# Final Report

## Shoalhaven Open Coast and Jervis Bay CMP Stage 3 Summary Report

Shoalhaven City Council

13 October 2023

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## Project Details

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| **Client** | Shoalhaven City Council |
| **Client Project Manager** | Nigel Smith |
| **Water Technology Project Manager** | Christopher Beadle |
| **Water Technology Project Director** | Gildas Colleter |
| **Authors** | Courtney Smith; Christopher Beadle |
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Suite 3, Level 1, 20 Wentworth Street
Parramatta NSW 2150
Telephone (02) 9354 0300
ACN 093 377 283
ABN 60 093 377 283

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# 1 INTRODUCTION

## 1.1 Introduction

Under the NSW Coastal Management Framework and the *NSW Coastal Management Act 2016* (CM Act), the future management of the Shoalhaven Local Government Area (LGA) open coastline and Jervis Bay will be guided by a Coastal Management Program (CMP).

The Shoalhaven Open Coast and Jervis Bay CMP will establish an integrated 10-year program for the coordinated management of the open coastline which is over 165 km long and extends from Seven Mile Beach in the north, to Durras Beach in the south. The CMP aims to ensure the integrated and effective management of the coastal zone, considering environmental, social, and economic factors. By implementing this program, the Shoalhaven LGA community can protect and enhance its coastal resources for the benefit of current and future generations.

The CMP is being prepared through the five-stage process prescribed in the NSW Coastal Management Manual and depicted in Figure 1-1.

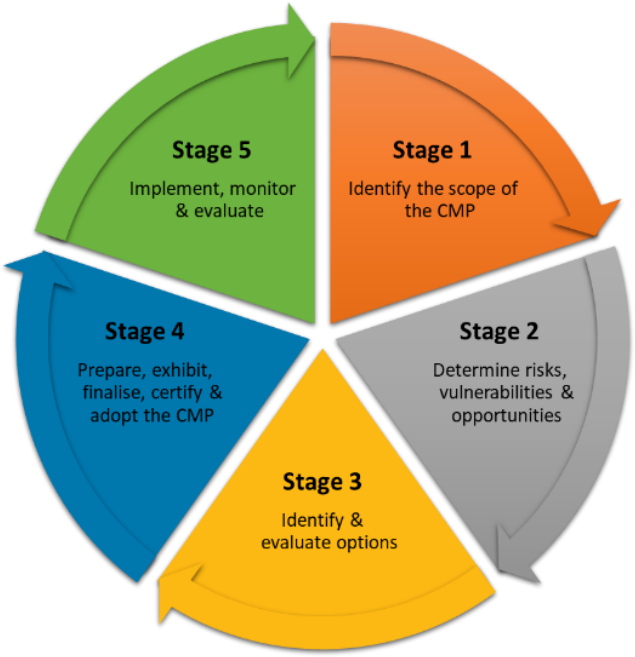


**Figure 1-1 The CMP process**

Stage 1 of the CMP (Advisian, 2020) was adopted by Council in June 2020. It included a review of relevant background information, a first pass risk assessment, a data gap analysis, and a forward program for the CMP.

Stage 2 included a detailed assessment of the various threats and risks affecting the environmental, social, and economic values of the coastal zone (Water Technology, 2023).

Subsequently, the purpose of Stage 3 is to identify coastal management options that can address coastal management issues such as threats, risks, and hazards, take advantage of opportunities, and give effect to the objectives of the CM Act.

This report has been prepared to fulfill the requirements of Stage 3 of the CMP process. It has been prepared on behalf of Shoalhaven City Council (Council) with funding and technical support from the NSW Department of Planning and Environment (DPE), and in consultation with various State agencies and other relevant stakeholders.

## 1.2 Approach to Stage 3

The recommended approach to Stage 3 is set out in the NSW Coastal Management Manual (OEH, 2018d) and is summarised in Figure 1-2.

The overarching aim of Stage 3 of the CMP is to develop a long list of potential management options to address the various risks and opportunities identified in Stage 2, and then to assess, rank, and prioritise those options using a robust, decision-making framework. The outcome of this stage will be the determination of a short list of management options to proceed to Stage 4 as management actions. These will then be implemented in Stage 5 of the CMP.

The assessment framework adopted in this study has been developed in order to make sound comparisons between each option and to rank options in a transparent and unbiased manner - in order to identify those having the greatest overall benefit for the coastal zone.

The Business Plan (Step 4) will be completed as part of Stage 4 of the CMP – so that the business plan can be prepared after option refinement, the development of management pathways, and commitment from delivery partners is confirmed.

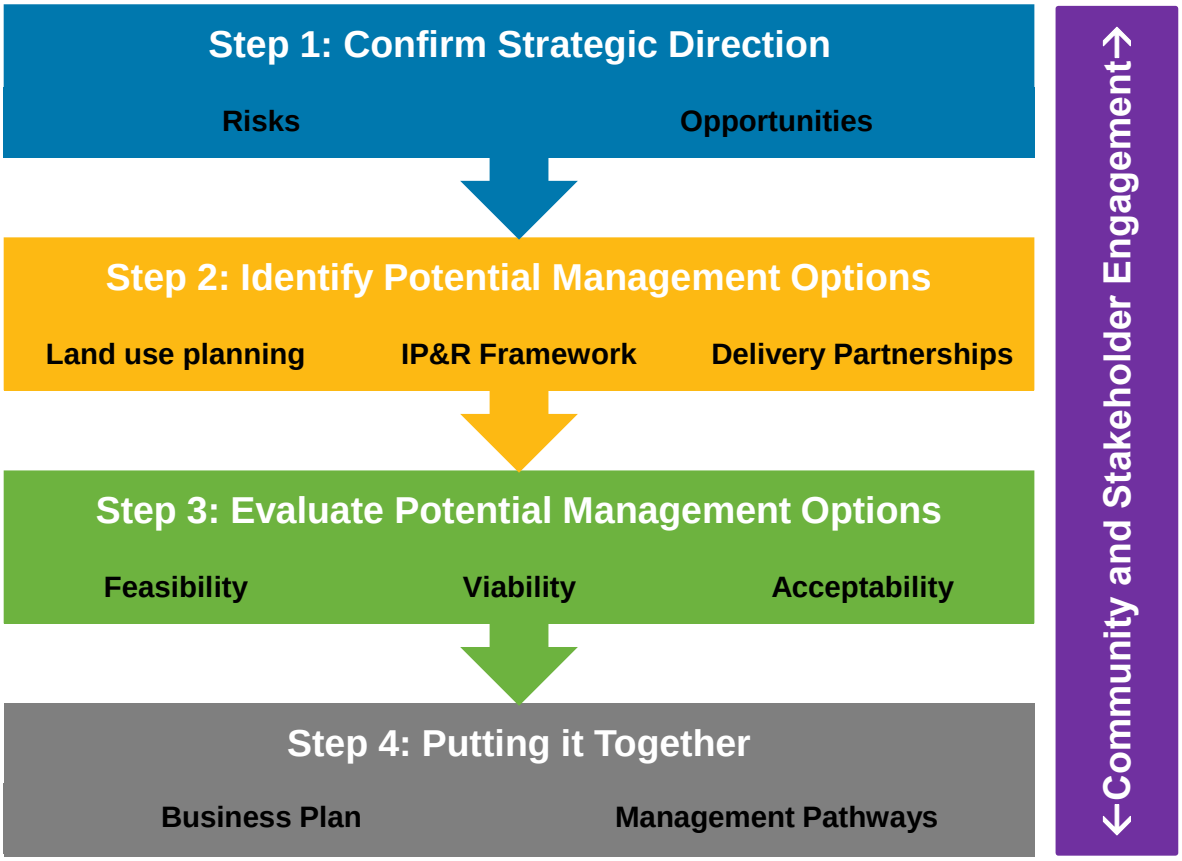


**Figure 1-2 The approach to Stage 3 of the CMP**

## 1.3 The Structure of this Report

The structure of this report is intended to reflect the structured delivery of Stage 3 of the CMP.

- Section 2 of this report provides a succinct overview of the community and stakeholder engagement activities that have been undertaken. This engagement process has been interwoven through each step in Stage 3 (in addition to the prior engagement in Stages 1 and 2), and therefore a summary has been provided up front within this document to provide overarching context.
- Sections 3 to 5 of this report provides a summary of the Steps 1 to 3 of the process (see Figure 1-2 above). Due to the very large number of potential management options assessed throughout these steps, these report sections provide an overview of the methodology and a summary of outcomes – with greater detail provided in the appendices of this report.

- Appendix A provides descriptions of the potential management options that have been assessed in Stage 3 (the options long-list).
- Appendix B provides a summary of the Feasibility and Acceptability assessment results for all potential management options.
- Appendix C provides a summary of the Viability Assessment results for all potential management options.
- Appendix D provides a detailed description of the economic cost-benefit analysis that has been undertaken for certain options where both (a) the risks and associated impacts are high and (b) the economic costs and benefits can be reasonably estimated.
- Appendix E provides detailed results for the community engagement exercises.

# 2 COMMUNITY AND STAKEHOLDER ENGAGEMENT

## 2.1 Overview

In the Stage 1 Scoping Study, a comprehensive Community and Stakeholder Engagement Strategy was prepared for the CMP (Advisian, 2020). This strategy outlined the overarching direction and approach and engagement framework for Council's full suite of CMPs.

At the outset of Stage 2, the strategy was progressed into a specific plan of action that detailed the methods, content, and timing for community and stakeholder engagement activities during Stages 2 to 4 of the Open Coast and Jervis Bay CMP. The plan was developed in accordance with NSW CMP Engagement Guidelines (OEH, 2018), the Shoalhaven City Council Community Engagement Strategy 2022 – 2026 (Shoalhaven City Council, 2023), and the International Association for Public Participation (IAP2) guidelines.

During Stage 3, the engagement process aimed to facilitate stakeholder and community involvement in identifying and evaluating potential management options. As per the IAP2 Spectrum of Public Participation, the following levels of engagement were used (see also Figure 2-1):

- **Inform:** Providing communities and stakeholders with information regarding the nature of the project, the identified risks, and the potential management options.
- **Consult:** Engaging with communities and stakeholders to obtain feedback regarding their support for the potential management options in the Stage 3 "Long List" of options.
- **Involve:** Ensuring that concerns and aspirations for the coastal zone (as harnessed during the Stage 1 Community Engagement Activities) are directly reflected in the development of potential management options for the CMP.
- **Collaborate:** Providing communities and stakeholders with the opportunity to submit suggestions for potential management options to be included in the "Long-List" of options and subsequently, the Stage 3 options assessment.

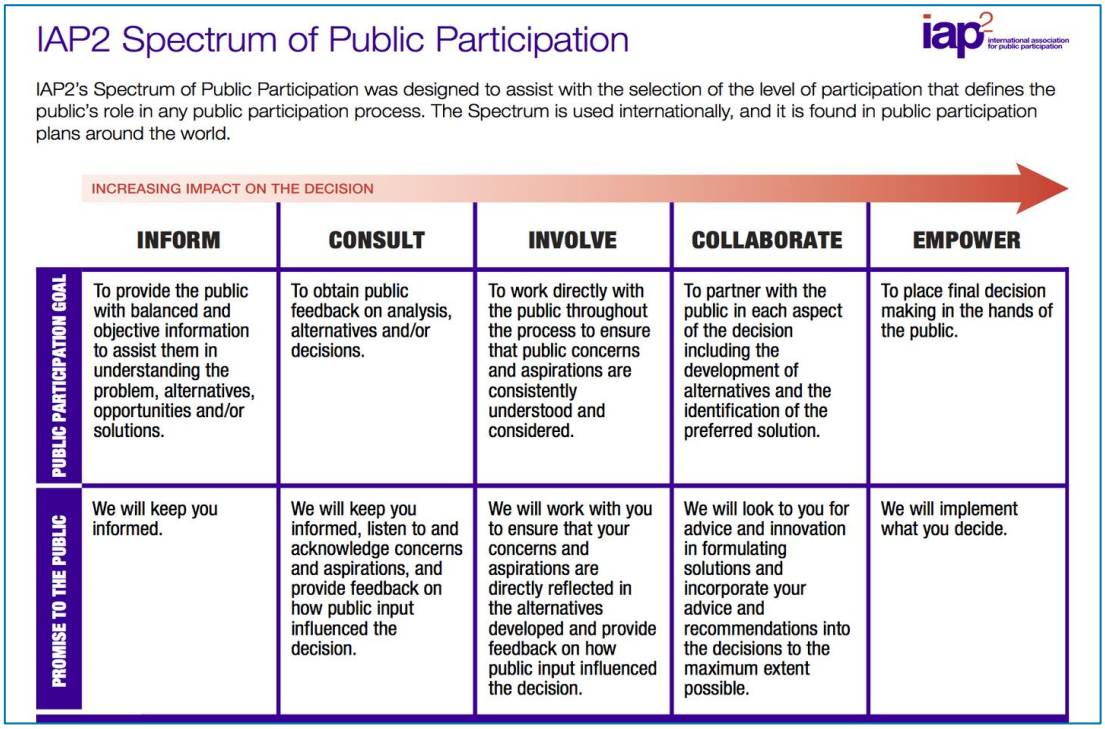


**Figure 2-1 The IAP2 spectrum of engagement (Source: IAP2)**

Based on this approach, a multi-modal community and stakeholder engagement process was undertaken during Stage 3. The key to this approach was the use of a centralised online engagement portal hosted on Council's Get Involved page for the project. The Stage 3 engagement approach is summarised in Figure 2-2, and described below.

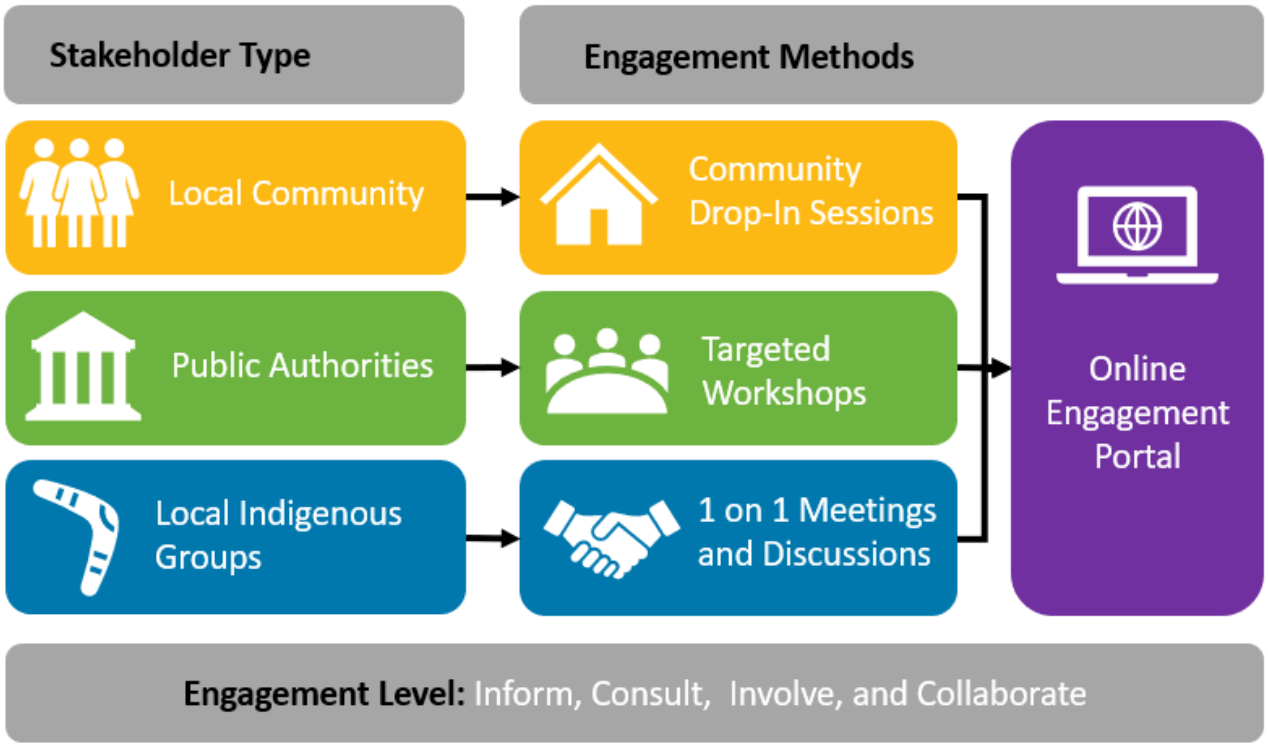


**Figure 2-2 The approach to Community and Stakeholder Engagement in Stage 3**

## 2.2 Online Engagement Portal

At the commencement of Stage 1 CMP Scoping Study, Council established a *Get Involved* page for the project. Through Stages 1 to 3 of the CMP, the webpage has served as a central repository for the community that contains project information, updates, and pathways for direct engagement.

### 2.2.1 Project Information

The *Get Involved* page acted as a key repository of project information for communities and stakeholders. It included:

- Background: An overarching description of the project, and background to the CMP process including the intent of the CMP, who is involved, and how it is developed.
- Explainer Videos: A video library provides the community with short, clear video packages explaining the project and the CMP process.
- A document library: Which includes key documents such as project brochures and bulletins, the Stage 1 Scoping Study, and the Terms of Reference for the Northern / Central / Southern Coastal Management Program Advisory Committees.
- Progress Updates: Regular updates on project progress as each stage of the CMP has evolved. This included provision of notice and advertisement for community engagement activities.

### 2.2.2 Engagement facilitation

The *Get Involved* page helped facilitate the Stage 3 engagement activities by hosting three key engagement elements, as described below and outlined in Figure 2-3.

- **1. An Action Booklet:** Providing information regarding larger (study area-wide) potential management options, including detailed description of those options and their potential costs and benefits.
- **2. A Feedback Portal:** This web-based mapping tool allowed communities and stakeholders to provide feedback on local area options in the Stage 3 long list. Each of the (then) 140+ local area options were presented as a geolocated 'pin' on the mapping interface. By clicking on the option icon, respondents could read a short description of the option, and provide feedback in the form of:
  - An indication of support from a drop-down list, with choices of: 'Support', 'Neutral / Don't Know', or 'Do Not Support'.
  - A free text response where more detailed comments and feedback could be provided.
- **3. A Suggestion Portal:** This was an additional web-based mapping tool that allowed communities and stakeholders to provide suggestions for additional options for consideration as local area options in the Stage 3 long list. Suggestions could be provided in the form of a "pin" placed on a given area of interest, along with ability to then leave a short description of that suggestion and/or comment.


**Figure 2-3 Functionality of the online engagement portal**

Snapshots of the Feedback Portal and Suggestion portals are provided in Figure 2-4. The *Get Involved* page also contained instructional booklets and videos to assist communities in using the engagement portals detailed above.

The engagement portals were left open for a 7-week period between 25 August and 16 October 2022.

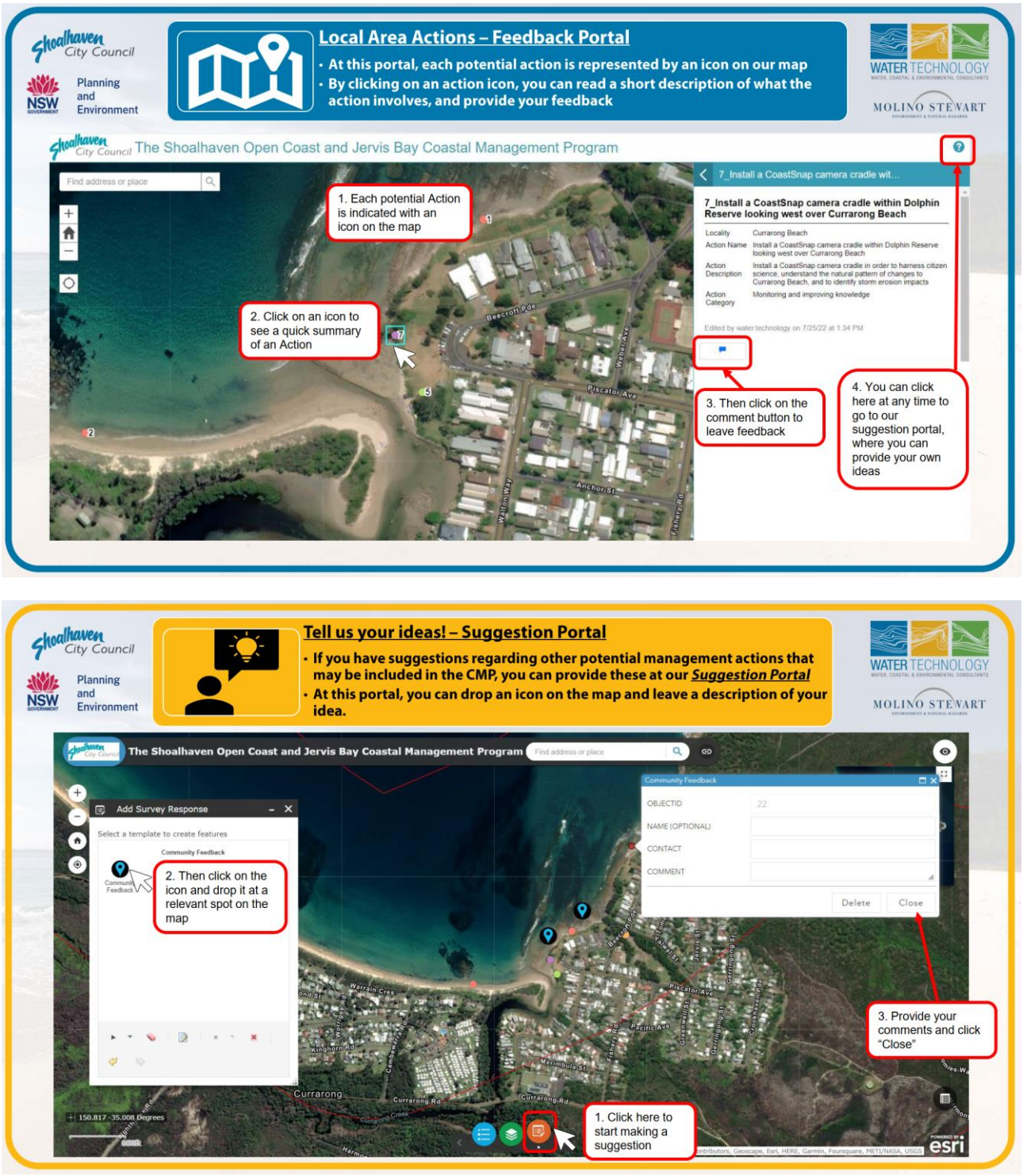


**Figure 2-4 A snapshot of the Feedback Portal (top) and Suggestion Portal (bottom)**

## 2.3 Community Engagement

### 2.3.1 Online Engagement Responses

The online engagement portal garnered a significant number of responses from the local communities. A total of 540 community members registered in the portal and provided responses. This included representatives from different community groups from across the Shoalhaven LGA coastal zone, comprising:

- Birdlife Shoalhaven
- Burrill Lake Community Association
- Callala Beach Progress Association
- Callala Bush Care
- Callala Foreshore Alliance
- Collingwood Beach Preservation Group
- Culburra Beach Seniors
- Huskisson Woollamia Community Voice
- Jervis Bay Cruising Yacht Club
- Jervis Bay Game Fishing Club
- Jervis Bay Sailing Club
- Lake Tabourie Community Consultative Body (CCB)
- Lake Wollumboola Protection Association
- Lake Wollumboola Bushcare Group
- Mollymook Dunecare / Bushcare
- Shoalhaven Heads Community Forum
- Shoalhaven Heads SLSC
- Shoalhaven Landcare
- Sussex Inlet & Districts Community Forum

A brief statistical summary of the responses is provided in Table 2-1.

**Table 2-1 Summary of online portal responses**

| Overall Participant Metrics | Statistic |
|---|---|
| Total number of participants registered in the mapping portals | 540 |
| Percentage of participants who indicated that they “would like to be kept informed about the progress of the CMP” | 82% |
| **Feedback Portal Metrics** | **Statistic** |
| Total number of local area options provided in the feedback portal | 137 |
| Total number of responses received | 1,306 |
| Average number of options responded to, per participant | 2.7 |
| Average (and median) number of responses received on each option | 9.5 (5) |
| **Suggestion Portal Metrics** | **Statistic** |
| Total number of suggestions / comments received | 187 |

A detailed summary of the online engagement responses in provided in Appendix F.

The community responses collected in the two portals were used in the following ways:

- Feedback Portal: Data from this portal provided quantified metrics of community support for each local area option in terms of % support. Refer to Section 5 for how this data was incorporated into the options assessment process.
- Suggestion Portal: All responses were thoroughly reviewed and were categorised into one of three categories.
  - **Considered in Stage 3:** Where suggestions fell into one of the following categories:

- Suggestion covered by existing option or is a comment on existing option.
- Suggestion to be included for consideration as new option in Stage 3 long list.

- **Considered, but not progressed to Stage 3:** Where suggestions fell into one of the following categories:
  - Outside technical scope of this CMP.
  - Located outside of the CMP study area boundary.
  - Inconsistent with Local and State Government policy.
- **General comment:** Where a general comment was provided that did not a provide a specific response in the form of an option, but was generally considered in the CMP development.

The suggestions are presented in Appendix E, where colours **in green** represent suggestions considered in Stage 3, **in grey** represent suggestions considered but not progressed to Stage 3, and **in blue** if they were a general comment.

### 2.3.2 Community Drop-In Sessions

For those who preferred face-to-face engagement methods, a series of community drop-in sessions were held to obtain input for the Stage 3 options identification and assessment process.

In total, 7 community drop-in sessions were held across 3 days during September 2022. Due to the large size of the study area, drop-in sessions were held in 3 separate locations across the northern (Nowra), central (Huskisson / Callala Beach) and southern (Ulladulla) regions of the study area. Details of these events are provided in Table 2-2, including session attendance. Overall, the sessions were well attended, with 123 attendees in total.

**Table 2-2 Summary of community drop-in sessions**

| | Southern CMP Study Area | | Jervis Bay CMP Study Area | | Northern CMP Study Area | |
|---|---|---|---|---|---|---|
| **Date → Time ↓** | Tuesday 6 September 2022 | | Wednesday 7 September 2022 | | Thursday 8 September 2022 | |
| | **Location** | **Attendance** | **Location** | **Attendance** | **Location** | **Attendance** |
| **Morning Session 10:00-12:00** | N/A | | Callala Beach Community Hall | 32 | N/A | |
| **Afternoon Session 14:00-16:00** | Ulladulla Civic Centre | 25 | Huskisson Community Centre | 27 | Shoalhaven Entertainment Centre (Nowra) | 13 |
| **Evening Session 17:00-19:00** | Ulladulla Civic Centre | 4 | Huskisson Community Centre | 13 | Shoalhaven Entertainment Centre (Nowra) | 9 |
| **Number of Attendees** | Total | **29** | Total | **72** | Total | **22** |

During the drop-in sessions, community members were encouraged to drop by any time during the allotted hours. The facilitation process for the workshops is summarised below:

- As people entered the venue, they were welcomed and directed to a 'welcome area', where a TV / projector screen played a short introductory video that provided:
  - Background into the project.
  - The purpose of the drop-in session.
  - Explanation of the drop-in session activities, including how to use the online engagement portal.

- Once this was complete, attendees were greeted by a member of the project team, and directed to:
  - Posters mounted on the wall that contained descriptions of the LGA-wide options and strategies.
  - Quick Response (QR) codes that allowed people to access the online engagement portal on their personal device (such as a smart phone or tablet).
  - A series of computer stations, where attendees could sit down, and navigate through the online portal on a larger screen with a member of the project team.

Community members were offered opportunities to provided verbal and written feedback on each of the potential management options, and the project in general. They were offered the opportunity to suggest additional options for consideration in the CMP – based on their local values and aspirations for the coastal zone. Robust in-person discussions were held between community members and members of the project team from Council and Water Technology.

**Figure 2-5 Drop-in session attendees watching an introductory video at the Callala Beach Community Hall**

### 2.3.3 Advertisement and Notice

The Community Engagement was advertised publicly through a range of mediums, including:

- The *Get Involved* webpage for the project.
- Media releases from Council.
- Council's social media channels, including Facebook, Twitter LinkedIn, and Instagram. These advertisements contained direct links to the *Get Involved* page for the project (see Figure 2-6).

- Posters and flyers: Over 70 posters were installed by Council staff at over 30 different beaches across the LGA. These posters included QR codes that provided direct access to the *Get Involved* page for the project, including the engagement portals (see Figure 2-6).

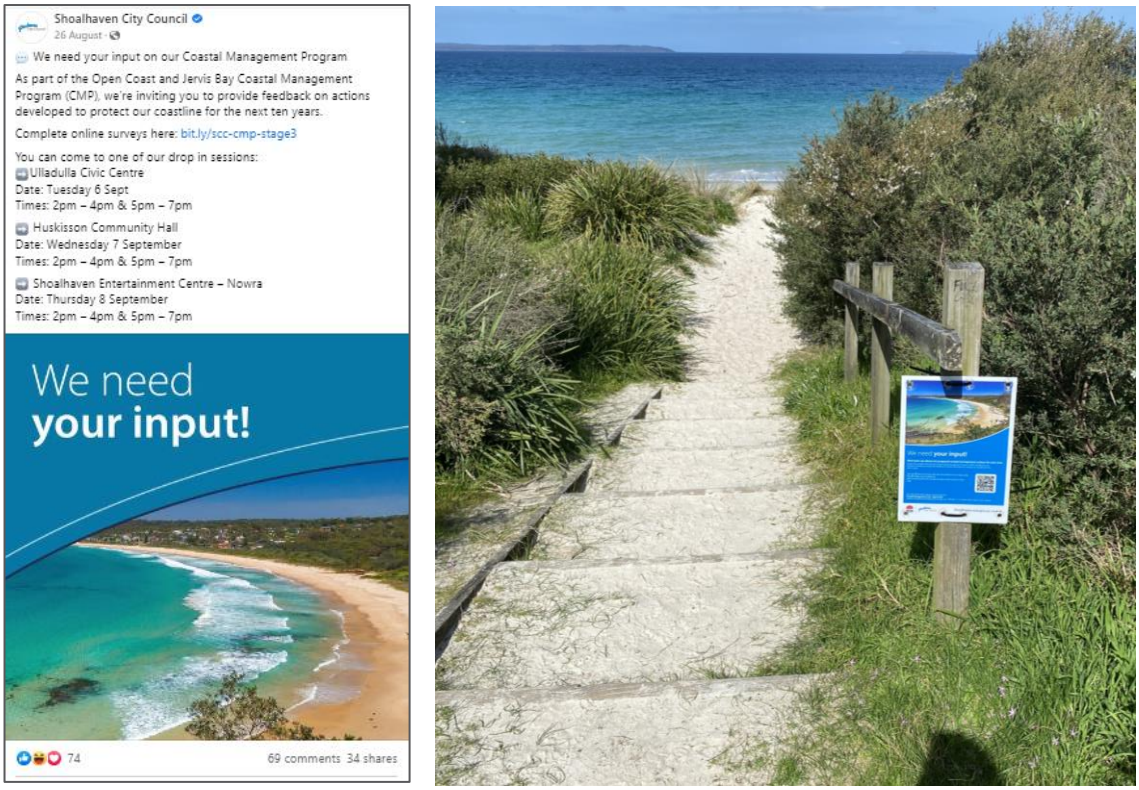


**Figure 2-6 Examples of social media advertisements (left), and advertising posters at beach access tracks at Callala Beach (right)**

## 2.4 Stakeholder Engagement with Public Authorities

During Stage 3 of the CMP, a robust engagement program was undertaken with representatives from key state government agencies as depicted in Figure 2-7.

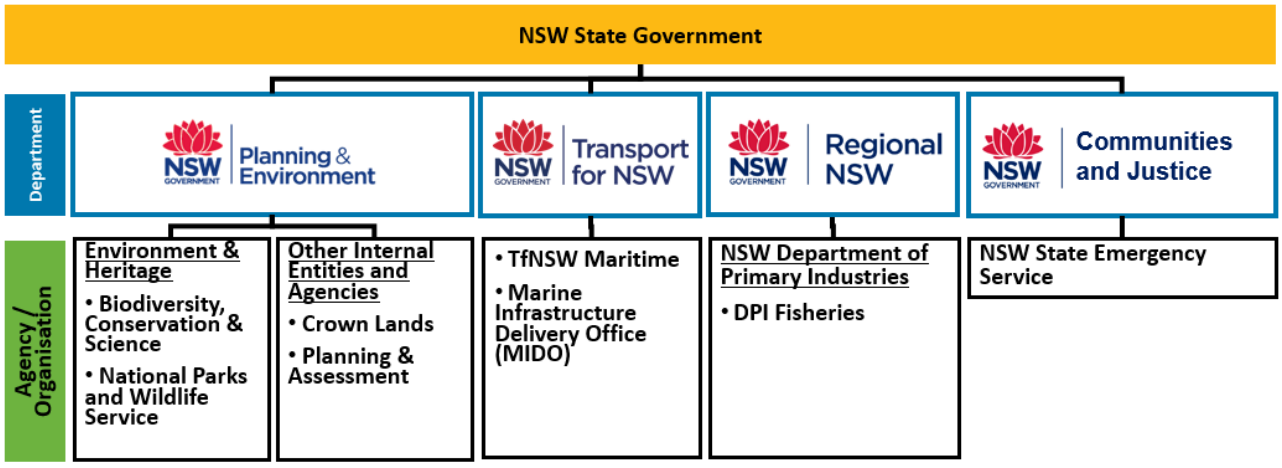


**Figure 2-7 State Government Agencies**

The engagement process included multiple rounds of engagement with these agencies, as shown in Figure 2-8. For the first round of engagement, a series of collaborative group online workshops were held in September 2022 with attendees from the agencies listed in Figure 2-7. The aims, methods and activities of the workshops were the same, but they covered two separate geographical areas:

- The first workshop covered the Jervis Bay Marine Park Area.
- The second workshop covered the remainder for the CMP study area.

The workshops served as a key touch point for discussion with the agencies regarding potential management options for the CMP. The aims of the workshops were to:

- Provide project background - including a summary of project progress to date, and a summary of the key risks and opportunities identified in Stage 2.
- Provide an overview of the Stage 3 engagement process – including a demonstration of how to use the Feedback and Suggestion Portals.
- Commence initial discussions of potential management options where inter-agency coordination and/or agreement could be required.
- Undertake a whiteboarding session to identify stakeholder ideas for potential management options, and linkages to existing state agency initiatives and actions.

From here, representatives were directed to use the Feedback portal to provide direct agency feedback on potential management options and provide responses during the 7-week engagement period.

Subsequently, a series of targeted follow up workshops were undertaken individually with a number of agencies – including Crown Lands, DPI-Fisheries, NPWS, and TfNSW / MIDO. These workshops were undertaken in order to facilitate more detailed discussions for options of particular relevance to each agency. Discussion points included refinement of the options and their delivery pathways, garnering in-principal support to facilitate progress of the option to Stage 4, and discussing potential funding mechanisms.

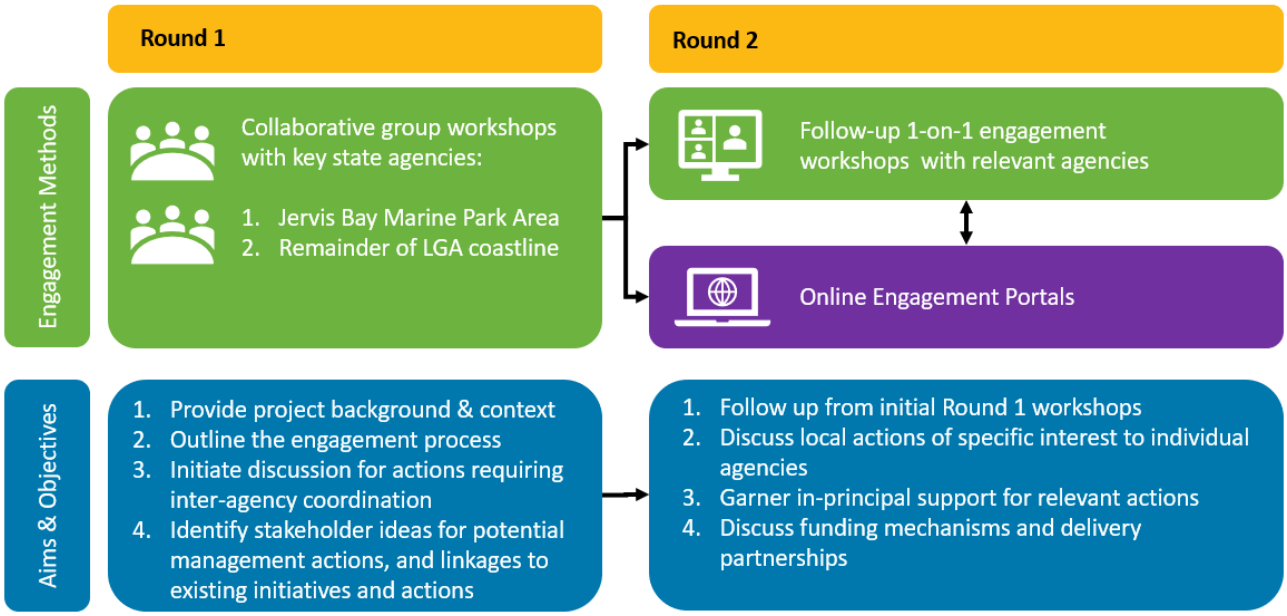


**Figure 2-8 Engagement Process with State Agencies**

## 2.5 Engagement with Local Indigenous Groups

As part of Stages 2 and 3 of the CMP, a multi-phase engagement process was undertaken with representatives from the following local Indigenous groups:

- Jerrinja Tribal Group.
- Jerrinja Local Aboriginal Land Council (LALC).
- Ulladulla LALC.

