physical impacts of this approach on Wamberal beach are the same as the modelled forecasts, as they are both based on the assumption of a continuation of current conditions.

As Option 1 represents a situation of no intervention, for the purposes of the CBA, Option 1 represents the Base Case[20] against which the relative costs and benefits of Options 2-8 should be compared.

Engineering/construction costs (Options 2-7)

This section considers the construction and engineering costs associated with seawalls and revetments. As Option 8 does not involve structural engineering costs, Option 8 costs are not included in the following section, but considered separately below. (Option 1, being the base case of no intervention, also does not involve any construction and maintenance costs).

It is assumed that these costs will accrue to the community of the LGA.[21]

The major differences in the revetment design options considered in the CBA are the costs associated with the different designs of the proposed seawall, and the recreational use values of the beach. For example, although a rubble mound has a lower capital cost that the other types of revetment considered in this analysis, its design footprint means that it will take up a larger area of beach that the other structures, with a consequent cost from loss of recreation and other non-consumptive uses.

The most expensive options are the Seabee Options 3 and 4 with an expected capital cost of $20.5 m, and the least expensive designs are the Rubble mound Options 2 and 3 with an expected $16.6m capital cost.[22] Table 6 summarises the costs of the various designs.

[20] i.e. 'The counterfactual' situation representing what would happen in the absence of options 2-8.

[21] The subject of how Council on behalf of the community obtains funds for, and finances, these construction and maintenance works is not considered in this report.

[22] Construction of a revetment will also generate costs to beach users with the loss of the beach for recreation and other uses, and associated loss of trad for local visitor-related businesses, as discussed in Section 5.1.4.

Table 5: Summary of Type of Revetment, Costs, Beach condition, and design features (base and height)

	Rubble mound Options 2,3	Seabee Option 3,4	Vertical Option 5,6
Capital Cost	$16,106,909	$20,543,688	$19,007,975
Maintenance Cost	$402,673	$308,155	$285,120
Transport impacts	$0	$96,000	$96,000
Base	17.5 m	13 m	?
Height	6.75 m AHD	6.5m AHD	8.0m AHD

Rubble mound revetment (Options 2 and 3)

Table 6 7 provides summary costs of the main items used in estimating the costs of Options 2 and 3. The main items influencing costs are as follows.

A rate of $32/tonne was applied for the supply of basalt in 1998. Boral Seaham Quarry near Newcastle quotes $79/tonne plus GST for armour rock and Boral Peats Ridge Quarry near Gosford quote $52.50/tonne for secondary armour. These rates have been used in the costing.

Preparatory earthworks, which entail the removal of sand and other materials to trim the dune face in preparation for the placing of rubble mound seawall materials, requires some 175,000 m3 to be rehandled. All sand excavated will be placed back on the beach.

The total amount of rock required is almost 91,000 tonnes. All the rock will need to be transported via road to Wamberal beach. It is likely that storage and rehandling will need to be undertaken at both the Terrigal and Wamberal Lagoon ends of the beach. Materials will then need to be transported to the works area by off-road equipment.

The wave reflecting recurved wall requires some 1,900 tonnes of concrete, which equates to about 100 to 150 concrete trucks accessing the beach road.

With Option 3, the sand volume required for an initial beach nourishment is for 300m3/m length of beach, which equates to 405,000 m3 for the full length of the beach.

The sand volume required for subsequent renourishment is for 300m3/m length of beach, which equates to 405,000 m3 for the full length of the beach. Overall costs of nourishment, including mobilisation and operating costs using a dredge to access sand from offshore are estimated at approximately $23/m3. This estimate is based on the advice of an independent dredging consultant, [redacted] for undertaking the beach nourishment as a one-off project.

Table 6: Summary cost estimates for Options 2 and 3

Item	Notes	Cost
Option planning	Includes detailed design, community consultation, DA, tendering, project management. Costs are over four years.	$420,000
Construction	Includes site works, materials, supervision, transport, contingency	$16,106,909
Maintenance	Annual costs @ 2.5% of construction cost	$402,673
Transport impacts	Impact of transport on local roads during construction	$96,000
Beach nourishment	Initial nourishment, Option 3	$9,315,000
Renourishment	Subsequent renourishments, every 10 years, Option 3	$2,875,000

Seabee revetment (Options 4 and 5)

Table 7 provides summary costs of the main items used in estimating the costs of Options 4 and 5. The main items influencing costs are as follows.

Preparatory earthworks, which entails the removal of sand and other materials to trim the dune face in preparation for the placing of rubble mound seawall materials, requires some 122,225 m3 to be rehandled. All sand excavated will be placed back on the beach.

The wall is constructed from about 40,600 concrete blocks, each of which costs $12.60.

The concrete required for the wave return is about 2,000 m3 at $1,050/ m3.

The total amount of rock required for secondary armour is approximately 12,600 tonnes.

Under Option 5, the sand volumes required for an initial beach and subsequent beach nourishments are the same as for Option 3.

Table 7: Summary cost estimates for Options 4 and 5

Item	Notes	Cost
Option planning	Includes detailed design, community consultation, DA, tendering, project management. Cost are over four years.	$420,000
Construction	Includes site works, materials, supervision, transport, contingency	$20,543,688
Maintenance	Annual costs @ 1.5% of construction cost	$308,155
Transport impacts	Impact of transport on local roads during construction	$96,000

Beach nourishment	Initial nourishment, Option 5	$9,315,000
Renourishment	Subsequent renourishments, every 10 years, Option 5	$2,875,000

Vertical seawall (Options 6 and 7)

Table 8 provides summary costs of the main items used in estimating the costs of Options 6 and 7. The main items influencing costs are as follows:

- Preparatory earthworks require some 39,945 m3 to be rehandled.
- The wall is constructed from about 15,000 concrete piles, each of which costs $560.
- The concrete required for the wave return is about 934 m3 at $1,050/ m3.
- The construction time is likely to be over 1 year (391 days of supervision and survey). As with Options 2-5 it may be necessary to stage the works over two years.
- Under Option 7, the sand volumes required for an initial beach and subsequent beach nourishments are the same as for Option 3.

Table 8: Summary cost estimates for Options 6 and 7

Item	Notes	Cost
Option planning	Includes detailed design, community consultation, DA, tendering, project management. Cost are over four years.	$420,000
Construction	Includes site works, materials, supervision, transport, contingency	$19,007,975
Maintenance	Annual costs @ 1.5% of construction cost	$285,120
Transport impacts	Impact of transport on local roads during construction	$96,000
Beach nourishment	Initial nourishment. Option 7	$9,315,000
Renourishment	Subsequent renourishments, every 10 years, Option 7	$2,875,000

Maintenance and other infrastructure costs (Options 2-7)

As well as the construction costs incurred under Options 2-7, there will be potential costs associated with options which include beach sand nourishment. Under Options 3, 4 and 6, Council would renourish the beach at an initial cost of $9,315,000, with renourishment expected to cost $2,875,000 every 10 years.

Reconnection of services to homes impacted by coastal recession would not occur under Options 2-7 (revetment options).

The probability of coastal recession impacting Ocean View Drive (which runs behind the first row of houses at Wamberal) is highly unlikely under all options, and would only occur in the event of dune breakthrough which is modelled as having a very low probability of occurring (see Section 2).

Under all options, Council would continue to open the lagoon on a regular basis, and would continue under the same assumptions made in Option 1.

Planning & implementation, monitoring, and relocation costs (Option 8)

As noted above, Option 8 does not involve structural engineering costs. The main items influencing the costs of Option 8 (which do not occur under Options 2-7), relate to option planning and implementation, monitoring, relocation costs and construction of demountable buildings. These costs are discussed below.

- It is assumed that one additional unpiled beachfront property within the hazard zone will require a development application (DA) each year (approximately 2% of the housing stock). However, instead of the buildings on these properties being redeveloped as piled houses, they are redeveloped as demountable houses.
- Remaining properties will continue to be used for their currently approved use while it is safe to do so.
- Based on the above assumptions, it is anticipated that by the end of the 50-year period of this assessment, approximately 50 beachfront properties will have been redeveloped as demountable structures.

Table 9 provides summary costs of the main items used in estimating the costs of Option 8.

Table 9: Summary costs for Option 8

Item	Notes	Cost
Option planning & implementation	Includes design, community consultation, planning scheme amendments. Costs are over three years.	$155,000
Monitoring	Annual costs	$5,000
Relocation costs	Cost of relocating demountable houses, per house. Includes transport, restumping, finishing, permits and contents removal	$46,200
Construction	Additional construction costs of a demountable house relative to a fixed house	-

Beach use and visitor-related business costs (Options 2-8)

As noted above, Options 2--7 will lead to a loss of the beach with associated impacts on beach use by residents and visitors, and reduced trade for visitor-related businesses. Option 8 will also lead to reduced beach use and trade, but at a gradual rate as the beach is affected by coastal erosion, recession, and sea level rise processes over time.

The economic value of visitation and visitor-related businesses at Wamberal Beach can be estimated by valuing consumer surplus for recreation use of the beach for visitors and producer surplus for the

value of visitor-related businesses. Consumer surplus is an economic measure of the difference between the total amount that consumers are willing and able to pay for a good or service (e.g. a visit to the beach), and the total amount that they actually pay (see Glossary).

Producer surplus is a measure of the difference between the amount a producer of a good or service (e.g. a tourism service provider) receives, and the minimum amount the producer would be willing to accept for the good. The surplus amount is the economic benefit received by the producer for selling the service.

Estimating the consumer surplus for beach visitation and the producer for visitor-related business involves three types of information:

Visitation and expenditure data

Data on numbers of visits to Wamberal beach by residents and non-residents and their estimated of expenditure is shown in Table 4.

It is important to note that because the geographic boundary of this analysis is the Central Coast Shire (rather than NSW), consumer surplus associated with non-residents is outside the scope of the analysis. However, the consumer surplus of residents visiting Wamberal beach is in scope, as is the producer surplus resulting from expenditure with local businesses by non-resident visitors to Wamberal beach.

Consumer surplus estimates

Consumer surplus associated with travel by residents to Wamberal beach was estimated as the cost and time associated with going to Wamberal beach compared to the additional cost and time associated with going to the nearest comparable alternative beaches. The alternative beaches are assumed to be a combination of North Avoca, Copacabana & Foresters beaches.

Consumer surplus is an economic measure of the difference between the total amount that consumers are willing and able to pay for a good or service (e.g. a visit to the beach), and the total amount that they actually pay (see Glossary). Consumer surplus relating to beach use was estimated by comparing the cost and time incurred by visitors outside the area travelling to Wamberal beach, with the cost and time associated with going to the nearest comparable alternative beaches (see Table 11). The alternative beaches are assumed to be a combination of North Avoca, Copacabana & Foresters beaches. Estimates of the cost and time involved in accessing Wamberal beach compared to the alternatives are provided in Table 11.

Table 10: Time and cost associated with visiting Wamberal beach compared to the nearest comparable alternatives

	Wamberal	Alternative beaches
Travel by walking (%)	50%	0%
Travel by car (%)	50%	100%
Average return travel distance walking (kms)	1.8	0
Average return travel time walking (mins)	27.0	0.0
Average return travel distance driving (kms)	5.0	15.0

Average return travel time driving (mins)	7.5	22.5
Opportunity cost of time walking (c/min)	13.8	13.8
Opportunity cost of time driving (c/min)	47.7	47.7
Vehicle running costs (c/km)	17.7	17.7
No. people per vehicle	2.5	2.5

Producer surplus estimates

Producer surplus resulting from expenditure with local businesses by non-resident visitors to Wamberal beach was calculated drawing on an estimate of total expenditure by the non-resident visitors. Producer surplus was calculated as the profit margin on that expenditure, with estimates on the breakdown of different types of expenditures and margins being sourced from ABS and Tourism Research Australia (TRA) data (see Table 11).

Producer surplus is a measure of the difference between the amount a producer of a good or service (e.g. a tourism service provider) receives, and the minimum amount the producer would be willing to accept for the good. The surplus amount is the economic benefit received by the producer for selling the service. Producer surplus will be relevant to the economic impacts on visitor-related businesses from reduced beach use.

Producer surplus relating to local visitor-related businesses is expressed as the profit margin on total expenditure by non-resident visitors to Wamberal beach.

Table 11: Profit by industry (%) and associated margins (%) associated with expenditure by non-resident visitors to Wamberal beach

Industry	Proportion of expenditure (%)	Average margin (%)
Fuel retailing	6%	2.4%
Other retail	17%	5.4%
Food, drink and accommodation	77%	10.5%

Sources: ABS 2015, TRA 2015

Changes to consumer and producer surplus relating to beach use

Under Option 1 (the Base Case) and Options 2-8 Wamberal beach recreation and visitor-related business activity are expected to change over time due to coastal processes, compared to today.

Changes to consumer surplus and producer surplus were estimated by developing an 'Amenity Factor' for all the options, with One (1) representing the level of beach recreation and related values at present. Changes to visitation relating to relative loss/ change of beach access under the different

options are expressed as deviations from this value of One (1), with a score of Zero (0) representing a complete loss of beach use and related activities under Options 2, 4 and 6 (seawalls without sand nourishment).

These 'amenity factors' were then applied proportionately to producer and consumer surplus estimates to identify the likely loss of consumer surplus (for visitors) and producer surplus (for businesses) over time, between 2016 and 2034 and 2066 under Options 1-8 (see Table 13).

Visitation to Wamberal beach is expected to decline over time due to coastal processes. Under Option 1 Wamberal beach is expected to lose recreational use gradually over the long-term time. Loss of visitation is likely to worsen under Options 2, 4 and 6, and especially under Option 6 (vertical wall), compared to the Option 1 (the base case). However, if options include beach nourishment (as in Options 3, 5 or 7), the loss of visitation will be reduced, and in the very long term Options 3, 5 and 7 may even lead to more available beach area than under Option 8 or Option 1. Option 8 (planned retreat) is likely to result in marginally better beach amenity than Option 1 in the long term.

Visitor-related business is expected to respond to the above expected changes in availability of beach area for recreation under the different options, with relatively greater loss under Options 2, 4 and 6 (seawalls without nourishment) than under other options.

Table 12: Summary of impacts on beach use and other non-consumptive values

Option	Description of beach and dune condition	2034 amenity		2066 amenity	
		Description	Amenity factor	Description	Amenity factor
1. Base case	Beach may lose a significant quantity of sand during winter storm season, but over summer will recover providing reasonable to good beach amenity in the medium term (i.e. to 2034). Clean-up after storms may be required to maintain amenity. In the longer term shoreline recession due to SLR results in dunes migrating landwards. Beach remains at toe of dune, but may narrow with loss of access at high tide, especially after storms.	Minor loss of amenity	0.9	Moderate loss of amenity	0.75
2. Rubble mound	The rubble mound structure will be intrusive resulting in a significant loss of beach amenity. In the medium term, the beach may lose significant quantity of sand during the winter storm season but over summer will recover, providing reasonable beach amenity. In the longer term, in the absence of beach nourishment, the toe of the seawall will be exposed most winters and it is likely that a full beach recovery will not occur most years, i.e. beach amenity will be negligible over winter and may be limited over summer.	Significant loss of amenity	0.5	Substantial loss of amenity	0.25
3. Rubble mound + nourishment	As per Option 2 but nourishment will limit loss of amenity. Note, nourishment will need to be ongoing in order to maintain the same amenity factor in 2066 as in 2034.	Moderate loss of amenity	0.75	Moderate loss of amenity	0.75
4. Seabee	Initially less intrusive than Option 2. This combined with a loss of sand over time, similar to Option 2, means that winter and summer amenity will remain somewhat better than under Option 2.	Moderate loss of amenity	0.75	Significant loss of amenity	0.5
5. Seabee + nourishment	As per Option 4 but nourishment will limit loss of amenity. Note, nourishment will need to be ongoing in order to maintain the same amenity factor in 2066 as in 2034.	Minor loss of amenity	0.9	Minor loss of amenity	0.9
6. Vertical wall	Initially less intrusive than Option 2, as the seawall will be set back. Over time however, loss of sand during winter could be greater and recovery over summer slower then Option 2, resulting in similar loss of winter and summer amenity in the longer term.	Moderate loss of amenity	0.75	Substantial loss of amenity	0.25

7. Vertical wall + nourishment	As per Option 6 but nourishment will limit loss of amenity. Note, nourishment will need to be ongoing in order to maintain the same amenity factor in 2066 as in 2034.	Moderate loss of amenity	0.75	Moderate loss of amenity	0.75
8. Planned retreat	Similar to Option 1 except that there will be greater scope for maintaining access and amenity in the longer term.	Minor loss of amenity	0.9	Minor loss of amenity	0.9

Amenity factors: 1=full amenity (relative to present); 0.9 = minor loss of amenity; 0.75 = moderate loss of amenity; 0.5 = significant loss of amenity; 0.25 = substantial loss of amenity; 0 = complete loss of amenity

5.2. Benefits

The relative benefits of Options 1-8 relate to the impacts of the options on beach front and other properties in the area and their market values.

Property effects (Options 2-8)

Benefits as avoided damage costs (Options 2-8)

Each of the infrastructure options (Options 2 to 7) is expected to prevent coastal processes damaging beachfront properties and other built assets at Wamberal beach for the whole period of the analysis (i.e. to 2065). All costs associated with these impacts (including loss of unpiled buildings, loss of premium value of land, maintenance costs of piled buildings and loss of dune values) will be avoided under Options 2 to 7. (i.e. in this case an avoided cost represents a benefit).[23]

Under Options 2-7 benefits will accrue to beach front property owners because they will not need to incur costs related to the loss of parts of their property to coastal processes. Avoided costs (i.e. benefits) will accrue to owners of both unpiled and piled buildings.

Unlike Options 2-7, Option 8 will not reduce the impacts of coastal processes on beach front properties on their land values relative to Option 1 (the base case of no management intervention). Option 8 will however, provide some benefits in the form of avoided costs, such as reduced costs of maintaining dunes under piled houses, and avoided costs for reconnecting services to piled houses, compared to the Option 1. Avoided dune maintenance and service restoration costs in the future will apply to those properties that are redeveloped with demountable structures rather than piled structures. Avoided costs will vary from year to year depending how many properties are exposed to coastal processes, from approximately $80,000 to 500,000/ year. (As noted above these maintenance and reconnection costs under Option1 do not occur under options 2-7).

Benefits as avoided short term loss of property values (Options 2-7)

Under Options 2-7 beach front property owners will not experience the reduced value of their built asset that would occur under Option 1 and Option 8.[24] (Under Option 8, loss of land and associated costs will still occur, but part of the costs associated with loss of their built asset will be avoided compared to Option 1, as loss of property to coastal processes will be part of a managed process under planned retreat (Option 8) rather that unplanned, as under Option 1).

A significant proportion of the market value of properties on Wamberal beach relates to their proximity to the beach, i.e. a 'coastal premium value'. This coastal premium value would be impacted by coastal processes, since there are constraints on the availability of coastal land within the LGA, i.e. there is no coastal greenfield land on which development could take place in the future. It is possible that hinterland properties near Wamberal beach, and other coastal properties, could attract a higher premium in the longer term due to the loss of coastal properties at Wamberal beach, this is unlikely within the timeframe of the CBA.

[23] NB the study has not estimated the impact of options on the value of crown land (i.e. land between high tide mark and seaward the boundaries of private property).

[24] Beach front property owners may experience declining asset values for the other reasons.

By protecting properties from coastal processes in the short-term, Options 2-7 will provide a benefit to property owners by reducing the loss of property value that would occur under Options 1 and 8, which do not provide such levels of protection.

Appendices 2-4 provide detailed and comprehensive explanations of the relationship between the modelled impacts of coastal processes and changes to property values under different rates of coastal process. This information was used to model the relative impacts of different options on properties and property values, and to estimate the economic impacts (benefits and costs) of the different options on properties.

The CBA suggests that the major benefits of the proposed seawall options for Wamberal Beach (Options 2-7) will accrue to Wamberal beach property owners. Some benefits will occur under Option 8 from avoided dune maintenance and service restoration costs, compared to Option 1.

6. Results of the cost-benefit analysis

Table 14 and Figure 6 present results of the CBA. Option 8 (planned retreat) has an estimated NPV of $1.1 million over the period of the analysis (2017-2066) and a BCR of 5.0, and is therefore expected to deliver a net benefit to society relative to Option 1 (the base case). These findings are based on a range of assumptions which are discussed and tested in Section 6.1.

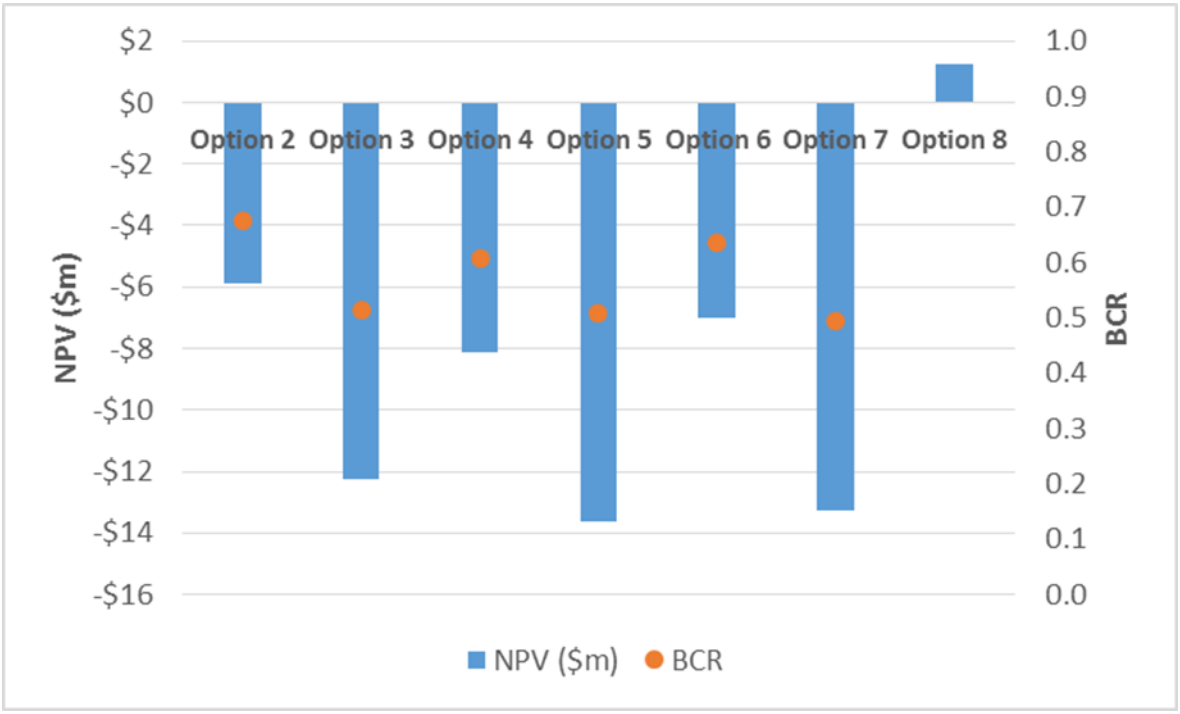
Options 2 to 7 (infrastructure options) have negative NPVs and BCRs of less than 1 suggesting that none of those options are likely to deliver net benefit relative to the status quo to society based on central assumptions adopted in the study. All the options with beach nourishment (Options 3, 5 and 7) have worse outcomes than the options without nourishment because of the very high cost associated with beach nourishment.

Table 13: Summary of results of the Cost-benefit Analysis

Option	BCR	NPV
Option 1 (base case): "Business-as-usual" conditions at Wamberal beach if none of the proposed management options are implemented.	Base case	Base case
Option 2: A rubble mound revetment	0.70	-$5.378 m
Option 3: A rubble mound revetment combined with beach nourishment	0.54	-$11.688 m
Option 4. A Seabee revetment	0.55	$-$9.217 m
Option 5: A Seabee revetment combined with beach nourishment	0.49	-$14.23 m
Option 6: A vertical seawall	0.49	-$9.79 m
Option 7: A vertical seawall combined with beach nourishment	0.47	-$13.975 m
Option 8: Planned retreat by managing the duration, type and intensity of future development within the coastal hazard area	5.03	$1.178 m

The relative NPVs and BCRs of the options are shown below, clearly showing the difference between Option 8 with an NPV of $1.17m, and BCR of 5, and the other options.

Figure 6: Visual representation of the results of the cost benefit analysis



Detailed information on CBA findings is given in Appendix A6.

As discussed in Section 4, infrastructure Options 2, 4 and 6 are likely to accelerate deterioration of the condition of the beach that will also occur under Option 1. This will have negative impacts on recreational and other non-consumptive uses of the beach (which are included in the results). Infrastructure options involving beach nourishment (Options 3, 5 and 7) are likely to significantly mitigate the adverse impacts of the infrastructure on the beach, but could also entail environmental impacts associates with off-shore dredging. Option 8 (planned retreat) is likely to have a small positive impact on beach values relative to Option 1.

7. Sensitivity testing

7.1. Sensitivity testing

Sensitivity analysis has been used to test assumptions which may have the potential to significantly affect the findings of an analysis. This has been done for the present CBA by developing 'high' and 'low' cases which modify the 'central case' assumptions used in the CBA (see Table 15).

Table 14: Sensitivity Analysis high and low cases

	% change relative to 'most likely' (central) case	
Variable	**High case**	**Low case**
Land value (coastal premium)	+50%	- 50%
Built asset value	+20%	-20%
Capital and operating costs of protection infrastructure (Options 2-7)	-25%	+25%
Beach nourishment costs (Options 3,5,7)	-25%	+25%

The new assumptions made under the high and low cases are significantly different from those of the central case. If the central case is sensitive to changing assumptions, it is expected that the new estimates being made under the high and low cases would also show significant differences from those under the central case.

Re-estimated NPVs and BCRs for the options under the high and low cases compared to the central case are shown in Table 16.

The results show that even with large changes to the original BCA assumptions about land and built asset values and construction and operating costs under the high and low cases, there is little effective change to the overall findings of the CBA.

Option 8 is the only option with both a BCR greater than one and a positive NPV, under all three cases (i.e. the high. low and central case). All other options have either a BCR no greater than one, and/ or a negative NPV, in least two cases.

Apart from Option 8, the only option to achieve a NPV more than close to zero and a BCR greater than 1, is Option 2 under the high case. However, for Option 2 to provide a positive NPV and BCR, it would be necessary for land value to increase by 50%, built asset value to increase by 20%, and seawall capital and operating costs to decrease by 25%, and beach nourishment costs to decrease by 25%.

It is understood that it would be highly unlikely for these events to occur in combination. Thus, it can reasonably be concluded that the assumptions used in the CBA, and the estimated NPVs and BCRs based on these assumptions, are sufficiently robust and defensible. Option 8 remains the only option to provide a net economic benefit to the community.

Table 15: Results of 'high', 'low' sensitivity analysis - a) Central case, b) High case and c) Low case

a) Central case

	NPV ($m)	BCR
Option 2	-$5.4	0.70
Option 3	-$11.7	0.54
Option 4	-$9.2	0.55
Option 5	-$14.2	0.49
Option 6	-$9.8	0.49
Option 7	-$14.0	0.47
Option 8	$1.2	5.03

b) High case

	NPV ($m)	BCR
Option 2	$3.4	1.25
Option 3	-$1.5	0.92
Option 4	$0.2	1.01
Option 5	-$3.5	0.84
Option 6	-$0.8	0.95
Option 7	-$3.6	0.82
Option 8	$1.2	5.32

c) Low case

	NPV ($m)	BCR
Option 2	-$14.4	0.36
Option 3	-$22.0	0.29
Option 4	-$18.9	0.27
Option 5	-$25.3	0.26
Option 6	-$19.1	0.20
Option 7	-$24.6	0.24
Option 8	$1.1	4.78

Proportion of properties owned outside of the LGA

Another factor which can influence the CBA is the number of properties in the study area which are assumed to be owned by people living outside of the LGA. Under the central case, 32% of properties are assumed to be owned by non-residents. The benefits of implementing options that might otherwise be expected to be realised by these property owners therefore fall outside of the geographic boundaries of the analysis (i.e. Central Coast LGA). However, if it assumed that 100% of properties in the study area are owned by residents living within the Central Coast LGA, then the NPVs and BCRs will be significantly higher for all options though only Option 2 achieves a positive NPV. As shown in Table 17, this assumption influences the findings of the analysis. (This result shows the extent to which the benefits of the options 2-8 accrue to property owners living outside the LGA.) However, it is important to note that the ranking of options does not change under an assumption of 100% local ownership compared to 32% ownership, with Option 8 still clearly having the highest NPV and BCR, and Option 2 having the same NPV, but a BCR of only just above 1.

Table 16: Results of sensitivity analysis with change to number of properties owned outside of LGA

a) 32% of properties owned outside of LGA

	NPV ($m)	BCR
Option 2	-$5.4	0.70
Option 3	-$11.7	0.54
Option 4	-$9.2	0.55
Option 5	-$14.2	0.49
Option 6	-$9.8	0.49
Option 7	-$14.0	0.47
Option 8	$1.2	5.03

b) All properties are owned by LGA residents

	NPV ($m)	BCR
Option 2	$2.5	1.14
Option 3	-$3.8	0.85
Option 4	-$1.3	0.94
Option 5	-$6.4	0.77
Option 6	-$1.9	0.90
Option 7	-$6.1	0.77
Option 8	$5.7	21.0

Changes to the discount rate

The discount rate used in a CBA can also affect the results of the analysis. A lower discount rate will give greater weight to costs or benefits occurring in the distant future than to those occurring in the near future, while a higher discount rate will give greater weight to costs and benefits occurring in the near future than in the more distant future. Varying the discount rate used in a CBA can lead to a different ranking of options if the options differ in their temporal distribution of costs and benefits.

The BCA has used a reference discount rate of7% applying a lower discount rate of 4% significantly increases the BCRs of all options, although Options 2 to 7 still have BCRs of less than 1, and the ranking of the options does not change. Conversely, a higher discount rate of 10% decreases the NPV of the options, although Option 8 is still the only option with a positive NPV and a BCR >1 under the different discount rates (see Appendix A6).

8. Distributional Analysis

The economic analysis described in Section 6 has identified costs and benefits of different options for managing coastal processes affecting Wamberal beach. This section considers the distribution of these costs and benefits among different stakeholders in local community. Cost and benefits of options relate to the differential impacts of construction and maintenance, beach access, property values, and visitor-related business.

The Stakeholders and the main type of impact they will experience are as follows.

Beach users

Beach users including surfers, walkers, swimmers, and dog walkers will be affected by the loss of beach associated with a seawall under Options 2, 4 and 6, although beach nourishment under Options 3,5, and 7 will mitigate these impacts. Potential loss of the beach will impact those residents in the LGA who do not own properties on the beach front but who use the beach. These impacts will not occur under Option 8.

Visitors to the LGA

Similar impacts to beach users are expected.

Business Owners

The construction of the seawall without nourishment will lead to a temporary loss of producer surplus to business owners in the area. However, as noted in the OEH CBA guidance. The timeframe of the analysis will mean that other businesses may open to replace the beach related businesses and still service the community with non-beach related services and goods. This impact is not expected to occur under Option 8.

Local community

Impacts on the local community predominantly relate to the costs of construction and maintenance, and the effectiveness of the options in preventing the impacts of coastal processes. The local community will also incur costs associated with the loss of the beach under Options 2-7. Costs will be incurred by beach users in particular. For the purposes of the CBA, beach users are treated as a separate category of the local community.

Local Council

Local council impacts are limited to damage to council assets such as Ocean View Drive. Modelling suggests that the presence or absence of a seawall under options 2-8 will have no effect on damage to Ocean View Drive. Damage to Ocean View Drive is more likely to come from flooding in Terrigal Lagoon.

The presence of a seawall under Options 2-7 will reduce the costs to council for reconnection of services to properties that would occur in the absence of the seawall protection under Option 8.

Property Owners on the beachfront

The main impacts on property owners along the beachfront will be the benefits of protection from coastal processes should a seawall be constructed under Options 2-8.

State government

There are approximately five allotments along the beachfront plus the land in front of the surf club that may be protected should a seawall be constructed. The expected value to the State government from protection of these properties by a seawall will be minor compared to the benefits to individual property owners as the state-owned land is undevelopable, and has not been considered further.

8.1. Summary of distributional analysis

The distributional analysis carried out for this study compares the net benefits of Options 2-8 with the base case (Option 1) for different stakeholders. The analysis shows that beach users will be significantly disadvantaged by the increased loss of the beach in front of the seawall under Options 2, 4 and 6. Planned retreat (Option 8) will not have this effect. Visitors and LGA residents to Wamberal enjoy substantial recreational and associated benefits from using the beach, and this benefit will be reduced by the impacts of a seawall which will lead to the loss of suitable beach areas for recreation. Options 3, 5 and 7 will delay the loss of beach through sand replenishment. Beach users will be able to enjoy recreational and associated benefits for a longer period of time compared to seawall-only options. However, the trade-off for this additional benefit is offset by the high costs of sand replenishment.

Property owners may lose direct access to the beach and some non-consumptive uses associated with living by the beach, because of a seawall. However, the presence of a seawall would reduce the potential impacts of coastal processes on their properties. Many of these property owners are likely to live outside the area, and only use their beach front properties as holiday homes and/or holiday rentals (see Figure 7). The 2011 census suggests that 41% of all beachfront properties were not occupied all year at Wamberal beach.

Property owners adjacent to the beach are the largest beneficiaries of the seawall options (Options 2-7). The impacts on the community include changes in recreational use of the beach, and the costs of protection, maintenance and nourishment for those options where they are required. Seawall options with nourishment (Options 3, 5 and 7) will have larger impacts on the community than options without (Options 2, 4 and 6) as nourishment will add extra costs to the overall costs of the option in question.

Relative to Option 1 (the base case of no management intervention), Option 8 provides net benefits to property owners, local businesses, the local community in general and beach users as a specific category of the local community. Property owners are the greatest beneficiaries under Option 8, as their properties will be lost at a slower rate under planned retreat than they would be under Option 1, properties will still retain market value until the time that they can no longer be habitable. There will be little difference in the area of the beach available for recreation and non-consumptive uses between Options 1 and 8 (as shown in the relatively low net benefits for beach users under Option 8 at the 20 and 50 year points, as shown in Tables 18 and 19.

Tables 18 and 19 provide details of the distributional impacts of the options at 20 years and 50 years, using a 7% discount rate to convert figures to today's dollars. Figure 7 and 8 show these impacts graphically, showing the percentage distribution between stakeholders.

Table 17: 20-year distributional analysis at 7 per cent discount rate

Stakeholder	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8
Property owner	$10,306,155	$10,306,155	$10,306,155	$10,306,155	$10,306,155	$10,306,155	$300,665
Local businesses	-$705,020	-$263,282	-$266,053	-$263,282	-$268,825	-$263,282	$98
Council	-$81,759	-$81,759	-$81,759	-$81,759	-$81,759	-$81,759	-$184,224
LGA Community	-$16,357,216	-$22,629,239	-$19,225,674	-$25,497,697	-$17,788,487	-$24,060,511	$0
Beach users	-$174,175	-$325,128	-$328,826	$26,341	-$332,525	-$325,128	$131
Total	**-$7,012,014**	**-$12,993,252**	**-$9,596,157**	**-$15,510,242**	**-$8,165,441**	**-$14,424,524**	**$116,671**

Table 18: 50-year distributional analysis at 7 per cent discount rate

Stakeholder	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8
Property owner	$13,283,556	$13,283,556	$13,283,556	$13,283,556	$13,283,556	$13,283,556	$1,117,965
Local businesses	-$1,395,837	-$401,244	-$565,475	-$401,244	-$729,706	-$401,244	$96,974
Council	$78,385	$78,385	$78,385	$78,385	$78,385	$78,385	-$200,258
LGA Community	-$17,648,479	-$24,684,465	-$20,213,845	-$27,249,831	-$18,702,789	-$25,738,775	$0
Beach users	-$225,069	-$506,926	-$726,085	$157,923	-$945,244	-$506,926	$129,407
Total	**-$5,907,445**	**-$12,230,693**	**-$8,143,464**	**-$14,131,211**	**-$7,015,798**	**-$13,285,003**	**$1,144,089**

Figure 7: Distributional percentage impacts (negatives represent net costs and positives represent net benefits)

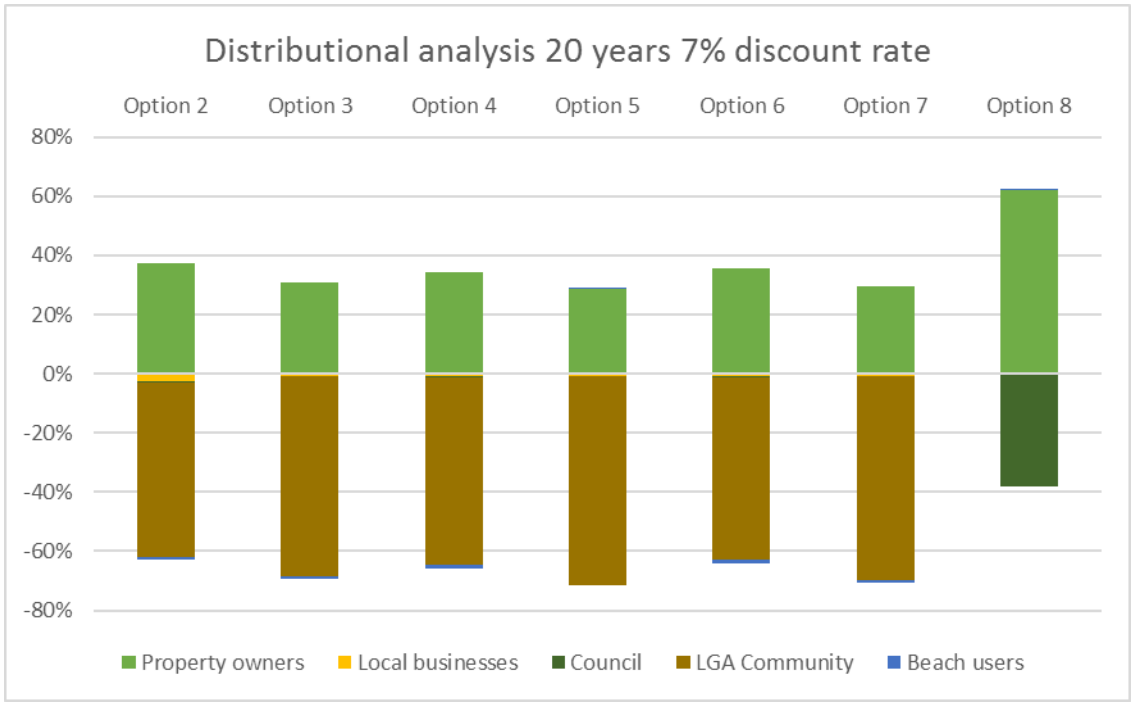
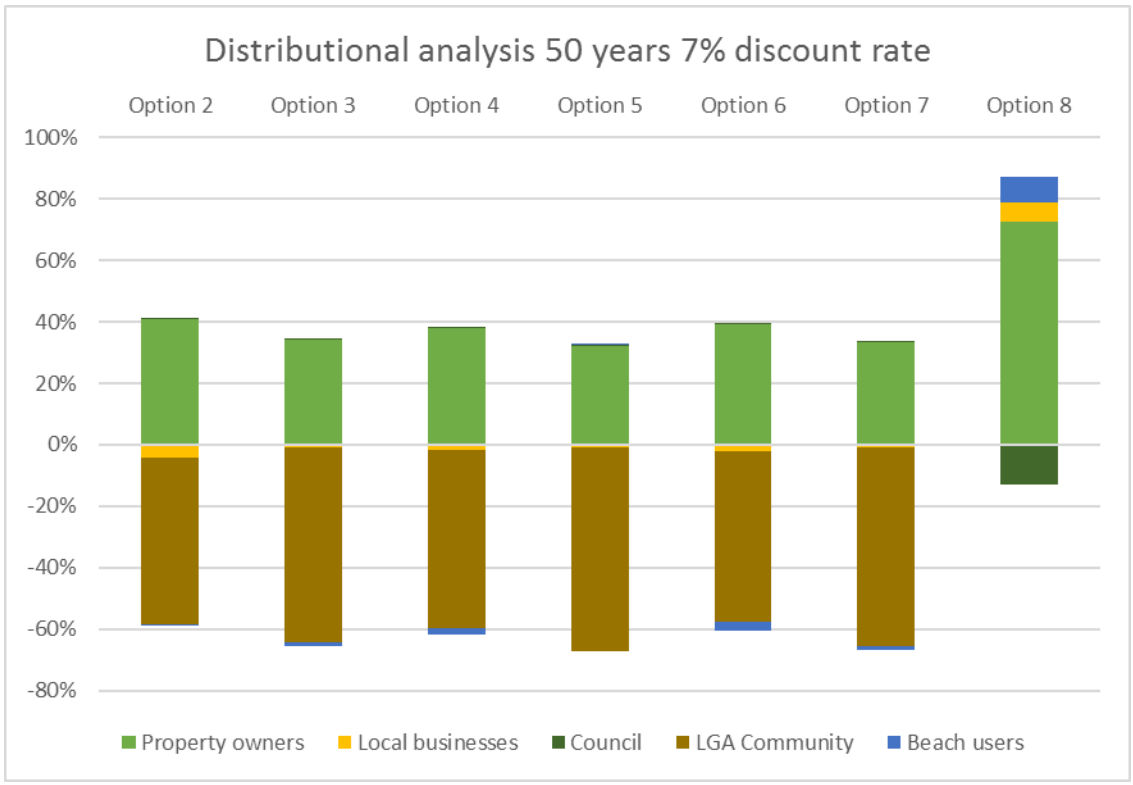


Figure 8: Distributional percentage impacts (negatives represent net costs and positives represent net benefits)



9. Conclusion

Wamberal beach has a history of impacts from coastal processes, with consequential impacts on properties, beach visitation and public infrastructure. Probabilistic modelling of the coastal processes affecting Wamberal beach shows that the impacts of coastal processes such as erosion, deposition, beach recession and sea level rise are complex and interact with Terrigal beach and Terrigal lagoon.

A range of structural engineering approaches have been considered to protect beachfront properties and other infrastructure at Wamberal beach. While surrounding lagoon properties will also be impacted by coastal processes the management options are specific to protecting beachfront properties and provide no benefits to lagoon properties.

This report uses a standard Cost-benefit Analysis (CBA) framework to estimate the direct and indirect costs and benefits of these options which may accrue to a range of key stakeholders. The CBA reports the benefit-cost ratio and the net present value of each option compared to a base case of 'business as usual'[25].

The analysis indicates that construction of a seawall will provide benefits to beachfront property owners by reducing the impacts of coastal processes. However, this will come at the expense of adverse impacts on the beach.

The speed with which the beach will be lost will vary with the type of seawall involved. The council-proposed rubble mound revetment (Options 2 and 3) will result in immediate loss of most of the beach in winter. Vertical seawall designs (Options 6 and 7) only have a two to three metre footprint, but their design means that the rate of sand erosion is faster than with a rubble mound revetment. This is offset by the fact that it will take longer for erosion to reach a vertical wall than rubble mound and Seabee walls.

It is not certain which design will lead to full beach loss the fastest, but it is expected that the value of the beach for recreation will be all but lost by 2064 due to sea level rise, regardless of design. The loss of the beach will impact negatively on beach users (visitors and the local community), local businesses and property values.

Options with a seawall plus beach replenishment are likely to prolong beach use compared to seawall-only options. Beach users will be able to enjoy recreational and associated benefits for a longer period of time compared to seawall-only options. This additional benefit is offset by the high costs of sand replenishment. In any case, rising sea levels means that by 2064 the value of the beach for recreation will be similar to seawall-only options.

It is estimated that the loss of the beach for recreation and other enjoyment will lead to fewer beach visits to Wamberal under the seawall options (Options 2-7) compared to the base case (Option 1). Although beach nourishment has been considered as a means of restoring beach areas lost because of a seawall, sand replenishment is not a financially feasible strategy for restoring this beach. This CBA considered a number of sand replenishment options currently available for implementation. However, alternative sources of sand may become feasible in the future and replenishment costs may change as a result.

As well as Wamberal businesses, Terrigal businesses are also likely to suffer, as Wamberal beach acts as an overflow area for visitors to Terrigal beach (the Central Coast's most popular beach) during the

[25] In this case, representing a situation with no specific intervention to mitigate the impacts of coastal processes

peak season. Loss of Wamberal beach will reduce the numbers of visitors to Terrigal, and potentially to the Central Coast.

Although Options 2-7 will provide some protection from coastal processes, they cannot provide protection from all effects. Longer term sea level rise will result in eventual loss of a useable beach, and more frequent flooding from Terrigal lagoon. This flooding will impact on an increasing number of properties surrounding Terrigal lagoon, and negatively affect council assets (such as water, electricity and sewerage) and road access to Terrigal lagoon and beach front properties.

The geotechnical assessment carried out to inform this CBA concluded that a seawall along Wamberal beach will not mitigate the risk of this flooding, but will only mitigate the risk of damage to properties sitting on the Wamberal beach dune. In the case of twenty beachfront properties the extent of damage risk faced is already mitigated due to a building requirement to put down piles to bedrock. Thus, sand can be eroded from underneath these properties during storm events, and will only involve utility reconnection costs.

The CBA suggests that the key beneficiaries from construction of a seawall are the approximately sixty owners of beachfront properties at Wamberal Beach. The trade-off from protecting these beachfront properties with a seawall would be the loss of annual visits due to the loss of the beach. This loss of visitors may create some concern in the wider Central Coast LGA, especially as 41% of the beach-front properties that would potentially be protected by a seawall (at the expense of the beach) are not permanently occupied and 32% are owned by people residing outside the Central Coast LGA.

The CBA shows that of all the options considered, Option 8 is the only option that will provide a net gain in economic welfare for the residents of the Central Coast LGA when compared to a base case of no specific management of beach recession (Option 1). Option 8 has the highest Net Present Value of $141,213 for twenty years and 1,178,077 for fifty years, and a Benefit: Cost Ratio of 1.61 or 20 years, and 5.03 for 50 years. This result is mainly due to the high value of the recreational and related benefits to the local community which are available under Option 8, but not under Options 2-7.

In summary, the seven engineering (seawall) options considered in this report (Options 2-7) all impose a net economic cost on the community, compared to continuing with the current status quo approach of no specific attempt to prevent the effects of coastal erosion (Option 1). The benefits of the engineering options (Options 2-7) will accrue to beach-front property owners, but are outweighed by their net costs to the wider community. Each of the engineering options has a benefit: cost ratio (BCR) of less than 1 and a negative Net Present Value (NPV).[26] The only option with a BCR greater than 1 and a positive NPV is Option 8: Planned Retreat. Therefore, from an economic perspective, the recommended option for management of coastal processes affecting Wamberal beach is the Planned Retreat option, as described in Section 4.3.

As noted above, all options involve a mix of costs and benefits for different stakeholders, and whatever option is chosen for implementation there will be winners and losers. Options 2-7 provide a level of benefits to owners of beach properties, but impose a greater level of costs on beach users, businesses and other sections of the local community. Ideally, benefiting stakeholders are able to compensate those stakeholders that face net costs associated with any option, such that overall no stakeholder is worse off. With respect to the situation at Wamberal, the only option where such re-distribution of benefits could be feasible is Option 8, where a relatively small number of property

[26] See Glossary for an explanation of BCR and NPV

owners affected makes re-distribution practically feasible, as opposed to other options where very large numbers of the community and beach users would need to be compensated.

Glossary

Amenity – In this report, a general term to cover recreational and other non-consumptive uses of the beach, including aesthetic values attached to the existence of the beach.

Beach – The zone of unconsolidated material that extends landward from the low water line to the place where there is marked change in material or physiographic form, or to the line of permanent vegetation (usually the effective limit of storm waves). The seaward limit of a beach, unless otherwise specified, is the mean low water line. A beach includes foreshore and backshore.

Beach erosion – The carrying away of beach materials by wave action, tidal currents, littoral currents, or wind. May occur during storms or with elevated water levels.

Beach profile – A cross-section taken perpendicular to a given beach contour; the profile may include the face of a dune or seawall, extend over the backshore, across the foreshore, and seaward underwater into the nearshore zone.

Benefit cost ratios (BCR) – assess benefits and costs in terms of their relativity to one another. A BCR<1 indicates that the costs outweigh the benefits. A BCR>1, indicates that the benefits of a project outweigh the costs and it is therefore viable, assuming that it also has a positive NPV.

Bruun Rule – a commonly used method for estimating the response of a sandy shoreline to rising sea levels.

Coastal engineering – A branch of civil engineering that applies engineering principles specifically to projects within the coastal zone (nearshore, estuary, marine, and shoreline).

Coastal management terms – Recognise, foster, protect, maintain, restore, enhance, support, acknowledge. These terms provide an indication of the outcome to be achieved, relative to the current state of the environment, access, recreational use and other coastal values.

Consumer surplus is defined as the difference between the total amount that consumers are willing and able to pay for a good or service (indicated by the demand curve) and the total amount that they do pay (i.e. the market price).

Cost–benefit analysis (CBA) is a form of economic appraisal that can be used to estimate changes to the economic wellbeing of local and wider communities. A CBA is used to estimate and compare the costs and benefits of implementing a proposed project or management activity with the costs and benefits of a 'base case', which represents a continuation of current conditions under which the proposed project/ policy is not implemented.

Discount rates – are rates used to discount a future stream of welfare/ wellbeing changes, whether they are costs or benefits.

Expected value – the value of a cost or benefit multiplied by the probability of it occurring.

Extreme storm event – Storm for which characteristics (wave height, period, water level etc.) were derived by statistical 'extreme value' analysis. Typically, these are storms with average recurrence intervals (ARI) ranging from one to 100 years.

Gabion – Steel wire–mesh basket to hold stones or crushed rock to protect a bank or bottom from erosion; or structures composed of masses of rocks, rubble or masonry held tightly together usually by wire mesh to form blocks or walls. Sometimes used on heavy erosion areas to retard wave action or as a foundation for breakwaters or jetties.

Geomorphology – A branch of physical geography which deals with the form of the Earth, the general configuration of its surface, the distribution of the land, water, etc.; or the investigation of the history of geologic changes through the interpretation of topographic forms.

Intermittently Closed and Open Coastal Lake or Lagoon (ICOLL) – Coastal lakes and lagoons where the entrance may be closed to the sea from time to time and for varying periods, by accretion of a berm. ICOLLs have sensitive water quality because they accumulate loads of sediment and nutrients from the catchment and may have poor water circulation and flushing. The fifteen highly sensitive waterways listed in the Coastal Management SEPP, and whose catchments are included in the Coastal Environment Area, are all ICOLLs.

Lagoon – A shallow body of open water, partly or completely separated from the sea by a coastal barrier or reef. Sometimes connected to the sea via an inlet.

Net present value – Is the value of welfare changes over time in a cost-benefit analysis, it is discounted to reflect the social opportunity cost of time and alternative social investments.

Outflanking or end effects – Erosion behind or around the land–based end of a groyne, jetty or breakwater or the terminus of a revetment or seawall, usually causing failure of the structure or its function.

Planned retreat is a coastal hazards management approach that acknowledges coastal processes and hazards as ongoing natural phenomena. The long-term recession of parts of the Byron Shire coastline is a dominant factor in planning for the use of coastal areas.

Probabilistic model – Mathematical model in which the behaviour of one or more of the variables is either completely or partially subject to probability laws.

Producer surplus is an economic measure of the difference between the amount a producer of a good receives and the minimum amount the producer is willing to accept for the good. The difference, or surplus amount, is the benefit the producer receives for selling the good in the market.

Revetment or sea wall – A type of coastal protection work which protects assets from coastal erosion by armouring the shore with erosion–resistant material. Large rocks/boulders, concrete or other hard materials are used, depending on the specific design requirements.

Sea level rise – An increase in the mean level of the oceans. Relative sea level occurs where there is a local increase in the level of the ocean relative to the land, which might be caused by ocean rising, the land subsiding, or both. In areas with rapid land level uplift (e.g. seismically active areas), relative sea level can fall.

Welfare economics – the basic concepts underpinning CBA are drawn come from a branch of economics known as ‘welfare economics’. Welfare economics is concerned with the effect of making choices about how scarce resources such as time, labour, money, can be allocated to increase the economic wellbeing of individuals and groups. These parties in aggregate can be defined as ‘the community’.

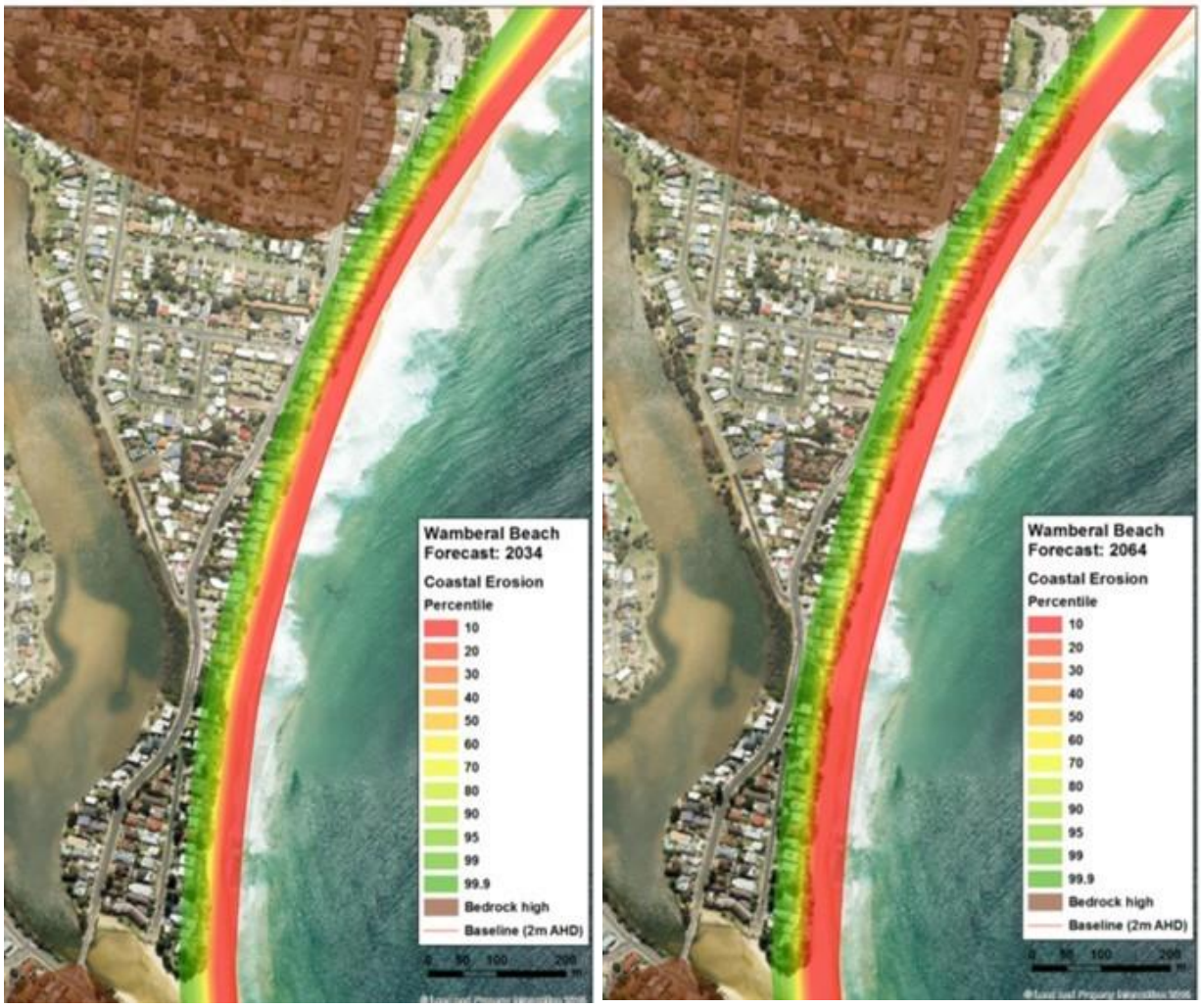
Appendices

A1. Recession profile: Modelling of potential shoreline change at Wamberal beach

In 2016, the Coastal & Marine Science unit of the NSW Office of Environment & Heritage (OEH) completed a *Forecast of Potential Shoreline Change* study of Wamberal beach (OEH 2016). The shoreline change study builds on the *Open Coast and Broken Bay Beaches Hazard Definition Study* completed for Gosford City Council in 2013, which includes Wamberal beach.

The shoreline change study applies a statistical Monte Carlo modelling method to generate forecasts of potential future shoreline change at Wamberal beach in 2034 and 2064 for coastal erosion percentile bands (see Figure 9). These percentile band changes provide the basis for estimating the potential impacts of coastal processes on properties discussed in the study.

Figure 9: Forecast coastal erosion percentile bands, 2034 and 2064



Source: OEH, 2016

A2. Shoreline change and impacts on property

As noted above, modelling of potential shoreline change at Wamberal beach was undertaken by the Office of Environment & Heritage (OEH 2016). The shoreline change study applies Monte Carlo modelling to generate forecasts of potential future shoreline change at Wamberal beach in 2034 and 2064 for coastal erosion percentile bands (i.e. 10, 20, 30, 40, 50, 60, 70, 80, 90, 95, 99 and 99.9). These percentile band changes provide the basis for estimating the potential impacts of erosion under the base case including:

- loss of coastal premium land values;
- destruction of unpiled houses and commercial buildings;
- loss of building values and costs of maintaining and servicing unpiled houses.
- Costs associated with each of these variables were derived from estimates of:
- the numbers of properties or buildings impacted in each year;
- the probability of each property or building being impacted in that year; and
- the values of the impacted properties (premium land value) or buildings (built asset value) or the cost of maintaining and servicing a piled house.

This is shown by the equation:

$$EV(C) = \sum C_i p_i = C_1p_1 + C_2p_2 + C_3p_3 \ldots.$$

Where:

- **C** is the coastal premium land value, value of the built asset (unpiled houses) or maximum maintenance (piled houses);
- **p** is probability of the property or built asset being impacted by shoreline erosion in any one year; and
- **n** is the number of affected properties.