***Stage 2 Engagement***

At the commencement of Stage 2 of the CMP, consultation was undertaken with representatives from the Jerrinja Tribal Group and Ulladulla LALC respectively. The purpose of these consultations was to:

- Follow up from the Stage 1 engagement process by providing a project update/briefing with important background into the CMP process and the process for engagement throughout.
- Obtain local knowledge regarding the various study area values and risks. Discussion was had regarding all manner of risks and values; however, a particular emphasis was placed on discussing the significant tangible and intangible indigenous cultural heritage across the study area and the LGA more generally. Discussions were had regarding potential management options to address the aforementioned risks.
- To emphasise that the CMP is an opportunity for improved collaboration and to address some key issues affecting the estuaries.

A summary of the discussed threats and risks is provided in the Stage 2 CMP Report (Water Technology, 2023).

***Stage 3 Engagement***

During Stage 3 of the CMP, consultation was undertaken with representatives from the Jerrinja Tribal Group, the Jerrinja LALC, and Ulladulla LALC respectively. The purpose of these consultations was to:

- Follow-up on the previous engagement and outline how previous discussions had translated into potential management options proposed for the Stage 3 long list.
- Discuss all of the potential management options in the long list, with a particular emphasis on those that relate to the preservation and protection of Indigenous cultural heritage.
- Discuss other potential management options for inclusion in the long list and Options Assessment.

Discussions were highly productive and generally supportive of the potential management options. Feedback received from stakeholders was incorporated into the options assessment as a key component of the Acceptability Assessment (see Section 5.3).

# 3 STEP 1: STRATEGIC DIRECTION

## 3.1 Overview

The purpose of the CMP is to create a comprehensive framework for the future management of the Shoalhaven LGA's coastline. This framework aims to align with the principles of ecologically sustainable development and promote the well-being of the community in social, cultural, and economic aspects.

During Stage 1 of the CMP (Advisian, 2020), Council developed a Vision, Purpose, and Management Objectives for the project. The Vision and Purpose play a crucial role in the CMP hierarchy, as they provide the framework for defining strategic objectives. These strategic objectives, in turn, enable the establishment of specific objectives. The relationship between the Vision, Purpose, and Specific Objectives is illustrated in Figure 3-1.

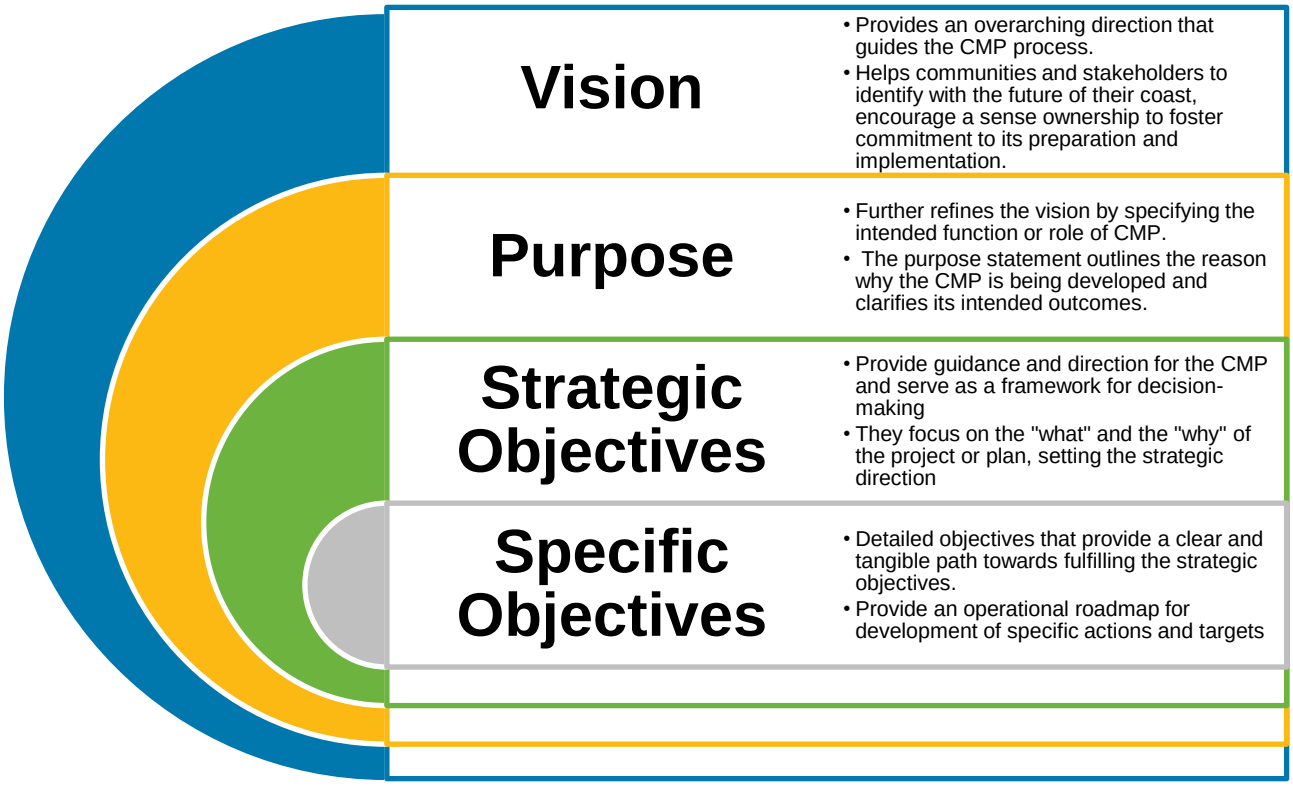


**Figure 3-1 The Vision, Purpose, and Objectives of the CMP**

## 3.2 Vision

The vision statement derived in Stage 1 of the CMP (Advisian, 2020) provides an overarching direction that guides the CMP process:

*We care for and protect the coast in a responsible manner so that current & future generations continue to be safe, refreshed & inspired by their coastal experience.*

## 3.3 Purpose

The purpose statement further refines the vision by specifying the intended function or role of CMP:

*To develop a plan for the future management of the Shoalhaven's open coastline in a manner consistent with the principles of ecologically sustainable development for the social, cultural, and economic well-being and safety of the people of the Shoalhaven.*

## 3.4 Strategic Objectives

The strategic management objectives determined during Stage 1 of the CMP are summarised in Table 3-1, with the key themes highlighted in **bold**.

**Table 3-1 Strategic objectives of the CMP**

| Objectives |
|---|
| Give effect to all relevant **NSW legislation and policy**, as applied to the coastal zone, in the Shoalhaven context. |
| Manage all coastal systems in an **integrated manner that recognises the links** between catchment, lake, estuary and open coast processes. |
| Manage the coastal zone **adaptively**, with a clear process for **modifying management approaches** as new knowledge becomes available. |
| Invest in effective and efficient strategies to achieve **positive natural, social, cultural and economic outcomes** within Council's responsibilities. |
| Take **coastal hazards** into account in Council's **land use planning**. |
| Maintain **natural systems and processes** to improve the **health and diversity** of natural systems. |
| Support the **social and economic wellbeing** of local **communities by maintaining safe access** to beaches and headlands and supporting recreational activities. |
| **Align** the Coastal Management Program with Local Environment Plan 2014, Development Control Plan 2014 and Integrated Strategic Plan. |
| **Engage with the community** in the review and preparation of coastal management programs. |
| Keep the **community informed** about coastal processes and management responses. |

## 3.5 Specific Objectives

The specific management objectives determined during Stage 1 of the CMP are summarised in Table 3-2, with the key themes highlighted in **bold**.

**Table 3-2 Specific objectives of the CMP**

| Objectives |
|---|
| To **protect** and enhance natural **coastal processes** and **coastal environmental values** including natural character, scenic value, biological diversity and ecosystem integrity and resilience. |
| To support the **social and cultural values** of the coastal zone and maintain public access, amenity, use and safety. |
| To **acknowledge and protect Aboriginal peoples'** spiritual, social, customary and economic use of the coastal zone. |
| To recognise the coastal zone as a vital **economic** zone and support sustainable coastal economies. |
| To facilitate **ecologically sustainable development** in the coastal zone and promote sustainable land use planning decision-making. |
| To **mitigate current and future risks** from coastal hazards, taking into account the effects of **climate change**. |
| 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. |
| To promote **integrated** and co-ordinated coastal planning, management, reporting and response. |

# 4 STEP 2: OPTION IDENTIFICATION

## 4.1 Overview

This section provides an overview of the coastal management options identified in Stage 3 of the CMP.

- Section 4.1 and 4.3 provides a summary of the strategic approach to coastal management, and methods used to identify potential coastal management options.
- Appendix A summarises the long list of potential management options. Given the size of the study area, the long list has been broken down so that options are presented in chapters that relate to their scale of application and geographical location and coverage, as depicted in Figure 4-1. This includes:
  - Seven (7) overarching strategies that apply to the management of the entire CMP study area. Each strategy includes a range of specific option options.
  - Three (3) Local Area Plans that include options that related to specific areas. These plans cover the Northern LGA area, the Jervis Bay Area, and the Southern LGA area.


**Figure 4-1 Structure of the CMP**

## 4.2 Strategic Approach

Coastal management is generally approached through the lens of five different strategic approaches as described in the NSW Coastal Management Manual (OEH, 2018d) and outlined in Figure 4-2.

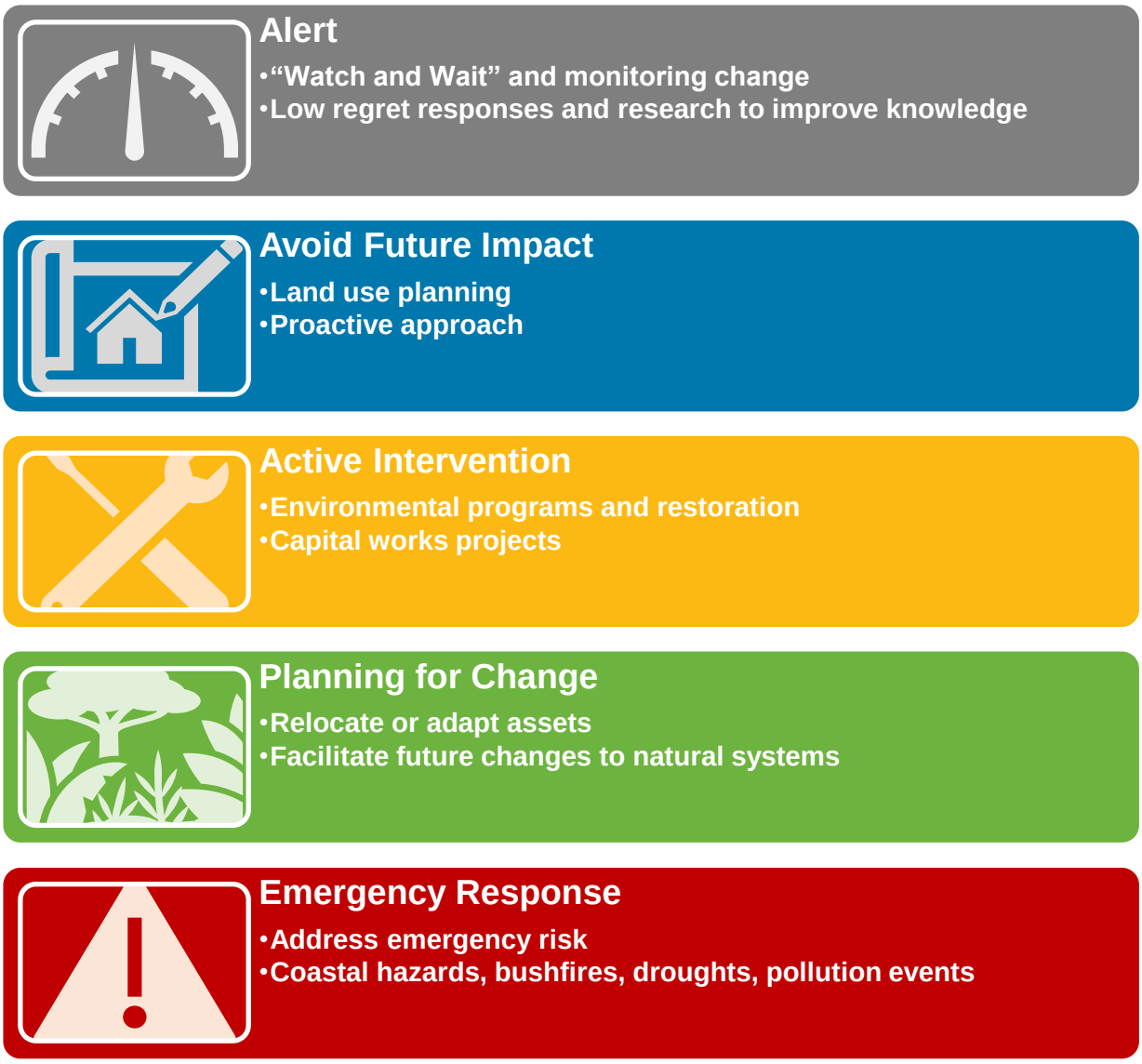


**Figure 4-2 The five strategic approaches to coastal management**

Different strategic approaches are relevant to different levels of risk and attitudes to risk. However, they are often combined, or the emphasis may change from one to another over time as circumstances change. Therefore, the derivation of management options for Stage 3 of the CMP has been undertaken with consideration of these five strategic approaches.

1. For coastal environments such as the study area, ***Alert*** responses may be implemented to monitor conditions and ensure communities are aware of emerging changes to the environment. *Low regrets* responses are generally cost-effective, low impact options that yield multiple net benefits now, and help communities prepare for future changes to risk exposure. Often, low regrets options can be insufficient to manage medium to high risks on their own, but they do allow coastal managers to strengthen coastal resilience and build management capacity.

2. Reducing current and future pressures on ecosystem health may also be achieved through ***Avoid*** approaches, such as recommending appropriate land use planning and infrastructure planning decisions that support appropriate community uses of the coastal environment and avoid future irreversible impacts.

3. If coastal hazard risk is high, or coastal ecosystem health is poor, then management options may seek to improve the safety, resilience, health or function of coastal landforms and ecosystems through a range of ***Active Intervention*** approaches – such as remediation, rehabilitation, and implementation of environmental improvement programs and capital works.

4. ***Planning for change*** and allowing coastal environments to adapt to climate change is often a more cost-effective approach that will lead to higher value environmental outcomes. Fostering strategic adaptation in coastal environments to address climate change is frequently a more economically efficient strategy that yields enhanced environmental benefits. Contemplating habitat migration becomes advisable when vigilant monitoring substantiates the impending or irreparable nature of such changes. This entails establishing a comprehensive set of protocols and tactics to be activated when inescapable transformations (like coastal erosion) render a region unsuitable for human occupancy or utilization.

5. ***Emergency Response*** is a strategic approach incorporating immediate actions designed to be implemented during extreme coastal hazards events, providing a set of actions to be followed during times of emergency.

## 4.3 Identification of Options

Once the strategic direction was confirmed, the next step of the assessment was to develop a suite of potential options to address the risks identified in Stage 2 and achieve the objectives of the CMP. A "long list" of potential options was developed through the process summarised in Figure 4-3, and outlined in the NSW Coastal Management Manual (OEH, 2018d). This included investigating prior works such as the Shoalhaven Coastal Zone Management Plan (CZMP) (Advisian, 2018a), historical studies, community and stakeholder engagement, and utilising coastal management expertise.

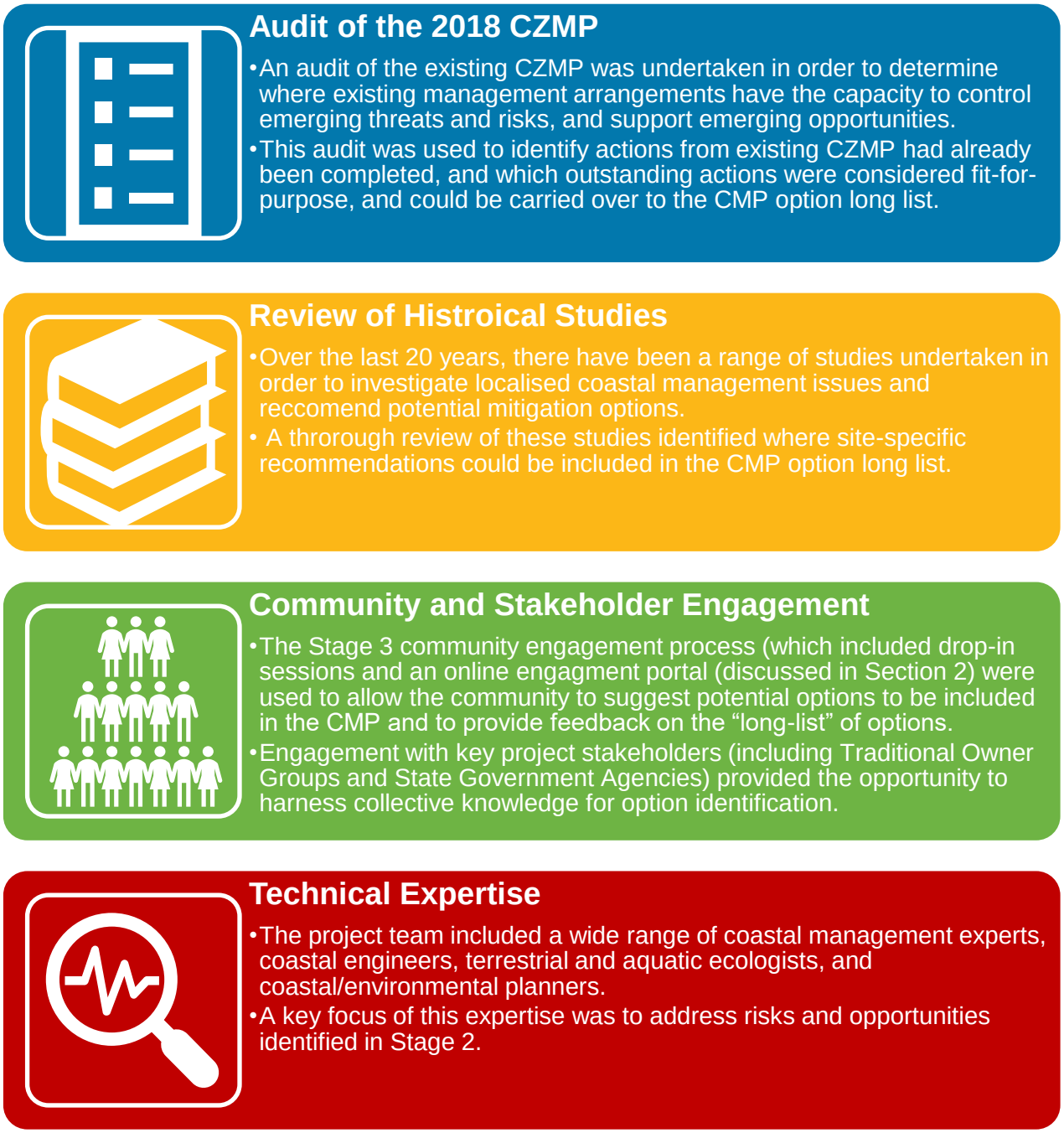


**Figure 4-3 Identification of potential management options**

# 5 STEP 3: OPTIONS ASSESSMENT

## 5.1 Overview

Once the long list of management options was developed in Step 2, the next step was to assess and prioritise these options. Decision making in coastal and estuary management can be complex and multifaceted due to the inherent trade-offs required between social, environmental, economic, and political factors. The identification of appropriate management options therefore requires the consideration of a range of criteria, many of which cannot be easily quantified into common units or monetary values. Traditionally, optioneering undertaken as part of coastal and estuary management plans has applied qualitative methods that aim to simplify this complexity. Whilst practical, this can sometimes lead to over-simplifications whereby important information may be lost, opposing points of view may be discarded, and elements of uncertainty may be ignored.

To ensure the program of management options are appropriate, are able to be implemented and meets the objectives the CM Act, Stage 3 of the CMP has employed a robust multi-criteria decision-making framework. The purpose of this approach is to evaluate and choose among alternatives based on multiple criteria through a systematic analysis that uses stakeholder participation to inform economic, social, and environmental criteria. This provides a tool that enables different stakeholders' perspectives and values to be explicitly included in the analysis.

The options assessment followed a 3-step process, as outlined in the NSW Coastal Management Manual (OEH, 2018d), and summarised in Figure 5-1 below.

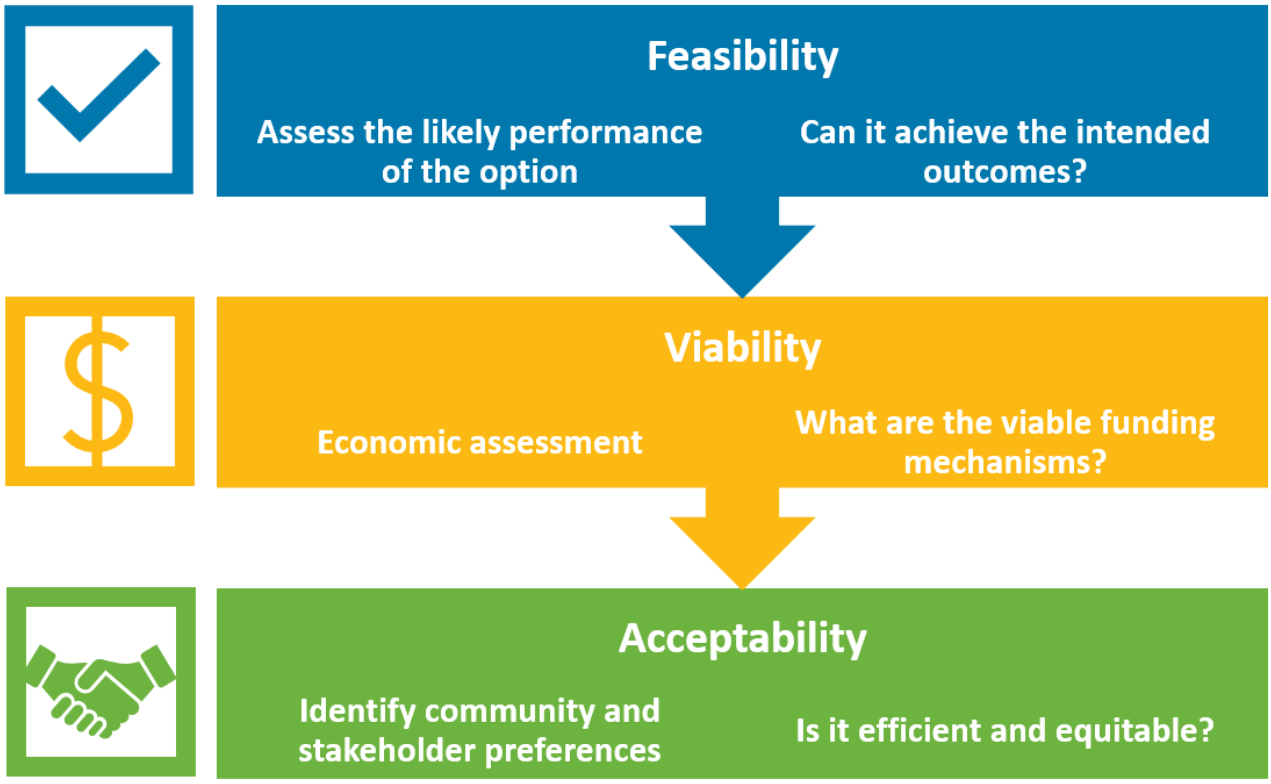


**Figure 5-1 The Stage 3 options assessment process**

The overarching approach was to undertake a discrete (but interrelated) assessment of each of these three components. The output of each assessment was a numerical score –: a *Feasibility Score*, a *Viability Score*,

and an *Acceptability Score*. These three scores were subsequently combined in order to calculate a total *Options Ranking Score* that could be used to rank and compare the various options.

This process was used as a transparent tool to help determine which options may progress to Stage 4 of the CMP. However, ultimately the total number of options that progressed through to Stage 4 will be based on the budget and resource constraints of Council.

In the first instance, a long list of 226 options identified in Stage 3 of the CMP was subject to varying degrees of assessment for feasibility, viability, and acceptability, depending on the complexity and magnitude of the options. An initial screening assessment was undertaken to 'rule out' any options that did not address an existing or future risk to the coast, to consolidate overlapping options, or to identify options that were not feasible through engagement with relevant agency staff. The outcome of this process was 155 options were assessed in full detail outlined in Sections 5.2 to 5.5.

## 5.2 Feasibility Assessment

### 5.2.1 Overview

As per the NSW Coastal Management Manual (OEH, 2018d), feasible coastal management options are those which are:

- Consistent with the objects of the relevant legislation (including the *Coastal Management Act 2016*, the *Marine Estate Management Act 2014*).
- Consistent with statutory and policy requirements at local, state and Commonwealth levels.
- Environmentally acceptable and consistent with Ecologically Sustainable Development (ESD) principles.
- Feasible in engineering / management terms, i.e., can the option(s) be realistically implemented, given the local social and environmental context.
- Able to address the identified issues, mitigating risks or enhancing opportunities, based on previous experience.
- Adaptive and can transition to alternative approaches when circumstances change.
- Broadly able to be implemented, in terms of available capacity and capability.
- Able to contribute new knowledge about effective management; for instance, a response that is structured as a carefully controlled trial of new technology.

The development of the long list of options was thereby undertaken with regards to the above. The feasibility assessment investigated how each option met the above requirements, and the ability for each option to address the various risks and opportunities across the study area. This methodology is outlined below in Section 5.2.2.

### 5.2.2 Multi Criteria Analysis Methodology

The feasibility assessment is intended to provide an indication of each potential option's ability to address the various risks and opportunities across the study area (as identified in Stage 2) – either directly or indirectly. Subsequently, the potential options were assessed using a high-level, semi-quantitative multi-criteria analysis framework. The framework provides a systematic and transparent approach to comparing different options that stakeholders and the community readily understand.

For this task, a semi-quantified assessment approach was adopted whereby each option was assessed against the various criteria and provided a numerical score. The sum total of this process was the calculation of a *Total Feasibility Score* (or TFS).

A summary of this methodology is provided in Figure 5-2 below, and included assessment of each individual option against the following criteria:

- *The Degree of Risk Mitigation*: This provided an assessment of the degree of risk being mitigated by the option. It includes consideration of:
  - The level of risk being mitigated: i.e., is the option addressing an extreme level of risk, or addressing a relatively low risk issue? These risks were assessed in the Stage 2 Report.
  - The effectiveness of the option: to account for the impact / effectiveness of the option to address the risk and achieve its intended outcome.
- *Potential Impacts on Environmental, Social, and Cultural Values:* Options were assessed considering not just their risk mitigation potential, but also for their potential impacts (both positive and negative) on the values of the study area. Categories included assessing impacts on:
  - Physical coastal processes
  - Coastal environment & biodiversity
  - Coastal & estuarine water quality
  - Social & recreational amenity
  - Public safety
  - Cultural heritage values (both tangible and intangible)

  Scores were assigned on a sliding scale from **+3 (strongly positive)** to **0 (neutral or no impact)** to **-3 (strongly negative)**. A score of -3 against any of these criteria may result in the option not being feasible.
- *Alignment with relevant legislation, policy, and plans*: To consider if the option is consistent with objects of the CM Act and all statutory and policy requirements at local, state and Commonwealth levels.

Using the formula provided in Figure 5-2 below, a total *Feasibility Score* was calculated for each option. From here, a scale factor of 2.0 was applied to each of the Study-Area-Wide options listed in Section 5.5. This was to acknowledge the greater geographic scale of the realised benefits for those options that apply to the entirety of the study area.

The full Feasibility Assessment is provided in Appendix A, and a summary of outcomes provided in Section 5.5.

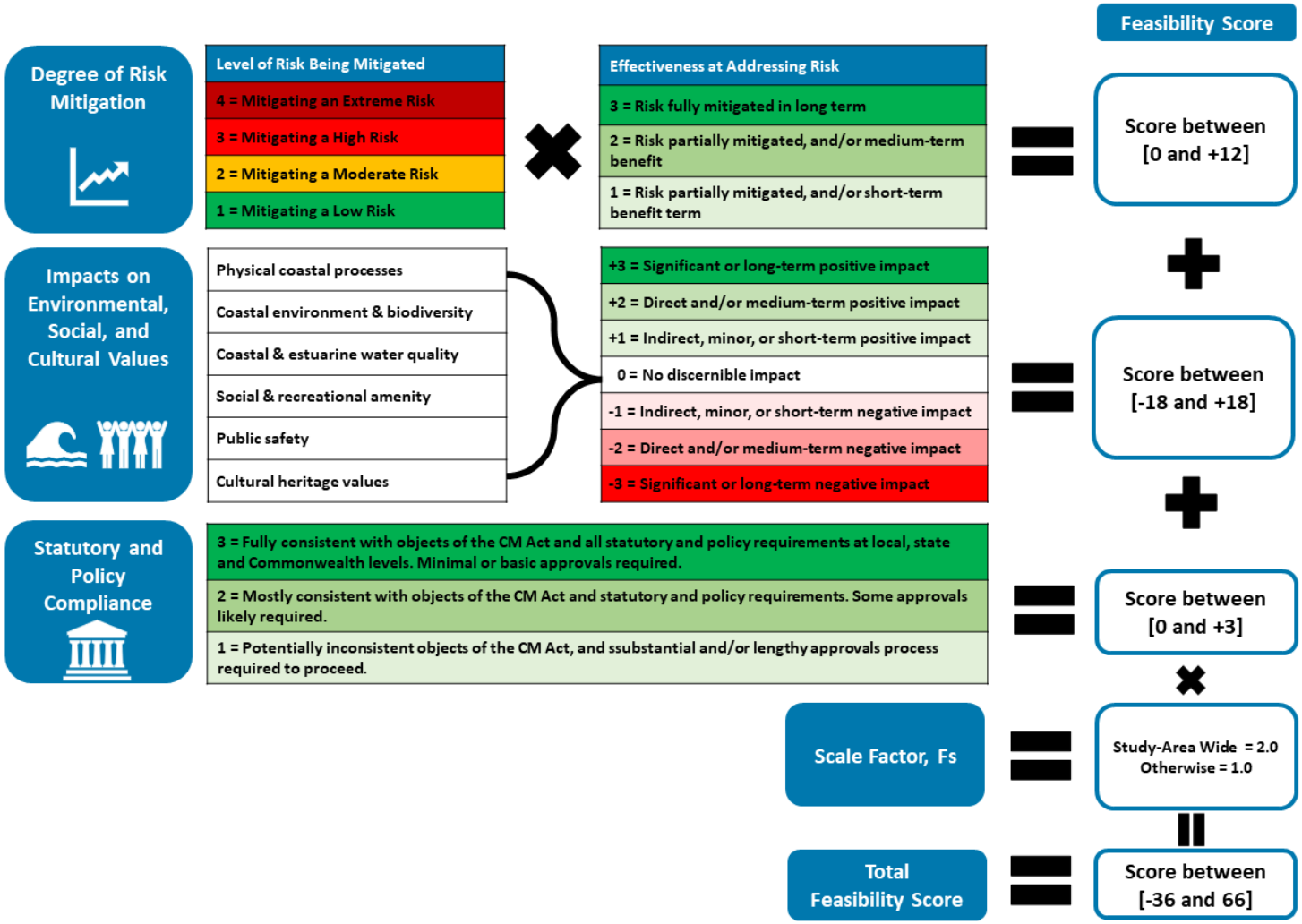


Figure 5-2 Calculation of feasibility score

## 5.3 Acceptability Assessment

A key factor in the evaluation of options involved determining the acceptability of those options to three distinct stakeholder groups (as discussed in Section 2):

- The local communities across the Shoalhaven LGA
- Local Indigenous partners – including the Jerrinja Tribal Group, Jerrinja LALC, and the Ulladulla LALC
- Relevant public authorities, such as state government agencies

To this end, a robust community and stakeholder engagement process was undertaken during Stage 3, and the methods and outcomes of this engagement are described in Section 2. This process allowed the communities and stakeholders to provide feedback on some of the potential management options, and to provide their suggestions and opinions regarding additional management options that could be considered in Stage 3 of the CMP.

Outcomes from the community and stakeholder engagement were used to calculate an *Acceptability Score* for each potential option. This was calculated using the method described in Table 5-1, whereby equal weighting was given to the three stakeholder groups.

**Table 5-1 Calculation of acceptability score**

| Component | Description | Acceptability Score |
|---|---|---|
| Community Support | Community support was calculated for each option based on the percentage of community support recorded for each option from the Stage 3 community engagement portal. The percentage support was converted into a decimal to generate a score between 0 and 1. | Score between: [0 and +1] |
| Indigenous Stakeholder Support | Support from local Indigenous interest groups was obtained through both face to face and online engagement methods. Stakeholder support was provided as a number between 0 and 1:<br>▪ If an Indigenous interest group indicated that it did not support a particular option, then a score of 0 was given and the option was disqualified from progression through to Stage 4 of the CMP.<br>▪ If partial or conditional support was offered from any group, then a score of 0.5 was applied and conditions of support were noted to modify the option accordingly.<br>▪ If all groups indicated support of the option, then a score of 1 was applied.<br>In the instance where new options were derived after the engagement period, a default score of 1 was applied, with a note to continue engagement through Stage 4. Likewise, if no indication of non-or partial support was offered, a default value of 1 was applied. | Score between: [0 and +1] |
| Stakeholder Support | Support from project stakeholders (comprising stage government agencies) was scored using the same process as outlined for Indigenous Interest Group above. | Score between [0 and +1] |
| **Total Acceptability Score** | | **Addition of the above. Score between; [0 and +3]** |

## 5.4 Viability Assessment

The primary purpose of the viability assessment is to identify (for each option):

- The cost of the option
- The distribution of costs and benefits to different stakeholders
- Any proposed cost-sharing arrangements and funding mechanisms
- Whether proposed management options are affordable and therefore viable for progression through to Stage 4 of the CMP

Subsequently, Stage 3 of the CMP requires an economic assessment of each of the potential options on the long list. Economic assessment approaches are intended help decision-makers better understand the socioeconomic implications of adopting different management options and help them to make choices about which options will provide net benefits to the community (OEH, 2018d). However, the scope and level of detail included in an economic assessment should be proportionate to the nature and scale of:

- The option itself – including the cost and complexity of the of the option, and the number of impacted stakeholders.
- The nature and risk level of the coastal issue(s) being addressed.

Therefore, the level of economic assessment will vary depending on the nature of each option. This is demonstrated in Figure 5-3, which details guidance in the NSW Coastal management Manual for the level of economic assessment required for particular options.

| | | **Complexity** | |
|---|---|---|---|
| | | **Low**<br>• Limited number of stakeholders<br>• Little or no quantitative data | **High**<br>• Disagreement or conflicting views among stakeholders<br>• Difficulty defining beneficiaries or apportioning costs<br>• Good quantitative data |
| **Risks and impacts** | **Low**<br>• Limited spatial scale<br>• Low risk and low impact | **Simple economic assessment**<br>These assessments ask similar questions as the more complex analysis, but use qualitative analysis and expert opinion rather than quantitative data. | **Intermediate level assessment**<br>These assessments ask the same questions as the more complex analysis, but may use detailed costings. |
| | **High**<br>• Addressing high or extreme risks<br>• An option involves major investment (see Treasury Guideline 2017) | **Intermediate level assessment**<br>Monte Carlo modelling or significant social analysis may not be necessary, but some detailed costing, e.g. for maintenance, is required. | **Detailed cost-benefit analysis**<br>This may involve a systematic comparison of all foreseeable costs and benefits and the probability that they will arise over the planning period. |

**Figure 5-3 Matrix of risk and complexity for selecting the level of economic assessment (source: OEH, 2018d)**

Subsequently, Stage 3 of the CMP has employed two different levels of economic assessment:

- **Detailed Economic Cost-Benefit Analysis**: A more detailed economic cost-benefit analysis (CBA) approach has been applied for options where risks and both (a) the impacts are high and (b) the economic costs and benefits can be reasonably estimated. This level of assessment was applied to 16 of the options on the long list, with the intention to calculate a Benefit-Cost Ratio (BCR) for each of those options. The process for this assessment is described in detail in Appendix D and summarised in Section 5.4.2. Given the time, level of detail and technical knowledge required to produce a CBA, it is not considered to be a good use of resources to carry out detailed CBAs for projects that are only expected to have minor costs and/or benefits for a very limited number of parties. The scope and level of detail included in a CBA should therefore be proportionate to the nature and scale of the coastal issue(s) being addressed.
- **Preliminary Economic Assessment**: This intermediate level assessment has been applied for the remainder of the options that did not fit the category above to warrant a full CBA (a total of 139 options). The process for this assessment is described in Section 5.4.1.

Using these methods of assessment, each option was then given a Viability Score that was related to the forward 10-year lifecycle cost of the option. This process is described in Figure 5-4 below.

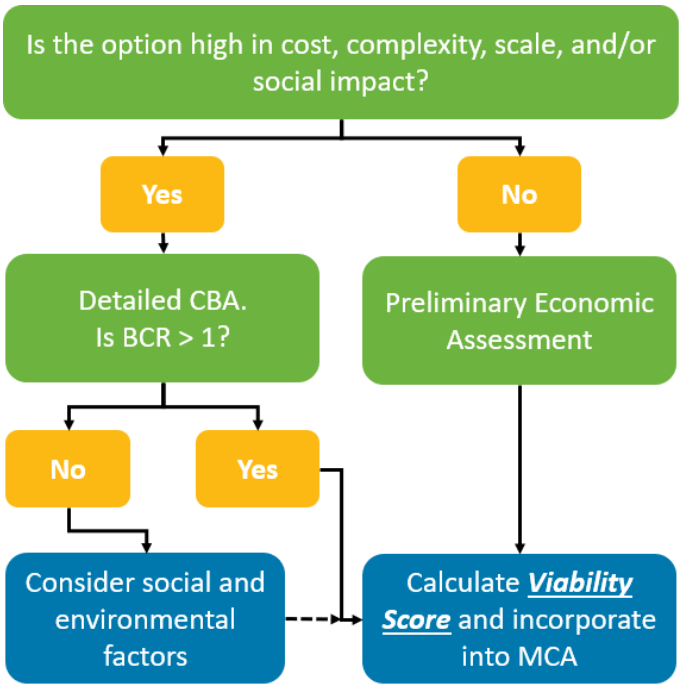


**Figure 5-4 The viability assessment process**

Key to the process described herein is the calculation of the forward lifecycle costs of each potential option. Both levels of economic assessment have assessed the costs and benefits of potential options in terms of their net present value (NPV). NPV is a standard economic analysis to compare options with time-variable costs and benefits. To compare costs and benefits occurring over different time periods, it is necessary to *discount* the value of future costs and benefits to determine their NPV. In this sense, NPV is today's value of some future stream of costs or benefits.

This approach allows for the adjustment of all future economic considerations to present-day dollars for a more direct comparison. This relates to the time-value of money, as planned expenses in the future are, in a sense, cheaper than equivalent costs today, because the money required for a future expense could be spent elsewhere today to provide value over time (i.e., it can be invested now to generate a return). An expense that

was incurred today could not be invested elsewhere. Using this approach, options with a lower NPV cost are considered better investments from a financial standpoint.

The selection of the discount rate is a crucial component in such economic assessments. The most contemporary NSW Government Guide to Cost-Benefit Analysis (NSW Treasury, 2023) at the time of this assessment (released in February 2023) recommends that economic appraisals should adopt a discount rate of 5% p.a., with sensitivity testing to be undertaken using a lower bound of 3% p.a., and an upper bound of 7% p.a. These values have been adopted for the economic assessment described herein.

It should be noted that the NSW Government *Guidelines for using cost-benefit analysis to assess coastal management options* (NSW Government, 2020), makes reference to now superseded treasury advice which previously recommended the use of a 7% p.a. discount rate, with sensitivity testing undertaken using a lower bound of 4% p.a., and an upper bound of 10% p.a. However, this assessment has been undertaken in a manner consistent with the most contemporary treasury advice from February 2023 (NSW Treasury, 2023).

### 5.4.1 Preliminary Economic Assessment

As part of the economic assessment, forward estimates have been provided for the full capital, operational and ongoing maintenance costs of potential management options. These cost estimates have been developed based on:

- Engagement with relevant stakeholders
- The costs for historical capital works and environmental management programs, based on Council records.
- Industry standard guidelines, such as the *Rawlinsons Australian Construction Handbook 2023* (Rawlinsons, 2023).
- Coastal engineering and coastal management experience of the project team

For many options, cost estimates have been based on standard unit rates for various types of projects, including earthworks and beach scraping works, dune restoration works, fencing, design and construction of rock armoured seawalls, implementation of drainage infrastructure, and so on. A full list of assumed unit rates is provided in Appendix B.

For most options, forward costs have been estimated over a planning period of 10 years, which is intended to align with the implementation period of the CMP. Each option's costs have been discounted to present day (2023) dollars using a NPV approach and a discount rate of 5% p.a. Once the 10-year NPV cost of each option was estimated, a Viability Score was calculated for each option based on the method detailed in Section 5.4.3.

### 5.4.2 Detailed Cost-Benefit Analysis

CBA is a form of economic appraisal that can be used as a decision-support tool for coastal management to assess whether a particular management option will provide net benefits to the local community compared to other alternative developments or options which will achieve the same objectives. However, whilst the CBA is an important decision support tool, it is also important to understand that CBA alone is not intended as a definitive statement of option ranking, and all options have been considered in the broader options assessment context of feasibility (Section 5.2), and acceptability (Section 5.3).

Options which will operate over relatively long timeframes, including engineering works with long design lives, are likely to generate potentially large costs and benefits. Subsequently, a detailed assessment of the costs and benefits of such large scale or long-lasting projects can provide a valuable contribution to CMP decision-making. The options for which a detailed CBA was undertaken are listed in Table 5-2 below.

A detailed description of the CBA for these options is provided in Appendix C, including the methodology, assumptions, and outcomes. A brief summary is provided herein.

**Table 5-2 Options for which a detailed CBA was carried out**

| ID | Location | Option Name |
|---|---|---|
| LN.02 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option A – refurbish existing seawall |
| LN.03 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option B – relocate SLSC landwards |
| LN.08 | Culburra Beach | Construct a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach |
| LN.17 | Warrain Beach | Long Term Adaptation pathway for SLSC building: Option A – relocate SLSC landwards |
| LN.18 | Warrain Beach | Long Term Adaptation pathway for SLSC building: Option B – coastal protection works |
| LN.23 | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade |
| LN.24 | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) |
| LN.40 | Currarong Beach | Design and construction of a rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent |
| LJ.01 | Callala Bay | Callala Bay Groyne Structure(s) |
| LJ.02 | Callala Bay | Callala Bay beach nourishment/scraping and foreshore restoration |
| LJ.55 | Callala Bay | Design and construction of a rock armoured seawall along the Callala Bay foreshore |
| LJ.29 | Collingwood Beach | Design and construction of a rock armoured seawall along Ilfracombe Avenue |
| LS.04 | Bendalong Point | Long Term Adaptation Pathway for Manta Ray Road Option A - Coastal Protection Works |
| LS.05 | Bendalong Point | Long Term Adaptation Pathway for Manta Ray Road Option B - Reroute Road Access |
| LS.30 | Mollymook Beach | Design and construct a rock armoured coastal revetment along the Mitchell Parade road reserve shoreline |
| LS.110 | Kioloa Beach | Kioloa Coastal Protection Works |

It should be noted that a full CBA has already been undertaken for Action LS.27 South Mollymook Coastal Protection Works (Origin Capital Group, 2020), and consequently this process has not been repeated in this study.

### *CBA Methodology*

The CBA was undertaken in accordance with guidance set out in the. NSW Government Guide to Cost-Benefit Analysis (NSW Treasury, 2023) and the NSW Coastal Management Manual guidelines for using cost-benefit analysis (NSW Government, 2020). The steps utilised in the Stage 3 CBA include:

1. Defining the Base Case: The base case was defined as the 'business as usual' option which represents a continuation of present Council management activity in a given location. The base case provided the

reference case against which alternative options were considered. Definition of the base case considered the presence and efficacy of any existing coastal protection works, or any existing proactive beach nourishment, beach scraping, and/or dune management (building or restoration) works. It subsequently considered the residual vulnerability of assets and infrastructure as defined by the Councils coastal hazard lines (Advisian, 2016).

2. Valuation of At-Risk Assets: In most instances, the primary costs associated with the base case included the costs associated with incurring coastal hazard damages to (a) public and private property, and (b) public assets and infrastructure. The valuation of at-risk assets was undertaken in a manner consistent with sound economic principles, as per guidance provided in Appendix 5 of the Guidelines for using cost-benefit analysis to assess coastal management options (NSW Government, 2020).
3. Calculation of Costs Associated with Coastal Hazard Damages: A key component of the CBA is to calculate coastal hazard related damages over the forward assessment period. In reality, damage costs are weather dependant and inherently unpredictable, with costs being incurred after severe storm events. Therefore, hazard damages cannot be precisely forecast over a given CBA assessment period. Consequently, a stochastic approach was adopted that provided the statistical range of potential damage costs. This assessment used a Monte-Carlo method, whereby the 100-year forward assessment period has been simulated 1,000 times using a sequence of randomly generated storm events. For this task, at-risk assets and associated damage costs were estimated based on Council's coastal hazard mapping (where available – see Appendix D for more detail).
    a. The dataset of the 1,000 simulations was then analysed statistically to generate the potential range (and the statistical distribution) of incurred damage costs.
    b. To aid in decision making, NPV costs were calculated over a range of forward planning periods., including:
        i. 10 Years – to align with the CMP lifecycle period.
        ii. 50 Years – which is a typical design life of coastal protection works such as rock armoured seawalls.
        iii. 100 Years – to provide a long-term planning information. Because of the uncertainty involved in forecasting costs and benefits over long periods, caution should be exercised when considering result over this period. However, this has been provided for informational purposes.
4. Calculation of Costs Associated with Option Implementation: Full life cycle costs have been estimated for all assessed options. For coastal infrastructure works such as rock armoured seawall, the capital cost for design and construction has been estimated based on the preliminary concept design parameters, with the application of typical unit rates used in coastal and civil engineering works estimations.
5. Calculation of Benefit Cost Ratio (BCR): The BCR was then calculated to provide information on the 'value for money' proposition of a management option. In economic analysis, a party is judged to obtain a benefit when it does not have to bear a cost it would otherwise have to incur. Subsequently, the benefits for each potential option were calculated as the avoid coastal hazard damages.

It should be noted that these costs only consider the cost of damage to the asset in today's dollars, and do not consider broader economic costs such as loss of revenue to local businesses, loss of recreational or tourism revenue (due to damage to the environment or infrastructure at the beach), or costs associated with any environmental remediation work caused by failure of the wastewater infrastructure.

Outcomes of the analysis are provided in Appendix D. As previously discussed, the calculated BCR values should not be used as the sole means of ranking and prioritising options. Rather, the BCR results provide one tool amongst many tools, to assess options and therefore should be considered in the full context of the Feasibility and Viability Assessments.

### 5.4.3 Viability Score

Once the 10-year NPV cost of each option was estimated, a Viability Score was calculated for each option based on the logarithm (Base 10) of the cost. This enable an order of magnitude cost-weighting to be applied to each option in the overall MCA. An example of the scores using the criteria is listed in Table 5-3.

It should be noted that for some options, the primary cost incurred is associated with Council staff time, which was assigned a designation of "CST" in the analysis summary in Appendix B. For such options, a Viability Score of 3 was applied.

**Table 5-3 Viability score weighting for options**

| 10-Year NPV cost of options | Viability Score |
|---|---|
| < $1,000 | 3 |
| $1,000 < $10,000 | 4 |
| $10,000 < $100,000 | 5 |
| $100,000 < $1,000,000 | 6 |
| > $1,000,000 | 7 |

## 5.5 Options Assessment Outcomes

The output of the three-phase assessment described was the calculation of an *Options Ranking Score,* which was the arithmetic combination of the *Feasibility Score*, the *Viability Score*, and the *Acceptability Score*, as demonstrated in Figure 5-5.

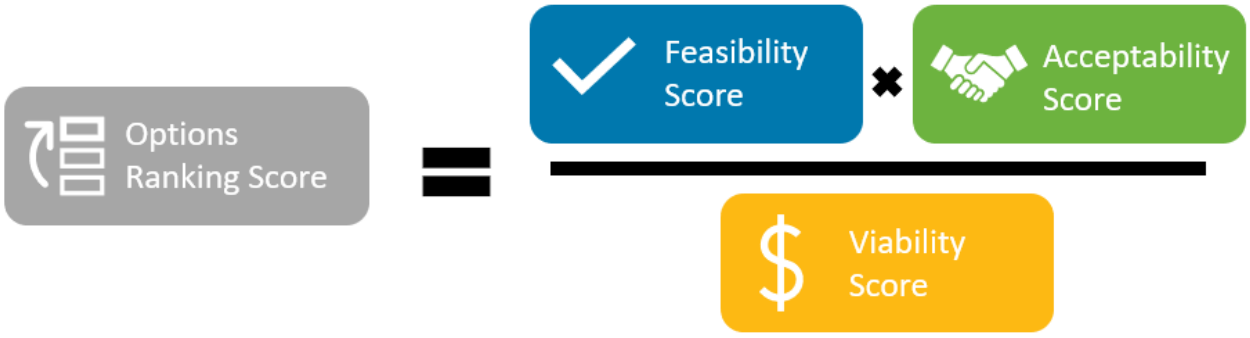


**Figure 5-5 Calculation of the options ranking score**

The feasibility score provided an indication of an option's ability to address the various risk across the study area (either directly or indirectly) and its impacts on the social and physical environment.

The acceptability assessment demonstrated the level of support for each of the options amongst the local community members and key project stakeholders.

The viability assessment outlined the full life-cycle costs of each option and provided a measure of economic viability and value for money.

Subsequently, the Options Ranking Score provided a numerical value that represented the holistic benefits of each option in a clear and transparent manner. This three-phased process was used to inform the development of the CMP – specifically which of the options on the long list should progress through to Stage 4 of the CMP.

However, it is recognised that the Options Ranking Score contains an inherent measure of both subjectivity and uncertainty. Therefore, the Options Ranking Score should not be used as a definitive or conclusive metric for which options should progress through to Stage 4 of the CMP. Some options will contain benefits that may not be easily captured by heuristic measures, or will possess an element of organisational, political, or social costs or benefits that may affect its overall favourability. However, ultimately the total number of options that progress through to Stage 4 will be based on the budget and resource constraints of Council.

Therefore, the Options Ranking score should instead be used as a starting point for discussion with Council after the first draft of this report is submitted, and the results considered in light of Council's understanding of local knowledge of the environmental, economic, and social context.

The summary of the outcomes of the assessment are provided in Section 5.5 and Table 5-6 below. It shows that of the 155 options on the long list, the Options Ranking Scores vary between a minimum score of 0.2, and a maximum score of 66 with a median of around 9.4. Adopting a cut-off score of **5.9** in consultation with Council, options that have been flagged as a "Do Not Progress" through to Stage 4 of the CMP are marked in the table with **DNP**. Adopting this cut-off has resulted in 123 options progressing through to Stage 4 of the CMP. An additional 3 options that scored below the cutoff score have been progressed by Council through to Stage 4, based on the justification provided in Table 5-5.

The total of 126 options equates to a similar number of actions that were included in the 2018 CZMP document. The cumulative 10 Year NPV costs of those options is also provided in Table 5-4.

**Table 5-4 Summary of options ranking scores for the long list of options.**

| Total Options | 155 | Options Ranking Score | Number of Options Equalling or Exceeding this Score | Cumulative 10-Yr NPV Cost of those Options |
|---|---|---|---|---|
| Percentile for Options | 100% | 66.0 | 1 | $- |
| | 95% | 30.3 | 8 | $1,957,000 |
| | 90% | 24.8 | 16 | $3,704,000 |
| | 85% | 20.7 | 24 | $4,750,000 |
| | 80% | 17.0 | 33 | $10,942,000 |
| | 75% | 13.6 | 39 | $11,770,000 |
| | 70% | 12.6 | 47 | $12,426,000 |
| | 65% | 11.9 | 54 | $13,061,000 |
| | 60% | 11.1 | 62 | $14,982,000 |
| | 55% | 10.0 | 70 | $17,213,000 |
| | 50% | 9.4 | 78 | $19,398,000 |
| | 45% | 9.3 | 86 | $20,382,000 |
| | 40% | 8.6 | 93 | $36,674,000 |
| | 35% | 8.2 | 101 | $39,996,000 |
| | 30% | 7.7 | 109 | $42,112,000 |
| | 25% | 6.9 | 116 | $43,016,000 |
| | 20% | 5.8 | 124 | $44,578,000 |
| | 15% | 4.6 | 131 | $44,949,000 |
| | 10% | 3.8 | 139 | $45,547,000 |
| | 5% | 0.5 | 147 | $61,767,000 |
| | 0% | 0.2 | 155 | $113,367,000 |

**Table 5-5 Inclusion of additional options (below cutoff score) for progression to Stage 4**

| ID | Option Name | Option Description | Justification for inclusion |
|---|---|---|---|
| LS.51 | Ulladulla Harbour | Foreshore restoration works at Central Harbour Beach<br>[Total Options Score = 5.4] | This action is considered necessary to proceed due to the consistency with best practice dune management Shoalhaven City Council is applying across the entirety of the Coastline. It is a cost effective and efficient soft coastal management solution with nearly immediate benefits for the community. |
| LN.23B | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 2: Construction<br>[Total Options Score = 5.8] | This action is considered necessary to proceed due to the lengthy history of community engagement over the last decade and the realised coastal hazard risk documented during and after the 2016 east coast low storm event. |
| LS.86 | North Durras Beach | Foreshore management works at the North Durras Creek entrance.<br>[Total Options Score = 5.1] | This action is considered necessary to proceed due to the ongoing history of the overland flow exacerbating erosion of the foreshore and the need to implement a solution for the benefit of the North Durras Community. |

**Table 5-6 Summary of options assessment outcomes**

| Option ID | Locality | Option Name | Feasibility Score | Acceptability Score | Viability Score | Options Ranking Score | Proceed to Stage 4? |
|---|---|---|---|---|---|---|---|
| S1.01 | Study Area Wide | Establish a CMP governance framework | 66 | 3.0 | 3.0 | **66.0** | STAGE 4 |
| S1.02 | Study Area Wide | Establish two new Full Time Equivalent (FTE) Coast & Estuary Officer roles within Council. | 66 | 3.0 | 6.3 | **31.5** | STAGE 4 |
| S1.03 | Study Area Wide | Develop and execute a communications plan for Stage 5 of the CMP | 40 | 3.0 | 4.6 | **26.0** | STAGE 4 |
| S1.04 | Study Area Wide | Develop and implement a program to monitor key environmental parameters relevant to coastal management | 46 | 3.0 | 5.4 | **25.7** | STAGE 4 |
| S1.05 | Study Area Wide | Maintain and where necessary expand upon the Council's BeachStat dashboard for the Shoalhaven LGA | 42 | 3.0 | 5.0 | **25.0** | STAGE 4 |
| S1.06 | Study Area Wide | Maintain and update the CoastSnap camera cradle locations across the Shoalhaven LGA | 34 | 3.0 | 4.6 | **22.1** | STAGE 4 |
| S1.07 | Study Area Wide | Develop and implement a program for regular and ongoing monitoring of coastal assets and infrastructure | 42 | 3.0 | 5.4 | **23.4** | STAGE 4 |
| S1.08 | Study Area Wide | Enact the CMPs Monitoring, Evaluation and Reporting (MER) Program for the CMP | 30 | 3.0 | 3.0 | **30.0** | STAGE 4 |
| S1.09 | Study Area Wide | Continue ongoing collaboration with state government agencies and research institutions | 36 | 3.0 | 5.2 | **20.8** | STAGE 4 |
| S1.10 | Study Area Wide | Undertake a Feasibility Study to assess the potential for sustainable and economical utilisation of offshore sand resources for large scale beach nourishment across the LGA | 48 | 3.0 | 4.8 | **30.3** | STAGE 4 |
| S1.12 | Study Area Wide | Monitoring of locations identified as being at risk of coastal cliff and slope instability. | 34 | 3.0 | 3.0 | **34.0** | STAGE 4 |
| S1.13 | Study Area Wide | Feasibility investigations, design, and approvals for creek entrance tripper walls at Mollymook Beach, Manyana Beach, and Hyams Beach | 13 | 3.0 | 5.1 | **7.6** | STAGE 4 |
| S2.01 | Study Area Wide | Develop and maintain an ongoing program of community engagement with coastal communities - about coastal hazard risk and the importance of coastal management | 38 | 3.0 | 5.2 | **21.9** | STAGE 4 |
| S2.02 | Study Area Wide | Develop and maintain an ongoing program of community engagement with coastal communities - about the geotechnical hazard risk and the importance of coastal management | 36 | 3.0 | 5.1 | **21.3** | STAGE 4 |
| S2.05 | Study Area Wide | Provide rockfall signage for the exposed cliff lines of applicable cliffs | 36 | 3.0 | 4.6 | **23.5** | STAGE 4 |
| S3.01 | Study Area Wide | Activate the "Coastal Hazard Emergency Action Sub-Plans" (CZEAS) for each beach as required after storm events. | 54 | 3.0 | 6.1 | **26.6** | STAGE 4 |
| S3.02 | Study Area Wide | Develop a Tide Alert Calendar, and encourage citizen science in monitoring tidal inundation | 30 | 3.0 | 4.5 | **20.0** | STAGE 4 |
| S4.01 | Study Area Wide | Review Councils coastal management planning policies every 10 years | 40 | 3.0 | 3.0 | **40.0** | STAGE 4 |
| S4.02 | Study Area Wide | Maintain planning controls to reduce future coastal hazard impacts | 46 | 3.0 | 3.0 | **46.0** | STAGE 4 |
| S4.05 | Study Area Wide | Fill information gaps in Council's existing coastal hazard mapping dataset. | 50 | 3.0 | 5.0 | **30.3** | STAGE 4 |

| Option ID | Locality | Option Name | Feasibility Score | Acceptability Score | Viability Score | Options Ranking Score | Proceed to Stage 4? |
|---|---|---|---|---|---|---|---|
| S5.01 | Study Area Wide | Continue Councils program of mapping threatened ecological communities (TECs) across coastal reserves | 32 | 3.0 | 4.7 | **20.4** | STAGE 4 |
| S5.02 | Study Area Wide | Maintain and enhance ecological communities in coastal reserves (including dunes), considering appropriate ecological strategies for urban (foreshore recreation reserve) and non-urban areas | 38 | 3.0 | 5.9 | **19.3** | STAGE 4 |
| S5.03 | Study Area Wide | Engage with SLSCs in order to develop a suite of dune vegetation management plans for the coastal dunes in front of all SLSC building and lifeguard towers on patrolled beaches | 40 | 3.0 | 3.0 | **40.0** | STAGE 4 |
| S6.02 | Study Area Wide | Undertake a LGA wide coastal zone Aboriginal Cultural Heritage Survey, and development of local protection/management plans | 40 | 3.0 | 5.3 | **22.5** | STAGE 4 |
| S6.03 | Study Area Wide | Engage with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to develop a cultural educational and awareness program | 42 | 3.0 | 4.9 | **25.8** | STAGE 4 |
| S6.04 | Study Area Wide | Provide opportunities and help build capacity to local Aboriginal Ranger programs, to enhance their role in management of Sea Country across the LGA | 42 | 3.0 | 3.0 | **42.0** | STAGE 4 |
| S7.01 | Study Area Wide | Review and update all Council asset management plans (AMPs), relevant to the coastal zone. | 30 | 3.0 | 5.6 | **16.0** | STAGE 4 |
| S7.03 | Study Area Wide | Implement high priority (and other relevant) actions from the hydraulic assessment report to manage stormwater drainage adjacent to or within identified coastal cliffs and slopes risk areas | 44 | 3.0 | 6.7 | **19.7** | STAGE 4 |
| S7.04 | Study Area Wide | Shoalhaven Open Coast Boating Infrastructure Plan: Stage 1 Plan Development | 40 | 3.0 | 4.9 | **24.6** | STAGE 4 |
| S7.05 | Study Area Wide | Implement the findings of the Shoalhaven Beaches Asset Management Strategy and incorporate into the relevant SCC Asset Management Plan. | 36 | 3.0 | 5.3 | **20.4** | STAGE 4 |
| LN.01 | Shoalhaven Heads | Assess the condition of the SLSC rock revetment | 20 | 2.7 | 4.3 | **12.4** | STAGE 4 |
| LN.02 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option A – refurbish existing seawall | 20 | 2.5 | 6.2 | **8.1** | STAGE 4 |
| LN.03 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option B – relocate SLSC landwards | 23 | 2.5 | DNP | **0.6** | DNP |
| LN.04 | Shoalhaven Heads | Opportunistic nourishment of foreshore and beaches | 19 | 2.6 | 5.0 | **9.9** | STAGE 4 |
| LN.35 | Shoalhaven Heads | Monitor performance of the SLSC dune restoration works | 16 | 3.0 | 4.8 | **10.1** | STAGE 4 |
| LN.36 | Crookhaven Heads | Install drainage along the downslope side of roads and tracks to minimise overland flow erosion near the Community Nursery | 11 | 3.0 | 5.2 | **6.4** | STAGE 4 |
| LN.07 | Culburra Beach | Passive relocation of northern access loop road when damaged by storm events - to a more landwards location within existing parcel | 14 | 2.8 | 5.6 | **7.0** | STAGE 4 |
| LN.08 | Culburra Beach | Construct a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach | 7 | 2.7 | DNP | **0.2** | DNP |
| LN.37 | Culburra Beach | Formalise drainage along the downslope side of Allerton Avenue | 8 | 3.0 | 4.9 | **4.9** | DNP |
| LN.42 | Culburra Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.9 | 4.8 | **8.4** | STAGE 4 |
| LN.17 | Warrain Beach | Long term adaptation pathway for SLSC building: Option A – relocate SLSC landwards | 23 | 2.7 | DNP | **0.6** | DNP |

| Option ID | Locality | Option Name | Feasibility Score | Acceptability Score | Viability Score | Options Ranking Score | Proceed to Stage 4? |
|---|---|---|---|---|---|---|---|
| LN.18 | Warrain Beach | Long term adaptation pathway for SLSC building: Option B – coastal protection works | 7 | 2.6 | DNP | **0.2** | **DNP** |
| LN.23A | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 1: Undertake investigations, detailed design, and approvals | 17 | 2.0 | 4.9 | **6.9** | **STAGE 4** |
| LN.23B | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 2: Construction | 17 | 2.0 | 5.9 | **5.8** | **STAGE 4** |
| LN.23C | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 3: Maintenance of the structure | 17 | 2.0 | 4.6 | **7.4** | **STAGE 4** |
| LN.24A | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 1: Undertake investigations and concept design | 21 | 3.0 | 5.0 | **12.6** | **STAGE 4** |
| LN.24B | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 2: Detailed design, approvals, and construction | 21 | 3.0 | 6.0 | **10.4** | **STAGE 4** |
| LN.24C | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) -Stage 3: Maintenance of the structure | 21 | 3.0 | 4.7 | **13.5** | **STAGE 4** |
| LN.25 | Currarong Beach | Long term adaptation pathway for mitigating coastal inundation hazard of Currarong Road | 8 | 2.7 | 7.0 | **3.1** | **DNP** |
| LN.26 | Currarong Beach | Long term adaptation pathway for mitigating coastal erosion hazard of Currarong Road | 8 | 2.7 | 4.5 | **4.8** | **DNP** |
| LN.27 | Currarong Beach | Wastewater Management Plan | 17 | 3.0 | 4.7 | **10.9** | **STAGE 4** |
| LN.29 | Currarong Beach | Improving recreational access during peak summer periods | 6 | 2.7 | 4.2 | **3.8** | **DNP** |
| LN.39 | Currarong Beach | Install gutters and downpipes for recreational assets at Beecroft Parade coastal reserve | 6 | 3.0 | 4.2 | **4.3** | **DNP** |
| LN.40 | Currarong Beach | Design and construction of a rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent | 9 | 3.0 | DNP | **0.3** | **DNP** |
| LN.43 | Currarong Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.9 | 5.0 | **8.1** | **STAGE 4** |
| LJ.00 | Callala Bay | Callala Bay Coastal Processes and Hazard Definition Study | 23 | 3.0 | 5.0 | **13.8** | **STAGE 4** |
| LJ.01A | Callala Bay | Callala Bay Groyne Structure(s) - Stage 1: Detailed design, approvals, and construction | 19 | 3.0 | 5.8 | **9.8** | **STAGE 4** |
| LJ.01B | Callala Bay | Callala Bay Groyne Structure(s) - Stage 2: Maintenance of the structure | 19 | 3.0 | 4.4 | **12.8** | **STAGE 4** |
| LJ.02 | Callala Bay | Callala Bay beach nourishment/scraping and foreshore restoration | 23 | 2.8 | 5.8 | **11.1** | **STAGE 4** |
| LJ.03 | Callala Bay | Sheaffe Street stormwater improvements | 20 | 2.9 | 4.8 | **11.9** | **STAGE 4** |
| LJ.04A | Callala Bay | Sailing Club Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | 20 | 3.0 | 4.4 | **13.6** | **STAGE 4** |
| LJ.04B | Callala Bay | Sailing Club Coastal Protection Works - Stage 2: Implementation | 20 | 3.0 | 5.0 | **11.9** | **STAGE 4** |
| LJ.44 | Callala Bay | Upgrade Callala Bay car park and foreshore access facilities | 21 | 3.0 | 5.2 | **12.0** | **STAGE 4** |
| LJ.45 | Callala Bay | Addition of signage advising of overflow boat and trailer parking | 8 | 3.0 | 3.0 | **8.0** | **STAGE 4** |
| LJ.55 | Callala Bay | Design and construction of a rock armoured seawall along the Callala Bay foreshore | 8 | 3.0 | DNP | **0.2** | **DNP** |

| Option ID | Locality | Option Name | Feasibility Score | Acceptability Score | Viability Score | Options Ranking Score | Proceed to Stage 4? |
|---|---|---|---|---|---|---|---|
| LJ.56 | Callala Bay | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.8 | 4.8 | **8.2** | STAGE 4 |
| LJ.13 | Callala Beach | Adaptation pathway for Community Hall and tennis club facilities | 22 | 2.4 | 4.7 | **11.0** | STAGE 4 |
| LJ.48 | Callala Beach | Empower local residents to engage in best practice foreshore management | 25 | 3.0 | 3.0 | **25.0** | STAGE 4 |
| LJ.57 | Callala Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.7 | 4.5 | **8.2** | STAGE 4 |
| LJ.17A | Huskisson | Upgrade the Huskisson Sea Pool, as per the 2022 Detailed Design Report | 18 | 3.0 | 6.5 | **8.3** | STAGE 4 |
| LJ.17B | Huskisson | Refurbish the coastal protection works for the Huskisson Sea Pool. | 18 | 3.0 | 5.8 | **9.3** | STAGE 4 |
| LJ.19 | Huskisson | Foreshore management works at Moona Moona Creek Entrance. | 21 | 2.8 | 4.7 | **12.5** | STAGE 4 |
| LJ.20 | Huskisson | Sand Scraping Program for Moona Moona Creek foreshore. | 4 | 2.3 | 5.4 | **1.7** | DNP |
| LJ.58 | Huskisson | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.9 | 4.8 | **8.3** | STAGE 4 |
| LJ.24 | Collingwood Beach | Stormwater Management Plan for Collingwood Beach | 15 | 2.6 | 4.7 | **8.2** | STAGE 4 |
| LJ.25 | Collingwood Beach | Stormwater outlet upgrade at Church St | 19 | 3.0 | 5.4 | **10.6** | STAGE 4 |
| LJ.26 | Collingwood Beach | Stormwater outlet upgrade at Bayswater Rd | 19 | 2.9 | 5.4 | **10.2** | STAGE 4 |
| LJ.27 | Collingwood Beach | Adaptation / protection of Wastewater Assets | 20 | 2.8 | 4.2 | **13.4** | STAGE 4 |
| LJ.28 | Collingwood Beach | Adaptation / protection of Wastewater Assets | 20 | 2.7 | 4.2 | **13.0** | STAGE 4 |
| LJ.29 | Collingwood Beach | Design and construction of a rock armoured seawall along Ilfracombe Avenue | 7 | 2.7 | DNP | **0.2** | DNP |
| LJ.30 | Collingwood Beach | Continue Collingwood Beach bush regeneration works | 20 | 3.0 | 5.2 | **11.6** | STAGE 4 |
| LJ.59 | Collingwood Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.6 | 4.8 | **7.4** | STAGE 4 |
| LJ.36 | Vincentia | Undertake dune restoration at Nelsons Beach | 14 | 2.9 | 5.1 | **8.0** | STAGE 4 |
| LJ.50 | Vincentia | Vegetation planting on Vincent Street to help improve foreshore slope stability | 16 | 3.0 | 4.9 | **9.7** | STAGE 4 |
| LJ.51 | Vincentia | Fill surface depressions in the Plantation Point public reserve | 5 | 3.0 | 4.0 | **3.8** | DNP |
| LJ.52 | Vincentia | Undertake a geotechnical assessment at the Southern end of Nelsons Beach | 7 | 3.0 | 4.6 | **4.6** | DNP |
| LJ.53 | Vincentia | Provide dinghy storage | 10 | 3.0 | 4.4 | **6.8** | STAGE 4 |
| LJ.39A | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 2: Construction | 19 | 3.0 | 5.0 | **11.4** | STAGE 4 |
| LJ.39B | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 3: Maintenance of the structure | 19 | 3.0 | 4.5 | **12.7** | STAGE 4 |
| LJ.43 | Hyams Beach | Little Hyams Beach dune management | 19 | 2.5 | 5.1 | **9.4** | STAGE 4 |
| LS.01 | Cudmirrah Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 19 | 3.0 | 3.0 | **19.0** | STAGE 4 |
| LS.113 | Berrara | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.5 | **9.3** | STAGE 4 |
| LS.03 | Bendalong Point | Foreshore restoration works at the Bendalong foreshore | 23 | 3.0 | 5.2 | **13.2** | STAGE 4 |
| LS.04 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option A: Coastal Protection Works | 9 | 2.3 | DNP | **0.2** | DNP |
| LS.05 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option B: Reroute Road Access | 10 | 3.0 | DNP | **0.3** | DNP |
| LS.06 | Bendalong Point | Washerwomans Beach dune restoration | 22 | 3.0 | 5.4 | **12.3** | STAGE 4 |

| Option ID | Locality | Option Name | Feasibility Score | Acceptability Score | Viability Score | Options Ranking Score | Proceed to Stage 4? |
|---|---|---|---|---|---|---|---|
| LS.114 | Bendalong Point | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.9 | 5.1 | **8.0** | STAGE 4 |
| LS.89 | Bendalong Point | Investigate the most appropriate way to direct stormwater from Holly Street | 9 | 3.0 | 4.2 | **6.5** | STAGE 4 |
| LS.115 | Inyadda Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.5 | 4.5 | **7.7** | STAGE 4 |
| LS.116 | Manyana Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.8 | **8.7** | STAGE 4 |
| LS.16A | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 2: Construction | 11 | 3.0 | 5.2 | **6.3** | STAGE 4 |
| LS.16B | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 3: Maintenance of the structure | 11 | 3.0 | 4.7 | **7.0** | STAGE 4 |
| LS.117 | Cunjurong Point | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.5 | 4.5 | **7.7** | STAGE 4 |
| LS.20 | Conjola Area | Opportunistic nourishment of beaches adjacent to Conjola | 19 | 2.1 | 5.3 | **7.5** | STAGE 4 |
| LS.118 | Narrawallee Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.5 | **9.3** | STAGE 4 |
| LS.22 | Narrawallee Beach | Dune maintenance | 25 | 3.0 | 4.8 | **15.7** | STAGE 4 |
| LS.111 | Mollymook Beach | Stormwater outfall works and dune restoration | 17 | 3.0 | 5.4 | **9.4** | STAGE 4 |
| LS.119 | Mollymook Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.8 | **8.7** | STAGE 4 |
| LS.27 | Mollymook Beach | South Mollymook Coastal Protection Works | 21 | 3.0 | 7.1 | **8.9** | STAGE 4 |
| LS.28 | Mollymook Beach | Landslide area rehabilitation at Mitchell Parade. | 20 | 3.0 | 4.9 | **12.3** | STAGE 4 |
| LS.29 | Mollymook Beach | Landslide risk management (LRM) recommendations for lookout at Bannisters Point | 20 | 3.0 | 4.9 | **12.3** | STAGE 4 |
| LS.30 | Mollymook Beach | Design and construct a rock armoured coastal revetment along the Mitchell Parade road reserve shoreline | 14 | 3.0 | DNP | **0.4** | DNP |
| LS.31A | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 2: Construction | 17 | 3.0 | 5.4 | **9.4** | STAGE 4 |
| LS.31B | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 3: Maintenance of the structure | 17 | 3.0 | 4.9 | **10.4** | STAGE 4 |
| LS.32 | Mollymook Beach | Dune restoration and access management at South Mollymook | 18 | 3.0 | 5.7 | **9.5** | STAGE 4 |
| LS.33 | Mollymook Beach | Sand Scraping and dune restoration at North Mollymook | 25 | 3.0 | 5.3 | **14.1** | STAGE 4 |
| LS.87 | Golf Course Reef Beach | Upgrade Golf Course Reef Beach car park and foreshore access facilities | 23 | 3.0 | 5.4 | **12.8** | STAGE 4 |
| LS.120 | Collers Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.8 | **8.7** | STAGE 4 |
| LS.42 | Collers Beach | Dune restoration and carpark upgrade at Collers Beach | 21 | 3.0 | 5.6 | **11.2** | STAGE 4 |
| LS.101 | Ulladulla Harbour | Stormwater drainage at the northern end of Did-Dell Street | 8 | 3.0 | 4.2 | **5.7** | DNP |
| LS.121 | Ulladulla Harbour | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.8 | **8.7** | STAGE 4 |
| LS.46A | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 1: Design and approvals | 6 | 3.0 | 4.3 | **4.2** | DNP |
| LS.46B | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 2: On-ground works | 6 | 3.0 | 4.8 | **3.8** | DNP |
| LS.47A | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 1: Design and approvals | 6 | 3.0 | 4.6 | **3.9** | DNP |
| LS.47B | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 2: Construction | 6 | 3.0 | 5.3 | **3.4** | DNP |

| Option ID | Locality | Option Name | Feasibility Score | Acceptability Score | Viability Score | Options Ranking Score | Proceed to Stage 4? |
|---|---|---|---|---|---|---|---|
| LS.47C | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 3: Maintenance of the structure | 6 | 3.0 | 4.9 | **3.7** | DNP |
| LS.48A | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | 21 | 3.0 | 4.4 | **14.3** | STAGE 4 |
| LS.48B | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 2: Implementation | 21 | 3.0 | 5.6 | **11.2** | STAGE 4 |
| LS.51 | Ulladulla Harbour | Foreshore restoration works at Central Harbour Beach | 9 | 3.0 | 5.0 | **5.4** | STAGE 4 |
| LS.52 | Ulladulla Harbour | Install dinghy racks | 13 | 3.0 | 4.3 | **9.1** | STAGE 4 |
| LS.53 | Ulladulla Harbour | Erosion monitoring at South Ulladulla Harbour Beach | 12 | 3.0 | 3.0 | **12.0** | STAGE 4 |
| LS.122 | Rennies Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.5 | **9.3** | STAGE 4 |
| LS.103 | Racecourse Beach | Undertake a subsurface investigation at the southern end of the Racecourse Beach | 7 | 3.0 | 4.4 | **4.8** | DNP |
| LS.59 | Racecourse Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 17 | 3.0 | 3.0 | **17.0** | STAGE 4 |
| LS.105 | Burrill Beach | Install drainage along the downslope side of Seaside Parade | 9 | 3.0 | 4.9 | **5.5** | DNP |
| LS.123 | Burrill Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 2.7 | 4.5 | **8.2** | STAGE 4 |
| LS.60 | Burrill Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 17 | 3.0 | 3.0 | **17.0** | STAGE 4 |
| LS.124 | Wairo Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.5 | **9.3** | STAGE 4 |
| LS.66 | Wairo Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 17 | 3.0 | 3.0 | **17.0** | STAGE 4 |
| LS.125 | Lake Tabourie | Maintain, repair, upgrade, and rationalise beach access tracks | 14 | 3.0 | 4.5 | **9.3** | STAGE 4 |
| LS.70 | Bawley Beach | Dune building and restoration | 15 | 2.0 | 4.6 | **6.5** | STAGE 4 |
| LS.71 | Bawley Point Headland | Upgrade and formalise parking facilities and pedestrian access to the Bawley Point Headland and the Gantry. | 20 | 2.9 | 5.6 | **10.3** | STAGE 4 |
| LS.106 | Cormorant Beach | Subsurface investigations Bawley Beach, Cormorant Beach, and Gannet Beaches. | 6 | 3.0 | 4.9 | **3.7** | DNP |
| LS.72 | Cormorant Beach | Develop an entrance management policy for the Cormorant Beach Lagoon | 18 | 2.0 | 4.4 | **8.2** | STAGE 4 |
| LS.73 | Cormorant Beach | Install a water level gauge in the Cormorant Beach Lagoon | 17 | 2.5 | 4.3 | **9.9** | STAGE 4 |
| LS.74 | Cormorant Beach | Cormorant beach pedestrian access management | 16 | 2.8 | 4.7 | **9.3** | STAGE 4 |
| LS.107 | Gannet Beach | Install drainage along the downslope side of Malibu Drive. | 8 | 3.0 | 5.3 | **4.5** | DNP |
| LS.110A | Kioloa Beach | Kioloa Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | 18 | 3.0 | 4.5 | **11.9** | STAGE 4 |
| LS.110B | Kioloa Beach | Kioloa Coastal Protection Works - Stage 2: Implementation | 20 | 3.0 | 6.5 | **9.3** | STAGE 4 |
| LS.82 | Kioloa Beach | Stormwater formalisation along seaward end of Scerri Drive | 13 | 3.0 | 4.6 | **8.4** | STAGE 4 |
| LS.83 | Merry Beach | Formalise access and increase foreshore resilience | 11 | 3.0 | 5.4 | **6.1** | STAGE 4 |
| LS.108 | Depot Beach | Install drainage along the downslope side of Fairly Street and Depot Beach Road | 8 | 3.0 | 5.3 | **4.5** | DNP |

| Option ID | Locality | Option Name | Feasibility Score | Acceptability Score | Viability Score | Options Ranking Score | Proceed to Stage 4? |
|---|---|---|---|---|---|---|---|
| LS.84 | Depot Beach | Long term adaptation pathway for the Depot Beach vehicle access track | 11 | 2.0 | 3.0 | **7.3** | STAGE 4 |
| LS.85 | Depot Beach | Dune building and restoration | 20 | 2.7 | 5.5 | **9.6** | STAGE 4 |
| LS.86 | North Durras Beach | Foreshore management works at the North Durras Creek entrance. | 14 | 1.7 | 4.6 | **5.1** | STAGE 4 |

# 6 THE WAY FORWARD

The next stage of the CMP process, Stage 4, involves the preparation, public exhibition (and updating if required), and submission of a draft CMP to the Minister for certification (OEH, 2018e). The draft CMP should include the various components laid out in the NSW Coastal Management Manual (OEH, 2018e), including:

- Snapshot of issues (coastal processes, coastal hazards, threats to biodiversity, resilience and integrity of coastal ecosystems and ecological values etc)
- Actions to be implemented by Council and other public authorities.
- A business plan identifying the full capital, operational and maintenance costs, and timings of management actions.
- Mapping of coastal management areas (including any proposed changes to current coastal management areas, or mapping of new coastal vulnerability areas).