The coastal erosion percentile bands were used to assess the probability of each property or building being impacted, with a probability weighting of 0.1 attached to each tenth percentile band from 10 to 90, 0.05 for the 95th percentile band, 0.04 for the 99th percentile band and 0.009 for the 99.9th percentile band (see snapshot of the probabilities and expected values for 2016).

It is important to note that because coastal erosion percentile bands have been forecast for only two time periods (2034 and 2064), interpolation was applied to estimating the probability of each property being impacted in the intervening years of the analysis (i.e. 2017-2033 and 2035-2063). Consideration was given to applying either an exponential or a logistic ('s') function to derive the interpolated values, reflecting either sea level rise projections (exponential) or the potential impact of shoreline change on properties over the long term. In the end, linear interpolation was selected as the most straightforward approach. By using linear interpolation however, it is possible that the impacts of coastal erosion on properties and buildings under the base case are overstated in the early years of the analysis but understated in the middle years of the analysis.

It is also important to note that, because the impacts of shoreline erosion are essentially one-off impacts, rather than recurring impacts, to avoid double counting, estimates of the costs of impacts on properties in each year are not calculated as the absolute cost of the impacts in that year but as the cost in that year incremental to the previous year.

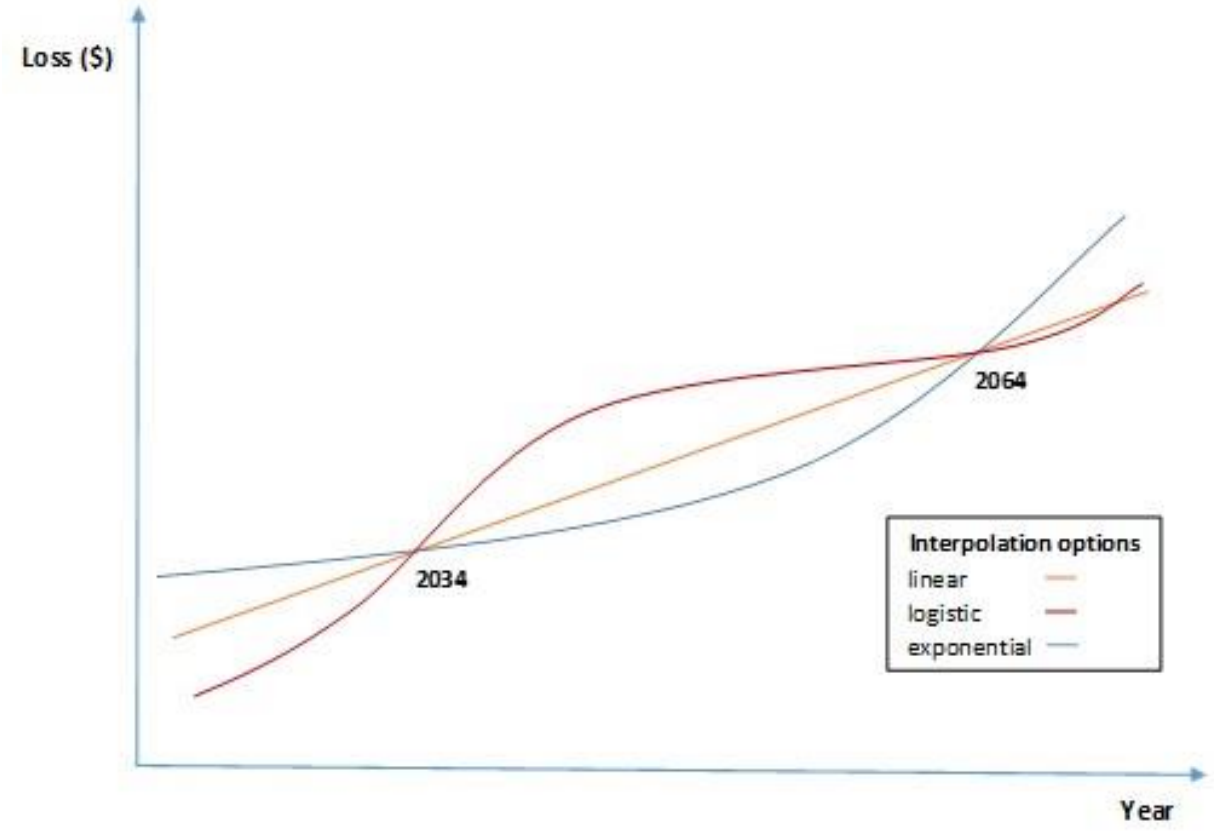
A3. Calculation of property impacts

Figure 10: Snapshot of the database used to estimate expected value of land and building losses, 2016

Property	Total Land Area (sqm)	Property depth (m)	Unimproved Value (total)	Coastal Premium	Built Asset Value	Capital Improved Value
a	1074	63.7	$ 1,500,039	$ 642,874	$ 1,515,961	$ 3,016,000
b	495	30.7	$ 1,896,667	$ 1,072,029	$ 350,000	$ 2,246,667
c	439	27.7	$ 613,333	$ 262,857	$ 600,000	$ 1,213,333
d	532	33.0	$ 2,036,667	$ 1,151,160	$ 600,000	$ 1,901,205
e	465	29.1	$ 613,333	$ 262,857	$ 600,000	$ 1,213,333
f	565	52.4	$ 2,206,667	$ 1,247,247	$ 350,000	$ 2,556,667
e	499	30.6	$ 613,333	$ 262,857	$ 600,000	$ 1,213,333
f	595	35.9	$ 2,260,000	$ 1,277,391	$ 511,088	$ 2,771,088
g	546	32.1	$ 613,333	$ 262,857	$ 600,000	$ 1,213,333
h	579	36.7	$ 2,276,667	$ 1,286,812	$ 800,000	$ 3,076,667
i	516	33.6	$ 613,333	$ 262,857	$ 600,000	$ 1,213,333
j	609	37.5	$ 2,276,667	$ 1,286,812	$ 1,099,346	$ 3,376,013
k	574	35.1	$ 613,333	$ 262,857	$ 350,000	$ 963,333
l	622	18.9	$ 2,516,667	$ 1,422,464	$ 558,333	$ 3,075,000
m	584	36.5	$ 613,333	$ 262,857	$ 350,000	$ 963,333

Probability of % of land area impacted: 2016												Likelihood of dwelling lost	2016D	2016L
100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	5%	1%		EV dwelling lost (unpiled)	EV premium land lost
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0
0%	0%	0%	0%	0%	4%	23.6%	46%	79%	97%	99%	99%	65.8%	230,300	607,435
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0
0%	0%	0%	0%	0%	0%	12%	29%	60%	81%	99%	99%	35.8%	214,800	456,441
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0
0%	0%	0%	0%	0%	0%	5%	19%	42%	62%	99%	100%	35.8%	125,300	348,915
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0
0%	0%	0%	0%	0%	0%	0%	8%	28%	43%	86%	100%	35.8%	182,970	223,662
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0
0%	0%	0%	0%	0%	0%	0%	0%	18%	29%	68%	100%	15.8%	126,400	137,510
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0
0%	0%	0%	0%	0%	0%	0%	0%	6%	17%	48%	94%	5.8%	63,762	79,271
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0
0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	34%	75%	0.9%	5,025	41,763
0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0	0

Figure 11: Possible approaches to interpolating the probability of land being impacted by recession (and associated losses) for years 2016-2033 and 2035-2063



A4. Impacts on coastal premium land values

Much of the market value of residential or commercial land on Wamberal beach stems from the fact that the land is zoned residential or commercial. If that land is lost due to coastal processes, its 'zoning value' is unlikely to be foregone in economic terms because, provided there is not an absolute constraint on land availability within the LGA (and hence property owners are not forced to move away from the LGA), the loss of zoning value to the affected property owners can expected to be offset by an increase in land values elsewhere within the LGA once additional land is rezoned. This represents a transfer of value of the land from the affected property owners to land developers.

On the other hand, a very significant proportion of the market value of properties on Wamberal beach is bound up in their proximity to the beach, i.e. a 'coastal premium value'. This coastal premium value would be impacted in the event of shoreline erosion, since there are constraints on availability of coastal land within the LGA, i.e. there is no coastal greenfield land on which development could take place in the future. While it is possible that hinterland properties within the vicinity of Wamberal beach and other coastal properties could attract a higher premium in the longer term due to the loss of coastal properties at Wamberal beach, this is unlikely within the timeframe of the analysis.

The coastal premium land value of each property in the study area has been calculated as a proportion of the total unimproved value land value of each property. Hedonic pricing is the method used to calculate the premium. Hedonic pricing is a statistical method that assesses the extent to which specific attributes of a good or service (such as proximity of a property to a beach or a park) adds to its market price[27]. A separate hedonic pricing analysis of the study area was beyond the scope of this study; thus, a literature review was completed of hedonic pricing studies undertaken in other locations to obtain a suitable hedonic transfer.

Of several Australian and international hedonic pricing studies considered, a study by Anning (2012) of the price premiums of beachfront properties in the Collaroy-Narrabeen area of Sydney is considered the most suitable. Anning's hedonic price analysis, which was applied as part of a broader range of methods to assessing beach values in Sydney, found that risk-free beachfront properties were subject to price premiums of around 264% relative to average properties in the sample area but that properties located in higher risk areas, subject to erosion, had lower but still high premiums of about 130%. Properties within the coastal zone, but not located on the beachfront, attracted a premium of about 75%.

Anning noted that these price premiums are substantially higher than those in the published literature but concluded that this "…can be explained in terms of the exclusivity of beachfront property in the Sydney region" (Anning, 2012, p.294), as well as differences in the samples and methods applied in other studies (e.g. the other studies generally included non-beachfront as well as beachfront properties in their samples). We concur with this conclusion and note also that the 'exclusivity' that applies to Sydney region beachfront properties likely also applies to properties on the Wamberal beachfront. On that basis, but also noting the erosion risk that applies to Wamberal beachfront properties, we have applied a coastal premium value of 130% to beachfront properties in the central (most likely) case. A

[27] The basic premise of the hedonic pricing is that the price of a marketed good or service is related to a range of characteristics. In the case of property prices, the hedonic pricing method applies multiple regression analysis to statistically estimate a function that relates property values in a location or region to property characteristics such as, for example, house size, distance to the beach, distance to shopping centres etc.

coastal premium value of 75% has been applied to properties in the study area that are located one street back from the beach (referred to in this study as the 'beach precinct').

These percentages were applied to the unimproved land values respectively for beachfront and beach precinct properties to estimate that portion of their total value that can be attributed to their location on or near to Wamberal beach. Estimated in this way, the properties in the study area are estimated to have an average coastal premium value of $1.1 million per property out of their average total unimproved value of $2.0 million.

The coastal premium estimates were validated by cross checking the market prices of a sample of properties in the study area with the market prices of comparable, non-beachfront properties in the Gosford region. Nevertheless, a range of alternative premiums have been applied for sensitivity testing (see Table 19).

Table 19: Central, Low and High coastal premium values used in the analysis[28]

Case	Beachfront properties	Beach precinct properties
Central (most likely)	130%	75%
Low	65%	38%
High	195%	112%

[28] Note percentages represent the increase in unimproved value of a property relative to its unimproved value dur to its location on, or close to, the beach. For example, if a local property that is located away from the beach has an unimproved value of $500,000, a property located on the beach but in all other respects having similar attributes (e.g. size, proximity to shops etc.) would have an unimproved value of $1,150,000 assuming a coastal premium of 130%.

A5. Beach nourishment

The options considered in the analysis include permutations foe each nourishment for each of the seawall types considered i.e.:

- Rubble mound (rock) seawall;
- Seabee (concrete unit) seawall; and
- Vertical seawall.

A potential sand source for nourishment for Wamberal beach was not identified in available documentation. Background documents on coastal processes identify that the "storm bite" for a severe 100 year ARI event is 250m^3/m length of beach. For Wamberal, this equates to some 340,000m^3. The "Beach Sand Nourishment Scoping Study" for Sydney beaches by AECOM (2010) recommends that the initial sand nourishment required for Sydney beaches is that which is equivalent to the beach loss due to a sea level rise of 0.3 metres. The 0.3 metres is composed of 0.2m attributable to sea level rise to 2010 and 0.1m to handle sea level rise over the next 10 years. The overall premise behind these numbers is that sea level rise over a planning period of 50 years is about 0.1m per 10 years and the beach loss attributable to sea level rise can be estimated by the Bruun Rule. The sand volume required for an initial beach nourishment at Wamberal is 300m^3/m length of beach which equates to 408,000 for the full length of the beach.

The AECOM (2010) study identifies a cost of \$25/m^3 for sand nourishment if a volume of 12 million cubic metres of sand was utilised. Sand sources for Wamberal are expected to be available at similar offshore water depths as that defined for Sydney beaches and a similar costing structure can be expected. However, a sand volume of 408,000 cubic metres would have a significant additional mobilisation loading because very large dredges that can work in water depths more than 25 metres need to be utilised. The effective cost would be \$50 to \$60 /cubic metre. However, it is unlikely that a dredging company would mobilise their large dredges for such a relatively small quantity of sand. So, to undertake beach nourishment from offshore sources it will be necessary to co-ordinate several beach nourishment projects in the Sydney – North Coast area. If such a co-ordination can be achieved, then the cubic metre rate should be able to be reduced.

We have sought the advice of an independent dredging consultant, [redacted] to identify the real cost of undertaking beach nourishment at Wamberal beach as a one-off project. His interim advice is that a suitable dredge should be able to be mobilised from the Singapore area at a cost of \$5 million. He is referring to a smaller dredge, say with 3,500m^3 hopper capacity but still able to dredge to a depth of up to 35 metres. Such a dredge can be expected to have a draft of up to 7 metres and could readily "rainbow" (spray) the sand from a location in a water depth of 8 metres to the 6m contour. The cost is estimated at \$10/m^3. Costs overall therefore, including mobilisation and operating costs, could be approximately \$22-23/ m^3 to undertake beach nourishment at Wamberal for a volume of about 400,000 cubic metres of sand.

Options where beach nourishment has been considered have a BCR less than 1 and have negative net present values for the community. This is partly due to the costs of beach nourishment outweighing the recreational use benefits of the beach if the beach is maintained in front of a seawall.

A6. Results of the CBA

Table A6.1 shows the results of the CBA. Option 8 (Planned Retreat) has an estimated NPV of $1.1 million over the period of the analysis (2017-2066) and a BCR of 5.0 and is therefore expected to deliver a net benefit to society relative to the Option 1 (the base case, or status quo, based on central assumptions about costs and benefits used in the study (see Section 6).

Options 2 to 7 (infrastructure options) have negative NPVs and BCRs of less than 1, suggesting that none of those options are likely to deliver a net benefit relative to society compared to the status quo, based on the central assumptions used in the study. All the options entailing beach nourishment (Options 3, 5 and 7) will have worse outcomes than the options without nourishment because of the very high cost associated with beach nourishment.

Table 20: Results of the CBA, Options 2 to 8 (Present Value, 2017-2066)

Option 2	NPV ($2016)
Costs of option	$18,102,416
Capital cost	$13,148,036
Maintenance	$4,500,444
Beach nourishment	$0
Transport & planning	$453,937
Benefits/avoided costs of option	$12,724,382
Avoided impacts on buildings and land	$13,921,352
Amenity impacts[29]	-1,164,601
NPV	-$5,378,034
BCR	0.70

Option 3	NPV ($2016)
Costs of option	$25,138,402
Capital cost	$13,148,036
Maintenance	$4,500,444
Beach nourishment	$7,035,985
Transport & planning	$453,937
Benefits/avoided costs of option	$13,469,743
Avoided impacts on buildings and land	$13,921,352
Amenity impacts	-$419,240
NPV	-$11,668,658
BCR	0.54

Option 4	NPV ($2016)
Costs of option	$20,667,782
Capital cost	$16,769,769
Maintenance	$3,444,076
Beach nourishment	$0
Transport & planning	$453,937
Benefits/avoided costs of option	$11,450,464
Avoided impacts on buildings and land	$13,921,352
Amenity impacts	-$2,438,520
NPV	-$9,217,318
BCR	0.55

Option 5	NPV ($2016)
Costs of option	$27,703,768

[29] 'Amenity' is used here as a blanket term to cover recreational and other non-consumptive uses of the beach, including aesthetic values attached to the existence of the beach.

Capital cost	$16,769,769
Maintenance	$3,444,076
Beach nourishment	$7,035,985
Transport & planning	$453,937
Benefits/avoided costs of option	$13,469,743
Avoided impacts on buildings and land	$13,921,352
Amenity impacts	-$419,240
NPV	-$14,234,024
BCR	0.49

Option 6	NPV ($2016)
Costs of option	$19,156,726
Capital cost	$15,516,170
Maintenance	$3,186,620
Beach nourishment	$0
Transport & planning	$453,937
Benefits/avoided costs of option	$9,362,967
Avoided impacts on buildings and land	$13,921,352
Amenity impacts	-$4,526,017
NPV	-$9,793,759
BCR	0.49

Option 7	NPV ($2016)
Costs of option	$26,192,711
Capital cost	$15,516,170
Maintenance	$3,186,620
Beach nourishment	$7,035,985
Transport & planning	$453,937
Benefits/avoided costs of option	$12,217,245
Avoided impacts on buildings and land	$13,921,352
Amenity impacts	-$1,671,739
NPV	-$13,975,466
BCR	0.47

Option 8	NPV ($2016)
Costs of option	$292,150
Demountable costs	$91,892
Planning costs	$200,258
Benefits/avoided costs of option	$1,470,227
Avoided impacts on buildings and land	$1,207,824
Avoided amenity impacts	$262,402
NPV	$1,178,077
BCR	5.03

As discussed above, infrastructure Options 3, 4 and 6 are likely to accelerate deterioration of the condition of the beach that will also occur under Option 1 (the base case). This will have negative impacts on recreational and other non-consumptive values of the beach (which are included in the results). Infrastructure options involving beach nourishment (Options 3, 5 and 7) are likely to significantly mitigate the adverse impacts of the infrastructure on these values, but could also entail environmental impacts associates with off-shore dredging. Option 8 (planned retreat) is likely to have a small positive impact on beach values compared to Option 1.

A7. Impacts of options for different stakeholders

This appendix is an expanded version of the material in Section 7 on the distribution of the costs and benefits of the different options on a range of stakeholders.

Implications of protection without nourishment Options 2,4,6

Beach users – Local Community

The seawall options without nourishment will have the largest direct impact on non-beachfront property owner residents of the LGA with the potential loss of the beach by 2064. The boundary of the analysis is the LGA and the potential loss of the beach will impact those residents in the LGA who do not own properties on the beach front. This will include surfers, walkers, swimmers, and even dog walkers.

Visitors to the LGA

Visitors to the LGA who visit the beach at Wamberal will also be impacted by the seawall option as they must visit alternative beaches if the wall is constructed without nourishment over the period of the analysis.

Business Owners

The construction of the seawall without nourishment will lead to a temporary loss of producer surplus to business owners in the area. However, as noted in the CBA guidance the timeframe of the analysis will mean that other businesses may open to replace the beach related businesses and still service the community with non-beach related services and goods.

Local Council

Ocean View drive will not be impacted by coastline recession if the wall is not constructed. Flooding of Ocean View drive will not occur under the status quo base case scenario because of coastline recession in the timeframe of the analysis. The flooding is more likely to result from Terrigal Lagoon.

The reconnection of services to properties because of coastline recession will not occur under the protection of properties and is treated as a benefit to council under the revetment options.

Property Owners on the beachfront

The main impacts in terms of benefits of the protection options will flow to property owners along the beachfront. These are direct benefits that flow to the property owners. The value of these benefits is determined by the expected value of the protection their properties will receive should a seawall be constructed. This is the largest group of beneficiaries of the building a seawall. The funding and financing principles developed by the council based on the distributional analysis will need to identify the property owners as the largest group; in the community that benefits.

State government

There are approximately five allotments along the beachfront plus the land in front of the surf club that may be protected should a seawall be constructed. The expected value of these benefits of protection will flow to the state government. These a minor in comparison to the private benefits that individual property owners will obtain from the protection of their properties. This is due to the fact the land value is relatively low as the allotments are currently undevelopable.

Economic implications of protection with nourishment Options 3,5,7

Beach users – Local community

The seawall options with nourishment will not directly impact on non-beachfront property owner residents of the LGA as the beach will be maintained however at relatively high cost to the Council. The boundary of the analysis at the time of the analysis was the Gosford LGA and the potential loss of the beach will not impact those residents in the LGA who do not own properties on the beach front. This will include surfers, walkers, swimmers, and even dog walkers. According to the Marsden Jacob Associates analysis, the amenity value placed on the beach by these recreational beach goers may not outweigh the costs of nourishment. This is due the lack of terrestrial sand sources and costs of off-shore dredging. Access may also be limited given the protection options being considered.

The costs of nourishment may be borne by the entire LGA community but that will be dependent on how the council will fund and finance the nourishment strategy which is assessed in this analysis.

Visitors to the LGA

The seawall options with nourishment will have no impact on visitors to the LGA as the beach will be maintained if the wall is constructed. However, the relatively high costs of nourishment will be borne by the local community. Access may be limited to a degree because of the proposed structure.

Business Owners

The seawall options with nourishment will have no impact on business owners in the area however the relatively high cost of nourishment may be incurred may the local community.

Local Council

The seawall option with nourishment will maintain amenity of the beach for the local community however the costs of nourishment maybe prohibitive.

Property Owners

Property owners under this option will have their properties protected and have the beach maintained in front of their properties. The amenity value of property owners will be capitalised in their property values.

State government

There are approximately 5 allotments along the beachfront plus the land in front of the surf club that may be protected should a seawall be constructed. The expected value of these benefits of protection will flow to the state government. These a minor in comparison to the private benefits that individual property owners will obtain from the protection of their properties. This is due to the fact the land value is relatively low as the allotments are currently undevelopable.

Option 8 Planned Retreat

Beach users – Local community

No impact on beach users from the local community for the period of the analysis relative to the base case. The beach will continue to move landward, however over the period of analysis the recreational use southern portion of the beach may be reduced. This is captured in the base case so there is no change from the status quo.

Visitors to the LGA

No impact on visitors outside the LGA for the period of the analysis relative to the base case. The beach will continue to move landward, however over the period of analysis the recreational use southern portion of the beach may be reduced. This is captured in the base case so there is no change from the status quo.

Business Owners

No impact on business owners relative to the base case.

Local Council

The proposed planned retreat model comprises a series of actions aimed at controlling development to maintain a rolling development-free buffer along the Wamberal beach foreshore. The buffer is designed to accommodate natural coastal processes and reduce the level of risk associated with coastal erosion and inundation to persons, development and infrastructure.

The planned retreat model assessed in this study includes the following features:

- Control of development on land within designated hazard areas for approvals under the provisions of the Environmental Planning and Assessment Act, 1979 via planning controls under Central Coast LEP, DCP's, and the Coastal Zone Management Plan. Controls would include:
- Exclusion of development within the buffer zone of a property - nominally all land within the property boundary that is seaward of the assessed developable area (e.g. land seaward of the 2045 erosion line as detailed in Section 6.2 of the Gosford DCP);
- All the structures receiving development consent are required to be built/rebuilt as demountable or relocatable structures;
- Development consent is subject to a condition that once the erosion line moves within the developable area of the property, the consent lapses and the structure must either be moved back, relocated or demolished; and
- When a development consent lapses, a new consent is required, supported by a revised assessment of the property's developable area and buffer zone.
- Provision of advice to purchasers of property within coastal planning precincts on the hazard risk restrictions associated with that land via issue of Section 149 planning certificates at time of purchase.
- A structure built under earlier approvals processes, prior to introduction of the planned retreat policy, is treated the same as it would be under the base case (i.e. it can continue to be used for its intended purpose while it is safe to do so and can be serviced).
- Removal of unapproved structures.
- Development of supporting planning instruments and policies.

In effect, the proposed model modifies existing development controls, with current controls requiring new developments within the hazard area to be piled, being replaced by a requirement for new developments to be demountable/moveable. Thus, the proposed model is gradualist in nature, which significantly reduces its potential costs but, to some extent, also limits its potential benefits.

Available information suggests that demountable houses are unlikely to be costlier to construct than equivalent sized fixed houses. Indeed, because demountable houses are by their nature 'kit homes' they could be cheaper (e.g. $1200-1800/ sq. metre compared to $1500 - $2200 / sq. metre for an on-site built house with equivalent fittings). This is particularly so, since, under the base case construction of a fixed house will require piling, which entails significant additional costs. On the

other hand, because demountable houses are kit homes they are likely to lose out in comparison to an architect or purpose designed house where a home owner's preference is for a house with bespoke elements.

Property Owners

As with the base case one additional unpiled beachfront property within the hazard area is assumed to seek a development application (DA) each year (approximately 2% of the housing stock). However, instead of the buildings on these properties being redeveloped as piled houses they are redeveloped as demountable houses.

Remaining properties will continue to be used as per their currently approved use while it is safe to do so.

Based on the above listed assumptions, it is anticipated that at the end of the 50-year period of this assessment approximately 50 beachfront properties will have been redeveloped as demountable structures.

State government

There are approximately five allotments that may be impacted by the beach moving landward over the period of the analysis plus the land in front of the surf club. The expected value of these costs will flow to the state government. These are minor in comparison to the private costs that individual property owners will incur. This is due to the fact the land value is relatively low as the allotments are currently undevelopable.

A8. Engineering information: revetment options

This appendix provides detailed technical description of Options 2-7.

General Comments

For the revetment types – Rubble mound and Vertical wall – the study has adopted the design cross - section proposed and costed by WRL (1998). For the Seabee seawall, we replaced the Gabion and Reno mattress toe with a piled toe. The variations from WRL (1998) relate to:

- Seawall height. In the WRL (1998) costing a constant seawall height of 8m (AHD) was adopted, whereas the design height of the seawall varied from 6 to 8 metres (AHD), with most the wall at 8m. Our costing considers the variable seawall height.
- WRL (1998) considered both basalt and local limestone armour rock. We have not considered local sandstone because:

- The unit size of sandstone armour increases to 7 tonnes whereas the unit size for basalt is 4 tonnes.
- This effectively increases the volume (tonnes) of rock that must be transported to the beach by 75% and increases the volume of truck traffic by a similar percentage.
- Sand stone has a density of 2,300kg/m^3 whereas basalt is 2670kg/m^3. The increased unit weight coupled with the lower density means that the rock layers are significantly thicker for a sandstone seawall than a basalt seawall which means the footprint of the seawall is significantly wider, estimated at 1.5 to 2 metres wider, with a corresponding loss of beach width.

- With the increased rock tonnage and the need to handle large armour rock it is likely that whilst the supply cost (per tonne) may be 30 to 40% lower than for basalt, the total constructed cost is likely to be higher.

- Costs have generally been updated by allowing for an approximate 70% CCI increase since 1998. The main exceptions to this are:

- Supply and placement of basalt rock as described in the "Background"??? above are higher than WRL (1998). The supply cost has been obtained from local quarries capable of producing the required product and the placement cost is based on our current industry experience.

- Geotextile supply cost reflects the use of a heavier duty geotextile as industry experience suggests that this is appropriate.

- Supervision and survey costs have been adopted from the more recent WRL (2013) costing for similar work at Byron Bay.

Option 2: Rubble Mound Revetment

Figure 12 is a reproduction of the rubble mound seawall sketch (Figure 18, WRL, 1998).

Figure 12: Basalt Rubble Mound Seawall – Generic 8m AHD Crest

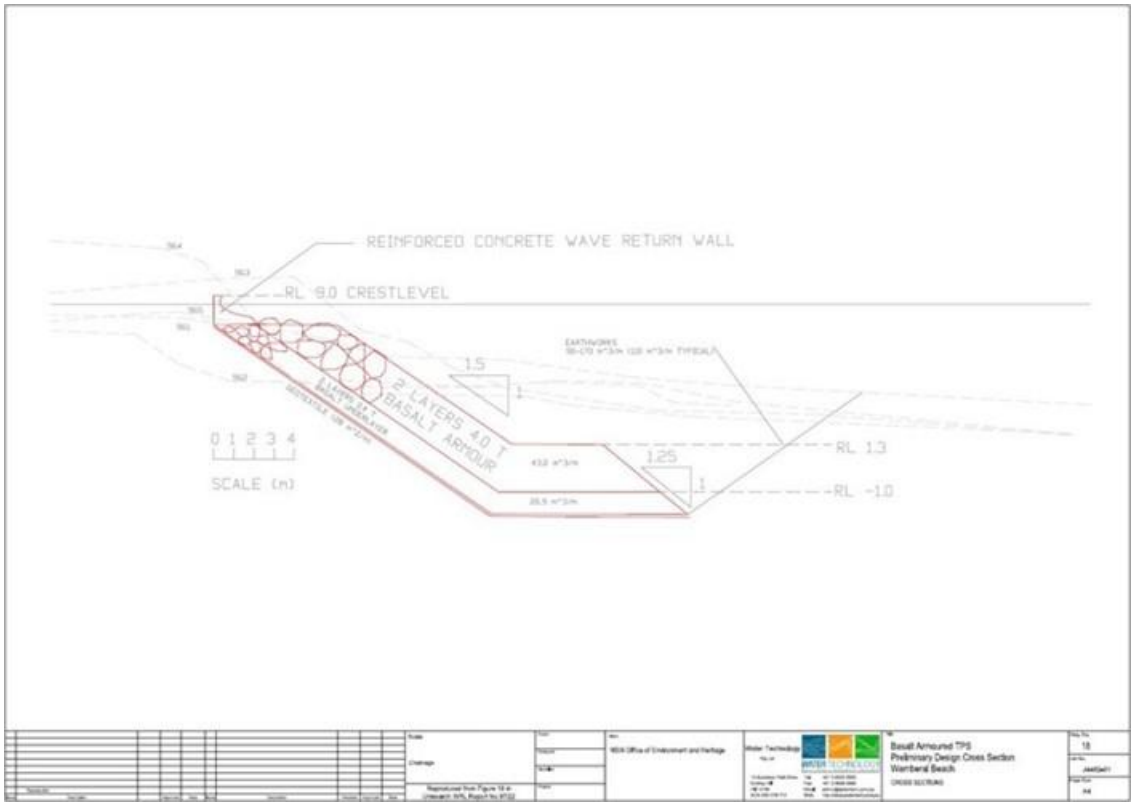


Figure 12 shows:

- A summer scenario with present day sea level and much of the seawall buried under the upper beach and dune.

- The toe of the seawall (underlayer) is set at -2m AHD to accommodate beach and dune erosion so that the integrity of the seawall remains even after a 50 year ARI storm at elevated sea

levels. Under an extreme event there may be some undermining of the toe of the structure but the combination of the geotextile, underlayer rock and armour rock toe structure would be expected to slump without any significant settlement of the rubble mound wall itself.

- The crest of the rubble mound is set at about 6.75m AHD. A recurved concrete wall with its top at 8m AHD is cast onto the top of the rubble mound wall to minimise wave overtopping.
- A standard rubble mound seawall slope form of two layers of 4 tonne armour rock underlain by 2 layers of secondary rock with a geotextile membrane separating the rock from the underlying trimmed sand slope. The geotextile prevents sand leaching out through the rock.
- The footprint (width) of this structure is 17 ½ metres when it is fully exposed. When it is constructed, presumably not in winter because of potential limited access and wave inundation of works, only about 50% of this total width would be exposed. The balance would be buried using sand excavated for construction purposes.

As sea level rises, combined with the natural recession of the shoreline, nominally 0.2m/year, Worley Parsons (2014), it is expected that the amount of the seawall exposed will increase as the beach width diminishes.

Like the Base Case, it is expected that by 2034 there will be a reduced dune/upper berm width and it may be expected that in most years, sand may be removed over winter exposing the top of the seawall toe. Over summer it can be expected that sand would be restored to the beach to cover the toe of the seawall and still provide for reasonable beach enjoyment.

For the 2064 scenario, it can be expected that the toe of the seawall will be fully exposed most winters. It is also likely that a full beach recovery will not occur most years. That is, the beach area will be negligible over winter, and may be limited over summer.

In the absence of beach nourishment, it is anticipated that wave run-up and overtopping may become unacceptable after 2064 and consideration will need to be made to raise the seawall crest if sea level rise is ongoing. This is likely to entail removing the recurved wall, raising the rubble mound crest level and rebuilding the recurved wall. If the recurved wall was still fully intact and functional, it may be possible to retain it and cast a new wall tied into the old wall.

Preparatory earthworks, which entails the removal of sand and other materials to trim the dune face in preparation for the placing of rubble mound seawall materials, require some 175,000 m3 to be rehandled. All sand excavated will be placed back on the beach.

The total amount of rock is almost 91,000 tonnes. All the rock will need to be transported via road to Wamberal beach. It is likely that storage and rehandling will need to be undertaken at both the Terrigal and Wamberal Lagoon ends of the beach. Materials will then need to be transported to the works area by off road equipment.

The wave reflecting recurved wall requires some 1,900 tonnes of concrete which equates to about 100 to 150 concrete trucks accessing the beach road.

The construction time is likely to be over 1 year (391 days of supervision and survey). It therefore may be necessary to stage the works over two years, to allow for work to stop over the busiest summer months and to allow for weather delays over winter.

Option 3: Rubble Mound Revetment with Beach Nourishment

For the purposes of this analysis it is assumed that beach nourishment will be delayed for several years, which implies the full depth and height of the seawall (see Figure A7.2), still needs to be allowed for and costed.

Under this option, the purpose of the sand nourishment up to 2064 relates to ensuring adequate area of beach for use, rather than providing protection to the properties and assets.

The sand nourishment approach adopted here is as per the AECOM Sydney beaches study, where 400,000 cubic metres is placed as soon as possible and top-up nourishments of 125,000 cubic metres are applied every 10 years, on the basis that sea level rise is occurring at a rate of 100mm each 10-year period. However, the costing is based on the costs developed by [redacted]

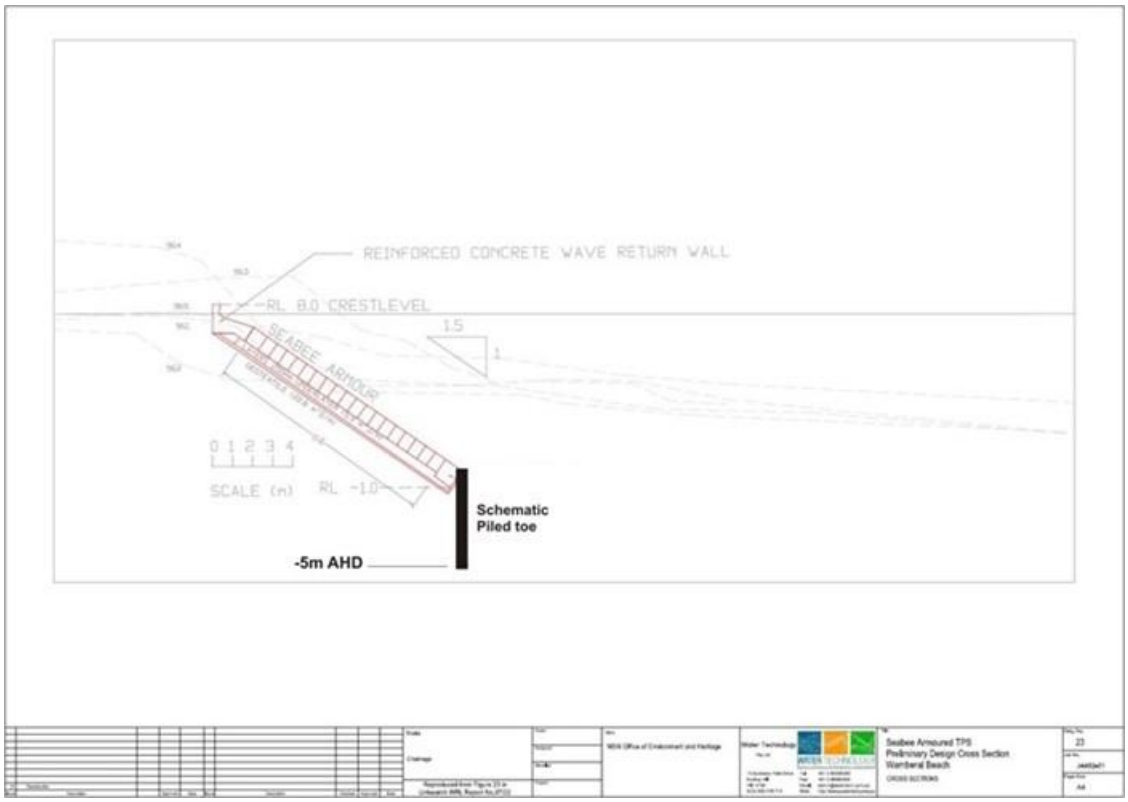
Option 4: Seabee Revetment

Figure 13 shows a modified (toe) Seabee seawall sketch based on Figure 23, WRL (1998).

Otherwise the Seabee seawall shows similar features as for a rubble mound wall:

- A summer scenario with present day sea level and much of the seawall buried under the upper beach and dune.
- The crest of the Seabee wall is set at about 6.75m AHD. A recurved concrete wall with its top at 8m AHD is cast onto the top of the Seabee wall to minimise wave overtopping.

Figure 13: Seabee Seawall - Generic 8m AHD Crest with piled toe



- A standard Seabee seawall slope form of one layer of 800mm high Seabee units underlain by 2 layers of 250mm rock with a geotextile membrane separating the rock from the underlying

trimmed sand slope. The geotextile prevents sand leaching out through the rock and Seabees to minimise overtopping.??

- The footprint (width) of this structure is 13 metres when it is fully exposed. When it is constructed, presumably not in winter because of potential limited access and wave inundation of works, only about 50% of this total width would be exposed. The balance would be buried using sand excavated for construction purposes.

The toe of the seawall is shown schematically as a contiguous piled wall from RL 0.0 AHD down to _5.0m AHD. This is a variation to the combined Seabee seawall – contiguous beam option shown in Figure 24 of WRL (1998). Here the focus is on providing a dissipative sloped wall down to the beach toe level, to minimise reflection and scouring by waves at the toe of the seawall. A steel sheet pile wall is another option. Two important aspects of the toe area: (1) that it should not fail because failure implies failure of the seawall above; and (2) sand cannot leach out from behind the wall if the toe is undermined. Therefore, a continuous wall is nominated rather than a toe beam supported by spaced piles. Since this is not an engineering design report we have opted to cost this arrangement by using appropriate pro-rata rates from the WRL (1998) rates for a combined Seabee – Contiguous piled wall.

The discussion in relation to sea level rise and the beach condition at the Seabee seawall is like that for a rubble mound wall, namely:

As sea level rises, combined with the natural recession of the shoreline, nominally 0.2m/year, Worley Parsons (2014), it is expected that the amount of the seawall exposed will increase as the beach width diminishes.

Like the Base Case, it is expected that by 2034 there will be a reduced dune/upper berm width and it may be expected that in many years, sand may be removed over winter exposing the top of the piled toe. Over summer it can be expected that sand would be restored to the beach to cover the toe of the seawall and still provide a reasonable beach area for enjoyment.

For the 2064 scenario, it can be expected that the toe of the Seabee seawall (piles) may be fully exposed most winters. It is also likely that a full beach recovery will not occur most years. That is, the available beach area will be negligible over winter, and may be limited over summer.

In the absence of beach nourishment, it is anticipated that wave run-up and overtopping may become unacceptable after 2064 and consideration will need to be made to raise the seawall crest if sea level rise is ongoing. This is likely to entail either re-configuring the recurved wall to a higher level or removing the recurved wall (which may have outlived its life anyway), raising the Seabee wall level and rebuilding the recurved wall.

Option 5: Seabee Revetment with Beach Nourishment

For the purposes of this analysis it is again assumed that beach nourishment will be delayed for several years which implies the full depth and height of the seawall, as per Figure 14, still needs to be allowed for and costed.

Under this option the purpose of the sand nourishment up to 2064 is to ensure adequate beach area for recreation, rather than providing protection to the properties and assets.

The sand nourishment approach adopted here is as per the AECOM Sydney beaches study, where 400,000 cubic metres is placed as soon as possible and top-up nourishments of 125,000 cubic metres

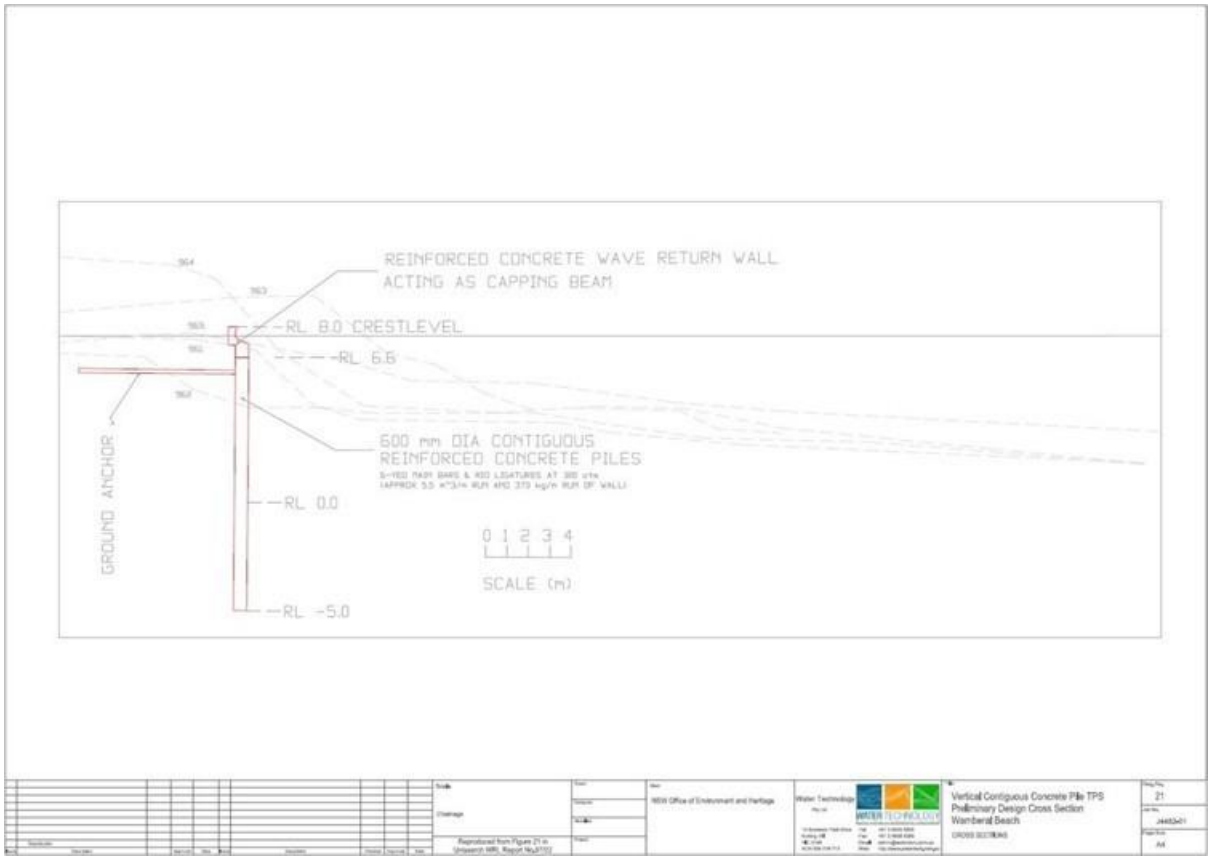
are applied every 10 years, on the basis that sea level rise is occurring at a rate of 100mm each 10-year period. However, the costing is based on the costs developed by [redacted].

Option 6: Contiguous Vertical Wall

Figure 14 is a reproduction of the Contiguous Piled seawall sketch (Figure 21, WRL, 1998). The wall is in effect side by side reinforced concrete piles that are anchored back into the dune. Features of this system, partly shown in the figure are:

- A summer scenario with present day sea level is shown and most of the seawall is covered by the upper beach and dune.
- The piling depth and ground anchoring is designed to allow for erosion at the toe of the wall down to -1m AHD.
- There is effectively no footprint on the beach implying that approximately an extra 15 metres width of dune and beach remains seaward of the wall.
- The seawall is constructed by building up the dune area where the wall is constructed with compacted sand and then drilling through the sand to create the concrete reinforced piles. Some excavation is also required behind the piles to install the anchors.
- A recurved wave wall is installed on top of the piling to limit wave overtopping.

Figure 14: Contiguous Piled Seawall - Generic 8m AHD Crest



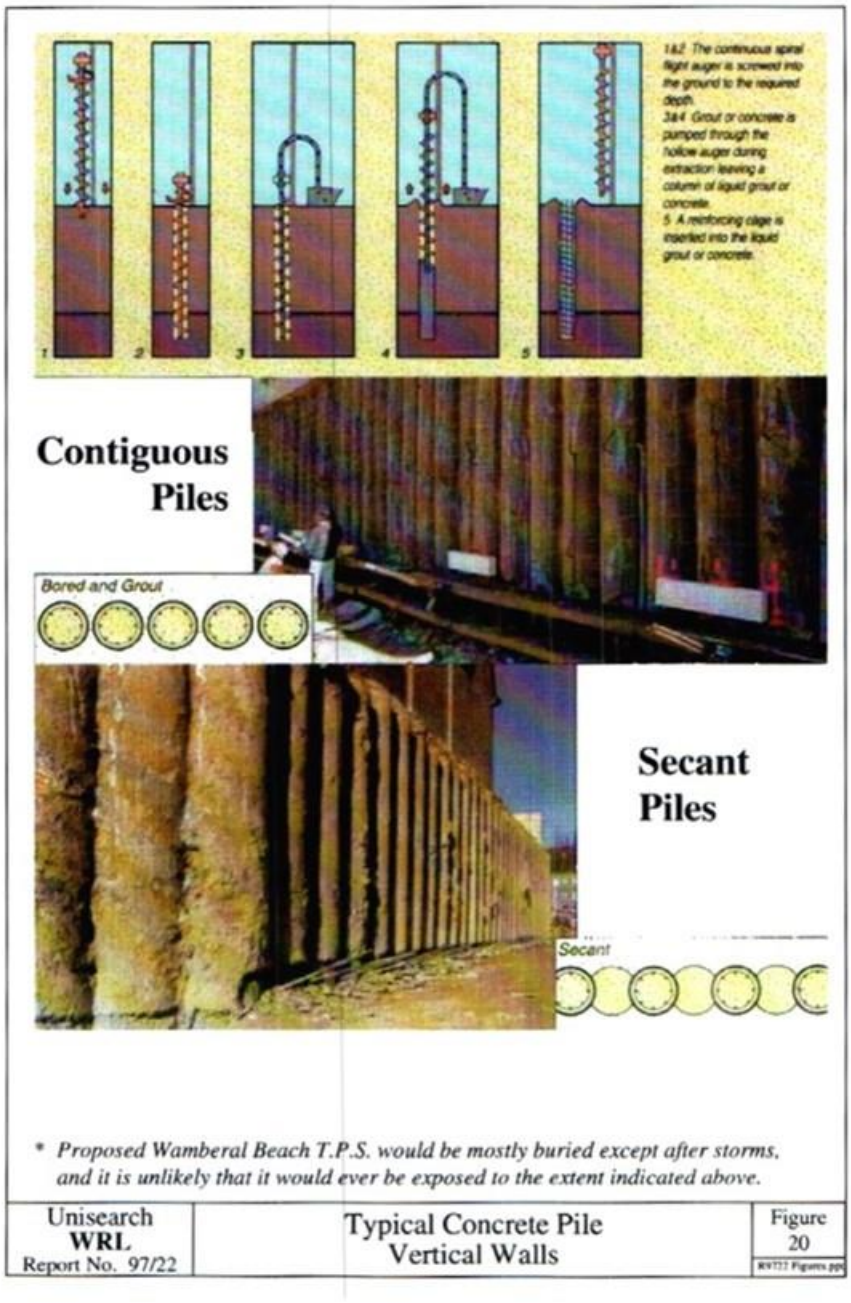
Negative features of this seawall system compared to sloped dissipative structures are:

- When the beach is eroded, the wall is visually high and unattractive (from WRL (1998)).
- Access to the beach requires sets of steps from the top of the wall down to a beach level. Ideally they would extend down to the lowest likely beach level and founded on piles. They would be considerably more expensive and are likely to require more maintenance than steps formed into a Seabee or rubble mound wall.
- A vertical wall will tend to result in a greater amount of wave topping than a sloped dissipative wall. It is noted in the WRL (1998) work that the crest level of the contiguous wall is set at the same level as for sloped walls. However, the extent of wave overtopping can be expected to be significantly higher. This is because when the wave hits a vertical wall it tends to send a jet of water up in the air. During the peak of the storm it is likely there will be strong onshore winds that can then push this jet onshore, even with the included recurved wall.

Option 7: Contiguous Vertical Wall with Beach Nourishment

For the purposes of this analysis it is again assumed that beach nourishment will be delayed for several years which implies the full depth and height of the seawall, as per Figure 15, still needs to be allowed for and costed.

Figure 15: Contiguous Piled Seawall – image from WRL (1998)



Under this option the purpose of the sand nourishment up to 2064 relates to ensuring an adequate beach for recreation and related uses rather than providing protection to the properties and assets.

The sand nourishment approach used here is as per the AECOM Sydney beaches study, where 400,000 cubic metres is placed as soon as possible and top up nourishments of 125,000 cubic metres are applied every 10 years on the basis that sea level rise is occurring at a rate of 100mm each 10 year. However, the costing is based on the costs developed by [redacted].

Wamberal Beach Terminal Protection and Sand Nourishment – Investigation and Concept Design: Phase 1

CONSULTATION REPORT

March 2021

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Executive Summary

Wamberal Beach between Terrigal and Wamberal Lagoon is a developed open coastal beach that has been subject to natural coastal erosion for many years. Wamberal is the highest risk beach on the Central Coast, and one of the highest risk coastal locations in NSW.

Council has been progressing its approach to coastal management through the preparation and implementation of the Gosford Beaches Coastal Zone Management Plan (CZMP). Council initiated a Wamberal coastal engineering study to progress with seawall investigations, as per several CZMP actions.

In July 2020, a major storm impacted the beach resulting in the undermining of beachfront properties, damage to public spaces and facilities, and loss of land. Many residents had to be evacuated. This initiated a major emergency response including extensive remedial works to stabilise the toe of the escarpment. The emergency situation generated significant local, state and national - worldwide media coverage.

In response to this emergency, the NSW Government has established the Wamberal Seawall Advisory Taskforce to provide advice and support to Council regarding a long-term solution to coastal erosion at Wamberal Beach. The Taskforce includes representatives from the NSW Government, Dept. Planning, Industry & Environment and Council.

Between 9 November and 7 December 2020, Council commenced its phase one community consultation for the Wamberal Beach Terminal Protection Structure and Sand Nourishment – investigation and concept design which involved:

- a comprehensive information package being displayed on yourvoiceourcoast.com
- an online *Wamberal Beach values and uses survey*
- an online tool for the community to *submit a question*
- 4 drop-in information sessions (both face to face and virtual opportunities were available)

Community participation included:

- **514** stakeholders completed the online survey with a total of **435** separate comments.
- **829** people viewed the information presented ahead of the online survey
- Over **100** community members attended drop-in information sessions both in person and virtually.
- **15** people submitted **29** questions via the online *submit a question* tool.

Results of the survey:

- **83.5%** of respondents said Wamberal Beach is **very important** to them

- **82.9%** of respondents said that Wamberal Beach is their **most visited beach** and **90.9%** said that they encourage friends/family from **outside of the area to visit Wamberal Beach**
- **50.6%** of participants visit the section of Wamberal Beach that is a sandy coastline backed by beachside houses most
- **63%** of participants said that their general experience at Wamberal Beach before the July-August erosion emergency was very good vs **5.5%** stating their experience has been very good after the July-August erosion emergency
- Scenic view / natural outlook **69.3%**, cleanliness of beach sand **80%** and cleanliness of ocean **84.8%** are very important in participants decision to use Wamberal-Terrigal Beach
- When considering long term solutions to erosion at Wamberal Beach participants indicated that maintaining the functional uses of the beach such as swimming, surfing, recreation on sand (**81.8%**), maintaining a sandy beach (**80.9%**) and Protecting the natural processes of the beach (**79%**) were very important
- **53.2%** of survey participants live in Wamberal

The key themes that were raised in survey comments covered:

- Potential loss of beach
- Management options for retreat
- Liability concerns (who pays? what is fair? who is responsible?)
- Environmental concerns and sea level rise

These comments have been grouped into themes and responses are provided to the key issues raised in this report.

Due to the large volume and variety of content contained within the submissions, not every comment was able to be included and responded to in this report however they will all be considered in the next steps for this project and the options being considered.

The key points discussed at the drop-in information sessions covered:

- The beach
    - Perceived impacts: beach (loss of sand), access/usability, surf amenity and visual amenity
- The lagoons
    - End effect concerns: ecological health, dunes, flooding and heritage
- Engagement
    - Concern: perceived lack of engagement in CZMP and current study
- The plan
    - CZMP process and status, Marsden Jacobs study
    - Perception that retreat is the only option, suggestions to build a reef (protection and surf) and encouragement for the construction of a seawall
- Seawall and Sand Nourishment

    - Some for/against/undecided
    - Nourishment sources and sustainability
- Financial matters
    - Who pays? How much?
    - Maintenance (seawall and sand nourishment)
    - Liability
    - Loss of property values

It's important to note that while we do our best to develop projects to meet the needs and requests of the community and stakeholders, technical constraints, costs, and the overarching project objectives must also be considered to deliver a project that is safe, functional and best balances the competing needs of all those affected including the environment.

Next steps

Comments received during the community consultation process for Phase One of the Wamberal Beach Terminal Protection and Sand Nourishment – investigation and concept design will be used to guide and inform the concept options recommended to proceed to the Phase Two consultation which will involve workshopping concept options with both directly impacted residents and the broader Central Coast Community.

The community will be kept up to date as the project progresses.

Contents

Introduction

Wamberal Beach Terminal Protection and Sand Nourishment – Investigation and Concept Design: Phase One consultation

Wamberal Beach (Terrigal Lagoon to Wamberal Lagoon) is a developed open coastal beach that has been subject to natural coastal erosion for many years. East Coast Low storms (1974, 1997, 2007, 2016 and 2020) have caused extensive erosion to the beach and dune, as well as damage to structures in this location. Wamberal is the highest risk beach on the Central Coast, and one of the highest risk coastal locations in NSW.

Council has been progressing its approach to coastal management through the preparation and implementation of the Gosford Beaches Coastal Zone Management Plan (CZMP).

Council initiated a Wamberal coastal engineering study to progress with seawall investigations, as per several CZMP actions. Council had also established a Wamberal Beach Working Group with residents and stakeholders.

In July 2020, a major storm impacted the beach resulting in the undermining of beachfront properties, damage to public spaces and facilities, and loss of land. Many residents had to be evacuated. This initiated a major emergency response including extensive remedial works to stabilise the toe of the escarpment. The emergency situation generated significant local, state and national - worldwide media coverage.

In response to this emergency, the NSW Government has established the Wamberal Seawall Advisory Taskforce to provide advice and support to Council regarding a long-term solution to coastal erosion at Wamberal Beach. The Taskforce includes representatives from the NSW Government, Dept. Planning, Industry & Environment and Council.

In consideration of the broader community interest in a seawall on Wamberal Beach, Council have developed a multi phased approach to engaging with the community, phase one consultation is the subject of this consultation report.

Between 9 November and 7 December 2020 Central Coast Council began the first phase of community engagement for the Wamberal Beach Terminal Protection and Sand Nourishment Investigation and Concept Design project. Key community touchpoints in the first phase of engagement included:

- A dedicated project webpage
- Wamberal StoryBoard and community survey
- Community drop-in information sessions

Through these engagement activities, the community were provided with information regarding the complex and longstanding erosion issue at Wamberal Beach and invited to complete a values and uses survey for Wamberal Beach. The questions asked were designed to assist Council to understand what the community love about Wamberal and Terrigal beach, how they use the coastal environment and the broader sentiment toward a long-term solution to the erosion issues. This information will be used to guide the concept designs and future steps for the project. Drop-in information sessions provided an opportunity for the community to speak with Council project staff, coastal engineering consultants and representatives from the NSW Government Advisory Taskforce about the project.

Consultation Approach

Objectives of consultation

The purpose of the phase one consultation for the Wamberal Beach Terminal Protection and Sand Nourishment Investigation and Concept Design project was to:

- Inform the community of the status of a permanent solution for Wamberal Beach and the Manly Hydraulics Laboratory investigation and concept design project.
- Encourage the community and stakeholders to complete the values and uses survey to understand what the community love about Wamberal and Terrigal Beach, how they use the areas and broader sentiment toward a long-term solution to the erosion issue.
- Provide the community an opportunity to speak directly with project staff and Coastal Management subject matter experts.
- Hear from stakeholders and the community to identify issues
- Report back to the community on the outcomes of community consultation and the next steps.

Our engagement framework

Consultation has been designed in accordance with Central Coast Council's Engagement Framework. This framework is available to view at https://cdn.centralcoast.nsw.gov.au/sites/default/files/documents/policies-register/community-engagement/engagement-framework/engagementframework.pdf.

How we consulted

We carried out extensive promotion of the consultation period to ensure the community and affected stakeholders were aware of the opportunity to get involved and given enough notice to provide feedback.