The Draft CMP document should, in essence, provide a clear and succinct *statement of proposed coastal management actions* undertaken to meet State, Regional and Local coastal management objectives. It will outline how actions will be implemented through Council's Integrated Reporting & Planning framework and the land-use planning systems. Following the completion of a draft CMP, DPE will review the draft CMP prior to public exhibition to ensure it meets all mandatory requirements for ministerial certification.

Council will then place the CMP on *public exhibition* to seek feedback from all stakeholders in the form of written submissions. It is a mandatory requirement of the NSW Coastal Management Manual that the draft CMP be exhibited for a period of not less than 28 calendar days (OEH, 2018e).

All submissions will be reviewed, considered and if applicable, incorporated into the finalised version of the CMP, along with a *Submissions Report* documenting all outcomes.

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WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

# APPENDIX A
# LONG LIST OF OPTIONS

**Table A-1 Overarching CMP strategies, and associated options**

| ID | Place in CMP Structure | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| S1.01 | Strategy 1: Integrated Coastal Zone Management | Establish a CMP governance framework | • Establish a CMP working group<br>• Clearly define its purpose, objectives and functions<br>• Define its roles and responsibilities of its members<br>• Execute the function of the Working Group<br>• Meet regularly to execute CMP and track progress | Planning and adaptation | Alert | SCC | N/A |
| S1.02 | Strategy 1: Integrated Coastal Zone Management | Establish two new Full Time Equivalent (FTE) Coast & Estuary Officer roles within Council. | Establish two new Full Time Equivalent (FTE) Coast & Estuary Officer roles within Council - in order to develop the implementation strategy of Council's Open Coast and Jervis Bay CMP, (including long-term funding options) and build Council's capacity to respond. | Planning and adaptation | Alert | SCC | DPE(E&H) |
| S1.03 | Strategy 1: Integrated Coastal Zone Management | Develop and execute a communications plan for Stage 5 of the CMP | Present information on Council's website and in community engagement activities that shows:<br>• The purpose of the CMP.<br>• The CMP background, and an overview of the NSW Coastal Management Framework.<br>• Key CMP information, including reports available for public consumption.<br>• The Status of CMP Actions, with details of the actions and recent updates/progress.<br>• Information pertaining to upcoming community consultation events, and avenues for engagement; and<br>• Links to relevant materials such as The NSW Coastal Management Framework, and the Marine Estate Management Strategy.<br>• How coastal zone systems function and how integrated management responses benefits Council and local communities. | Community engagement | Alert | SCC | DPE(E&H) |
| S1.04 | Strategy 1: Integrated Coastal Zone Management | Develop and implement a program to monitor key environmental parameters relevant to coastal management | This should comprise an ongoing monitoring program that includes:<br>• Periodic beach/dune survey and shoreline monitoring<br>• Monitoring of storm events and their impacts (including photologs)<br>• Ecological data including dune ecology and invasive species<br>• Include citizen science opportunities such as CoastSnap<br>• Strategic linkages to existing monitoring programs, such as Beachwatch and BeachStat<br>This program should be integrated into the wider Shoalhaven City Council Environmental Monitoring Program (EMP) | Monitoring and improving knowledge | Alert | SCC | DPE(E&H) |
| S1.05 | Strategy 1: Integrated Coastal Zone Management | Maintain and where necessary expand upon the Council's BeachStat dashboard for the Shoalhaven LGA | Maintain Council's existing BeachStat dashboard for the LGA. The BeachStat program is system to automatically track beach users and shoreline positions using low-cost remote camera systems, and machine learning algorithms.<br>Investigate the potential to add more locations to the dashboard in the future on an as needed basis. | Monitoring and improving knowledge | Alert | SCC | DPE(E&H) |
| S1.06 | Strategy 1: Integrated Coastal Zone Management | Maintain and update the CoastSnap camera cradle locations across the Shoalhaven LGA | Maintain the existing suite of CoastSnap camera cradles for the LGA that covers key beaches, which possess a high level of risk associated with coastal hazards and beach change. Investigate the potential to add more CoastSnap locations. CoastSnap is a global citizen science project to capture our changing coastlines. It allows citizens to capture and upload photos of their beaches in order to improve our scientific understanding of erosion and coastal shoreline change. This action should include ongoing funding for CoastSnap image analysis, and identification of future locations for additional camera cradles.<br>More information about CoastSnap can be found here: https://www.coastsnap.com/ | Monitoring and improving knowledge | Alert | SCC | DPE(E&H) |
| S1.07 | Strategy 1: Integrated Coastal Zone Management | Develop and implement a program for regular and ongoing monitoring of coastal assets and infrastructure | This would involve development and implementation of a monitoring program designed to assess and track the condition of various coastal assets and infrastructure, including:<br>• Coastal protection structures (revetments, seawalls, training walls)<br>• Recreational assets including viewing platforms & coastal access tracks<br>• Stormwater outlets.<br>• Sewer and water infrastructure<br>The program should be integrated into Councils broader asset management program. | Monitoring and improving knowledge | Alert | SCC | N/A |
| S1.08 | Strategy 1: Integrated Coastal Zone Management | Enact the CMPs Monitoring, Evaluation and Reporting (MER) Program for the CMP | This will include:<br>• Ongoing monitoring of CMP Actions<br>• Annual review of actions to ensure they are appropriate and current, with completed actions documented<br>• Ongoing reporting of progress<br>• Documentation of the effectiveness of the proposed strategies and actions will be reported as part of Council's Annual Report (which is part of the IP&R framework), including progress towards or full achievement of the performance targets included for each action. | Monitoring and improving knowledge | Alert | SCC | N/A |

| ID | Place in CMP Structure | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| S1.09 | Strategy 1: Integrated Coastal Zone Management | Continue ongoing collaboration with state government agencies and research institutions | Continue to collaborate with universities, government agencies and others in research that focuses on:<br>• Climate change impacts on coastal processes and coastal landforms, including new data on sea level rise, storm behaviour, sediment transport processes and coastal recession modelling<br>• Impact of sea level rise on rock platform communities<br>• Coastal lake entrance behaviour (sediment budget, morphology, opening and closing regimes) with sea level rise and other aspects of climate change and climate variability<br>• Ecological services and functions of dune species and most effective vegetation structure to enhance dune resilience<br>• Assessing and monitoring the impacts of NABE works at all beaches where it's implemented | Monitoring and improving knowledge | Alert | SCC | DPE (E&H)<br>DPI-Fisheries<br>NPWS<br>Crown Lands |
| S1.10 | Strategy 1: Integrated Coastal Zone Management | Undertake a Feasibility Study to assess the potential for sustainable and economical utilisation of offshore sand resources for large scale beach nourishment across the LGA | Large scale beach nourishment may represent a strategic, long term management solution for coastal hazard risk for a number of "at risk" locations across the LGA. Presently, the only potential sand source identified for large scale nourishment is sand bodies located offshore - but such offshore sand sources are not currently feasible due to regulatory constraints.<br><br>However, there is a possibility that the existing regulatory constraints may be lifted at some point during the CMPs 10 year life cycle. Therefore, the purpose of the study would be to:<br>• Determine if offshore beach nourishment is feasible and economically viable; and<br>• Undertake the necessary assessments in advance, to ensure Council can act without delay should restraints be lifted and an opportunity arise to undertake beach nourishment in a cost effective way. | Coastal hazard protection | Alert | SCC | DPE (E&H) |
| S1.12 | Strategy 1: Integrated Coastal Zone Management | Monitoring of locations identified as being at risk of coastal cliff and slope instability. | Undertake monitoring of locations identified as being at risk of coastal slip and slope instability in the Stage 2 Geotechnical Report. These include:<br>> Bendalong Point: Monitor areas of deep colluvial soils in the Dee Beach Bluff for signs of movement<br>> Bendalong Point: Monitor slightly arcuate cracking and settlement in the western (north-bound) lane on the steep section of Manta Ray Road up Bendalong Headland<br>> Narrawallee Beach: Continue to monitor groundwater levels and inclinometers at Surfers Avenue<br>> Golf Course Reef Beach: Monitor soil in the Golf Course Reef Bluff for signs of movement<br>> Ulladulla Harbour: Monitor the cracking and settlement in the access road to the Ulladulla Sea Pool at the end of Wasons Road<br>> Depot Beach: Monitor cracking and settlement in Fairley Street pavement, adjacent to No. 30 Depot Beach Road.<br>This should also include any monitoring recommended by the Actions LS.103 (Racecourse Beach), and LS.106 (Bawley Beach, Cormorant Beach, and Gannet Beaches). | Monitoring and improving knowledge | Alert | SCC | N/A |
| S1.13 | Strategy 1: Integrated Coastal Zone Management | Feasibility investigations, design, and approvals for creek entrance tripper walls at Mollymook Beach, Manyana Beach, and Hyams Beach | This would involve the investigation of the potential for the installation of "tripper walls" at three specific locations across the LGA. These tripper walls will comprise small (mostly buried) Geotextile Sand Container (GSC) structures located at specific creek entrances. The structures would be intended to prevent the meandering of creek entrances from exacerbating coastal hazard risk and negatively impacting safe beach access. The three potential locations identified in this CMP include:<br>• Manyana Beach: The northern side of the Manyana Creek entrance. To prevent the northwards meander of the creek entrance from eroding the beach in front of the public road along Sunset Strip. This would also include dune restoration work (fencing/ revegetation) to the dune and beach area located to the north of tripper wall.<br>• Mollymook Beach: At the southern side of the Blackwater Creek entrance. It would prevent the creek mouth meandering southwards along the beach to the surf club - which exacerbates beach erosion and reduces safe beach access.<br>• Hyams Beach: At the northern side of Hyams Creek, preventing it from meandering northwards and eroding the foreshore and increasing coastal hazard risk.<br>The Action would be undertaken in a staged progression in order to ensure that the concepts have been investigated in detail, are proven to be effective, and would have minimal adverse environmental or social impacts.<br><br>The first Stage of the project (this Action) would include the following works:<br>A) Investigation of the feasibility of the concept(s), and comparative analysis to alternatives such as ongoing sand scraping and beach profiling.<br>B) Concept design of the structure(s)<br>C) Undertaking required environmental assessment and obtaining necessary approvals<br>D) Detailed design of the structure(s)<br>E) A prioritised schedule of works across all three locations<br><br>Subsequent Stages are identified on a site by site basis for - with implementation to be phased by priority:<br>• Manyana Beach: LS.16 | Coastal hazard protection | Active Intervention | SCC | DPE<br>DPI-Fisheries / JBMP |

| ID | Place in CMP Structure | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| | | | • Mollymook Beach: LS.31<br>• Hyams Beach: LJ.39 | | | | |
| S2.01 | Strategy 2: Community Engagement | Develop and maintain an ongoing program of community engagement with coastal communities - about coastal hazard risk and the importance of coastal management | Engage with foreshore reserve property owners, residents, beach goers, and community youth around risk, environmental, cultural and social issues such as:<br>• The value of dune vegetation (e.g. trapping wind-blown sand and maintaining dune resilience, ecological functions and buffering against coastal hazards)<br>• Recognising Aboriginal cultural heritage on the coast<br>• The importance of foreshore vegetation in providing shade and wind protection, filtering runoff, improving water quality and providing habitat<br>• Managing the interface between coastal bushland and private property, including edge impacts, encroachments, garden refuse dumping, storm water discharges, vegetation retention, fire protection zones and weed management<br>• Illegal pruning, poisoning and removal of trees, private vehicle access and illegal structures/items which restrict public use of the reserve. Enforce regulations in high conservation value areas as a priority.<br>Education programs should be enacted every 5 years. | Community engagement | Alert | SCC | N/A |
| S2.02 | Strategy 2: Community Engagement | Develop and maintain an ongoing program of community engagement with coastal communities - about the geotechnical hazard risk and the importance of coastal management | Prepare information for landholders living adjacent to geotechnical hazards and how they can contribute to risk reduction through:<br>• Maintaining an adequate surface drainage path into and out of the property<br>• Draining piped storm water away from steep slopes to avoid saturation and scouring<br>• Maintaining vegetation cover of appropriate species<br>• Repairing leaking or broken underground drainage or sewer pipes as soon as faults are identified<br>• Periodically inspecting the property to observe changes<br>Education programs should be enacted every 5 years | Community engagement | Alert | SCC | N/A |
| S2.05 | Strategy 2: Community Engagement | Provide rockfall signage for the exposed cliff lines of applicable cliffs | For the identified at-risk cliffs, install rockfall signage to improve safety around coastal cliffs. Signage should be installed at nearby formal entry/exit points to the foreshore. These locations are identified in the Stage 2 Geotechnical Hazard Study Report, and include:<br>• Crookhaven Head (below the Nursery)<br>• Culburra (Penguin Head)<br>• Callala Bay<br>• Vincentia (Plantation Point) – particularly around the exposed cliff lines opposite Vincent Street, Twyford Street, Plantation Point Parade and Elizabeth Drive and around Plantation Point.<br>• Hyams Point:<br>• Berrara Headland<br>• Bendalong (Red Head)<br>• Manyana (Inyadda Point)<br>• Mollymook Beach (Bannisters Point)<br>• Ulladulla (Ulladulla Head and Wardens Head)<br>• Rennies Beach Bluff<br>• Racecourse Beach Bluff<br>• Dolphin Point<br>• Depot Beach Headland | Coastal hazard protection | Alert | SCC | N/A |
| S3.01 | Strategy 3: Emergency Planning and Response | Activate the "Coastal Hazard Emergency Action Sub-Plans" (CZEAS) for each beach as required after storm events. | Activate the "Coastal Hazard Emergency Action Sub-Plans" for each beach and coastal headland as required after storm events - and prepare resources and collaborate with relevant staff about the plans.<br>Typical works after a storm event would include:<br>• Remediation: Where beach erosion has caused a large escarpment/ drop off (>0.5 m) that presents a risk to assets or has created unsafe access, Council will take action to make the area safe through beach scraping.<br>• Restoration: Arrange for permanent repair/removal of damaged assets or the rehabilitation of the environment.<br>• Remove: Removal of beach/storm debris that poses high risk to public safety. | Coastal hazard protection | Emergency Response | SCC | DPE (E&H)<br>NSW SES |
| S3.02 | Strategy 3: Emergency Planning and Response | Develop a Tide Alert Calendar, and encourage citizen science in monitoring tidal inundation | The study area coastline is currently exposed to tidal inundation risk (sunny day flooding), with increasing vulnerability to this risk over time due to future Sea Level Rise. As the tides can be predicted many years in advance, this option involves development of a "Tide Alert" Calendar, and a public engagement program. It specifically includes:<br>A) The creation of a Tide Alert Calendar: This would be a simple and practical tool that clearly communicates dates of higher-than-normal high tides to indicate when low-lying land is particularly vulnerable to tidal inundation and coastal flooding. Red-alert tide calendars are highly visual and easily interpreted, and do not require technical expertise or interpretation of large amounts of data or text.<br>B) Public awareness and citizen science: This initiative would focus on public engagement and awareness | Community engagement | Alert | SCC | N/A |

| ID | Place in CMP Structure | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| | | | around the highest red-alert days each year, encouraging citizens to "snap the coast" at the designated time of the high tide and upload the photograph to Councils social media channels or a Council web repository. This kind of public engagement initiative allows both Council and the local community to utilize these red-alert tide days and visualize the impacts rising sea levels may have on their communities in the future. | | | | |
| S4.01 | Strategy 4: Planning and Adaptation | Review Councils coastal management planning policies every 10 years | Review Councils coastal management planning policies for the 10 year CMP implementation lifecycle. This should include consideration of the latest environmental data, observed coastal hazard impacts and state government policies. The review should consider:<br>• The Shoalhaven City Council Sea Level Rise Framework<br>• The Shoalhaven City Council Coastal Hazard Mapping | Planning and adaptation | Avoid Future Impact | SCC | DPE (E&H) |
| S4.02 | Strategy 4: Planning and Adaptation | Maintain planning controls to reduce future coastal hazard impacts | Implement and maintain planning controls in:<br>• The Shoalhaven Local Environmental Plan 2014: Maintain appropriate zoning in the LEP to protect frontal dune systems and enhance resilience to coastal hazards.<br>• Shoalhaven Development Control Plan 2014 G6 Coastal Management Areas, which require specific information and assessment for proposed development in coastal hazard areas.<br>Update and maintain notation to section 10.7 (5) certificates for properties affected by coastal hazards consistent with NSW Government legislation.<br><br>Wherever possible, use zoning and planning controls in Shoalhaven Development Control Plan 2014 to maintain open spaces where coastal dunes and associated habitats can roll landward in response to climate change and sea level rise. On the open coast, this management action is linked to planning for vegetated foreshore reserves on coastal dunes. | Planning and adaptation | Avoid Future Impact | SCC | N/A |
| S4.05 | Strategy 4: Planning and Adaptation | Fill information gaps in Council's existing coastal hazard mapping dataset. | There are numerous beaches across the LGA where formal coastal hazard mapping does not exist, and therefore Chapter G6 of the DCP does not apply to potential coastally adjacent development. In order to inform future development in the coastal zone, the gaps in this coastal hazard mapping should be filled by undertaking localised hazard assessment for the following beaches:<br>• Callala Bay (see Action LJ.00)<br>• Nelsons Beach<br>• Bawley Beach<br>• Cormorant Beach<br>• Gannet Beach<br>• Racecourse Beach (southern)<br>• Kioloa Beach<br>• Merry Beach<br>• North Durras Beach (and the Durras Lake Estuary Entrance)<br>For consistency, the study should utilise an methodology that is consistent with that used to develop Council's existing coastal hazard mapping dataset. | Monitoring and improving knowledge | Avoid Future Impact | SCC | N/A |
| S5.01 | Strategy 5: Protection of the Coastal Environment | Continue Councils program of mapping threatened ecological communities (TECs) across coastal reserves | Carry out surveys to ground-truth and map the distribution and condition of TECs in coastal erosion risk areas using the Biodiversity Conservation Act, Biodiversity Assessment Methodology. | Environmental protection and restoration | Alert | SCC | DPE (E&H) |
| S5.02 | Strategy 5: Protection of the Coastal Environment | Maintain and enhance ecological communities in coastal reserves (including dunes), considering appropriate ecological strategies for urban (foreshore recreation reserve) and non-urban areas | This action includes the ongoing implementation of ecological restoration works in coastal reserves. Prioritisation will be given to areas that house threatened ecological communities (TECs), and targeted weed species control works. | Environmental protection and restoration | Active Intervention | SCC | DPE (E&H) |
| S5.03 | Strategy 5: Protection of the Coastal Environment | Engage with SLSCs in order to develop a suite of dune vegetation management plans for the coastal dunes in front of all SLSC building and lifeguard towers on patrolled beaches | This will involve developing dune vegetation management plans for every SLSC across the LGA. The goal will be to maintain immediate sight lines at surf patrol locations (to maintain public safety), whist also maintaining appropriate coverage of dune vegetation to promote dune stability and minimise loss of sand from the littoral systems that would contribute to long term recession of the beach. | Environmental protection and restoration | Active Intervention | SCC | N/A |

| ID | Place in CMP Structure | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| S6.02 | Strategy 6: Protection of Cultural Heritage | Undertake a LGA wide coastal zone Aboriginal Cultural Heritage Survey, and development of local protection/management plans | This action would involve engaging with the relevant Local Aboriginal Land Councils, Traditional Owner groups and an archaeologist to undertake an updated cultural heritage survey of the coastal zone – and in doing so fill existing information gaps within the LGA-wide Aboriginal Cultural Heritage Mapping and updating the Aboriginal Heritage Information Management System (AHIMS). It is anticipated that there would be three main tasks for this action:<br>• Consultation with the relevant Local Aboriginal Land Councils and Traditional Owners and knowledge holders.<br>• An Aboriginal cultural heritage assessment, which should include survey field work, and recording of cultural heritage sites (such as middens sites) and detailed documentation of findings.<br>• The development and prioritisation of local, site specific management plans for protection and preservation of these sites. | Protection of cultural heritage | Avoid Future Impact | SCC | Jerrinja LALC<br>Jerrinja Tribal Group |
| S6.03 | Strategy 6: Protection of Cultural Heritage | Engage with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to develop a cultural educational and awareness program | Engage with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to develop and roll out a cultural educational and awareness program - related to the Aboriginal Cultural Heritage (ACH) of the coastal zone. Design of the program should be led by either relevant Local Aboriginal Land Councils or local TO groups, that could involve educational methods such as:<br>• School programs including planting days, stewardship sites and hands on activities<br>• Signage at local sites such as beaches, estuaries, and headlands (including the use of QR codes that includes elders speaking about the history of the area)<br>• Brochures and information provided to tourists at caravan parks and information centres.<br>• Cultural tours to provide greater awareness of ACH values to both the local community and to the large population of seasonal visitors | Protection of cultural heritage | Alert | SCC | Jerrinja LALC<br>Ulladulla LALC |
| S6.04 | Strategy 6: Protection of Cultural Heritage | Provide opportunities and help build capacity to local Aboriginal Ranger programs, to enhance their role in management of Sea Country across the LGA | Work with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to bolstering existing ranger programs and facilitate a greater role for these programs in coastal management across the Shoalhaven LGA.<br>• This will involve working with and supporting the ranger team coalition to help enhance/ boost their capacity and awareness of coastal management.<br>• Where possible, utilise Aboriginal ranger teams (in conjunction with other suitable land rehabilitation contractors) to undertake on ground works associated with dune restoration and monitoring programs.<br>• Work collaboratively to help develop the next generation of junior rangers to be a part of future coastal management across the Shoalhaven LGA.<br>This action is consistent with Initiative #4 of the NSW Marine Estate Management Strategy – which includes Increase Aboriginal participation in Sea Country management, planning and monitoring through employment and training of Aboriginal people at a regional and local level. | Protection of cultural heritage | Active Intervention | SCC | Jerrinja LALC |
| S7.01 | Strategy 7: Asset Management | Review and update all Council asset management plans (AMPs), relevant to the coastal zone. | Review and update all asset management plans (AMPs), relevant to the coastal zone.<br>• AMPs by asset type will be updated by relevant asset custodian.<br>• Include an asset management approach to provide for replacement, relocation or retrofitting of public assets that are currently in coastal risk areas including surf clubs and sewer, water and sewerage infrastructure, foreshore protection infrastructure, roads and access paths.<br>• Align the asset management plans with emergency action sub-plans.<br>This action includes continuing to implement high priority recommendations from the Coastal Erosion Stormwater Impact Assessments in 2015 and 2023. | Asset management | Active Intervention | SCC | N/A |
| S7.03 | Strategy 7: Asset Management | Implement high priority (and other relevant) actions from the hydraulic assessment report to manage stormwater drainage adjacent to or within identified coastal cliffs and slopes risk areas | The Shoalhaven Hydraulic Impact Assessment Report has included an assessment of Council's stormwater drainage network across ten (10) high-risk coastal cliffs and slope areas. The project covers identification of existing/potential stormwater runoff issues that may trigger cliff and slope instability issues, development of hydraulic models and assessment of suitability of the current network based on design and capacity. The report has detailed a number of recommendations including modification and upgrades to the local stormwater network at these locations. These recommendation of this report should be implemented through the CMP as a key measure to reduce the risk of coastal cliff and slope instability in high risk areas. | Asset management | Active Intervention | SCC | N/A |
| S7.04 | Strategy 7: Asset Management | Shoalhaven Open Coast Boating Infrastructure Plan: Stage 1 Plan Development | This Action would involve the development of a strategic plan to help Council to manage (and invest in) its boating facilities across the Open Coast and Jervis Bay CMP study area. It could include the following components:<br>Baseline Assessment:<br>•Desktop Audit: Identify all Council managed boating infrastructure in the study area, including boat ramps, wharfs, jetties and pontoons. This can also include supporting infrastructure such as dinghy storage, fish cleaning facilities, parking etc.<br>•Inspection: Undertaking detailed condition inspections for each ramp, clearly identifying where structural and/or public safety issue may exist.<br>•Conditions / Operability: A review of environmental conditions at each boat ramp & wharf (including tide, | Asset management | Active Intervention | SCC | TfNSW |

| ID | Place in CMP Structure | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| | | | wind and wave conditions)<br>•Safety: A review of TfNSW and Marine Rescue incident databases to identify potential public safety issues at each ramp.<br>Needs Analysis:<br>•User & community consultation: To help assess the frequency and nature of use of the facilities<br>•Use Analysis: Including a review of the NSW DPI state-wide survey of recreational fishing, and the Regional Boating plans (such as the South Coast Boating Network Plan) – in order to broadly assess current usage and future trends for use of the facilities.<br>•Boat Ownership & Registration: Assessment of the TfNSW data relating to general boat licences, personal water craft licences, personal watercraft registrations, recreational vessel registrations<br>Strategic Plan:<br>•Development of a list of asset management recommendations - including a prioritized and costed list of actions for monitoring, maintaining, or refurbishment / upgrades of facilities.<br>Outcomes should be consistent with the South Coast Boating Network Plan from TfNSW.<br><br>Upon completion, Council should seek suitable sources of funding for implementation, and this may include application through the NSW Boating Now Program administered by TfNSW. | | | | |
| S7.05 | Strategy 7: Asset Management | Implement the findings of the Shoalhaven Beaches Asset Management Strategy and incorporate into the relevant SCC Asset Management Plan. | Implement the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021) and findings from contemporary monitoring and inspections by Council (2023) for the approximately 250 beach access tracks located across the 40 Council managed beaches of the LGA. Findings have recommended Council undertake works to maintain, repair, upgrade and rationalise a number of beach access tracks. Specific recommendations have been incorporated into the options assessment under the Local Area Actions. | Asset management | Active Intervention | SCC | N/A |

**Table A-2 Northern LGA options**

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LN.01 | Shoalhaven Heads | Assess the condition of the SLSC rock revetment | Assess the condition of the rock revetment in front of the Shoalhaven Heads Surf Club if and when it's exposed during a major storm. The revetment was designed and constructed following the 1970s storms. | Asset management | Active Intervention | SCC | N/A |
| LN.02 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option A – refurbish existing seawall | Based on the information provided in the seawall condition assessment (Option LN.01), upgrade the seawall to provide protection to the SLSC building and car park. | Planning and adaptation | Planning for Change | SCC | N/A |
| LN.03 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option B – relocate SLSC landwards | At end of building asset life or in the event of significant storm damage, relocate surf club landward and construct on deep piled foundations. | Planning and adaptation | Planning for Change | SCC | N/A |
| LN.04 | Shoalhaven Heads | Opportunistic nourishment of foreshore and beaches | Develop a plan for reuse of excavated 'dry notch' (flood notch) sand, and other suitable sand resulting from any potential entrance management or dredging works at the river entrance for:<br>• Erosion sites fronting River Road<br>• Low dune crest locations along Shoalhaven Heads beach<br>• The northern side of the entrance area, to increase the volume of the beach and dunes, and provide interim protection from large southerly waves during storms. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LN.35 | Shoalhaven Heads | Monitor performance of the SLSC dune restoration works | Monitor the performance of the dune restoration works at the Shoalhaven Heads SLSC. Monitor for signs of any potential recurrence of dune blowouts, and undertake dune restoration maintenance works as necessary. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LN.36 | Crookhaven Heads | Install drainage along the downslope side of roads and tracks to minimise overland flow erosion near the Community Nursery | Install drainage along the downslope side of roads and tracks (e.g., kerb and guttering) to minimise overland flow erosion near the Community Nursery, in order to reduce prolonged or excessive saturation of the soil erosion due to uncontrolled runoff. This would reduce the risk of coastal cliff and slope instability. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LN.07 | Culburra Beach | Passive relocation of northern access loop road when damaged by storm events - to a more landwards location within existing parcel | This would include investigation into the potential relocation of northern access loop road and car park when/if the structure is damaged by storm future storm events. Relocation should be to a more landwards location within existing lot/parcel. Planning analysis indicates that there is sufficient room to accommodate this. | Planning and adaptation | Planning for Change | SCC | N/A |
| LN.08 | Culburra Beach | Construct a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach | This would include the design and construction of a 250 m long buried rock-armoured seawall structure to protect the car park and the road at Allerton Ave, and associated amenities (public toilets etc) located at the southern end of Culburra Beach. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LN.37 | Culburra Beach | Formalise drainage along the downslope side of Allerton Avenue | Install drainage along the downslope side of Allerton Avenue (e.g. kerb and guttering), in order to reduce prolonged or excessive saturation of the soil, and erosion due to uncontrolled runoff. This would reduce the risk of coastal cliff and slope instability. | Environmental protection and restoration | Active Intervention | SCC | N/A |
| LN.42 | Culburra Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LN.17 | Warrain Beach | Long term adaptation pathway for SLSC building: Option A – relocate SLSC landwards | At end of building asset life or in the event of significant storm damage, relocate surf club landward (within existing parcel) and construct on deep piled foundations.<br>Adaptation timeframe: Likely 30+ years or longer | Planning and adaptation | Planning for Change | SCC | N/A |
| LN.18 | Warrain Beach | Long term adaptation pathway for SLSC building: Option B – coastal protection works | Design and construct a rock armoured seawall structure to protect the SLSC and car park.<br>Adaptation timeframe: Likely 30+ years or longer | Planning and adaptation | Planning for Change | SCC | N/A |
| LN.23A | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 1: Undertake investigations, detailed design, and approvals | This would include continuing to progress the design and construction of a shoreline protection structure (such as a rock armoured seawall) that covers a section of public foreshore along Beecroft Parade, between Dolphin Reserve and the boat ramp accessway. A concept design of this structure was prepared as part of the Currarong Coastal Erosion Protection Technical Design Report (RHDHV, 2017), which provided the planform layout and cross-sectional concept designs for the potential structure. This project would be executed in three stages. Stage 1 of this Action would therefore involve the following steps:<br>• Geotechnical investigation: Investigation of the subsurface conditions to the east of Currarong Creek (at, and behind the proposed structure footprint) to determine if the subsurface profile comprises sandy soils or less erodible rocky bedrock strata. This would inform the development of the concept design of the structure. If this investigation provided new information that indicated that the structure is not required, then | Coastal hazard protection | Active Intervention | SCC | DPE(E&H) |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| | | | there would be no need to progress any further.<br>• Finalisation of the concept design based on outcomes of the geotechnical Investigation<br>• Community and Stakeholder Engagement<br>• Detailed Design of the structure | | | | |
| LN.23B | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 2: Construction | Construction of the erosion protection structure that has been investigated and designed under through action LN.23A. | Coastal hazard protection | Active Intervention | SCC | DPE(E&H) |
| LN.23C | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 3: Maintenance of the structure | Undertake maintenance of the structure to maintain function and optimise public beach use. | Coastal hazard protection | Active Intervention | SCC | DPE(E&H) |
| LN.24A | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 1: Undertake investigations and concept design | This Action would involve the implementation of a potential groyne structure (or a series of groynes) at Currarong Beach, in order to mitigate the long term coastal erosion risks at the site. It would be undertaken in a staged progression in order to ensure that the potential solution has been investigated in detail, is proven to be effective, and would have minimal adverse environmental or social impacts. The first Stage of the project would include the following works:<br>Stage 1A: Coastal Processes Investigation:<br>Undertake a desktop investigation to investigate the local sediment transport sources, sinks and pathways using numerical modelling methods (wave, hydrodynamic, and morphological). Crucial to this task will be to determine the magnitude and direction of alongshore transport, in order to determine if a groyne (or a series of groynes) will be effective as a long term mitigation option.<br>Stage 1B: Concept Design Analysis:<br>Use of numerical morphological modelling of potential groyne layouts for determining:<br>A) Optimised configuration - spacing & layout (with and without associated nourishment, location, length, orientation).<br>B) Optioneering vs nourishment alone / other alternatives<br>C) Potential negative impacts (i.e., downdrift, or on the estuary morphodynamics),<br>Then if all of the above boxes are ticked, and there is high confidence for successful and beneficial implementation of the structure(s), then the Action can progress to the LN.24B. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H) |
| LN.24B | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 2: Detailed design, approvals, and construction | This Stage would comprise the:<br>• Detailed design and approvals, and<br>• Construction of the proposed structure(s).<br>The structure could be implemented as a relatively low cost "trial structure(s)", constructed our of geotextile sand containers (GSCs), with the option to remove the structure after a 10-15 year trial period if the structure if it did not perform according to expectations or if unexpected impacts occurred. Alternatively, if the performance of this structure is proven, it can be upgraded to a more permanent material (rock armoured), to provide an end-state long-term solution. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H) |
| LN.24C | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) -Stage 3: Maintenance of the structure | Undertake maintenance of the structure to maintain function and optimise public beach use. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H) |
| LN.25 | Currarong Beach | Long term adaptation pathway for mitigating coastal inundation hazard of Currarong Road | Raising of road to prevent tidal inundation from the western (Jervis Bay) side under future SLR scenarios (+0.6m or higher).<br>Adaptation timeframe: Likely 50+ years or longer | Planning and adaptation | Planning for Change | SCC | NPWS |
| LN.26 | Currarong Beach | Long term adaptation pathway for mitigating coastal erosion hazard of Currarong Road | Investigate long term coastal protection options to prevent erosion of the road under future shoreline recession scenarios, such as nearshore breakwaters, groynes, and beach nourishment.<br>Adaptation timeframe: Likely 50+ years or longer | Planning and adaptation | Planning for Change | SCC | N/A |
| LN.27 | Currarong Beach | Wastewater Management Plan | Develop a wastewater overflow management strategy for Currarong Creek, in order to determine the optimised operational pathways for dealing with inundation under future sea level rise scenarios. Options include relocation of the structures, raising the structures, and/or flood proofing. | Planning and adaptation | Planning for Change | SCC | N/A |
| LN.29 | Currarong Beach | Improving recreational access during peak summer periods | Investigate opportunities to cater for high seasonal usage of the Currarong Boat Ramp & Beach area - including provision of increased parking and associated amenities within Elliot Reserve. | Monitoring and improving knowledge | Alert | SCC | N/A |
| LN.39 | Currarong Beach | Install gutters and downpipes for recreational | Install gutters and downpipes at the picnic sheds at the northern end of the coastal reserve behind Beecroft Parade. | Coastal hazard protection | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| | | assets at Beecroft Parade coastal reserve | | | | | |
| LN.40 | Currarong Beach | Design and construction of a rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent | This option would involve the design and construction of a rock armoured seawall along the Currarong Beach foreshore. The structure would need to be around 750 m long and cover the developed foreshore along Warrain Crescent. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H)<br>NPWS |
| LN.43 | Currarong Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |

**Table A-3 Jervis Bay LGA options**

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LJ.00 | Callala Bay | Callala Bay Coastal Processes and Hazard Definition Study | Undertake a coastal processes and coastal hazards study of the Callala Bay foreshore area. The primary objective of this study would be to develop a greater understanding of the alongshore and cross-shore morphological processes that can support the scientifically based derivation and assessment of coastal management solutions. The study would include three key components:<br>Part 1: Coastal Process Investigation:<br>A desktop investigations required to identify and quantify the local sediment transport sources, sinks, and pathways. This investigation should employ numerical modelling methods comprising wave, hydrodynamic, and morphological modelling. The outcomes of the study would be:<br>A) A quantified conceptual model of local sediment transport, including longshore sediment transport rates and the relative contribution of longshore and cross-shore processes to shoreline change at the study area.<br>B) An assessment of storm erosion, and derivation of coastal hazard lines for the Callala Bay foreshore; and<br>C) Determine the foreshore buffer required to protect private and public property.<br>D) This study should also include an investigation into feasible sand sources to supply any potential long term beach nourishment program for Callala Bay. Note that during Stage 3 of the CMP, NPWS has indicated that it will not accept winning of sand from within NPWS land tenure to the north of Wowly Creek.<br>Part 2: Assessment of Management Options:<br>The outcomes of the study would then inform decision making around management actions. Specifically, this part of the study should:<br>A) Develop concept designs for options LJ.01 Callala Bay Groyne Structure(s), and LJ.02 Beach Nourishment and Foreshore Restoration.<br>B) Use numerical modelling to assess the relative performance and potential impacts (i.e. downdrift, or on local estuary morphodynamics) of the options.<br>C) The outcomes of the study would be a clear decision making pathway to progress to LJ.01 or LJ.02. | Coastal hazard protection | Active Intervention | SCC | DPE(E&H), NPWS, JBMP |
| LJ.01A | Callala Bay | Callala Bay Groyne Structure(s) - Stage 1: Detailed design, approvals, and construction | If the outcomes of LJ.00 indicate that this option represents an optimised solution, then it can be implemented in a staged process. The first stage would comprise:<br>• Detailed design and approvals, and<br>• Construction of the proposed structure(s).<br>The structure could be implemented as a relatively low cost "trial structure(s)", constructed out of geotextile sand containers (GSCs), with the option to remove the structure after a 10-15 year trial period if the structure if it did not perform according to expectations or if unexpected impacts occurred. Alternatively, if the performance of this structure is proven, it can be upgraded to a more permanent material (rock armoured), to provide an end-state long-term solution. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H)<br>NPWS |
| LJ.01B | Callala Bay | Callala Bay Groyne Structure(s) - Stage 2: Maintenance of the structure | Undertake maintenance of the structure to maintain function and optimise public beach use. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H)<br>NPWS |
| LJ.02 | Callala Bay | Callala Bay beach nourishment/scraping and foreshore restoration | If the outcomes of LJ.00 indicate that this option represents an optimised solution, then it can be implemented. This option would involve the restoration and revegetation of the foreshore along Progress Park, in between the boat ramp and Sheaffe Street. This should include:<br>• An ongoing program of beach scraping / beach nourishment to surcharge the upper beach profile with additional sand. It is proposed that the sand would be sourced from the location identified in Option LJ.00.<br>• Replacing the existing lawn vegetation at the seawards end of in progress park (seawards of the walking path) with more appropriate dune vegetation, in order to improved resilience of foreshore to long term erosion, and promote natural beach recovery after storm events. There is space to accommodate this and keep some of the existing lawn reserve for community recreational use. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H)<br>NPWS |
| LJ.03 | Callala Bay | Sheaffe Street stormwater improvements | The drainage at the road head to be collected and discharged to the beach in a manner which minimises its erosive impact at the back beach embankment and the beach berm. A vegetated grass swale could be constructed in between the road head and the dune - in order to capture excess storm water, recharge the dune aquifer, and prevent road runoff from worsening beach erosion. | Coastal hazard protection | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LJ.04A | Callala Bay | Sailing Club Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | A formal coastal engineering condition assessment should be undertaken of the existing coastal protection works in front of the sailing club building. These works were intended as interim and/or informal coastal protection works. This assessment should also include a geotechnical investigations in order to determine the subsurface conditions around the sailing club and its exposure to coastal erosion. The outcome of this assessment should be a clear understanding of:<br>A) The effectiveness of the current coastal protection works<br>B) The nature and extent (if any) of any potential upgrades or maintenance works required to achieve the intended level of protection - and prevent undermining and structural failure of the building. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.04B | Callala Bay | Sailing Club Coastal Protection Works - Stage 2: Implementation | If the outcomes of LJ.04A indicate that upgrades or maintenance works are required, then these should be implemented in line with the recommendations of LJ.04A. This would also include obtaining any relevant approvals and environmental assessments required to undertake the works. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.44 | Callala Bay | Upgrade Callala Bay car park and foreshore access facilities | The purpose of this Action will be to upgrade the car park and foreshore access facilities - in order to provide increased amenity and to mitigate the erosive impacts of uncontrolled stormwater flows and unrestricted pedestrian and dinghy access to the foreshore. The works associated with this Action should include:<br>• Car Park Works: Formalisation of stormwater runoff and overland flow drainage at the Callala Bay car park - to alleviate overland flow impacts on foreshore erosion<br>• Dinghy Storage: Provide formal dinghy storage at the car park area, in order to prevent abandoned and uncontrolled dinghy storage impeded foreshore amenity and access<br>• Formalise Access: Formalise pedestrian access to the foreshore in between the boat ramp and the sailing club, and replant native dune vegetation species across this foreshore area to promote foreshore resilience. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H) |
| LJ.45 | Callala Bay | Addition of signage advising of overflow boat and trailer parking | Provide signage indicating where overflow boat and trailer parking can be found at Marine Parade | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LJ.55 | Callala Bay | Design and construction of a rock armoured seawall along the Callala Bay foreshore | This option would involve the design and construction of a rock armoured seawall along the Callala Bay foreshore. The structure would need to be around 270 m long - and would commence at the existing rock armoured revetment at the Car Park / Boat Ramp, and extend northwards around 80 m past Sheaffe Street (so as to ensure that seawall end effects do not adversely impact on the coastal hazard risk of properties farther north). | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP<br>Crown Lands<br>DPE(E&H) |
| LJ.56 | Callala Bay | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LJ.13 | Callala Beach | Adaptation pathway for Community Hall and tennis club facilities | At end of building asset life or in the event of significant storm damage, undertake planning investigations to relocate the facilities away from the coastal hazard zone to a less exposed location. | Planning and adaptation | Planning for Change | SCC | N/A |
| LJ.48 | Callala Beach | Empower local residents to engage in best practice foreshore management | This Action would involve working with local foreshore residents along Callala Beach in order to increase the resilience of the local dune system. This would involve:<br>• Providing local residents with information regarding best practice for management of the foreshore within their property boundaries - including appropriate foredune species to plant within their property boundary<br>• Interested residents to be provided the opportunity to obtain access to Councils nursery | Community engagement | Active Intervention | SCC | N/A |
| LJ.57 | Callala Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LJ.17A | Huskisson | Upgrade the Huskisson Sea Pool, as per the 2022 Detailed Design Report | Construction of the sea pool at Huskisson was completed in 1965, making it 57 years old. The design of the pool and the quality of the construction is exceptional. Nonetheless, a fifty-year service life is all that can be expected for a structure of this type and era. Its design working life has now been exceeded and the pool has entered an end-of-life phase where an increased burden on maintenance and repairs will be realised, until a major refurbishment or renewal is undertaken. A site investigation was undertaken in March 2022. The aim was to determine the root cause behind current issues and inform concept design of repairs.<br><br>Two remedial options have been proposed - Option 1 entails minor works and Option 2 entails major refurbishment. An engineers report issued by Council in 2022, it recommended that Option 1 is undertaken initially, then Option 2 rolled-out if a funding source from Federal or State government can be secured. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.17B | Huskisson | Refurbish the coastal protection works for the Huskisson Sea Pool. | Undertake coastal engineering works and investigations to upgrade the rock armour protection for the Huskisson Sea Pool. This should include upgrading the access stairs that traverse the seawall and provide access to the foreshore. | Coastal hazard protection | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LJ.19 | Huskisson | Foreshore management works at Moona Moona Creek Entrance. | Undertake foreshore management works at the northern side of Moona Moona Creek entrance. This should include implementation of a swale running behind the foreshore to prevent overland flow exacerbating the current erosion issues. This can be combined with landscaping and construction of an improved accessway. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.20 | Huskisson | Sand Scraping Program for Moona Moona Creek foreshore. | Implement a sand scraping program along the northern foreshore of Moona Moona Creek, and at Moona Moona Park. Sand can be scraped from the flood tide delta and placed up onto the foreshore banks in order to mitigate current erosion issues. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries Crown Lands JBMP |
| LJ.58 | Huskisson | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LJ.24 | Collingwood Beach | Stormwater Management Plan for Collingwood Beach | Design and implement a holistic stormwater management plan for Collingwood Beach. This should look at the volumes and discharges of the numerous stormwater outlets that discharge onto the beach, and the potential to optimise the network from both a functional perspective (and potentially consolidate/reduce the number of outlets), and it minimise impacts of beach erosion in front of outlets. This should also look at the potential for the implementation of utilised hind dune swales for stormwater retention and aquifer recharge. | Asset management | Active Intervention | SCC | N/A |
| LJ.25 | Collingwood Beach | Stormwater outlet upgrade at Church St | The stormwater outlet at Church street is in need of an upgrade, as it appears to be experiencing undermining from wave run-up and beach erosion, and meandering of stormwater discharges causes erosion and results in loss of beach width.<br>Upgrades should include:<br>• Installation of a new headwall<br>• Installation of scour protection to prevent future undermining of the outlet from reoccurring | Asset management | Active Intervention | SCC | N/A |
| LJ.26 | Collingwood Beach | Stormwater outlet upgrade at Bayswater Rd | The stormwater outlet at Bayswater street is in need of an upgrade. The initial concept for the upgrade, prepared by Shoalhaven City Council, comprises a reinforced concrete stormwater pipeline that will discharge into a rip-rap drainage trench located in a swale behind the local foredune. The design also includes the construction of a proposed timber boardwalk above the outlet, that will provide a viewing platform and a seating area – in order to enhance local recreational amenity. | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LJ.27 | Collingwood Beach | Adaptation / protection of Wastewater Assets | Investigate future adaptation of sewerage infrastructure along the beach front reserve at Collingwood Beach. This includes the potential protection or relocation of sewage pump station, 150 mm gravity main and 225 mm rising main along the southern end of Elizabeth Drive | Planning and adaptation | Planning for Change | SCC | N/A |
| LJ.28 | Collingwood Beach | Adaptation / protection of Wastewater Assets | Investigate future adaptation of sewerage infrastructure along the beach front reserve at Collingwood Beach. This includes the potential protection or relocation of 450 mm gravity mains along Susan Street and Montague Street, and 225 mm rising main along Berry Street | Planning and adaptation | Planning for Change | SCC | N/A |
| LJ.29 | Collingwood Beach | Design and construction of a rock armoured seawall along Ilfracombe Avenue | This includes investigating the potential for a 500m long buried seawall structure located under the dune, as a last line of defence for the public road (and nearby water mains). It would run along the length of Ilfracombe Avenue. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.30 | Collingwood Beach | Continue Collingwood Beach bush regeneration works | Support the preparation and implementation of the Collingwood Beach DuneCare Action Plan, to guide the work of the DuneCare Group under Council's Bushcare Program. This should include applying the findings of the Collingwood Beach Dune Vegetation Two-Year Trial Action Plan, which ran form 2018-2020. Relevant findings include:<br>• Adoption of the approved revegetation species list used in the trial<br>• Undertaking weeding work, and the strategic planting of trees (from the approved revegetation species list) in line with property boundaries or other strategic locations to act as "stepping stones" to provide links to other urban bushland canopies and so as to not impede views<br>• Vegetation management and cases of environmental vandalism to be managed in accordance with Council's Tree Management Policy (Public Land), Vegetation Vandalism Prevention Policy, Foreshore Reserves Policy, and the NSW Dune Management Manual. | Environmental protection and restoration | Active Intervention | SCC | N/A |
| LJ.59 | Collingwood Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LJ.36 | Vincentia | Undertake dune restoration at Nelsons Beach | At Nelson Beach, strategically increase the vegetated dune buffer at pinch points along Plantation Point Parade in order to maintain a minimum 20 m vegetated buffer. This would involve minor realignment of the coastal walking path and some unsealed parking facilities to a slightly more landwards position. | Environmental protection and restoration | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LJ.50 | Vincentia | Vegetation planting on Vincent Street to help improve foreshore slope stability | Replanting of deep-rooted native trees and shrubs in coastal slopes where trees have been removed in the vicinity of the boat ramp on Vincent Street. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.51 | Vincentia | Fill surface depressions in the Plantation Point public reserve | Fill surface depressions in the Plantation Point public reserve with beach/aeolian sands to prevent overland flow ponding that may increase the risk of slope instability. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.52 | Vincentia | Undertake a geotechnical assessment at the Southern end of Nelsons Beach | Undertake a geotechnical assessment to inform the ground conditions for the design of remedial options for the bare steep slopes at the southern end of Nelsons Beach. This would include:<br>• Site Assessment: Survey the coastal slope and note visible signs of instability.<br>• Subsurface Analysis: Collect samples for geotechnical properties. Perform geophysical surveys to assess subsurface conditions.<br>• Analyse coastal processes and erosion potential<br>• Develop and evaluate options for stabilizing the slope. This includes an assessment of costs estimates and environmental impacts. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LJ.53 | Vincentia | Provide dinghy storage | At Barfluer Beach, near the Vincentia Sailing Club shed, provide stacked boat storage in order to help reduce informal storage of boats on dunes and foreshore of the beach. The purpose of this is to reduce the impact of informal boat storage on the dune system, and increase the health and resilience of the foreshore. This option would include assessing available landside locations for storage in the immediate vicinity of the existing Sailing Club shed, and choosing the location with the least impact to the foreshore. | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LJ.39A | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 2: Construction | If the investigation, design, and approvals undertaken in Action S1.13 indicate that this Action should proceed, the undertaken construction of the tripper wall structure. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP |
| LJ.39B | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 3: Maintenance of the structure | Undertake maintenance of the structure to maintain function and optimise public beach use. | Coastal hazard protection | Active Intervention | SCC | DPI-Fisheries / JBMP |
| LJ.43 | Hyams Beach | Little Hyams Beach dune management | Undertake a program of dune restoration at Little Hyams Beach - to provide additional erosion buffer for the access road, boat ramp, and public toilets. This should include:<br>• Beach scraping in order to provide a greater sand buffer in the upper beach face.<br>• Dune restoration and revegetation that replaces existing vegetation with more appropriate dune vegetation to provide greater foreshore stability and promote natural recovery after storms.<br>This should also include dune building and restoration of the foreshore to the south of the Cyrus Street stormwater outlet, to mitigate the impacts of discharges meandering across the beach and generating erosion in front of properties. This may also include implementation of a small (buried) sand bag "tripper wall" to the south of the outlet. This structure would stay buried most of the time, but only becomes exposed during periods of high discharges, and prevent southwards meander of the creek entrance. | Coastal hazard protection | Active Intervention | SCC | N/A |

**Table A-4 Southern LGA options**

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LS.01 | Cudmirrah Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | Investigate land use planning options for improved coastal and environmental management - including potential rezoning Lot 7008 DP 1029732 from a RE1 (Public Recreation) to a C2 (Environmental Conservation), in order to provide enhanced protection to the local dune system. Note that this may require engagement with the Sussex Inlet SLSC | Planning and adaptation | Avoid Future Impact | SCC | N/A |
| LS.113 | Berrara | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.03 | Bendalong Point | Foreshore restoration works at the Bendalong foreshore | Undertake foreshore restoration works along the Bendalong foreshore in consideration of best practice coastal management. The works are to include enhancement of the local dune system through revegetation of foreshore area with appropriate coastal dune species (instead of turf/lawn) and formalisation of pedestrian access to promote dune resilience. | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.04 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option A: Coastal Protection Works | Design and construct a buried sea wall extending from the boat ramp to the western car park - in order to protect the Manta Ray Road car park and recreational infrastructure. This would be subject to design, assessment of potential environmental impacts, and approvals. | Planning and adaptation | Planning for Change | SCC | N/A |
| LS.05 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option B: Reroute Road Access | Re-route the road access to the boat ramp as long-term adaptation measure. This would involve connecting the northern end of Rosella Road to northern headland car park. This would be subject to design, assessment of potential environmental impacts, and approvals. | Planning and adaptation | Planning for Change | SCC | N/A |
| LS.06 | Bendalong Point | Washerwomans Beach dune restoration | Undertake dune restoration and revegetation across the 100 m long stretch of beach in front of the Washerwomans Beach car park, public toilets and picnic bench. The purpose of this is to enhance resilience by providing a more stable and highly vegetated dune system. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.114 | Bendalong Point | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.89 | Bendalong Point | Investigate the most appropriate way to direct stormwater from Holly Street | Investigate the most appropriate way to direct stormwater from Holly Street to the base of the coastal slope with appropriate erosion control measures below discharge points | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.115 | Inyadda Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.116 | Manyana Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.16A | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 2: Construction | If the investigation, design, and approvals undertaken in Action S1.13 indicate that this Action should proceed, the undertaken construction of the tripper wall structure. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.16B | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 3: Maintenance of the structure | Undertake maintenance of the structure to maintain function and optimise public beach use. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.117 | Cunjurong Point | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LS.20 | Conjola Area | Opportunistic nourishment of beaches adjacent to Conjola | Opportunistic nourishment of beaches adjacent to Conjola within the same tertiary sediment compartment utilising sand dredged from Lake Conjola entrance works | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.118 | Narrawallee Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.22 | Narrawallee Beach | Dune maintenance | Monitor and maintain the vegetated dune in the southern end of the beach in order to protect wastewater assets from erosion and inundation. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.111 | Mollymook Beach | Stormwater outfall works and dune restoration | At the stormwater outlet opposite 31 Mitchell Parade, undertake local erosion mitigation works to alleviate the erosion pinch point that is placing the stormwater infrastructure and Mitchell Parade at risk. The works should be similar in nature to the works undertaken opposite 57 Mitchell Parade, around 250 m to the north. The works will include a combination of:<br>> Stormwater scour protection works, to prevent the meandering stormwater flows from exacerbating beach erosion; and<br>> Dune restoration works either side (North and South) of the scour protection works, to increase the volume of vegetated dune | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.119 | Mollymook Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.27 | Mollymook Beach | South Mollymook Coastal Protection Works | In accordance with the design and approvals requirements - the implementation of the South Mollymook Coastal Protection Works should proceed through to construction phase. | Coastal hazard protection | Active Intervention | SCC | DPE (E&H) |
| LS.28 | Mollymook Beach | Landslide area rehabilitation at Mitchell Parade. | The findings of the investigation Mitchell Parade Geotechnical report (Cardno, 2022) should be reviewed and implemented in order to mitigate the risk of future landslides in this area. Given the location and nature of the cliff area, the investigation recommends either a Mechanically Stabilised Earth (MSE) wall or rock fill stabilisation as the preferred option. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.29 | Mollymook Beach | Landslide risk management (LRM) recommendations for lookout at Bannisters Point | Review and implement the findings of the geotechnical assessment undertaken for the lookout at Bannisters Point to mitigate the risk of future landslides in this area (JK Geotechnics, 2019). This will address the potential cliff and slope instability, and to provide landslide risk management (LRM). | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.30 | Mollymook Beach | Design and construct a rock armoured coastal revetment along the Mitchell Parade road reserve shoreline | This option involves the design and construction of a 370 m long rock armoured seawall/revetment, which would be buried under the dunes as a last line of defence to protect Mitchell Parade in between (approximately) 31 and 59 Mitchell Parade. These works would be designed to protect the road at the pinch point where it is currently located within the coastal hazard zone. A 2012 report from consultants RoyalHaskoningDHV estimated cost of the structure is $11.5 million (in 2023 dollars). | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.31A | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 2: Construction | If the investigation, design, and approvals undertaken in Action S1.13 indicate that this Action should proceed, the undertaken construction of the tripper wall structure. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.31B | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 3: Maintenance of the structure | Undertake maintenance of the structure to maintain function and optimise public beach use. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.32 | Mollymook Beach | Dune restoration and access management at South Mollymook | Undertake a program of dune restoration along the 250 m long stretch of foreshore in between Blackwater Creek and the Surf Club. This should include:<br>• Dune restoration and revegetation that removes weeds and plants more appropriate dune species in order to provide greater foreshore stability and promote natural recovery after storms.<br>• Implementation of dune fencing and construction of pedestrian access tracks for formalise access | Coastal hazard protection | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LS.33 | Mollymook Beach | Sand Scraping and dune restoration at North Mollymook | At the northern end of Mollymook Beach (north of Mollymoke Farm Creek), undertake a program of dune restoration in order to increase the beach width and the width of the vegetated dune system (extending it seawards by around 10 m) in order to provide increased protection to Beach Road and associated facilities. This should include:<br>• A program of sand scraping to increase the volume of sand on the upper beach face and increases beach width.<br>• Dune restoration and revegetation that removes weeds and plants more appropriate dune species in order to provide greater foreshore stability and promote natural recovery after storms. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.87 | Golf Course Reef Beach | Upgrade Golf Course Reef Beach car park and foreshore access facilities | The purpose of this Action will be to upgrade the car park and foreshore access facilities - in order to provide increased amenity and to mitigate the erosive impacts of uncontrolled stormwater flows and unrestricted pedestrian and dinghy access to the foreshore. The works associated with this Action should include:<br>• Formalisation of stormwater runoff, and upgrade of the car park facilities.<br>• Formalisation of pedestrian access to the beach<br>• Revegetation of the foreshore with native species<br>As part of this action, Council should engage with Ulladulla LALC and other relevant local Traditional Owner groups to determine best way to provide protection for culturally sensitive areas at Golf Course Reef Beach foreshore and carpark. | Asset management | Active Intervention | SCC | Ulladulla LALC |
| LS.120 | Collers Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.42 | Collers Beach | Dune restoration and carpark upgrade at Collers Beach | This would involve undertaking a program of dune restoration in front of car park and sewage pump station, in order to improve recreational/visual amenity, increased protection for the foreshore and minimise erosion from uncontrolled pedestrian access. This would include:<br>• Dune restoration and revegetation that removes weeds and plants more appropriate dune species in order to provide greater foreshore stability and promote natural recovery after storms.<br>• Increase width of dune vegetation another 5 m landward within Council foreshore reserve, reducing footprint of unsealed car park by 5 m west/ landwards.<br>• Providing a sealed car park for safer vehicle access<br>• Installing a formal pedestrian access point from the car park to the beach | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.101 | Ulladulla Harbour | Stormwater drainage at the northern end of Did-Dell Street | Investigate the opportunities for improving/extending the stormwater drainage pathways at the northern end of Did-Dell Street | Monitoring and improving knowledge | Alert | SCC | N/A |
| LS.121 | Ulladulla Harbour | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.46A | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 1: Design and approvals | Undertake a trial program of ongoing sand relocation (backpassing) from Millards Creek entrance southwards to in front of the seawall and highway. The purpose of these works would be to provide additional dry beach width along the foreshore, and provide additional sand buffer for erosion in front of the revetment works. Works must be undertaken to ensure no negative impacts on flooding in Millards Creek. If the trial proves to be successful, then it could be implemented on a recurring/ongoing basis. The first stage would comprise:<br>A) Foreshore survey and design of the redistribution works<br>B) Undertaking required environmental assessment and obtaining necessary approvals | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.46B | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 2: On-ground works | Undertake the on-ground works as designed in Action LS46.A, including post works monitoring and evaluation | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.47A | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 1: Design and approvals | This would include investigation of the potential for a geotextile container groyne located near the entrance to Millard Creek. The purpose of the structure would be to retain sand in front of the seawall on Central Harbour Beach, and to maintain an open entrance to Millards Creek to mitigate catchment flooding impacts. This could be implemented as a relatively low cost "trial structure", with the to retain the opportunity to remove after a 5 year trial period if the structure if it did not perform according to expectations or if unexpected impacts occurred. Alternatively, once the performance of this structure can be upgrade to a more permanent material (rock armoured groyne), to provide a long-term solution. The first stage would comprise: | Coastal hazard protection | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| | | | A) Concept design of the structure<br>B) Undertaking required environmental assessment and obtaining necessary approvals<br>C) Detailed design of the structure | | | | |
| LS.47B | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 2: Construction | The structure could be implemented as a relatively low cost "trial structure(s)", constructed out of geotextile sand containers (GSCs), with the option to remove the structure after a 10-15 year trial period if the structure if it did not perform according to expectations or if unexpected impacts occurred. Alternatively, if the performance of this structure is proven, it can be upgraded to a more permanent material (rock armoured), to provide an end-state long-term solution. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.47C | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 3: Maintenance of the structure | Undertake maintenance of the structure to maintain function and optimise public beach use. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.48A | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | A formal coastal engineering condition assessment should be undertaken of the existing coastal protection works in front of the Princes Highway, in order to determine its ability to adequately protect the public highway (both now and into the future). The outcome of this assessment should be a clear understanding of:<br>A) The effectiveness of the current coastal protection works<br>B) The nature and extent (if any) of any potential upgrades or maintenance works required to achieve the intended level of protection. | Coastal hazard protection | Active Intervention | SCC | TfNSW |
| LS.48B | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 2: Implementation | If the outcomes of LS.48A indicate that upgrades or maintenance works are required, then these should be implemented in line with the recommendations of LS.48A. This would also include obtaining any relevant approvals and environmental assessments required to undertake the works. | Coastal hazard protection | Active Intervention | SCC | TfNSW |
| LS.51 | Ulladulla Harbour | Foreshore restoration works at Central Harbour Beach | In between car park and seawall, undertake dune vegetation restoration works (to replace current lawn along the foreshore), and install formal access points | Environmental protection and restoration | Active Intervention | SCC | N/A |
| LS.52 | Ulladulla Harbour | Install dinghy racks | Determine appropriate location for, and install dinghy racks by the car park. | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.53 | Ulladulla Harbour | Erosion monitoring at South Ulladulla Harbour Beach | Monitor South Ulladulla Harbour Beach for erosion impacts resulting from vertical shotcrete seawall | Monitoring and improving knowledge | Alert | SCC | N/A |
| LS.122 | Rennies Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.103 | Racecourse Beach | Undertake a subsurface investigation at the southern end of the Racecourse Beach | Undertake a subsurface investigation at the southern end of the Racecourse Beach study area to determine if the subsurface profile comprises Pleistocene sandy soils, to confirm, revise or remove hazard lines in the current assessment. | Monitoring and improving knowledge | Alert | SCC | N/A |
| LS.59 | Racecourse Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | Investigate land use planning options for improved coastal and environmental management - including potential rezoning Lot 2 DP 1265528 and Lot 7041 DP 1059893 from a RE1 (Public Recreation) to a C2 (Environmental Conservation), in order to provide enhanced protection to the local dune system. | Planning and adaptation | Avoid Future Impact | SCC | N/A |
| LS.105 | Burrill Beach | Install drainage along the downslope side of Seaside Parade | Install drainage along the downslope side of Seaside Parade, in order to reduce prolonged or excessive saturation of the soil, and erosion due to uncontrolled runoff. This would reduce the risk of coastal cliff and slope instability. | Coastal hazard protection | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LS.123 | Burrill Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.60 | Burrill Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | Investigate land use planning options for improved coastal and environmental management - including potential rezoning Lot 7002 DP 1050294 from a RE1 (Public Recreation) to a C2 (Environmental Conservation), in order to provide enhanced protection to the local dune system. | Planning and adaptation | Avoid Future Impact | SCC | N/A |
| LS.124 | Wairo Beach | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.66 | Wairo Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | Investigate land use planning options for improved coastal and environmental management - including potential rezoning Lot 2 DP 1134134 from a RE1 (Public Recreation) to a C2 (Environmental Conservation), in order to provide enhanced protection to the local dune system. | Planning and adaptation | Avoid Future Impact | SCC | N/A |
| LS.125 | Lake Tabourie | Maintain, repair, upgrade, and rationalise beach access tracks | Maintain, repair, upgrade, and rationalise beach access tracks at this location, as detailed in the findings of the Shoalhaven Beaches Asset Management Strategy (Advisian, 2021), and based on contemporary monitoring and inspections by Council (2023). | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.70 | Bawley Beach | Dune building and restoration | Provide increased protection for the Balwey Beach car park and boat ramp by undertaking a localised dune building and restoration across the 35 m stretch of foreshore in front of the car park. This could include scraping sand from lower on the beach profile (from the salient behind the local nearshore reef) to create a wider and more densely vegetated dune system. Dune revegetation works should focus on removal of weeds, and replanting of native primary and secondary dune vegetation. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.71 | Bawley Point Headland | Upgrade and formalise parking facilities and pedestrian access to the Bawley Point Headland and the Gantry. | Upgrade the existing parking and access facilities in order to provide safer and access and increased capacity. These works should also include adequate vehicle restrictions (through fencing and sandstone blockwork) to prevent unauthorised vehicle access beyond the parking section. | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.106 | Cormorant Beach | Subsurface investigations Bawley Beach, Cormorant Beach, and Gannet Beaches. | Undertake subsurface investigations for the beaches in between rocky coastlines in this area (including Bawley Beach, Cormorant Beach, and Gannet Beach) to determine if the subsurface profile comprises sandy soils, to confirm, revise or remove hazard lines in the current assessment. | Monitoring and improving knowledge | Alert | SCC | N/A |
| LS.72 | Cormorant Beach | Develop an entrance management policy for the Cormorant Beach Lagoon | This would involve the preparation of a Council policy for the opening of the estuary. It would involve an investigation into whether there is a substantial need to artificially open the estuary entrance for flood mitigation purposes, particularly for the surrounding properties along Terragong Ave, Lurnea Ave, Murramarang Rd, and Tingira Dr. Council is currently preparing the Willinga Lake Flood Study which includes the Bawley Point catchments, and this action would be triggered following its completion.<br><br>It should be noted that the NSW State Government supports minimal interference with estuary entrance barriers and advocates natural processes being allowed to operate to the greatest extent possible. It does not support the artificial opening of an estuary unless it can be demonstrated that the social, environmental and economic benefits greatly outweigh any potential adverse environmental impacts to the Cormorant Beach Wetlands (which are mapped as state significant coastal wetlands under the Resilience and Hazards State Environmental Planning Policy). | Coastal hazard protection | Alert | SCC | N/A |
| LS.73 | Cormorant Beach | Install a water level gauge in the Cormorant Beach Lagoon | This will involve installation of a water level gauge within the lagoon/wetlands. The purpose of this will be to:<br>• To improve management of flood risk for local residents by monitoring & publishing water levels in real time.<br>• To provide a dataset to improve the understanding of physical processes working in the wetlands (including water levels, hydrodynamics and entrance opening / closing regime). | Monitoring and improving knowledge | Alert | SCC | N/A |
| LS.74 | Cormorant Beach | Cormorant beach pedestrian access management | Provide stabilisation to the pinch point between the estuary entrance and Tingara Drive by using fencing to direct all pedestrian access through the existing formal access point. The fenced off area should become a localised point of restoration, with additional revegetation work to provide stability - including the planting of deep rooted vegetation. | Environmental protection and restoration | Active Intervention | SCC | N/A |

| ID | Locality | Option Name | Option Description | Option Category | Management Approach | Lead | Support |
|---|---|---|---|---|---|---|---|
| LS.107 | Gannet Beach | Install drainage along the downslope side of Malibu Drive. | Install drainage along the downslope side of Malibu Drive, in order to reduce prolonged or excessive saturation of the soil, and erosion due to uncontrolled runoff. This would reduce the risk of coastal cliff and slope instability. | Recreational amenity & safety | Active Intervention | SCC | N/A |
| LS.110A | Kioloa Beach | Kioloa Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | A formal coastal engineering condition assessment should be undertaken of the existing coastal protection works that extend from in front of car park up around to the Marine Rescue building. This assessment should also include a geotechnical investigation in order to determine the subsurface conditions around the Marine Rescue building and its exposure to coastal erosion. The outcome of this assessment should be a clear understanding of:<br>A) The effectiveness of the current coastal protection works along the Kioloa foreshore<br>B) The nature and extent (if any) of any potential upgrades or maintenance works required to achieve the intended level of protection - and prevent undermining and structural failure of the carpark and Marine Rescue building. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.110B | Kioloa Beach | Kioloa Coastal Protection Works - Stage 2: Implementation | If the outcomes of LS.110A indicate that upgrades or maintenance works are required, then these should be implemented in line with the recommendations of LJ.04A. This would also include obtaining any relevant approvals and environmental assessments required to undertake the works. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.82 | Kioloa Beach | Stormwater formalisation along seaward end of Scerri Drive | Install kerb and guttering along seaward end of Scerri Drive to prevent overland flow from exacerbating local beach erosion and dune instability in front of the road. This Action could be included as part of any future coastal protection upgrade works. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.83 | Merry Beach | Formalise access and increase foreshore resilience | Use dune fencing to formalise access to the beach (at both the north and central access points) and provide protection for the local foredunes vegetation. This could be accompanied by strategic planting of native dune vegetation. | Environmental protection and restoration | Active Intervention | SCC | N/A |
| LS.108 | Depot Beach | Install drainage along the downslope side of Fairly Street and Depot Beach Road | Install drainage along the downslope side of Fairly Street and Depot Beach Road - in order to reduce prolonged or excessive saturation of the soil, and erosion due to uncontrolled runoff. This would reduce the risk of coastal cliff and slope instability. | Coastal hazard protection | Active Intervention | SCC | N/A |
| LS.84 | Depot Beach | Long term adaptation pathway for the Depot Beach vehicle access track | Engage with the National Parks and Wildlife Service to discuss long term future management of the Depot Gutter Road vehicle access track. Options include realignment of the road to a more landwards location, and eventual abandonment of the road. | Planning and adaptation | Planning for Change | SCC | NPWS |
| LS.85 | Depot Beach | Dune building and restoration | Engage with the National Parks and Wildlife Service to discuss restoration of the foredune along the length of the Depot Gutter Road vehicle access track, in order to provide increased stability of the foreshore in the short term. | Coastal hazard protection | Active Intervention | NPWS | SCC |
| LS.86 | North Durras Beach | Foreshore management works at the North Durras Creek entrance. | Engage with the National Parks and Wildlife Service to develop a program of foreshore management works at the North Durras Creek Entrance. This could include:<br>• Foreshore stabilisation works to protect the access road. Works would need to be confined to areas outside of the Habitat Protection Zone within Batemans Marine Park (that is, above the above Mean High Water level).<br>• Formalisation of local stormwater to prevent overland flows exacerbating erosion of the foreshore. | Coastal hazard protection | Active Intervention | SCC | NPWS |