Media release	• Issued on Wednesday 11 November 2020 A copy of the media release can be found in Appendix A
Drop-in Information sessions (face to face)	Drop-in information sessions were held on: • Wednesday 25 November 9am to 4pm hosted at the Erina Centre (Attended by 28 people) • Thursday 26 November 9am to 4pm hosted at Wamberal Beach Surf Life Saving Club (Attended by 66 people)

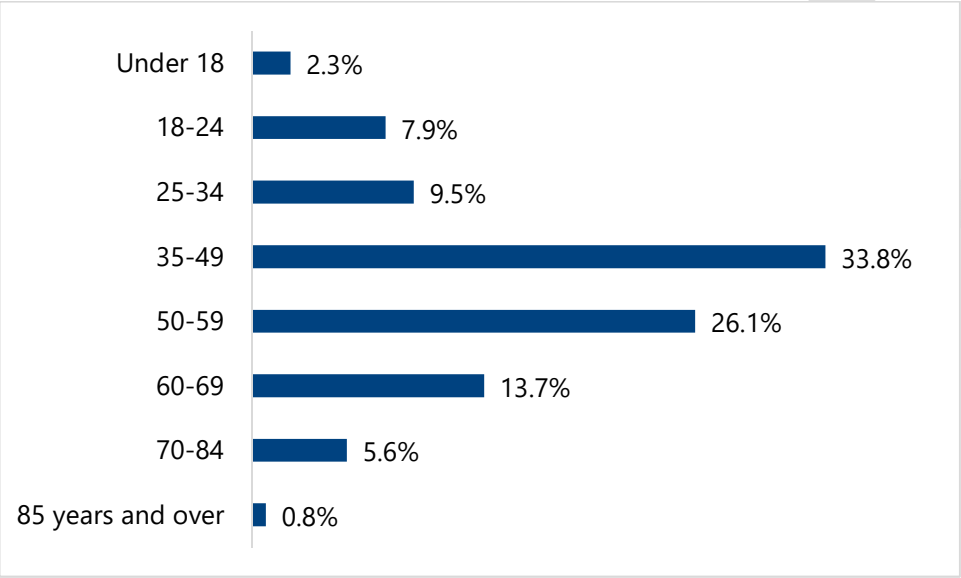
Drop-in information sessions (virtual)	Drop-in information sessions were held on: • Tuesday 1 December from 2.30pm to 6pm (Attended by 5 people) • Thursday 3 December from 12pm to 3pm (Attended by 2 people)
Your Voice – Our Coast website	• Project page launched on 9 November 2020 under *Wamberal Beach Terminal Protection and Sand Nourishment - Investigation and Concept Design* • https://www.yourvoiceourcoast.com/wamberalerosion 1,844 visits during consultation period
Social media	• Facebook posts on 11 November, 13 November and 28 November 2020 Total reach of 17,568 • Twitter tweets on 11 November, 13 November, 24 November and 28 November 2020 • Instagram post on 13 November 2020 • LinkedIn post on 13 November 2020 Copies of the posts can be found in Appendix B

What we heard

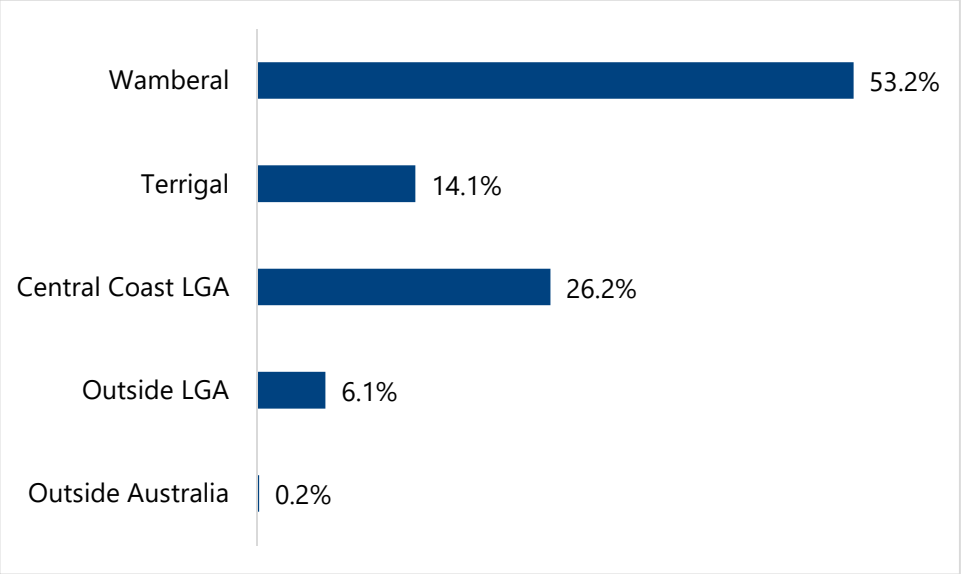
514 surveys were completed during this time. These were provided as online surveys through yourvoiceourcoast.com and hand written survey forms provided at information sessions.

Who we heard from

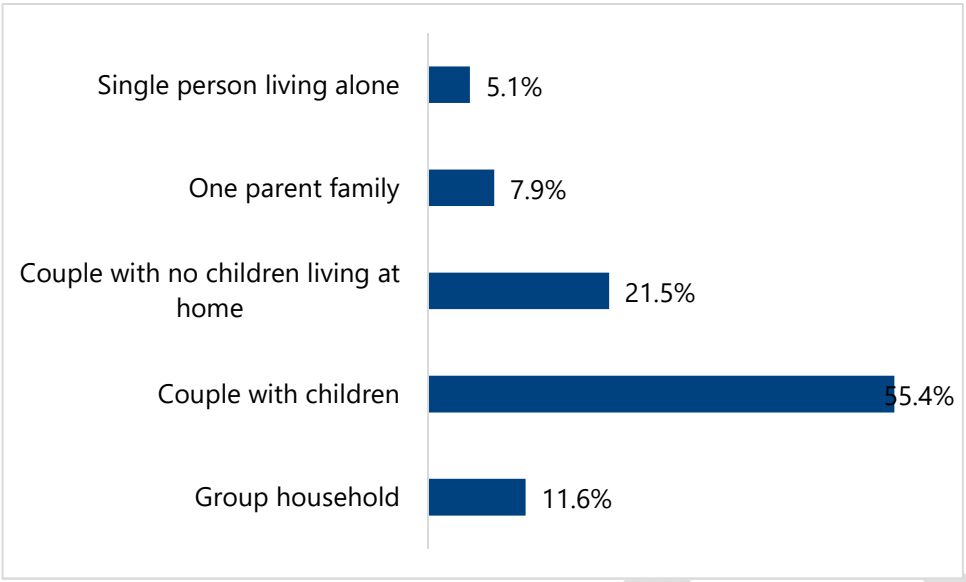
Age of respondents:



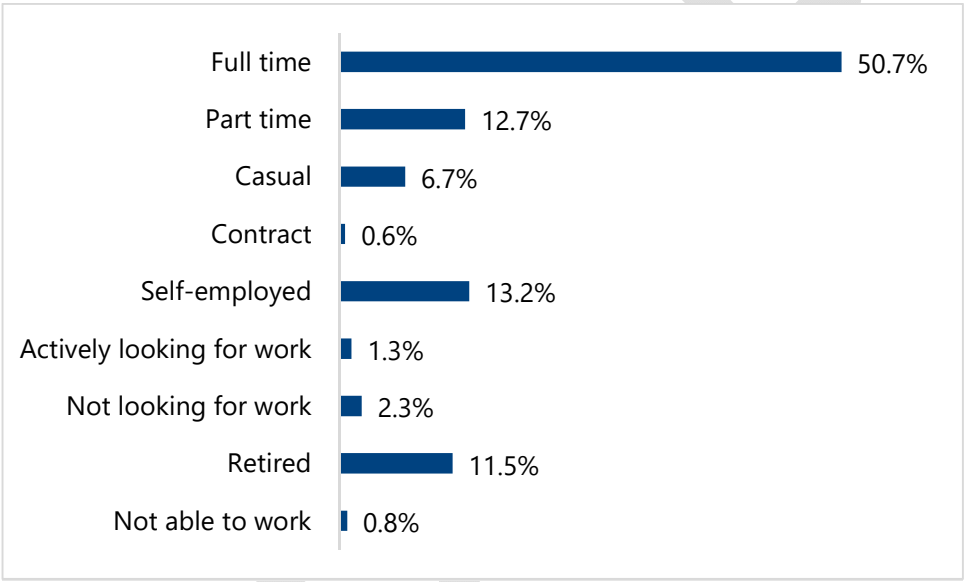
Suburb (suburb has been rolled into categories):



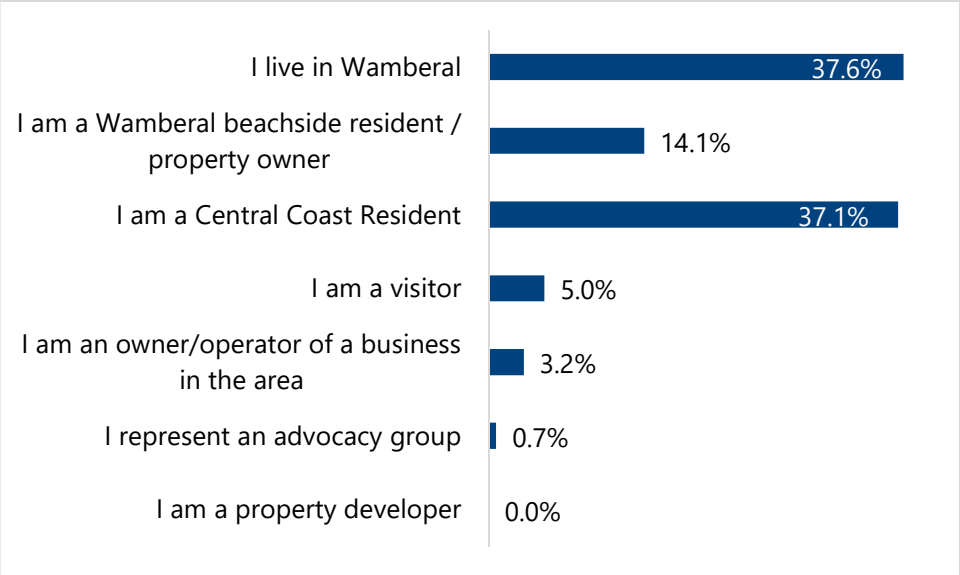
Family type:



Employment type:

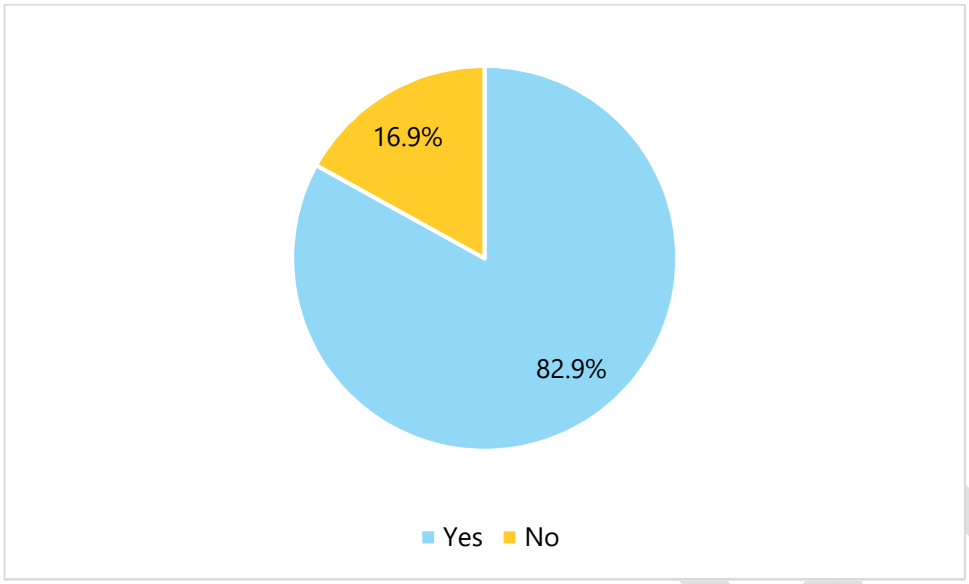


Interest in Wamberal Beach (multiple options could be selected):

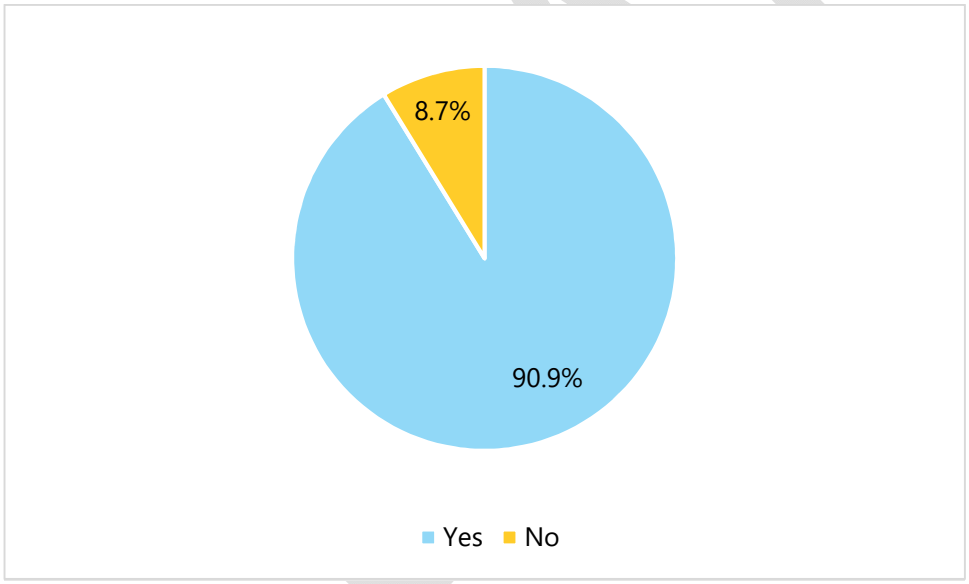


Wamberal Beach survey results for *uses*

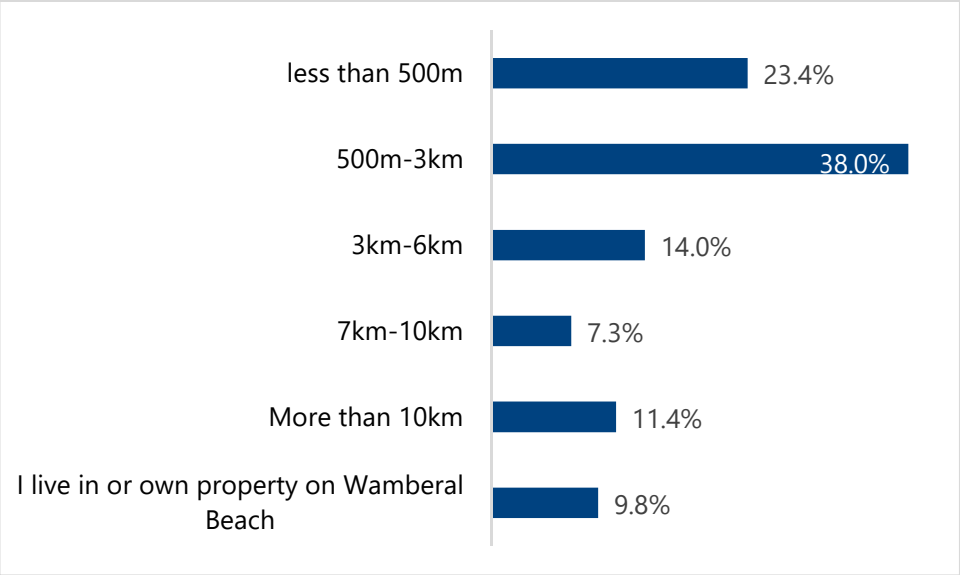
Is Wamberal Beach your most visited beach:



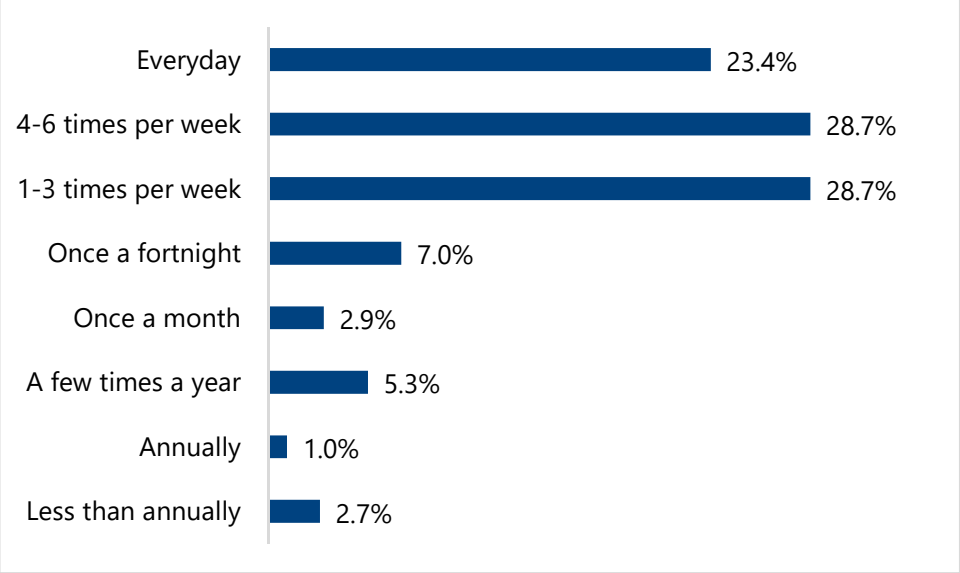
Do you encourage friends/family from outside the area to visit Wamberal Beach:



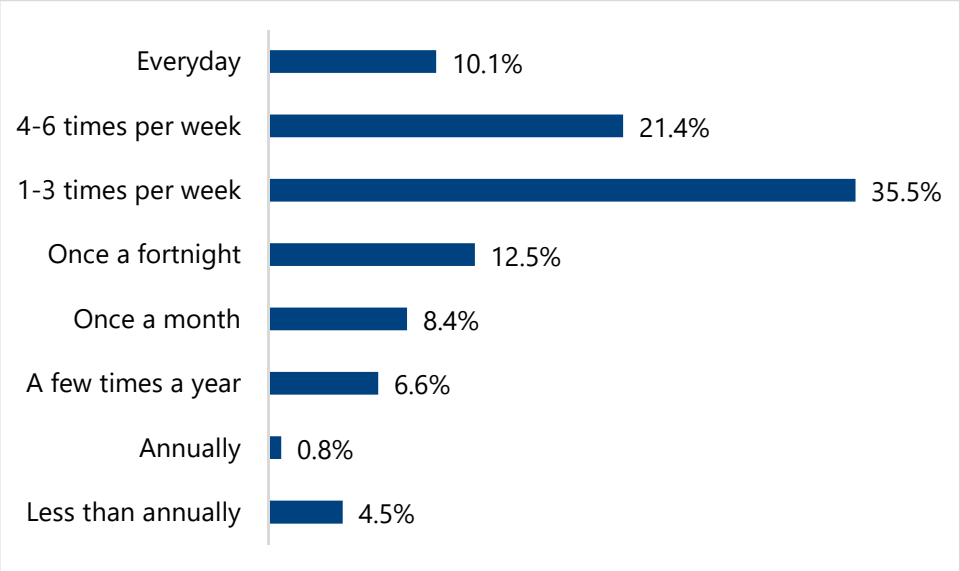
How far from Wamberal Beach do you live:



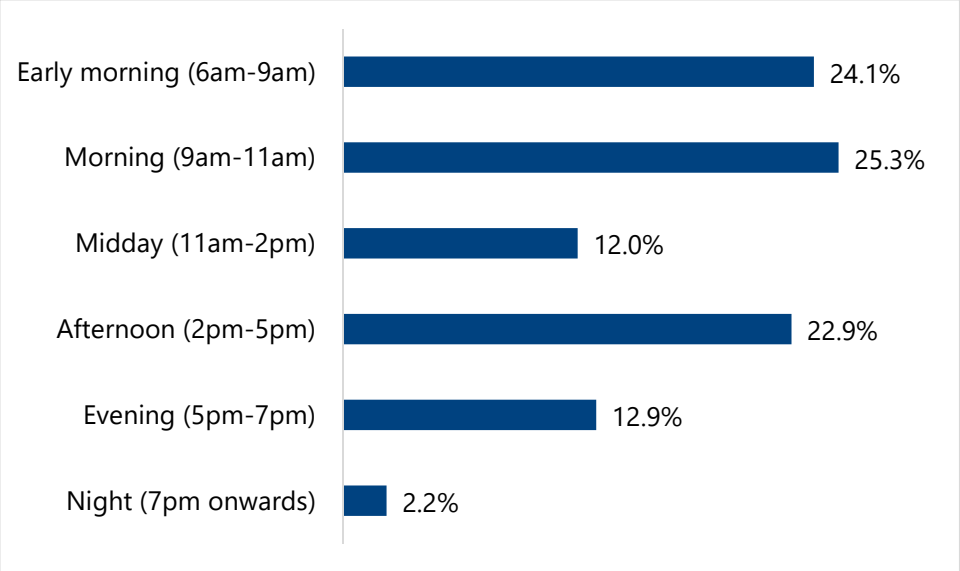
How many times do you visit Wamberal Beach in Summer:



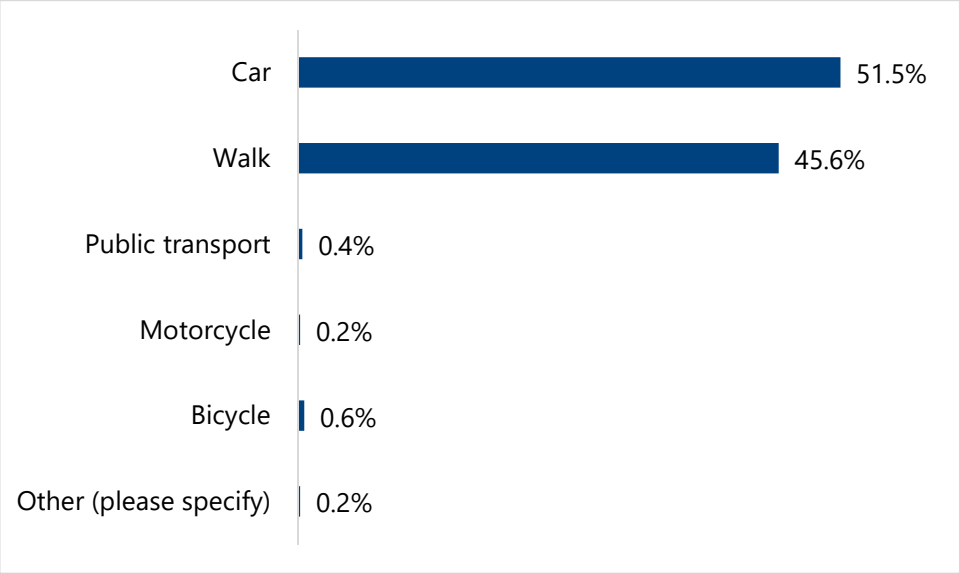
How many times do you visit Wamberal Beach in Winter:



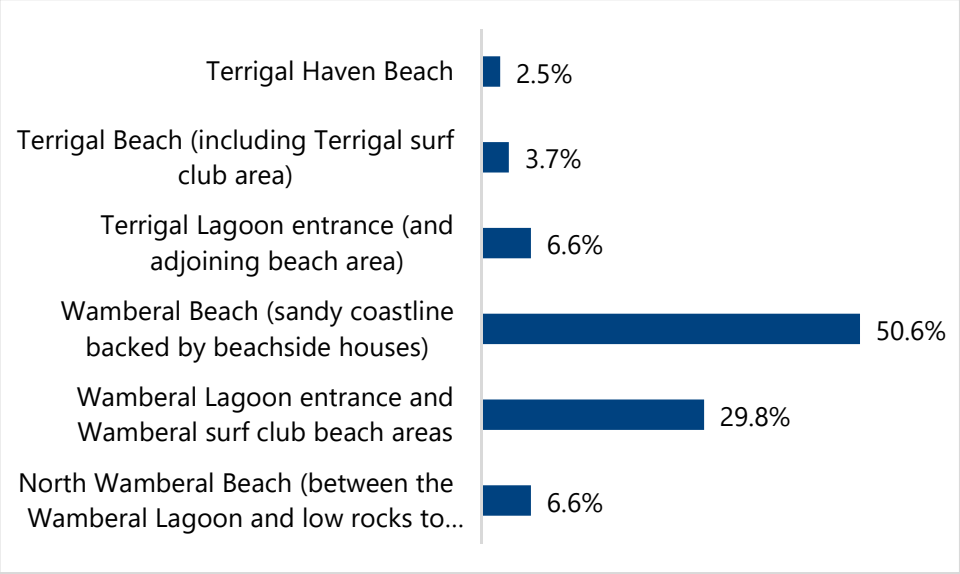
What time of day do you mostly visit Wamberal Beach:



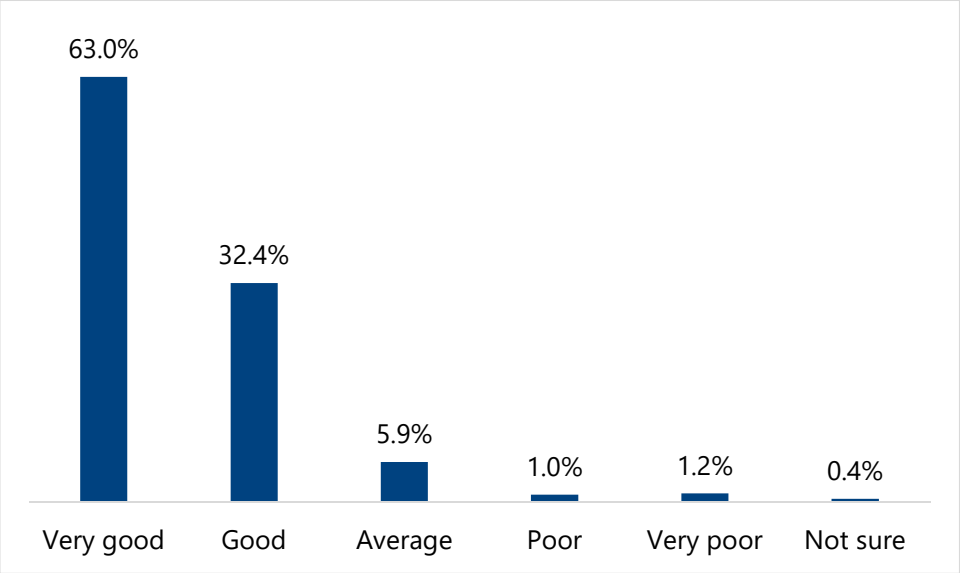
How did you get to Wamberal Beach the last time you visited:



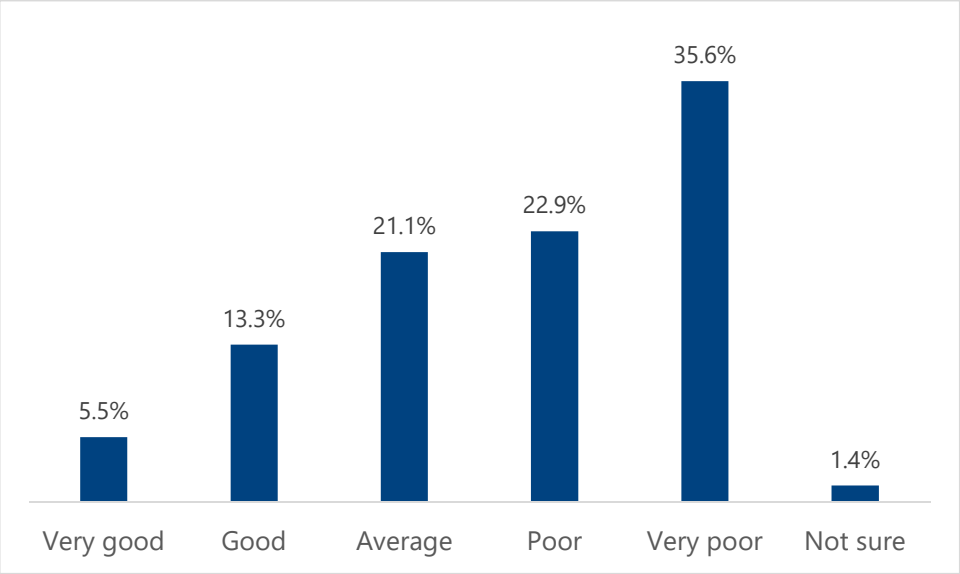
The Wamberal-Terrigal Beach embayment is a long sandy coastline. Which area do you visit most:



What has been your general experience when visiting Wamberal-Terrigal Beach **before** the July-August 2020 erosion event?

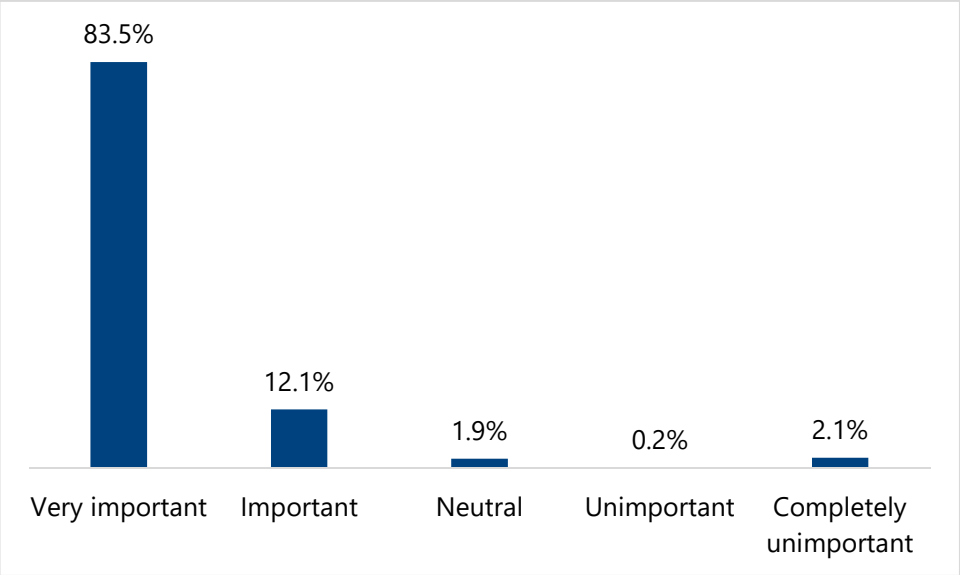


What has been your general experience when visiting Wamberal-Terrigal Beach, **during and/or immediately after** the July-August 2020 erosion event?

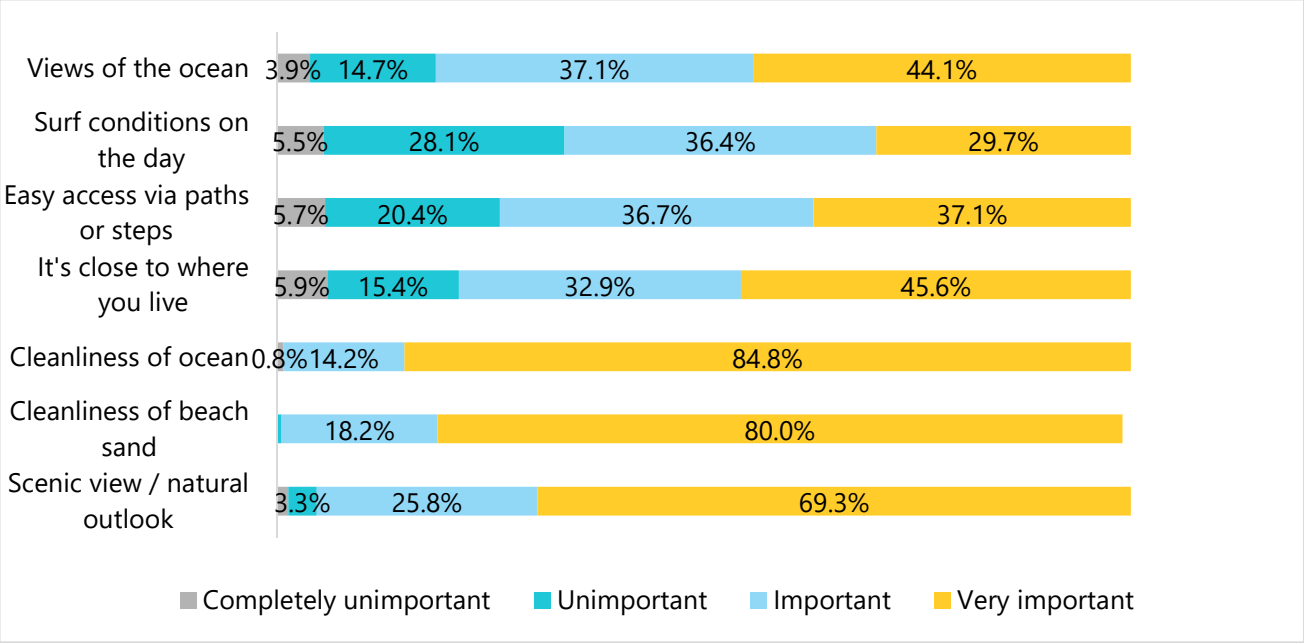


Wamberal Beach survey results for *values*

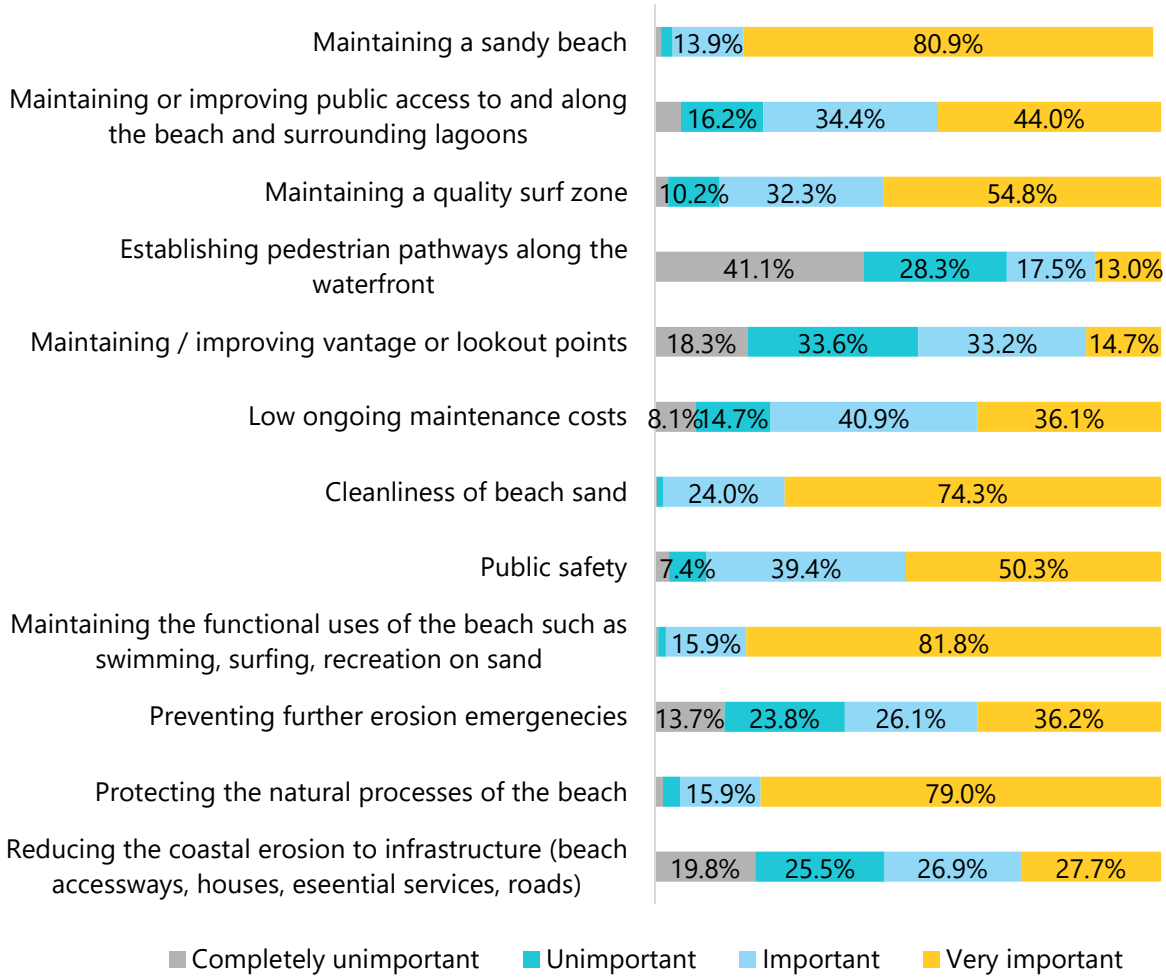
How important is Wamberal Beach to you:



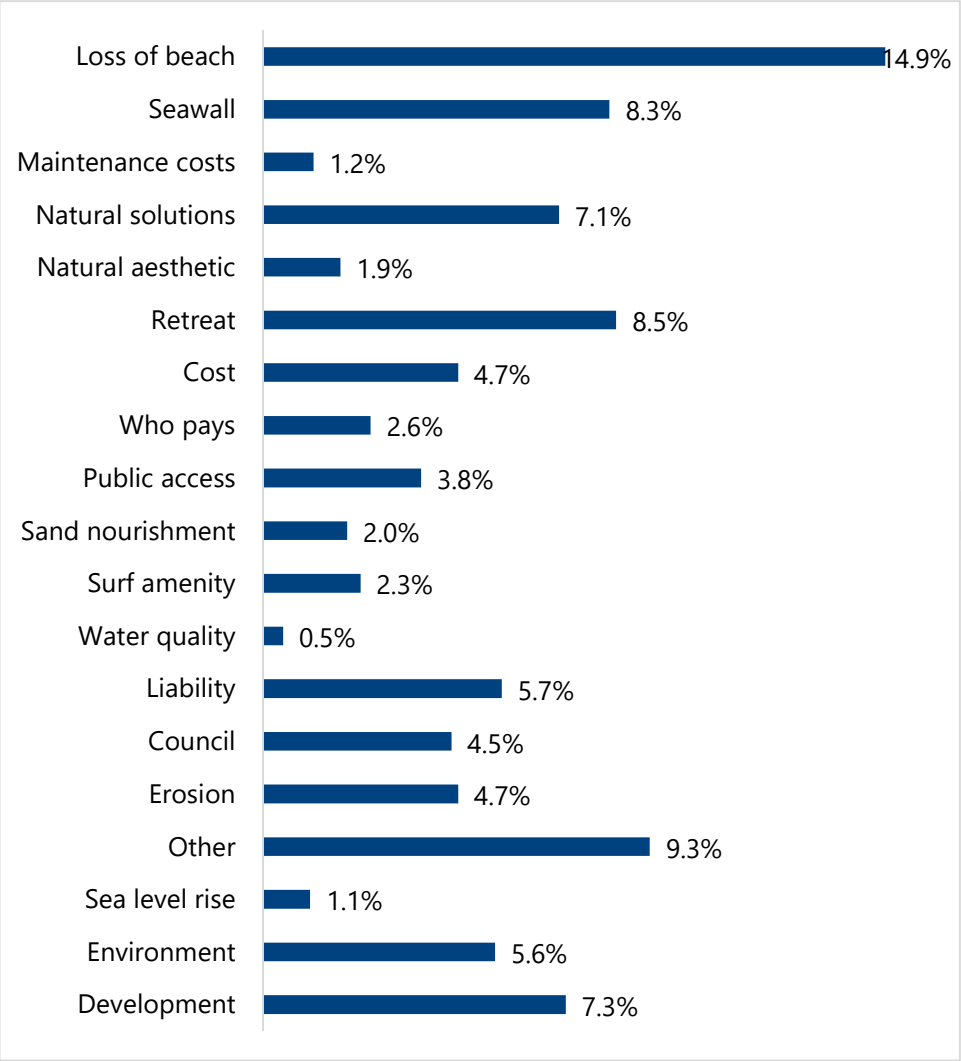
How important are each of the following in your decision to use Wamberal-Terrigal Beach:



How important are the following when considering any long-term solutions to erosion at Wamberal Beach:



From the **514** online submissions, a total of **435** separate comments were made. These comments have been grouped into themes and responses have been provided to key issues raised during the phase one community consultation process this report.



It's important to note that while we do our best to develop projects to meet the needs and requests of the community and stakeholders, technical constraints, costs, and the overarching project objectives must also be considered to deliver a project that is safe, functional and best balances the competing needs of all those affected including the environment.

Issue Category	Key issues raised	Response
Loss of beach	• Concerns that if a seawall is constructed the sandy beach will be lost.	• While seawalls are a form of structural defense to control shoreline erosion, they have also been known to exacerbate the problem by causing either active or passive erosion of the beach. Poorly designed structures positioned within the active beach profile are a major cause of this occurrence. Correctly designed structures that incorporate local shoreline and wave data (such as LIDAR), evaluate seawall location, alignment and geological footprint and position the seawall as far landward from the active beach profile are seen to have fewer interactions with waves, reducing the likelihood of beach erosion. Applying sand nourishment to the works program to replenish the beach and improve beach amenity reduces interaction of waves with the potential seawall, by moving the natural beach profile towards the ocean and burying the structure. The coastal engineering study currently underway is looking at behavior at Wamberal Beach and assessing coastal and environmental impacts from various seawall designs, including the impact on public access and beach amenity both now and into the future. Climate change impacts are also being considered.
Seawall	• Concerns that a seawall will cause further erosion issues. • Concerns that there will be erosion issues at the lagoon	• Seawalls can alter hydrodynamic conditions through interaction with waves. These interactions can influence beach sediment transport that leads to changes in morphology. A correctly positioned seawall (i.e. one that is positioned landward of the tidal zone) will generally only interact with waves during big storm events, limiting erosion potential. Positioning and alignment are being thoroughly considered in the MHL study and includes the use of wave monitoring data at Wamberal Beach. • Beach response is generally divided into two categories being frontal effects and end effects. Frontal effects are being assessed for each of the proposed seawall options. Wave diffraction at the end effects

Issue Category	Key issues raised	Response
	entrances causing flooding to homes surrounding the lagoon. Support for a *lagoon to lagoon* solution to enable fresh water circulating the lagoons.	is being generally considered as part of the MHL study. Where the project moves from the concept design to a detailed design phase (i.e. pursuing a specific seawall option), a detailed review of the terminal end effects (including beach modelling) will occur at this stage. This would also be examined as part of an Environmental Impact Assessment (EIA).
	• Concerns around issues arising for the construction of a seawall (Stockton Beach and Terrigal Beach used as a common examples).	• Every coastal system is unique and characterized by a range of influences such as: the rate of erosion, wave energy, tides, weather patterns, exposure to the ocean, net sediment transport and anthropogenic (human) influences. As a result, beaches are dynamic and constantly changing. Change can also be observed throughout the seasons where beaches tend to be wider and have a gentle slope in the summer and become narrower and steeper in the winter.
	• Concerns around the impacts of a seawall on wave energy and associated impacts.	• While it is easy to compare coastal environments (even at a local level), the reality is each beach is influenced by its own set of driving factors. For example, Stockton Beach has an erosion rate of 1-2 meters/per year. In comparison Wamberal Beach recedes at a rate of 20 cm/per year. Stockton Beach also has strong anthropogenic influences being the shipping port. Here sand is transferred from the beach and infills the shipping channel which allows ships to enter the port. Terrigal Beach differs from Wamberal Beach as it is mostly comprised of a rocky headland. Whereas Wamberal is fully exposed to the ocean and comprised of unconsolidated sediments (mostly sand).
	• Concerns that a seawall will impact the tourism opportunities for Wamberal Beach.	• Currently there is a multitude of ad hock coastal protection structures (placed both illegally and legally) which spans from lagoon to lagoon. This consists of concrete, rock, septic filled tanks and bricks which is both unsightly and hazardous. The addition of a seawall would provide an opportunity to remove these

Issue Category	Key issues raised	Response
	Support for the cleaning of asbestos and other debris currently located on the beach.	structures, install an appropriate engineered structure designed to protect against coastal erosion while enhancing amenity. Furthermore, a promenade style structure is one recommendation proposed in the MHL study which aims to enhance tourism and inclusivity, allowing beach goers to walk/ride along the top of the structure.
	• Concerns around the longevity of a seawall. • Support for a long term protection structure at Wamberal Beach. Concerns that a seawall will only protect private residence and will not offer community benefit.	• Generally, seawall designs are engineered to withstand a 50-year life span which takes into account sea level rise projections. MHL's proposed designs will incorporate future modifications to prolong the life of the structure after the 50year period. • A Cost Benefit Analysis (CBA) and Distributional Analysis (DA) is being undertaken by expert economists; Balmoral Group as part of the MHL study. The CBA & DA will inform the assessment of different management options and guide the development of possible funding models by articulating how costs and benefits are distributed. It aims to identify who will benefit most from the seawall. Benefits for the wider community could include: o Opportunity to remove unsightly ad hock structures making it safer for beach goers o Remove/contain contamination present in the dune system o Install an appropriate engineered design that protects against coastal erosion, minimising risk to public infrastructure (roads, water and sewer, NBN, electricity) o Improve beach access points o Reduce the need for expensive emergency protection works that are not designed to withstand major storm events. Noting the last emergency works (2020) cost $2.1M

Issue Category	Key issues raised	Response
		○ If a promenade is adopted; enhance tourism and provide inclusive access to all residents
Maintenance costs	• Concerns around the cost to maintain a terminal protection structure. • Concerns around the cost to maintain sand nourishment.	• Maintenance costs will be dependent on design type. For example, a rock revetment may incur higher maintenance costs due to being semi ridged and comprising a larger footprint that's exposed to the sea. Contrary to this, a vertical seawall design would likely have less ongoing maintenance costs due to being a rigid design with a smaller footprint; having less interactions with the sea. Where a preferred seawall is adopted, these costs will be identified during a detailed design phase. Ongoing maintenance costs will be included in the proposed funding model (i.e. who pays). • Sand nourishment is being investigated as part of the MHL study. This includes available sources, viability, nourishment intervals, method of delivery (vehicle/dredging/offshore deposit) and associated costs. Ongoing sand nourishment costs will be included in the proposed funding model (i.e. who pays)
Natural solutions	• Concern that man-made solutions will have a detrimental effect to Wamberal Beach.	• A terminal protection structure (seawall) and sand nourishment have been recommended in various coastal management plans as a preferred erosion strategy at Wamberal Beach for several decades. Recommendations were included in the following: – Coastal Processes Study (PWD, 1994) – Coastline Management Plan (WBM, 1995) – In the late 1990's a range of coastal protection options were proposed by WRL (1998) for Council. A 'Seabee' seawall, spanning lagoon to lagoon, was designed and modelled in detail. – An Environmental Impact Statement (EIS) for the coastal protection solution was finalised in 2003 by MHL, which found that a seawall with periodic small-scale sand nourishment was acceptable. – Coastal Hazard Definition Study (CHDS, 2015), a Coastal Zone Management Study (CZMS, 2017) and the preparation of a Coastal Zone Management Plan (CZMP, 2017). The Gosford

Issue Category	Key issues raised	Response
		Beaches CZMP outlines actions to address the erosion risks at Wamberal Beach. Sand nourishment and a terminal protection structure (seawall) was again determined to be the best solution to the long standing issue
	• Encouragement to allow the beach to manage itself naturally.	• Currently ad-hock protection structures exist from lagoon to lagoon forming an unofficial seawall at Wamberal Beach. Continuing to be reactive in response to coastal emergencies will see continued materials being added and contamination making its way onto the beach. The dune system is highly disturbed, comprising of coastal development. This makes it difficult to allow the beach to manage itself naturally and return to a natural state.
Natural aesthetic	• Suggestions to keep any solution as natural looking as possible Suggestions to keep as much of the natural environment as possible.	• The MHL study is investigating five different seawall designs, with differing footprint size, construction materials and sand nourishment requirements. Natural materials such as sandstone and basalt have been identified for revetment style structures. For vertical concrete options, these can be buried minimising the visual impact of the structure. Periodic sand nourishment will aim to enhance amenity and compliment the design. The community will be provided an opportunity to have their say on the designs proposed during the next phase of consultation.
Retreat	• Suggestions for Council to purchase properties for the purpose of planned retreat.	• Council has no planned retreat policy nor is there a legal mechanism to force people out of their homes and reclaim their land. The resolution of Council is to proceed with the MHL coastal engineering and economics assessment, consistent with the Gosford Beaches Coastal Zone Management Plan: – 38/19 - That Council request the Chief Executive Officer to commence the Wamberal Terminal Protection and Sand Nourishment preliminary investigations and concept design. – Council is looking into the costs of potential erosion solutions and potential funding models.

Issue Category	Key issues raised	Response
	• Suggestions for the State or Federal Governments to purchase the properties for the purpose of planned retreat. • Suggestions to plan for the gradual retreating of properties along Wamberal Beach (priority matrix with most at risk retreated first).	– Any long-term solution must be technically feasible, legally permissible, environmentally and socially acceptable and financially viable. • The coastal engineering and economics assessment currently underway will update the Wamberal Beach cost benefit assessment (CBA) completed by Marsden Jacobs for the State Government in 2017. This earlier study assessed the economic merits of the generic coastal management scenarios for Wamberal Beach. Unlike the MHL assessment, detailed costings were not available for the preliminary CBA completed in 2017, as the options considered in that study were not progressed to a fully developed concept design stage. • Gradual buy back of properties is an expensive option that Council simply can not afford.
Cost	• Concerns about the cost of a permanent solution (seawall). • Concerns about the ongoing cost of maintaining the beach. • Concerns about the cost of sand nourishment	• A Cost Benefit Analysis (CBA) and Distributional Analysis (DA) is being undertaken by expert economists; Balmoral Group as part of the MHL study. The CBA & DA will inform the assessment of different management options and guide the development of possible funding models by articulating how costs and benefits are distributed. It aims to identify who will benefit most from the seawall. • Council is awaiting the findings in the current MHL engineering and economics study before making any decisions regarding the funding or delivery of a seawall and sand nourishment at Wamberal Beach. • The cost of sand nourishment is currently being assessed in the MHL study. A variety of viable sources are being determined including material dredged as part of Council operations. The costs will be presented in the Stage 4 report and provided for public consultation.

Issue Category	Key issues raised	Response
	• Concerns about the repetitive cost when the structure reaches the end of its life. • Concerns about the cost of retreat	• MHL are proposing an adaptable design to extend the life of the structure past the 50year life expectancy. Note many seawalls continue to be effective long after this period. There will undoubtedly be repetitive future costs however, these can be compared to the current costs of reactive emergency works which are temporary and vastly more expensive. • Gradual buy back of properties is an expensive option that Council simply can not afford.
Who pays	• Concerns over who pays for the construction of a seawall. Suggestion that the cost of a permanent solution should not be paid for by Council. Suggestion that directly impacted residents should pay for the entire permanent solution. Concerns that the broader community will be contributing (via rates) to the construction of a seawall that has vested interests.	• A Cost Benefit Analysis (CBA) and Distributional Analysis (DA) is being undertaken by expert economists; Balmoral Group as part of the MHL study. The CBA & DA will inform the assessment of different management options and guide the development of possible funding models by articulating how costs and benefits are distributed. It aims to identify who will benefit most from the seawall. In a similar example to Wamberal, the CBA for the Collaroy-Narrabeen Beach seawall identified private residents as the main beneficiary resulting in an 80:10:10 funding model developed. Here, residents paid 80% of the total costs with council and state government both contributing 10%. Council is awaiting the findings in the current MHL engineering and economics study before making any decisions regarding the funding or delivery of a seawall and sand nourishment at Wamberal Beach.
Public access	• Concerns that public access to Wamberal Beach will be impacted.	• The coastal engineering study currently underway is looking at behavior at Wamberal Beach and assessing coastal and environmental impacts from various sea wall designs, including the impact on public access and beach amenity both now and into the future. Climate change impacts are also being considered.

Issue Category	Key issues raised	Response
	• Suggestions to ensure that public access to Wamberal Beach is improved. • Concerns that Wamberal Beach will be reserved for beachside residents only.	• Terminal protection structures can be easily equipped with stairs and access ramps. Promenade style revetments can improve access by making it more accessible and inclusive for the whole community (allowing wheelchair/bike access). • Council are using feedback from the community consultation phases to assist with development and design. Residents will continue to have an opportunity to provide comment during each phase of the project.
Sand nourishment	• Concerns about Councils ability to fund ongoing sand nourishment Concerns about the sourcing of sand for nourishment purposes Concerns about cost of ongoing sand nourishment • Suggestions to only use sand nourishment as a management option for Wamberal Beach.	• The preferred long-term solution for Wamberal Beach includes a sand nourishment program to ensure long-term outcomes for Wamberal Beach. Sand nourishment requirements, resources and cost estimates are being looked at through the MHL study. There are emerging opportunities for sourcing sand for nourishment purposes at Wamberal Beach, which were not available previously. The cost of sand nourishment will form part of a potential funding model that needs to be established. • Sand nourishment as a standalone solution to address erosion is not feasible for Wamberal Beach given the vast quantities needed to ensure full protection.
Surf amenity	• Concerns that any engineered solution will impact the surf amenity of Wamberal Beach.	• There are many different factors that determine if a seawall structure will interact with waves and the beach. ○ Seawall location and alignment: The location of a seawall relative to the beach profile that moves back and forth over time is important. Did you know that seawalls located behind the active beach do not interact with waves under most circumstances? There are many seawalls that co-exist with healthy, high quality beaches. Manly, Bondi and Newcastle (main beach, not Stockton) are good examples of this situation.

Issue Category	Key issues raised	Response
		○ Type of seawall and its geographical footprint: In locations like Wamberal Beach sloping rock revetments typically interact with waves and beach more than vertical seawalls, which can be placed further landward on the beach. This is because the sloping structures take up more space on the beach. A range of seawall types are being investigated for Wamberal. ○ Applying sand nourishment to the works program to replenish the beach and improve beach amenity. Adding sand to Wamberal Beach would reduce the interaction of waves with the potential seawall, by moving the natural beach profile towards the ocean and burying the structure. The coastal engineering study currently underway is looking at behavior at Wamberal Beach and assessing coastal and environmental impacts from various sea wall designs, including the impact on public access and beach amenity both now and into the future. Climate change impacts are also being considered. Did you know that ad-hoc protection works have been placed at Wamberal Beach for many decades? From Terrigal Lagoon to the Wamberal Surf Life Saving Club, the beach is backed by rocks, building rubble and other works. These materials have been placed in front of the erosion scarp by various entities since the 1970's. When Wamberal is in an eroded state, the ad hoc protection materials interact with the waves. When the beach system naturally recovers (builds out) over time, the rock and rubble become

Issue Category	Key issues raised	Response
		buried. A properly designed and constructed seawall would interact with the beach in a similar way, but in a more effective and less hazardous manner. Replacing the ad hoc coastal protection works, with a properly designed and constructed seawall that improves beach access and amenity is one of several broader community benefits being looked at.
Water quality	• Concerns that foreign materials used in the construction of a seawall will impact water quality	• Central Coast Council manages over 80km of coastline within the local government area and conducts numerous coastal projects each year. Council is equipped with a team of environmental and coastal scientists who manage these projects, minimising environmental harm by enforcing appropriate controls (such as installation of silt curtains, bunds, dust suppressants and water quality monitoring of receiving waters). An Environmental Impact Assessment (EIA) would be required as part of the development assessment process to identify and address all associated environmental impacts and provide a course of action to mitigate harm.
Liability	• Comments around who is responsible for development being approved for Wamberal Beach. Suggestions that Council should not be liable for works required to be completed (both in emergency and more broadly) Comments around personal responsibly for private property owners.	• Central Coast Council is the consent authority for private development and Council managed land at Wamberal Beach. The coastal engineering assessment is looking at proposed terminal protection structure (seawall) alignments for various concept options. We do not yet know what the planned footprint of each concept option is and what the land implications will be. The seawall footprint from the previously approved Wamberal terminal protection structure was located across a mix of private and public land.

Issue Category	Key issues raised	Response
		Developing a methodology that can support the coordinated delivery of an embayment-wide solution across a mix of private and public land is one of the key challenges that needs to be worked through. Council has a responsibility to address key management actions outlined in the certified Gosford Beaches CZMP. The CZMP outlines the need to investigate the preferred protection option however, does not provide for the construction of a seawall. Private owners are able to submit a Development Application (DA) for coastal protection works at any given time. DA's submitted will be considered on its merits under the relevant planning controls and in accordance with the certified CZMP. As previously mentioned, the CBA/DA will identify the beneficiaries of the seawall and a funding model will be formed based on these findings. Meaning, if private owners are the ones most benefiting, they will be likely be the highest cost contributors.
Council	• Concerns around Councils management of Wamberal Beach.	• The NSW Government has laws in place that guide how the NSW coastline is managed. Coastal Zone Management Plans (CZMPs) identify coastal management issues and the actions required to address these issues. The Gosford Beaches CZMP was prepared in line the state government legislation, the Coastal Management Manual, and in consultation with the Central Coast community. The plan was certified by the Minister for the Environment in May 2017 and identifies several key management actions for Wamberal Beach, including: – TW11: Terminal protection- Council to action review, design and funding of terminal protection structure for Wamberal

Issue Category	Key issues raised	Response
		– TW14: Investigation of sources of sand and determination of the feasibility of beach nourishment for Wamberal Beach – TW15: Beach nourishment coupled with a terminal revetment to increase the buffer against storm erosion. Council is fulfilling its obligation to address the key management actions outlined in the CZMP in accordance with relevant coastal and planning legislation.
	• Concerns around Council's ability to finance a project like this given the financial crisis.	• Council is awaiting the findings in the current MHL engineering and economics study before making any decisions regarding the funding or delivery of a seawall and sand nourishment at Wamberal Beach.
Erosion	• Comments around erosion being inevitable Concerns that any terminal protection structure will result in further erosion issues at each end	• The Gosford Beaches Coastal Processes and Hazard Definition Study concluded that Wamberal Beach has been eroding at an average rate of 20cm/per year. In comparison to beaches like Stockton Beach which erodes between 1 and 2meters/per year, Wamberal Beach is considered stable. Increased erosion at Wamberal is witnessed during East Coast Low (ECL) storm events which incur the most damage. Erosion is inevitable and Council must act to protect public assets now and into the future.
Sea level rise	• Concerns around any protection structures ability to cope with sea level rise Suggestion that any terminal protection structure would be temporary due to impending sea level rise	• The design life for a seawall is generally 50years which includes future projected sea level rise. MHL are using projected sea level rise levels into each of the proposed designs as well as including design modifications to extend the life span of the structure past the design life expectancy.

Issue Category	Key issues raised	Response
Environment	• Concerns around the environmental impacts that a terminal protection structure would cause • Suggestion to retreat the private properties and re-vegetate the dune system as a natural solution to the erosion issue at Wamberal Beach	• The current study by Manly Hydraulics Laboratory includes a 'Coastal Protection Assessment' report to investigate the potential impacts of various sea wall concept designs on coastal processes including the beach width at Wamberal. As part of a detailed design phase an Environmental Impact Assessment (EIA) report would be required as part of the development approval process. The EIA report would be required to assess the associated environmental impacts and identify mitigation measures. • Council has no planned retreat policy nor have a legal mechanism to force people out of their homes and reclaim their land, hence this is not an option being investigated.
Development	• Comments around the approval process for development application process for Wamberal Beach • Suggestions for Council to no longer approve any Development Applications for impacted properties • Concerns around the historical development application approval process	• No protection works can be carried out without prior development consent. The State Government in 2018 introduced legislation which requires development consent for 'coastal protection works'. The appropriate course of action is to lodge a development application with Council which will be considered on its merits. More information on coastal protection works can be found in this factsheet provided by the State Government. • In 2018 the State Environmental Planning Policy (Coastal Management) 2018 commenced giving effect to the objectives of the Coastal Management Act 2016. The SEPP specifies how development proposals are to be assessed if they fall within the coastal zone. Councils and other consent authorities must comply with the new assessment criteria when assessing proposals. • New coastal planning legislation and assessment criteria is changing the way our coast lines are being developed. This is a result of "lessons learnt" through legacy issues and our knowledge of coastal processes and climate change. The Coastal Management Act focus is on ecologically sustainable development that:

Issue Category	Key issues raised	Response
		– protects and enhances sensitive coastal environments, habitats and natural processes – strategically manages risks from coastal hazards – maintains and enhances public access to scenic areas, beaches and foreshores – supports the objectives for our marine environments under the Marine Estate Management Act 2014 – protects and enhances the unique character, cultural and built heritage of our coastal areas, including Aboriginal cultural heritage.
Other	• Concerns that the engagement for the development of the Gosford Beaches CZMP (which outlines a TPS as the preferred management solution) was not sufficient	• The community were consulted as part of the Gosford Beaches Coastal Zone Management Plan (CZMP; 2017), and preceding Coastal Zone Management Study (CZMS; 2015). A CZMP Community Engagement Strategy was developed and endorsed by Council in November 2013, this document guided consultation throughout the CZMS – CZMP processes. Community consultation included: – public exhibition of draft documents (CZMS, CZMP) – CZMS - targeted community presentations to discuss potential management options for each study area, including Terrigal/Wamberal (2015) – community drop-in sessions (include at Terrigal SLSC; 2015) – public notices – promotion via local newspaper. – In addition, workshops were held with the Council's Catchments and Coast (advisory) coastal sub-committee established at that time. • The consultation that Council is undertaking to inform the Wamberal Beach Terminal Protection and Sand Nourishment – investigation and concept design includes best practice community engagement principals and has been designed in accordance with Central Coast Council's Engagement Framework.

Issue Category	Key issues raised	Response
	• Concerns that the current engagement is not sufficient	Further opportunities for community engagement will be delivered in the Phase 2 consultation.

Consultation outcomes and next steps

Thank you to everyone who provided feedback during the phase one consultation for the Wamberal Beach Terminal Protection and Sand Nourishment- Investigation and Concept Design Walk and attended the drop-in information sessions.

Comments received during the community consultation process for Phase One of the Wamberal Beach Terminal Protection and Sand Nourishment – investigation and concept design will be used to guide and inform the concept options recommended to proceed to the Phase Two consultation which will involve workshopping concept options with both directly impacted residents and the broader Central Coast Community.

The next steps for Wamberal Beach are as follows:

- continue with the coastal engineering and economics study looking at concept option and feasibility for implementing the Gosford Beaches CZMP actions
- continue to participate in the NSW Government Wamberal Seawall Advisory Taskforce
- develop a methodology for implementing a long-term solution, that is legally permissible, environmentally and socially acceptable and financially viable.

The community will be kept up to date as the project progresses.

Appendices

Appendix A

Media release

Council ensures community voice is heard

Wednesday, 11 November 2020

Central Coast Council is committed to community consultation and engagement with a number of projects opening for discussion this week.

Council's Director Connected Communities, Julie Vaughan said consultation with the community is continuing to ensure projects keep moving to meet grant funding milestones or to ensure they are ready for funding applications or implementation in the new year.

"In the last financial year more than 6,000 pieces of feedback from our community helped shape 50 projects, plans and strategies," Ms Vaughan said.

"Our 'Your Voice – Our Coast' online portal demonstrates Council's ongoing commitment to engage effectively with all members of community, offering a seamless user experience and enabling the community to easily search for projects by category or by location.

"While Council is currently focused on delivering essential services, we also have a number of projects we need to seek our community's input on to ensure they meet our funding milestones or are ready for implementation or funding bids in the new year.

"I would encourage our community to jump online to have their say on the projects that interest them."

Council is currently seeking input on the following projects and plans including:

- Gwandalan, Tunkuwallin Oval district playspace
- Gwandalan, South Eastern Park local playspace
- Integrated Water Resource Plan
- San Remo, John Pete Howard Reserve district playspace
- Terrigal Haven, ex-HMAS Adelaide II mast monument
- Terrigal Lagoon trail concept design
- Tuggerah Lakes foreshore restoration works
- Wamberal Beach terminal protection and sand nourishment
- Warnervale District Contributions Plan
- Winney Bay Clifftop walk concept designs

Visit our newspage for information on each.

Council's administrator, Dick Persson AM said community participation in planning matters is important in creating a shared sense of purpose, direction and understanding.

"Council has the important responsibility of ensuring decisions we make for and behalf of the community ensure appropriate community input is considered in the process," Mr Persson said.

"While I am focusing on understanding Council's financial situation, it's important that Council continues to engage the community on key operational issues.

"I encourage everyone to be active in their community and sign up to Council's weekly Coast Connect e-newsletter so you can stay informed on opportunities to have your say."

Visit yourvoiceourcoast.com for further information and to have your say.

Last updated : Wed 11 Nov 2020

Appendix B

Tweets (various dates)

CentralCoastCouncil @CCoastCouncil · 11 Nov

It's a bumper November for community engagement on the Central Coast with 11 important projects seeking your feedback
👉 Head to hubs.la/H0zFJm90 for all the details.

CentralCoastCouncil @CCoastCouncil · 13 Nov

We want to know what you value about #Wamberal beach – let us know as part of our community engagement around a long-term solution to coastal erosion.

hubs.la/H0zLLc00

#coastalerosion

CentralCoastCouncil @CCoastCouncil · 24 Nov

Don't forget to register for our drop in sessions as part of our first stage of engagement around the long-term options for coastal erosion at #WamberalBeach. Drop in sessions start tomorrow and registrations are essential 👉hubs.la/H0Bq_Fd0

#wamberal #coastalerosion


CentralCoastCouncil @CCoastCouncil · 28 Nov
New virtual engagement sessions for Wamberal coastal erosion announced! Bookings essential hubs.la/H0BDk1Z0 #wamberal #coastalerosion #wamberalerosion

Facebook posts (various dates)

Central Coast Council
Published by HubSpot · November 11 ·

Community engagement is continuing this month to ensure projects keep moving to meet grant funding milestones, or they are ready for funding applications and implementation in the new year.

Your feedback is used to make decisions to deliver better services, community facilities, and projects for our region. In the last financial year more than 6,000 contributions from our community helped shape 50 projects, plans and strategies.

This November we want your feedback on:
- three new playspaces
- a monument for the ex-HMAS Adelaide II
- a lagoon trail at Terrigal
- saltmarsh rehabilitation works on Tuggerah Lakes
- Winney Bay clifftop walk
- Warnervale District Contributions Plan
- terminal protection and sand nourishment on Wamberal Beach
- the start of our long-term water planning – the Integrated Water Resource Plan.

Most of these projects have NSW or Australian Government funding – head to our Your Voice Our Coast platform for all the details.
https://hubs.la/H0zFJm20

Central Coast Council
Published by HubSpot · November 13 ·

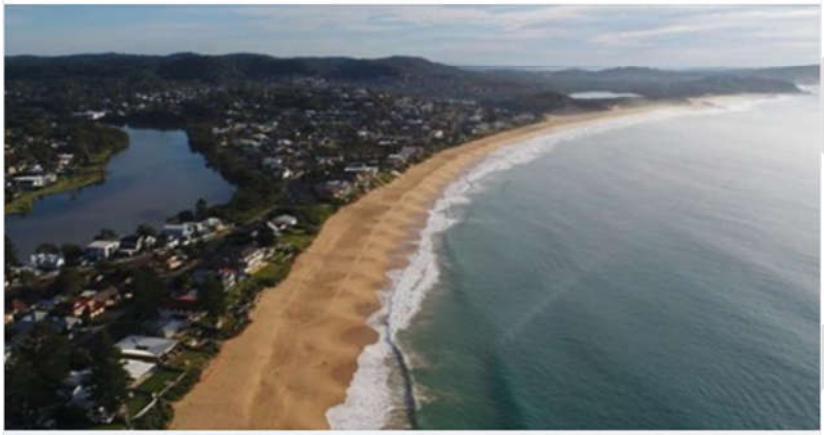
The first phase of the community engagement around a long-term solution for coastal erosion at Wamberal is now open.

This is a complex issue and to ensure we understand how the community feel at every step of the process, we will be giving you many opportunities to have a say. Right now, we need to understand what you value about Wamberal beach and how you use it.

Residents and visitors are invited to complete our survey online, submit a question or register for our drop-in sessions where they can ask questions about the project with our team.

Visit our website to learn more, sign up for updates and to take part in the initial phase of the community engagement. Responses to the survey will be accepted until 8 December 2020 https://hubs.la/H0zLLT-0

*We understand you have a lot of questions at the moment, but please keep comments respectful, clean and on topic.



YOURVOICEOURCOAST.COM
Wamberal Beach Terminal Protection and Sand Nourishment - Investigation and Concept Design | Your Voice Our Coast

Central Coast Council
Published by HubSpot · November 28 at 2:05 PM ·

Missed the opportunity to drop-in and chat with us about coastal erosion issues at Wamberal this week?

We've added two opportunities to virtually drop in next week. These sessions will be held late afternoon and over lunchtime. We're looking forward to hearing your concerns and answering your questions after meeting more than 90 interesting community members this week.

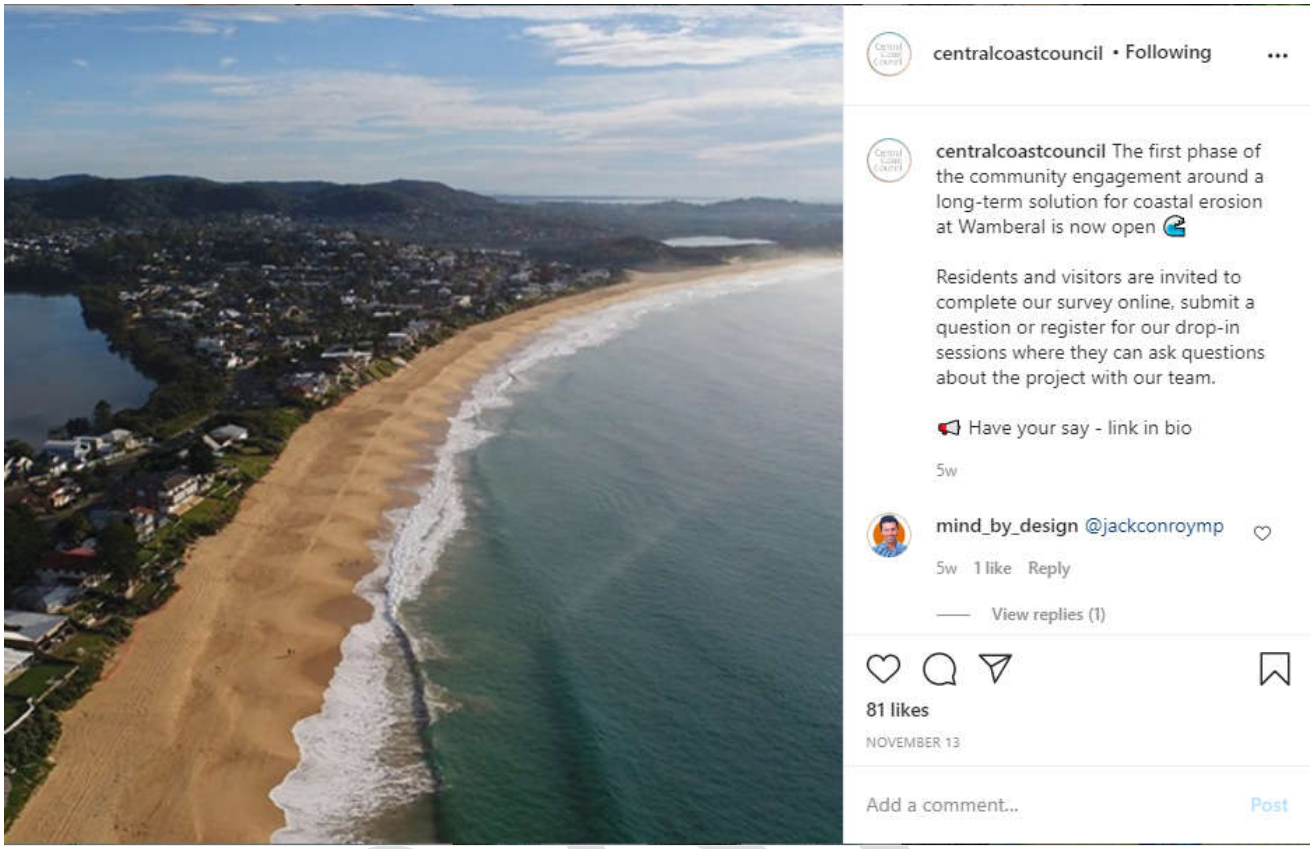
Virtual sessions will be held Tues 1 December and Thurs 3 December. Bookings for the 20-minute virtual sessions are essential.

The Wamberal beach values and uses survey is open until Tuesday 8 December. Bookings, further details and the survey are available at https://hubs.la/H0BD8Hk0

*We understand you have a lot of questions at the moment, but please keep comments respectful, clean and on topic.

YOURVOICEOURCOAST.COM
Wamberal Beach Terminal Protection and Sand Nourishment - Investigation and Concept Design | Your Voice Our Coast

Instagram posts (various dates)



LinkedIn posts (various dates)

Central Coast Council
7,639 followers
1mo •

As we come closer to the end of the year, and our annual engagement blackout period we have 11 important projects open for community engagement this November.

Community feedback is used by Council to make informed decisions to deliver better services, community facilities, and projects for the Central Coast region. In the last financial year more than 6,000 contributions from our community helped shape 50 projects, plans and strategies.

Projects currently with our community for their consideration include:

- three new playspaces
- a monument for the ex-HMAS Adelaide II
- a lagoon trail at Terrigal
- saltmarsh rehabilitation works on Tuggerah Lakes
- Winney Bay clifftop walk
- Warnervale District Contributions Plan
- terminal protection and sand nourishment on Wamberal Beach
- the start of our long-term water planning – the Integrated Water Management Plan
- a roundabout at Blue Bay.

Most of these projects have NSW or Australian Government funding – head to our Your Voice Our Coast platform for all the details https://hubs.li/H0zFX8S0

#playspace #playground #memorial #Terrigal #saltmarsh #TuggerahLakes #Centralcoastwaterways #planning #water #waterplanning #environment #environmentalrestoration #haveyoursay #engagegment #consultation #erosion #coastalerosion

Wamberal Beach Terminal Protection & Sand Nourishment: **Draft Design Requirements**

CONSULTATION REPORT

Central Coast Council

September 2022

Contents

1 Introduction

1.1 Background

The Gosford Beaches Coastal Zone Management Plan (CZMP) contains an action to progress a long-term solution for Wamberal Beach erosion. The CZMP outlines a preferred protection solution (terminal protection structure) and the technical studies needed to inform further decision making, but it does not provide for the delivery of a seawall and sand nourishment.

On 29 January 2019, Central Coast Council resolved to work with the NSW Government to progress designs for a terminal protection structure (seawall) at Wamberal. Manly Hydraulics Laboratory (MHL) were engaged to complete coastal assessments and develop concept plans for a long-term solution for Wamberal Beach in May 2020.

Following the July 2020 storm event which saw the emergency response place 2,400 tonnes of large rocks, over 2,000 tonnes of rock bags and 4,000 tonnes of sand along Wamberal Beach, the NSW Government Wamberal Seawall Advisory Taskforce was set up to provide technical advice and assistance to Council in progressing a long-term solution for Wamberal.

Six Technical Reports to support the Wamberal Beach Terminal Protection and Sand Nourishment project were developed, these reports included:

- Stage 1 Literature Review - to take stock of what is known and identify any information gaps.
- Stage 2 Coastal Protection Assessment - to determine sand movement, beach behaviour and impacts/opportunities around public access and amenity.
- Stage 3 Concept Design Options - for a terminal protection structure (seawall) and sand nourishment, and potential seawall alignment.
- Stage 4 Sand Nourishment Investigation - to help maintain public beach amenity.
- Stage 5 Coastal Monitoring Webpage – to monitor beach conditions.
- Stage 6 Cost Benefit Analysis - to guide development of possible funding models.

With many technical, financial, social and environmental complexities attributed to this project, Council has sought expertise and advice from technical coastal experts and have continued to consult with the Wamberal and broader Central Coast community. Council understands that the best coastal erosion management solutions are developed when state and local governments, residents and the broader community work together.

A review of the technical studies, results from the community consultation and consideration of Councils role in relation to coastal erosion resulted in the development of the Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements. The results of the public exhibition of the Draft Requirements are the subject of this report.

Further information on each phase of the project including detailed consultation reports for each phase are available at yourvoiceourcoast.com/wamberalerosion.

1.2 The project

This report provides an overview of the engagement activities undertaken for the public exhibition of the Wamberal Beach Terminal Protection and Sand Nourishment projects Draft Design Requirements (Design Requirements) which was carried by Central Coast Council from 29 June and 27 July 2022.

The draft Design Requirements outline specific criteria for assessment of Wamberal Beach coastal protection Development Applications such as:

- Alignment
- Construction management
- Material selection
- Landscaping
- Maintenance requirements

This report documents the methods and approach of the public exhibition and provides an analysis of and response to community and stakeholder submissions during this phase.

The draft Wamberal Beach Engineering Design Requirements can be viewed online at yourvoiceourcoast.com/wamberalerosion.

2 Engagement Approach

2.1 Purpose of Engagement

The purpose engagement was to:

- Inform the community on the draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements
- Seek feedback on the draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements
- Work with stakeholders and the community to identify issues which may affect Wamberal Beach

2.2 Our engagement framework

Consultation has been designed in accordance with Central Coast Council's Engagement Framework. This framework is available to view at https://www.yourvoiceourcoast.com/Central-Coast-CouncilEngagement-Framework

2.3 How we consulted

Consultation methods

Written submissions	All residents and stakeholders could make a written submission via email, the online submission form on yourvoiceourcoast.com, or via post. **247** submissions via the online submission form were received. Copies of the submission form can be found in **Appendix A**
Virtual drop-in information sessions	• **8** virtual information sessions were hosted via Microsoft Teams. **28** registered to attend the sessions and **19** people actively participated.

Promotion of activities

We carried out promotion of the public exhibition to ensure the community and stakeholders were aware of the opportunity to participate.

Media Releases	• Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements on public exhibition 28 June 2022 Copies of the media releases can be found in **Appendix B**
Coast Connect articles	• Have your say on sea wall design requirements 21 July 2022 • Sea wall design requirements 29 June 2022 • Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements 14 July 2022 Copies of the articles can be found in **Appendix C**
Your Voice – Our Coast website	• Date of page launch: 29 June 2022 • Page URL: yourvoiceourcoast.com/wamberalerosion
Social media	Facebook: • 21 July – Closing soon! Make your voice heard and submit feedback…. • 25 July - Provide your input and influence community decisions…. Twitter: • 21 July – Closing soon! Make your voice heard and submit feedback…. • 25 July – We are currently seeking feedback on: Linked In: • 25 July – Provide your input and influence community decisions. Copies of the posts/advertisements can be found in **Appendix D**
Notifications	• Direct emails to **363** previously engaged participants A copy of the notification can be found in **Appendix E**

3 What we heard

Council sought feedback from the community between 29 June and 27 July 2022.

3.1 Coding rationale

A variety of feedback was received, Council has coded the feedback received using the following rationale:

Theme	Summary of theme	Example comment
Community consultation	Appreciate the opportunity to have a say	This is clearly not in community consultation. I have lived in Wamberal for over 20 years and know many people in the local area. Our community definitely do not want a sea wall. I would like some transparency on how you came to the conclusion that we did.
	Don't believe that adequate consultation has been undertaken	CCC Sustainability and Climate Action Plan 2022-2025 (page 17): P1 Council endorse the Ecologically Sustainable Development (ESD) values through integrating social, economic and environmental considerations into Council's decision making through the implementation of the four principles: precautionary principles, inter-generational equity, conservation of biological diversity and improved valuation, pricing and incentive mechanisms. These principles must be considered in Council decision making. Why haven't they been addressed?

Theme	Summary of theme	Example comment
No seawall	Do not want a sea wall on Wamberal Beach	Any proposed seawall at Wamberal should be totally scrapped. A seawall would destroy the beach for everyone. Seawalls have failed wherever they have been built, they do not stop beach erosion, they worsen it and create a hideous eyesore. I am not in support of private seawalls at Wamberal Beach or any other beach on the Central Coast. I oppose of any seawall going into Wamberal Beach. Not only will this look horrendous but it will ruin our beach!! We live here to enjoy the beach we have and surf there almost every day. Wamberal will not be the same if this goes ahead.
Support for design requirements	Support for the Draft Requirements Support for coastal protection	I am a frequent visitor to Wamberal beach and support protection. I support Councils Wamberal Beach Terminal protection Engineering requirements. We wish to submit our formal positive support for the initiatives by your Council in working towards a practical solution to the very serious beach erosion and subsequent property damage along Wamberal Beach.
Transparency	An elected body is not in place to consider such decisions	You can't find a local Wamberal resident who doesn't think this stinks of corruption and just more central coast council incompetence. We implore the decision makers to stop ignoring the majority and to

Theme	Summary of theme	Example comment
		take notice of the importance of local community wishes.
	How was the decision to construct a seawall determined	Big decisions like these should be made under an elected council NOT under an administrator being guided by a Taskforce that is by its very name bias toward a wall rather than exploring other options.
Beach amenity	Seawalls destroy the beach for swimmers, surfers, beach walkers and all other beach users.	Being able to work in with the requirements that the studies provide and that council provide I hope that we are able to come up with a solution that is able to protect the properties as well as keep as close to the current functionality of the beach and its amenities
	Supportive of a design that provides security for the beach amenity	
	Who will be held accountable if there is a reduction in beach amenity	Who can we hold accountable when the beach is not accessible to the general public?
	No deviation from the criteria set out should be allowed as a deviation would result in a loss of beach amenity	How will the communities, beach users and ratepayers concerns for aesthetics be upheld as they are the ones that will need to look at it and be most affected by amenity both during construction, after storm events and during maintenance
		No justifications should be allowed for deviation from the criteria proposed. If homeowners are committed to protecting both property and beach, they must follow this criteria and not deviate. Any deviation may have

Theme	Summary of theme	Example comment
		catastrophic effects on beach and beach amenity.
Community benefit	A seawall is not in the better interests of the broader community. How will the seawall benefit the broader community	"These Requirements were developed for Central Coast Council to assist developers, professional engineering designers and Council in the preparation and evaluation of development applications for coastal protection works at Wamberal Beach." This requirement is flawed and does not address the following issues: . Where does the public interest full into this consideration? It should be 1st consideration and is not even mentioned. This statement has obviously guided this document and has resulted in the unbalanced report of the way forward.
Alternative solutions	Proposals for alternative solutions to erosion at Wamberal Beach	Why not create and break wall 200 to 300 metres out from the shoreline at Wamberal. This will prevent large surf swells hitting the shoreline causing destruction. I think this is a more sensible approach to this problem. I am against the individual Private Sea Wall option and in favour of the nature-based system of coastal protections Vertical sea walls do not absorb or ameliorate any of the kinetic energy

Theme	Summary of theme	Example comment
		of large waves, which hit the wall with maximum force, then concentrated reflection of this energy creates vortices, resulting in the sand to seaward of the vertical wall being scoured. The resultant suspension of sand in water (ie the beach) is progressively sucked out to sea. Properly constructed, sloping, buried revetement walls by contrast, do not reflect the kinetic energy in this same manner, and cause far less scouring & beach loss. I am not proposing that this would be the best solution here but there is likely to be better solutions than the wall construction on individual properties which are currently proposed. It is most probable that walls constructed on individual properties will not solve the erosion problem and will not be to the long-term benefit of the local residents.
Sand nourishment	Suggestions to only use sand nourishment Comments about sand nourishment Questions around suitability of ongoing sand nourishment Who pays?	Total waste of funds, just like beach sand renourishments etc. Plenty of beach along the coast of NSW. I don't agree to Wamberal needing this kind of assistance. It may be that Council decides some of these elements cannot be specified in full within the timeframe or scope of finalizing these requirements; or are best addressed within a broader geographic context. In that circumstance, the Requirements should state explicitly that these will

Theme	Summary of theme	Example comment
	Is there a suitable sand source available? Sand nourishment is not required Sand nourishment triggers Due-normal sand lines	be important considerations as part of a sand nourishment program and will be fully articulated through the new Coastal Management Program that Council will complete by end 2023. It is essential that Wamberal beachfront property owners and Central Coast residents generally are forewarned that these are live issues which will be resolved before any Wamberal seawall DA is approved. The current temporary works should not be the benchmark – after all, they are meant to be only temporary! Those temporary, ad hoc works were installed under emergency storm conditions without the rigor of a DA process; and should not be regarded as now a permanent feature. Those temporary works already have a negative impact on the sand profile of the beach – the fact that a properly designed seawall would have a less worse impact (at least in the near term) is no reason to accept that sand nourishment should achieve anything less than the previous natural state. We don't agree that the burden of sand nourishment should fall on beachfront residents. It is clear that sand is washed away in storm events whether there is a structure there or not and is

Theme	Summary of theme	Example comment
		eventually returned to the beach. It is a natural habit of the beach with the sand recovering in time. Before any DA is submitted or approved, a sustainable, ongoing and workable sand source must be made known to the wider public. This will ensure sand nourishment requirements are met and that it isn't just a false promise. No approval should be given if homeowners can't guarantee sand nourishment will be ongoing and readily available.
Planned retreat	Planned retreat as a management option should be considered Why was planned retreat never considered The only feasible option is planned retreat	A better long term solution might be to offer limited financial assistance for the residents to move out and those properties to be demolished. Some locations just should not have houses on them. Unfortunately this planning process has been restricted to prioritising property protection, which has resulted in a dismissal of environmental and community concerns. The lack of effective State government policy on these at risk coastal areas has exacerbated the problem. The most sustainable option of managed retreat from this high risk dune has not been considered because there is a lack of legislative tools to guide the process nor is there financial

Theme	Summary of theme	Example comment
		support from state government to implement such a proposal. Council must work with the State government to allow historical planning failures to be sensibly addressed by restricting building and repairs to homes in the coastal hazard zone and to provide a mechanism for relocation. Just because no policy currently exists should not be a reason not to pursue this type of sustainable solution and the legislation required. The coastal erosion issue will only increase in the future, with many of the NSW coastline communities potentially at risk.
Who pays	Who will fund the construction? Are ratepayer monies being used to fund the wall If the owners are the sole beneficiaries, they should be responsible for paying The owners should not pay	I strongly object to council funds being directed to this. If the state wants to assist property owners and that way spread the cost across all NSW residents, fine. But fighting coastal erosion by throwing money at it - you might as well burn it. should not be funded by private property owners, it is a community asset and should be fund by government Council should have a clearly stated policy on this cost attribution, and it should be built into the engineering Requirements statement.

Theme	Summary of theme	Example comment
	Who pays for the protective works for the public owned parcels? Who pays for the ongoing sand nourishment	Perhaps, the most suitable mechanism would be an annual Council levy on property owners to accumulate a special purpose sand nourishment account that can be drawn upon to fund episodic sand nourishment works Ongoing sane nourishment must be an integral part of any part of the protection of Wamberal Beach. The costs of this nourishment would be vastly increased if a wall was constructed, as the natural processes would not return sand to the beach. Who would fund this continued sand nourishment? It would be immensely costly and if a private wall is built, effectively preventing public access, who pays? Landowner or ratepayer? Regarding Affected Public Land zone RE1 along Wamberal Beach, specifically Nos 71, 25, 25A & 25B Ocean View Drive (25,25A & 25B known as The Ruins). Who will be involved in making decisions about whether this land is to have a wall or not and what mechanisms will be in place for ratepayers / taxpayers / constituents / beach users to be involved in this critical decision-making process?
Environmental impacts	The environmental impacts would be…	Immense evidence of the detrimental impact these have on dune ecosystems.

Theme	Summary of theme	Example comment
	The environment should be the number one consideration	I am strongly opposed to the construction of a sea wall along wamberal beach as it will destroy the natural beach, cause further erosion and have a significant impact upon the environment and ecology of the beautiful coastline from Terrigal lagoon to wamberal lagoon. Vertical seawalls are generally the least environmentally sound solution on open beaches that are exposed to periodic large swells. It is seems easy for planners to focus on protecting residential assets for humans, while at the same time ignoring the "residential assets", aka habitat used by local flora and fauna as well as migratory birds.
Tourism	Wamberal Beach is a Tourism destination Wamberal Beach has immense value from a tourism perspective The fact that there is a beach at Wamberal is part of the Tourism appeal	Beaches, especially Wamberal beach as been a tourist attraction for many years, people come from Sydney and the western suburbs to take in the beautiful beaches of the central coast. Think about it, you won't get the tourism that you do with an ocean wall and straight up water, beaches are the real tourist attraction and not to mention we are losing our sand through erosion.

Theme	Summary of theme	Example comment
Climate change/Sea level rise	Concerns about the legitimacy of seawalls in the context of climate change and sea level rise Concerns that the seawall would never stack up to sea level rise as a result of climate change	Since the initial investigations into a seawall at Wamberal began, our whole world has changed, with governments trying to lower carbon emissions to try to lessen the impact of sea level rise and climate change. A seawall is old and outdated technology with regard to conditions now prevailing on the Central Coast.
Seawall location (Key criteria 1)	Concerns about key criteria one being flexible How will alignment be managed on properties that have structures Suggestions to not have any leniency toward seawall alignment Comments on the need to have flexibility in the seawall alignment	The seawall is to be located as far landward as possible. Then further on in the Draft Report it states that the seawall has to be at least 3 metres from the existing structure...in some cases along this beachfront that is not possible. How will this be addressed? We disagree with the practicality of the alignment rules in some sections, particularly where the house currently is built close to the boundary. Additionally, the seaward limit is in many cases further landward and restricts space even more. We ask that council allow flexibility in these cases. A seawall that is built on public land should not be allowed!! It should not be the case 'where possible,' but rather 'must be,' on private property. Any closer to the ocean

Theme	Summary of theme	Example comment
		and the likelihood the beach is eroded increases dramatically.
Constructed, owned and maintained by private property owners (key criteria 3)	Comments about how the wall will be managed and lack of detail on how maintenance will be carried out Suggestions to ensure liability for maintenance remains that of the property owner (even when properties are sold) Questions over the governance of maintenance costs and who will oversee Comments about criteria suggesting that all owners will want the same protection (if any), how will this be managed. Wave modelling Comments about the management of the development applications and how impacted residents not wanting to sign onto the DA will be managed	How on earth can construction start on one parcel of land, but not the one next door (if they have no funds to build a seawall???) And then what will be put in place to ensure that the landowners do maintain their seawall? Who will monitor and pay to ensure this will be complied with, and then report on it??? None of this is addressed in this report. The TPS Engineering requirements seem to omit any information about ongoing auditing of the Maintenance Management Plans If one of the properties in the group does not agree to the type of protection proposed for adjacent properties or does not want any form of non-natural protection at all or cannot afford coastal protection measures how will Terminal end control be achieved - Does this open up the potential for owners to be pressured into compliance by other stakeholders / owners However in the WORKING DRAFT WAMBERAL BEACH TERMINAL PROTECTION STRUCTURE ENGINEERING DESIGN REQUIREMENTS Report MHL2872 there is no mention of "modelling would occur during a detailed design phase, once an alignment

Theme	Summary of theme	Example comment
		has been agreed upon and a preferred seawall design has been adopted". In Table 3.1 of the document (see below), there is no mention of design based on wave action modelling. This needs to occur before the next stage of is project. There is no discussion on the social context of residents and their ability or interest in applying for a DA and funding the seawall and its maintenance. What happens if not all residents sign on to the communal DA? What are the potential delays and what is the likelihood of emergency repair works being required by the residences and being paid for, again, by the Council and State government.
Collaroy and other seawall examples	Concerns about proposal being similar to Collaroy	Disgraceful. have a look at Collaroy. How can this be allowed The Seawall at Collaroy in Sydney northern beaches is a contemporary example of where a Seawall has failed and created further erosion of our beautiful beaches that will result in reduced tourism that will impact adversely upon the community Even Rose Bay in Sydney Harbour, not exposed to large swells, lost almost all its beach exactly corresponding to the location of vertical sea walls. The only permanent sand beaches between Rose Bay Police Station & the

Theme	Summary of theme	Example comment
		eastern end of this bay are where there is no vertical sea wall. I'm sure that everyone (except perhaps your cost benefit consultants, who presumably know nothing of coastal science) involved in this unfolding fiasco, are aware of what happens when this engineering mistake is foisted on a beach. Collaroy, Terrigal, for example. What provisions will be in place for change of ownership of beachfront properties. Will there be requirements or covenants put on the titles and planning certificates so that subsequent buyers will be enforced to abide by the conditions of maintenance and repair.
Beach access	What is the plan for the beach access points How will the publicly owned parcels of land be treated? Will the beach access be maintained during construction?	I am concerned about the beach access point on Surfers Rd, Wamberal. How will beach access for regular beach users be maintained? when the previous emergency works took place beach users were prevented from using the beach. · There are a number of Council/Government owned blocks. As these are owned by council who in turn are funded by ratepayers how will the council ensure that what happens to these blocks and the type of protection (if any) is what the ratepayers want.

Theme	Summary of theme	Example comment
Public access	Concerns that a wall will enable the beach to become a 'private beach' and trespassing issues. Comments about public access being retained at all times. Concerns about limited public access to the beach during the construction.	The whole beach from The Ruins (near the end of Pacific Street) to surfers Road would effectively become a private beach for landholders along Ocean View Drive depriving the coast of this amenity and the resultant cost to the local economy would be devastating. Will local residents be able to walk along the top of the wall when there is no beach left? Access along the waterfront should be maintained for all. Public access to the beach must be maintained at all times and no part of the beach should be closed off.
End effects	Concerns about the end effects of terminal protection	I am very worried about the proposed termination of the wall in the adjoining property and the "End Effect" & potential "Flanking Effect" that the wall may have on my & nearby properties & the beach. Any sand moving north along the seawall will impact the intermittent entrance to the lagoon, causing flooding to the residents of Remembrance Drive and surrounding properties adjacent to the lagoon. The seawall design does not adequately incorporate protection of residents north of the structure.
Reflection	Concerned about wave reflection from the seawall	I am concerned for the welfare of the beach and the level of erosion

Theme	Summary of theme	Example comment
		that a vertical wall may cause to the beach through reflection.
Existing Development Applications	How will existing Development Applications be treated?	Alongshore uniformity & Interaction with adjoining properties or works - How will existing DA's (approved or under assessment) be treated? Will they be reviewed to comply with the new guidelines? - How will this be negotiated given the scale and complexity of existing proposals (for example 85 – 89 Ocean View Drive where the protection works are incorporated with a swimming pool
Natural replenishment	Coastal processes	Frontal dunes are dynamic systems and when "stable" they are receding and accreting over time, with sand moving inshore and offshore as well as longitudinally along the beach. The construction of man-made barriers impedes the natural movement of sand. The construction of a hard terminal structure on the frontal dune will interrupt the dynamic sand movement and it is inevitable with sea level rise that the sandy beach will disappear, rather than the natural process of sand being reworked and the dune profile moving landward.
Other	How will public land be treated? How will asbestos be treated?	PUBLIC LAND AFFECTED - ZONE RE1 Regarding the public land zone RE1 along Wamberal Beach, specifically at Nos. 71, 25, 25A & 25B Ocean View Drive (refer image below) 1. Who will be involved in making the decisions about if this land is to have a wall or not and what mechanisms will be in place for ratepayers / taxpayers / constituents / beach users to be

Theme	Summary of theme	Example comment
	Gabion/rock backs not appropriate	involved in this critical decision making process?
	Concerns over the precedent this could set	How will the presence of asbestos be dealt with properly? I realise the Draft has requirements for contamination assessment and remediation however I believe for a project of this scale an independent assessor for asbestos contamination and site remediation should be used to ensure continuity along the entire length of the beach
	Treatment for end of asset life	
	Use of existing emergency works materials	gabion/rock bags do not seem to be a feasible option as after the recent storms there is now wires, rocks and mess exposed along the beach near Pacific St.
	Comments about Coastal Management Program process and the inclusion of the Design Requirements	The only reason this has progressed is that we are talking about home owners of multi million dollar homes; no such interest has been shown for ordinary home owners suffering from repeated flooding at Long Jetty or The Entrance. This is both a case of ignoring the science, and blatant elitism.
	Questions on Waste Management Plan?	
	Comments on the proposed 3m maintenance corridor	Our focus starts with the premise that the policy and design requirements for a Wamberal seawall will in many ways serve as precedent for coastal erosion management into the future for Wamberal and for other Central Coast beaches.

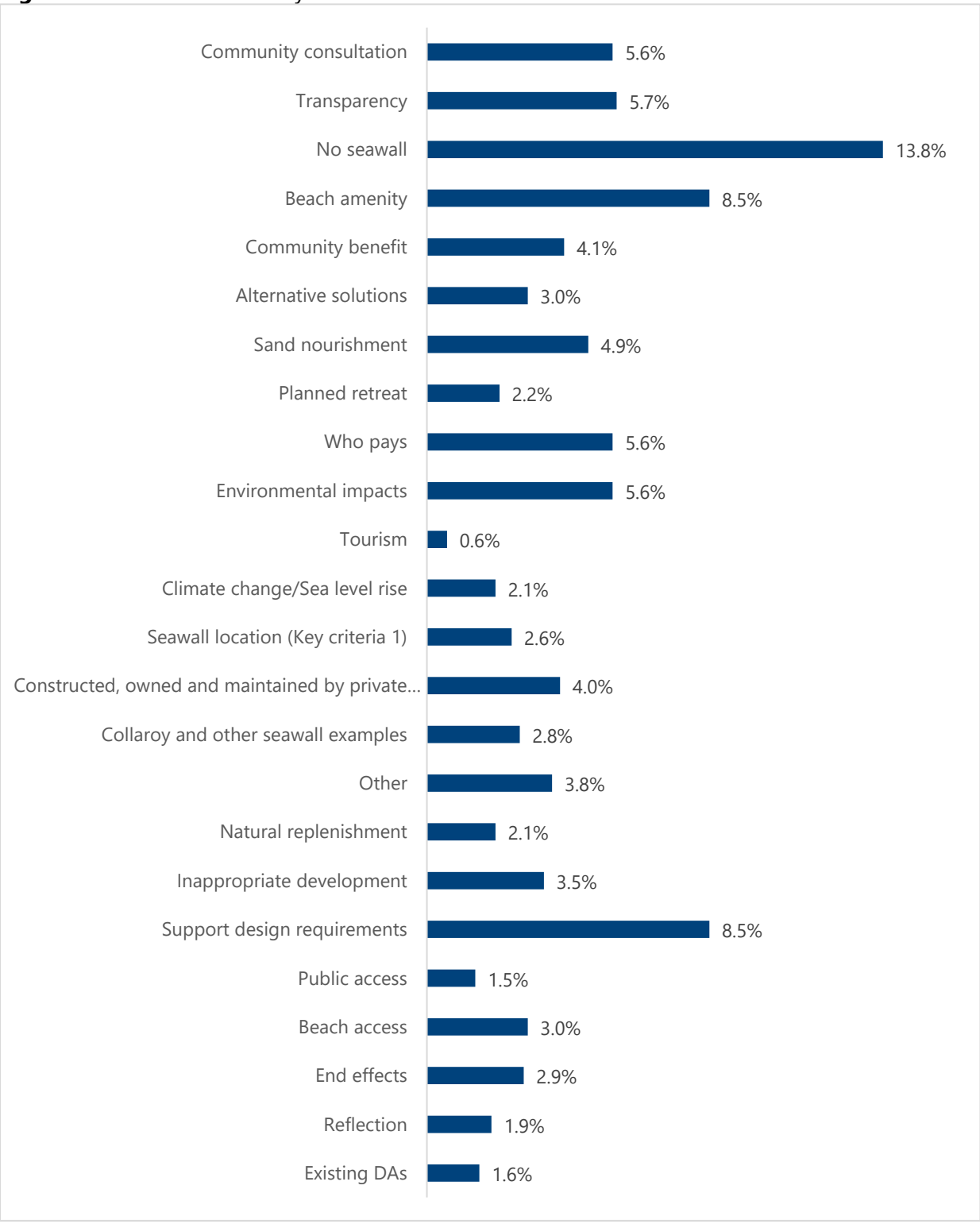
Theme	Summary of theme	Example comment
		The Engineering Requirements must specify that the property owners are responsible for upgrade or demolition of the seawall, should that circumstance arise. There must be the ability for Council to make orders that this must happen. We request that it is encouraged to use current emergency works (rocks, bags etc) to be used in front of any vertical sections to minimise the vertical impact and to help retain the sand, creating a more natural dune. The requirements should not be included in the new coastal management plan that is to take over the existing CZMP. Rather, a vote from the wider community should be made for a preferred solution. It was done in the past and needs to be done again. As has been stated in the past, the current CZMP is based on 2004 consultation, done when I was 4 and before many homeowners and community members even lived in the Wamberal area. It is only fair to update the new CMP with current perspectives of the community. Please clarify what a waste management plant is. Or if this is a typo how can we be sure this document has been properly checked both for typing errors or

Theme	Summary of theme	Example comment
		any of the information contained in it? The report should have regard to all coastal beaches as we move into the future and not be confined to private properties fronting a public beach. 3-meter corridor of maintenance is not practical.
Inappropriate development	Comments about the inappropriate development occurring within the dune environment. Concerns that development applications are still being approved in spite of the unstable dune system.	Council must work with the State government to allow historical planning failures to be sensibly addressed by restricting building and repairs to homes in the coastal hazard zone and to provide a mechanism for relocation.

3.2 Written submission forms

A total of **247** written submissions were received during the consultation period. Submissions were provided as emails and online submissions through yourvoiceourcoast.com.

Figure one: Overall results by theme identified in submission results.



Total responses received = 247. Total codes applied = 821

3.3 Key findings from consultation

- Key elements and triggers for sand nourishment are not detailed within the design requirements, these elements include:
    - What the triggers for sand nourishment are?
    - Who will pay for the sand nourishment campaign?
    - Has a suitable sand source been identified and is it available long term?
- Wamberal Beach should remain accessible to the public with the same level of amenity *if* a seawall is constructed. Details on what level of accountability (and where the accountability lies) if the same level of amenity cannot be maintained are not included as part of the considerations.
- The community is concerned about the transparency afforded to this process and question if a decision on this project is appropriate whilst Council is under Administration.
- Information is required on who the applicants for terminal protection development applications are and what role Council plays within the development application process (will Council provide project support?).

A full list of themes raised throughout consultation can be found in **Section 3.1**. Council's response to these themes can be found in **Section 4**.

4 Council's response

Due to the large volume and variety of content contained within community feedback, not every issue was able to be included and responded to in the following information, however all feedback has been read and will be considered by the project team when making recommendations to Council.

Theme	Summary question	Council's response
Community consultation:	What community consultation has been undertaken to inform the project direction?	Terminal protection structure (seawall) and sand nourishment have been recommended by experts as a preferred erosion strategy at Wamberal Beach for several decades as documented in MHL stage 1 report. The Gosford Beaches Coastal Zone Management Plan 2017 (GBCZMP) prepared in line with state government legislation, and in consultation with the Central Coast community, included recommendation of terminal protection as a key management action for Wamberal Beach. Section 1.4 of the GBCZMP states consultation undertaken and Appendix 6 details how feedback was considered. Recently, four phases of community consultation were undertaken as part of the Wamberal Beach Terminal Protection and Sand Nourishment - Investigation and Concept Design studies. A summary of this engagement can by found on Your Voice Our Coast. These phases of engagement highlighted key criteria which have informed the Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements.

Theme	Summary question	Council's response
No seawall	Why is a seawall the preferred erosion management solution for Wamberal Beach and how was this determined?	The Coastal Zone Management Study 2015 was developed (endorsed by Council on 26 May 2015) to inform management actions in the Gosford Beaches Coastal Zone Management Plan (GBCZMP). The Study considered all feasible management options to address current and future coastal risks (including climate change) relevant to the environmental planning and management of the area. Options considered what was legally permissible, financially viable and realistic for Wamberal Beach. The Study recommended terminal protection which accrued a management action item in the certified GBCZMP as the preferred solution to address coastal erosion at Wamberal. The GBCZMP was prepared in line with state government legislation, and in consultation with the Central Coast community.
Transparency	How will the decision on the draft Design Requirements for Wamberal Beach be determined?	Following community consultation, amendments will be made to finalise the Draft Requirements. Once finialised, a report will be prepared for Council to adopt the Design Requirements.
Beach amenity	What processes are in place to ensure the maintenance of beach amenity remains a key criterion when assessing development applications for coastal protection works?	The primary principle for terminal protection design is for the seawall is to be located as far landward as possible, to reduce interaction with coastal processes and maximise available beach width. Applicants must prepare a Maintenance Management Plan (MMP) which identifies methods and location for access for ongoing and post storm event maintenance.

Theme	Summary question	Council's response
		A time limited consent will also apply to any approved design to assess its function and impacts along with changes in the coastal environment in time.
	Will flexibility within the Design Requirements be afforded if there is a potential to impact on Beach Amenity?	The primary principle of the engineering requirements is for the seawall to be located as far landward as possible, to reduce interaction with coastal processes and maximise available beach width. Council is aware that each property has differing circumstances in terms of property location, geology and existing coastal protection works, for this reason some flexibility may apply. A coastal engineer may request a change in alignment to avoid structural damage to a property, this request would then be assessed by Council through the development application (DA) process. Unacceptable requests to change the alignment would involve extending the seawall seaward without reasonable justification particularly when it can be wholly situated on private property. All Development Applications will be assessed on its merits.
	How is the level of optimum beach amenity being measured (i.e. prior to 2020 emergency works or after)?	Installation of a Trailcam and Lidar wave runup monitoring station occurred as part of the MHL Stage 5 study. Beach conditions at Wamberal Beach are continuously monitored and displayed via the public webpage and includes: • Available beach width • Condition rating

Theme	Summary question	Council's response
		• Beach profile changes • Subaerial beach volume • Berm height and • Water level This information is used to inform beach conditions.
Community benefit	How will the seawall benefit the broader community?	The current management of Wamberal Beach consists of emergency coastal protection campaigns (funded by Council and State government) and valuation of private development applications for coastal protection works. The last emergency campaign cost $2.1M of which Council was awarded **$992,501** under the NSW Government's Coastal and Estuary Grants program. Campaigns are expensive and not designed for long term protection. Ad-hoc protection works span the Wamberal embayment. The works are unsightly, take up a large footprint on the public beach and not designed for long term protection. A seawall would benefit the community by: • Removing the need for ongoing emergency protection campaigns • Cost saving through privately funded construction and maintenance of the seawall • The Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements provides stronger

Theme	Summary question	Council's response
		governance for development applications which reflect recent scientific studies and community feedback • An engineered design seawall will be located on private property (behind current ad-hoc works). Temporary works will be removed resulting in increased beach width and improving aesthetics • Time limited consent applied to the seawall (50years) allows for future evaluation. If performance or amenity is impacted, it can be removed.
	How will the seawall benefit directly impacted property owners?	The seawall would offer protection against storm damage.
Alternative solutions	What other erosion management options have been considered for Wamberal Beach?	The Coastal Zone Management Study 2015 developed as part of the Gosford Beaches Coastal Zone Management Plan (GBCZMP) explored artificial reefs, planned retreat and sand nourishment. These options were deemed not viable due to either legal or resourcing factors.
Sand nourishment	What are the triggers for sand nourishment?	Triggers for sand nourishment are undetermined and being explored by Council. The MHL reports state vertical seawalls require zero upfront nourishment, due to it being located far landward. The engineering requirements however state that clean sand must replace the volume of ad-hoc works removed. Wamberal Beach has an underlining recession rate of 20cm/per annum. Establishing nourishment triggers requires assessment for

Theme	Summary question	Council's response
		natural recession, storm-based erosion and impacts associated with the seawall.
	Who will pay for the sand nourishment campaign?	This is currently being determined through assessment of natural recession (at 20cm/per annum), storm-based erosion events and future impacts associated with the seawall. Due to these factors, nourishment will likely be funded by private owners, State and Local Government entities. Council is currently working with the State Government via the Wamberal Taskforce with a primary focus on sand nourishment.
	Has a suitable sand source been identified and is it available long term?	The MHL Stage 4 Sand Nourishment Investigation identified local sand sources and available volumes. While maintenance volumes could be achieved, sand nourishment for the sole purpose of protection could not be achieved. Council is currently working with State Government via the Wamberal Taskforce to investigate sand nourishment options (such as offshore deposits) and the licensing and environmental requirements to undertake operations.
	Will the Design Requirements be updated to include information on the requirements for sand nourishment?	Additions have been made to the Engineering Requirements to indicate that it will be Council's responsibility to investigate and undertake the sand nourishment campaigns. The Design Requirements can also be amended and put forward to Council for adoption at any given time.

Theme	Summary question	Council's response
		Council is also exploring the option of applying a coastal protection charge to residents which would be used to fund nourishment campaigns.
	Are there environmental impacts associated with sand nourishment?	Yes. Environmental impacts exist for both inland and offshore sand nourishment operations. Impacts would be assessed during the environmental assessment phase. The Environment Protection Authority, Crown Lands and the Department of Primary Industries (Fisheries) must be consulted regarding any permits or licenses required. For offshore sand sources an extraction license is required. The Guidelines for Sand Nourishment, Science and Synthesis for NSW provides an overview of the main considerations for beach nourishment projects.
Planned retreat	Why is planned retreat not being considered for Wamberal Beach?	Council does not have a planned retreat policy in place. Residents have a legal right to reside under an approved development application. Any long-term solution must be technically feasible, legally permissible, environmentally and socially acceptable and financially viable. Planned retreat involves more than just buy back of homes, it involves compensation, demolition and removal of existing properties and remediation of the sand dune.

Theme	Summary question	Council's response
		Even if this was possible, a seawall would eventually be required when public infrastructure (such as the road, water and sewer, NBN) is threatened by coastal erosion, at which the public would fund.
Who pays	Who will pay for the construction of terminal protection at Wamberal Beach?	Beachfront owners are responsible for seawall fronting their land. Council would undertake sections across beach access points. The remaining five vacant blocks are owned by the Department of Planning and Environment (State Government).
	Who will pay for terminal protection at the impacted publicly owned parcels of land?	Of the 1400m proposed Seawall, Central Coast Council owns 4.3% of the beachfront land (approx. 60m of land south of the SLSC). Council will be responsible for funding their proportion. The five vacant blocks are owned by the Department of Planning and Environment (State Government).
Environmental impacts	How will the environment be considered when assessing development applications for terminal protection at Wamberal Beach?	Any development application (DA) must satisfy the requirements of relevant environmental and planning legislation. The Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements sets out additional environmental criteria that must be addressed. All DA's must contain a State of Environmental Effects which details and explains the likely impacts of the proposed development both during and after the development, and the proposed measures that will mitigate these impacts.
Tourism	Wamberal Beach is a key driver of tourism for the region, was this considered when investigating	Of course. The current state of the beach is in disrepair with ad-hoc works (both illegal and emergency campaigns) and damaged decks and private access structures spanning the entire embayment.

Theme	Summary question	Council's response
	erosion management options for Wamberal Beach?	An engineered design seawall would be positioned far landward (on private property), involve the removal of ad-hoc works and structures, maximising the beach profile and enhancing beach amenity.
Climate change/sea level rise	Have the impacts of sea level rise and climate change been considered? How will sea level rise and climate change be considered when assessing development applications for terminal protection at Wamberal Beach?	Yes. The Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements state sea level rise (SLR) projections adopted in design should be specified and be consistent with the Council's latest SLR policy at the time of detailed design works being undertaken. Detailed designs must specify an adaption pathway to future sea level rise and environmental conditions beyond the design life of the structure. Development applications will be assessed against all relevant legislation and inline with the Draft Requirements.
Seawall location (key criteria 1)	How will seawall alignment be considered when assessing development applications for terminal protection structures at Wamberal Beach?	The primary principle for terminal protection design is for the seawall is to be located as far landward as possible, to reduce interaction with coastal processes and maximise available beach width. Seawall alignment is outlined in the Draft Requirements and must be wholly located on private property. Some flexibility exists but must be justified by engineering advice. Council assesses all development applications based on its merits.

Theme	Summary question	Council's response
Constructed, owned and maintained by private property owners (key criteria 3)	How will the coordination of the development application take place?	It is the responsibility of private residents to coordinate and prepare their development applications. Additional clarity on this has been added to the Engineering Requirements.
	What is Council's role in supporting the development application process?	Councils' role is consent authority (assessing officer) and regulator (ensuring development is in accordance with the approved DA). Additional clarity on this has been added to the Engineering Requirements.
	What would Council's role be during the construction of the terminal protection structure?	Councils' role is regulator ensuring development is in accordance with the approved development application.
	What role would council plan in the ongoing maintenance of the terminal protection structure?	The Draft Requirements outlines maintenance criteria. Councils' role will be regulator, to ensure maintenance is in accordance with the approved development application.
	Who is responsible for the terminal protection structure at the end of its life (50 years)?	Landowners are responsible for the life of the structure. Time limited consent (of 50years or less) (determined through the development application) is applied to the seawall which allows for future evaluation. If performance or amenity is impacted, it may be removed or adapted.
Collaroy and other seawall examples	Have Council considered the lessons from other locations where seawalls have been constructed?	Yes. The MHL Stage 2 Coastal Protection Amenity Assessment catalogued 91 seawall structures on sandy beaches predominantly in south-east Queensland and NSW to assess the cross shore and longshore impacts on beach processes associated with the proposed concept seawall designs for Wamberal Beach.

Theme	Summary question	Council's response
		Council has also visited Northern Beaches Council to undertake a lesson's learnt presentation on the Collaroy Narrabeen seawall project which helped guide the Draft Requirements.
Beach access	What will happen with the beach access points?	Seawall must front these sections to enable continuous protection across the embayment. Council will be responsible as landowner for the 60m beach accessways. Council will ensure public access is maintained.
	How will requirements for the publicly owned parcels be determined?	Council will seek confirmation that the five vacant blocks belonging to the Department of Environment and Planning will also adhere to the Draft Requirements.
	How will the beach access points be managed during construction?	A construction management plan must be prepared in accordance with the Draft Requirements. Applicants must propose methods of access from the site for demolition, excavation and construction vehicles, including routes through Council owned or managed land and the location and type of temporary vehicular crossing for the purpose of minimising traffic congestion and noise in the area, with no access across public parks or reserves being allowed without Councils Consent being granted.
Public access	How will Council ensure that Wamberal Beach remains a public beach?	By ensuring the seawall is located on private property.
	Will public access to the beach be maintained during construction?	Yes.

Theme	Summary question	Council's response
End effects	How have the end effects of terminal protection been considered at Wamberal Beach? Will the potential end effect impacts be considered when assessing development applications for terminal protection structures at Wamberal Beach?	Engineering designs for coastal protection works prepared for development applications must address end effects and put in place measures to mitigate impacts. Wamberal beachfront applicants further require their seawall designs to undergo 3D physical modelling as specified in the Draft Requirements. Modelling validates design components and identifies any inefficiencies. Development applications may be referred for peer review by an independent engineer or to the Local Planning Panel for an extra level of assessment.
Reflection	How will wave reflection be considered when assessing development applications for terminal protection structures at Wamberal Beach?	The proposed seawall alignment is positioned far landward, outside of active beach profile. Interactions between waves and the seawall would only occur during big storm events therefore, wave reflection modelling was not included as key criterion.
Existing development applications	How will existing development applications be treated if the Wamberal Beach Design Requirements are adopted by Council?	Council will be seeking consistency with existing development applications also encouraged to adhere to the Draft Requirements which reflect the latest scientific studies and feedback from the community.
Natural replenishment	Will a terminal protection structure impede the natural beach replenishment? How will this be considered when assessing development applications for terminal protections structures at Wamberal Beach?	Wamberal is a relatively stable beach with an underlying recession rate of 20cm/per annum. The beach naturally fluctuates between eroded phases post storm events and accreted phases, as the sand stays within the system. The proposed seawall alignment is positioned far landward; outside of the active beach profile (high and low tide zone). This means the seawall will only interact with ocean processes during large storm events.

Theme	Summary question	Council's response
		In time, sea level rise will cause more frequent interactions with coastal processes therefore, a time limited consent has been proposed.
Inappropriate development	In consideration of Wamberal Beach being identified as a high-risk location for erosion, why has development been approved along Wamberal Beach? Why is Council assessing and approving development applications for parcels of land directly impacted by erosion at Wamberal Beach?	Development approval began in the 1800's at a time when coastal processes were not fully understood which has left a legacy issue. Currently, local planning controls, and coastal legislation in NSW allows for the development to continue in these areas provided development meets the planning controls including being situated landward of the coastal building line. Councils' role as consent authority is to review development applications (DA) and ensure compliance with relevant State legislation and local planning controls at the time.