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

# APPENDIX B
# FEASABILITY AND ACCEPTABILITY ASSESSMENT RESULTS

**Table B-1 Feasibility & Acceptability Scores**

| *Action Information* | | | Acceptability | | | | Feasibility | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Degree of Risk Mitigation | | | | Environmental Impacts | | | Social Impacts | | | | | Total |
| *Action ID* | *Locality* | *Action Name* | Community | Stakeholders | First Nations | Acceptability Score | Level of Risk Mitigated | Risk Rating | Effectiveness | Risk Mitigation Score | Coastal Processes | Environment & Biodiversity | Water Quality | Social Amenity | Public Safety | ACH | Alignment with Plans & Policy | Scale Factor | Feasibility Score |
| S1.01 | Study Area Wide | Establish a CMP governance framework | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +3 | +3 | +3 | +3 | +3 | +3 | +3 | 2 | **+66** |
| S1.02 | Study Area Wide | Establish two new Full Time Equivalent (FTE) Coast & Estuary Officer roles within Council. | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +3 | +3 | +3 | +3 | +3 | +3 | +3 | 2 | **+66** |
| S1.03 | Study Area Wide | Develop and execute a communications plan for Stage 5 of the CMP | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +2 | +8 | +1 | +1 | +1 | +2 | +2 | +2 | +3 | 2 | **+40** |
| S1.04 | Study Area Wide | Develop and implement a program to monitor key environmental parameters relevant to coastal management | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +2 | +8 | +2 | +2 | +2 | +2 | +2 | +2 | +3 | 2 | **+46** |
| S1.05 | Study Area Wide | Maintain and where necessary expand upon the Council's BeachStat dashboard for the Shoalhaven LGA | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +2 | +2 | +2 | +2 | +2 | +2 | +3 | 2 | **+42** |
| S1.06 | Study Area Wide | Maintain and update the CoastSnap camera cradle locations across the Shoalhaven LGA | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +2 | +2 | +1 | +1 | +1 | +1 | +3 | 2 | **+34** |
| S1.07 | Study Area Wide | Develop and implement a program for regular and ongoing monitoring of coastal assets and infrastructure | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +1 | +1 | +1 | +2 | +3 | +1 | +3 | 2 | **+42** |
| S1.08 | Study Area Wide | Enact the CMPs Monitoring, Evaluation and Reporting (MER) Program for the CMP | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +1 | +1 | +1 | +1 | +1 | +1 | +3 | 2 | **+30** |
| S1.09 | Study Area Wide | Continue ongoing collaboration with state government agencies and research institutions | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +1 | +3 | +2 | +2 | +2 | +2 | +2 | +2 | +3 | 2 | **+36** |
| S1.10 | Study Area Wide | Undertake a Feasibility Study to assess the potential for sustainable and economical utilisation of offshore sand resources for large scale beach nourishment across the LGA | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +3 | +1 | +1 | +3 | +3 | +1 | 0 | 2 | **+48** |
| S1.12 | Study Area Wide | Monitoring of locations identified as being at risk of coastal cliff and slope instability. | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +3 | +2 | 0 | +1 | +2 | 0 | +3 | 2 | **+34** |
| S1.13 | Study Area Wide | Feasibility investigations, design, and approvals for creek entrance tripper walls at Mollymook Beach, Manyana Beach, and Hyams Beach | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | -1 | +2 | 0 | +2 | +2 | 0 | +2 | 1 | **+13** |
| S2.01 | Study Area Wide | Develop and maintain an ongoing program of community engagement with coastal communities - about coastal hazard risk and the importance of coastal management | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +3 | +3 | +1 | +1 | +1 | +1 | +3 | 2 | **+38** |
| S2.02 | Study Area Wide | Develop and maintain an ongoing program of community engagement with coastal communities - about the geotechnical hazard risk and the importance of coastal management | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +2 | +3 | +1 | +1 | +1 | +1 | +3 | 2 | **+36** |
| S2.05 | Study Area Wide | Provide rockfall signage for the exposed cliff lines of applicable cliffs | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | 0 | +3 | 0 | +3 | 2 | **+36** |
| S3.01 | Study Area Wide | Activate the "Coastal Hazard Emergency Action Sub-Plans" (CZEAS) for each beach as required after storm events. | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +3 | +2 | +1 | +2 | +3 | +1 | +3 | 2 | **+54** |
| S3.02 | Study Area Wide | Develop a Tide Alert Calendar, and encourage citizen science in monitoring tidal inundation | N/A | N/A | N/A | **3.0** | High | +3 | +2 | +6 | 0 | 0 | 0 | +3 | +3 | 0 | +3 | 2 | **+30** |
| S4.01 | Study Area Wide | Review Councils coastal management planning policies every 10 years | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +2 | +1 | +1 | +1 | +2 | +1 | +3 | 2 | **+40** |

| Action Information | | | Acceptability | | | | Feasibility | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Degree of Risk Mitigation | | | | Environmental Impacts | | | Social Impacts | | | | | Total |
| *Action ID* | *Locality* | *Action Name* | Community | Stakeholders | First Nations | Acceptability Score | Level of Risk Mitigated | Risk Rating | Effectiveness | Risk Mitigation Score | Coastal Processes | Environment & Biodiversity | Water Quality | Social Amenity | Public Safety | ACH | Alignment with Plans & Policy | Scale Factor | Feasibility Score |
| S4.02 | Study Area Wide | Maintain planning controls to reduce future coastal hazard impacts | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +2 | +1 | +1 | +1 | +2 | +1 | +3 | 2 | **+46** |
| S4.05 | Study Area Wide | Fill information gaps in Council's existing coastal hazard mapping dataset. | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +3 | +2 | 0 | +2 | +3 | 0 | +3 | 2 | **+50** |
| S5.01 | Study Area Wide | Continue Councils program of mapping threatened ecological communities (TECs) across coastal reserves | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +1 | +3 | +1 | 0 | 0 | +2 | +3 | 2 | **+32** |
| S5.02 | Study Area Wide | Maintain and enhance ecological communities in coastal reserves (including dunes), considering appropriate ecological strategies for urban (foreshore recreation reserve) and non-urban areas | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +1 | +3 | +1 | 0 | 0 | +2 | +3 | 2 | **+38** |
| S5.03 | Study Area Wide | Engage with SLSCs in order to develop a suite of dune vegetation management plans for the coastal dunes in front of all SLSC building and lifeguard towers on patrolled beaches | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +2 | +3 | 0 | 0 | +2 | +1 | +3 | 2 | **+40** |
| S6.02 | Study Area Wide | Undertake a LGA wide coastal zone Aboriginal Cultural Heritage Survey, and development of local protection/management plans | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +2 | 0 | +3 | +3 | 2 | **+40** |
| S6.03 | Study Area Wide | Engage with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to develop a cultural educational and awareness program | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +3 | 0 | +3 | +3 | 2 | **+42** |
| S6.04 | Study Area Wide | Provide opportunities and help build capacity to local Aboriginal Ranger programs, to enhance their role in management of Sea Country across the LGA | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +1 | +2 | 0 | +3 | 0 | +3 | +3 | 2 | **+42** |
| S7.01 | Study Area Wide | Review and update all Council asset management plans (AMPs), relevant to the coastal zone. | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +1 | +1 | +1 | 0 | +3 | 0 | +3 | 2 | **+30** |
| S7.03 | Study Area Wide | Implement high priority (and other relevant) actions from the hydraulic assessment report to manage stormwater drainage adjacent to or within identified coastal cliffs and slopes risk areas | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +1 | +1 | +1 | +1 | +3 | 0 | +3 | 2 | **+44** |
| S7.04 | Study Area Wide | Shoalhaven Open Coast Boating Infrastructure Plan: Stage 1 Plan Development | N/A | N/A | N/A | **3.0** | High | +3 | +3 | +9 | +1 | 0 | +1 | +3 | +3 | 0 | +3 | 2 | **+40** |
| S7.05 | Study Area Wide | Implement the findings of the Shoalhaven Beaches Asset Management Strategy and incorporate into the relevant SCC Asset Management Plan. | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +3 | +6 | +1 | +2 | 0 | +2 | +3 | +1 | +3 | 2 | **+36** |
| LN.01 | Shoalhaven Heads | Assess the condition of the SLSC rock revetment | 0.67 | 1.0 | 1.0 | **2.7** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +2 | +3 | 0 | +3 | 1 | **+20** |
| LN.02 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option A – refurbish existing seawall | 0.50 | 1.0 | 1.0 | **2.5** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +3 | +3 | 0 | +2 | 1 | **+20** |
| LN.03 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option B – relocate SLSC landwards | 0.50 | 1.0 | 1.0 | **2.5** | Extreme | +4 | +3 | +12 | +1 | +1 | +1 | +2 | +3 | 0 | +3 | 1 | **+23** |
| LN.04 | Shoalhaven Heads | Opportunistic nourishment of foreshore and beaches | 0.57 | 1.0 | 1.0 | **2.6** | High | +3 | +2 | +6 | +3 | +3 | 0 | +2 | +2 | 0 | +3 | 1 | **+19** |
| LN.35 | Shoalhaven Heads | Monitor performance of the SLSC dune restoration works | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +1 | +4 | +1 | +1 | 0 | +3 | +3 | +1 | +3 | 1 | **+16** |
| LN.36 | Crookhaven Heads | Install drainage along the downslope side of roads and tracks to minimise overland flow erosion near the Community Nursery | N/A | N/A | N/A | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +1 | +1 | +1 | +3 | 1 | **+11** |

| Action Information | | | Acceptability | | | | Feasibility | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Degree of Risk Mitigation | | | | Environmental Impacts | | | Social Impacts | | | | | Total |
| *Action ID* | *Locality* | *Action Name* | Community | Stakeholders | First Nations | Acceptability Score | Level of Risk Mitigated | Risk Rating | Effectiveness | Risk Mitigation Score | Coastal Processes | Environment & Biodiversity | Water Quality | Social Amenity | Public Safety | ACH | Alignment with Plans & Policy | Scale Factor | Feasibility Score |
| LN.07 | Culburra Beach | Passive relocation of northern access loop road when damaged by storm events - to a more landwards location within existing parcel | 0.80 | 1.0 | 1.0 | **2.8** | Moderate | +2 | +3 | +6 | 0 | 0 | 0 | +2 | +3 | 0 | +3 | 1 | **+14** |
| LN.08 | Culburra Beach | Construct a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach | 0.69 | 1.0 | 1.0 | **2.7** | Extreme | +4 | +3 | +12 | -2 | -2 | 0 | -2 | +2 | -2 | +1 | 1 | **+7** |
| LN.37 | Culburra Beach | Formalise drainage along the downslope side of Allerton Avenue | N/A | N/A | N/A | **3.0** | Moderate | +2 | +1 | +2 | +1 | 0 | 0 | +1 | +1 | 0 | +3 | 1 | **+8** |
| LN.42 | Culburra Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 0.90 | 1.0 | 1.0 | **2.9** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LN.17 | Warrain Beach | Long term adaptation pathway for SLSC building: Option A – relocate SLSC landwards | 0.71 | 1.0 | 1.0 | **2.7** | Extreme | +4 | +3 | +12 | +1 | +1 | +1 | +2 | +3 | 0 | +3 | 1 | **+23** |
| LN.18 | Warrain Beach | Long term adaptation pathway for SLSC building: Option B – coastal protection works | 0.63 | 1.0 | 1.0 | **2.6** | Extreme | +4 | +3 | +12 | -3 | -3 | 0 | -1 | +3 | -2 | +1 | 1 | **+7** |
| LN.23A | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 1: Undertake investigations, detailed design, and approvals | 0.00 | 1.0 | 1.0 | **2.0** | Extreme | +4 | +3 | +12 | -1 | -1 | 0 | +3 | +3 | 0 | +1 | 1 | **+17** |
| LN.23B | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 2: Construction | 0.00 | 1.0 | 1.0 | **2.0** | Extreme | +4 | +3 | +12 | -1 | -1 | 0 | +3 | +3 | 0 | +1 | 1 | **+17** |
| LN.23C | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 3: Maintenance of the structure | 0.00 | 1.0 | 1.0 | **2.0** | Extreme | +4 | +3 | +12 | -1 | -1 | 0 | +3 | +3 | 0 | +1 | 1 | **+17** |
| LN.24A | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 1: Undertake investigations and concept design | N/A | 0.5 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | -1 | +2 | 0 | +3 | +3 | 0 | +2 | 1 | **+21** |
| LN.24B | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 2: Detailed design, approvals, and construction | N/A | 0.5 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | -1 | +2 | 0 | +3 | +3 | 0 | +2 | 1 | **+21** |
| LN.24C | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) -Stage 3: Maintenance of the structure | N/A | 0.5 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | -1 | +2 | 0 | +3 | +3 | 0 | +2 | 1 | **+21** |
| LN.25 | Currarong Beach | Long term adaptation pathway for mitigating coastal inundation hazard of Currarong Road | 0.67 | 1.0 | 1.0 | **2.7** | Low | +1 | +2 | +2 | 0 | -1 | 0 | +2 | +2 | 0 | +3 | 1 | **+8** |
| LN.26 | Currarong Beach | Long term adaptation pathway for mitigating coastal erosion hazard of Currarong Road | 0.67 | 1.0 | 1.0 | **2.7** | Low | +1 | +2 | +2 | -1 | 0 | 0 | +2 | +2 | 0 | +3 | 1 | **+8** |
| LN.27 | Currarong Beach | Wastewater Management Plan | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | 0 | 0 | +3 | +3 | +2 | 0 | +3 | 1 | **+17** |
| LN.29 | Currarong Beach | Improving recreational access during peak summer periods | 0.67 | 1.0 | 1.0 | **2.7** | Low | +1 | +3 | +3 | 0 | -1 | 0 | +2 | 0 | 0 | +2 | 1 | **+6** |
| LN.39 | Currarong Beach | Install gutters and downpipes for recreational assets at Beecroft Parade coastal reserve | N/A | N/A | N/A | **3.0** | Low | +1 | +2 | +2 | 0 | 0 | 0 | 0 | +1 | 0 | +3 | 1 | **+6** |
| LN.40 | Currarong Beach | Design and construction of a rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent | N/A | N/A | N/A | **3.0** | Extreme | +4 | +3 | +12 | -2 | -2 | 0 | -2 | +2 | -1 | +2 | 1 | **+9** |
| LN.43 | Currarong Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 0.90 | 1.0 | 1.0 | **2.9** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LJ.00 | Callala Bay | Callala Bay Coastal Processes and Hazard Definition Study | N/A | N/A | N/A | **3.0** | Extreme | +4 | +3 | +12 | +3 | +1 | +1 | +1 | +1 | +1 | +3 | 1 | **+23** |
| LJ.01A | Callala Bay | Callala Bay Groyne Structure(s) - Stage 1: Detailed design, approvals, and construction | N/A | 0.5 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | -1 | +1 | 0 | +3 | +2 | 0 | +2 | 1 | **+19** |
| LJ.01B | Callala Bay | Callala Bay Groyne Structure(s) - Stage 2: Maintenance of the structure | N/A | 0.5 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | -1 | +1 | 0 | +3 | +2 | 0 | +2 | 1 | **+19** |

| Action Information | | | Acceptability | | | | Feasibility | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Degree of Risk Mitigation | | | | Environmental Impacts | | | Social Impacts | | | | | Total |
| *Action ID* | *Locality* | *Action Name* | Community | Stakeholders | First Nations | Acceptability Score | Level of Risk Mitigated | Risk Rating | Effectiveness | Risk Mitigation Score | Coastal Processes | Environment & Biodiversity | Water Quality | Social Amenity | Public Safety | ACH | Alignment with Plans & Policy | Scale Factor | Feasibility Score |
| LJ.02 | Callala Bay | Callala Bay beach nourishment/scraping and foreshore restoration | 0.80 | 1.0 | 1.0 | **2.8** | Extreme | +4 | +3 | +12 | +2 | +3 | 0 | +2 | +1 | 0 | +3 | 1 | **+23** |
| LJ.03 | Callala Bay | Sheaffe Street stormwater improvements | 0.86 | 1.0 | 1.0 | **2.9** | High | +3 | +3 | +9 | +2 | +1 | +1 | +2 | +2 | 0 | +3 | 1 | **+20** |
| LJ.04A | Callala Bay | Sailing Club Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +3 | +2 | 0 | +3 | 1 | **+20** |
| LJ.04B | Callala Bay | Sailing Club Coastal Protection Works - Stage 2: Implementation | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +3 | +2 | 0 | +3 | 1 | **+20** |
| LJ.44 | Callala Bay | Upgrade Callala Bay car park and foreshore access facilities | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +2 | +2 | 0 | +3 | +2 | 0 | +3 | 1 | **+21** |
| LJ.45 | Callala Bay | Addition of signage advising of overflow boat and trailer parking | N/A | N/A | N/A | **3.0** | Low | +1 | +1 | +1 | 0 | 0 | 0 | +3 | +1 | 0 | +3 | 1 | **+8** |
| LJ.55 | Callala Bay | Design and construction of a rock armoured seawall along the Callala Bay foreshore | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | -3 | -2 | 0 | -2 | +2 | -1 | +2 | 1 | **+8** |
| LJ.56 | Callala Bay | Maintain, repair, upgrade, and rationalise beach access tracks | 0.82 | 1.0 | 1.0 | **2.8** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LJ.13 | Callala Beach | Adaptation pathway for Community Hall and tennis club facilities | 0.36 | 1.0 | 1.0 | **2.4** | Extreme | +4 | +3 | +12 | +2 | +2 | 0 | 0 | +3 | 0 | +3 | 1 | **+22** |
| LJ.48 | Callala Beach | Empower local residents to engage in best practice foreshore management | N/A | N/A | N/A | **3.0** | Extreme | +4 | +3 | +12 | +3 | +3 | 0 | +2 | +1 | +1 | +3 | 1 | **+25** |
| LJ.57 | Callala Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 0.65 | 1.0 | 1.0 | **2.7** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LJ.17A | Huskisson | Upgrade the Huskisson Sea Pool, as per the 2022 Detailed Design Report | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | 0 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+18** |
| LJ.17B | Huskisson | Refurbish the coastal protection works for the Huskisson Sea Pool. | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | 0 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+18** |
| LJ.19 | Huskisson | Foreshore management works at Moona Moona Creek Entrance. | 0.82 | 1.0 | 1.0 | **2.8** | High | +3 | +3 | +9 | +2 | +1 | +1 | +2 | +3 | 0 | +3 | 1 | **+21** |
| LJ.20 | Huskisson | Sand Scraping Program for Moona Moona Creek foreshore. | 0.31 | 1.0 | 1.0 | **2.3** | Moderate | +2 | +1 | +2 | -1 | -1 | 0 | +1 | +1 | 0 | +2 | 1 | **+4** |
| LJ.58 | Huskisson | Maintain, repair, upgrade, and rationalise beach access tracks | 0.85 | 1.0 | 1.0 | **2.9** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LJ.24 | Collingwood Beach | Stormwater Management Plan for Collingwood Beach | 0.58 | 1.0 | 1.0 | **2.6** | Moderate | +2 | +2 | +4 | +1 | +1 | +3 | +1 | +2 | 0 | +3 | 1 | **+15** |
| LJ.25 | Collingwood Beach | Stormwater outlet upgrade at Church St | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +2 | +2 | +3 | +1 | +2 | 0 | +3 | 1 | **+19** |
| LJ.26 | Collingwood Beach | Stormwater outlet upgrade at Bayswater Rd | 0.91 | 1.0 | 1.0 | **2.9** | High | +3 | +2 | +6 | +2 | +2 | +3 | +1 | +2 | 0 | +3 | 1 | **+19** |
| LJ.27 | Collingwood Beach | Adaptation / protection of Wastewater Assets | 0.80 | 1.0 | 1.0 | **2.8** | High | +3 | +3 | +9 | 0 | 0 | +3 | +2 | +3 | 0 | +3 | 1 | **+20** |
| LJ.28 | Collingwood Beach | Adaptation / protection of Wastewater Assets | 0.71 | 1.0 | 1.0 | **2.7** | High | +3 | +3 | +9 | 0 | 0 | +3 | +2 | +3 | 0 | +3 | 1 | **+20** |
| LJ.29 | Collingwood Beach | Design and construction of a rock armoured seawall along Ilfracombe Avenue | 0.67 | 1.0 | 1.0 | **2.7** | Extreme | +4 | +3 | +12 | -1 | -1 | 0 | 0 | -2 | -2 | +1 | 1 | **+7** |
| LJ.30 | Collingwood Beach | Continue Collingwood Beach bush regeneration works | N/A | N/A | N/A | **3.0** | Extreme | +4 | +2 | +8 | +3 | +3 | +1 | +1 | +1 | 0 | +3 | 1 | **+20** |
| LJ.59 | Collingwood Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 0.55 | 1.0 | 1.0 | **2.6** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LJ.36 | Vincentia | Undertake dune restoration at Nelsons Beach | 0.92 | 1.0 | 1.0 | **2.9** | Moderate | +2 | +2 | +4 | +1 | +2 | +1 | +2 | +1 | 0 | +3 | 1 | **+14** |
| LJ.50 | Vincentia | Vegetation planting on Vincent Street to help improve foreshore slope stability | N/A | N/A | N/A | **3.0** | Low | +1 | +3 | +3 | +2 | +3 | +1 | +2 | +2 | 0 | +3 | 1 | **+16** |
| LJ.51 | Vincentia | Fill surface depressions in the Plantation Point public reserve | N/A | N/A | N/A | **3.0** | Low | +1 | +1 | +1 | 0 | 0 | 0 | 0 | +1 | 0 | +3 | 1 | **+5** |
| LJ.52 | Vincentia | Undertake a geotechnical assessment at the Southern end of Nelsons Beach | N/A | N/A | N/A | **3.0** | Moderate | +2 | +1 | +2 | 0 | 0 | 0 | 0 | +2 | 0 | +3 | 1 | **+7** |
| LJ.53 | Vincentia | Provide dinghy storage | N/A | N/A | N/A | **3.0** | Low | +1 | +2 | +2 | +1 | +2 | 0 | +2 | 0 | 0 | +3 | 1 | **+10** |

| Action Information | | | Acceptability | | | | Feasibility | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Degree of Risk Mitigation | | | | Environmental Impacts | | | Social Impacts | | | | | Total |
| *Action ID* | *Locality* | *Action Name* | Community | Stakeholders | First Nations | Acceptability Score | Level of Risk Mitigated | Risk Rating | Effectiveness | Risk Mitigation Score | Coastal Processes | Environment & Biodiversity | Water Quality | Social Amenity | Public Safety | ACH | Alignment with Plans & Policy | Scale Factor | Feasibility Score |
| LJ.39A | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 2: Construction | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +2 | 0 | 0 | +3 | +2 | 0 | +3 | 1 | **+19** |
| LJ.39B | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 3: Maintenance of the structure | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +2 | 0 | 0 | +3 | +2 | 0 | +3 | 1 | **+19** |
| LJ.43 | Hyams Beach | Little Hyams Beach dune management | 0.50 | 1.0 | 1.0 | **2.5** | Moderate | +2 | +3 | +6 | +3 | +3 | +1 | +1 | +2 | 0 | +3 | 1 | **+19** |
| LS.01 | Cudmirrah Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +3 | +6 | +3 | +3 | 0 | 0 | +1 | +3 | +3 | 1 | **+19** |
| LS.113 | Berrara | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.03 | Bendalong Point | Foreshore restoration works at the Bendalong foreshore | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +2 | +3 | +1 | +1 | +3 | +1 | +3 | 1 | **+23** |
| LS.04 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option A: Coastal Protection Works | 0.33 | 1.0 | 1.0 | **2.3** | High | +3 | +3 | +9 | -2 | -1 | 0 | -1 | +3 | 0 | +1 | 1 | **+9** |
| LS.05 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option B: Reroute Road Access | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | 0 | -2 | 0 | -1 | +3 | -2 | +3 | 1 | **+10** |
| LS.06 | Bendalong Point | Washerwomans Beach dune restoration | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | +2 | +3 | +1 | +2 | +1 | +1 | +3 | 1 | **+22** |
| LS.114 | Bendalong Point | Maintain, repair, upgrade, and rationalise beach access tracks | 0.94 | 1.0 | 1.0 | **2.9** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.89 | Bendalong Point | Investigate the most appropriate way to direct stormwater from Holly Street | N/A | N/A | N/A | **3.0** | Low | +1 | +2 | +2 | +1 | 0 | 0 | +1 | +2 | 0 | +3 | 1 | **+9** |
| LS.115 | Inyadda Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 0.50 | 1.0 | 1.0 | **2.5** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.116 | Manyana Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.16A | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 2: Construction | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | -1 | +2 | 0 | +2 | +2 | 0 | +2 | 1 | **+11** |
| LS.16B | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 3: Maintenance of the structure | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | -1 | +2 | 0 | +2 | +2 | 0 | +2 | 1 | **+11** |
| LS.117 | Cunjurong Point | Maintain, repair, upgrade, and rationalise beach access tracks | 0.50 | 1.0 | 1.0 | **2.5** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.20 | Conjola Area | Opportunistic nourishment of beaches adjacent to Conjola | 0.11 | 1.0 | 1.0 | **2.1** | High | +3 | +2 | +6 | +3 | +3 | 0 | +2 | +2 | 0 | +3 | 1 | **+19** |
| LS.118 | Narrawallee Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.22 | Narrawallee Beach | Dune maintenance | 1.00 | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +2 | +3 | +1 | +2 | +2 | 0 | +3 | 1 | **+25** |
| LS.111 | Mollymook Beach | Stormwater outfall works and dune restoration | N/A | N/A | N/A | **3.0** | High | +3 | +2 | +6 | +2 | +2 | 0 | +2 | +2 | 0 | +3 | 1 | **+17** |
| LS.119 | Mollymook Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.27 | Mollymook Beach | South Mollymook Coastal Protection Works | 1.00 | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+21** |
| LS.28 | Mollymook Beach | Landslide area rehabilitation at Mitchell Parade. | 1.00 | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +2 | +3 | 0 | +3 | 1 | **+20** |
| LS.29 | Mollymook Beach | Landslide risk management (LRM) recommendations for lookout at Bannisters Point | 1.00 | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +2 | +3 | 0 | +3 | 1 | **+20** |
| LS.30 | Mollymook Beach | Design and construct a rock armoured coastal revetment along the Mitchell Parade road reserve shoreline | N/A | N/A | N/A | **3.0** | Extreme | +4 | +3 | +12 | -1 | -2 | 0 | +2 | +3 | -1 | +1 | 1 | **+14** |
| LS.31A | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 2: Construction | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | -1 | +1 | 0 | +3 | +3 | 0 | +2 | 1 | **+17** |

| Action Information | | | Acceptability | | | | Feasibility | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Degree of Risk Mitigation | | | | Environmental Impacts | | | Social Impacts | | | | | Total |
| *Action ID* | *Locality* | *Action Name* | Community | Stakeholders | First Nations | Acceptability Score | Level of Risk Mitigated | Risk Rating | Effectiveness | Risk Mitigation Score | Coastal Processes | Environment & Biodiversity | Water Quality | Social Amenity | Public Safety | ACH | Alignment with Plans & Policy | Scale Factor | Feasibility Score |
| LS.31B | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 3: Maintenance of the structure | N/A | 1.0 | 1.0 | **3.0** | High | +3 | +3 | +9 | -1 | +1 | 0 | +3 | +3 | 0 | +2 | 1 | **+17** |
| LS.32 | Mollymook Beach | Dune restoration and access management at South Mollymook | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +3 | +6 | +1 | +3 | +1 | +2 | +2 | 0 | +3 | 1 | **+18** |
| LS.33 | Mollymook Beach | Sand Scraping and dune restoration at North Mollymook | 1.00 | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +3 | +2 | +1 | +2 | +2 | 0 | +3 | 1 | **+25** |
| LS.87 | Golf Course Reef Beach | Upgrade Golf Course Reef Beach car park and foreshore access facilities | N/A | N/A | N/A | **3.0** | High | +3 | +3 | +9 | +2 | +2 | 0 | +3 | +1 | +3 | +3 | 1 | **+23** |
| LS.120 | Collers Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.42 | Collers Beach | Dune restoration and carpark upgrade at Collers Beach | 1.00 | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | +1 | +2 | +1 | +1 | +1 | 0 | +3 | 1 | **+21** |
| LS.101 | Ulladulla Harbour | Stormwater drainage at the northern end of Did-Dell Street | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | 0 | 0 | 0 | 0 | +1 | 0 | +3 | 1 | **+8** |
| LS.121 | Ulladulla Harbour | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.46A | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 1: Design and approvals | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +1 | +2 | 0 | -1 | 0 | +1 | +1 | 0 | +3 | 1 | **+6** |
| LS.46B | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 2: On-ground works | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +1 | +2 | 0 | -1 | 0 | +1 | +1 | 0 | +3 | 1 | **+6** |
| LS.47A | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 1: Design and approvals | N/A | 1.0 | 0.0 | **3.0** | Moderate | +2 | +2 | +4 | -2 | 0 | 0 | +1 | +1 | 0 | +2 | 1 | **+6** |
| LS.47B | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 2: Construction | N/A | 1.0 | 0.0 | **3.0** | Moderate | +2 | +2 | +4 | -2 | 0 | 0 | +1 | +1 | 0 | +2 | 1 | **+6** |
| LS.47C | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 3: Maintenance of the structure | N/A | 1.0 | 0.0 | **3.0** | Moderate | +2 | +2 | +4 | -2 | 0 | 0 | +1 | +1 | 0 | +2 | 1 | **+6** |
| LS.48A | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+21** |
| LS.48B | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 2: Implementation | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+21** |
| LS.51 | Ulladulla Harbour | Foreshore restoration works at Central Harbour Beach | 1.00 | 1.0 | 1.0 | **3.0** | Low | +1 | +1 | +1 | +1 | +1 | 0 | +2 | +1 | 0 | +3 | 1 | **+9** |
| LS.52 | Ulladulla Harbour | Install dinghy racks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | +2 | 0 | +3 | 0 | 0 | +3 | 1 | **+13** |
| LS.53 | Ulladulla Harbour | Erosion monitoring at South Ulladulla Harbour Beach | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | 0 | 0 | 0 | +2 | +3 | 0 | +3 | 1 | **+12** |
| LS.122 | Rennies Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.103 | Racecourse Beach | Undertake a subsurface investigation at the southern end of the Racecourse Beach | N/A | 1.0 | 1.0 | **3.0** | Low | +1 | +2 | +2 | 0 | 0 | 0 | 0 | +2 | 0 | +3 | 1 | **+7** |
| LS.59 | Racecourse Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +2 | +3 | 0 | +1 | 0 | +2 | +3 | 1 | **+17** |
| LS.105 | Burrill Beach | Install drainage along the downslope side of Seaside Parade | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | 0 | 0 | 0 | 0 | +2 | 0 | +3 | 1 | **+9** |
| LS.123 | Burrill Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 0.67 | 1.0 | 1.0 | **2.7** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.60 | Burrill Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +2 | +3 | 0 | +1 | 0 | +2 | +3 | 1 | **+17** |
| LS.124 | Wairo Beach | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |
| LS.66 | Wairo Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | 1.00 | 1.0 | 1.0 | **3.0** | High | +3 | +2 | +6 | +2 | +3 | 0 | +1 | 0 | +2 | +3 | 1 | **+17** |
| LS.125 | Lake Tabourie | Maintain, repair, upgrade, and rationalise beach access tracks | 1.00 | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | +1 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+14** |

| Action Information | | | Acceptability | | | | Feasibility | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Degree of Risk Mitigation | | | | Environmental Impacts | | | Social Impacts | | | | | Total |
| *Action ID* | *Locality* | *Action Name* | Community | Stakeholders | First Nations | Acceptability Score | Level of Risk Mitigated | Risk Rating | Effectiveness | Risk Mitigation Score | Coastal Processes | Environment & Biodiversity | Water Quality | Social Amenity | Public Safety | ACH | Alignment with Plans & Policy | Scale Factor | Feasibility Score |
| LS.70 | Bawley Beach | Dune building and restoration | 0.00 | 1.0 | 1.0 | **2.0** | Moderate | +2 | +2 | +4 | +1 | +2 | +1 | +2 | +2 | 0 | +3 | 1 | **+15** |
| LS.71 | Bawley Point Headland | Upgrade and formalise parking facilities and pedestrian access to the Bawley Point Headland and the Gantry. | 0.89 | 1.0 | 1.0 | **2.9** | High | +3 | +3 | +9 | 0 | +1 | +1 | +3 | +3 | 0 | +3 | 1 | **+20** |
| LS.106 | Cormorant Beach | Subsurface investigations Bawley Beach, Cormorant Beach, and Gannet Beaches. | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +1 | +2 | 0 | 0 | 0 | 0 | +1 | 0 | +3 | 1 | **+6** |
| LS.72 | Cormorant Beach | Develop an entrance management policy for the Cormorant Beach Lagoon | 0.00 | 1.0 | 1.0 | **2.0** | High | +3 | +3 | +9 | 0 | 0 | 0 | +3 | +3 | 0 | +3 | 1 | **+18** |
| LS.73 | Cormorant Beach | Install a water level gauge in the Cormorant Beach Lagoon | 0.50 | 1.0 | 1.0 | **2.5** | High | +3 | +3 | +9 | 0 | 0 | +1 | +1 | +3 | 0 | +3 | 1 | **+17** |
| LS.74 | Cormorant Beach | Cormorant beach pedestrian access management | 0.75 | 1.0 | 1.0 | **2.8** | Moderate | +2 | +3 | +6 | +1 | +2 | +1 | +2 | +1 | 0 | +3 | 1 | **+16** |
| LS.107 | Gannet Beach | Install drainage along the downslope side of Malibu Drive. | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | 0 | 0 | 0 | 0 | +1 | 0 | +3 | 1 | **+8** |
| LS.110A | Kioloa Beach | Kioloa Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +2 | +1 | 0 | +3 | 1 | **+18** |
| LS.110B | Kioloa Beach | Kioloa Coastal Protection Works - Stage 2: Implementation | N/A | 1.0 | 1.0 | **3.0** | Extreme | +4 | +3 | +12 | 0 | 0 | 0 | +2 | +3 | 0 | +3 | 1 | **+20** |
| LS.82 | Kioloa Beach | Stormwater formalisation along seaward end of Scerri Drive | 1.00 | 1.0 | 1.0 | **3.0** | Extreme | +4 | +2 | +8 | 0 | 0 | 0 | +1 | +1 | 0 | +3 | 1 | **+13** |
| LS.83 | Merry Beach | Formalise access and increase foreshore resilience | 1.00 | 1.0 | 1.0 | **3.0** | Low | +1 | +1 | +1 | +1 | +2 | 0 | +2 | +2 | 0 | +3 | 1 | **+11** |
| LS.108 | Depot Beach | Install drainage along the downslope side of Fairly Street and Depot Beach Road | N/A | 1.0 | 1.0 | **3.0** | Moderate | +2 | +2 | +4 | 0 | 0 | 0 | 0 | +1 | 0 | +3 | 1 | **+8** |
| LS.84 | Depot Beach | Long term adaptation pathway for the Depot Beach vehicle access track | 0.00 | 1.0 | 1.0 | **2.0** | Moderate | +2 | +3 | +6 | 0 | 0 | 0 | -1 | +3 | 0 | +3 | 1 | **+11** |
| LS.85 | Depot Beach | Dune building and restoration | 0.67 | 1.0 | 1.0 | **2.7** | High | +3 | +3 | +9 | +1 | +3 | +1 | +2 | +1 | 0 | +3 | 1 | **+20** |
| LS.86 | North Durras Beach | Foreshore management works at the North Durras Creek entrance. | 0.67 | 0.0 | 1.0 | **1.7** | Moderate | +2 | +3 | +6 | +1 | +1 | 0 | +2 | +2 | 0 | +2 | 1 | **+14** |

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

# APPENDIX C
# VIABILITY ASSESSMENT RESULTS – BASIC ECONOMIC ASSESSMENT

**Table C-1 Viability Assessment Results**

| *Action Information* | | | Full CBA Undertaken? | | Viability Assessment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Capital and Operational Costs | | | | | | | | | | Outcomes | |
| ***Action ID*** | ***Locality*** | ***Action Name*** | **Y/N** | **Proceed Based on BCR?** | **Y1** | **Y2** | **Y3** | **Y4** | **Y5** | **Y6** | **Y7** | **Y8** | **Y9** | **Y10** | **Total 10 Year NPV Cost** | **Viability Score** |
| S1.01 | Study Area Wide | Establish a CMP governance framework | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| S1.02 | Study Area Wide | Establish two new Full Time Equivalent (FTE) Coast & Estuary Officer roles within Council. | No | N/A | $ 240,000 | $ 240,000 | $ 240,000 | $ 240,000 | $ 240,000 | $ 240,000 | $ 240,000 | $ 240,000 | $ 240,000 | $ 240,000 | $1,900,000 | **6.3** |
| S1.03 | Study Area Wide | Develop and execute a communications plan for Stage 5 of the CMP | No | N/A | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $41,000 | **4.6** |
| S1.04 | Study Area Wide | Develop and implement a program to monitor key environmental parameters relevant to coastal management | No | N/A | $ 50,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $230,000 | **5.4** |
| S1.05 | Study Area Wide | Maintain and where necessary expand upon the Council's BeachStat dashboard for the Shoalhaven LGA | No | N/A | $ 40,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $110,000 | **5.0** |
| S1.06 | Study Area Wide | Maintain and update the CoastSnap camera cradle locations across the Shoalhaven LGA | No | N/A | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $41,000 | **4.6** |
| S1.07 | Study Area Wide | Develop and implement a program for regular and ongoing monitoring of coastal assets and infrastructure | No | N/A | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $240,000 | **5.4** |
| S1.08 | Study Area Wide | Enact the CMPs Monitoring, Evaluation and Reporting (MER) Program for the CMP | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| S1.09 | Study Area Wide | Continue ongoing collaboration with state government agencies and research institutions | No | N/A | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $160,000 | **5.2** |
| S1.10 | Study Area Wide | Undertake a Feasibility Study to assess the potential for sustainable and economical utilisation of offshore sand resources for large scale beach nourishment across the LGA | No | N/A | $ - | $ 60,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $57,000 | **4.8** |
| S1.12 | Study Area Wide | Monitoring of locations identified as being at risk of coastal cliff and slope instability. | No | N/A | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | CST | **3.0** |
| S1.13 | Study Area Wide | Feasibility investigations, design, and approvals for creek entrance tripper walls at Mollymook Beach, Manyana Beach, and Hyams Beach | No | N/A | $ 130,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $130,000 | **5.1** |
| S2.01 | Study Area Wide | Develop and maintain an ongoing program of community engagement with coastal communities - about coastal hazard risk and the importance of coastal management | No | N/A | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $ 20,000 | $160,000 | **5.2** |
| S2.02 | Study Area Wide | Develop and maintain an ongoing program of community engagement with coastal communities - about the geotechnical hazard risk and the importance of coastal management | No | N/A | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $120,000 | **5.1** |
| S2.05 | Study Area Wide | Provide rockfall signage for the exposed cliff lines of applicable cliffs | No | N/A | $ 40,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $40,000 | **4.6** |
| S3.01 | Study Area Wide | Activate the "Coastal Hazard Emergency Action Sub-Plans" (CZEAS) for each beach as required after storm events. | No | N/A | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $ 150,000 | $1,200,000 | **6.1** |
| S3.02 | Study Area Wide | Develop a Tide Alert Calendar, and encourage citizen science in monitoring tidal inundation | No | N/A | $ 25,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $ 1,000 | $32,000 | **4.5** |
| S4.01 | Study Area Wide | Review Councils coastal management planning policies every 10 years | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| S4.02 | Study Area Wide | Maintain planning controls to reduce future coastal hazard impacts | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| S4.05 | Study Area Wide | Fill information gaps in Council's existing coastal hazard mapping dataset. | No | N/A | $ 90,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $90,000 | **5.0** |
| S5.01 | Study Area Wide | Continue Councils program of mapping threatened ecological communities (TECs) across coastal reserves | No | N/A | $ 50,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $50,000 | **4.7** |
| S5.02 | Study Area Wide | Maintain and enhance ecological communities in coastal reserves (including dunes), considering appropriate ecological strategies | No | N/A | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 100,000 | $810,000 | **5.9** |