5 Next steps

Council has used the submission received to inform changes to the Wamberal Beach Terminal Protection & Sand Nourishment Design Requirements. These changes include:

- clarification on the sand nourishment requirements and responsibility within the EDR. It is outlined that Council will be responsible for investigation and implementation of sand nourishment into the future however funding contributions will be required from beachfront landowners. The funding model is to be further developed as part of the new Coastal Management Program. The sand nourishment triggers and replenishment volumes to maintain beach amenity are to be reviewed periodically.
- clearer statements that private property owners are responsible for preparing and lodging development applications and that this shall generally comprise no more than one application for each of the three sections outlined in the design requirements.
- further clarity that Council's role is to assess the development applications on merit,
- Council will also have a separate role as the proponent for coastal protection works fronting the beach access ways and Wamberal Surf Club lands.

To reaffirm the need for seawall designs to integrate aesthetically with the coastal environment, a fifth criteria is proposed for inclusion in the final Engineering Design Requirements that was not included in the draft document as exhibited:

- The seawall is to include landscaping and materials that blend into the coastal environment and be designed to have a reduced vertical relief following the natural cross section of the foreshore.

Results from the Wamberal Beach Terminal Protection & Sand Nourishment Design Requirements public exhibition as well as the associated recommendations are expected to be presented at the October 2022 meeting of Council.

The community will be kept up to date.

6 Appendices

Appendix A – Submission form

Submission form: Wamberal Beach Terminal Protection Structure Engineering Design Requirements

Please note your attention is drawn to the provisions of the Government Information (Public Access) Act 2009 which allows for possible access to certain public and personal documentation.

First name:

Surname:

Address:

Suburb:

Daytime telephone number:

Email:

Your submission or comments:

Attachment one:

Drop files or click here to upload

Attachment two:

Drop files or click here to upload

→

Appendix B – Media release

Central Coast Council Media Release

28 June 2022

Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements on public exhibition

Council engaged Manly Hydraulics Laboratory to draft the design requirements for terminal protection works at Wamberal Beach to address coastal erosion – which will be placed on public exhibition at yourvoiceourcoast.com from 29 June 2022 to 27 July 2022.

The Wamberal Beach Terminal Protection Structure Engineering Design Requirements address key criteria such as engineering, landscaping, environmental and maintenance requirements of property owners.

Central Coast Council Director Environment and Planning, Alice Howe said this milestone follows on from the completion of Wamberal Beach Terminal Protection and Sand Nourishment Investigation project, which identified preferred designs for the protection works.

"The review of expert technical studies, extensive community consultation and consideration of Council's role in relation to coastal erosion led to the identification of specific criteria for the preferred seawall design," Dr Howe said.

"These criteria state that the infrastructure is to be located as far landward as possible (to reduce interaction with coastal processes and maximise beach width), that the asset is to be located wholly on private property where possible, and constructed, owned and maintained by property owners, the seawall is to have the narrowest footprint (to reduce erosion/beach encroachment), and that the design is to have the least requirement for sand nourishment (both upfront and ongoing).

"The draft Design Requirements outline engineering specifications and details such as the minimum footprint, length of construction, material selection, landscaping, and maintenance.

"These requirements reflect what the community told us was important in feedback received throughout the three phases of community consultation conducted over the past two years."

Council Administrator, Rik Hart said there are a number properties along Wamberal Beach foreshore that are impacted by beach erosion which need permanent solutions.

"Property owners are able to seek development consent to undertake work to protect their assets, however, works must not negatively impact beach access, public amenity, neighbouring properties and the health of our coastlines," Mr Hart said.

"Council is performing its regulatory function as a Local Government to develop planning controls which will enable Wamberal foreshore property owners to undertake approved development to protect their assets whilst the beach public amenity and environment is protected appropriately.

"Community consultation has been an integral part of the process to identify long-term solutions to this issue and I encourage ongoing community participation now that the draft requirements are on public exhibition.

"The community will continue to have opportunities to provide comment before any work is undertaken. Any development application for a section of seawall at Wamberal Beach will be placed on public exhibition, providing the public with opportunity to comment on the detailed design drawings, environmental impact assessments, construction programs and maintenance plans."

The draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements include:

1. Guidelines for preferred concept design: alignment of seawall, concept design and alignment drawings, site specific geotechnical requirements and shadow modelling design criteria, including guidelines for design life including future modifications.
2. List of relevant legislation.
3. Guidelines for contamination assessment and remediation and reuse of removed material.
4. Guidelines for terminal end controls during and post construction, beach access points and beach safety during construction and other environmental aspects.
5. Guidelines for construction impacts.
6. Guidelines for construction schedule.
7. Guidelines for landscaping and aesthetics.
8. Guidelines for certification.
9. Guidelines for seawall maintenance and ongoing responsibility and security.

Following this public exhibition period, the final Design Requirements will be presented to Council for adoption and then used in conjunction with the Environmental Planning and Assessment Act 1979, Coastal Management Act 2016 and Resilience and Hazards SEPP 2021 during development application assessments.

Have your say on the draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements between 29 June 2022 and 27 July 2022 at yourvoiceourcoast.com

The community can register to attend drop-in information sessions (virtually) to discuss the design requirements with project staff.

Further information, FAQs, technical studies and consultation reports from the Wamberal Beach Terminal Protection and Sand Nourishment Investigation project, are also available online at yourvoiceourcoast.com

ENDS

Appendix C – Coast Connect articles

Central Coast Council

Coast Connect

21 July 2022

Support during flood clean up and recovery

The recent severe weather event that hit the Central Coast this month, created the biggest flood on Tuggerah Lakes since 1949 and the biggest flood on the Hawkesbury River in the last 100 years.

Council staff worked closely alongside the NSW State Emergency Service, coordinating activities from the Emergency Operations Centre at Charmhaven.

The Central Coast local government area is included in the NSW Government's Natural Disaster Declaration announced on Tuesday 5 July 2022, meaning people in our community who have been affected by this severe weather and flooding event can access a range of special assistance measures.

Council and flood evacuation impacted residents are now well into recovery and clean-up efforts, and this is expected to take some time.

I would like to thank all of the staff and volunteers who have worked tirelessly during the weather event and the recovery. Also, thank you to the members of the community who have contacted my office and local MPs' offices and have offered to help participate in the clean-up.

I strongly encourage all in the community to take extra care of yourselves on the roads, beaches, near flood affected areas and if you are helping with the clean-up.

Rik Hart, Administrator

Recovery information

Your mental health matters

Natural disasters, cleaning up and recovery can take a toll on your mental and physical health. Those in flood-affected communities may be feeling anxious, worried or afraid. It's vital that you seek support and look after both yours and your loved ones' wellbeing. There are many local and state services available to help if you need support.

Find support information >

Want to keep fit in winter?

Council manages 30 tennis facilities across the Central Coast which are run by either Council, or clubs and community groups – many of which are free to use! Tennis is a great activity for all ages including seniors, as it's low impact and helps maintain balance and co-ordination skills. It's also a perfect way to catch up with friends and family.

Find a tennis court near you >

Next Council meeting

The next Ordinary Council Meeting will be held Tuesday 26 July at Wyong. Come along or watch the live webcast.

Read more

Have your say on sea wall design requirements

It's the last week to provide feedback on the Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements. These guidelines will enable foreshore property owners to undertake approved development to protect their assets against coastal erosion, whilst the beach public amenity and environment is protected appropriately.

Public exhibition until 27 July >

Infrastructure works underway in July

In addition to the works being undertaken to clean up from the floods, Council crews continue to build, fix and maintain community infrastructure across the coast. The sports amenities building at Ettalong Lemon Grove Netball Courts is in the final construction stages, and works continue across the region to upgrade playspaces and sportsgrounds.

See summary of works in progress >

More across the Coast

Contact us

Wyong Office

2 Hely Street

Wyong NSW 2259

Ph: 1300 463 954

Email us

ask@centralcoast.nsw.gov.au

Important links

New LEP and DCP in effect 1 Aug

Chemical clean out events

Have your say on Draft Dogs in Open Space Action Plan

Delivery Program and Operational Plan FY22-23

Coast Connect

29 June 2022

Service delivery and operational plan

Our plans about what we will deliver for you in this next financial next year (and the following two years) are in place after being adopted at the 29 June 2022 Council Meeting.

Because we have a larger than budgeted, projected surplus for the 21-22 financial year, we have responded to community feedback and have been able to allocate extra resources for:

- local roads maintenance
- vegetation management
- planning assessment

The annual budget also sets out all the individual projects and actions to be delivered, details of capital works and how much we can charge our customers for any paid services.

View plans for FY22-23

Administrator message

We have produced a Delivery Program that that has been out for public consultation and incorporates all the changes as a result of IPART's recent rate decisions for Council. Even with these changes, our average rates overall continue to be approximately ten percent less than the neighbouring regions of Lake Macquarie and Newcastle.

Rik Hart, Administrator >

Sea wall design requirements

The draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements is now on public exhibition for community feedback. These guidelines will enable foreshore property owners to undertake approved development to protect their assets against coastal erosion, whilst the beach public amenity and environment is protected appropriately.

View the draft and have your say >

School holiday program

Join in the fun-filled program of online and face-to-face activities and events

winter program

Celebrating NAIDOC week

This national celebration honours the rich history, cultures and achievements of our First Nations People. Join us in recognising this important week with the official flag raising ceremony Monday 4 July from 9.30am at Council's Wyong Administration Building. We invite you to join us in recognising the valuable contributions of First Nations people across the Central Coast with an official flag raising ceremony.

Learn more >

New planning controls

The consolidated Central Coast Local Environmental Plan 2022 (CCLEP 2022) and Central Coast Development Control Plan 2022 (CCDCP 2022) has been finalised will come into effect on 1 August 2022. These harmonised planning controls provide a consistent planning framework for the region and pathway toward a smoother process for development applications and assessment.

Read fact sheet >

More across the Coast

Central Coast Council

Contact us

Wyong Office

2 Hely Street

Wyong NSW 2259

Ph: 1300 463 954

Email us

ask@centralcoast.nsw.gov.au

Important links

Council meeting highlights 28 June

Sportsground upgrades

Have you joined our recycle service trial from home?

Local makers and creators

Avoca Beach road and carpark closures

Coast Connect

14 July 2022

Recovery for flood impacted communities

Following the recent severe weather and flooding event that took place across the Central Coast, impacted residents have turned their sights toward recovery and clean-up efforts.

The Resilience NSW recovery team with Central Coast Council, Service NSW, Services Australia and a range of other support teams remain at these rapid recovery hubs, offering recovery assistance, providing access to information and services for flood-affected Central Coast residents.

- **The Entrance Hub** - located at The Entrance Community Centre, Battley Ave, The Entrance and open Monday to Friday 10am-4pm and Saturday to Sunday 10am-2pm.
- **Spencer Hub** - located at Spencer Community Hall, 4776 Wisemans Ferry Road, Spencer and open Monday to Friday 10am-4pm and Saturday to

Central Coast Council

Sunday 10am-2pm.

Council would again like to thank the many volunteers with local SES, Rural Fire Service, and other local support services who continue to provide invaluable assistance to keep our community safe.

Find out more

Clean-up of flood affected waste

Council and its contractors have begun letterbox drops to flood inundated properties, with information on collection days of flood affected waste. Our waste facilities are also open to receiving self-hauled waste from residents and businesses, with reduced fees applying for for flood impacted mixed waste.

Further waste updates >

Health and safety during clean-up

A reminder to never enter a damaged building or structure, unless deemed safe to do so by authorities and take great care around electricity. If removing or moving waste, always use appropriate personal protective equipment, including dust mask, gloves, covered shoes or boots and full-length clothing to cover your arms and legs.

More on health and safety >

NSW GOVERNMENT

Disaster relief support

Community members affected by the recent severe weather event can access a range of special assistance measures.

Eligibility

Share feedback on off-leash areas

We're calling all community members, including those without dogs, to provide feedback on off-leash areas. Our aim is to improve opportunity for dedicated dog exercise areas and provide open space that all community members can safely enjoy. The draft Dogs in Open Action Plan remains on public exhibition until 26 August.

Have your say >

Council awarded NSW Community Sports Award

Council has won the Sport NSW Local Council of the Year Community Sports Award, which recognises contributions to the community in sport and active recreation. The Awards celebrate the outstanding achievements and contributions of community coaches, officials, administrators, organisations and local council's of the past year.

Find out more >

More across the Coast

Central Coast Council

Contact us

Wyong Office

2 Hely Street
Wyong NSW 2259
Ph: 1300 463 954

Email us

ask@centralcoast.nsw.gov.au

Important links

Stay informed about flood recovery

Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements

Appendix D – Social Media posts

Central Coast Council
July 21 at 3:37 PM ·

Closing soon! Make your voice heard and submit feedback on the Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements by 5pm, Wednesday 27 July https://hubs.la/Q01hg6YH0

The design requirements address key criteria such as engineering, landscaping, environmental and maintenance requirements of property owners.

These guidelines, once finalised and adopted, will enable foreshore property owners to undertake approved development to protect their assets against coastal erosion, whilst the beach public amenity and environment is protected appropriately.

Central Coast Council
July 25 at 2:07 PM ·

Provide your input and influence community decisions 🙌

Our consultation hub is open 24/7 and we are currently seeking your feedback on:

- Draft Wamberal Beach Design Requirements (until 27 July 2022)
- Amendments to 2022-23 Fees and Charges (until 1 August 2022)
- Dogs In Open Space Action Plan (until 26 August 2022)
- Tuggerah Lakes foreshore restoration works (ongoing)

There are also a number planning proposals that are currently on exhibition.

👉 Find our more and have your say at https://hubs.la/Q01hrsKr0

CentralCoastCouncil @CCoastCouncil · 21 Jul

Closing soon! Make your voice heard and submit feedback on the Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements by 5pm, Wednesday 27 July hubs.la/Q01hg2Km0

CentralCoastCouncil @CCoastCouncil · 25 Jul

We are currently seeking feedback on:

- Draft Wamberal Beach Design Requirements (until 27 July 2022)
- Amendments to 2022-23 Fees and Charges (until 1 August 2022)
- Dogs In Open Space Action Plan (until 26 August 2022)

Find out more: tinyurl.com/5n8czfs8

Central Coast Council
9,672 followers
3w •

Provide your input and influence community decisions.

We are currently seeking your feedback on:
- Draft Wamberal Beach Design Requirements (until 27 July 2022)
- Amendments to 2022-23 Fees and Charges (until 1 August 2022)
- Dogs In Open Space Action Plan (until 26 August 2022)
- Tuggerah Lakes foreshore restoration works (ongoing)

There are also a number planning proposals that are currently on exhibition.

Find our more and have your say at https://hubs.la/Q01hrtnr0

Appendix E – Notifications

Public exhibition: Draft Wamberal Beach Terminal Protection Structure Engineering Desi

CC Central Coast Council Engagement <engageme@c

Reply | Reply All | Forward

To

Tue 19/07/2022 1:58

Bcc [redacted]

Public exhibition now live Draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements

Thank you for staying updated on the Wamberal Beach Terminal Protection and Sand Nourishment – Investigation and Concep Design project. Council is pleased to advise that the draft Wamberal Beach Terminal Protection Structure Engineering Design Requirements are now on public exhibition.

Details on the draft Design Requirements and information on how to have your say is available at:
yourvoiceourcoast.com/wamberalerosion

Submissions close at 5pm, 27 July 2022.

Council will continue to keep you updated as the project progresses.

Regards
Central Coast Council

Engagement outcomes summary report

Phase 2: Wamberal Beach terminal protection and sand nourishment consultation

Central Coast Council

November 2021

Mara Consulting

People | Place | Purpose

Creating vibrant communities through powerful conversations

Project Name	
Location	Wamberal Beach
Project Number	2138
Client	Central Coast Council
Mara Consulting Document	

Mara Consulting Pty Ltd	

Revisions	Date of issue	Details	Author	Approved
001	24/09/2021	Draft	BM	SH
002	12/11/2021	Final	BM	KL
003				
004				
005				

Mara Consulting

Consultation + Urban Design

Creating vibrant communities through powerful conversations

Confidentiality

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the above circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. This Engagement Outcomes Report has been written for an internal audience and is recommended for this purpose only.

Contents

List of Tables

Introduction

Council has been progressing its approach to coastal management through the preparation and implementation of the Gosford Beaches Coastal Zone Management Plan (CZMP). Council initiated a Wamberal coastal engineering study to progress with seawall investigations, as per several CZMP actions.

In consideration of the broader community interest in the seawall investigations for Wamberal Beach, Central Coast Council (CCC) developed a multi-phased approach to engaging with the community.

Phase 1 consultation which occurred in 2020 delivered a range of opportunities for the community to get involved and let Council know how they use the beach and what they value about it, this feedback, as well as technical reports prepared by expert engineers were used to inform the development of five seawall concept options for Wamberal Beach.

Between 29 July and 10 September 2021, CCC conducted phase 2 consultation for the Wamberal Beach Terminal Protection and Sand Nourishment investigation and concept designs (the Project). CCC engaged Mara Consulting Pty Ltd (Mara) to deliver stakeholder engagement services for the Project, which together with a range of digital engagement tools included a series of online information sessions with both directly impacted residents and the broader Central Coast community to consider the concept design options and view the technical reports.

The phase 2 consultation focused on allowing the community to provide feedback on 5 concept design options for a seawall at Wamberal Beach. This report provides the outcomes of this consultation.

A survey and interactive concept options were developed to assist in:

- understanding the levels of support for the look, feel and functionality of each of the concept designs
- identifying and aligning the community values for Wamberal Beach to inform the decision-making around a preferred seawall design for Wamberal Beach.

Great care was given to the program of engagement, which considered how to undertake meaningful and genuine conversations that built trust and allowed for the current public health orders to be adhered to. Conducting consultation in a way that provided a safe, socially distanced and accessible way for the majority of people to contribute was a key focus. This meant using online platforms to gather feedback where participants were able to provide feedback in their own time and space.

The engagement activities were open online for 6 weeks in order to provide participants time to digest technical reports, scientific studies, new information and provide a response. Due to the technical nature of the reports, online information sessions were offered to allow these information rich documents to be analysed, summarised and presented followed by a Q&A session.

It was anticipated that participants would visit the website multiple times before engaging in one of the activities. This is reflective in the website statistics, which included 2566 total visits to the site, with 1399 unique users. This means on average each person that looked at the site approximately 1.8 times.

Engagement approach

Objectives of consultation

The purpose of the phase 2 consultation for the Wamberal Beach Terminal Protection and Sand Nourishment Investigation and Concept Design project was to:

- Identify key stakeholders for the Project and their respective requirements.
- Support a robust planning process through effective communication and engagement techniques.
- Proactively inform stakeholders about the Project with accurate and adequate information on the project and opportunities to provide feedback.
- Promptly respond to and address public enquiries.
- Keep Council informed of upcoming activities, and any issues arising from consultation with external stakeholders during the Project.
- Minimise risks to the Project.
- Deliver engagement opportunities that encouraged participation, was innovative, adaptive, and sustainable.
- Make the four technical reports available and provide opportunities for the community to understand them, the reports included the:
    - Stage 1 Literature Review - to take stock of what is known and identify any information gaps.
    - Stage 2 Coastal Protection Assessment - to determine sand movement, beach behaviour and impacts/opportunities around public access and amenity.
    - Stage 3 Concept Design Options - for a terminal protection structure (seawall) and sand nourishment, and potential seawall alignment.
    - Stage 4 Sand Nourishment Investigation - to help maintain public beach amenity.

The communication and engagement activities for the Project were to inform, consult and involve, which reflects the International Association of Public Participation (IAP2) principles of engagement. The IAP2 spectrum of engagement aims to provide a values-based framework to effectively engage with stakeholders.

Communication and engagement approach and principles

Mara, on behalf of CCC, engaged with the Wamberal and broader Central Coast community to understand the value of Wamberal Beach to the community and seek feedback around the concept design options available for a long-term solution.

Consultation included:

- **Project introduction** – Online information sessions and information on the CCC Your Voice Our Coast (YVOC) website introduced the phase 2 consultation and presented 5 concept seawall designs. Questions and high level comment on the draft options were invited. Council's internal Coastal Management Team, consulting engineers (Manly Hydraulics Laboratory & UNSW Water Research Laboratory) and a Wamberal Beach Taskforce representative from the Department of Planning, Industry and Environment (DPIE) were involved in delivering information to the community.

- **A focus on design** –The feedback sought from the community focused on the look-and-feel of the options being presented (ie. what people like and do not like) through a values survey and Social PinPoint interactive layout of the 5 concept designs where community members were able to pin a comment to each of the concept renders. The 5 concept designs included:
  - Option 1: Rock Buffer with basalt
  - Option 2: Rock Buffer with sandstone
  - Option 3: Vertical Wall with rock toe
  - Option 4: Vertical Wall without rock toe
  - Option 5: Tiered Wall with promenade

Information collected during the consultation for phase 2 will inform CCC's decision-making on Wamberal Beach coastal erosion management solutions.

Engagement methods

How were people engaged?

The phase 2 consultation gathered feedback from a diverse range of people, property owners, beach users, special interest groups including Wamberal Beach Save our Sand Campaign (SOS) and the Wamberal Beach Protection Association, Wamberal residents the general Central Coast community.

The Your Voice Our Coast webpage was created for the Project and acted as the main way for people to source information and access links to participate. The engagement program was primarily delivered through:

- an online survey
- a Social PinPoint (SPP) page where participants were able to drop comments on the 5 concept design renders and
- a series of eight community information sessions with detailed Q&A.

During the six-week consultation period, there were more than 2,560 visits to the YVOC site, with participation from more than 1,974 people across all activities, including 1,399 unique users to the YVOC site, survey respondents, SPP comments and attendance at the online information sessions.

The consultation activities were carried out in stages as described below.

Table 1: Engagement methodology

Activities	Intended outcome
Stage 1: Introduce the engagement project and build a shared understanding of the complexity of the Project, opportunities and constraints. This phase also explains the negotiables and non-negotiables.	
• Launch engagement: – Project information for targeted circulation to key stakeholders via email – Social media posts – Letterbox drop flyer to residents of Ocean View Dr – Your Voice, Our Coast webpage including: • Link to the 4 completed technical studies and concept design renders • Detailed FAQs • Link to digital survey and Social PinPoint page • Link to register for updates • Link to register for an online information session • Provide project email address, staff contact and phone number for project and engagement enquiries.	**INFORM** • Introduce the Project to the community and interested stakeholders • Establish channels of communication – how to get involved • Opportunity to sign up for regular updates or register to attend an online information session
Stage 2: Engagement activities to invite feedback on the options	
8 x Online Information Sessions Hosted by the project team which includes CCC representatives, consulting engineers (MHL, UNSW Water Research Lab) and Taskforce representative (DPIE)	**INFORM** • An information session provided to introduce the project, share information about site opportunities, constraints and coastal processes, and provide an opportunity for stakeholders to ask questions • Establish communication channels • Provide an update on the project • Identify issues and concerns • Advise of additional ways to participate

Activities	Intended outcome
Social PinPoint (SPP) online interactive engagement platform containing project information, opportunity to leave comment and/or complete an online survey	**INFORM & CONSULT** • Update on the project • Gather feedback on preferred concept design options • Clarify issues

Please note: Due to public health orders Council were unable to host the many face to face opportunities for engagement that had been flagged in the outcomes of phase 1 consultation held in 2020.

Who was engaged?

A range of participants were encouraged to participate. A number of communication activities promoted the consultation. Groups, individuals and those who had registered for project updates were contacted either to directly participate or encourage their network to get involved. These included:

- Wamberal residents
- Central Coast residents
- Wamberal property owners including Ocean View Drive
- Wamberal businesses
- Not for profit organisations eg. Wamberal Beach Surf Lifesaving Club
- Online organised groups eg. SOS (Save our Sands Facebook group)

Demographic data from survey and online information sessions was used to assess and assure that there was representation of a diversity of age groups. The main groups to participate in the online survey were those aged between 55-70 (67) and 45-54 (53), however consultation also attracted 32 participants under the age of 35 and 29 over the age of 70.

How were people engaged?

Campaign summary

- YVOC project website
- Online digital survey
- Social PinPoint - feedback on concept design renders
- Online information session with Q&A
- Telephone conversations
- Direct emails
- FAQ's
- Letterbox drop of project flier to residents of Ocean View Drive, Wamberal
- Social media posts

Engagement outcomes

Please note that this phase 2 Engagement Outcomes Report is to be read in alongside the phase 2 Data Report, a separate document that provides greater detail and analysis of all data collected during consultation.

Survey

The digital (online) survey questions allowed for an understanding of the community value of Wamberal Beach and comments about the five concept options for the Wamberal Beach Terminal Protection Structure. It is notable that:

- There were high levels of survey completion, with a total of 286 surveys completed during the six-week consultation period.
- Of those who participated, 114 said they identified as a Wamberal Beach resident, 24 resided in Terrigal and 54 resided in the Central Coast LGA with over 80 per cent of respondents completing all questions.
- Fewer respondents were from Sydney suburbs (21) who identified as owning property or a holiday home in the suburb of Wamberal.
- More men completed the survey than women (129 vs 93).
- A total of 9 respondents were First Nations people.
- The highest proportion of participants were aged between 55 and 70 years.

The majority of respondents indicated that the **reason for their interest in Wamberal Beach** was because they were a resident of the area (58%) followed by residents that were impacted by coastal erosion (29%). Few respondents indicated that they were a commercial property owner (1%) or representative of an interest group (1%). Other responses included beach front property owners, holiday home owners and rate payers (6%).

Many respondents lived adjacent to Wamberal Beach (24%), less than 1km of Wamberal Beach (21%) or lived in an adjacent suburb (17%). Few respondents lived outside the Central Coast LGA (9%). When asked how respondents found out about the survey, a frequent response was social media (31%) followed by the Central Coast Council website (30%). Few respondents found out about the survey from news media (7%), information sourced from local advocacy groups (3%) or flyer in letterbox (0.4%).

Value and visitation

When asked **what they valued most about the beach**, many respondents agreed it was the recreation opportunities that the beach environment provides including surfing, swimming, walking/running, walking the dog or relaxation (95). This was followed by 73 respondents who indicated that it was the long, wide

stretch of beach and the open space that they valued most. The third most popular response was the value of nature, the natural beachfront and the natural environment (60).

The **most popular reason for visiting the beach** was for leisure purposes ie. walking/running (77%) followed by swimming (50%) and picnic/sitting with family or friends (36%). Most people visit the beach with family (73%) or friends (34%). The most important thing when visiting the beach from a list of given options was connecting with nature (32%) followed by the option to enjoy a wide range of recreational uses (27%).

Many respondents reported **frequency of visits the beach** as every day (28%) followed by 4-6 times per week (16%) and a few times a month (16%). When asked later in the survey about visitation if the preferred seawall option allowed for community amenity (ie. a promenade), a majority said they would not visit (40%) followed by others suggesting they would visit every day (17%) or very rarely visit (13%).

Solution framing

The numbers in brackets provided in the below paragraphs indicate the level of agreement using the Likert Scale. The Likert Scale rating is used to measure the amount of value placed on each of the design elements presented. A number of 3 or greater than 3 suggests overall agreement with the statement.

When thinking about outcomes for Wamberal Beach, a majority of respondents agreed that the preferred design needs to visually blend into the surrounding environment (4.5), followed by protection of buildings and public lands from coastal hazards (3.52). A total of 76 per cent strongly disagreed that the design (look) of the preferred seawall was *not* important and a further 80 per cent strongly disagreed that maintaining levels of sand on the beach as part of the long term solution was *not* important.

Respondents agreed that:

- A solution that has a low environmental impact and no beach encroachment is most important (3.85)
- The preferred seawall design with the least possible encroachment on the existing beach is important (3.69). Others agree that it doesn't matter if the seawall encroaches a little, as long as adjoining properties are protected from future beach erosion (3.24)
- Easy access to the beach is an important feature in seawall design (3.41)
- Privacy of beachside property owners should be considered when choosing a preferred seawall design for Wamberal Beach (3.24)

Survey respondents were asked to rank elements from 1-10 where 1 is most important and 10 is least important. When ranking 1-10 the importance of considerations in designing a long term solution, respondents ranked 'lowest environmental impact' (rank 1), 'minimal visual impact' (2) and 'least beach footprint' (3) as the most important. This was followed by 'highest protection for properties' (4) and 'most durable' (5) with **cost considerations** being ranked 7 ('cost to build') & 8 ('cost to maintain') in a listing rank of 10 items.

Additionally, respondents suggested that regular sand nourishment campaigns to maintain beach amenity would be important for the long term solution and that long term seawall durability is most important in selecting a preferred seawall design over all other costs (ie. cost of construction, cost of maintenance)

It is clear from the survey responses that the long term solution for Wamberal Beach needs to:

- Allow for all current recreation opportunities
- Maintain the long, wide open space that the beach currently provides
- Maintain the natural beachfront and the natural environment as much as possible
- Blend in with the surrounding environment
- Protect buildings and public lands from coastal hazards
- Maintain levels of sand on the beach with regular sand nourishment campaigns
- Have a low environmental and a low visual impact with least possible encroachment (footprint) on the existing beach
- Durability of the design is more important than cost of construction and maintenance
- Provide access to the beach as part of seawall design
- Consider the privacy of beachfront property owners.

Responsibility

The numbers in brackets provided in the below paragraphs indicate the level of agreement using the Likert Scale. The Likert Scale rating is used to measure the amount of agreement for each of the design elements presented. A number 3 or greater suggests overall agreement with the statement. A number less than 3 indicates overall disagreement with the statement.

When asked who was responsible for the **construction of a seawall** at Wamberal Beach to provide protection from coastal hazard threats:

- Many respondents agreed that it should be State Government (3.39) or a collaborative effort between directly affected property owners and all levels of government (3.34).
- The least supported statement was that responsibility for construction lies with directly affected property owners and Central Coast Council (2.67).

When asked who respondents thought should be responsible for **seawall maintenance**, respondents agreed that it should be a collaborative effort between all levels of government (3.64), followed by State Government (3.33). The least supported statement was that maintenance was the responsibility of directly affected property owners (2.65).

When asked who respondents thought should be responsible for the cost of **sand nourishment**, respondents agreed that it should be a collaborative effort between all levels of government (3.82), followed by State Government (3.48). The least supported statement was for directly affected property owners to be responsible for the cost of sand nourishment (2.38).

It is clear from the survey responses that respondents agree that:

- construction of a seawall should be the responsibility of State Government or a collaborative effort between affected property owners and all levels of government, and
- maintenance of a seawall (including sand nourishment) should be the collaborative responsibility of all levels of government.

Information and knowledge

Respondents were asked where they go to **access information** about the current state of Wamberal Beach (ie. to understand coastal hazard threats and the ongoing management of Wamberal Beach) with:

- 46 per cent indicating they always source information from Central Coast Council (3.89)
- 44 per cent saying they always source their information from expert coastal engineers and university research groups (3.72)
- 36 per cent suggesting they always source their information from State and Federal Government organisations (3.58).

Respondents least sourced information about the management of Wamberal Beach from social media (2.34).

When respondents were asked to indicate if they would **like any additional information** about a set of listed topics:

- 27 per cent said they would like to know more about the actions they can take to reduce their own risk in regards to coastal hazards.
- 27 per cent did not feel they needed any more information about anything in relation to coastal hazards and coastal management. That said, some respondents went on to ask questions such as why a wall is the only option being considered and why planned retreat is not an option and stating that a seawall is unsuitable in this location.
- 21 per cent wanted to know more about who the key players were in coastal management (ie. who is responsible).

During the consultation, Council provided extensive information about the seawall options through direct communications via email and phone, as well as inviting community questions and discussion about the seawall options during the online information sessions. Information was also provided through a detailed list of FAQ's and access to full technical and scientific reports on the Your Voice Our Coast website. Despite efforts of Council and expert coastal engineers to inform and engage the community, the community still had misconceptions about a solution for the site, highlighted by requests for a planned retreat and questions around why seawall options were the only options being considered. This has flagged the need for further community education about why a seawall solution is the most effective option for this location.

Additional comments or questions

A total of 162 respondents left additional comments or questions when completing the survey. These responses have been coded to group similar sentiments and are shown in the table below. Some respondents gave both supportive and unsupportive comments in their entry. For a full unedited verbatim list of responses to this survey question, please refer to the **Data Report** at **Appendix A**.

Table 2: Coded survey comments

Comment	N
Answered	162
Skipped	124
Supportive	
Seawall support (in general)	29
Concept designs do not show how outcomes would look in reality/sand would cover structures most of the time (all except promenade)	10
A seawall is to protect the beach for all of the community, not just beachfront property owners (also to protect Council assets)	12
Support for Options 1 or 2 (rock buffer)	8
Support for Option 5 (promenade)	6
Seawalls causing loss of sand from the beach is incorrect	2
Current beach hazard and materials need to be removed	1
Unsupportive	
No/do not build a seawall	33
Buy back properties/planned retreat/retreat	25
Please explore other options/no other options but seawall provided/more negotiation and consultation required	16
Leave as is/protect dune system/leave natural, sand will return	15
Homeowners must accept risk/their responsibility	12
Seawalls strip sand from the beach/none of the options effective/sighting Australian and International examples of seawalls	10
Need to work out a funding model/people need to see this to assist decision making	6
All seawall options are too expensive	5
Seawall options need to be considered alongside sand nourishment/CBA	4
Environmental studies required before decision is made/questions around seawalls, flooding and lagoon erosion	4
Limitations on access for beachfront property owners will not be supported/beach access from private property to the beach needs to be maintained	4
All seawall options ugly/unsightly/unattractive	3
Hybrid solution required – different solutions for different parts of the beach	2
Council is responsible/approved DA's	2
Definitely no promenade	1
Beachfront property owners should not have to pay construction costs	1

Comment	N
Build an artificial reef	1
Inform real estate agents of coastal risks	1

Of the 68 supportive comments, respondents agreed a seawall was a good idea and Council should just 'get on with it'. Others highlighted that the design renders did not show how the beach would look in reality following construction of Options 1-4 as sand would cover the structures most of the year (outside of large storm events). Those supportive of a seawall also said it would 'protect the beach for all of the community' including important community assets, not just for the benefit of beachfront property owners.

Of the 145 unsupportive comments, the community did not want a seawall constructed and strongly urged the buy-back of the worst affected beach front properties and a restoration of the natural dune system. Others were highly concerned that a seawall in this location will 'strip sand from the beach' and cause a 'narrowing of sand' which would impact on recreation opportunities and the environment. Others said that the seawall options were 'unsightly' and others suggested that all seawall options were 'too expensive'.

Additional comments and questions in opposition raise a few key points of community need (ie. information the community have indicated they need to know before making an informed choice about which option they prefer) being:

- To understand a funding model before decisions are made as to what type of seawall will be constructed. This is especially true for impacted property owners who are considering that they may be asked to contribute to the cost of construction, and if so, what that looks like and how will costs be distributed.
- To consider all seawall options alongside the cost of sand nourishment requirements and the outcomes of the Cost Benefit Analysis (CBA) for all suggested seawall options for the site.
- The acknowledgement and consideration of environmental concerns ie. risks of flooding and lagoon erosion.

It is clear from these concerns that the community needs to be reminded that this phase 2 consultation (concept design phase) is part of a broader staged approach to finding a solution for coastal erosion threats at Wamberal Beach and that additional phases will include:

- The completion of a detailed cost benefit analysis (CBA) on each of the options
- Finer detail about access to the beach from public and private property and environmental impacts that will be considered in the next detailed design phase (phase 3)
- Consultation around possible future funding models during a future project phase.

Social PinPoint

The five concept design options were made available on Social PinPoint where comments and suggestions were encouraged to stimulate discussion and expression of preferences. During the six-week consultation period a total of 267 feedback pins were placed on the concept design renders and a total of 1,047 reactions were made.

Some of the commentary received on the interactive concept designs included:

- comments on planned retreat being a more suitable option
- suggestions to create an offshore reef to address the erosion issues being faced at Wamberal Beach
- concern over sand loss.

Other comments related to wanting to understand the process and local impact of a seawall.

Comments that received the most reactions on each of the concept renders are detailed below. For a full unedited verbatim list of comments left on Social PinPoint please refer to **Data Report** at **Appendix A**. In interpreting results from Social PinPoint there is a focus on the number of reactions each comment received. Individual comments were either given a thumbs up or a thumbs down reaction from other community members.

Wamberal Beach- existing environment

In the interactive presentation of concept options on Social PinPoint, an image of Wamberal Beach as it currently looks was available. This image attracted 70 comments.

These comments included:

- support for leaving the beach in its natural state ('as is') due to concerns about sand being stripped from the beach if a seawall is constructed on site
- support for maintaining the natural look and feel of the beach environment
- discussion around the natural sand movement and potential for doing nothing
- the suggestion that the only option is planned retreat as the visual impact of the proposed seawalls would be highly unsatisfactory
- concern that the current state of the beach is a 'dump' and the area was unsafe.

Table 3: Supportive and unsupportive comments for the existing environment at Wamberal Beach

Wamberal Beach - existing environment	N	
Something I like	33	
Something I don't like	3	
Make a comment	34	
Top 3 responses – Something I like	👍	👎
It is a well-established pattern that when a sea wall is created it leads to further erosion of the sand located in front of it. Why let the interests of these 60 or so properties outweigh the interests of almost 20,000 people living in Terrigal and Wamberal.	17	1
Keeping the natural gentle slope of the beach and dune is the only way to maintain that critical piece of beachfront as it has been for thousands of years. This is the only solution that will guarantee the thousands of visitors and local members of the community continued access to this section of the beach. Any other solution will eventually erode the sand completely devastating the environment and community alike.	15	1
Should be left as is and houses removed. They should not of (sic) been built in the first place. With the houses gone the dunes will look after the beach and other properties.	11	1
Top response – Something I don't like	👍	👎
Status quo is a dump … damaged foreshore, unsafe areas and property in disrepair.	4	0
Top 4 responses – Make a comment	👍	👎
The top left looks best!!! [existing beach] The Wamberal Community do not want a seawall!! Please listen. I would prefer our beach not look like the attached photo!! It's disgusting.	13	1
Each of the five options talk about the ability to reflect wave energy when they should be looking to disperse wave energy as the sand does naturally already except for where private land owners have built too close to the wave zone creating 'cliffs' that cause waves to reflect and drag sand away.	12	0
Make sure we don't enter into a contract to pay for sand from Westconnex. It is not compatible sand with Wamberal. We would end up paying to take their waste when they should be paying us to take their waste. Tipping fees would be $200 a tonne for Westconnex. Instead, our Administrator can enter into a contract to pay for their waste and the residents get no say on the contract.	9	0
There is plenty of sand in the sea, it will restore naturally. Property Owners should be given the option to protect their property at their cost. Most of the restoration work is	9	4

Wamberal Beach - existing environment	N	
not on Council owned land. The legalities of the Council doing work on private land is an issue with any Council intervention. The best engineering solution is buried sand bags, stabilised with concrete and allowing the sand to naturally restore.		

Option 1: Rock Buffer with basalt

There were 3 supportive comments and 24 unsupportive comments left on a render image of Option 1. An additional 15 comments were also made. The supportive comments received NIL reactions.

Again, there was great concern about a seawall causing loss of sand from the beach and the dangers a rock buffer would pose to swimmers, surfer, families and members of the SLSC visiting the beach. Again, there were calls for Council to buy back affected properties and restore the natural dune system. People also did not like a rock buffer as it would ruin the aesthetic of the beach.

Table 4: Supportive and unsupportive comments for Option 1.

Option 1: Rock Buffer with basalt	N	
Something I like	3	
Something I don't like	24	
Make a comment	15	
Top response – Something I like		
Responses attracted NIL reactions.	0	0
Top 4 responses – Something I don't like		
The impact to the beach will be that of a breakwall with the waves reflecting off the large stones. This process erodes the sand which will eventually result in the loss of the beach completely. If this was to occur it would devastate the local community and visitors alike. Adding to this is the inherent danger a rockwall will pose to both surfers and swimmers if they are swept onto the rocks. Wamberal Surf Club will also lose access to this section of the beach placing lives in danger.	12	2
All photos are misrepresented of the current conditions. Look at what the wall and rock remediation has done to both Terrigal Beach and parts of Wamberal beach atm. These are not the only options and want to see the raw data from the initial community consultation. Walls ruin beaches and removes the sand. The only community members that want this is the 60 odd residents that have houses along the beach. On many cases those residents fought against Council to have their houses constructed closer.	10	2
By far the worst option. Ruins aesthetic of the beach and it's appeal.	7	0
This option and the two tiered walls are by far the ugliest and ruin the	7	0

Option 1: Rock Buffer with basalt	N	
aesthetic of the beach.		
Top 3 responses – Make a comment	👍	👎
The only worthy option is not listed, so this CCC process is flawed. The only acceptable option is the protection of the beach through the restoration of natural incipient and primary dunes/processes which are undermined by about 12 large homes that are unviable, perched too close to the beach, undermining the capacity of the beach to maintain a healthy sand budget. Where is the dune rehab plan? Negotiate and selectively relocate unviable homes. Don't push private externalities onto the public.	19	2
All these options show a seawall with a beach. This is very misleading and biases the survey. The only realistic pictures would show a wall with no sand.	5	0
This illustration does not represent the real world height difference between the beach and the residence backyards. the current drop is 5-10 in parts. This looks like 2m at most. Is sand being imported to build up the height of the beach?	5	0

Option 2: Rock Buffer with sandstone

There were 9 supportive comments and 16 unsupportive comments left on a render image of Option 2. An additional 8 comments were also made.

In support of the sandstone rock buffer, it was highlighted that the rocks would be buried by sand and will provide stability to the dune system. Unsupportive comments are highly similar to those expressed for Option 1.

Table 5: Supportive and unsupportive comments for Option 2.

Option 2: Rock Buffer with sandstone	N	
Something I like	9	
Something I don't like	16	
Make a comment	8	
Top response – Something I like	👍	👎
The 2 rock-wall solutions look the best. The wall will be buried by sand and they will provide stability to the dune which will protect the beach for everyone.	2	1
Top 3 responses – Something I don't like	👍	👎
The impact to the beach will be that of a breakwall with the waves reflecting off the large stones. This process erodes the sand which will eventually result in the loss of the beach completely. If this was to occur it would devastate the local community	8	1

Option 2: Rock Buffer with sandstone	N	
and visitors alike. Adding to this is the inherent danger a rockwall will pose to both surfers and swimmers if they are swept onto the rocks. Wamberal Surf Club will also lose access to this section of the beach placing lives in danger.		
This is a farce. The pictures convey the idea that these revetments will maintain the beach berm and cusps, whereas it is highly likely the beach will shrink within a few years, eventually disappearing. Also, none of the revetment options call out the fact that a revetment in one section of beach will transfer wave energy to adjacent beach areas, spreading the problem. Council is bankrupt. I request an interview with the relevant CCC decision-makers. This process is run by engineers.	6	0
How will the natural fore dune be able to rebuild with this option. This also creates a hard barrier that will most likely erode the beach to a very narrowand unusable strip of sand as has happened at Terrigal.	5	0
Top response – Make a comment	👍	👎
All photos are misrepresented of the current conditions. Look at what the wall and rock remediation has done to both Terrigal Beach and parts of Wamberal Beach atm. These are not the only options and want to see the raw data from the initial community consultation. Walls ruin beaches and removes the sand. The only community members that want this is the 60 odd residents that have houses along the beach. On many cases those residents fought against Council to have their houses constructed closer.	6	0

Option 3: Vertical Wall with rock toe

There were 0 supportive comments and 17 unsupportive comments left on a render image of Option 3. An additional 6 comments were also made.

Unsupportive comments are highly similar to those expressed for Options 1 and 2 in regards to perceived sand loss from the beach, a call for a planned retreat and a return of the natural dune system.

There were also concerns about graffiti and the wall looking like a 'prison wall'; being 'ugly' and a 'waste of money'.

Table 6: Supportive and unsupportive comments for Option 3.

Option 3: Vertical Wall with rock toe	N	
Something I like	0	
Something I don't like	17	
Make a comment	6	
Top response – Something I like	👍	👎
NIL responses received NIL reactions.	0	0
Top 4 responses – Something I don't like	👍	👎
The reflection of waves from the wall will result in the loss of the beach completely. Benefitting only a small few the impacts would devastate the many thousands of locals and visitors alike who use this beach. Adding to this is the inherent danger a wall will pose to both surfers and swimmers if they are swept into it. Wamberal Surf Club will also lose access to this section of the beach placing lives in danger as only limited equipment can be quickly brought to the scene of any rescue.	18	0
Ugly, waste of money.	12	0
Destroys the beach and the animal/marine life habitats.	11	0
This is looks very, very ugly, how long until it is covered in graffiti. If you like the sensation of walking alongside a prison wall then this might work. Apart from that the sand will most likely be washed away as has happened at Terrigal. Removing the foredune to build a wall seems very environmentally destructive.	10	0
Top response – Make a comment	👍	👎
Definitely not, our sand will be lost	2	1

Option 4: Vertical Wall without rock toe

There were 0 supportive comments and 22 unsupportive comments left on a render image of Option 4. An additional 2 comments were also made.

Unsupportive comments are highly similar to those expressed for Options 1, 2 and 3 regarding perceived sand loss from the beach, a call for a planned retreat and a return of the natural dune system. There was also a wish to maintain the natural beauty of the site and restore ecosystems with concerns about the environmental effects of a rock wall on the lagoon.

Table 7: Supportive and unsupportive comments for Option 4.

Option 4 – Vertical Wall without rock toe	N	
Something I like	0	
Something I don't like	22	
Make a comment	2	
Top response – Something I like	👍	👎
NIL responses received NIL reactions.	0	0
Top 3 responses – Something I don't like	👍	👎
This option would most likely result in the eventual total loss of sand on the beach. It is has no regard whatsoever for trying to maintain natural beauty or ecosystems at all. It looks like a prison yard wall.	13	2
Seawalls don't absorb the waves energy, they just deflect it. In an event of an ECL where all of the sand is removed from in front of the seawall, much of the force of the waves energy is moved to the ends of the seawall. In this case Terrigal and Wamberal Lagoons. Wamberal Nature Reserve, (National Park), on one end… hundreds of homes surrounding Terrigal Lagoon on the other. Pure madness.	12	0
The reflection of waves from the wall will result in the loss of the beach completely. Benefitting only a small few the impacts would devastate the many thousands of locals and visitors alike who use this beach. Adding to this is the inherent danger a wall will pose to both surfers and swimmers if they are swept into it. Wamberal Surf Club will also lose access to this section of the beach placing lives in danger as only limited equipment can be quickly brought to the scene of any rescue.	9	0
Top response – Make a comment	👍	👎
All the vertical seawall options I do not agree with. The sand will be lost and the beach ruined to protect a dozen houses.	7	0

Option 5: Tiered Wall with promenade

There were 15 supportive comments and 29 unsupportive comments left on a render image of Option 5. An additional 16 comments were also made.

Reactions for each of the comments was the most divided when compared to comments left on the other 4 concept design options. Unsupportive comments are highly similar to those expressed for Options 1, 2, 3 and 4 regarding perceived sand loss from the beach, a call for a planned retreat and a return of the natural dune system.

Responses indicate that some believe this is the 'best option' out of the 5 concept design options presented, agreeing it would benefit both the property owners and the community. Others agreed it is a welcomed 'community asset' and will contribute to a healthy lifestyle for both able bodied people, the elderly and those with a disability. Supporters suggested that it would provide a valuable link to Terrigal, Spoon Bay and the lagoons which would allow them to walk, ride and scoot between the two locations.

Others did not like the idea of linking a promenade to Terrigal, some agreeing it would look like a 'skatepark' with the addition of concrete and removal of the natural environment. Others agreed that the cost benefit analysis (CBA) must consider the loss of value to homes and loss of revenue to local businesses caused by the 'wilful destruction of this major recreation and tourism' asset.

Table 8: Supportive and unsupportive comments for Option 5.

Option 5 – Tiered Wall with promenade	**N**	
Something I like	15	
Something I don't like	29	
Make a comment	16	
Top 4 response – Something I like	👍	👎
I think option 5 adds to the environment in addition to the value of a seawall. It would improve access to the beach for people of all ages and mobility. It would be a tourist attraction for the area.	8	9
Great idea! Myself and many members of the community have always discussed how a promenade was needed. Seen effective on the Gold Coast. Makes sense to build something that'll last!	6	13
Best of the 5 options by far. Either this, or no sea wall the preferred options. The rest are neither here nor there.	6	6
Great for running and walking without worrying about cars and roads! The public should get something out of this!	6	4
Top 5 responses – Something I don't like	👍	👎
Private access to the beach should be removed entirely. Equitable, public access should be provided at existing public access routes.	10	1
The reflection of waves from the wall will result in the loss of the beach completely. Benefitting only a small few the impacts would devastate the many thousands of locals and visitors alike who use this beach. Adding to this is the inherent danger a wall will pose to both surfers and swimmers if they are swept into it. Wamberal Surf Club will also lose access to this section of the beach placing lives in danger as only limited equipment can be quickly brought to the scene of any rescue.	9	0

Option 5 – Tiered Wall with promenade	N	
After a few years of storm surges, it will be goodbye beach. This photo presents the lie that the beach berm and incipient dunes will not be undermined by the wall. They will. Many other homes on the right side of the photo are not at risk. Start again. Hands off our beach.	8	2
The CBA must consider the loss of value to our (Central Coast ratepayers) homes and loss of revenue to our businesses caused by the wilful destruction of this major piece of recreational and tourism infrastructure. The overall effect on the Central Coast economy will be significant and unjustifiable to save 60 houses on clearly unsuitable land. Not to mention the major social, environmental and economic benefit of returning land back to the public use.	8	2
Where is the natural environment, it looks like a skate park.	8	1
Top 3 responses – Make a comment	👍	👎
I like the idea of Option 5 as it is the only one that has a promenade. The cost would be worth it, so the beach would have easy access from Terrigal to Wamberal for all ages and disabilities to enjoy and use, like they do now with the new Terrigal boardwalk. This could be like a continuation of this would benefit both businesses and tourists, as well as achieving better accessibility for residents. It would open up the whole of our area, whilst also protecting beach front homes.	7	6
I like this option as it provides public benefit particularly for families with young children, the elderly and disabled who would be able to enjoy a walk along a beachside promenade other than Terrigal.	5	8
A terrible option. Just as Terrigal Beach has disappeared with their wall that is what will happen here. Leave Wamberal as a natural beach. We don't need it to be an extension of Terrigal, nor do we need the disastrous impacts of a sea wall.	3	1

Online Information Sessions

Eight information sessions were conducted across a two week period during August with morning, midday and late afternoon timeslots scheduled. The sessions were hosted online using Zoom due to the COVID-19 public health orders. Each session consisted of a presentation followed by Q&A.

The sessions were attended by CCC's Coastal Management Team, Manly Hydraulics Laboratory, UNSW Water Research Laboratory and DPIE to provide an expert response to questions and input into discussion. The sessions were attended by 22 participants. Participants were encouraged to submit questions during the registration process. These questions were addressed during the information session following the presentation. Open discussion was also encouraged if time permitted. For a full unedited verbatim list of pre-submitted questions for each of the online information sessions, please refer to the **Data Report** at **Appendix B**. The information sessions provided an opportunity for the project team to

provide more detailed information and for the community to gain a better understanding of the project and ask questions.

The main questions submitted upon registration and asked during the information session are collectively summarised below:

- Why a seawall is the only option being considered for Wamberal Beach?
- Who pays for the seawall? What are some of the likely funding models?
- Why the idea of a planned retreat has not been explored further?
- Who pays for sand nourishment?
- Concern that seawalls cause loss of sand from the beach.
- Who is responsible if, what has been modelled in the science using decades of data, is different to what occurs in reality?
- Are the seawall designs adaptable to climate change?

Other questions asked about what would be further discussed and considered during a detailed design phase (phase 3) once the look and feel of a preferred seawall has been chosen, such as:

- Environmental impacts and mitigation measures
- Access to the beach from both public reserves and carparks, and private beachside residences
- The extent to which the seawall will become buried with sand nourishment and/or natural sand accumulation on the beach
- Restoration of disturbed dune systems following construction.

Phone calls and emails

Those who did not have access to the internet to complete the digital survey, comment on Social PinPoint or attend an online information session had the option of making contact with the Project team via phone and email.

A total of 4 phone conversations took place and approx. 10 emails were received about the Project during the six-week consultation period.

Main topics of discussion included:

- Opposition to a seawall at Wamberal Beach
- Concerns a seawall will increase erosion
- Concerns regarding private beach access
- Why a planned retreat had not been considered.

Creating vibrant communities through powerful conversations

Mining, Exploration and Geoscience
Department of Regional NSW

21 March 2024

Mark and Corinne Lamont
By email:

Dear Mr and Mrs Lamont,

Thank you for your letter of 18 February 2024 to the Hon. Courtney Houssos MLC, Minister for Finance, Minister for Domestic Manufacturing and Government Procurement and Minister for Natural Resources, regarding offshore sand recovery for beach nourishment. The Minister has asked that I respond on her behalf.

The NSW Government acknowledges the importance of allowing coastal protection works to support the nourishment and rehabilitation of NSW coastal beaches. There are already existing legislation and policies in place that allow for offshore sand recovery from NSW coastal waters for beach nourishment.

Recovery of sand as a mineral in NSW's coastal waters is already permissible and regulated under the *Offshore Minerals Act 1999* to ensure that the environmental impacts of any proposed activities are assessed and minimised.

The Government's *Offshore Exploration and Mining Policy* makes it clear the Government will consider applications for offshore mineral exploration and mining for sand for the purposes of beach nourishment, provided it can be demonstrated that it is for a broader public benefit.

More recently, the Government introduced the *Environmental Planning and Assessment Amendment (Sea Bed Mining and Exploration) Bill 2024* to the NSW Parliament which contains exemptions to ensure coastal management activities, such as the recovery of sand from NSW coastal waters for beach nourishment, continue to be permissible.

Thank you for bringing this matter to the Government's attention.

Yours sincerely,

Georgina Beattie

Chief Executive Officer
Mining, Exploration and Geoscience

Rik Hart
Administrator
A vibrant and sustainable Central Coast

Central Coast Council

26 March 2024

Mr and Mrs Lamont

Dear Mr and Mrs Lamont

Amendments to Environmental Planning and Assessment Act 1979

Thank you for your correspondence of 18 March in relation to amendment 203 to the *Environmental Planning and Assessment Act 1979* to prohibit carrying out of sea bed petroleum and mineral exploration and recovery and related purposes.

These amendments, passed by the NSW Parliament on 14 March, give effect to the NSW Government's Offshore Exploration and Mining Policy (February 2022). Minister Scully in his second reading speech stated:

> *"... there is currently no legislative prohibition on those activities and no limitations on development within the State for the purposes of offshore mineral or petroleum exploration and mining. The bill is intended to give certainty to our communities and industries about the Government's position on offshore exploration and mining by giving effect to the NSW Government's Offshore Exploration and Mining Policy."*

The amendments do not change the existing policy framework in NSW. What they do mean is that an Act of Parliament is now required to amend that policy framework. This interpretation has been confirmed with both the Department of Climate Change, Energy, the Environment and Water and the Department of Planning, Housing and Infrastructure.

The Offshore Exploration and Mining Policy states that:

> "*the NSW Government:*
> - *Does not support offshore mineral, coal or petroleum exploration or mining for commercial purposes in or adjacent to NSW coastal waters*
> - *Will consider offshore mineral exploration or mining in NSW coastal waters for the purposes of beach nourishment, provided it is for a broader public benefit."*

The process to extract marine sand for coastal protection works for public benefit remains the same, which is via an exploration licence to identify a suitable sand source, a mining lease for approval under the *Mining Act 1992* to access that sand supply and development consent for use of the sand supply for public benefit. Council continues to advocate for a more streamlined, whole of NSW approach to offshore sand extraction for coastal protection works, as beach nourishment for public

benefit is an integral component of Council's preferred solution for Wamberal Beach.

As there has been no material change to the NSW regulatory framework in relation to coastal protection, and, in particular, no change to the prohibition on use of offshore sand for private property protection, I don't consider it necessary to change Council's adopted approach at this time.

I and senior Council staff remain happy to accompany you to a meeting with Minister Sharpe's office on this matter, diaries permitting.

Yours sincerely

Rik Hart
Administrator

Gmail **Corinne Lamont**

FW: Dear Mr Hart, We are disappointed that you are not taking the opportunity presented by the Environmental Planning and Assessment Amendment (Sea Bed Mining and Exploration) Bill 2024 (Amendment) to pass a resolution to halt Council's participation in t

Office Of The Administrator Mon, Apr 8, 2024 at 2:48 PM
To: Corinne Lamont
Cc:

Dear Mr and Mrs Lamont

Thank you for your further correspondence. I believe I have made my position clear.

I remain available to attend a meeting with Minister Sharpe's office, should my diary permit.

Yours sincerely,

Rik Hart

Central Coast Council

Office of the Administrator
Central Coast Council

"We acknowledge the Traditional Custodians of the land on which we live, work and play. We pay our respects to Darkinjung country, and Elders past and present. We recognise the continued connection to these lands and waterways and extend this acknowledgement to the homelands and stories of those who also call this place home. We recognise our future leaders and the shared responsibility to care for and protect our place and people."

As an ECO Destination, we encourage you to reduce your footprint by not printing this email and keeping file sizes to a minimum.

From: Corinne Lamont
Sent: Tuesday, 2 April 2024 2:07 PM
To: Administrator Rik Hart ; Office Of The Administrator

Cc: Mark Lamont
Subject: Dear Mr Hart, We are disappointed that you are not taking the opportunity presented by the Environmental Planning and Assessment Amendment (Sea Bed Mining and Exploration) Bill 2024 (Amendment) to pass a resolution to halt Council's participation in th...

[EXTERNAL EMAIL] Do not click any links or attachments unless you have checked the sender and trust the content is safe. If you are unsure, please report this to I&T Service Desk via the Portal.

Dear Mr Hart,

We are disappointed that you are not taking the opportunity presented by the Environmental Planning and Assessment Amendment (Sea Bed Mining and Exploration) Bill 2024 (Amendment) to pass a resolution to halt Council's participation in the WPA seawall DA.

The Amendment ensures that offshore sand nourishment for coastal erosion management would not become an unintended victim of mining regulations and is a clear signal of NSW Government support of coastal protection that provides broader public benefit. The Amendment confirms NSW Government is enabling sand nourishment for public beach benefit at the very time where your Council is advancing a vertical seawall for private property benefit, by joining the WPA seawall DA.

There are three major issues with your response and stated position:

1. Sand nourishment's primary purpose being for public beach amenity and protection, versus private property protection

2. Council's failure to advance sand nourishment (without a seawall) as a solution according to CZMP Action TW14

3. Overwhelming broad community rejection of the seawall.

Accordingly, we ask you to review the following facts, reconsider your position and pass a resolution for the Central Coast community as requested previously.

1. **The WPA vertical seawall does not provide broader public benefit**

In your letter of 26 March 2024, you infer the proposed WPA seawall to be private property protection. That is the disconnect. NSW Government and the overwhelming majority of the community are calling on Council to take actions that are primarily to protect and enhance public beach amenity, not actions that are primarily for private property protection.

Council can apply to NSW Government for offshore sand nourishment for public beach protection. So far, Council has not done that. Council has instead advanced a wholly inappropriate WPA alignment for private property protection through a vertical seawall. Council's private property first approach is the very reason Council is less able to access NSW Government support for sand nourishment. Council needs to get the NSW Government 'ask' and 'purpose' right.

You say you dismissed our request for you to pass a resolution to stop Council's participation in the WPA seawall DA because "there has been no material change to the NSW regulatory framework in relation to coastal protection, and in particular, no change to the prohibition on use of offshore sand for private property protection". The amendment to the (Sea Bed Mining and Exploration) Bill 2024 by the NSW Government signals NSW Government's continued support of sand nourishment for a **broader public benefit,** and the continued prohibition for use of offshore sand for private property protection indicates that broad public benefit, not private protection, is paramount in coastal management as is the intention of the CMA. Council's WPA seawall initiative, being focused on private protection, puts Council out of step with NSW Government's sand nourishment support criteria. Council's decision to join the proposed private property WPA seawall DA, works against public beach benefit under the Amendment. For these reasons, we ask you again to pass a resolution to halt Council's participation in the WPA seawall DA and pursue an available solution, sand nourishment, that provides a broader public benefit.

Put another way, how can Council endorse, adopt, approve, or join in any way the WPA vertical seawall knowing that the WPA vertical seawall will not provide a broader public benefit? Council must see the conflict in committing and wasting public funds and resources to prop up a WPA private property seawall that has no broader public benefit, and therefore, limiting the extent of NSW Government support under the Amendment.

The proposed vertical seawall is an inequitable beach-destroying, lagoon-flooding option for coastal private property protection at Wamberal Beach. The only protection the WPA seawall will provide is protection to the often-empty business rental and holiday dwellings that sit on the sand dunes, many loaded with positive covenants that are not enforced by Council. Like NSW Government, Council needs to back out of 'coastal protection' that is not primarily providing broader public benefit.

2. Council's failure to investigate and advance sand nourishment and dune revegetation as a coastal erosion solution for Wamberal Beach and other Central Coast beaches as per the CZMP actions TW14 and TW13.

As quoted in your last email, sand from offshore sources has been available for beach nourishment if it is "for broader public benefit". Unless you or Council regard Wamberal Beach as being a private beach, any sand nourishment on Wamberal Beach would be primarily for the broader public benefit. Does Council believe sand nourishment at Wamberal Beach as a coastal protection measure, in conjunction with dune revegetation (TW13) has no "broader public benefit"? Council opting for a sand nourishment as a coastal protection solution at Wamberal Beach would incidentally have the added benefit of protecting the private properties that sit at the back of the beach. It is the WPA seawall that has "no broader public benefit". It delivers the opposite and, therefore, Council should not be using community funds and resources propping up private property protection instead of funding coastal erosion measures that do provide broader public benefit.

Sand from offshore sources continues to be an available option and was considered a favourable and feasible option in comparison to terminal protection, as far back as 2003 and included as a CZMP action. As confirmed in the MHL stage 4 – Sand Nourishment Investigation Council has failed to investigate a sand nourishment option for Wamberal Beach. The MHL stage 4 – Sand Nourishment Investigation states:

> "Sand nourishment as structural protection for un-piled beachfront structures has not been considered in the sand nourishment investigation given the adoption of terminal protection outlined in the certified Gosford Beaches CZMP (2017). This has previously been reported primarily due to the lack of readily available sand sources (potential sources subject to future legislative and planning viability) required for large-scale nourishment to sufficiently mitigate the prevailing storm erosion hazard without terminal protection. Large-scale nourishment also poses a number of complexities including implications on flooding and lagoon entrance management, broader embayment-wide environmental impacts on existing nearshore environments, seabed habitats and reefs, as well as ongoing commitments to maintaining a sufficient storm erosion buffer. The design objectives of sand nourishment in this study are to:
>
> > A. Assess the merits of sand nourishment requirements to mitigate the impacts on public beach width amenity for each of the proposed seawall concept designs options detailed in Stage 3 Seawall Concept Design."

Council continues its failure to carry out an action in the CZMP to investigate a sand nourishment solution for Wamberal and other Central Coast beaches. Instead, Council is pursuing a private vertical seawall for Wamberal Beach that is nothing like what was described as an action in the (now expired) CZMP. The CZMP does not even contain an action to build a seawall. This important detail is deceptively omitted from Council's updated Coastal Erosion -Wamberal Beach FAQ page. Please refer to Council's other pre-existing Wamberal page "Responding to the coastal erosion threat at Wamberal Beach" which states:

> "Sand nourishment coupled with a terminal seawall (Action: TW15) is the preferred long-term solution for Wamberal Beach in the CZMP. **However, the CZMP does not provide for the construction of a seawall.** Indeed, the solution is complex - requiring input and agreement from a number of parties."

On this matter, also refer to Wamberal Seawall Advisory Taskforce Meeting Record (Meeting 10) 7 September 2021 which notes:

> *"4.3. Update on procedures around approvals with view to progress a preferred*
>
> *option by year end following phase 2 community consultation: Scott Cox advised staff*
>
> *are working on a detailed project plan but still need clarification about who is*
>
> *responsible for any works. Noted consent authority will likely by(sic) [be] the Local*
>
> *Planning Panel or Regional Planning Panel. Approval process also depends on the*
>
> *option selected as each has different implications regarding land tenure (e.g., if a*
>
> *structure is built on Council land, Crown land, privately owned land, or a combination*

*thereof). **It was noted there are no actions in the certified Coastal Zone Management Plan (CZMP) regarding Council building a seawall."***

Council continues to inappropriately justify its position to build the WPA vertical seawall with the now expired CZMP while it has failed to investigate CZMP action for a sand nourishment and dune revegetation solution for Wamberal and other Central Coast beaches and, according to NSW Government policy, that option has always been available to Council.

The Amendment compels you to pass a resolution to stop Council's participation in the private property WPA seawall DA and carry out the sand nourishment and dune revegetation solution for Wamberal Beach. Please refer to the letter attached from CEO Mining, Exploration and Geoscience which states that The Government will consider applications for offshore mineral mining for sand for the purpose of beach nourishment, provided it can be demonstrated it is for the broader public benefit."

3. Massive lack of support for the WPA seawall

It would be obvious to you and Council that the wider community does not support the proposed WPA/Council seawall at Wamberal Beach. Council staff member Ben Fullagar recently confirmed at a Council pop-up that, like the community, most Council staff do not support a seawall at Wamberal. If the Central Coast community had elected Councillors, it is unlikely that Council would be joining the WPA seawall DA, and I am confident you know this to be true. With only approximately five months remaining before the Central Coast community has an elected Council again, any decisions regarding actions with the extreme level of opposition from the community as the proposed WPA/Council seawall should be left to an elected Council. We ask you again to therefore make the resolution.

An elected Council never resolved to build a seawall. That resolution was made by you. This is another deceptive omission on Council's Coastal Erosion - Wamberal Beach Webpage which needs to be amended immediately. Council attempts to justify partnering with the WPA in a seawall DA by deceptively linking the WPA seawall to resolutions made by an elected Council to adopt a CZMP which never had actions to build a seawall. The resolution to build a seawall has been made by you and not an elected Council. We implore you to make a resolution that serves the Central Coast community and halt all further Council action on the WPA seawall until the community has an elected Council. We insist that Council stops wasting any further community resources on the WPA seawall DA. Council staff are of the opinion that the DA will be refused and would head to Court. Why is Council partnering in a DA that it is confident will be refused? That is an obvious negligent waste of public funds.

We have informed you from our communication with beachfront property owners, that almost half of the beachfront property owners would prefer a properly coordinated sand nourishment and revegetation solution instead of the proposed WPA vertical seawall, but that option has not been offered to the community. Beachfront property owners have told us they have been harassed, lied to and bullied into consenting to the WPA seawall DA. Council and all involved are guilty of this by association. The reason the WPA wants a seawall has nothing to do broader public benefit. It would be shameful for Council to continue with the WPA seawall given all that is in front of you, all that is at stake for the community.

Here are examples of the big WPA seawall con straight from the horse's mouth. This is what Council is supporting and propping up, sourced from WPA emails to beachfront property owners. Note, you might say that Council is not the WPA, but for Wamberal Beach, Council is tied to the WPA and the following reflects on Council, not just the WPA:

10th May 2023

"Having the council[sic] participating on the DA as a landowner is a great advantage and their financial assistance also helps the economies of scale and helps keeps the costs down for everyone."

5th October 2023

"What we will say, is that the proposed DA is designed to finally deliver the protection we all deserve, whilst simultaneously enhancing the value of our properties."

"2024 will see us secure an approval for our protection and complete something that has never been completed in the history of the beach."

Jan 2024

"Having a DA with every block of land involved means every land owner has the ability to protect their home if and when, they choose to do so and that has always been the goal."

"We have never, in the history of the beach had the council join a group DA as landowners but they are in this DA application and have been working extremely closely with us to ensure we are successful."

"We can provide a very supportive payment plan for the cost of the DA.

It is time for Council to stop propping up a private seawall benefitting very few of its constituents.

Conclusion and meeting with Minister Sharpe's office

We will confirm with you a date for a meeting with The Hon Penny Sharpe's senior advisor, but ask, for all the reasons set out above, that Council in the meantime halts all seawall actions. This meeting should have taken place a long time ago and organised by Council not Wamberal Beach SOS. The Coastal Erosion- Wamberal Beach Webpage states that Council has "advocated that mass sand nourishment of areas severely impacted by coastal erosion should be provided to coastal communities." What does this mean? What evidence can Council provide that it has done this? The MHL 2021 studies indicate Council has not advocated for a sand nourishment solution for Wamberal Beach.

We look forward to your reply and your decision to pass the resolution as requested.

Kind regards,

Corinne and Mark Lamont

Wamberal Beach SOS

No Wamberal Beach Seawall Inc

[redacted]

[redacted]

Smoking guns at Wamberal – fight to stop a seawall to save the beach

The Central Coast community and local group Wamberal Beach Save Our Sand (SOS) have been in a long battle to save Wamberal Beach and its adjacent lagoons from a destructive proposed seawall.

Top scientists and engineers say the proposed 1.3-kilometre hard vertical seawall would leave the community with a wall but no beach and would increase food risk for hundreds of low-lying homes around the adjacent lagoons.

In 2016 and 2020, Wamberal was in the spotlight as aerial news footage showed sea surges eroding the beachfront dunes, some homes needing to be evacuated, some homes undermined, homeowners interviewed as victims, complaining that Council had promised them a seawall, that Council was missing in action, failing to save their homes from the sea. In the midst of those storms, media and the community lent beachfront residents a sympathetic ear. But in the calm that followed, the local community has woken up to the fact that things are not as they were presented. It turns out the beachfront owners were not promised a seawall, quite the opposite. It turns out most of the beachfront owners signed Indemnities and Covenants on their land titles from the outset, accepting full responsibility for storm surges and dune erosion damage, releasing Council from all liability. Even more, homeowners signed Covenants promising they would replace sand and dune vegetation lost after storms, in perpetuity, all at their cost. They even signed undertakings that if they did not restore their foredunes after storms, Council could do the work and bill the owners for it. The Covenants were intended as a mechanism to preserve the public beach, a focus for local and regional tourism. The beachfront owners knew the risks and committed to fix the beach when storms arrived. None of that made the news when homes were filmed on the brink of falling into the sea. So how did the promises of beachfront property owners to perpetually restore their foredunes turn into a claim that they were the victims, promised a seawall by a Council that was not jumping to their aid? Is this a case of buyer beware, or is there a deeper story of influence, money, power, and deceit?

In 2024, SOS and the wider community are calling on NSW Government to step in and avert a seawall development disaster. SOS is asking NSW Government to change policies and the Offshore Minerals Act so that sand nourishment from sustainable offshore sources can be made available to restore Wamberal Beach and other NSW beaches, as is being done in other states and around the world. As coastal engineer Angus Gordon OAM says, “Seawalls are a 19th Century response to a 21st Century problem. They don’t work in places like Wamberal. Adaptive strategies such as sand nourishment and dune revegetation are a superior solution, critical as our coasts are impacted by sea level rises associated with climate change. The situation at Wamberal Beach is a signal for Australia, a nation that in one sense is defined by its beaches. If we get Wamberal right, we can apply that success more widely, up and down the coast.”

The following document concentrates on a specific, festering, unwanted seawall; a likely illegitimate Gosford Beaches Coastal Zone Management Plan (CZMP) used to drive it; seawall politics and influence, and a community’s fight to stop it. This document provides some of the history of the proposed Wamberal Beach seawall, but by no means covers all

the corrupt mishandling of a planning problem that led to a group of property owners lobbying Council and a local state politician to get a 1.3km seawall built along a beach to protect their properties. Around 70% of the properties that have been built on the sand dunes at Wamberal Beach are holiday houses and Airbnb's. Understandably, the community opposes sacrificing their beach and adjacent lagoons to protect holiday houses. Wamberal Beach has been a big part of so many lives with generations of the same residents still living in the area and calling Wamberal Beach their local beach.

Context

Figure 1: 1970s Wamberal Beach cottages

Figure 2: 2020 History repeats, Wamberal Beach bunkers

Nearly 50 years ago, some smaller beach houses toppled off sand dunes at Wamberal into the sea. With that knowledge, a relatively small group of landowners and developers built more homes along the dunes. They made the homes bigger, more bunkered, pushing the limits further as the decades rolled by. Many of the homes turned into rental businesses. Successive Councils, State Governments and at times even the Courts allowed the developments, sometimes not. In most cases, developers signed Covenants promising to deal with inevitable sand erosion, promising to restore beach sand and revegetation after storms. But after a couple of storms, those developers and property owners appear to have forgotten their Covenant promises, instead leaning on the local Council to bail them out. They wanted a seawall. The 2020 storms cemented the beachfront owner seawall push, just as the Central Coast Council became bankrupt and went into administration. Since 2020, the unelected Council governed by a single Administrator, Rik Hart, has continued to push for a seawall, Council recently signing on as a co-applicant to the private beachfront property owner group's seawall development application (DA). The unelected Council appears to have opted to co-fund a seawall for the private owners rather than enforcing the Covenants those private owners made when they decided to build on sand dunes.

Seawalls - reactive, self-entitled fortification, just don't mention the public cost

When faced with an immediate disastrous beachfront storm situation, those who stand to lose and those who back them become highly reactive, prone to jumping onto the evening news, mustering sympathy, portraying themselves as beachfront victims, blaming the local Council for not fortifying their homes sooner or for not agreeing to fortifications, conveniently saying nothing about the impacts of such fortifications on beach amenity, manipulating for a seawall. We hear the mantra of beachfront owners being the line of defence to protect the homes and infrastructure behind them, and we have all heard the line that the poor beachfront homeowner's living room should not be the last line of defence along the beach.

All this drives a push for poorly considered flawed decisions. The media sensation becomes so thick that outsiders watching the news would think the entire community backs the calls for fortification to protect the poor beachfront homeowners. This has been the case at

Wamberal, where seawall talk gets traction whenever a severe storm arrives, taking sand. Reactive media sensationalism oils a political agenda to fortify the beach and quietly push the problem further along the beach, or to fortify the privileged homes without regard for the impact such fortification would have on beach amenity. This situation has been at play at Wamberal Beach for some time and is best described by D Lord and T Macdonald's in their paper "Managing Wamberal Beach - The Forgotten Twin" presented to the NSW Coastal Conference in 2016.

> "Many things remain undone. Through the inability to implement forward planning that is cognisant of the changing coastal risks, we have failed to minimise the increase in assets at risk at present and into the future, not just at Collaroy and Wamberal but right along the NSW coast. We have had limited success in implementing strategies to address the known hazards over many years, lengthening rather than reducing the list of "hotspots" along the coast. We have increased reliance on emergency response, rather than pursuing sound planning and development controls to minimise impacts on both development and the natural beach environment. This is becoming the management approach of first resort, subsequently facilitating ill-considered and localised protection options to be constructed during and post storm. Such works, which may only provide temporary relief, can transfer adverse impacts alongshore and likely increase risk to beach users.
>
> A longer-term view to Coastal Zone Management is required. As reliance on emergency response increases, some areas may no longer be suitable for their current use. Alternatively, their large-scale protection may result in loss of the beach amenity along significant sections of the developed coast and foster a divided community response to funding and land use. It is an opportune time to rethink our past responses and reflect on the direction of coastal management. Do we want to continue increasing expenditure, resource commitment and community angst associated with "unforeseen disasters" and increasing "emergency" management? Or are holistic, longer-term strategies feasible and if so, what is blocking them?
>
> See: Managing Wamberal Beach – The Forgotten Twin

Why is it that after all those decades, Council, under administration only a year and a half ago in 2022, finally resolved to build a seawall? Part of the answer appears to be a dubious Gosford City Council (GCC) draft Coastal Zone Management Plan (CZMP). A draft copy of the Plan was used to try to win a court case, Dunford v Gosford City Council."

Abuse of the CZMP

A CZMP is a management plan enacted under the Coastal Protection Act 1979. The Gosford City Council Gosford Beaches CZMP's Executive Summary states the purpose, objective, guidelines, principal, consultation process of developing a CZMP. A resolution was passed by Gosford City Council on 26 April 2017 for the Draft CZMP to be submitted for certification. Words that are significant to actions pursued after certification which are discussed in this report are italicised. The actions in the CZMP relevant to this Smoking Guns document are:

- TW11 Terminal protection – Council's action to *review* the design and funding of a terminal protection structure (TPS) for Wamberal
- TW14 Council's action to investigate sources of sand and feasibility of beach nourishment for Wamberal Beach
- TW15 Beach nourishment coupled with a *terminal revetment* to increase buffer against storm erosion.

Refer to attachment 1 & 2 Worley Parsons Gosford City Council Gosford Beaches CZMP Wamberal Beach Executive Summary and Wamberal Actions.

We have learned from Angus Gordon OAM, a former member of the NSW Coastal Panel who was involved in drafting and implementation of the 1979 NSW Coastal Protection Act, that due to changes in the coastal management legislation about 20 years ago, NSW Government no longer scrutinised or approved actual CZMP actions, it only certified that correct steps were followed in the CZMP's development. Where the NSW Coastal Panel had to previously *approve* the actual actions in the CZMP, that was no longer required, Mr Gordon advised that this change was made so no future liability stemming from a CZMP could fall on the NSW Government.

The following Gosford City Council Minutes from 2017 resolve to submit the CZMP to the Minister for certification.

MINUTES OF THE ORDINARY COUNCIL MEETING OF COUNCIL 26 APRIL 2017 contd

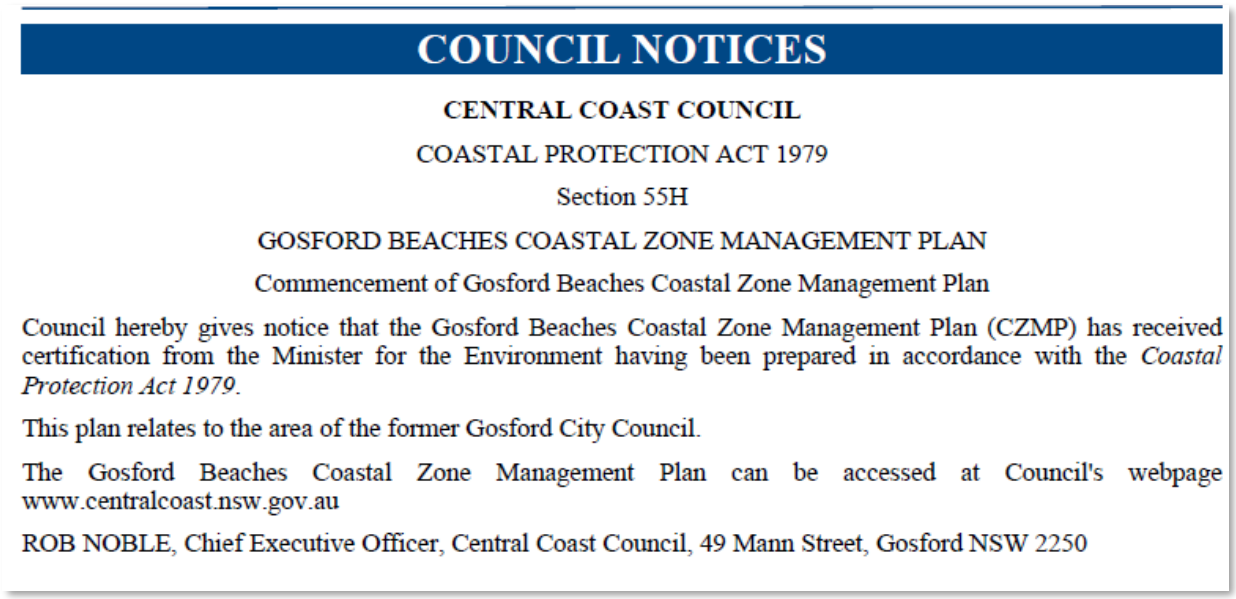
3.8 Report on the Draft Gosford Beaches Coastal Zone Management Plan

RESOLVED on the motion of Mr REYNOLDS:

232/17 ***That Council resolve to submit, for the purpose of s. 55G(1) of the coastal Protection Act 1979, the Draft Coastal Zone Management Plan (CZMP) for Gosford's Open Coast and Broken Bay Beaches to the Minister for the Environment, to seek certification from the Minister pursuant to s.55G(4) of that Act.***

233/17 ***That Council authorise the Chief Executive Officer to make minor amendments to the Draft Gosford Coastal Zone Management Plan prior to submitting that Plan to the Minister, to ensure that references to the former Gosford Council, this Council and the former Gosford local government area are correct.***

On 2 June 2017 the CZMP was certified by the NSW Minister for the Environment as follows:



COUNCIL NOTICES

CENTRAL COAST COUNCIL

COASTAL PROTECTION ACT 1979

Section 55H

GOSFORD BEACHES COASTAL ZONE MANAGEMENT PLAN

Commencement of Gosford Beaches Coastal Zone Management Plan

Council hereby gives notice that the Gosford Beaches Coastal Zone Management Plan (CZMP) has received certification from the Minister for the Environment having been prepared in accordance with the *Coastal Protection Act 1979*.

This plan relates to the area of the former Gosford City Council.

The Gosford Beaches Coastal Zone Management Plan can be accessed at Council's webpage www.centralcoast.nsw.gov.au

ROB NOBLE, Chief Executive Officer, Central Coast Council, 49 Mann Street, Gosford NSW 2250

So, the CZMP was certified in terms of its process of development, but it was never approved as a course of action. Media should investigate how the certified CZMP has been misused for political and legal purposes, as seen below in the Wamberal Beach Dunford and Marchese cases, to falsely assert approval of a seawall, something the CZMP never did.

Can a CZMP be used to try to win a court case?

Dunford v Gosford City Council came before the NSW Land and Environment Court on 9 December 2014. Gosford Council had refused Esther Dunford's Development Application to demolish an existing beachfront dwelling at 23B Ocean View Drive Wamberal and build a new one with deep concrete pylons and a basement carpark. Council refused the Development Application because:

- The construction of the proposed dwelling would not sufficiently avoid or minimise the potential risk of coastal erosion, and
- The proposed construction of the dwelling was not in the public interest as it would be impacted by coastal hazard processes resulting in property damage and loss.

Point 36 under "Findings" in the Land and Environment Court (LEC) judgement found that:

> "The significant difference between Mr Lord (Expert Witness for Council) and Mr Nielsen (Expert Witness for Dunford) was whether there was a need for the revetment wall (or Terminal Protection Structure [TPS] as described *in the draft CZMP)*. Essentially, Mr Lord maintained that there should be no development, such as that proposed, until the revetment wall was constructed whereas Mr Nielsen maintained that a dwelling could be constructed, with an appropriate design that would sufficiently minimise the potential risk from coastal erosion, without the revetment wall. In his opinion, the proposed development satisfies this test."

The Court's Commissioner agreed with Nielsen that a revetment wall was not required to sufficiently minimise the risk from coastal erosion and Dunford's appeal was upheld on 14 January 2015. The house with basement garage was approved and built without seawall protection.

See: *Dunford v Gosford City Council [2015] NSWLEC 1016 – Barnet Jade*

But the Dunford development did not end there…

CZMP sham endorsement, sight unseen

In a paper presented to the 2016 NSW Coastal Conference by P Aiken from the NSW Coastal Alliance, a pro-seawall lobby group, Mr Aiken suggested that Gosford Council's draft CZMP was used in the Dunford court proceedings to justify Council's refusal of the Dunford's DA. Mr Aiken also suggested that Gosford Council officers asked Council's Catchment and Coast Committee to quickly endorse the draft CZMP *without actually seeing it*, to assist Council in an attempt to win the Dunford case. In the paper, Mr Aiken wrote:

> "The Gosford Council Coasts Committee had been asked and agreed to endorse the document without actually seeing it, to assist Council. At a meeting of the committee just days before, Committee members were encouraged to support this request of Council Officers present at the meeting because it was said that funding was at risk due to a demand by the "Minister" that the CZMP be immediately presented for certification. It was the Emergency Sub-Action Plan for Wamberal Terrigal Beach that the Minister was demanding to be presented, not the CZMP and yet the Land and Environment Court believed that a draft CZMP endorsed by community representatives had been presented to the Court in support of Council's defence of its rejection of a [Dunford] Development Application. It was impossible for this Plan to be legitimately endorsed by community representatives because they had not seen it in a completed form. As far as the committee was concerned this was simply a mechanism to support the provision of funding that was at risk of being withdrawn by the State Government because of an unrealistic timeframe for the completion of the CZMP."

In summary, the 2014 draft CZMP was rushed through Council's Catchment Committee for endorsement because the Committee believed Council staff needed the CZMP endorsed for State funding, which was not true. The real reason the CZMP Committee endorsement was required was for Council to be able to use the document to try to win the Dunford case. If Mr Aiken is correct, a revetment wall and sand nourishment as a CZMP action for Wamberal was contrived and forced without the endorsing committee even seeing the document, to assist GCC win a Land and Environment Court case, which it lost and was also ordered to pay costs. Also, if Mr Aiken's claim is correct, the court had been misled into thinking that community representatives had reviewed and endorsed the Plan. They had not. Members of the Committee had not even seen the final draft Plan. Also, as noted in Mr Aiken's paper, the notion that a revetment wall was a preferred coastal management action for Wamberal is false and GCC building a revetment wall was, according to Council's astounding court admission, just "spin". Regarding spin, at a separate cost hearing before Justice Sheahan on 1 May 2015, the decision of the Land and Environment Court 12 June 2015 noted comments by counsel for Gosford Council, Mr Fraser in Section 21 of the decision:

> "(2) the proposed revetment wall had been discussed for 25 years, but Mr Fraser conceded it was "all talk and no action" (Tp137, L16); (3) much of Council's argument was admitted by its counsel to be "spin" (Tp142, c.f. p119)"

According to Mr P Aiken, the 2015 CZMP was not a legitimate planning instrument and therefore casts doubt on the legitimacy of the certified 2017 CZMP that politicians and Council relied upon to build a seawall at Wamberal.

See: "Engagement and Consultation in Coastal Management" P Aiken NSW Coastal Alliance pages 13-14.

Dunford now wants a seawall too!

In 2016, the Dunford property at 23B Ocean View Drive became involved in yet another DA appeal before the Land and Environment Court. Also, this wouldn't be the last time the dubious 'rushed, sight-unseen, spun' draft GCC CZMP and in particular CZMP actions for a

Terminal Protection Structure (TPS) seawall at Wamberal Beach would be used to win a case in court.

In August 2016, Eugene Marchese lodged a DA for a seawall extending from 29 Pacific St to 25C Ocean View Drive Wamberal (The Pacific 6). The Dunford place, 23B Ocean View Drive, was included in this DA even though in the 2014 Dunford case, the LEC consented to construction on the block without the need for a seawall, the Court judgement in the earlier case being that the dwelling and basement garage being constructed would withstand erosion and would not require seawall protection.

The consent authority for this Pacific 6 seawall DA was the NSW Coastal Panel and because the Panel for some reason did not assess the DA in the required time it was deemed a refusal. The Pacific 6 applicants appealed the refusal in the LEC. According to Eugene Marchese, the named applicant for the Pacific 6, the DA was "blocked at every turn by the NSW Coastal Panel".

See *"Wamberal beachfront residents 'blocked' again in a bid to build their own revetment wall" 28 June 2017*

Enter the CZMP to the rescue

On 19 December 2016 Sharon Molloy Director at the Newcastle branch Of Office of Environment & Heritage (OEH) forwarded a letter to Prof Bruce Thom, the Chair of the NSW Coastal Panel, opposing the Pacific 6 seawall because of "end effect" damage, encroachment onto the public beach and sand nourishment requirements. Sharon Molloy did add that "OEH considers that it is far more desirable that an embayment wide design be prepared and implemented".

Refer attachment 3 Letter from Sharon Molloy Office of Environment and Heritage regarding "Pacific 6" seawall DA.

The NSW Planning Minister, Rob Stokes, is also reported in the previous Daily Telegraph article as saying, "he did not approve a short-term solution for Wamberal residents because the former Gosford Council had yet to submit a Coastal Zone Management Plan". The Gosford CZMP included a whole of embayment solution (refer to Attachment 2).

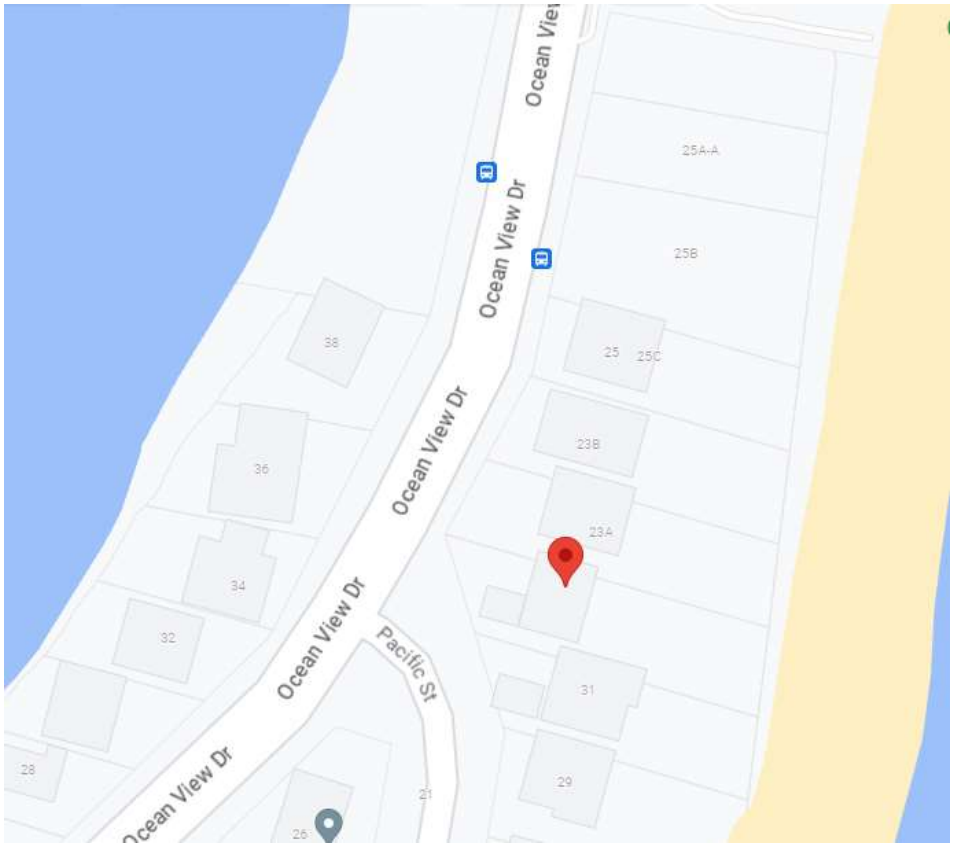
The CZMP was certified in April 2017 by Gabriel Upton, the Liberal Minister for Local Government from January 2017 to March 2019. In a recording of a community event organised by Wamberal Protection Association (WPA) pro-seawall beachfront property owner lobby group, a member said, "they [WPA] were fighting behind the scenes for months to get the CZMP certified, and if they hadn't formed the WPA and incorporated and hadn't approached pretty well everybody who had influence on the signing of the CZMP, it probably wouldn't be done today"

It is very clear from the recording that the WPA believed they were instrumental in getting the CZMP certified, and they had Adam Crouch's (State MP for Terrigal) unequivocal support, he even made the seawall an objective for his first and second terms in office. The purpose of the CZMP included actions for all Gosford Council beaches from Patonga to Forrester's yet the only reason the WPA, NSW Coastal Alliance (NSW CA) and Adam Crouch wanted the probably illegitimate CZMP certified was self-serving with their Wamberal Beach seawall agenda.

Refer to Wamberal Protection Association (Wamberal beachfront property owners pro-seawall lobby group) 2017 recording of seawall promotional event at Breakers Country Club Wamberal

Time 32:00

Map 1: Location of the Pacific 6 (Right hand side)



With the Gosford Beaches CZMP now certified and after a very expensive 2016 LEC court battle for both the Pacific 6 and State Government's Office of Environment and Heritage (OEH), the LEC ruled in June 2017 that the new consent authority for the Pacific 6 became Central Coast Council. The Pacific 6 relodged their DA with the newly amalgamated Central Coast Council. Was this orchestrated? While the Pacific 6 were in the LEC fighting to get their seawall DA approved, which didn't look like happening, the WPA, NSW CA were lobbying Adam Crouch MP and other NSW Liberal Government to get the CZMP certified so the decision to build any seawall at Wamberal beach was back with Council, and not the NSW State Government who would not approve the Pacific 6 DA.

Facebook posts from WPA pro-wall lobby group and Adam Crouch MP regarding certification of the CZMP and building a TPS seawall at Wamberal Beach

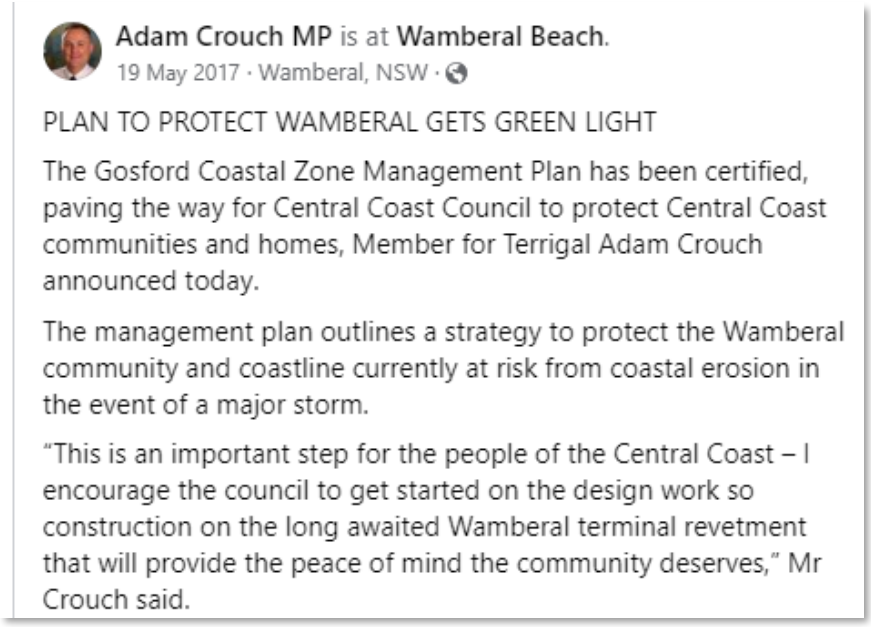
Wamberal Lagoon to Lagoon Solution
19 May 2017 ·

GREAT NEWS!!! - AN IMPORTANT MESSAGE FROM WAMBERAL PROTECTION ASSOCIATION PRESIDENT PHIL HUDSON

We are delighted to receive this attached announcement from our local member Adam Crouch MP, who along with us has been actively pursuing this matter. We acknowledge the efforts of the Central Coast Council under the guidance of Administrator Ian Reynolds in getting the CZMP finalised and submitted to the NSW Government. We also commend the Minister for the Environment, Gabrielle Upton for her consideration and timely Certification of the CZMP, and of course we thank Adam Crouch for his unwavering efforts to push this project.

Whilst we are genuinely excited with this news, we remain mindful that there are still more steps to be taken in order for the Terminal Revetment Structure to become a reality. We will continue to work closely with the Central Coast Council, Adam Crouch, Minister Upton [Environment] and Minister Roberts [Planning] to facilitate these next crucial steps of design, funding and timing.

So in essence, it is great news and we thank all those who have helped us reach this point ... and we look forward to ongoing assistance and co-operation as we move ahead with the next steps in the process.



Adam Crouch MP is at Wamberal Beach.
19 May 2017 · Wamberal, NSW ·

PLAN TO PROTECT WAMBERAL GETS GREEN LIGHT

The Gosford Coastal Zone Management Plan has been certified, paving the way for Central Coast Council to protect Central Coast communities and homes, Member for Terrigal Adam Crouch announced today.

The management plan outlines a strategy to protect the Wamberal community and coastline currently at risk from coastal erosion in the event of a major storm.

"This is an important step for the people of the Central Coast – I encourage the council to get started on the design work so construction on the long awaited Wamberal terminal revetment that will provide the peace of mind the community deserves," Mr Crouch said.

Mr Crouch's continued NSW Government push and interference in Council affairs to make a Wamberal Beach seawall a reality is discussed in more detail later in this document.

High hopes for the Marsden Jacob Associates Report

The WPA was eager for Council to implement CZMP actions to build a seawall along Wamberal Beach. They were aware that Council was waiting on the release of a State Government funded OEH-commissioned Marsden Jacob Associates report, a Cost Benefit

Analysis (CBA) of eight Wamberal Beach management options, including seawall options. At the WPA's 2017 event, where they incidentally were pitching to the Pacific 6 and other beachfront owners, they said they were eagerly anticipating the results of the report so they could move forward on a seawall, and they expected the Marsden Jacob Associates report to back a seawall. *Refer to* *Wamberal Protection Association (Wamberal beachfront property owners pro-seawall lobby group) 2017 recording of seawall promotional event at Breakers Country Club Wamberal*

Time 6:00 minutes

Around that time, 17 June 2017, Mr Crouch wrote to the new Council CEO on behalf of the beachfront owners, directing Council to move forward with a seawall specification before the Marsden Jacob Associates Report was even finished. So, according to the WPA, Adam Crouch MP directly influenced the certification of the CZMP a couple of months earlier, and his letter to the Council CEO shows Mr Crouch pushing the Council CEO to start seawall plans, even without the findings of the Marsden Jacob Associates Report being finalised or published.

Refer Attachment 4 Marsden Jacob Associates Wamberal Beach management options: Cost benefit and distributional analysis

When the Marsden Jacob Associates report finally arrived, it did not back any seawall options, it was quite the reverse. Suddenly, the Marsden Jacob Associates report was a thorn in the side of Adam Crouch MP, and in time, the WPA. What would happen to the report?

ADAM CROUCH MP

Member for TERRIGAL

Electorate Office: Shop 3 Fountain Plaza, 148-158 The Entrance Road, Erina NSW 2250

Phone: (02) 4365 1906 Fax: (02) 4365 4768
Email: terrigal@parliament.nsw.gov.au

16th June 2017

Attention Ian Reynolds –Administrator
Rob Noble - CEO
Central Coast Council
49 Mann Street
Gosford NSW 2250

Dear Ian and Rob,

Re: ***Coastal Sea Wall - Wamberal***

In mid-2016 Office Environment Heritage commissioned a Cost Benefit Analysis (CBA) to examine the likely costs and benefits (both public and private) of a potential sea wall structure at Wamberal against the 'do nothing' option.

Gosford City Council was initially represented on a Steering Committee that initiated and has overseen this work, but the relevant officer ceased employment following the creation of Central Coast Council and was not replaced. OEH expects the Cost Benefit Analysis to be finalised this month and will share its findings with Central Coast Council.

A decision on what funding, if any, OEH would provide through its "Coastal Grants Program" for any sea wall cannot be made until such time as an actual proposal is provided. At present, Central Coast Council has not submitted a proposal to construct a sea wall at Wamberal.

The CBA will provide informed consideration of the distribution of costs and benefits of a sea wall, which will assist Central Coast Council in determining a funding model, and OEH's consideration of an appropriate State Government contribution. The CBA will be one input to these decisions and will be balanced against other considerations.

Finalisation of the CBA is not required in order for Central Coast Council to progress the design of a seawall. Specifically, the CBA does not preclude Central Coast Council from independently progressing preliminary concept design work and community consultation that will be necessary before a final engineering design and costing can be undertaken.

I am requesting, on behalf of the residents that surround the immediate area of the proposed coastal sea wall to be constructed at Wamberal, that Central Coast Council move forward immediately to submit the required proposal for costing determinations to be considered. I am advised that Ms Sharon Molloy, Acting Director Hunter Central Coast of the Office of Environment and Heritage can be contacted on 4927 3120 or sharon.molloy@environment.nsw.gov.au should you require further assistance.

I look forward to a response to this urgent request.

Adam Crouch MP
Member for Terriga

c.c. The Hon Gabrielle Upton MP

Letter from Adam Crouch MP to Council directing them to start work on the proposed Wamberal Beach seawall.

The following statement by Mr Ian Reynolds Council Administrator reveal that Council was awaiting the Marsden Jacob Associates CBA to make an informed decision on any CZMP actions for Wamberal Beach.

See: Council's Plan for Coastal Management in the South Certified - 4 June 2017

Now the Plan has been certified, Council is in a position to apply for State Government funding to help manage coastal hazards and other issues in a timely and cost-effective manner.

The Office of Environment and Heritage (OEH) is currently undertaking a cost-benefit analysis for its design of a proposed revetment wall along the whole of Wamberal Beach.

"Once the design, cost benefit analysis and construction cost is completed by OEH and made available to Council, Council can then have an informed and constructive conversation with local landowners, State Government, and the community about a possible permanent solution for beach erosion at Wamberal and how it might be funded," Mr Reynolds said.

New Council in the dark?

Central Coast Council (Council) had their first Councillor elections since amalgamation in September 2017. On 21 June 2018 at an NSW Land and Environment Court conciliation conference, the Marchese v Central Coast Council case was settled by the parties making an agreement, not by a decision of the Court based on merit, and so the Pacific 6 appeal was upheld. A condition of consent of the Marchese-Council 'Pacific 6' settlement related to actions in the CZMP, namely:

> "6.1. If the whole-of bay seawall solution is implemented for Wamberal Beach as provided within Gosford Beaches CZMP, … and the removal of the proposed work is required due to an incompatibility of two designs then, at that time, the seawall approved under this development consent must be removed at the cost of the registered properties of the land subject of this development consent."

In the Court judgement by Gray C, point 4 stated:

> "In making orders to give effect to the agreement between the parties, I was not required to make, and have not made, any merit assessment of the issues that were originally in dispute between the parties."

Refer attachment 5 Marchese v Central Coast Council [2018] NSWLEC 1310

The community needs to know the settlement terms that were reached between the parties in the LEC with the decision to uphold the appeal in favour of the DA applicant.

The decision by the LEC for the matter to be settled is also surprising given the following, included in supporting documentation for the DA:

> "As reported in Horton Coastal Engineering "Coastal Engineering Report and of Environmental Effects, accompanying the 2016 Pacific 6 DA, in the Egger Case:
>
> > *"In 1987, the Supreme Court of NSW in Egger v Gosford Shire Council found that the protection works at 25 Pacific Street may have contributed to the loss of 23a Ocean View Drive in a coastal storm in 1978. As stated in the judgement, 'the additional erosion due to the seawall interacting with the northerly moving body of water probably made the difference between the home remaining or collapsing".*
>
> *Therefore, since 1987, there has been an awareness that (based on law) the 25 Pacific Street seawall may cause an adverse impact on adjacent properties, including the subject properties (and indeed may have done so in the June 2016 storm). "*

Horton, the architect of the Collaroy seawall, was advocating a Wamberal seawall arms race. He tried to use the Eggers case, a case that warned against seawall developments, as a justification to simply build more seawalls, literally kicking the problem further along the beach.

The issue of "end effects" with a seawall is referenced in law yet to avoid this impact on Wamberal beachfront properties that are not at risk, Central Coast Council is allowing a seawall to be forced on everyone and pushing the end effects to the lagoons that will sit at either end of the TPS.

The mystery of the Marsden Jacob Associates report

On 4 June 2018, about two weeks before the Pacific 6 LEC case settled, Council Mayor Jane Smith announced that the Office of Environment and Heritage Marsden Jacob Associates "Wamberal Beach Management Options: Cost Benefit and Distributional Analysis (CBA)" would be released and made publicly available via the Council Website.

See: Highlights of the 4 June 2018 Council Meeting

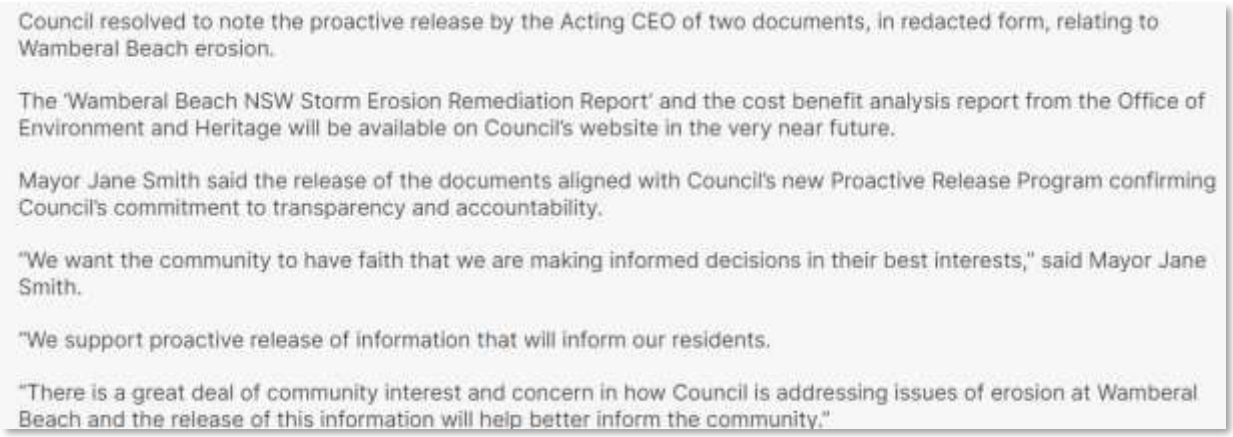
Council notes proactive release of information and the establishment of a working group relating to erosion at Wamberal beach

Council resolved to note the proactive release by the Acting CEO of two documents, in redacted form, relating to Wamberal Beach erosion.

The 'Wamberal Beach NSW Storm Erosion Remediation Report' and the cost benefit analysis report from the Office of Environment and Heritage will be available on Council's website in the very near future.

Council also announced establishment of a Working Group to investigate erosion solutions for Wamberal Beach. The only two community members in the group were Wamberal beachfront property owners.

See: Council notes proactive release of information and the establishment of a working group relating to erosion at Wamberal Beach - 4 June 2018



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The 'Wamberal Beach NSW Storm Erosion Remediation Report' and the cost benefit analysis report from the Office of Environment and Heritage will be available on Council's website in the very near future.

Mayor Jane Smith said the release of the documents aligned with Council's new Proactive Release Program confirming Council's commitment to transparency and accountability.

"We want the community to have faith that we are making informed decisions in their best interests," said Mayor Jane Smith.

"We support proactive release of information that will inform our residents.

"There is a great deal of community interest and concern in how Council is addressing issues of erosion at Wamberal Beach and the release of this information will help better inform the community."

See article: COUNCIL FORMS WORKING GROUP TO TACKLE WAMBERAL EROSION 6 June 2018

Remarkably, the Marsden Jacob Associates report had been published ten months prior to these Council announcements, which raises the following very serious questions:

1. Was release of the report supressed by the NSW State Government or Council? If so why and under whose instructions? Was the Report suppressed or kept away from Council because of the Pacific 6 Court case and/or Mr Crouch MP's and/or Ministry influence and/or other reasons, and under whose instructions?

2. How did Council obtain a copy of the report? Did Council obtain a copy of the Marsden Jacob report with a Government Information Public Access (GIPA) request on OEH? When was the Report released to Council?
3. Noting the Report was published in August 2017, if the report was not immediately released to Council, why wasn't it?
4. Was there a situation that some in Council Management were aware of the report and had seen the report earlier, but not the Mayor or Councillors?
5. What was Council's view of the Report and was the Report discussed between Council and Mr Crouch MP, if so, what was discussed?
6. Why was the report not released publicly when it was published in August 2017?

The Marsden Jacob Associates report concluded that a TPS seawall was the worst option for Wamberal Beach, that a seawall, regardless of what type, delivered no public benefit. The Marsden Jacob Associates Report killed the idea of a TPS, yet Council used a TPS at Wamberal Beach to settle a court case. How could Council settle the Pacific 6 case with the option of progressing a seawall if it was aware of the contents and recommendations of the Marsden Jacob Associates CBA? Is the reason for this apparent inconsistency that Council was not aware or could not be seen to be aware of the existence of the report?

In summary, here we have a situation where the Pacific 6 DA is in the LEC with the State Government opposing the DA and it is unlikely the appeal will be upheld. Enter a CZMP that was pushed for NSW Government certification by Adam Crouch MP which includes items for a TPS seawall at Wamberal. A long-awaited Marsden Jacob Associates report that recommends no seawall at Wamberal is suppressed and Council settle on the Pacific 6 LEC case using the TPS seawall as a bargaining tool. The following articles describe the absurdity of the situation:

See article: Revetment wall at Wamberal approved 6 July 2018

"As one NSW Government agency concludes that the building of a revetment wall to protect beachfront private property at Wamberal may not be viable, the state's Land and Environment Court (LEC) has ruled in favour of the building of such a revetment."

See: Government report predicts a grim future for Wamberal Beach – 6 July 2018

Related to this is the question of what Council offered in the negotiations to reach a settlement with the Pacific 6.

- Did Council make the right offer, a fully informed offer, a legal offer?
- Did Council offer the Pacific 6 a future seawall to settle the matter?
- Would Council have made a different offer if they were provided access to the Marsden Jacob Associates report months before?
- Who at Council or outside Council negotiated, influenced and made the offer?
- Was the CZMP action (TW11) mischaracterised during the negotiations as being a Council decision for a seawall when in fact it was only a call for a review?

Unsolved mystery 1: Disappearance of the Marsden Jacob Associates report

The Marsden Jacob Associates CBA 'disappeared' for some years. In July 2023, Corinne Lamont made numerous attempts to obtain a copy of the Report. Mrs Lamont started her search with NSW Department of Planning and Environment (DPIE). According to DPIE the report didn't exist. They could not find any record of the report. Mrs Lamont was able to provide DPIE proof (see Figure 1 below) that the report existed, and they suggested that she contact State Government Library Services, which she did on 9 August 2023. Mrs Lamont subsequently received the following response from DPIE:

Michele O'Brien
to me

Hi Corinne

I've checked a number of sources for you and have been unable to locate this document with no success. See below:

- OEH Library Catalogue
- OEH Digital Archive
- Department of Planning & Environment catalogue
- Department of Planning and Environment Digital archive
- State Library of NSW catalogue
- National Library catalogue

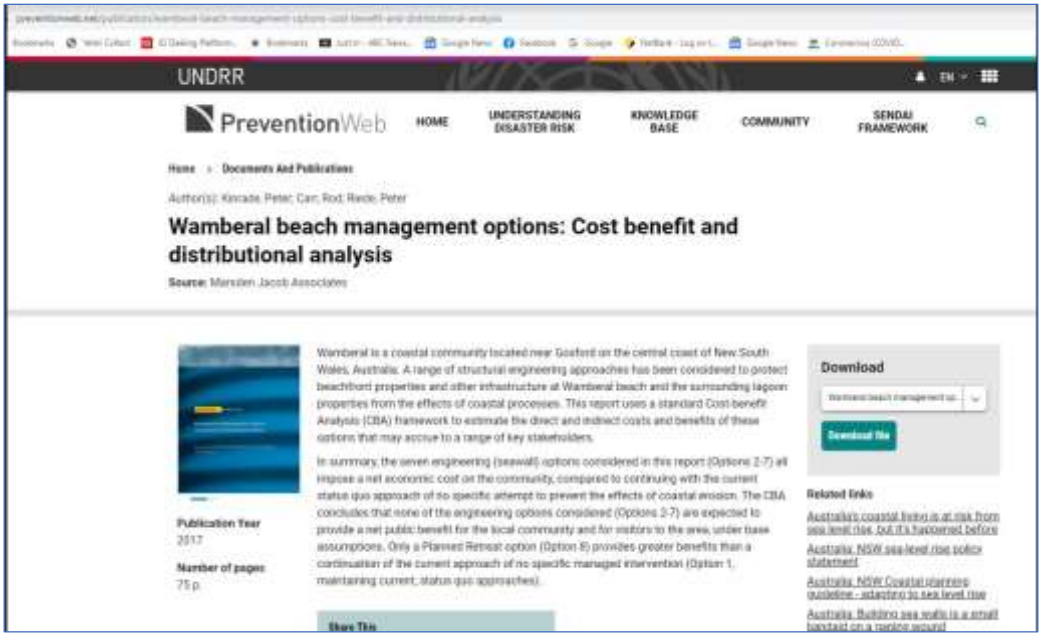
I also tried the Wayback Machine Internet Archive but could not locate it.

Hopefully you will have some success with the original author. You could also try to the local government library for Wamberal

Kind regards
Michele

Email DPIE SEARCH FOR Marsden Jacob CBA – 9 August 2023

Figure: Evidence of the existence of the Marsden Jacob Associates report



The smoking guns of Wamberal Beach seawall manipulation report – 20 February 2024

Mrs Lamont subsequently made enquiries with the author of the Report and received the following response on 17 August 2023:

Wamberal beach management options: Cost benefit and distributional analysis
3 messages

Corinne Voysey Wed, Aug 9, 2023 at 5:58 PM
To:

Dear Peter,

Sorry to bother you again and thank you for your call yesterday morning. After your call I contacted OEH again to see if I could get a copy of your "Wamberal beach management options: Cost benefit and distributional analysis" publication. Unfortunately OEH said they were unable to find any record of the publication and suggested I contact the government Library Services, which I did. Library Services checked the following and the Wayback Machine and were unable to locate the publication:

- OEH Library Catalogue
- OEH Digital Archive
- Department of Planning & Environment catalogue
- Department of Planning and Environment Digital archive
- State Library of NSW catalogue
- National Library catalogue

I also contacted a State Member of Parliament who quoted the publication in her speech in September 2020. Unfortunately they cannot locate the publication either. I don't know where else I can go to obtain a copy and was hoping you might be able to help.

I look forward to hearing from you.

Thank you and kind regards,

Corinne Lamont

Peter Kinrade Thu, Aug 17, 2023 at 9:09 AM
To: Corinne Voysey

Hello Corinne,

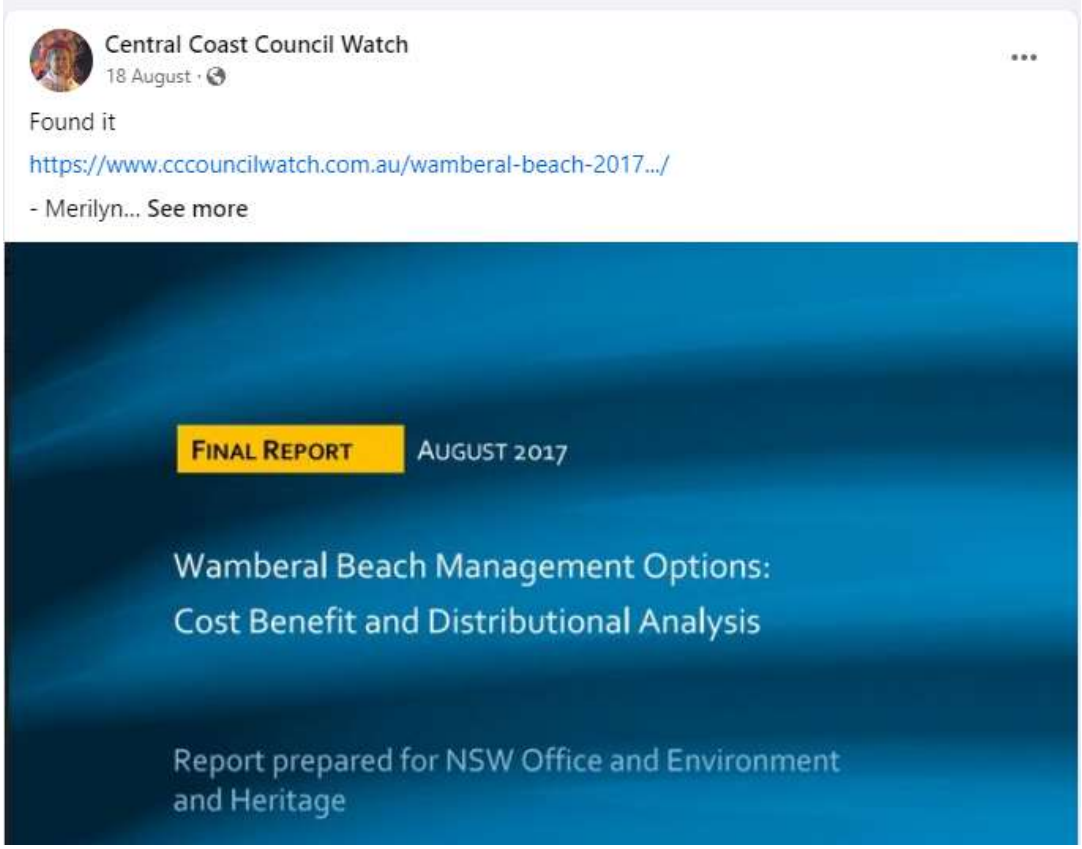
Apologies for the delay in getting back to you. Even though the report is now 6 years old, I am surprised that that OEH does not have a record of the report. As I mentioned previously, unfortunately we cannot provide you with a copy without permission from the OEH, but I will talk with my colleagues as to whether there are any other options available to you. I will get back to you once I have done this.