| Action Information | | | Full CBA Undertaken? | | Viability Assessment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Capital and Operational Costs | | | | | | | | | | Outcomes | |
| Action ID | Locality | Action Name | Y/N | Proceed Based on BCR? | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Total 10 Year NPV Cost | Viability Score |
| | | for urban (foreshore recreation reserve) and non-urban areas | | | | | | | | | | | | | | |
| S5.03 | Study Area Wide | Engage with SLSCs in order to develop a suite of dune vegetation management plans for the coastal dunes in front of all SLSC building and lifeguard towers on patrolled beaches | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| S6.02 | Study Area Wide | Undertake a LGA wide coastal zone Aboriginal Cultural Heritage Survey, and development of local protection/management plans | No | N/A | $ 120,000 | $ 12,000 | $ 12,000 | $ 12,000 | $ 12,000 | $ 12,000 | $ 12,000 | $ 12,000 | $ 12,000 | $ 12,000 | $210,000 | **5.3** |
| S6.03 | Study Area Wide | Engage with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to develop a cultural educational and awareness program | No | N/A | $ 40,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $76,000 | **4.9** |
| S6.04 | Study Area Wide | Provide opportunities and help build capacity to local Aboriginal Ranger programs, to enhance their role in management of Sea Country across the LGA | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| S7.01 | Study Area Wide | Review and update all Council asset management plans (AMPs), relevant to the coastal zone. | No | N/A | $ 50,000 | $ 50,000 | $ 50,000 | $ 50,000 | $ 50,000 | $ 50,000 | $ 50,000 | $ 50,000 | $ 50,000 | $ 50,000 | $410,000 | **5.6** |
| S7.03 | Study Area Wide | Implement high priority (and other relevant) actions from the hydraulic assessment report to manage stormwater drainage adjacent to or within identified coastal cliffs and slopes risk areas | No | N/A | $ 625,000 | $ 625,000 | $ 625,000 | $ 625,000 | $ 625,000 | $ 625,000 | $ 625,000 | $ 625,000 | $ 625,000 | $ 625,000 | $5,100,000 | **6.7** |
| S7.04 | Study Area Wide | Shoalhaven Open Coast Boating Infrastructure Plan: Stage 1 Plan Development | No | N/A | $ 75,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $75,000 | **4.9** |
| S7.05 | Study Area Wide | Implement the findings of the Shoalhaven Beaches Asset Management Strategy and incorporate into the relevant SCC Asset Management Plan. | No | N/A | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $ 25,000 | $200,000 | **5.3** |
| LN.01 | Shoalhaven Heads | Assess the condition of the SLSC rock revetment | No | N/A | $ 20,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $20,000 | **4.3** |
| LN.02 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option A – refurbish existing seawall | Yes | Yes | $ 1,500,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $ 15,000 | $1,600,000 | **6.2** |
| LN.03 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option B – relocate SLSC landwards | Yes | No | $ 3,340,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $3,300,000 | **DNP** |
| LN.04 | Shoalhaven Heads | Opportunistic nourishment of foreshore and beaches | No | N/A | $ 27,500 | $ - | $ - | $ 27,500 | $ - | $ - | $ 27,500 | $ - | $ - | $ 27,500 | $90,000 | **5.0** |
| LN.35 | Shoalhaven Heads | Monitor performance of the SLSC dune restoration works | No | N/A | $ 24,000 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $58,000 | **4.8** |
| LN.36 | Crookhaven Heads | Install drainage along the downslope side of roads and tracks to minimise overland flow erosion near the Community Nursery | No | N/A | $ 133,000 | $ 2,660 | $ 2,660 | $ 2,660 | $ 2,660 | $ 2,660 | $ 2,660 | $ 2,660 | $ 2,660 | $ 2,660 | $150,000 | **5.2** |
| LN.07 | Culburra Beach | Passive relocation of northern access loop road when damaged by storm events - to a more landwards location within existing parcel | No | N/A | $ 394,900 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $390,000 | **5.6** |
| LN.08 | Culburra Beach | Construct a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach | Yes | No | $ 3,750,000 | $ 33,400 | $ 33,400 | $ 33,400 | $ 33,400 | $ 33,400 | $ 33,400 | $ 33,400 | $ 33,400 | $ 33,400 | $4,000,000 | **DNP** |
| LN.37 | Culburra Beach | Formalise drainage along the downslope side of Allerton Avenue | No | N/A | $ 72,200 | $ 1,444 | $ 1,444 | $ 1,444 | $ 1,444 | $ 1,444 | $ 1,444 | $ 1,444 | $ 1,444 | $ 1,444 | $82,000 | **4.9** |
| LN.42 | Culburra Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LN.17 | Warrain Beach | Long term adaptation pathway for SLSC building: Option A – relocate SLSC landwards | Yes | No | $ 3,300,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $3,300,000 | **DNP** |
| LN.18 | Warrain Beach | Long term adaptation pathway for SLSC building: Option B – coastal protection works | Yes | No | $ 3,000,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $3,200,000 | **DNP** |
| LN.23A | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 1: Undertake investigations, detailed design, and approvals | Yes | Yes | $ 80,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $80,000 | **4.9** |

| Action Information | | | Full CBA Undertaken? | | Viability Assessment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Capital and Operational Costs | | | | | | | | | | Outcomes | |
| Action ID | Locality | Action Name | Y/N | Proceed Based on BCR? | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Total 10 Year NPV Cost | Viability Score |
| LN.23B | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 2: Construction | Yes | Yes | $ - | $ - | $ - | $ 940,000 | $ - | $ - | $ - | $ - | $ - | $ - | $810,000 | **5.9** |
| LN.23C | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade - Stage 3: Maintenance of the structure | Yes | Yes | $ - | $ - | $ - | $ - | $ 9,400 | $ 9,400 | $ 9,400 | $ 9,400 | $ 9,400 | $ 9,400 | $41,000 | **4.6** |
| LN.24A | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 1: Undertake investigations and concept design | Yes | Yes | $ 100,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $100,000 | **5.0** |
| LN.24B | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) - Stage 2: Detailed design, approvals, and construction | Yes | Yes | $ - | $ - | $ - | $ - | $ 1,300,000 | $ - | $ - | $ - | $ - | $ - | $1,100,000 | **6.0** |
| LN.24C | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) -Stage 3: Maintenance of the structure | Yes | Yes | $ - | $ - | $ - | $ - | $ - | $ 13,000 | $ 13,000 | $ 13,000 | $ 13,000 | $ 13,000 | $46,000 | **4.7** |
| LN.25 | Currarong Beach | Long term adaptation pathway for mitigating coastal inundation hazard of Currarong Road | No | N/A | $ 9,000,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $9,000,000 | **7.0** |
| LN.26 | Currarong Beach | Long term adaptation pathway for mitigating coastal erosion hazard of Currarong Road | No | N/A | $ 30,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $30,000 | **4.5** |
| LN.27 | Currarong Beach | Wastewater Management Plan | No | N/A | $ 50,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $50,000 | **4.7** |
| LN.29 | Currarong Beach | Improving recreational access during peak summer periods | No | N/A | $ 15,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $15,000 | **4.2** |
| LN.39 | Currarong Beach | Install gutters and downpipes for recreational assets at Beecroft Parade coastal reserve | No | N/A | $ 15,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $15,000 | **4.2** |
| LN.40 | Currarong Beach | Design and construction of a rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent | Yes | No | $ 11,812,500 | $ 118,125 | $ 118,125 | $ 118,125 | $ 118,125 | $ 118,125 | $ 118,125 | $ 118,125 | $ 118,125 | $ 118,125 | $13,000,000 | **DNP** |
| LN.43 | Currarong Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 75,000 | $ 3,750 | $ 3,750 | $ 3,750 | $ 3,750 | $ 3,750 | $ 3,750 | $ 3,750 | $ 3,750 | $ 3,750 | $100,000 | **5.0** |
| LJ.00 | Callala Bay | Callala Bay Coastal Processes and Hazard Definition Study | No | N/A | $ 100,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $100,000 | **5.0** |
| LJ.01A | Callala Bay | Callala Bay Groyne Structure(s) - Stage 1: Detailed design, approvals, and construction | Yes | Yes | $ - | $ - | $ - | $ - | $ 800,000 | $ - | $ - | $ - | $ - | $ - | $660,000 | **5.8** |
| LJ.01B | Callala Bay | Callala Bay Groyne Structure(s) - Stage 2: Maintenance of the structure | Yes | Yes | $ - | $ - | $ - | $ - | $ - | $ 8,000 | $ 8,000 | $ 8,000 | $ 8,000 | $ 8,000 | $28,000 | **4.4** |
| LJ.02 | Callala Bay | Callala Bay beach nourishment/scraping and foreshore restoration | Yes | Yes | $ 267,375 | $ 53,475 | $ 53,475 | $ 53,475 | $ 53,475 | $ 53,475 | $ 53,475 | $ 53,475 | $ 53,475 | $ 53,475 | $650,000 | **5.8** |
| LJ.03 | Callala Bay | Sheaffe Street stormwater improvements | No | N/A | $ 65,000 | $ 1,300 | $ 13 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $66,000 | **4.8** |
| LJ.04A | Callala Bay | Sailing Club Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | No | N/A | $ 25,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $25,000 | **4.4** |
| LJ.04B | Callala Bay | Sailing Club Coastal Protection Works - Stage 2: Implementation | No | N/A | $ - | $ - | $ - | $ 120,000 | $ 1,200 | $ 1,200 | $ 1,200 | $ 1,200 | $ 1,200 | $ 1,200 | $110,000 | **5.0** |
| LJ.44 | Callala Bay | Upgrade Callala Bay car park and foreshore access facilities | No | N/A | $ 149,100 | $ 2,982 | $ 2,982 | $ 2,982 | $ 2,982 | $ 2,982 | $ 2,982 | $ 2,982 | $ 2,982 | $ 2,982 | $170,000 | **5.2** |
| LJ.45 | Callala Bay | Addition of signage advising of overflow boat and trailer parking | No | N/A | $ 2,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| LJ.55 | Callala Bay | Design and construction of a rock armoured seawall along the Callala Bay foreshore | Yes | No | $ 4,050,000 | $ 40,500 | $ 40,500 | $ 40,500 | $ 40,500 | $ 40,500 | $ 40,500 | $ 40,500 | $ 40,500 | $ 40,500 | $4,300,000 | **DNP** |
| LJ.56 | Callala Bay | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LJ.13 | Callala Beach | Adaptation pathway for Community Hall and tennis club facilities | No | N/A | $ 50,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $50,000 | **4.7** |
| LJ.48 | Callala Beach | Empower local residents to engage in best practice foreshore management | No | N/A | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | CST | **3.0** |
| LJ.57 | Callala Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LJ.17A | Huskisson | Upgrade the Huskisson Sea Pool, as per the 2022 Detailed Design Report | No | N/A | $ 3,000,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $3,000,000 | **6.5** |
| LJ.17B | Huskisson | Refurbish the coastal protection works for the Huskisson Sea Pool. | No | N/A | $ 600,000 | $ 6,000 | $ 6,000 | $ 6,000 | $ 6,000 | $ 6,000 | $ 6,000 | $ 6,000 | $ 6,000 | $ 6,000 | $640,000 | **5.8** |
| LJ.19 | Huskisson | Foreshore management works at Moona Moona Creek Entrance. | No | N/A | $ 55,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $55,000 | **4.7** |

| Action Information | | | Full CBA Undertaken? | | Viability Assessment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Capital and Operational Costs | | | | | | | | | | Outcomes | |
| Action ID | Locality | Action Name | Y/N | Proceed Based on BCR? | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Total 10 Year NPV Cost | Viability Score |
| LJ.20 | Huskisson | Sand Scraping Program for Moona Moona Creek foreshore. | No | N/A | $ 31,250 | $ 31,250 | $ 31,250 | $ 31,250 | $ 31,250 | $ 31,250 | $ 31,250 | $ 31,250 | $ 31,250 | $ 31,250 | $250,000 | **5.4** |
| LJ.58 | Huskisson | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LJ.24 | Collingwood Beach | Stormwater Management Plan for Collingwood Beach | No | N/A | $ 50,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $50,000 | **4.7** |
| LJ.25 | Collingwood Beach | Stormwater outlet upgrade at Church St | No | N/A | $ 250,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $250,000 | **5.4** |
| LJ.26 | Collingwood Beach | Stormwater outlet upgrade at Bayswater Rd | No | N/A | $ 250,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $250,000 | **5.4** |
| LJ.27 | Collingwood Beach | Adaptation / protection of Wastewater Assets | No | N/A | $ 15,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $15,000 | **4.2** |
| LJ.28 | Collingwood Beach | Adaptation / protection of Wastewater Assets | No | N/A | $ 15,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $15,000 | **4.2** |
| LJ.29 | Collingwood Beach | Design and construction of a rock armoured seawall along Ilfracombe Avenue | Yes | No | $ 6,320,000 | $ 63,200 | $ 63,200 | $ 63,200 | $ 63,200 | $ 63,200 | $ 63,200 | $ 63,200 | $ 63,200 | $ 63,200 | $6,800,000 | **DNP** |
| LJ.30 | Collingwood Beach | Continue Collingwood Beach bush regeneration works | No | N/A | $ 63,000 | $ 12,600 | $ 12,600 | $ 12,600 | $ 12,600 | $ 12,600 | $ 12,600 | $ 12,600 | $ 12,600 | $ 12,600 | $150,000 | **5.2** |
| LJ.59 | Collingwood Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LJ.36 | Vincentia | Undertake dune restoration at Nelsons Beach | No | N/A | $ 57,500 | $ 11,500 | $ 11,500 | $ 11,500 | $ 11,500 | $ 11,500 | $ 11,500 | $ 11,500 | $ 11,500 | $ 11,500 | $140,000 | **5.1** |
| LJ.50 | Vincentia | Vegetation planting on Vincent Street to help improve foreshore slope stability | No | N/A | $ 35,000 | $ 7,000 | $ 7,000 | $ 7,000 | $ 7,000 | $ 7,000 | $ 7,000 | $ 7,000 | $ 7,000 | $ 7,000 | $85,000 | **4.9** |
| LJ.51 | Vincentia | Fill surface depressions in the Plantation Point public reserve | No | N/A | $ 10,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $10,000 | **4.0** |
| LJ.52 | Vincentia | Undertake a geotechnical assessment at the Southern end of Nelsons Beach | No | N/A | $ 40,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $40,000 | **4.6** |
| LJ.53 | Vincentia | Provide dinghy storage | No | N/A | $ 25,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $25,000 | **4.4** |
| LJ.39A | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 2: Construction | No | N/A | $ - | $ 105,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $100,000 | **5.0** |
| LJ.39B | Hyams Beach | Hyams Beach Creek entrance northern tripper wall structure - Stage 3: Maintenance of the structure | No | N/A | $ - | $ - | $ 5,250 | $ 5,250 | $ 5,250 | $ 5,250 | $ 5,250 | $ 5,250 | $ 5,250 | $ 5,250 | $32,000 | **4.5** |
| LJ.43 | Hyams Beach | Little Hyams Beach dune management | No | N/A | $ 48,000 | $ 9,600 | $ 9,600 | $ 9,600 | $ 9,600 | $ 9,600 | $ 9,600 | $ 9,600 | $ 9,600 | $ 9,600 | $120,000 | **5.1** |
| LS.01 | Cudmirrah Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| LS.113 | Berrara | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.03 | Bendalong Point | Foreshore restoration works at the Bendalong foreshore | No | N/A | $ 70,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $ 14,000 | $170,000 | **5.2** |
| LS.04 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option A: Coastal Protection Works | Yes | No | $ 3,900,000 | $ 39,000 | $ 39,000 | $ 39,000 | $ 39,000 | $ 39,000 | $ 39,000 | $ 39,000 | $ 39,000 | $ 39,000 | $4,200,000 | **DNP** |
| LS.05 | Bendalong Point | Long term adaptation pathway for Manta Ray Road Option B: Reroute Road Access | Yes | No | $ 4,100,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $4,100,000 | **DNP** |
| LS.06 | Bendalong Point | Washerwomans Beach dune restoration | No | N/A | $ 97,500 | $ 19,500 | $ 19,500 | $ 19,500 | $ 19,500 | $ 19,500 | $ 19,500 | $ 19,500 | $ 19,500 | $ 19,500 | $240,000 | **5.4** |
| LS.114 | Bendalong Point | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 100,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $ 5,000 | $140,000 | **5.1** |
| LS.89 | Bendalong Point | Investigate the most appropriate way to direct stormwater from Holly Street | No | N/A | $ 15,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $15,000 | **4.2** |
| LS.115 | Inyadda Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.116 | Manyana Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LS.16A | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 2: Construction | No | N/A | $ - | $ 180,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $170,000 | **5.2** |
| LS.16B | Manyana Beach | Manyana Creek entrance tripper wall structure - Stage 3: Maintenance of the structure | No | N/A | $ - | $ - | $ 9,000 | $ 9,000 | $ 9,000 | $ 9,000 | $ 9,000 | $ 9,000 | $ 9,000 | $ 9,000 | $55,000 | **4.7** |
| LS.117 | Cunjurong Point | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.20 | Conjola Area | Opportunistic nourishment of beaches adjacent to Conjola | No | N/A | $ 27,500 | $ 27,500 | $ 27,500 | $ 27,500 | $ 27,500 | $ 27,500 | $ 27,500 | $ 27,500 | $ 27,500 | $ 27,500 | $220,000 | **5.3** |

| Action Information | | | Full CBA Undertaken? | | Viability Assessment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Capital and Operational Costs | | | | | | | | | | Outcomes | |
| Action ID | Locality | Action Name | Y/N | Proceed Based on BCR? | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Total 10 Year NPV Cost | Viability Score |
| LS.118 | Narrawallee Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.22 | Narrawallee Beach | Dune maintenance | No | N/A | $ 24,000 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $ 4,800 | $58,000 | **4.8** |
| LS.111 | Mollymook Beach | Stormwater outfall works and dune restoration | No | N/A | $ 200,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $ 10,000 | $270,000 | **5.4** |
| LS.119 | Mollymook Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LS.27 | Mollymook Beach | South Mollymook Coastal Protection Works | No | N/A | $ 12,000,000 | $ 120,000 | $ 120,000 | $ 120,000 | $ 120,000 | $ 120,000 | $ 120,000 | $ 120,000 | $ 120,000 | $ 120,000 | $13,000,000 | **7.1** |
| LS.28 | Mollymook Beach | Landslide area rehabilitation at Mitchell Parade. | No | N/A | $ 75,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $75,000 | **4.9** |
| LS.29 | Mollymook Beach | Landslide risk management (LRM) recommendations for lookout at Bannisters Point | No | N/A | $ 75,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $75,000 | **4.9** |
| LS.30 | Mollymook Beach | Design and construct a rock armoured coastal revetment along the Mitchell Parade road reserve shoreline | Yes | No | $ 11,500,000 | $ 115,000 | $ 115,000 | $ 115,000 | $ 115,000 | $ 115,000 | $ 115,000 | $ 115,000 | $ 115,000 | $ 115,000 | $12,000,000 | **DNP** |
| LS.31A | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 2: Construction | No | N/A | $ - | $ 270,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $260,000 | **5.4** |
| LS.31B | Mollymook Beach | Blackwater Creek entrance southern tripper wall structure - Stage 3: Maintenance of the structure | No | N/A | $ - | $ - | $ 13,500 | $ 13,500 | $ 13,500 | $ 13,500 | $ 13,500 | $ 13,500 | $ 13,500 | $ 13,500 | $83,000 | **4.9** |
| LS.32 | Mollymook Beach | Dune restoration and access management at South Mollymook | No | N/A | $ 190,000 | $ 38,000 | $ 38,000 | $ 38,000 | $ 38,000 | $ 38,000 | $ 38,000 | $ 38,000 | $ 38,000 | $ 38,000 | $460,000 | **5.7** |
| LS.33 | Mollymook Beach | Sand Scraping and dune restoration at North Mollymook | No | N/A | $ 85,000 | $ 17,000 | $ 17,000 | $ 17,000 | $ 17,000 | $ 17,000 | $ 17,000 | $ 17,000 | $ 17,000 | $ 17,000 | $210,000 | **5.3** |
| LS.87 | Golf Course Reef Beach | Upgrade Golf Course Reef Beach car park and foreshore access facilities | No | N/A | $ 219,400 | $ 4,388 | $ 4,388 | $ 4,388 | $ 4,388 | $ 4,388 | $ 4,388 | $ 4,388 | $ 4,388 | $ 4,388 | $250,000 | **5.4** |
| LS.120 | Collers Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LS.42 | Collers Beach | Dune restoration and carpark upgrade at Collers Beach | No | N/A | $ 171,000 | $ 34,200 | $ 34,200 | $ 34,200 | $ 34,200 | $ 34,200 | $ 34,200 | $ 34,200 | $ 34,200 | $ 34,200 | $410,000 | **5.6** |
| LS.101 | Ulladulla Harbour | Stormwater drainage at the northern end of Did-Dell Street | No | N/A | $ 15,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $15,000 | **4.2** |
| LS.121 | Ulladulla Harbour | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 50,000 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 | $68,000 | **4.8** |
| LS.46A | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 1: Design and approvals | No | N/A | $ 20,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $20,000 | **4.3** |
| LS.46B | Ulladulla Harbour | Sand redistribution at Central Harbour Beach - Stage 2: On-ground works | No | N/A | $ 57,500 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $58,000 | **4.8** |
| LS.47A | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 1: Design and approvals | No | N/A | $ 40,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $40,000 | **4.6** |
| LS.47B | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 2: Construction | No | N/A | $ 210,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $210,000 | **5.3** |
| LS.47C | Ulladulla Harbour | Trial groyne structure at Millards Creek Entrance - Stage 3: Maintenance of the structure | No | N/A | $ - | $ 10,500 | $ 10,500 | $ 10,500 | $ 10,500 | $ 10,500 | $ 10,500 | $ 10,500 | $ 10,500 | $ 10,500 | $75,000 | **4.9** |
| LS.48A | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | No | N/A | $ 25,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $25,000 | **4.4** |
| LS.48B | Ulladulla Harbour | Princes Highway Coastal Protection Works - Stage 2: Implementation | No | N/A | $ 400,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $400,000 | **5.6** |
| LS.51 | Ulladulla Harbour | Foreshore restoration works at Central Harbour Beach | No | N/A | $ 38,000 | $ 7,600 | $ 7,600 | $ 7,600 | $ 7,600 | $ 7,600 | $ 7,600 | $ 7,600 | $ 7,600 | $ 7,600 | $92,000 | **5.0** |
| LS.52 | Ulladulla Harbour | Install dinghy racks | No | N/A | $ 20,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $20,000 | **4.3** |
| LS.53 | Ulladulla Harbour | Erosion monitoring at South Ulladulla Harbour Beach | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| LS.122 | Rennies Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.103 | Racecourse Beach | Undertake a subsurface investigation at the southern end of the Racecourse Beach | No | N/A | $ 25,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $25,000 | **4.4** |

| Action Information | | | Full CBA Undertaken? | | Viability Assessment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Capital and Operational Costs | | | | | | | | | | Outcomes | |
| Action ID | Locality | Action Name | Y/N | Proceed Based on BCR? | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Total 10 Year NPV Cost | Viability Score |
| LS.59 | Racecourse Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| LS.105 | Burrill Beach | Install drainage along the downslope side of Seaside Parade | No | N/A | $ 76,000 | $ 1,520 | $ 1,520 | $ 1,520 | $ 1,520 | $ 1,520 | $ 1,520 | $ 1,520 | $ 1,520 | $ 1,520 | $87,000 | **4.9** |
| LS.123 | Burrill Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.60 | Burrill Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| LS.124 | Wairo Beach | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.66 | Wairo Beach | Investigate land use planning options to provide enhanced protection to the local dune system. | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| LS.125 | Lake Tabourie | Maintain, repair, upgrade, and rationalise beach access tracks | No | N/A | $ 25,000 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $ 1,250 | $34,000 | **4.5** |
| LS.70 | Bawley Beach | Dune building and restoration | No | N/A | $ 17,350 | $ 3,470 | $ 3,470 | $ 3,470 | $ 3,470 | $ 3,470 | $ 3,470 | $ 3,470 | $ 3,470 | $ 3,470 | $42,000 | **4.6** |
| LS.71 | Bawley Point Headland | Upgrade and formalise parking facilities and pedestrian access to the Bawley Point Headland and the Gantry. | No | N/A | $ 387,200 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $390,000 | **5.6** |
| LS.106 | Cormorant Beach | Subsurface investigations Bawley Beach, Cormorant Beach, and Gannet Beaches. | No | N/A | $ 75,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $75,000 | **4.9** |
| LS.72 | Cormorant Beach | Develop an entrance management policy for the Cormorant Beach Lagoon | No | N/A | $ 25,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $25,000 | **4.4** |
| LS.73 | Cormorant Beach | Install a water level gauge in the Cormorant Beach Lagoon | No | N/A | $ 20,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $20,000 | **4.3** |
| LS.74 | Cormorant Beach | Cormorant beach pedestrian access management | No | N/A | $ 22,500 | $ 4,500 | $ 4,500 | $ 4,500 | $ 4,500 | $ 4,500 | $ 4,500 | $ 4,500 | $ 4,500 | $ 4,500 | $54,000 | **4.7** |
| LS.107 | Gannet Beach | Install drainage along the downslope side of Malibu Drive. | No | N/A | $ 171,000 | $ 3,420 | $ 3,420 | $ 3,420 | $ 3,420 | $ 3,420 | $ 3,420 | $ 3,420 | $ 3,420 | $ 3,420 | $200,000 | **5.3** |
| LS.110A | Kioloa Beach | Kioloa Coastal Protection Works - Stage 1: Condition Inspection and Recommendations Report | No | N/A | $ 35,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $35,000 | **4.5** |
| LS.110B | Kioloa Beach | Kioloa Coastal Protection Works - Stage 2: Implementation | Yes | Yes | $ - | $ 3,000,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $ 30,000 | $3,000,000 | **6.5** |
| LS.82 | Kioloa Beach | Stormwater formalisation along seaward end of Scerri Drive | No | N/A | $ 38,000 | $ 760 | $ 760 | $ 760 | $ 760 | $ 760 | $ 760 | $ 760 | $ 760 | $ 760 | $43,000 | **4.6** |
| LS.83 | Merry Beach | Formalise access and increase foreshore resilience | No | N/A | $ 111,500 | $ 22,300 | $ 22,300 | $ 22,300 | $ 22,300 | $ 22,300 | $ 22,300 | $ 22,300 | $ 22,300 | $ 22,300 | $270,000 | **5.4** |
| LS.108 | Depot Beach | Install drainage along the downslope side of Fairly Street and Depot Beach Road | No | N/A | $ 182,400 | $ 3,648 | $ 3,648 | $ 3,648 | $ 3,648 | $ 3,648 | $ 3,648 | $ 3,648 | $ 3,648 | $ 3,648 | $210,000 | **5.3** |
| LS.84 | Depot Beach | Long term adaptation pathway for the Depot Beach vehicle access track | No | N/A | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | CST | **3.0** |
| LS.85 | Depot Beach | Dune building and restoration | No | N/A | $ 140,000 | $ 28,000 | $ 28,000 | $ 28,000 | $ 28,000 | $ 28,000 | $ 28,000 | $ 28,000 | $ 28,000 | $ 28,000 | $340,000 | **5.5** |
| LS.86 | North Durras Beach | Foreshore management works at the North Durras Creek entrance. | No | N/A | $ 40,000 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $40,000 | **4.6** |

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# APPENDIX D
# VIABILITY ASSESSMENT RESULTS – DETAILED CBA

# D-1 Introduction

Economic assessment approaches can be used to evaluate the viability of management actions. They can help decision-makers better understand the socio-economic implications of adopting various management options and help them to make choices about which options will provide net benefits to the community.

A cost-benefit analysis (CBA) is one form of economic assessment that can be used to estimate changes to the economic wellbeing of local and wider communities in response to a change in management. The CBA involves estimating and comparing 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 (NSW Government, 2020).

In the case of CBAs for proposed coastal management activities, the base case would represent a continuation of Council's prevailing approach to coastal management (i.e., a 'business as usual' situation). The costs and benefits of alternative management options are then compared with the costs and benefits of the base case to identify any incremental differences between the base case and the alternative approaches.

A more detailed economic CBA approach has been applied for options where risks and both (a) the impacts are high and (b) the economic costs and benefits can be reasonably estimated. This level of assessment has been applied to 16 of the options on the long list, with the intention to calculate a Benefit-Cost Ratio (BCR) for each of those options.

# D-2 Methodology

## D-2-1 Definition of the Base Case

As part of any robust CBA exercise, the assessment needs to develop detailed descriptions of a range of alternative options that could achieve the desired outcomes. This includes a detailed base case, which represents a continuation of present Council management activity. The base case will provide the reference case against which alternative options should be considered (NSW Government, 2020).

The 'base case' in this instance is the 'business as usual' option. As noted above, this is not the same as a 'do nothing' approach. The reason for the base case to be defined as the 'business as usual' option is that Council may already be undertaking coastal management activities, for example through sand nourishment, dune management and stabilisation, and/or protective works. However, the base case should not include costs incurred by Council for routine clean-up activities not directly associated with the above erosion management activities, where these activities are part of Council's normal operational/ beach maintenance activities and would continue irrespective of which specific erosion management strategy was adopted.

Subsequently, for each options the base case considered:

- The presence and efficacy of any existing costal protection works.
- Any existing proactive management approaches such as dune management (building or restoration).
- The resulting vulnerability of assets and infrastructure – as defined by the Council's coastal hazard lines (Advisian, 2016).

The costs and benefits associated with the base case identified were and (where possible) monetised over time. The task involves estimating a stream of costs and benefits associated with current Council activities into the future, relative to the present. This process will identify whether, and to what extent, continuing with their current management activities will reduce risks associated with coastal hazards over time.

## D-2-2 Valuation of At-Risk Assets

In most instances, the primary costs associated with the base case included the costs associated with incurring coastal hazard damages to (a) public and private property, and (b) public assets and infrastructure. The valuation of assets was undertaken in a manner consistent with sound economic principles, as per guidance provided in Appendix 5 of the Guidelines for using cost-benefit analysis to assess coastal management options (NSW Government, 2020).

- Public And Private Property: The approach undertaken for the valuation of public and private property is outlined in Table D-1, along with underlying principles and assumptions.
- Public Assets and Infrastructure: The approach undertaken for the valuation of public and private property is outlined in Table D-2, along with underlying principles and assumptions. Values are based on the replacement cost values of individual asset types, with unit rate valuation applied as per standard engineering approaches and NSW government guidelines.

**Table D-1 Valuation approach for public and private property**

| Asset Class | Valuation Principles and Assumptions |
|---|---|
| Private Property | ▪ Market price for the relevant or similar parcel (NSW Government, 2020).<br>▪ The entire value should be considered to be lost if erosion or inundation affects the dwelling (NSW Government, 2020).<br>▪ Property prices were assigned based on median property values for the suburb that the property resides in – as reported by https://www.realestate.com.au/australia/<br>▪ To account for the higher asset value of coastally adjected properties, land values were scaled up by a factor of 2.3 as per the findings of (Wiltshire, 2019; Phibbs & Halloran, 2021). This scaling process is based on the assumption that that these properties would likely reside in the 90$^{th}$ percentile for property value within that post code.<br>▪ These derived values were cross-referenced with data from the NSW Valuer General's land value for specific affected private lots – with the resulting average values of private properties found to be relatively consistent between the two methods. |
| Public Land (including foreshore parks and reserves) | ▪ Public land parcels are valued as per the NSW Valuer General's land value for the relevant or similar parcel (NSW Government, 2020).<br>▪ Only the proportion eroded or inundated should be considered a loss. |

**Table D-2 Valuation approach for public assets and infrastructure**

| Asset Class | Asset Type | Unit Cost^ | Basis of Assumption |
|---|---|---|---|
| Roads | Sub-arterial road - 3 lane flexible pavement road | $ 9,908 / m | Transport for NSW Economic Parameter Values (2020) |
| | Sub-arterial road - 4 lane flexible pavement road | $ 11,506 / m | |
| | Rural / residential road | $ 2,610 / m | |
| | Carpark – at grade | $ 7,082 / space | |
| | Footpath / cycleway – standard 1.2 m wide | $ 254 / m | |

| Asset Class | Asset Type | Unit Cost^ | Basis of Assumption |
|---|---|---|---|
| Wastewater infrastructure | 100 mm gravity main | $ 231 / m | NSW Reference Rates Manual - Valuation of Water Supply, Sewerage and Stormwater Assets (Department of Primary Industries, 2014) |
| | 150 mm gravity main | $ 306 / m | |
| | 300 mm gravity main | $ 604 / m | |
| | 100 mm rising main | $ 196 / m | |
| | 200 mm rising main | $ 352 / m | |
| | 250 mm rising main | $ 438 / m | |
| | Pump Station - major* (100 L/s) | $ 1,070,000 per unit | |
| | Pump station – minor* (30 L/s) | $ 530,000 per unit | |
| Water supply infrastructure | 100 mm reticulation main | $ 176 / m | |
| | 150 mm reticulation main | $ 271 / m | |
| | 200 mm trunk water main | $ 322 / m | |
| | 250 mm trunk water main | $ 403 / m | |
| Public Buildings and Amenities | SLSC Buildings | $ 3,000,000 / building | 2018 Risk Assessment (Advisian, 2018a) |
| | Amenities blocks (toilets etc) | $3,500 / $m^2$ | Rawlinsons (2023) |
| | Playgrounds | $ 50,000 / unit | 2018 Risk Assessment (Advisian, 2018a) |

^ *unit costs provided in this table are as reported in the assumption basis reference. All values have been indexed for inflation to 2023 values for the purposes of the CBA.*

* *where available, replacement values for specific pump stations was provided by Council*

## D-2-3 Calculation of Costs Associated with Coastal Hazard Damages

A key component of the CBA is to calculate coastal hazard related damages over the forward assessment period. It should be noted that Council's coastal hazard lines are based on a deterministic 1% Annual Exceedance Probability (AEP) best estimate hazard line – that represents the landwards extent of the Zone of Reduce Foundation Capacity (ZRFC). Best-estimate hazard lines are not often used for application in CBA because they do not quantify uncertainty in predictions of future coastline change through the use of uncertainty envelopes. However, the use a probabilistic Monte Carlo approach provides a means to quantify and capture some of this uncertainty from a CBA perspective – noting that an economic CBA in only one tool amongst a range of available tools to ranks and prioritise options.

Subsequently, the probabilistic calculation of coastal hazard damages was undertaken over a forward 100-year planning period (from year 2023 to 2123) using the following approach:

- Council's 1% AEP coastal hazard lines were superimposed over existing asset and infrastructure databases in order to determine (for a given planning horizon):
  - What specific assets and infrastructure would be impacted by a 1% AEP event.
  - The extent to which they would be impacted (i.e., the length of road, the number of private properties, or the area of public foreshore).

  - The damage cost associated with the impact – based on unit valuation approaches provided in Section D-2-2.
- This provided an assessment of the potential hazard damages associated with a 1% AEP storm event in:
  - 2023 – Based on interpolation between the 2016 coastal hazard line and the 2030 coastal hazard line.
  - 2030 – Based on the 2030 coastal hazard line.
  - 2050 – Based on the 2050 coastal hazard line.
  - 2100 – Based on the 2100 coastal hazard line.
  - 2123 – Based on an extrapolated hazard extent for a +0.9 m SLR scenario derived during Stage 2 of the CMP (Water Technology, 2023).
- Damages at interceding years were calculated through linear interpolation between the nearest hazard line years. With this process, the increased vulnerability to coastal hazards over time was captured, with a greater quantity of at-risk assets exposed in the year 2123 (Year 100), compared to the year 2023 (Year 1).
- In reality, damage costs are weather dependant and inherently unpredictable, with costs being incurred after severe storm events. Therefore, hazard damages cannot be precisely forecast over a given CBA assessment period. Consequently, a stochastic approach was adopted that provided the statistical range of potential damage costs. This assessment has utilised a Monte-Carlo method, whereby the 100-year forward assessment period has been simulated 1000 times using a sequence of randomly generated storm events. The following steps have been undertaken for each asset:
  - For each management option (including the associated base case), the forward 100 years assessment period was simulated 1,000 times.
  - For each simulation, a random number generator was applied that produced a decimal number in between 0 and 1 (from a prescribed normal probability distribution) for each year in the assessment period: From *Year 1* through to *Year 100*. These numbers represented the AEP of the most severe storm event to occur in any given year.
  - For each *Year* within a particular simulation, coastal hazard damage was deemed to have occurred to a particular asset if the AEP decimal exceeded (i.e., is lower than) the AEP event considered to cause damage to the asset (based on the coastal hazard lines). The incidence of erosion-based damage was deemed to occur once the structure was intersected by the coastal hazard line.
- The sum of all hazard damages for all assets was collated across each simulation, with all costs discounted to present day (2023) dollars using a NPV approach and a discount rate of 5% (see Section 5.4). Sensitivity testing wall also undertaken using discount rates of 3%, and 7%.
- The dataset of the 1,000 simulations was then analysed statistically in order to generate the potential range (and the statistical distribution) of incurred damage costs. This data was displayed in terms of the probability of exceedance of particular damage costs – with output provided for the 1% probability of exceedance, as well as the 5%, 10%, 50%, and 90% values.
  - In this sense, the 1%, 5%, and 10% values represent the potential asset damages during forward planning periods that are particularly stormy.
  - The 50% value represents the potential asset damages during a forward planning period that represents a median case.
  - The 90% value represents the potential asset damages during a forward planning period that are statistically calm – or below average in terms of storm occurrence.

- To aid in decision making, NPV costs were calculated over a range of forward planning periods. The CBA evaluation period should be long enough to capture all costs and benefits attributable to the option under consideration. The timeframe should reflect the expected economic life of the principal asset (e.g., coastal protection works). Subsequently, NPVs were calculated for forward planning periods of:
  - 10 Years – to align with the CMP lifecycle period.
  - 50 Years – which is typical of coastal protection works such as rock armoured seawalls.
  - 100 Years – to provide a long-term planning information. Because of the uncertainty involved in forecasting costs and benefits over long periods, caution should be exercised when considering result over this period. However, this has been provided for informational purposes.

It should be noted that these costs only consider the cost of damage to the asset in today's dollars, and do not consider broader economic costs such as loss of revenue to local businesses, loss of recreational or tourism revenue (due to damage to the environment or infrastructure at the beach), or costs associated with any environmental remediation work caused by failure of the assets such as water or wastewater infrastructure.

### *A Note on Coastal Hazard Line Availability*

Whilst the assessment of potential hazard damages was based on Council's coastal hazard line data (Advisian, 2016), it should be noted that no hazard line data was available to inform the analysis for two key locations:

- Callala Bay
- Kioloa

There are several actions in the CMP aimed at filling these current gaps in the current coastal hazard mapping. However, in the interim, the CBA was undertaken using best estimates for potential erosion hazard extents from historical beach profile data and previous studies. These analyses do not represent formal hazard mapping exercises, and therefore the CBA outcomes at Callala Bay and Kioloa should be deemed to be preliminary in nature - and the results interpreted with a significantly higher degree of uncertainty.

### *A Note on Storm Event Severity and Frequency*

When discussing the severity and occurrence of natural events such as storms, engineers and scientists assign a measure of an event's severity by way of either an *Average Recurrence Interval* (ARI) or an *Annual Exceedance Probability* (AEP).