Kind regards

Peter

Peter Kinrade | Associate Director
MARSDEN JACOB ASSOCIATES
Level 4, 683 Burke Road

Mrs Lamont next wrote to the editor of Coast Community News after recalling they mention receiving the Marsden Jacob Associates Report in an article published on 6 July 2018 "*Government report predicts a grim future for Wamberal Beach"*. Coincidentally, July 2018 was the month after the settlement of the Pacific 6 court case. As a result of Mrs Lamont's inquiry, former Coast Community News journalist Merilyn Vale located the Report and published it on her Central Coast Council Watch Facebook page on 18 August 2023.



At the same time, Mrs Lamont thought she would try to locate the report through Adam Crouch MP's office. Adam Crouch's office sent Mrs Lamont a copy of the Report on 17 August 2023, a few days before Ms Vale posted it on Facebook.

ElectorateOffice Terrigal Thu, Aug 17, 2023 at 9:08 AM
To: Corinne Voysey

Good morning Corinne,

I am well thanks, hope the same for you and Mark as well.

Please find attached 2017 Cost Benefit Analysis by Marsden Jacobs. Let me know if you have any issues accessing it.

Kind regards,

Jack Robinson
Electorate Officer
Office of Adam Crouch MP
Opposition Whip
Member for Terrigal

T: (02) 4365 1906

The response that Mrs Lamont received from Council in relation to her search for the Report is troubling. As with her attempt to locate the report through DPIE, Mrs Lamont first used the search tools available on the Council and DPIE Websites. What surprised Mrs Lamont is that both sites held reports and publications dating back to the last century, yet it did not have the six-year-old Marsden Jacob Associates report, however, Local Liberal State MP Adam Crouch and a local Facebook media source had copies.

Pulling teeth – emails to Mr Fullagar (Council) regarding the Marsden Jacob report

On 26 Jan 2019 Council resolved to commence the Wamberal TPS and Sand Nourishment preliminary investigations and concept designs. Why was this resolution made if the Marsden Jacob Associates Report was already the preliminary report on a seawall for Wamberal Beach? Did Council have the Marsden Jacob Associates CBA 2017 at the time that this resolution was made?

3.2 Deferred Item - Management Activities at Wamberal and Terrigal Beaches

Councillor Burke left the chamber at 8.08pm and did not return.

Moved: ***Councillor MacGregor***
Seconded: ***Councillor Pilon***

Resolved

36/19 ***That Council note the Deferred Item - Response to Motion of Urgency U5/18 Asbestos – Wamberal and Terrigal Beaches which is Attachment 1 to this report.***

37/19 ***That Council note the funding offer provided by the NSW Government for the Wamberal Terminal Protection and Sand Nourishment preliminary investigations and concept design.***

38/19 ***That Council request the Chief Executive Officer to commence the Wamberal Terminal Protection and Sand Nourishment preliminary investigations and concept design.***

39/19 ***That Council request the Chief Executive Officer to provide a report on the activity suggested by Councillor Pilon.***

Mrs Lamont wrote to Ben Fullagar, Section Manager Catchments to Coast, Central Coast Council and asked him for a copy of the Marsden Jacob CBA 27 July 2023 believing that Council would have a copy as Gosford Council staff were involved in a steering committee with OEH at the time the report was commissioned by OEH. Mr Fullagar initially advised Mrs Lamont that Council did not have a copy and the report was never finalised. Mrs Lamont was subsequently able to prove to Mr Fullagar that the Marsden CBA did in fact exist, that up until July 2020 Councillors were still asking for the report:

Council Minutes 20 July 2020 item 748/20 as follows:

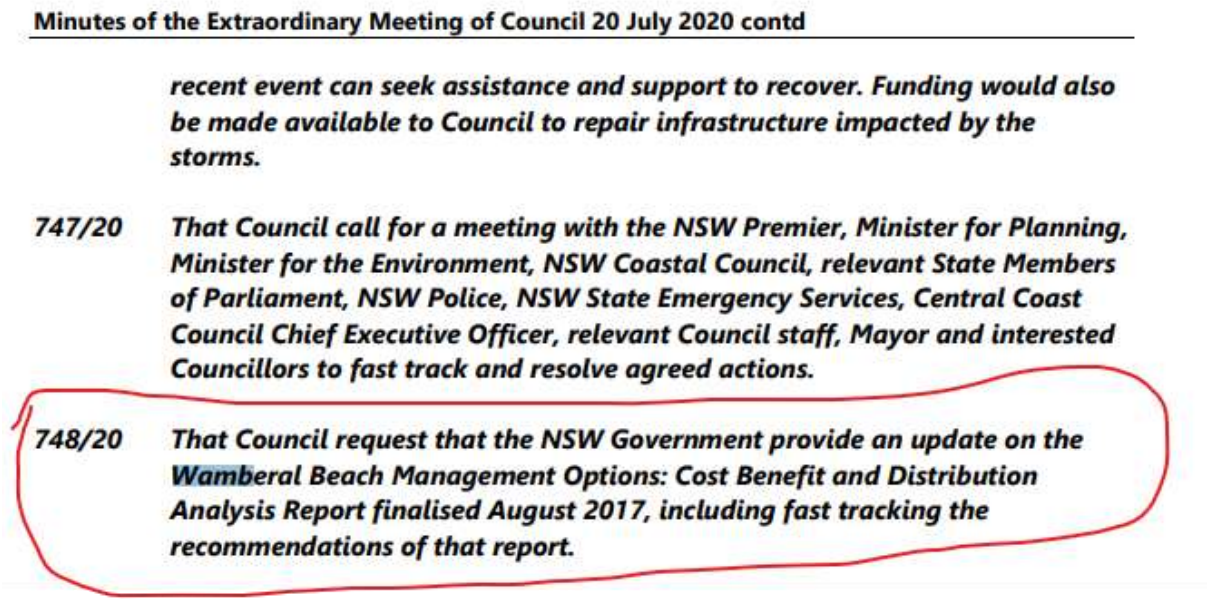
> "That Council request that the NSW Government provide an update on the Wamberal beach management options: Cost benefit and distributional analysis Report finalised August 2017, including fast tracking the recommendations of that report."

Astonishingly, an article in The Guardian 28 July 2020 discusses the findings of the Marsden Jacob CBA including that a seawall would deliver no net benefit.

How was The Guardian and other media outlets able to publish an article on the Marsden Jacobs Associates CBA while Council was still requesting the CBA to be released?

See article: Wamberal beach erosion: seawall would deliver no net benefit, study finds

Refer to Attachment 6 Emails to and from Ben Fullagar Central Coast Council.



Minutes of the Extraordinary Meeting of Council 20 July 2020 contd

recent event can seek assistance and support to recover. Funding would also be made available to Council to repair infrastructure impacted by the storms.

747/20 ***That Council call for a meeting with the NSW Premier, Minister for Planning, Minister for the Environment, NSW Coastal Council, relevant State Members of Parliament, NSW Police, NSW State Emergency Services, Central Coast Council Chief Executive Officer, relevant Council staff, Mayor and interested Councillors to fast track and resolve agreed actions.***

748/20 ***That Council request that the NSW Government provide an update on the Wamberal Beach Management Options: Cost Benefit and Distribution Analysis Report finalised August 2017, including fast tracking the recommendations of that report.***

Reading the email attachments between Mr Fullagar and Mrs Lamont it is apparent that Mr Fullagar does not know when Council received the Marsden Jacob CBA, how it was obtained, why it was removed from Council's website and under whose instructions, though there is no proof it was ever available to Council or on the Council website. Mrs Lamont has learnt from a source that Council and a local NSW Coastal Alliance member obtained the Marsden Jacob Report with a GIPA request to OEH.

There appears to be a lot of subterfuge surrounding the Marsden Jacob Associates CBA. Why and who prevented its release? Why didn't Council act on the findings of the Report? Why would OEH spend a considerable amount of money commissioning a report that would be ignored, hidden, eventually missing without trace? Why was a LEC Court case settled with a Council using a seawall that the Marsden Jacob Associates report said provided no benefit and was the worst option? The Report should've killed the idea and any progression of a TPS seawall at Wamberal Beach. Instead, it was full steam ahead for Council, WPA and Adam Crouch MP who handed over a cheque to Council for $207,500 for beach nourishment and revetment wall design work just over a year after the publication of the Marsden Jacob Associates report.

The question as to why the recommendations and conclusions of the Marsden Jacob Associates report were ignored was raised in NSW Parliament by Abigail Boyd MLC, NSW Member for the Greens in a parliamentary speech "Coastal Erosion" 17 September 2020.

Refer to Attachment 7 A Boyd MLC speech - Coastal Erosion - Legislative Council Hansard - 17 September 2020.pdf

Coincidentally Crouch Part 1?

MP Adam Crouch started more publicly voicing his support and exerting pressure on Council to build a seawall at Wamberal Beach after the 2016 storms. A Central Coast Express Advocate article on 8 June 2016, quotes him saying:

> *"Doing nothing was not an option," and urged the Council to move quickly in applying for a slice of the $83.6 million the NSW Government has put on the table. "I strongly recommend the Council move on this and move on it quickly, Wamberal is a historic hot spot and would meet all the criteria for funding. Money is no excuse. We now have the ability to put in a remedy and we should be on the front foot with this. It only gets more expensive every year."*

Mr Crouch would be aware that it only gets more expensive every year because planning decisions and court cases have not allowed a halt on development and planned retreat, and a TPS option has been foolishly chased instead of better options like dune stabilisation and beach nourishment. This statement was also made nearly a year before Council had even resolved to submit the CZMP for certification.

The Pacific 6 DA reveals donations to the Liberal Party and assumed pro-wall lobbying is no secret. While pandering to the votes of about 60 beachfront property owners he continued to ignore over 3,500 Wamberal residents who want an equitable solution for the whole community and the beach and lagoon environments.

The WPA and Adam Crouch MP increasingly influenced the newly formed Council, distorting the intent of the CZMP, pushing for seawall actions that were at odds with the recommendations of the Marsden Jacob Associates report. Adam Crouch MP campaigned to redefine the CZMP TW11 as an action to build a seawall instead of a design and funding review. Ultimately MP Crouch criticised the Marsden Jacob Associates report as flawed, in chorus with the WPA and Coastal Alliance. It is not surprising that three years later, Adam Crouch ordered a new Cost Benefit Study to 'redo' the study, sourcing $207,500 from NSW Government to give to Council for the new study. The redo study was undertaken by MHL and delivered recommendations more aligned with Mr Crouch and the WPA's preferences.

See article: Gosford Coastal Zone Management Plan approved: Council urged to immediately apply for funding

Adam Crouch MP with **Councillor Jilly Pilon** at **Wamberal Beach.**

Paid partnership · 19 October 2018 · Wamberal, NSW ·

MAJOR MILESTONE FOR WAMBERAL BEACH

Today I handed over a $207,500 cheque to Central Coast Council for beach nourishment and design work for a revetment wall at Wamberal Beach.

This is the first significant funding milestone for a long-term solution to protect hundreds of millions of dollars of public and private assets on Ocean View Drive.

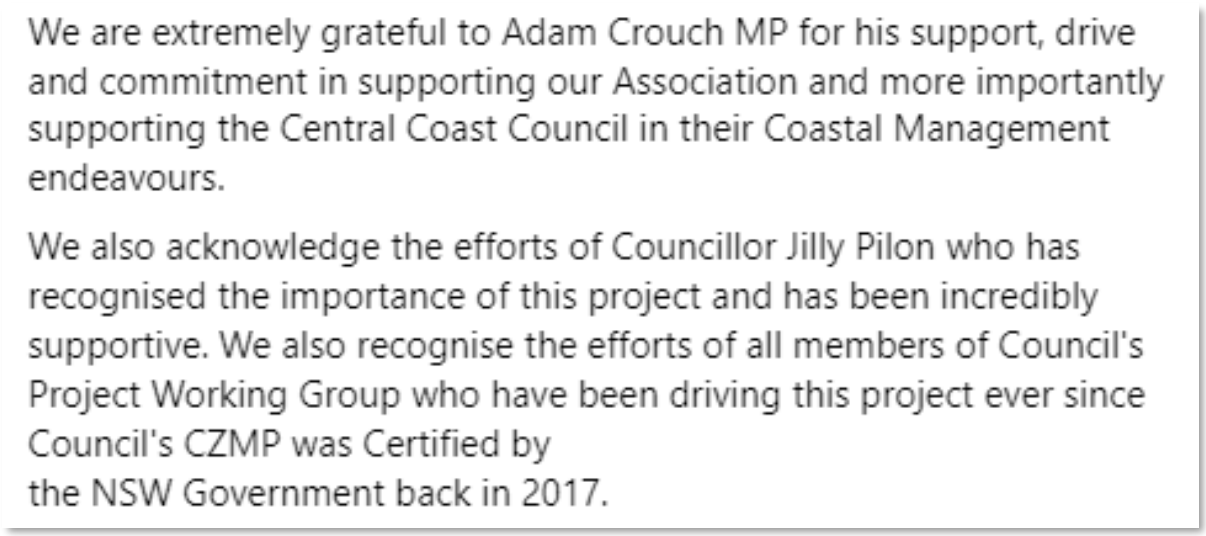
Congratulations to Council, the Wamberal Protection Association, the NSW Coastal Alliance and local residents for working together to achieve this outcome.

Member for Terrigal, Adam Crouch, presenting a cheque to Warren Hughes of the Wamberal Protection Association with Clr Jilly Pilon

Arguably, Mr Crouch MP remarketed the CZMP and said little to nothing about the Marsden Jacob Associates report. To this day, Council, and some in NSW Parliament parrot Mr Crouch MP's false assertion that the CZMP was a seawall decision. Mr Crouch appears to have forgotten, or more precisely, he later ignored the minutes of his Taskforce meeting. Was it a coincidence that:

1. Council was pressured to complete the final CZMP, and have it certified by Minister Upton in 2017, throwing the Pacific 6 case out of State's hands and, forcing Council to use the CZMP as a tool to settle the case against the Pacific 6, Mr Crouch's constituents? Echoes of the Dunford case?
2. Mr Crouch made ongoing public gestures of support for a seawall, as evidenced below, one moment telling the community that a seawall would be decided by experts, at other times touting the need to build a seawall.

On the day that Mr Crouch handed over this this cheque he appeared in a NBN TV news bulletin "WONDERWALL: CASH TO PLAN FOR WAMBERAL EROSION FIX" 19 Oct 2018 and said that the seawall was going to be protecting the "Ocean View Rd and the 100's of millions of dollars of infrastructure plus also the 100's of homes on the other side of that road as well". It did not stop there. Mr Crouch continued on 29 May 2020 with, "what I would say to Council is anything you can do to speed this process up because it's got to protect not just the people of the beachfront but also Council's own assets under Ocean View Drive, also those people on the lagoon, you don't want homes to be the last line of defense when it comes to stopping sea erosion"



We are extremely grateful to Adam Crouch MP for his support, drive and commitment in supporting our Association and more importantly supporting the Central Coast Council in their Coastal Management endeavours.

We also acknowledge the efforts of Councillor Jilly Pilon who has recognised the importance of this project and has been incredibly supportive. We also recognise the efforts of all members of Council's Project Working Group who have been driving this project ever since Council's CZMP was Certified by the NSW Government back in 2017.

WPA media release 23 Oct 2018

The ocean breakthrough myth

The scenario of the ocean breaking through Wamberal Beach dunes onto Ocean View Drive is one of Mr Crouch and the WPA beachfront homeowners biggest "go to" furphies. The breakthrough myth became an assumption in the 2021 Manly Hydraulics Laboratories CBA Mr Crouch celebrated funding, used to sell the proposed Wamberal Beach seawall.

Evidenced in the following article in June 2017, even as Council were awaiting the findings of Marsden Jacob CBA before making an informed decision about a possible permanent solution for Wamberal, both Adam Crouch and Gabriel Upton, Minister for Local Government, Environment and Heritage were putting pressure on Council to apply for funding to build a wall with assumptions of a dune breakthrough.

See: "Coastal crisis: $1 billion worth of Central Coast private and public assets in danger"

See: Wamberal-residents-call-for-sea-wall-to-be-fast-tracked

This was more of Adam Crouch and Liberal Party's spin, misinformation, and fear mongering. There was no proof of a dune breakthrough onto Ocean View Drive. The Marsden Jacob CBA report stated it was highly unlikely to happen and Coastal expert Prof Andrew Short has affirmed this. Dune breakthrough misinformation continued to be used by Mr Crouch and the WPA without any evidence, to gain public support by misleading the public into believing the proposed Wamberal seawall was saving all Wamberal and not just the often-vacant beachfront properties. How else could the WPA get the community to back their need for a seawall, a short-term fix that would destroy the beach, increase flooding to the lagoons just to protect their uninsurable majority holiday homes?

2.3. Dune breakthrough and overtopping

Potential for dune breakthrough has been assessed, but is considered highly unlikely over the timescale of the present study (to 2064).[11]

Based on available information, it is highly unlikely that a dune breakthrough (itself an unlikely event), will result in a new channel into Terrigal Lagoon. The breakthrough will be a result of run-up washing over the dune and cutting through it, but the base level of any cut is unlikely to extend down to the level of the Ocean View Drive. The breakthrough is more likely to result in a sand washover and deposition on the road and on the lagoon side of the road. Should all the sand be washed over the road, the road would still be a barrier to breakthrough. That is, although a single storm (even the 100 year ARI event in 2064) may erode the dune back to the road, it is unlikely to have the duration at high water levels to breach the road. Hence a new channel would not be created.

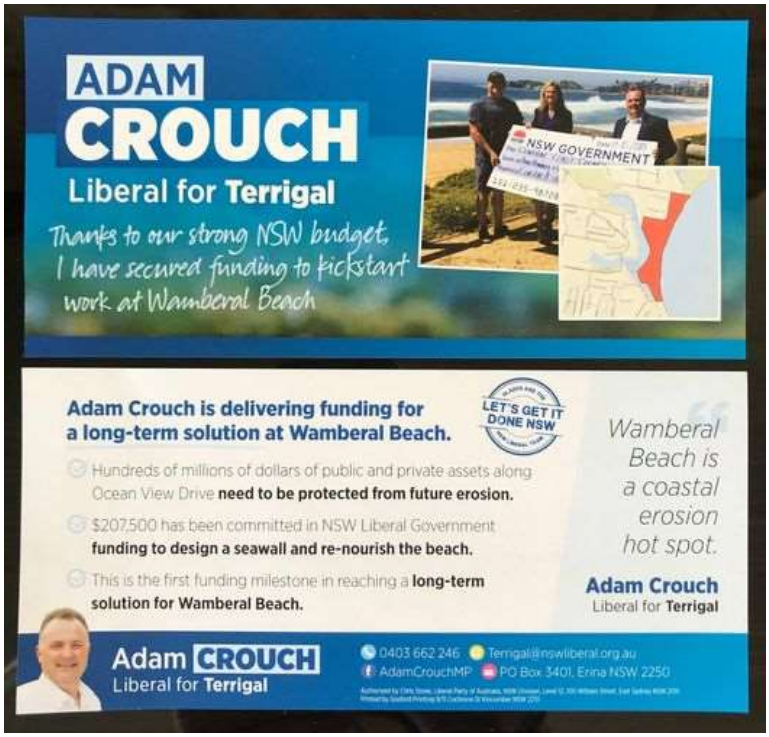
Therefore, any impacts will primarily relate to the impact of the breakthrough on the dune itself. In any case, it is likely that any breach in the dune will be rectified after it occurs to re-establish the present-day configuration.

Some services may also be affected by a breakthrough. (However, although the potential for breakthrough is most likely between [redacted], there is no sewer connection at this location which could be ruptured). Another possible impact of dune breakthrough would be temporary road blockage due to sand deposition.

Office of Environment and Heritage Wamberal Cost-Benefit Analysis and Distributional Analysis pg 16

[See Professor Andrew Short (USYD) 2023 interview regarding Wamberal Beach, refuting the pro-seawall campaign claim of "dune breakthrough".]

Time 15:00



Mr Crouch never let up on the seawall and made the TPS seawall at Wamberal Beach his agenda and promise at the NSW State election in March 2019. It is the community's opinion

that Mr Crouch's bias for a Wamberal Beach seawall was financially motivated and should be investigated.

With Mr Crouch's cash splash Central Coast Council were able to engage Manly Hydraulics to start studies to satisfy TPS and sand nourishment actions in the CZMP. Ms Lamont was advised that NSW DPE decided the terms of engagement. The studies that they were engaged to complete were:

- **Literature Review:** to take stock of what was known and identify any information gaps.
  Stage 1 - Literature Review
- **Coastal Protection Assessment:** to determine sand movement, beach behaviour and impacts/opportunities around public access and amenity.
  Stage 2 - Coastal Protection Amenity Assessment
- **Concept Design Options:** for a terminal protection structure (seawall) and sand nourishment, and potential seawall alignment.
  Stage 3 - Concept Designs
- **Sand Nourishment Investigation:** to help maintain public beach amenity.
  Stage 4 - Sand Nourishment Investigation
- **Coastal Monitoring Webpage:** to monitor beach conditions.
  Stage 5 - Coastal Monitoring Webpage
- **Cost Benefit Analysis:** to guide development of possible funding models.
  Stage 6 - Cost-Benefit Analysis

See: Council Coastal Erosion Webpage.

Not Another Cost Benefit Analysis

Why was another CBA undertaken if there was already a CBA, the 2017 Marsden Jacob Associates CBA, completed three years earlier? In a 2019 paper "Cost Benefit Analysis in Coastal Management – Getting It Right and Getting it Wrong" authors Horton and Rajaratnam

it is noted that,

> "…there is a perception in some NSW coastal management circles that CBA in coastal management studies is an unreliable tool that is overemphasised, can give any answer that is wanted"…,

Was a new MHL CBA undertaken because the Marsden Jacob and Associates CBA did not provide the answer Adam Crouch MP, the NSW Government or Council wanted and needed to support building a seawall at Wamberal Beach.

The 2017 Marsden Jacob Associates CBA was based on "NSW OEH Government Guidelines for using cost-benefit analysis". To achieve different results than those provided in the Marsden Jacobs and Associates CBA and achieve outcomes supportive of a seawall at Wamberal Beach, MHL used the "NSW Treasury guide to cost-benefit analysis" for a new CBA. Who gave the instructions to undertake a new CBA three years after the publication of the Marsden Jacob and Associates CBA and use NSW Treasury Guidelines instead of OEH CBA guidelines for the new CBA? Was pro-seawall Peter Horton, Collaroy Beach coastal

engineer's biased advice sought on how to get the desired result supporting a seawall for the Wamberal Beach CBA? Why is the 2021 MHL CBA publicly available while the 2017 Marsden Jacobs and Associates CBA cannot be found on Council or NSW Government websites. Mrs Lamont has tried without success to enquire from Council who was in control of MHL's engagement and who decided the scope of work for all MHL's reports for the proposed Wamberal Seawall.

Refer Attachment 9 "Cost Benefit Analysis in Coastal Management –Getting it Right and Getting it Wrong" Horton & Rajaratnam

See: [Wamberal residents call for seawall to be fast tracked]

Mr Crouch was able to ramp up his efforts after a major storm event in mid July 2020 setting the stage for his proposed seawall, and soon after taking advantage of a Council under administration and a precedent set with the disastrous Collaroy seawall.

Tuesday, 21 July 2020

RECOVERY COORDINATOR APPOINTED FOR COASTAL EROSION

The NSW Government has appointed a Local Recovery Coordinator in response to the significant erosion issues at Wamberal Beach.

Lee Shearer APM, a former NSW Police Force Assistant Commissioner, has been appointed to the role. Ms Shearer previously held the role of Central Coast Coordinator-General for the NSW Department of Planning and Environment.

Parliamentary Secretary for the Central Coast and Member for Terrigal Adam Crouch said the appointment would better support the local community, many of whom were forced to evacuate.

"Ms Shearer will build on the work by the Local Emergency Operations Controller, Superintendent Tony Joice to protect lives, minimise damage to properties and clean up the beach," Mr Crouch said.

"Following the community meeting on Sunday, it's clear that local residents have no faith in Central Coast Council to prioritise their needs.

"That's why the Premier, Minister for Police and Emergency Services and myself have appointed Ms Shearer as the Local Recovery Coordinator.

"In addition to dozens of private properties, the hundreds of millions of dollars of public assets along Ocean View Drive must be protected."

In the end, the decision to resolve to build a TPS at Wamberal Beach was made by an NSW Government appointed Administrator and an NSW Government Taskforce that Mr Crouch established. Considering these coincidences, Mr Crouch MP's overreach and interference in Council process warrants investigation. Incidentally, Council staff consulting on the TPS were known to have encouraged local residents not to vote for Adam Crouch MP in the 2023 State Election if they wanted to stop the seawall.

Coincidently Crouch Part 2 – The 'what' Taskforce?

Mr Crouch MP used the 2020 media sensation around the damage and danger to beachfront houses at Wamberal Beach and the lobbying from WPA and NSW Coastal Alliance to take charge of Council affairs to implement his solution for Wamberal, a seawall. In July 2020 Mr Crouch met with Gary Murphy from Council and Phil Watson Dept of Planning, which according to meeting minutes was basically the formation of the tellingly named Wamberal Seawall Advisory Taskforce. The name of Mr Crouch's group left no doubt as to fact that the taskforce was singular in its push for a seawall at Wamberal.

The taskforce was made up of:

> Independent Chair – Dr Phil Watson. Although Dr Watson is a DPIE employee, he will chair the Advisory Taskforce in an independent capacity in recognition of his significant expertise and international reputation in coastal management. He is not a DPIE representative on the Advisory Taskforce.
>
> Adam Crouch MP, Member for Terrigal and Parliamentary Secretary for the Central Coast • The General Manager, or their representative from Central Coast Council
>
> A representative from the Department of Planning and Environment (Environment, Energy and Science)
>
> A representative from the Department of Planning and Environment (Planning and Assessment)
>
> A representative from Department of Planning and Environment (Crown Lands)
>
> Additional technical experts from the Department of Planning and Environment and Council may attend in an observer capacity as required.

Refer to Attachment 10 Wamberal Seawall Advisory Taskforce Terms of Reference

There were no Councillors or community representatives on the taskforce. Community members complained to Gabriel Upton to have Mr Crouch removed from the Taskforce as his agenda was not for a long-term solution for Wamberal, but his election promise of a seawall. This fell on deaf ears.

The Taskforce meeting minutes for 8 September 2020 reveal that:

> *"On 7 July 2020, AC (Adam Crouch) arranged for a meeting with GM (Gary Murphy) and PW (Phil Watson) to discuss these issues and agreed to work closely and collaboratively to progress relevant matters before the current tranche of funding for actions in certified CZMPs finish at the end of 2021. In effect it was the informal beginnings of the Taskforce".*

It is evident, reading the available Taskforce meeting minutes, that there was an urgency to progress a TPS for Wamberal as far as possible and as quickly as possible, initially before expiry of the CZMP, then before the state election and before Rik Hart, the appointed Administrator's, term expired, that is, before the Central Coast community was able to vote for Central Coast Councillors. Adam Crouch MP even petitioned for a public enquiry into Council to ensure Councillors did not return after their suspension expired in April 2021, so he could easily, among other things, further his own agenda with the Wamberal TPS and the taskforce.

Adam Crouch urged the disbandment of the Council-established Wamberal Protection Working Group, with the Seawall Taskforce taking over the Council-established group. As noted in the first Taskforce meeting August 2020, Adam Crouch "raised concerns regarding Council's Project Working Group and its slow progress and suggested that it might be time to wrap that group up." The group was established in November 2018 to work collaboratively on recommendations for managing beach erosion at Wamberal. Mr Crouch felt the Council group was holding things, the seawall, up.

Mr Crouch was now able to complete his conversion of CZMP action TW11 from an action to **review** the design and funding of terminal protection structure (TPS) for Wamberal, to **build** a seawall. It is even mentioned in the taskforce minutes that the actions were never for Council to build a seawall. Without Councillors to represent them the only options being given to the local community was 5 different types of seawalls.

Wamberal Seawall Advisory Taskforce Meeting Record (Meeting 10) 7 September 2021 notes:

> *"4.3. Update on procedures around approvals with view to progress a preferred option by year end following phase 2 community consultation: Scott Cox advised staff are working on a detailed project plan but still need clarification about who is responsible for any works. Noted consent authority will likely by(sic) [be] the Local Planning Panel or Regional Planning Panel. Approval process also depends on the option selected as each has different implications regarding land tenure (e.g., if a structure is built on Council land, Crown land, privately owned land, or a combination thereof). It was noted there are no actions in the certified Coastal Zone Management Plan (CZMP) regarding Council building a seawall.*

End of the coast's representative Council

As established, the building of a seawall was never a CZMP action and as noted earlier, the CZMP was only certified as a process, not approved as an action, or obligated resolution. As stated on a Council Web page, Central Coast Council responding to the coastal erosion threat at Wamberal Beach:

> *"Sand nourishment coupled with a terminal seawall (Action: TW 15) is the preferred long-term solution for Wamberal Beach in the CZMP. However, the CZMP does not provide for the construction of a seawall."*

The decision to build a TPS seawall along Wamberal Beach was made by Rik Hart, and not a democratically elected council.

> “
>
> *28 June 2022 Ordinary Council Meeting Minutes*
>
> *Time commenced: 7:18pm*
>
> *Moved: Rik Hart*
>
> *107/22 Resolved*
>
> *That Council:*
>
> 1. *Confirms its position, as described in the certified Gosford Beaches Coastal Zone Management Plan (CZMP), for a coastal protection seawall with sand nourishment as the adopted solution to coastal erosion at Wamberal Beach.*
>
> ”

In October 2022, Engineering Design Requirements were adopted by the Administrator.

Item No:	2.4
Title:	Wamberal Beach Terminal Protection Structure Engineering Design Requirements
Department:	Environment and Planning

11 October 2022 Ordinary Council Meeting

Reference:	F2021/01774 - D15331032
Author:	Ben Fullagar, Section Manager, Catchments to Coast
Manager:	Luke Sulkowski, Unit Manager, Environmental Management
Executive:	Alice Howe, Director Environment and Planning

Recommendation

That Council:

1 ***Receive the consultation report (Attachment 1) summarising the submissions from the public exhibition of the Draft Engineering Design Requirements for a Wamberal Beach Terminal Protection Structure.***

2 ***Note the recommended changes to the Draft Design Requirements following Council's consideration of the submissions.***

3 ***Adopt the updated Engineering Design Requirements (Attachment 2) for***

- ***a. use by landowners in the preparation of development applications for coastal protection works within the Wamberal embayment,***
- ***b. consideration in the assessment of development applications for coastal protection works within the Wamberal embayment.***

See: Wamberal Beach Terminal Protection Structure Engineering Design Requirements

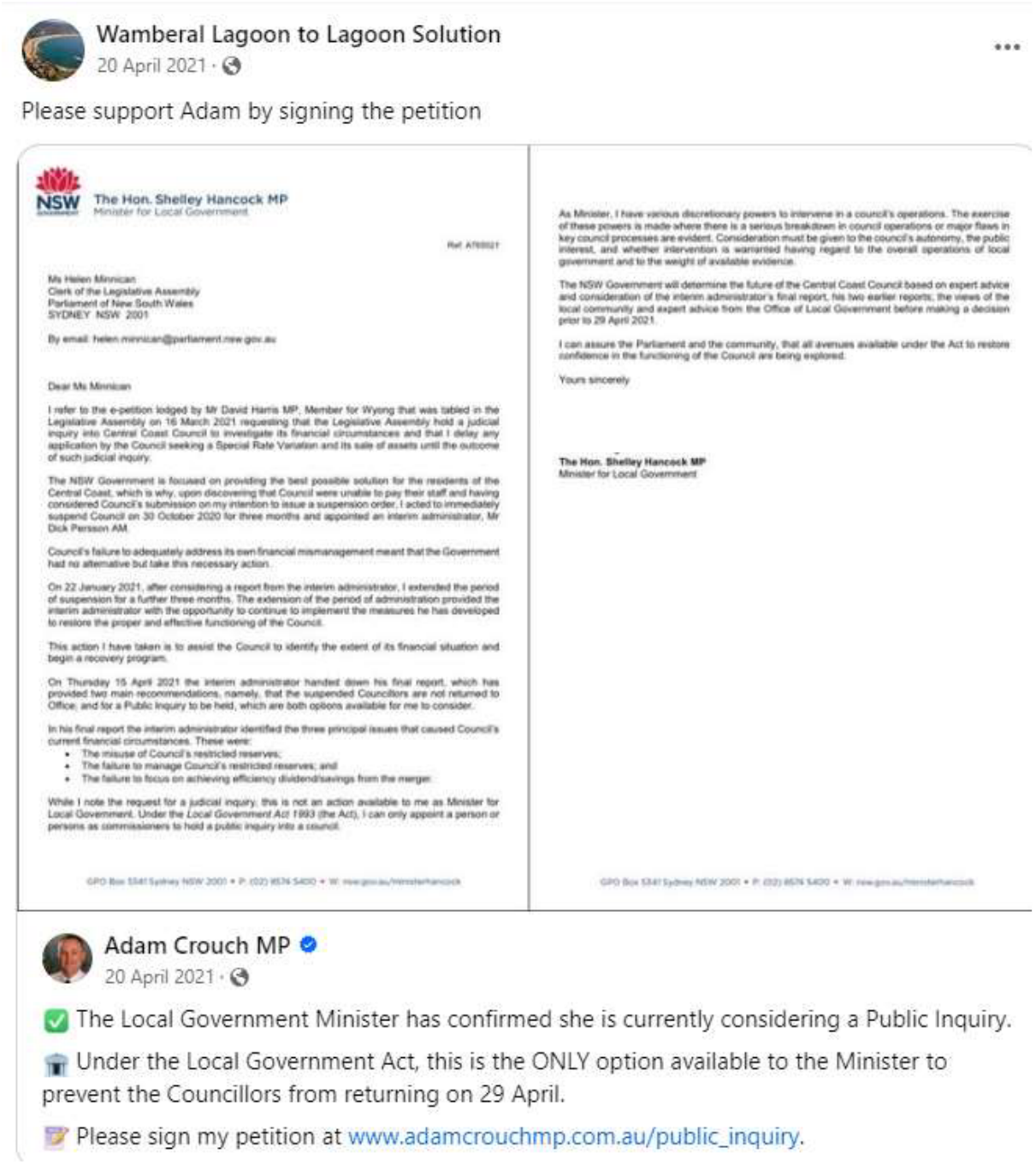
Rik Hart took over as administrator from Dick Pearson on May 13, 2021, and David Farmer was appointed as CEO on 12 April 2021. David Farmer made a comment reported in the Coast Community News 5 May 2021 that, “In some ways it is easier working alongside just

one person, as opposed to elected Councillors, as you don't have to wonder how the numbers will fall". The community should not have to accept an autocratically run Council, yet here is the new CEO alluding to the fact this is what the community could expect with Rik Hart's appointment.

The decision made by Rik Hart is not supported by an overwhelming majority of the Central Coast community. The resolution made by Rik Hart to build TPS at Wamberal needs to be reversed or repealed and revisited by elected Councillors.

Council, with direction of the Seawall Taskforce, organised community consultations on a seawall-only 'solution' for Wamberal. The community did not want a seawall that would take away their beach. This is perhaps why the community response was considered lack lustre by the Taskforce. There wasn't a choice on all available options to deal with Wamberal Beach, only seawalls. Council received a lot of push-back on the seawall options but Council persisted under administration with Adam Crouch MP at the Taskforce, driving the push.

Central Coast Councillors' suspension was supposed to end at the end of April 2021, they never returned because of a Public Enquiry which was petitioned for by Adam Crouch. The Central Coast community has not had a voice in Council since October 2020, and will not have one until September 2024. This has enabled decisions regarding a seawall to advance with Adam Crouch and the State Government's interference preventing the Council from acting autonomously on the seawall issue with community support. Other than approximately 50 or 60 beach property owners, many of whom do not live on the Central Coast, the Central Coast community has been ignored by Council on the Wamberal seawall issue.



Wamberal Lagoon to Lagoon Solution
20 April 2021 ·

Please support Adam by signing the petition

NSW The Hon. Shelley Hancock MP
Minister for Local Government

Ref: A765021

Ms Helen Minnican
Clerk of the Legislative Assembly
Parliament of New South Wales
SYDNEY NSW 2001

By email: helen.minnican@parliament.nsw.gov.au

Dear Ms Minnican

I refer to the e-petition lodged by Mr David Harris MP, Member for Wyong that was tabled in the Legislative Assembly on 16 March 2021 requesting that the Legislative Assembly hold a judicial inquiry into Central Coast Council to investigate its financial circumstances and that I delay any application by the Council seeking a Special Rate Variation and its sale of assets until the outcome of such judicial inquiry.

The NSW Government is focused on providing the best possible solution for the residents of the Central Coast, which is why, upon discovering that Council were unable to pay their staff and having considered Council's submission on my intention to issue a suspension order, I acted to immediately suspend Council on 30 October 2020 for three months and appointed an interim administrator, Mr Dick Persson AM.

Council's failure to adequately address its own financial mismanagement meant that the Government had no alternative but take this necessary action.

On 22 January 2021, after considering a report from the interim administrator, I extended the period of suspension for a further three months. The extension of the period of administration provided the interim administrator with the opportunity to continue to implement the measures he has developed to restore the proper and effective functioning of the Council.

This action I have taken is to assist the Council to identify the extent of its financial situation and begin a recovery program.

On Thursday 15 April 2021 the interim administrator handed down his final report, which has provided two main recommendations, namely, that the suspended Councillors are not returned to Office, and for a Public Inquiry to be held, which are both options available for me to consider.

In his final report the interim administrator identified the three principal issues that caused Council's current financial circumstances. These were:

- The misuse of Council's restricted reserves;
- The failure to manage Council's restricted reserves; and
- The failure to focus on achieving efficiency dividend/savings from the merger.

While I note the request for a judicial inquiry, this is not an action available to me as Minister for Local Government. Under the *Local Government Act 1993* (the Act), I can only appoint a person or persons as commissioners to hold a public inquiry into a council.

GPO Box 5341 Sydney NSW 2001 • P: (02) 8574 5400 • W: www.gov.au/ministerhancock

As Minister, I have various discretionary powers to intervene in a council's operations. The exercise of these powers is made where there is a serious breakdown in council operations or major flaws in key council processes are evident. Consideration must be given to the council's autonomy, the public interest, and whether intervention is warranted having regard to the overall operations of local government and to the weight of available evidence.

The NSW Government will determine the future of the Central Coast Council based on expert advice and consideration of the interim administrator's final report, his two earlier reports, the views of the local community and expert advice from the Office of Local Government before making a decision prior to 29 April 2021.

I can assure the Parliament and the community, that all avenues available under the Act to restore confidence in the functioning of the Council are being explored.

Yours sincerely

The Hon. Shelley Hancock MP
Minister for Local Government

GPO Box 5341 Sydney NSW 2001 • P: (02) 8574 5400 • W: www.gov.au/ministerhancock

Adam Crouch MP
20 April 2021 ·

✅ The Local Government Minister has confirmed she is currently considering a Public Inquiry.

🏛️ Under the Local Government Act, this is the ONLY option available to the Minister to prevent the Councillors from returning on 29 April.

📝 Please sign my petition at www.adamcrouchmp.com.au/public_inquiry.

Bankrupt and under administration, Council copies Collaroy

The following minutes from the Wamberal Seawall Advisory Taskforce and articles with links provided, reveal how the very unpopular seawall was now going to become a reality with a precedent set in a newly approved Collaroy seawall.

See: Wamberal Seawall Advisory Taskforce meeting 11, 14 October 2021

"Phil Watson provided an update as Chair of the Taskforce. The following key points were noted:

- A community group has made representations to members and are proposing to present an alternative option for consideration as part of a DA process. This is an exciting development as it presents an additional opportunity to progress implementation of protection works but suggest the Taskforce will need to understand more about the

details concerning the proposal. Action: Phil Watson to organise a meeting between residents, Administrator and CEO to discuss the proposal in more detail."

See: *Wamberal Seawall Advisory Taskforce meeting 11, 18 November 2021*

That community Group was the WPA. Phil Watson provided an update as Chair of the Taskforce. The following key points were noted and are particularly disturbing:

> "Council should be readying themselves and doing all the preparatory work necessary to guide a possible Landowner developed DA process, should that provide an alternate, expedited process by which to implement a solution to this long-standing issue. Casey noted a project brief is being prepared for consultants regarding minimum engineering and planning requirements. Will also need to consider coastal management requirements in line with legislation."

See article: A Very Bad Precedent" Prof Andy Short says we're about to destroy a famous beach to save houses. Is this a trend?

The following excerpt from the article: The Writing's On The Wall At Wamberal" shows the striking similarities between the Collaroy Beach in the Northern Beaches Council area and Wamberal Beach in the Central Coast Council area in terms of the manipulation of decisions and governance gaps to secure a seawall for each:

- Both Councils were bankrupt, in Administration at the time of seawall development push
- Both Councils had been through amalgamations
- Residents took the lead to submit seawall DAs with Council (in Administration) tagging along
- Both Councils being dragged along by way of political and private owner media coverage.
- A lack of wider community consultation, with the consultation in place at Wamberal being limited to solely considering different types of seawalls, no non-seawall options.

Note the following article excerpt:

> **"The State government has stepped in** with the Seawall Taskforce because the local Central Coast Council is still under administration and crippled with debt after years of mismanagement. Council debt is currently sitting at $565 million, and the idea of council slugging ratepayers another $40 million to protect multi-million-dollar private homes at Wamberal wouldn't go down well.
>
> The Council is in no position to drive this process, but if the taskforce gets its way, Council will have a crucial role. This is where the "precedent" — Collaroy — kicks in.
>
> As it turns out, the idea of ratepayers forking out millions to save beachfront property is universally unpopular. Northern Beaches Council got around it by having the beachfront property owners agree to pay 80 per cent of the cost themselves. They then moved the proposed wall inside the private property boundaries and put the approvals through the council's standard development application process. Essentially, they became private seawalls".

https://www.centralcoast.nsw.gov.au/council/media-release/long-term-erosion-solution-options-wamberal-beach

Without conveniently adopting a similar strategy as Collaroy it is unlikely a seawall could become a reality at Wamberal:

Council Administrator, Rik Hart said delivery of a long-term erosion solution at Wamberal Beach is currently not funded and proceeding with any solution would require a funding commitment from the NSW or Federal Government.

"There are many technical, financial, social and environmental complexities that need to be worked through to develop a long-term solution to erosion at Wamberal Beach," Mr Hart said.

"Technical studies and concept design renders are an important step forward in the exploration of a long-term solution but it needs to be clearly understood that delivery of any solution at Wamberal Beach is not yet funded.

"We also need to consider that on top of the initial cost to develop a new asset of this scale there are significant ongoing maintenance and other costs.

Long-term erosion solution options for Wamberal Beach - 28 July 2021

4 *Reaffirm its resolution of 28 June 2022 that responsibility for the design, construction and maintenance of any seawall fronting private property rests with the landowners that benefit from the proposed coastal protection works and are to be fully funded by each respective private property owner.*

5 *Confirm that coastal protection works fronting Council-owned land at the beach access ways and Wamberal Surf Lifesaving Club also be governed by the Engineering Design Requirements, and make provision for the cost of these works in Council's Long Term Financial Plan.*

6 *Write to the NSW Government, as the owner of five beachfront allotments at 'The Ruins' and '69 Ocean View Drive', seeking commitment for coastal protection works fronting those lands and the use of the Engineering Design Requirements.*

7 *Note that sand nourishment is not expected to be required in the short term due to the location of the structure on private land landward of the current beach.*

- 31 -

Wamberal Beach Terminal Protection Structure Engineering Design Requirements (contd)

Confirm that, when the need for sand nourishment arises, as established by periodic monitoring of sand volume on Wamberal Beach, private property owners will be required to contribute to the cost of that beach nourishment to maintain public beach amenity at a capped rate of $100/lineal metre/year, plus annual increases determined pursuant to the All Groups Consumer Price Index (Sydney).

Write to the Minister for Local Government, Minister for Planning and Homes, Minister for the Environment and Minister for Regional NSW seeking:

a. *amendments to the Local Government Act 1993 to allow for the costs of construction works on private land, identified in a certified Coastal Zone Management Plan or Coastal Management Program, to be recouped through a coastal protection services charge or similar mechanism.*

11 October 2022 adopted Engineering Design Requirements (EDR) Council resolution

Seawall Mark II must be stopped

There are many studies and articles that reveal that Wamberal has had a development problem, which has incorrectly been referred to as an erosion problem for a long time. In the

absence of available sand nourishment sources, it was decided at the start of this century that the Wamberal Beach development problem would be fixed with a seawall. I will continue to refer to it as a development problem because that is what it clearly is. The adjacent Spoon Bay beach dune system has no erosion problem because it does not have a development problem. The anthropocentric "beach erosion" position has been knowingly used by pro-wall interests to misrepresent the problem, the real problem being their own land development, not beach erosion. Media, even the ABC, has consistently failed to accurately report the "development problem", so media consumers are, knowingly or unknowingly marketed a flawed description of the problem itself, so there is less chance the community will be sufficiently knowledgeable to understand potential solutions. Note the anthropocentrism and flawed starting principles of the following Council diagnosis and analysis, italics added for emphasis:

"*To address the ongoing erosion threat*, a seawall and sand nourishment protection solution was recommended in 1995 (WBM). This plan was designed in 1998 (WRL) and assessed through an Environmental Impact Statement (EIS) in 2003 (MHL). Council adopted the EIS protection plan in 2004, however funding could not be secured. For this reason, the approved long-term solution did not progress".

https://info.centralcoast.nsw.gov.au/erosionsurvey

Interestingly. Council staff, Adam Crouch MP and other MPs have led the community to believe that a seawall was the preferred solution to deal with development problem at Wamberal Beach, which it wasn't. The layers of misinformation in that claim are breathtaking. First, there is a development problem at the beach, not an erosion problem. Secondly, Dr Alice Howe, Director of Environment and Planning, Central Coast Council recently conceded in a meeting with Corinne and Mark Lamont that a seawall was only Council's adopted choice, not Council's or the community's preferred choice.

The Wamberal Beach Property Protection Environmental Impact Statement Report MHL935 June 2003 page 60, reveals that:

> "The studies into the beach nourishment proposal have been advanced so far as is practical at the present time. The nourishment option is believed to be technically feasible, and the preliminary economic analysis suggests that it favourably compares with the terminal protection structure as a long-term strategy. However, at the present time it cannot be considered a viable alternative, nor can it be ruled out. Resolution of the outstanding issues is likely to take several years. It is not possible to advance the nourishment option further at this time and the terminal protection structure will be considered as the preferred option for the remainder of this document.
>
> At the present time the only viable option for the protection of the existing development along the Terrigal/Wamberal foredune would appear to be through the construction of a terminal protection structure. However, this option also has a requirement for ongoing sand nourishment and as such is constrained by the lack of a secured, economical sand source"

The following report provides insights into public sentiment at a meeting of 78 residents in 2004 regarding how to deal with the development problem at Wamberal Beach. With climate change threats becoming more real to everyone, scientific evidence of the failure of seawalls and growing community knowledge and discomfort with the Council pro-seawall push, the results of a similar survey taken in 2023 would be quite different, yet neither Council or Adam Crouch's Seawall Taskforce ever surveyed the wider community on the issue and options and instead they simply asked the community which one of five seawalls they wanted. The community rightly felt stitched up.

By way of contrast, Wamberal Beach Save Our Sand conducted a letterbox drop to 1,000 local Wamberal residents, inviting them to a surf club information over pizza event on

Sunday 5 November 2023. 150 locals attended the event, that is 15% of those letter boxed. Attendees were singular in their opposition to the proposed seawall and seawalls in general. Council and Adam Crouch MP were pushing on with the pro-wall WPA regardless of the huge community outcry against seawalls.

Gosford Council

REPORT OF THE STRATEGY/POLICY WORKSHOP

Held on 20 July 2004

SF.018 PROTECTION OF WAMBERAL BEACH (IR 1228037)

BUSINESS UNIT: NATURAL RESOURCES

Community Consultation

The EIS was placed on public exhibition on 4 November until 31 December 2003. On the evening of 1 December 2003, a Public Information Evening attended by 78 community members was held at Terrigal Memorial Country Club. The three key options were presented to the community. A summary of this meeting and its outcomes are provided as an attachment to this report (see GCC 2004, tabled item 7). Comments from those in attendance is summarised in the Table 2 (below).

Table 2: Summary of comments from public meeting

1	About two thirds of those at the meeting wanted to 'do something' rather than 'do nothing'.
2	Options 1 & 3 have polarised opinions with half in favour of each and half against. Option 2 was the first or second preference for almost everyone.
3	Those who favour Option 1 see it as permanent and more secure. They also appreciated that the wall would be 'buried'. The substantially smaller sand nourishment volumes were also regarded as a positive (less environmental impact and less time with barges offshore). At least some (maybe half) beachfront land owners are happy to pay the cost in order to achieve the security in the event of a large storm event. A cost of $50,000 is fairly small relative to house and land values.
4	Concerns in regard to Option 1 principally revolve around 'unproven technology' and the costs associated with the construction of the wall and the impact on land values, rates and land taxes. Some people felt it was unfair to have the beachfront owners pay for what would also be a community benefit.
5	Option 2 is seen as the 'natural' alternative.
6	The principal disadvantages of option 2 relate to the amount of sand required and the environmental and visual (offshore dredge) impacts. There are also concerns in regard to its costs and that it is not presently legal.
7	Those who are happy to 'take the risk' or 'why fight nature' favour option 3.
8	Comments at meeting suggest some still want to pursue other options such as offshore reefs or groynes, but this is a minority.

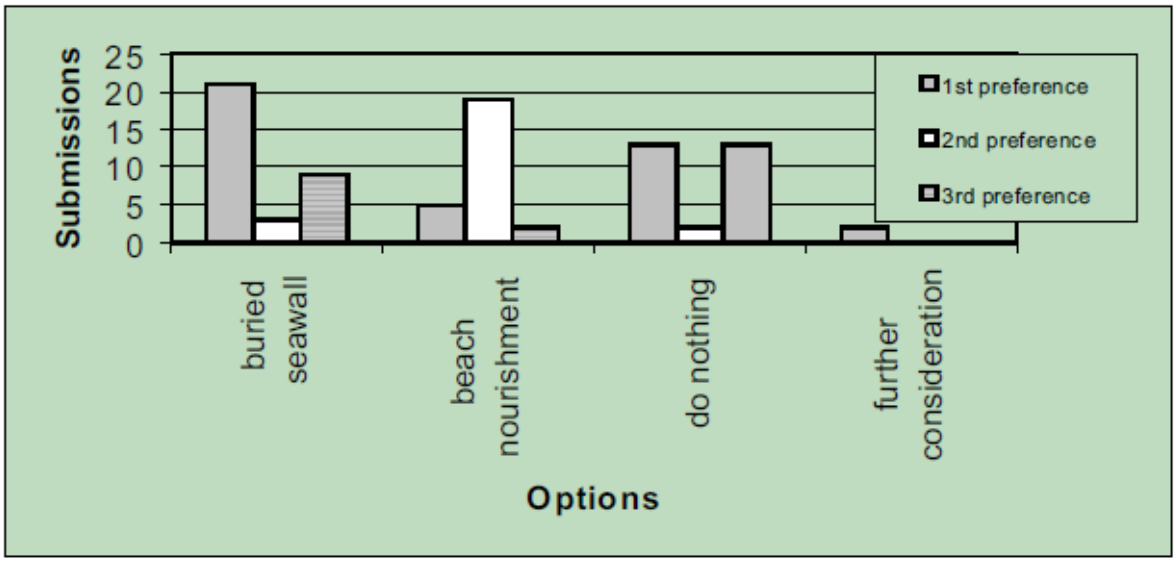


Figure 4: Summary of preferences from written submissions

Results of analysis of all comments from both the information evening and written submissions are summarised in Figure 5 (below).

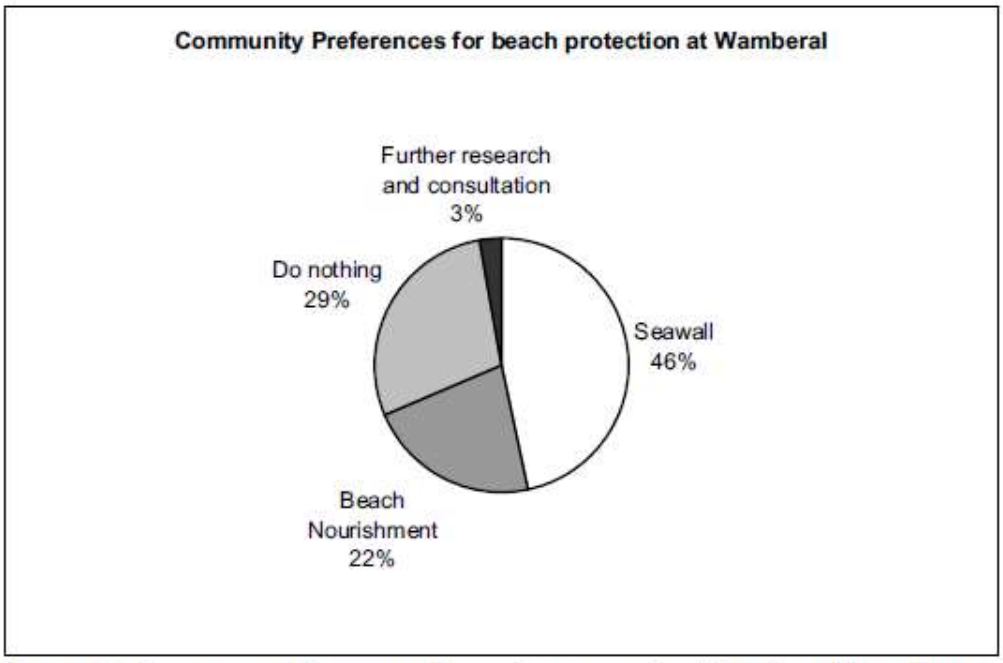


Figure 5: Summary of community preferences for Wamberal beach protection

Figure 5 comprised of a small sample size of 78 attendees at a public event and 41 written submissions on the choices presented.

Refer attachment 11 Report of the Strategy/Policy Workshop Held on July 2004

The preferred option vs revetment walls vs vertical walls

Table 3.7 Recommended Options for Action for Wamberal Beach as Identified by the GCC Coastal Management Study
(WBM 1995)

Action	Funding Category	Priority
The practical, economic, and environmental feasibility of sand nourishment as the principal protection option is to be investigated.	II	High
The back beach dune ridge and properties on and behind the dune area are to be protected in accordance with the following procedures and conditions: a) A formal terminal protection line is to be determined by the Council, coinciding more or less with the line of the scarp as created during storm events in 1974/1978. b) A terminal protection structure in the nature of a buried revetment is to be designed and constructed** to the satisfaction of council and NSW Public Works, such construction to occur as soon as practicable and in an orderly coordinated manner along the extent of the approved line. c) New buildings and additions to existing buildings on the beachfront properties may be constructed in accordance with normal Council by-laws and subject to conditions as follows: • set back from the protective structure line by a distance to be determined as part of the structure design to facilitate maintenance; • the maximum practicable quantity of sand behind the seawall to be excavated and placed on the beach; • sand thus removed may be replaced by other suitable foundation material; • any structure erected within the 20 year erosion hazard zone prior to construction of the protective revetment must be set back from the designated to withstand the design storm wave erosion, as certified by appropriately qualified coastal and foundation engineers. d) Existing freehold land extending seaward of the toe of the constructed seawall to be dedicated as public reserve at no cost and rezoned and re-gazetted for public use.	VII III or V VI	High High
Sand nourishment as necessary if feasible to maintain beach amenity.	I	Moderate
Dune vegetation to be managed in accordance with CaLM practice and procedures.	II*	Ongoing Council activity
Monitoring of beach sand quantities as part of regional coastal process monitoring program.	II	Ongoing Council activity
Zoning of allotments located more than 15 metres landward of the constructed seawall may be modified to remove erosion hazard implications	-	-

* Community assistance with implementation.

Refer to Attachment 12 Wamberal Beach and Property Protection Environmental Impact Statement Report MHL935 June 2003

As previously mentioned, Dr Alice Howe conceded at a meeting on 6 November 2023 that a TPS was the adopted choice by council and not a preferred choice. It was also conceded by Council's Ben Fullagar at the same meeting that "if Council had access to one million cubic metres of sand there would be no need for a seawall". Dr Howe then said she would not be holding her breath for the required sand for sand nourishment purposes to become available. Dr Howe also confirmed that the proposed seawall at Wamberal could be stopped with a Council resolution but she would not support such a resolution.

From a starting position of a 19th Century buried revetment wall, local State MP Adam Crouch and an unrepresentative Council in administration have quietly assisted the progression to make a 19th Century vertical seawall a reality at Wamberal Beach. Renowned Coastal Engineer Angus Gordon OAM has publicly spoken on this issue, stating a vertical seawall would be illegal as it is odds with the continuous revetment wall that was certified in the CZMP. The following letter from Prof Bruce Thom in 2003 explains the need for a buried revetment wall to fulfill the principles of Ecological Sustainable Development (ESD), which are required to be adhered to by all levels of government and written in the Coastal Management Act of 2016.

New South Wales Government

Coastal Committee of New South Wales

Level 18
Governor Macquarie Tower
1 Farrer Place, Sydney 2000
GPO Box 3927, Sydney 2001
Enquiries:
Telephone: (02) 9391 2178
Fax: (02) 9391 2194

Chairman: Professor B. G. Thom

W V Strachan
Manager
Manly Hydraulics Laboratory
110B King Street
MANLY VALE NSW 2093

Attention: K Brockman

Dear Mr Strachan

Thank you for the opportunity to comment on issues which could be addressed in the EIS for a "terminal protection structure" proposed for Wamberal Beach.

I have discussed some of the issues with staff in DLWC and would like to repeat points made by them in relation to the need to address all moral, economic and ecological impacts of the proposal. The NSW Coastal Policy operates under the principles of ESD. This means that any structure designed for one purpose (eg protection of property) must not have a negative impact on other environmental, social and economic values. Although Gosford Council is not specifically covered in its entirety by the Policy its ocean beaches are protected by the Policy.

Specifically there is a need to ensure the beach amenity, including aesthetics, is retained or enhanced. From this perspective it is important that the structure be buried or, if partially exposed, be quickly covered. If this requires beach nourishment from say offshore, along shore or lagoon sources, then the impact of nourishment from those sources needs evaluation.

My other point relates to compliance with Part 3 of the Coastal Protection Act. It is not clear to me as to whether part of the structure extends beyond HWM at least during storms. If this is the case, does Council need Ministerial approval to proceed?

I hope these comments are of assistance.

for B G Thom
Chair

Appendix 2 EIS

The Coastal Management Act

The *Coastal Management Act 2016* promotes strategic and integrated management, use and development of the state's coast for the social, cultural and economic wellbeing of the people of NSW.

Its focus is on ecologically sustainable development that:

- protects and enhances sensitive coastal environments, habitats and natural processes
- strategically manages risks from coastal hazards and responds to climate change
- maintains and enhances public access to scenic areas, beaches and foreshores
- supports the objectives for our marine environment under the *Marine Estate Management Act 2014*
- protects and enhances the unique character, cultural and built heritage of our coastal areas, including Aboriginal cultural heritage.

The department's Environment and Heritage group is responsible for the Act. The group helps councils by administering grant funding and offering technical help and coordination to develop comprehensive coastal management programs.

https://www.planning.nsw.gov.au/policy-and-legislation/coastal-and-marine-management/coastal-management

Coastal Management Act 2016 No 20

3 Objects of this Act

The objects of this Act are to manage the coastal environment of New South Wales in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State, and in particular—

(a) to protect and enhance natural coastal processes and coastal environmental values including natural character, scenic value, biological diversity and ecosystem integrity and resilience, and

(b) to support the social and cultural values of the coastal zone and maintain public access, amenity, use and safety, and

(c) to acknowledge Aboriginal peoples' spiritual, social, customary and economic use of the coastal zone, and

(d) to recognise the coastal zone as a vital economic zone and to support sustainable coastal economies, and

(e) to facilitate ecologically sustainable development in the coastal zone and promote sustainable land use planning decision-making, and

(f) to mitigate current and future risks from coastal hazards, taking into account the effects of climate change, and

(g) to recognise that the local and regional scale effects of coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (including estuaries and other arms of the sea), and to manage coastal use and development accordingly, and

(h) to promote integrated and co-ordinated coastal planning, management and reporting, and

(i) to encourage and promote plans and strategies to improve the resilience of coastal assets to the impacts of an uncertain climate future including impacts of extreme storm events, and

(j) to ensure co-ordination of the policies and activities of government and public authorities relating to the coastal zone and to facilitate the proper integration of their management activities, and

(k) to support public participation in coastal management and planning and greater public awareness, education and understanding of coastal processes and management actions, and

(l) to facilitate the identification of land in the coastal zone for acquisition by public or local authorities in order to promote the protection, enhancement, maintenance and restoration of the environment of the coastal zone, and

(m) to support the objects of the *Marine Estate Management Act 2014*.

The adoption of a vertical seawall in Council's EDR according to experts cause the most beach erosion:

https://nre.tas.gov.au/Documents/Tasmanian_Coastal_Works_Manual_Chapter_15_Shoreline_Modification.pdf

"15.1.7 Impacts of seawalls

> The construction of the seawall will most likely involve significant disturbance to the intertidal zone and may disturb toxic materials such as heavy metals or introduce sediments into the estuary or coastal waterway. Seawalls may increase erosion of the beach in front of the wall and accelerate erosion at the end of the wall. Subsequent beach replenishment or other beach protection measures are usually required. **Vertical concrete walls cause the most serious erosion of beaches**. When waves hit the wall, they are reflected back, and scour sand from the beach. As the beach becomes lower and flatter, the waves become larger, the scouring increases, and the beach is eventually lost. By this time, the wall itself may be undermined if not anchored adequately. Seawalls can disrupt the natural flow of sand across the beach."

Council did not have the funding for a whole of embayment TPS at Wamberal in 2004 and does not have the funding now. Additionally, such a public project would never get community support. The community is rightly against a structure that would destroy beach access and amenity, according to experts cause flooding to the lagoons that sit at either end of the proposed vertical seawall so that approximately 60 uninsurable, often unoccupied holiday rental properties and houses are protected in the short term.

To overcome this roadblock as per the previous article, The Writing's on The Wall at Wamberal", a vertical seawall on private property was adopted. There is no way that homeowners who already felt like they were extending themselves by paying for the seawall on their land were going to opt for a revetment seawall which has a larger footprint, even though it is a better option for the beach. Some of the properties do not even have space for a revetment seawall. The well documented science behind damaging effects of seawalls has been completely ignored, the principals of ESD and the objects of the CMA will be breached, and a Council under administration is not only endorsing this but becoming a seawall development co-applicant walling vacant public land to protect about 10 houses that are currently notably at risk. The phenomenon of seawall end effects pushing erosion problems away from what they are protecting will mean that the remaining houses along the beach that don't currently need protection will probably perish or require protection of a seawall in

the future. They have been marketed to by landowners who have more at risk. In recent weeks, the WPA is known to have heavily promoted its seawall DA application to other beachfront residents who have less or no need for a seawall. The WPA has told reluctant residents the following in a bid to induce the residents onto the seawall DA:

- If you don't join the DA now, you won't have protection from the sea
- If you don't join the DA now, it will cost you more to add a seawall later

Some residents have said they were phone bombed in one day by WPA members in an effort to get a reluctant beachfront resident to sign onto the seawall. Individual beachfront property owners not consenting to the seawall were told by the WPA they were the only ones not consenting. Those beachfront property owners then learned that they were not the only ones consenting, that there were many other property owners not consenting to the seawall.

The WPA has also offered financial arrangements to beachfront property owners for the DA costs in an attempt to get owners to sign a DA consent form for their property. If Beachfront property owners are unable to pay for DA costs, how would they ever afford a seawall? This didn't matter to the WPA, because their goal is not to build a whole of embayment terminal protection seawall as per the Council adopted solution, the goal is to get everyone to consent to a seawall DA, so that it appeared that all beachfront property owners want a seawall and it looked like a whole of embayment TPS DA for the assessors. With the Eggers v Gosford City Council legal precedence established confirming end effect dangers of seawalls to unwalled properties it was unlikely a seawall with gaps would be approved by any assessing consent authority.

The WPA bullying and intimidation behaviours to non-seawall consenting beachfront property owners are an unacceptable form of self-interested marketing. The main reason the WPA want all the beachfront property owners, including reluctant ones, to join their seawall DA is because they know their DA will have a better chance of being approved if it is end to end, covering all lots. For years, the WPA has marketed its seawall as something that will save Wamberal, but it is in the view of experts, entirely the reverse.

See: Message from Bob about WPA bullying

The end effects of the proposed 1.3km vertical seawall will have detrimental effects on the Terrigal Lagoon and Wamberal Beach Nature Reserve and Lagoon which sit at the ends of the proposed seawall. The seawall is predicted to cause increased flooding to the low-lying areas around the lagoons that house thousands of people. The Wamberal Nature Reserve is offered the highest protection, and there are critically endangered flora, fauna and migratory birds that have been found around the lagoons, yet Council will not do any environment impact studies on seawall impacts to the lagoons. Hundreds of concerned residents that have not been consulted on the seawall project as per NSW Government guidelines have pleaded with Council to do studies on seawall flooding impacts to the lagoons before joining the WPA DA to build a seawall, but Council refuses to do this even though they have been warned by coastal experts of the flooding risks to the lagoons. The WPA has even admitted to the seawall end effect flooding impacts to the lagoons, stating at the WPA seawall campaign launch in 2017 that the end-to-end seawall was the best solution so the end waters would go into the lagoons.

See: SOS interview Angus Gordon OAM regarding seawall impacts on lagoon flooding

Community fights back

In 2020, locals formed and grew the Wamberal Save our Sand (SOS) community group to fight the proposed Wamberal Beach seawall. SOS is an inclusive community-based organisation that aims to protect Wamberal Beach and make it accessible.
The group formed in part in response to Adam Crouch's Seawall Taskforce moves which founding members of SOS could see did not represent the views or direction of most locals.

SOS runs a Facebook page that informs the public about the proposed Wamberal seawall because Council consultation on the topic was inadequate. The group has approximately 3,500 members, however, the suburb of Wamberal has over 6,000 citizens the majority of whom do not support any seawall at Wamberal. The feeling is similar in adjacent suburbs. SOS seeks an equitable solution for all concerned, including the beach itself, an important element of the community and for tourism. SOS activities include:

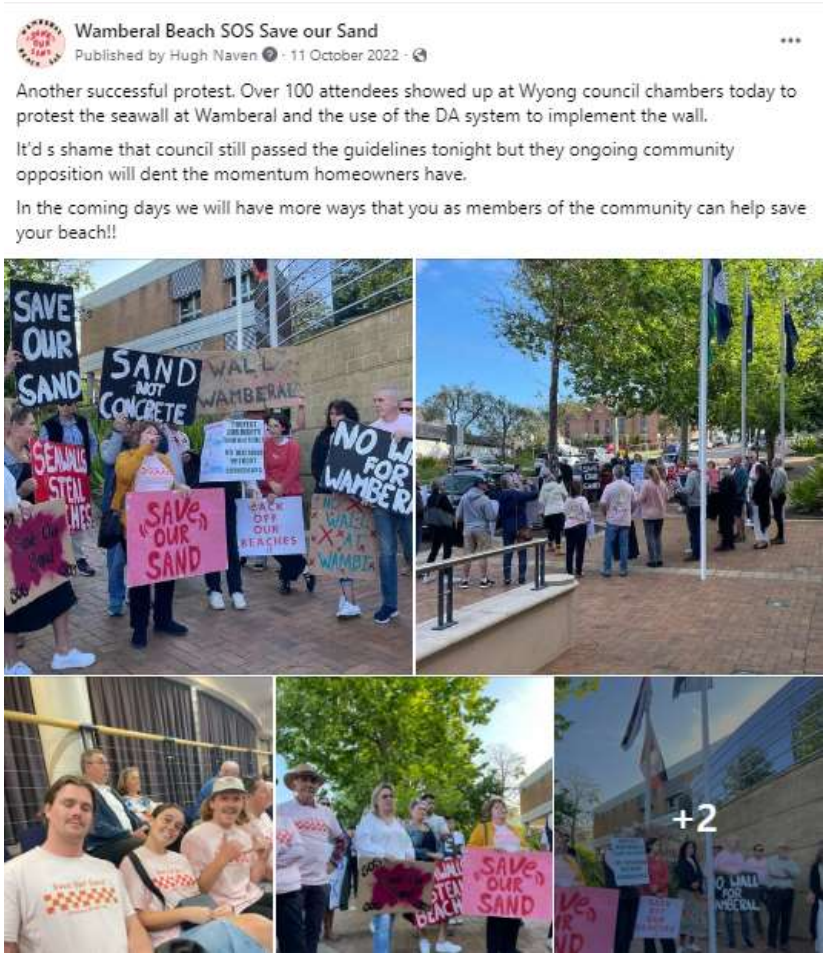
- Holding public expert events to educate the community
- Holding social events so that community members can ask questions, raise their concerns
- Rallying protest events at the beach and at Council
- Making submissions to Inquiries, Planning system and the impacts of climate change on the environment and communities
- Leading a successful e-petition effort at State Parliament
    - Stop Wamberal Beach Seawall petition
    - Refer attachment 12 Recording of debate in NSW Parliament Legislative Council
    - ABC Central Coast Radio Interview
- Meeting, influencing, and corresponding with Council, State and Federal MPs and relevant State Ministers
    - Gordon Reid Parliament speech in Federal Parliament opposing the Wamberal Beach Seawall
- Circulating relevant reports and studies, often through the popular Facebook page or letter box drops
- Actively engaging local media to inform the community – (ABC interviews, NBN news reports Coast Community News articles on Wamberal Beach (SOS) Facebook page)
- Issuing Press Releases of relevance to the cause
- Producing digital media content on the no Wamberal Beach seawall issue– Sandy & Bob series
    - Episode 1 Nobody promised them a seawall
    - Episode 2 More WPA dirty deeds uncovered
    - Episode 3 The Case of Dr Alice Howe
    - Episode 4 WPA title deed stocktake 2
- Assisting the formation of a separate sister entity, No Wamberal Beach Seawall Inc, an association that assists with fundraising for events, communications, and legal strategy advice. Engaging Colin Biggers Paisley to formulate a legal strategy.

See: Seawall Petition tabled in Parliament

Seawall petition tabled in Parliament

TOPICS: Lead NSW Parliament Seawall Seawall Petition Wamberal

Corinne Lamont, Abigail Boyd and Mark Lamont outside Parliament House on September 12



The smoking guns of Wamberal Beach seawall manipulation report – 20 February 2024

Wamberal Beach SOS Save our Sand
Published by Hugh Naven · 11 October 2022 ·

Reminder: protest occurring today at Wyong council chambers. We would love to see you all there around 5pm this afternoon.

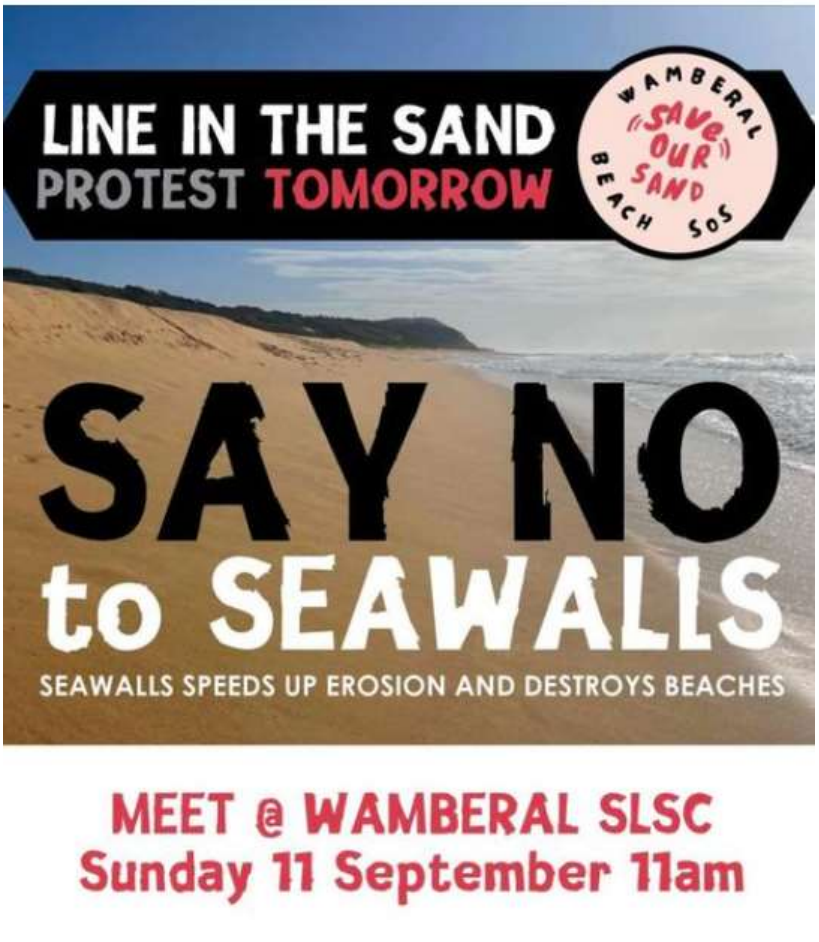
TUES. 11 OCT 2022
No Seawall Protest @ Wyong Council Chambers
Central Coast Council Chambers

Wamberal Beach SOS Save our Sand
Published by Hugh Naven · 10 September 2022 ·

Protest Tomorrow!!

To say thanks for supporting the campaigning we will be giving out plenty of prizes from shirts, to stickers, to stubby holders.

The prizes are only available to those that come to the protest so make sure you are there. It will be taking place at 11am at the lookout in front of Wamberal surf club. ... See more



MEET @ WAMBERAL SLSC
Sunday 11 September 11am

Is this what we want for Wamberal Beach?

Call Council on 4350 5302 or email theadministrator@centralcoast.nsw.au to say no seawall, request a meeting.

Do you realise how bad the proposed seawall will be?

- Eventually there will be no beach, just a concrete wall. Walls eat out beaches*
- No beach = no beach life, no beach walks, no safe swimming or surfing*
- The proposed seawall with be 1.3 kilometres long, five times as long as Collaroy
- Council says it will be three metres high, experts say six or more metres high*
- A seawall will increase lagoon flood risk*. Residents know what that means for their homes, but Council hasn't consulted them or studied lagoon impacts.
- Flooding from seawall end effects will endanger lagoon wildlife and dune biodiversity around the surf club*.

*Confirmed by beach expert, Professor Andrew Short (USYD) and top coastal engineer, Angus Gordon OAM.

Act urgently! A seawall DA is expected by November 2023.

WAMBERAL SAVE OUR SAND BEACH SOS

Call or email the following local, state and federal leaders now. Tell them no seawall:

- Dr Gordon Reid: Gordon.Reid.MP@aph.gov.au (02) 4322 2400
- David Harris MP: wyong@parliament.nsw.gov.au (02) 4352 2711
- Adam Crouch MP: terrigal@parliament.nsw.gov.au (02) 4365 1906
- Rik Hart, Council Administrator: theadministrator@centralcoast.nsw.gov.au PO Box 20, Wyong NSW 2259

Together, we can stop the seawall

#NoWall4Wambi


wamberalbeach_sos
Wamberal
You are invited
In response to community concerns about the proposed Wamberal seawall, No Wamberal Beach Seawall Inc in conjunction with Wamberal Beach Save Our Sand (SOS) invites you to:
Follow us for more info
Meet the experts at Breakers
Angus Gordon OAM
BE, M MEng. Sc, FIE Aust, CPEng, NER, APEC, IPEA
Eminent coastal engineer; co-developed the NSW Coastal Protection Act; former Pittwater Council GM; former Manly Hydraulics Lab MD; author of 56 technical papers on coastal management.
Prof Andrew Short PhD
(Marine Science) University of Sydney, School of Geo-sciences
Former member of the NSW Coastal Panel; published over 250 articles on beach and coastal systems. Former expert witness for the landmark Wamberal Beach Eggers vs Gosford Council seawall case.
Brendan Donohoe BTP
(Town Planning) UNSW, President Surfrider Australia, Northern Beaches.
Decades of experience leading the campaign to stop seawall development along Sydney's Northern Beaches. Expert in 'no seawall' community advocacy and Council and State Government strategy.
Also meet and hear from:
• Wamberal beachfront homeowners who oppose the seawall
• Wamberal SOS and Association leader updates on Council and NSW Government actions
Take the opportunity to ask questions and discuss the seawall issue and alternatives.
Note:
We have invited State Government MPs and Ministers, Central Coast Council and media to this event. We have also invited National Parks and Wildlife (Wamberal Lagoon Nature Reserve) and local indigenous leaders.
Where: Breakers Country Club, 64 Dover Rd, Wamberal
When: 2pm, Saturday 30 September 2023
Please RSVP: nwbsa.inc@gmail.com
ENTRY IS FREE

You're invited to a No Seawall Social at Wambi Surf Club, upstairs at the Wamberal Ocean View Café.

An opportunity to:

- Learn about the proposed seawall's impacts.
- Ask questions, get answers.
- Process seawall worries in a friendly environment.
- Enjoy the famous Wambi pizza and drinks.
- Take in the stunning seawall-free views of the dunes and beach.
- Celebrate the beach we love.
- Meet surprise guests, enjoy treats.
- Maybe win the big raffle.

Entry is free, but pizza & drinks are as per club café prices.

Big beach rally

Stop the seawall

Wamberal Beach*, Sunday 21 January at noon

A seawall DA is coming any week now.

Now is the time to send Council and the WPA a message!

Bring a banner, bring your kids and friends.

Be there, save the beach

Hear updates, meet locals, form a line in the sand, grab stickers and flags, have a swim if you like.

Let's rally for a better future for Wamberal.

*Meet on the beach in front of Wamberal Surf Club

Organised by Wamberal Beach Save Our Sand (SOS) and No Wamberal Beach Seawall Inc.

WAMBERAL SAVE OUR SAND BEACH SOS

Why we need to act

- Council just paid $100,000 of ratepayer funds to the WPA (pro-seawall beachfront owners) seawall DA
- Top experts say the seawall will destroy Wamberal Beach and worsen lagoon flooding
- The unelected Council has its head in the sand, refusing to answer SOS questions and refusing to first conduct independent lagoon flood impact studies
- Anti-seawall beachfront property owners say they have been pressured by the WPA to sign onto the seawall DA
- We need state and federal government support for sand nourishment
- The WPA and Council have spread seawall misinformation for years. We need to stop the seawall once and for all.

So come along to Wamberal Beach on Sunday 21 January at noon for our biggest event yet.

SCAN ME

Organised by Wamberal Beach Save Our Sand (SOS) and No Wamberal Beach Seawall Inc

Debunking Wamberal Protection Association seawall propaganda

Propaganda

Wamberal Protection Association Inc

WAMBERAL BEACH TERMINAL PROTECTION STRUCTURE...

WHO BENEFITS?

ALL RESIDENTS OF WAMBERAL

COMMERCE and TOURISM

PUBLIC INFRASTRUCTURE & UTILITIES

CENTRAL COAST COUNCIL

STATE GOVERNMENT

PRIVATE HOMES

OTHER CONSIDERATIONS

Don't be fooled! This is a private property interest group. The only "protection" this association is promoting is the protection of their beachfront properties. A seawall would enable them to insure their properties, improving their property values. That seems fair enough, however, a seawall would cause the public beach to wither over time and would push storm wave energy threats onto hundreds of surrounding lagoon residents who would pay dearly, potentially seeing their property values decline. See evidence, footnotes (1) and (4) overleaf.

False: The proposed wall would gradually destroy the public beach for all users. A seawall would kill natural dune processes that sustain the beach sand budget. A wall would reduce the beach's natural ability to bounce back after storms, so the beach would gradually go under water at high or mid tides. Our beach lifestyle would be forever altered. The beach will then require perpetual sand replenishment, but Council is yet to find a sand source or perpetual funding. Regardless, some private owners and Council have teamed up to push their wall DA through this year. We need to act now. See footnote (2).

False: The wall will destroy existing dune and foredune vegetation along most of the beach. The wall is a wicked option as it would protect the least viable private beachfront properties, the ones that were built too close to the sea in the first place, but would punish surrounding beachfront properties that are currently less at risk, that is, properties that are more responsibly situated with existing dune vegetation. This situation is caused by the "end effect". The end effect is where seawalls deflect storm wave energy onto properties at the ends of the wall. End effects are already happening at the beach as some owners have walled their properties, pushing erosion onto neighbours. The Association is going for an "end-to-end" seawall as they and Council know the end effect of a seawall would be a nightmare for properties at the ends of any wall. It is unfair that many residents with beach properties that are responsibly situated - set back from the sea at the north and south ends of the beach - would have to forego their idyllic vegetated dune situation, putting up with a wall to avoid the end effect, all for the benefit of others, not themselves, and knowing the wall would wreck the public beach and would push storm surges onto surrounding lagoon residents and businesses. There is also the potential issue of future legal action by lagoon residents who might claim compensation for the wall's end effects. We really do need to think again about "who benefits". Technical evidence overleaf, footnote (3).

Nonsense: The wall will put surrounding lagoon neighbours and infrastructure at greater risk during storm surges. A wall would simply deflect storm wave energy into the Terrigal and Wamberal lagoon residential and tourist precincts because of the end effect. Evidence overleaf, footnote (4).

They're dreaming: The wall will be a money pit forever. Neither Council or pro-wall residents have confirmed the source of replenishment sand or the funding of such sand which studies show will be required into the future, forever. Then there is the cost to Council of increased flooding and damage to lagoon neighbourhoods due to a wall's end effects.

False: Wamberal is a world-class beach. The proposed sea wall would cause it to wither. The only thing undermining the beaches' world class status is a small number of properties that are developed too close to the sea despite the lessons learnt over the past 50 years.

Wamberal Beach SOS Save our Sand
Published by Corinne Lamont · 5 November 2023 ·

Thank you for your support on this important issue. We appreciate your leadership and advocacy. Thanks for speaking with the community today. No seawall.

Abigail Boyd
5 November 2023 ·

What a blast! Today I joined my fellow Coasties at Wamberal for a chat about stopping the seawall, grassroots democracy and people power. Thank you to the wonderful organisers and to the SO many people who joined us - look at that crowd!

Labor need to step up and stand with the community on this fight, because we won't stop fighting until our voices are heard 🙌

An election to stop the seawall?

On 25 March 2023 NSW held a state election. The existing pro-wall Liberal State MP Adam Crouch was running against new Labor candidate Sam Boughton. One of the issues Sam Boughton ran on in his very organic campaign was the need to stop the proposed Wamberal seawall.

Sam wanted to support the majority community members that do not want the proposed Wamberal seawall or anything like the Collaroy seawall at Wamberal Beach. SOS is aware that even Council staff consulting on the Wamberal seawall project were advising locals to vote for Sam if they wanted to stop the proposed Wamberal Beach seawall.

https://www.facebook.com/SamBoughton4Terrigal/videos/168312289290557

To the relief of many locals on election night, it looked like Sam had won the safe Liberal seat. Unfortunately, Adam Crouch MP retained his seat thanks to postal votes, but possibly experienced the biggest state swing against the former Liberal government in the state, partly because of his efforts to push the proposed Wamberal seawall.

The local community hoped that with Labor winning the election they may take action to return an elected Council to the Coast, and with community voices finally being heard, a resolution could be passed to stop the Wamberal seawall. Unfortunately, the new Labor government announced that Council elections would not take place until September 2024.

Adam Crouch continues to interfere in the Wamberal seawall matter even though his taskforce was disbanded a month before his party lost the election. As recently as 10 May 2023, even though the Wamberal Seawall Advisory Taskforce was disbanded in March 2023, Adam Crouch continued interfering in local government activities by asking the following questions in NSW parliament:

“

EROSION MITIGATION WORKS AT WAMBERAL BEACH

Crouch, Adam to the Minister for Planning and Public Spaces

(1) Five blocks of land along Wamberal Beachfront are under the ownership of the State Government, will these blocks be included in the group DA to build continuous protection along the beachfront?

(2) If these blocks are not included, is the Government liable for any damage to the adjoining blocks?

(3) Will the Minister explain to the other landowners how it will be possible to build a continuous solution if the Government owned blocks are not included in the group DA?

“

These questions are in line with Mr Crouch’s and the WPA’s bullying tactics to intimidate locals, forcing them to sign up for the TPS even if they don’t need protection. His questions are also based on misinformation, more on that below. In an ABC article 13 April 2023 Mr Crouch is quoted as saying:

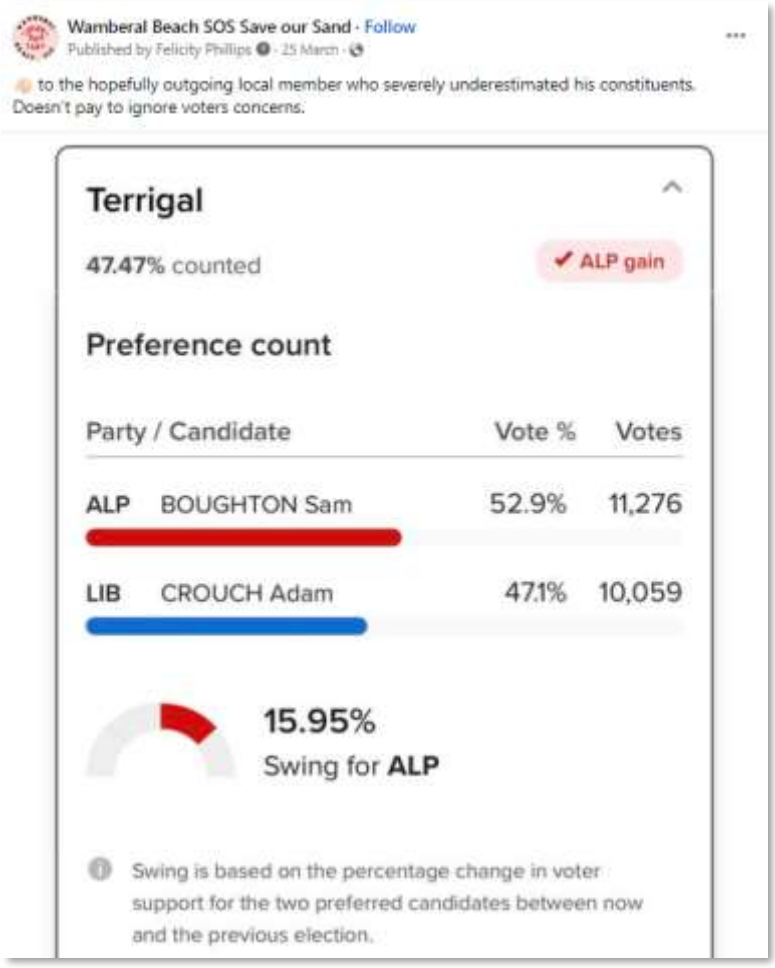
> *“Property owners who refused to pay to build and maintain their section of the wall could become liable for any damages caused to their neighbours' properties”.*

See: https://www.abc.net.au/news/2023-04-13/wamberal-seawall-plan-review-government-erosion-solution/102211926

This statement and questions in parliament show Adam Crouch has no understanding of how seawalls and beach processes work, or worse, he understands the processes but misrepresents them for perceived or real interest, particularly as WPA members are part of his base. The State Government land blocks along the beach do not need protection. Why should they have a community-funded wall in front of them when they don’t need a wall? An unwalled property will not impact a walled property, however, science says that the walled properties will cause damage to adjacent unwalled properties. This was established in the Eggers v Gosford City Council case in the NSW Supreme Court. Has Mr Crouch warned the WPA homeowners that they will be liable for damage their seawalls cause to their unwalled neighbours’ properties? His questions in parliament are all back to front, they are projection. Eggers v Gosford Shire Council leaves no doubt that MP Crouch’s questions and statements are misinformed and treacherous.

SOS is aware that at times, Adam Crouch’s constituents who are concerned about the proposed seawall were unable to object to Mr Crouch as his staff have advised constituents that wanted to see him that he only gave appointments on state issues, and he blocks

people or hides dissenting comments on his official Facebook page. But Mr Couch made the Wamberal seawall a state issue, he ran an election promise to deliver the seawall, and it nearly tipped him out of office.



Sam Boughton for Terrigal · Follow
28 February ·

Let's talk about walls...

Our current state member has been a vocal supporter of a hard seawall at Wamberal. He has always said it won't affect beach access, the sand, the surf, or the natural ecosystems (dunes, lagoons, ocean).

I went down to Collaroy on the weekend, to speak to Sue Wright - Labor for Wakehurst and Jeffrey Quinn - Labor for Pittwater about how the seawall there has impacted their community. It's clear that this has been a very unwelcome addition to the Northern Beaches.

When you look at the situation in Wamberal, there are so many unanswered questions. Who will pay for the sand nourishment? Where will the sand come from? How will the wall impact the lagoons when water from big swells are shunted into them? Will lagoon properties be at risk? What about the beachfront owners who are against a wall? What about the publicly owned land on the beachfront - do taxpayers have to pay to build and maintain those sections of the wall?

Whenever I door knock in the suburb of Wamberal, the wall is the issue that comes up more than anything else. But it's not just the Wamberal community that is concerned. Avoca, North Avoca, Avoca, Springfield, Saratoga...I've had this issue raised with me right around the electorate. Allowing this wall to go ahead sets a precedent, and where do we draw the line - a wall at Avoca and North Avoca? Copa after that? A wall the entire length of the Central Coast?

There has been a concerning lack of genuine community consultation around this issue, and the current 'solution' is very unpopular. Why have no alternatives been investigated?

#centralcoast
Liesl Tesch MP
David Harris MP
Wamberal Beach SOS Save our Sand

Taking the politics out of the picture - it's time to move!

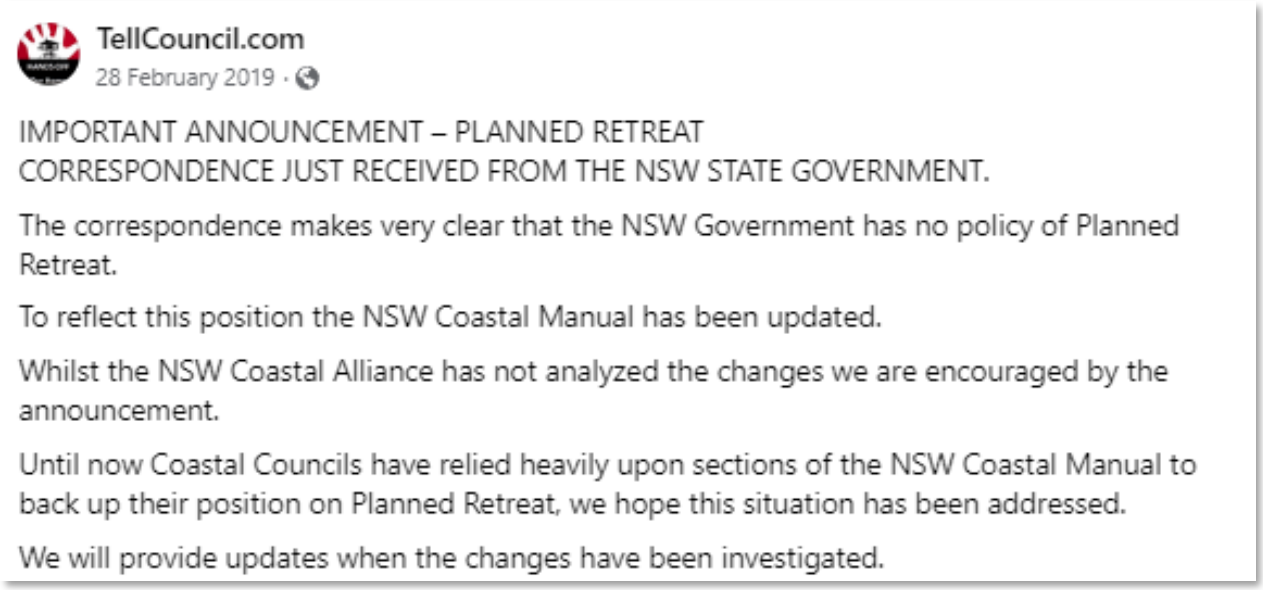
The history of dealing with a development problem along Wamberal Beach in this submission reveals that it is extremely difficult for local councils to establish and implement best practice development and climate change adaption policies in uncertain political environments where influence, ideological loyalty to a self-interested base and vote-winning is more important.

The following article from the Fifth Estate relates this situation of the uncertainty of implementing climate change policy by a local pre amalgamation Central Coast Council after a change of state government.

See article: NSW coastal planning in storm of confusion

> 20 September 2012
>
> "Special Minister of State Chris Hartcher said early last week that the NSW government would drop "Labor's onerous" and "heavy-handed" statewide sea level rise planning benchmarks" of 40 cm by 2050 and 90 cm by 2100.
>
> The government also wants to remove the compulsory notices on section 149 certificates warning buyers that the property they are about to buy could flood. That policy has now been removed which indicates that councils now don't have anything [in terms of planning] vaguely supported by the government at this stage."
>
> **Pressures**
>
> In White's view, pressure from property owners has convinced the state government to back away from the "tough decisions" on managed retreat decided by the former government.
>
> It was understandable, he said, but the "the only sustainable decision is planned retreat because councils cannot afford to build protection for ever and a day.
>
> White said he has spoken to the minister but says, "they're playing politics and they're trying to win votes – that's pretty basic".

The following are examples where the previous Liberal Government's Environment Minister has back flipped on policy due to individual and lobby group voter pressure.



TellCouncil.com
28 February 2019 ·

IMPORTANT ANNOUNCEMENT – PLANNED RETREAT
CORRESPONDENCE JUST RECEIVED FROM THE NSW STATE GOVERNMENT.

The correspondence makes very clear that the NSW Government has no policy of Planned Retreat.

To reflect this position the NSW Coastal Manual has been updated.

Whilst the NSW Coastal Alliance has not analyzed the changes we are encouraged by the announcement.

Until now Coastal Councils have relied heavily upon sections of the NSW Coastal Manual to back up their position on Planned Retreat, we hope this situation has been addressed.

We will provide updates when the changes have been investigated.

NSW GOVERNMENT

DOC19/157201

We are writing to members of the NSW Coastal Alliance who have previously written to the NSW Government in relation to 'planned' or 'managed' retreat.

We want to make it clear that the NSW Government has not adopted a policy of 'planned' or 'managed' retreat.

The Coastal Management Manual was released in April 2018 as part of the NSW Government's coastal management reforms under the *Coastal Management Act 2016*. The Manual provides guidance to help councils prepare and implement coastal management programs to deal with the impacts of coastal hazards.

To clearly reflect the NSW Government's position, the Manual has now been updated and is available on the Office of Environment and Heritage (OEH) website www.environment.nsw.gov.au/research-and-publications/publications-search/coastal-management-manual-part-b.

I trust this information is of assistance.

Anthony Roberts MP
Minister for Planning
Minister for Housing
Special Minister of State

Gabrielle Upton MP
Minister for the Environment
Minister for Local Government
Minister for Heritage

Next is an email from Jo Marchese dates 19 January 2019 to Minister for the Environment with objections to new Coastal Management Legislation, namely planned retreat. Incidentally at the same time the Marcheses' were involved in a prolonged LEC court case to build a seawall to protect 6 Properties (The Pacific 6). The objection is really about a possible drop in property values as a result of sensible planned retreat policies to adapt to climate change risks in hazardous areas. Even Councils enjoying the higher rates they can charge on premium beachfront land are willing to protect those properties rather than doing what is inevitable and planning a retreat. Those properties with seawalls will eventually be worthless and a loss to everyone, who will take the blame? Why not take a pre-emptive stance, a new premium market can be established in less hazardous and more resilient areas. The required and inevitable long term adaption policies are only hindered by providing short term security like seawalls.

Cc: Eugene Marchese
Subject: Objection To Proposed New Coastal Management Legisation

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Submission

Objection to proposed new Coastal Management legislation - (request to delay implementation and more time for consultation)

As owners and ratepayers of a family home at [redacted] Wamberal, NSW, 2260, we would like bring to the Minister's - and Government's - attention our concern about the proposed new Coastal Management bill and its impact on thousands of local residents, businesses and public and private amenities and infrastructure

We respectfully ask the Minister to delay adoption of the proposed bill until a range of significant issues can be resolved

There are three main issues that concern my fellow residents - and I'm sure tens of thousands of residents up and down the NSW Coast

Firstly, the proposed Bill fails to distinguish between undeveloped and developed land in the so-called " coastal vulnerability zone" That could have a devastating impact on highly developed areas such as ours at Terrigal/ Wamberal - especially as the beachfront and its environs are one of the main drawcords for development and commercial growth in an area struggling for jobs and employment

Secondly, the proposed legislation is unsettling for residents living in the so-called *" Coastal Hazard Area"* with ambiguous provisions such as ' ambulatory boundaries' [which even in some quarters is called, " planned retreat"); 'time limited development consent'; ' sand nourishment' obligations; and others - all open to different interpretations with the language and meaning vague and undefined; and,

Thirdly, Coastal mapping in the proposed legislation is deficient and inadequate, leaving residents throughout the State in serious uncertainty how they are affected ;

Given the critical nature of this Bill, and the hasty way it has been presented, we would ask the Minister and the Department to delay the gazetting [enactment] of this Bill until these issues are comprehensively discussed and resolved.

The need to stop looking at short term and start on long term actions now, is covered well in the following "The Conversation" article:

> Far-sighted adaption to rising seas is blocked by just fixing eroded beaches
>
> 15 May 2005.
>
> "We have studied this problem by combining insights from our work in economics, coastal geomorphology and engineering. As we have explained elsewhere, short-term actions to adapt to coastal flooding can actually increase risks to lives and property. By raising the value of coastal properties, these steps encourage people to stay in place and delay decisions about more drastic solutions, such as moving inland".

Playing politics also happens at a local government level where Councillors may not endorse Council planning policies or decisions to help a constituent's DA. It's astounding that people will use their rights and the law to live and build where they want to but at the same time use the law and their rights to get protection for what they shouldn't be doing, like building on a sand dune. A good example of this is covered in the previous Dunford v Gosford City Council, and Marchese v Central Coast Council. This state of personal entitlement is covered in Tayanah O'Donnell's article:

> "Building seawalls is a small bandaid on a gaping wound"
>
> 5 October 2018
>
> "Another interesting result of my research was seeing how residents rely on law and popular ideas associated with private property to advance individual property rights (such as exclusivity and freedom to redevelop). At the same time many look to the state for help when their own property is threatened by climate variability.
>
> Many respondents said they wanted intervention to protect their own properties from climate change impacts. However, they favoured *no* intervention for broader property protections. This was especially so where these interventions were because of "climate change", or where these interventions would reduce property values or public amenity. Others thought we shouldn't be paying to protect someone who has chosen to live in a high-risk location".

As mentioned in the introduction, it is also apparent that being reactive when faced with a dire or disastrous situation leads to badly considered and wrong decisions. This has been the case with Wamberal, where the seawall push gains traction whenever we are faced with the damage of a severe storm. The reaction to the sensationalism evoked by the storm-chasing media has assisted the seawall political agenda, pushing the Wamberal beach overdevelopment problem onto the beach itself and onto adjacent lagoons. No one in the pro seawall set are prepared to acknowledge the impacts seawalls have on the natural sand budget and Council doesn't really know what the budget or source for sand nourishment is, with or without a seawall.

Wamberal Beach SOS Save our Sand
Published by Corinne Lamont · 19 October 2023 ·

We must turn the tide on seawalls

The time to think about the fate of our beaches is now. We need a coastal commissioner.

Wendy Harmer

The controversial seawall at Collaroy-Narrabeen beach is to be extended.

Surfrider Foundation Northern Beaches
18 October 2023 ·

If you can grab a copy of today's @sydneymorningherald for @wendy_gai 's article about our loathed Collaroy/Narrabeen seawall.

"There are 3 things NSW Planning Minister must do... declare a moratorium on the building of seawalls, reinstate the Coastal Panel...and appoint a Coastal Commissioner".

The seas are rising and so are we @surfrideraus @surfridercentralcoast @roryamonmp @drsophie4mackellar @pennysharpemlc @beachescouncil @senatorsurfer

#seawallsstealbeaches #climatechangemitigation #protectourcoast

Wamberal Beach (SOS) are hoping that the tide is changing on seawalls and look to a recent Land and Environment Court decision for hope.

See: [Private property owners lose epic case Byron Bay seawall case]

There are areas around Australia that are already successfully planning for climate change and sea level rise

Adaptation and city resilience initiatives

Building a more resilient city

We're committed to working with the community to adapt our city to the projected impacts of climate change including sea level rise.

In recent years, Council has developed two local adaptation plans in partnership with the community, including:

- Marks Point and Belmont South
- Pelican, Blacksmiths, Swansea, Swansea Heads, Caves Beach.

https://www.lakemac.com.au/Projects/Adaptation-and-city-resilience-initiatives

See: Lake Macquarie Local Adaption Plan for Future Flooding and Coastal Risks

Better ways to sustain NSW beaches

There are also other coastal management options that satisfy the ESD principles and CMA objects that could be more readily investigated and used with a co-ordinated participation from all levels of government. See: Beach Nourishment Scheme or NABE

As well as trying to stop a seawall, Wamberal Beach (SOS) are lobbying NSW State and the Federal Government to enable sand nourishment from offshore sources to be used as a solution to combat erosion along the NSW coastline. This would involve changes to the Offshore NSW Minerals Act allowing sustainable offshore sand dredging and rainbowing of sand onto beaches from a hopper dredge that could be a shared resource along the NSW coastline. Offshore sand nourishment is the most popular coastal erosion solution widely used all around the world and in other Australian states. The following link is an interview organised by Wamberal Beach (SOS) in January 2024 for beachfront property owners, federal MP Dr Gordon Reid, and coastal expert Angus Gordon.

Angus Gordon provides details of how sand nourishment is the superior solution for Wamberal Beach, how it has been successfully used to protect beaches and property and the feasibility of using offshore sources of sand.

See: Wamberal (SOS) beachfront property owner meeting with federal MP DR Gordon Reid and Angus Gordon OAM

Ironically while Adam Crouch MP established a “seawall” taskforce to get a seawall for Wamberal Beach, John Barilaro was working with Newcastle Council to deliver a sand nourishment solution for Stockton Beach, and in November 2023 a hopper dredger was rainbowing sand onto Stockton Beach. This could have been happening at Wamberal Beach too, especially with an amendment to the Offshore Minerals Act. The proposed Wamberal seawall requires sand nourishment; however, Council has been unable to secure a source of sand for the seawall project and has refused to seek sand without also seeking a massive seawall. So, the situation is a mess.

See: NSW Government survey shores up sand options for Stockton Beach

See: Stockton Beach Repair Blueprint

Wamberal Beach (SOS) engages with Wamberal beachfront property owners

In a further effort to stop the proposed seawall Wamberal Beach (SOS) sent text messages to the beachfront property owners to urge them not to consent to the WPA and Council seawall DA. The response from the beachfront property owners other than the WPA, was

mainly positive with a growing number of beachfront property owners indicating they did not support the proposed seawall and were interested in Wamberal Beach (SOS) activities lobbying for sand nourishment as an alternate solution to building a seawall. It was revealed by one of the beachfront owners that about half the beachfront property owners did not a seawall.

Refer attachment 13 texts sent to beachfront property owners

Beachfront owners on the hook to restore the beach – Covenants

Wamberal Beach (SOS) recently carried out Title Searches on 34 Wamberal beachfront properties and found that 21 properties have positive covenants requiring the owners to restore the sand dunes and vegetation on their beachfront after storms, at their expense, in perpetuity. The positive covenants and associated land titles make no mention of Council promising to build a seawall and the covenants make the owners aware of the risk of coastal hazards to the properties.

Some of the properties also have indemnities on their titles, indemnifying Council from any damages caused by coastal hazards. Why has Council pushed for a seawall with these covenants and indemnities on the property owners, why hasn't Council simply enforced the beach restoration as they are entitled to under the covenants? Council's Development Control Plans require these covenants with any DA, yet Wamberal (SOS) has noticed Council hasn't placed positive covenants on all the beachfront properties that should have them. If Council can't follow its own rules and procedures, how can it be trusted to maintain beach amenity with a seawall? Council had a land management scheme for the beachfront properties in in the 90's that beachfront property owners defaulted on and as a result cost Council a lot of money. In the recent 2020 storms over $2,000,000 was spent in emergency works. This should not be occurring with the existing covenants on the beachfront properties and is further proof Council should not be trusted to manage the beach, let alone a beach and adjacent lagoons that will be destroyed with the proposed 1.3km seawall. There is already a requirement for most property owners to restore and revegetate the sand dunes, that's the solution that is already in place and Council should be enforcing, not a new beach and lagoon destroying seawall.

See:

- Episode 1 Nobody promised them a seawall
- Episode 2 More WPA dirty deeds uncovered
- Episode 3 The Case of Dr Alice Howe
- Episode 4 WPA title deed stocktake 2
- Episode 5 Council deceives on covenants
- Episode 6 The Nikolaidis case

"Against the tide: storm-battered residents cling to beachfront homes on Australian east coast". The beachfront homeowners in this article have perpetual Positive Covenants on their property title requiring dune restoration and revegetation and indemnifying Council from damages caused by the sea or storms. Their public comments about Council promising a seawall are not true.

In the 1993 LEC case Nikolaidis v Gosford City Council the owners accept that a deck attached to their house will be a sacrificial deck.

> "…the design of the foundations may be sufficient to avoid the total collapse of the building, the extent of the potential for the action of the waves to impact on the structure is reflected in the design which incorporates what is described as a sacrificial free-standing verandah. In the event of a major storm, it is recognised that this verandah, and deck,

> built at ground floor level, on the eastern extremity of the building could collapse and fall onto the sand or be washed away. Presumably, this potential loss is to be accepted by the proponents, and any future owners, as part of the price for building in such a location. The Court has some difficulty in accepting a concept which involves recognition that the proposed structure will, at some stage during its life, be exposed to a hazard which must, almost certainly, cause serious damage irrespective of the protective measures which the applicants say inevitably will occur".
>
> "Mr Ingham concluded that, having regard to the value of properties fronting Wamberal Beach, in the event of a severe storm taking place some beach nourishment measures and stabilisation measures would be immediately undertaken to protect dwellings along the beach and that it is most unlikely, in his opinion, for the council or the whole community to stand idly by and watch the destruction of major buildings. This suggests that the community will be placed under pressure, in the event of a major storm event, to undertake urgent preventative or restorative works. Reliance on such an approach where the paramount consideration under such circumstances is unlikely to be a long term one would be the antithesis of good planning".

Refer to attachment 14 AustLII Land and Environment Court of NSW Record of Hearing Nikolaidis v Gosford City Council

Unelected Council fails important lessons, shirks expert advice

Wamberal Beach (SOS) have repeatedly written to The Minister for the Central Coast The Hon David Harris MP and The Minister for Local Government The Hon Ron Hoenig MP to order a review of Council's WPA partnership to build a seawall, asking the ministers to step up for the people of the Central Coast who have not had a voice in Council since October 2020. Council should be ordered to remove itself from the seawall project until the community has an elected Council. The resolution to build the seawall at Wamberal Beach was made by one person who is not listening to and not acting in the community's best interest. The administrator and Council management are rushing to advance this seawall before the September 2024 Council elections as they know that the seawall will not be supported by an elected Council representing the community.

Central Coast Council under administration continues to stand firm on joining the WPA in a seawall DA for Wamberal Beach, ignoring or dismissing expert opinion and public protest. The CZMP that Council falsely used as a basis to build a seawall at Wamberal Beach expired on 31 December 2023, after a NSW Government extension in 2021, however, Council still say they will follow through on their badly made resolution to join WPA to build a seawall. Council is joining the WPA seawall DA to build a seawall across five parcels of NSW Government land and public beach accessways. This land does not need seawall protection, but the WPA needs the public land on their seawall DA to increase chances of the seawall DA being approved by assessors. Seawalls are a federated proposition, all in or none, so Council is effectively propping up a private development that would not stand alone, a development experts say would shred the beach of its sand. Council is assisting WPA in achieving their seawall goals instead of listening to experts and the community on the issue.

See Professor Andrew Short (USYD) 2023 interview regarding Wamberal Beach, refuting the pro-seawall campaign claim of "dune breakthrough".

A problem with the position that Council is taking is that the proposed seawall is not remotely close to the seawall proposed in the certified CZMP. Instead of a buried revetment as set out in the CZMP along with sand nourishment and dune revegetation, a vertical seawall is

proposed. Council has not sourced sand for any sand nourishment requirements to maintain beach amenity. The Collaroy seawall is only 1/5th the length of the massive seawall proposed for Wamberal. At Collaroy, 4,388 truckloads of sand were dumped in front of the seawall last November, the seawall emasculating the natural ability of the beach to rebuild deposits after storms.

Council staff involved in the project believe the DA will end up in the Land and Environment Court, which means they predict it will be refused by the consent authority. Why would Council waste rate payer resources on advancing a seawall they are predicting to be refused.

Dr Gordon Reid MP
FEDERAL MEMBER FOR ROBERTSON

The Hon. Paul Scully MP
Minister for Planning and Public Spaces
GPO Box 5341
SYDNEY NSW 2000

17 OCT 2023

Dear Minister Scully,

I write concerning the NSW State Government's decision to allow five publicly owned sites along Wamberal Beach to be transferred to Central Coast Council to facilitate a development application for a seawall.

Minister, as you would be aware, over the past several years thousands of Central Coast residents have mobilised against the construction of a seawall along Wamberal Beach.

Some 1,377 people have signed a petition opposing this proposal and many others across the region do not want to see this seawall constructed.

I ask you Minister, to review this decision by the NSW State Government to approve the transfer of five publicly owned sites to Central Coast Council.

I understand that Wamberal beachside residents will now put forward a development application, in partnership with Council, to the Hunter Central Coast Regional Planning Panel.

The planning panel will have the final determination on whether this proposal proceeds.

I trust that you will listen to the concerns of the thousands of residents against this seawall and act accordingly.

Yours sincerely,

Dr Gordon Reid MP
Federal Member for Robertson

Proposed seawall is flaky, likely to be fudged

The seawall proposed in the CZMP is for a whole of embayment solution buried revetment seawall, yet SOS knows many Wamberal beachfront property owners will not be consenting to the proposed Council and WPA vertical seawall DA, so the seawall will not be a continuous whole of embayment TPS. There will be no timeline or time limit for the seawall to be built, so construction could go on forever in bits and pieces with dune sections between wall sections being eaten out as was proved in the famous seawall case Eggers v Gosford City Council in the 70s, a case centred on a smaller seawall on Wamberal Beach, a case where Prof Andrew Short was the expert witness! Council and the WPA are putting hundreds of neighbouring lagoon homes at risk to protect about 70 beachfront properties that are often vacant.

See: Angus Gordon speaking about seawall flooding impacts to Terrigal and Wamberal Lagoons

Council passed a resolution for Engineering Design Requirements (EDR) to be followed for the proposed seawall DA, however, Council acknowledges that these requirements may not be followed. One of the requirements is for the vertical seawall to be place on private land, yet coastal engineer Peter Horton, who specialises in seawalls has already stated that there is no statutory or scientific basis for Council's seawall alignment. This means that property owners will most likely dispute the alignment in the DA if and when they build the seawall, and it may end up on the public beach and not on private property.

See: Coastal Engineering Advice on 75 Ocean View Drive Wamberal Horton Coastal Engineering report:

> "That stated, for the record, it is noted that the MHL (2022) seawall alignment has no coastal engineering analysis supporting it, simply being 0.9m seaward of the landward edge of a 1998 sloping revetment design. It is questioned how 0.9m seaward of the most landward edge of a seawall design in 1998 has become the most seaward edge now, noting that the 1998 revetment extended in the order of 19m further seaward and was found to be acceptable in terms of coastal processes. It is considered to be an unrealistic and impractical alignment, that could not be built at many properties due to proximity to dwellings, would not allow seawall terracing due to lack of space, and would leave a dune potentially with building waste and the like exposed to erosion (or forcing owners to remove materials that could safely be buried landward of the seawall and would not need to be exposed during construction). The seawall alignment in MHL (2022) is also not a statutory consideration, not being referred to in the Central Coast Local Environmental Plan 2022 nor CZMP, and MHL (2022) itself notes that there is some flexibility to the adopted alignment".

As already mentioned the new dwellings being built along the beachfront on sand dunes are being built to withstand coastal hazards and don't need a seawall as stated in the previous Coastal Engineering Advice on 75 Ocean View Drive Wamberal Horton Coastal Engineering:

> If the above requirements are followed, the proposed development would be at an acceptably low risk of damage from erosion/recession for an acceptably rare storm and over an acceptably long design life. The proposed dwelling is at an acceptably low risk of inundation over an acceptably long life, with the precautionary recommendation that stair landings on the southern side are contoured to fall away from the entry doors.

These new larger bunkered dwellings are being approved without the need for a seawall with owners knowing the risks of the location where they are building.

This document has used material and discussed issues dating back 50 years, the actions that needed to be taken were quite clear a long time ago and may already be too late, there is no more time to waste.

See: State Disaster Mitigation Plan

https://cdn.filestackcontent.com/tjqbgVECRWofoL7XsAkQ

State Disaster Mitigation Plan

Consistent and unified decisions on equitable and sustainable climate change adaption policy can only be made when state government MPs, departments and Councils operate openly, without the type of interference documented here. There must be assistance and rewards for adherence from all levels of government. What we need now is a perpetual apolitical, independent body to achieve sustainable coastal management. Local groups such as SOS should not have to spend so much time and community resources, educating and representing the local community. That should be the function of healthy, open local and state governments. Federal MP Dr Gordon Reid and state Abigail Boyd MLC both delivered speeches in federal and state parliament in support of the Wamberal Beach (SOS) campaign to stop the Wamberal Beach seawall. It shouldn't be this hard to stop a seawall.

We maintain contact with all relevant state, federal and local government stakeholders and with the local community, including Wamberal beachfront property owners who do not want a seawall and are feeling WPA pressure to jump to a seawall, and will continue to fight the proposed Wamberal seawall.

I and other community representatives at Wamberal Beach SOS are available to speak with ABC and provide additional input or answer any questions.

Kind regards,

Corinne Lamont

Wamberal Beach SOS organiser and President at No Wamberal Bech Seawall Incorporated

Facebook - https://www.facebook.com/wamberalbeachsos

List of Attachments

1. Worley Parsons Gosford City Council Gosford Beaches CZMP
2. Wamberal Beach Executive Summary and Wamberal Actions.
3. Letter from Sharon Molloy Office of Environment and Heritage regarding “Pacific 6” seawall DA.
4. Marsden Jacob Associates Wamberal beach management options: Cost benefit and distributional analysis
5. Marchese v Central Coast Council [2018] NSWLEC
6. Emails to and from Ben Fullagar Central Coast Council.
7. A Boyd MLC speech – Coastal Erosion – Legislative Hansard – 17 September 2020
8. Emails to/from Ben Fullagar, Central Coast Council
9. “Cost Benefit Analysis in Coastal Management –Getting it Right and Getting it Wrong” Horton & Rajaratnam
10. Wamberal Seawall Advisory Taskforce Terms of reference
11. Strategy/Policy Workshop 2004
12. Wamberal Beach and Property Protection Environmental Impact Statement Report MHL935 JUNE 2003
13. texts sent to beachfront property owners
14. AustLll Land and Environment Court of NSW Record of Hearing Nikolaidis v Gosford City Council