Where an ARI (sometimes also referred to as a *Return Period*) is assigned, it represents the average time that elapses between two events that equal or exceed a particular condition. For instance, a 100-year ARI event is one which is expected to be equalled or exceeded *on average* once every 100 years. However, since events occur randomly in any particular timeframe under consideration (rather than at precise regular or cyclical intervals), they have a probability of occurrence within that time.

Use of the term ARI can lead to misperceptions, such as the viewpoint that having just experienced a 100-year ARI event, there will not be another one like it for 100 years. This is not correct. It is therefore generally preferable to express the occurrence of a storm event in terms of AEP. With ARI expressed in years, the relationship between ARI and AEP is expressed as the following equation (Laurenson, 1987):

$$AEP = 1 - exp\left(\frac{-1}{ARI}\right) \qquad \textbf{Equation D.1}$$

Table D-3 is provided to assist in appreciating the relationship between AEP and ARI. Typically, ARIs of greater than 10 years are very closely approximated by the reciprocal of the AEP (for example, 20 year ARI ≈ 1/20 or ~5% AEP). Table D-3 also indicates the likelihood of the occurrence of a particular event in during a nominal 10-years, 50-years, and 100-years planning horizon.

**Table D-3 Relationship between ARI and AEP**

| Average Recurrence Interval (ARI) in years | Annual Exceedance Probability (AEP) | Probability of Experiencing at Least One Event in 10 Years | Probability of Experiencing at Least One Event in 50 Years | Probability of Experiencing at Least One Event in 100 Years |
|---|---|---|---|---|
| 1 | 63% | ~100% | ~100% | ~100% |
| 5 | 18% | 86% | ~100% | ~100% |
| 10 | 9.5% | 63% | 99% | ~100% |
| 20 | 4.9% | 39% | 92% | 99% |
| 50 | 2.0% | 18% | 63% | 86% |
| 100 | 1.0% | 10% | 39% | 63% |
| 200 | 0.5% | 5% | 22% | 39% |

It should be noted that, generally speaking, it is difficult to ascribe a probability of exceedance storm erosion demand values, as storm erosion depends on multiple variables including wave height, water level at the time of the storm, wave direction, beach slope and the potential formation of localised rip cells (Advisian, 2016). Therefore, the AEPs assigned in the hazard study should be considered as indicative only, and essentially derived for the purposes of comparing potential erosion management options. The uncertainty associated with these values has been considered in the CBA analysis through the determination and consideration of the full statistical range of CBA outcomes.

## D-2-4 Calculation of Costs Associated with Option Implementation

Full life cycle costs have been estimated for all assessed options (summarised in Table 5-2). For coastal infrastructure works such as a rock armoured seawall, the capital cost for design and construction has been estimated based on the preliminary concept design parameters, with the application of typical unit rates summarised in Table D-4. It should be noted that for a number of options, assumptions have either taken into account local site-specific factors, and/or have been based on detailed concept designs and cost estimates developed in historical studies. The basis of CBA assumptions used in option costing is provided in Table D-4. It should be noted that option costings are not intended as detailed costings for implementation, but rather as cost estimates to be used to rank and assess options. Cost estimates are likely accurate to ±50%.

**Table D-4 Basis of CBA assumptions used in option costing**

| ID | Name | Action Name | Basis of Capital Cost Assumptions | Basis of Operational / Maintenance Cost Assumptions |
|---|---|---|---|---|
| LN.02 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option A – refurbish existing seawall | ▪ Due to the amount of existing rock material that could be reused on site, this has been estimated at $12,000 per linear metre. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LN.03 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option B – relocate SLSC landwards | ▪ Cost of relocation is based on asset replacement value for the SLSC building and associated infrastructure and amenities. Additional cost of 10% associated with demolition etc (Rhelm, 2023).<br>▪ Structure assumed to be relocated immediately. | ▪ Negligible (relative to LN.02). |
| LN.08 | Culburra Beach | Construct a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach | ▪ Nominal cost of $15,000 per linear metre.<br>▪ Assumed that structure is constructed immediately. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LN.17 | Warrain Beach | Long term adaptation pathway for SLSC building: Option A – relocate SLSC landwards | ▪ Cost of relocation is based on asset replacement value for the SLSC building and associated infrastructure and amenities. Additional cost of 10% associated with demolition etc (Rhelm, 2023).<br>▪ Structure assumed to be relocated in 2050, the year at which it becomes exposed to coastal hazards. | ▪ Negligible (relative to LN.18). |
| LN.18 | Warrain Beach | Long term adaptation pathway for SLSC building: Option B – coastal protection works | ▪ Nominal cost of $15,000 per linear metre.<br>▪ Structure assumed to be constructed in 2050, the year at which it becomes exposed to coastal hazards. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LN.23 | Currarong Beach | Shoreline erosion protection structure at Beecroft Parade | ▪ Concept design and cost estimate based on Currarong Coastal Erosion Protection Technical Design Report (Royal HaskoningDHV, 2017). | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |

| ID | Name | Action Name | Basis of Capital Cost Assumptions | Basis of Operational / Maintenance Cost Assumptions |
|---|---|---|---|---|
| LN.24 | Currarong Beach | Currarong Beach Shoreline Protection Structure(s) | ▪ Concept design and associated cost estimate for a GSC groyne and associated beach nourishment is based on Currarong Coastal Erosion Protection Technical Design Report (Royal HaskoningDHV, 2017).<br>▪ CBA has assumed that this structure would be upgraded to a rock armoured structure after 15 years (end of GSC asset life). Nominal unit rate of $20,000 per liner metre for a low crested rock armoured groyne. | ▪ For GSC structures, a nominal assumption of 2.5% of capital costs p.a – based on standard coastal engineering practice.<br>▪ For rock armoured groyne, a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LN.40 | Currarong Beach | Design and construction of a rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent | ▪ Nominal cost of $15,000 per linear metre, assuming a 750 m long structure.<br>▪ Assumed that structure is constructed immediately. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LJ.01 | Callala Bay | Callala Bay Groyne Structure(s) | ▪ Concept design and associated cost estimate for a GSC groyne and associated beach nourishment is based on Coastal Erosion Remediation Options: Callala Bay (Royal HaskoningDHV, 2013).<br>▪ CBA has assumed that this structure would be upgraded to a rock armoured structure after 15 years (end of GSC asset life). Nominal unit rate of $20,000 per liner metre for a low crested rock armoured groyne. | ▪ For GSC structures, a nominal assumption of 2.5% of capital costs p.a – based on standard coastal engineering practice.<br>▪ For rock armoured groyne, a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LJ.02 | Callala Bay | Callala Bay beach nourishment/scraping and foreshore restoration | ▪ Based on unit rates for sand sourcing at $30 / $m^3$, and a requirement for a nourished volume of approx. 2,500$m^3$.<br>▪ These unit rates conservative assume sand is sourced externally. Locally sourced sand from the beach compartment could be sourced for around $15/$m^3$. | ▪ Assumes nourishment required every 3 years, based on the course (low confidence) existing estimates of alongshore transport rates. |
| LJ.55 | Callala Bay | Design and construction of a rock armoured seawall along Callala Bay foreshore | ▪ Nominal cost of $15,000 per linear metre, assuming a 750 m long structure.<br>▪ Assumed that structure is constructed immediately. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |

| ID | Name | Action Name | Basis of Capital Cost Assumptions | Basis of Operational / Maintenance Cost Assumptions |
|---|---|---|---|---|
| LJ.29 | Collingwood Beach | Design and construction of a rock armoured seawall along Ilfracombe Avenue | ▪ Concept design and associated cost estimate for the structure was based on the Coastal Erosion Remediation Options: Collingwood Beach (Royal HaskoningDHV, 2013). | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LS.04 | Bendalong Point | Long Term Adaptation Pathway for Manta Ray Road Option A: Coastal Protection Works | ▪ Nominal cost of $12,000 per linear metre, assuming a 260 m long structure. Reduced unit rate cost due to lower crest level and likely higher foundation level due to bedrock outcropping.<br>▪ Assumed that structure is constructed immediately. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LS.05 | Bendalong Point | Long Term Adaptation Pathway for Manta Ray Road Option B: Reroute Road Access | ▪ Includes estimate for construction of new road (based on unit rates in Table D-3), and cost of decommission and refurbishment of Manta Ray Road to public foreshore.<br>▪ Assumed that structure is constructed immediately.<br>▪ Also includes 60 m of rock armoured seawall to the east of the eastern boat ramp. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LS.30 | Mollymook Beach | Design and construct a rock armoured coastal revetment along the Mitchell Parade road reserve shoreline | ▪ Concept design and associated cost estimate for the structure was based on the Shoalhaven “Authorised Locations” Coastal Erosion Remediation Options - Mollymook Beach (Royal HaskoningDHV, 2012).<br>▪ Assumed that structure is constructed immediately. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |
| LS.110 | Kioloa Beach | Kioloa Coastal Protection Works | ▪ Nominal cost of $15,000 per linear metre for a full upgrade of the structure to current coastal engineering standards.<br>▪ Analysis assumes a 180 m long structure running from the Marine Rescue building, west to the end of Scerri Drive.<br>▪ Assumed that structure is constructed immediately. | ▪ For rock armoured seawalls a nominal assumption of 1% of capital costs p.a – based on standard coastal engineering practice. |

## D-2-5 Calculation of Benefit Cost Ratio (BCR)

Net present value (NPV) is the sum of the discounted project benefits less the sum of the discounted project costs. The benefit-cost ratio (BCR) is the ratio of the present value of benefits to the present value of costs. In this sense, the BCR is intended to provide information on the 'value for money' proposition of a management option.

In economic analysis, a party is judged to obtain a benefit when it does not have to bear a cost it would otherwise have to incur. Owners of infrastructure or assets that would otherwise be damaged or lost due to coastal hazards would benefit from management options that reduce or eliminate the risk from the hazard. That is, the benefit they receive is the avoidance of the cost they would otherwise incur (NSW Government, 2020). Subsequently, the NPV benefits for the various options were essentially considered to be equivalent to the damage costs calculated for the base case. Whilst this would not always be the case for a given CBA, the approach was applicable in these instances due to the specific nature of the base case(s), where the incurred costs exclusively comprised hazard damage costs.

As discussed in Section D-2-3, the benefits of each option (which comprise avoided hazard damage costs) have been calculated probabilistically due to the uncertainty associated with future storm activity. Subsequently, the corresponding BCR has also been calculated probabilistically. This provided the statistical range of potential BCR values that an option may provide of a set planning horizon.

An example of this output is provided in Table D-5, which provides an explainer of how these results have been set out. In this example:

- Value **X**: Represents the 50 Year NPV Cost of implementing a given option.
- Value **Y**: Represents the economic benefits that have a 1% probability of being reached (or exceeded) during a 50 years planning horizon. In this sense, it is representative of the benefits gained during a future planning horizon that is statistically in the top 1% for storminess.
- Value **Z**: Represents the BCR that has a 1% probability of being reached (or exceeded).

**Table D-5 Interpretation of BCR outcomes for options analysis**

| **Discount Rate:** | **5%** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Life Cycle** | **Costs** | **Benefits (Avoided Storm Damage Costs) - Probability of Exceedance** | | | | | **BCR - Probability of Exceedance** | | | | |
| | | **1%** | **5%** | **10%** | **50%** | **90%** | **1%** | **5%** | **10%** | **50%** | **90%** |
| 10 Year NPV | | | | | | | | | | | |
| 50 Year NPV | **X** | **Y** | | | | | **Z** | | | | |
| 100 Year NPV | | | | | | | | | | | |

BCR values for 1%, 5%, and 10% probabilities of exceedance will be higher. This is because these values represent future scenarios that have been statistically "stormy". Therefore, the economic benefits will and associated BCRs will be higher, and a large amount of storm damage has been avoided.

Conversely, BCR values for the 50% and 90% probability of exceedance levels will be lower, as these represent future scenarios that are statistically less stormy in nature. Therefore, less benefits in the form of avoided storm damages will be accrued during the course of those scenarios.

In this context, it is recommended that consideration of the BCR values is more heavily weighted towards the outcomes for lower probabilities, such as 1%, 5%, and 10%. It is the aim of coastal protection works to provide protection from severe, low probability storm scenarios, and therefore these values will provide a more appropriate suite of scenarios from a coastal hazard risk-management perspective.

# D-3 Results and Discussion

The results of the CBA are provided in the subsequent tables set out in Section D-3. The calculated BCR values have been provided with a colour code based on Table D-6 below.

**Table D-6 Interpretation of BCR outcomes for options analysis**

| Outcomes | Stage 3 Approach |
|---|---|
| BCR < 0.8 | Consider removing option from long list |
| 0.8< BCR < 1.2 | Consider keeping option in long list – but strongly consider the results of the CBA sensitivity analysis, and take care to weight the option against feasibility and acceptability scores |
| BCR >1.2 | Consider progression of option to Stage 3 - taking into account feasibility and acceptability scores |

As previously discussed, the calculated BCR values should not be used as the sole means of ranking and prioritising options. Rather, the BCR results provide one tool amongst many tools, to assess options and therefore should be considered in the full context of the Feasibility and Viability Assessments.

A summary of the outcomes has been provided in Table D-7 which has extracted a subset of values based on:

- A 50 Year Planning Period (based on 50 year NPV costs and benefits)
- Adoption of a 5% discount rate
- BCR values reported for the 1%, 5%, and 10% values.

**Table D-7 Summary of CBA results – BCR values calculated for a planning period of 50 years and a discount rate of 5% p.a.**

| ID | Name | Action Name | 1% BCR | 5% BCR | 10% BCR | CBA Outcome and relation to overall options assessment |
|---|---|---|---|---|---|---|
| LN.02 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option A – refurbish existing seawall | 2.2 | 1.5 | 1.2 | Option LN.02 has a higher BCR value, and it is therefore recommended to progress LN.02 through the Feasibility and Acceptability assessment stages, ahead of LN.03. |
| LN.03 | Shoalhaven Heads | Adaptation pathway for SLSC building: Option B – relocate SLSC landwards | 1.2 | 0.8 | 0.7 | |
| LN.08 | Culburra Beach | Construct a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach | 0.0 | 0.0 | 0.0 | Given the low economic benefit, it is recommended that this option drops out of the options assessment, and that erosion risk at Culburra Beach can be more cost-effectively addressed through other actions in the CMP that don't require large amounts of capital expenditure, including the CZEAS. |
| LN.17 | Warrain Beach | Long Term Adaptation pathway for SLSC building: Option A – relocate SLSC landwards | 0.2 | 0.1 | 0.1 | These options both score low in terms of BCR as the SLSC is unlikely to be at risk until around 2050. Given the low |

| ID | Name | Action Name | 1% BCR | 5% BCR | 10% BCR | CBA Outcome and relation to overall options assessment |
|---|---|---|---|---|---|---|
| LN.18 | Warrain Beach | Long Term Adaptation pathway for SLSC building: Option B – construction of rock armoured seawall | 0.2 | 0.1 | 0.1 | BCR score, it is suggested that these options are reconsidered during the next review of the CMP in ten years. |
| LN.23 | Currarong Beach | Design and construct a shoreline erosion protection structure at Beecroft Parade | 20.7 | 14.7 | 11.6 | It is recommended that this option progresses to the Feasibility and Acceptability assessment stages. |
| LN.24 | Currarong Beach | Currarong Beach Groyne Structure | 8.7 | 5.6 | 4.0 | Based on these outcomes, it is recommended that LN.24 proceed as a preferable option through to the Feasibility and Acceptability assessment stages, ahead of Option LN.40. |
| LN.40 | Currarong Beach | Design and construction of a rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent | 1.7 | 1.1 | 0.8 | |
| LJ.01 | Callala Bay | Callala Bay Groyne Structure | 0.1* | 0.1* | 0.0* | BCR values for Callala Bay are of low confidence due to lack of available coastal hazard line data.<br>Therefore, despite the low BCR of Option LJ.01 and LJ.02, both of these options be progressed through to the Feasibility and Acceptability assessment stages.<br>Nonetheless, the BCR score of Option LN.55 are sufficiently low in comparison to the other options so as to recommend that it not progress through the Options assessment. |
| LJ.02 | Callala Bay | Beach Scraping and foreshore restoration | 0.3* | 0.2* | 0.1* | |
| LJ.55 | Callala Bay | Design and construction of a rock armoured seawall along Callala Bay foreshore | 0.0* | 0.0* | 0.0* | |
| LJ.29 | Collingwood Beach | Design and construction of a rock armoured seawall along Ilfracombe Avenue | 0.2 | 0.1 | 0.1 | Given the low economic benefit, it is recommended that this option drops out of the options assessment, and that erosion risk at Collingwood Beach can be more cost-effectively addressed through other actions in the CMP that don't require large amounts of capital expenditure, including dune management and the CZEAS. |
| LS.04 | Bendalong Point | Long Term Adaptation Pathway for Manta Ray Road Option A: Coastal Protection Works | 0.6 | 0.4 | 0.4 | Given the low economic benefit, it is recommended that this option drops out of the options assessment, and that erosion risk at Bendalong Beach can be more cost-effectively addressed through other actions in the CMP that don't require large amounts of capital expenditure, including foreshore management and the CZEAS. |
| LS.05 | Bendalong Point | Long Term Adaptation Pathway for Manta Ray Road Option B: Reroute Road Access | 0.6 | 0.4 | 0.3 | |

| ID | Name | Action Name | 1% BCR | 5% BCR | 10% BCR | CBA Outcome and relation to overall options assessment |
|---|---|---|---|---|---|---|
| LS.30 | Mollymook Beach | Design and construct a rock armoured coastal revetment along the Mitchell Parade road reserve shoreline | 0.6 | 0.4 | 0.2 | Given the low economic benefit, it is recommended that this option drops out of the options assessment, and that erosion risk at Collingwood Beach can be more cost-effectively addressed through other actions in the CMP that don't require large amounts of capital expenditure, including dune management and the CZEAS. |
| LS.110 | Kioloa Beach | Rock revetment maintenance and/or upgrade | 1.6* | 1.1* | 0.9* | It is recommended that this option progresses to Feasibility and Acceptability assessment stages. |

* *These BCR values are of low confidence, as there was no coastal hazard mapping available to inform the CBA . These preliminary values should be approached with caution*.

**BCR CALCULATIONS - OPTION LN.02 - Shoalhaven Heads: Adaptation pathway for SLSC building: Option A – refurbish existing seawall**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,606,617 | $ 3,000,000 | $ 2,404,636 | $ 2,002,316 | $ - | $ - | 1.69 | 1.36 | 1.13 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,772,531 | $ 3,938,055 | $ 2,746,120 | $ 2,213,740 | $ - | $ - | 2.22 | 1.55 | 1.25 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,797,605 | $ 4,037,311 | $ 2,805,957 | $ 2,300,426 | $ 107,172 | $ - | 2.25 | 1.56 | 1.28 | 0.06 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,616,792 | $ 3,000,000 | $ 2,647,340 | $ 2,380,681 | $ - | $ - | 1.86 | 1.64 | 1.47 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,882,525 | $ 5,143,798 | $ 3,346,371 | $ 2,647,340 | $ - | $ - | 2.73 | 1.78 | 1.41 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,973,203 | $ 5,570,584 | $ 3,511,103 | $ 2,926,018 | $ 445,765 | $ - | 2.82 | 1.78 | 1.48 | 0.23 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,597,728 | $ 3,000,000 | $ 2,188,149 | $ 1,689,594 | $ - | $ - | 1.88 | 1.37 | 1.06 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,706,502 | $ 3,196,367 | $ 2,474,976 | $ 1,838,842 | $ - | $ - | 1.87 | 1.45 | 1.08 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,714,021 | $ 3,228,851 | $ 2,482,685 | $ 1,862,427 | $ 25,809 | $ - | 1.88 | 1.45 | 1.09 | 0.02 | 0.00 |

**BCR CALCULATIONS - OPTION LN.03 - Shoalhaven Heads: Adaptation pathway for SLSC building: Option B – relocate SLSC landwards**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 3,340,000 | $ 3,000,000 | $ 2,404,636 | $ 2,002,316 | $ - | $ - | 0.90 | 0.72 | 0.60 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,340,000 | $ 3,938,055 | $ 2,746,120 | $ 2,213,740 | $ - | $ - | 1.18 | 0.82 | 0.66 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,340,000 | $ 4,037,311 | $ 2,805,957 | $ 2,300,426 | $ 107,172 | $ - | 1.21 | 0.84 | 0.69 | 0.03 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 3,340,000 | $ 3,000,000 | $ 2,647,340 | $ 2,380,681 | $ - | $ - | 0.90 | 0.79 | 0.71 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,340,000 | $ 5,143,798 | $ 3,346,371 | $ 2,647,340 | $ - | $ - | 1.54 | 1.00 | 0.79 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,340,000 | $ 5,570,584 | $ 3,511,103 | $ 2,926,018 | $ 445,765 | $ - | 1.67 | 1.05 | 0.88 | 0.13 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 3,340,000 | $ 3,000,000 | $ 2,188,149 | $ 1,689,594 | $ - | $ - | 0.90 | 0.66 | 0.51 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,340,000 | $ 3,196,367 | $ 2,474,976 | $ 1,838,842 | $ - | $ - | 0.96 | 0.74 | 0.55 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,340,000 | $ 3,228,851 | $ 2,482,685 | $ 1,862,427 | $ 25,809 | $ - | 0.97 | 0.74 | 0.56 | 0.01 | 0.00 |

**BCR CALCULATIONS - OPTION LN.08 - Culburra Beach: Construct a rock armoured seawall to protect the public road along Allerton Avenue**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,016,543 | $ 5,794 | $ 1,465 | $ 1,307 | $ - | $ - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,431,327 | $ 40,647 | $ 24,718 | $ 18,393 | $ - | $ - | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,494,011 | $ 144,243 | $ 91,762 | $ 84,648 | $ 8,220 | $ - | 0.03 | 0.02 | 0.02 | 0.00 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,041,979 | $ 6,889 | $ 1,614 | $ 1,307 | $ - | $ - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,706,312 | $ 70,449 | $ 40,982 | $ 31,429 | $ - | $ - | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,933,008 | $ 777,496 | $ 574,090 | $ 463,646 | $ 22,147 | $ - | 0.16 | 0.12 | 0.09 | 0.00 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 3,994,321 | $ 4,889 | $ 1,337 | $ 1,303 | $ - | $ - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,266,255 | $ 23,767 | $ 14,224 | $ 11,967 | $ - | $ - | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,285,054 | $ 32,980 | $ 24,069 | $ 18,023 | $ 3,225 | $ - | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |

**BCR CALCULATIONS - OPTION LN.17 – Warrain Beach Long term adaptation pathway for SLSC building: Option A – relocate SLSC landwards**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 50 Year NPV | $ 883,899 | $ 203,100 | $ 127,047 | $ 109,247 | $ - | $ - | 0.23 | 0.14 | 0.12 | 0.00 | 0.00 |
| 100 Year NPV | $ 883,899 | $ 312,616 | $ 209,060 | $ 174,615 | $ 44,020 | $ - | 0.35 | 0.24 | 0.20 | 0.05 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 50 Year NPV | $ 1,485,624 | $ 445,341 | $ 301,862 | $ 226,876 | $ - | $ - | 0.30 | 0.20 | 0.15 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,485,624 | $ 1,032,709 | $ 737,804 | $ 633,794 | $ 78,382 | $ - | 0.70 | 0.50 | 0.43 | 0.05 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 50 Year NPV | $ 531,070 | $ 445,341 | $ 301,862 | $ 226,876 | $ - | $ - | 0.84 | 0.57 | 0.43 | 0.00 | 0.00 |
| 100 Year NPV | $ 531,070 | $ 1,032,709 | $ 737,804 | $ 633,794 | $ 78,382 | $ - | 1.94 | 1.39 | 1.19 | 0.15 | 0.00 |

**BCR CALCULATIONS - OPTION LN.18 - Warrain Beach Long term adaptation pathway for SLSC building: Option B – coastal protection works**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 50 Year NPV | $ 909,316 | $ 203,100 | $ 127,047 | $ 109,247 | $ - | $ - | 0.22 | 0.14 | 0.12 | 0.00 | 0.00 |
| 100 Year NPV | $ 959,463 | $ 312,616 | $ 209,060 | $ 174,615 | $ 44,020 | $ - | 0.33 | 0.22 | 0.18 | 0.05 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 50 Year NPV | $ 1,565,806 | $ 445,341 | $ 301,862 | $ 226,876 | $ - | $ - | 0.28 | 0.19 | 0.14 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,747,162 | $ 1,032,709 | $ 737,804 | $ 633,794 | $ 78,382 | $ - | 0.59 | 0.42 | 0.36 | 0.04 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 50 Year NPV | $ 536,194 | $ 445,341 | $ 301,862 | $ 226,876 | $ - | $ - | 0.83 | 0.56 | 0.42 | 0.00 | 0.00 |
| 100 Year NPV | $ 551,233 | $ 1,032,709 | $ 737,804 | $ 633,794 | $ 78,382 | $ - | 1.87 | 1.34 | 1.15 | 0.14 | 0.00 |

**BCR CALCULATIONS - OPTION LN.23 – Currarong Beach: Shoreline erosion protection structure at Beecroft Parade**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,006,814 | $ 18,090,035 | $ 14,174,631 | $ 11,661,849 | $ - | $ - | 17.97 | 14.08 | 11.58 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,110,786 | $ 22,978,885 | $ 16,324,110 | $ 12,881,158 | $ - | $ - | 20.69 | 14.70 | 11.60 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,126,499 | $ 23,471,887 | $ 16,508,054 | $ 13,186,174 | $ 539,432 | $ - | 20.84 | 14.65 | 11.71 | 0.48 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,013,189 | $ 18,090,035 | $ 15,605,301 | $ 13,865,517 | $ - | $ - | 17.85 | 15.40 | 13.69 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,179,716 | $ 29,441,225 | $ 19,030,748 | $ 15,605,301 | $ - | $ - | 24.96 | 16.13 | 13.23 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,236,541 | $ 31,873,405 | $ 20,017,176 | $ 16,635,319 | $ 2,223,845 | $ - | 25.78 | 16.19 | 13.45 | 1.80 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,001,243 | $ 18,090,035 | $ 12,898,505 | $ 9,840,498 | $ - | $ - | 18.07 | 12.88 | 9.83 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,069,408 | $ 19,037,871 | $ 14,516,980 | $ 10,549,368 | $ - | $ - | 17.80 | 13.57 | 9.86 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,074,120 | $ 19,077,211 | $ 14,738,100 | $ 10,771,804 | $ 129,584 | $ - | 17.76 | 13.72 | 10.03 | 0.12 | 0.00 |

**BCR CALCULATIONS - OPTION LN.24 - Currarong Beach: Currarong Beach Shoreline Protection Structure(s)**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,600,211 | $ 11,032,814 | $ 10,810,959 | $ 9,475,494 | $ - | $ - | 6.89 | 6.76 | 5.92 | 0.00 | 0.00 |
| 50 Year NPV | $ 2,706,039 | $ 23,566,774 | $ 15,108,081 | $ 10,837,368 | $ - | $ - | 8.71 | 5.58 | 4.00 | 0.00 | 0.00 |
| 100 Year NPV | $ 2,732,785 | $ 25,364,373 | $ 16,224,862 | $ 11,876,004 | $ 1,400,872 | $ - | 9.28 | 5.94 | 4.35 | 0.51 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,619,317 | $ 12,885,239 | $ 11,919,450 | $ 9,475,494 | $ - | $ - | 7.96 | 7.36 | 5.85 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,116,864 | $ 35,462,495 | $ 23,531,259 | $ 13,271,413 | $ - | $ - | 11.38 | 7.55 | 4.26 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,213,588 | $ 38,792,032 | $ 26,107,263 | $ 20,350,096 | $ 5,546,619 | $ - | 12.07 | 8.12 | 6.33 | 1.73 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 1,583,519 | $ 9,865,716 | $ 9,768,687 | $ 9,144,785 | $ - | $ - | 6.23 | 6.17 | 5.77 | 0.00 | 0.00 |
| 50 Year NPV | $ 2,413,829 | $ 17,746,376 | $ 10,990,411 | $ 9,667,739 | $ - | $ - | 7.35 | 4.55 | 4.01 | 0.00 | 0.00 |
| 100 Year NPV | $ 2,421,849 | $ 18,007,350 | $ 11,038,452 | $ 9,783,034 | $ 344,907 | $ - | 7.44 | 4.56 | 4.04 | 0.14 | 0.00 |

**BCR CALCULATIONS - OPTION LN.40 - Currarong Beach: Rock armoured seawall at the Currarong Beach foreshore along Warrain Crescent**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 13,174,630 | $ 11,032,814 | $ 10,810,959 | $ 9,475,494 | $ - | $ - | 0.84 | 0.82 | 0.72 | 0.00 | 0.00 |
| 50 Year NPV | $ 14,418,981 | $ 24,083,378 | $ 15,977,369 | $ 10,939,641 | $ - | $ - | 1.67 | 1.11 | 0.76 | 0.00 | 0.00 |
| 100 Year NPV | $ 14,607,034 | $ 26,391,230 | $ 16,944,241 | $ 12,694,024 | $ 2,142,107 | $ - | 1.81 | 1.16 | 0.87 | 0.15 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 13,250,937 | $ 12,885,239 | $ 11,919,450 | $ 9,475,494 | $ - | $ - | 0.97 | 0.90 | 0.72 | 0.00 | 0.00 |
| 50 Year NPV | $ 15,243,936 | $ 38,088,741 | $ 25,201,193 | $ 13,271,413 | $ - | $ - | 2.50 | 1.65 | 0.87 | 0.00 | 0.00 |
| 100 Year NPV | $ 15,924,023 | $ 43,563,659 | $ 29,903,294 | $ 23,815,965 | $ 8,459,899 | $ - | 2.74 | 1.88 | 1.50 | 0.53 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 13,107,964 | $ 9,865,716 | $ 9,768,687 | $ 9,144,785 | $ - | $ - | 0.75 | 0.75 | 0.70 | 0.00 | 0.00 |
| 50 Year NPV | $ 13,923,765 | $ 17,746,376 | $ 11,444,568 | $ 9,667,739 | $ - | $ - | 1.27 | 0.82 | 0.69 | 0.00 | 0.00 |
| 100 Year NPV | $ 13,980,161 | $ 18,846,401 | $ 11,600,785 | $ 9,836,395 | $ 531,355 | $ - | 1.35 | 0.83 | 0.70 | 0.04 | 0.00 |

**BCR CALCULATIONS - OPTION LJ.01 - Callala Bay Groyne Structure(s)**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 922,540 | $ 85,737 | $ 84,999 | $ 80,810 | $ - | $ - | 0.09 | 0.09 | 0.09 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,944,613 | $ 165,871 | $ 105,417 | $ 85,020 | $ - | $ - | 0.09 | 0.05 | 0.04 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,969,687 | $ 184,077 | $ 121,005 | $ 96,991 | $ 19,843 | $ - | 0.09 | 0.06 | 0.05 | 0.01 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 934,233 | $ 96,080 | $ 93,636 | $ 85,220 | $ - | $ - | 0.10 | 0.10 | 0.09 | 0.00 | 0.00 |
| 50 Year NPV | $ 2,320,332 | $ 242,778 | $ 161,613 | $ 95,972 | $ - | $ - | 0.10 | 0.07 | 0.04 | 0.00 | 0.00 |
| 100 Year NPV | $ 2,411,010 | $ 417,247 | $ 285,877 | $ 241,921 | $ 58,065 | $ - | 0.17 | 0.12 | 0.10 | 0.02 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 912,323 | $ 85,220 | $ 77,347 | $ 68,189 | $ - | $ - | 0.09 | 0.08 | 0.07 | 0.00 | 0.00 |
| 50 Year NPV | $ 1,678,696 | $ 130,663 | $ 83,993 | $ 75,387 | $ - | $ - | 0.08 | 0.05 | 0.04 | 0.00 | 0.00 |
| 100 Year NPV | $ 1,686,216 | $ 131,413 | $ 86,416 | $ 77,109 | $ 5,845 | $ - | 0.08 | 0.05 | 0.05 | 0.00 | 0.00 |

**BCR CALCULATIONS - OPTION LJ.02 - Callala Bay: Beach nourishment/scraping and foreshore restoration**

| Discount Rate: | 5% | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 297,864 | $ 85,737 | $ 84,999 | $ 80,810 | $ - | $ - | 0.29 | 0.29 | 0.27 | 0.00 | 0.00 |
| 50 Year NPV | $ 569,270 | $ 165,871 | $ 105,417 | $ 85,020 | $ - | $ - | 0.29 | 0.19 | 0.15 | 0.00 | 0.00 |
| 100 Year NPV | $ 612,894 | $ 184,077 | $ 121,005 | $ 96,991 | $ 19,843 | $ - | 0.30 | 0.20 | 0.16 | 0.03 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 318,485 | $ 96,080 | $ 93,636 | $ 85,220 | $ - | $ - | 0.30 | 0.29 | 0.27 | 0.00 | 0.00 |
| 50 Year NPV | $ 759,615 | $ 242,778 | $ 161,613 | $ 95,972 | $ - | $ - | 0.32 | 0.21 | 0.13 | 0.00 | 0.00 |
| 100 Year NPV | $ 918,097 | $ 417,247 | $ 285,877 | $ 241,921 | $ 58,065 | $ - | 0.45 | 0.31 | 0.26 | 0.06 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 280,073 | $ 85,220 | $ 77,347 | $ 68,189 | $ - | $ - | 0.30 | 0.28 | 0.24 | 0.00 | 0.00 |
| 50 Year NPV | $ 455,129 | $ 130,663 | $ 83,993 | $ 75,387 | $ - | $ - | 0.29 | 0.18 | 0.17 | 0.00 | 0.00 |
| 100 Year NPV | $ 468,173 | $ 131,413 | $ 86,416 | $ 77,109 | $ 5,845 | $ - | 0.28 | 0.18 | 0.16 | 0.01 | 0.00 |

**BCR CALCULATIONS - OPTION LJ.55: Callala Bay: Design and construction of a rock armoured seawall along Callala Bay foreshore**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,391,421 | $ 85,737 | $ 84,999 | $ 80,810 | $ - | $ - | 0.02 | 0.02 | 0.02 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,844,918 | $ 165,871 | $ 105,417 | $ 85,020 | $ - | $ - | 0.03 | 0.02 | 0.02 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,913,453 | $ 184,077 | $ 121,005 | $ 96,991 | $ 19,843 | $ - | 0.04 | 0.02 | 0.02 | 0.00 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,419,230 | $ 96,080 | $ 93,636 | $ 85,220 | $ - | $ - | 0.02 | 0.02 | 0.02 | 0.00 | 0.00 |
| 50 Year NPV | $ 5,145,568 | $ 242,778 | $ 161,613 | $ 95,972 | $ - | $ - | 0.05 | 0.03 | 0.02 | 0.00 | 0.00 |
| 100 Year NPV | $ 5,393,422 | $ 417,247 | $ 285,877 | $ 241,921 | $ 58,065 | $ - | 0.08 | 0.05 | 0.04 | 0.01 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,367,125 | $ 85,220 | $ 77,347 | $ 68,189 | $ - | $ - | 0.02 | 0.02 | 0.02 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,664,439 | $ 130,663 | $ 83,993 | $ 75,387 | $ - | $ - | 0.03 | 0.02 | 0.02 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,684,992 | $ 131,413 | $ 86,416 | $ 77,109 | $ 5,845 | $ - | 0.03 | 0.02 | 0.02 | 0.00 | 0.00 |

**BCR CALCULATIONS - OPTION LJ.29 - Collingwood Beach: Design and construction of a rock armoured seawall along Ilfracombe Avenue**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 6,769,214 | $ 1,037,878 | $ 1,031,220 | $ 936,311 | $ - | $ - | 0.15 | 0.15 | 0.14 | 0.00 | 0.00 |
| 50 Year NPV | $ 7,468,263 | $ 1,696,912 | $ 1,042,166 | $ 1,012,293 | $ - | $ - | 0.23 | 0.14 | 0.14 | 0.00 | 0.00 |
| 100 Year NPV | $ 7,573,907 | $ 1,785,157 | $ 1,192,472 | $ 1,034,540 | $ 134,640 | $ - | 0.24 | 0.16 | 0.14 | 0.02 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 6,812,082 | $ 1,183,440 | $ 1,118,778 | $ 997,479 | $ - | $ - | 0.17 | 0.16 | 0.15 | 0.00 | 0.00 |
| 50 Year NPV | $ 7,931,705 | $ 2,261,482 | $ 1,474,220 | $ 1,142,632 | $ - | $ - | 0.29 | 0.19 | 0.14 | 0.00 | 0.00 |
| 100 Year NPV | $ 8,313,762 | $ 3,157,099 | $ 2,186,342 | $ 1,715,270 | $ 403,545 | $ - | 0.38 | 0.26 | 0.21 | 0.05 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 6,731,763 | $ 997,479 | $ 944,439 | $ 790,078 | $ - | $ - | 0.15 | 0.14 | 0.12 | 0.00 | 0.00 |
| 50 Year NPV | $ 7,190,062 | $ 1,337,528 | $ 985,533 | $ 846,983 | $ - | $ - | 0.19 | 0.14 | 0.12 | 0.00 | 0.00 |
| 100 Year NPV | $ 7,221,744 | $ 1,406,112 | $ 993,524 | $ 871,211 | $ 38,329 | $ - | 0.19 | 0.14 | 0.12 | 0.01 | 0.00 |

**BCR CALCULATIONS - OPTION LS.04 - Bendalong Point: Long Term Adaptation Pathway for Manta Ray Road Option A: Coastal Protection Works**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| Life Cycle | Costs | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 3,427,450 | $ 1,882,110 | $ 1,474,682 | $ 1,213,225 | $ - | $ - | 0.50 | 0.39 | 0.32 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,781,399 | $ 2,390,572 | $ 1,698,122 | $ 1,340,080 | $ - | $ - | 0.63 | 0.45 | 0.35 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,834,890 | $ 2,441,848 | $ 1,717,404 | $ 1,371,697 | $ 56,107 | $ - | 0.64 | 0.45 | 0.36 | 0.01 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| Life Cycle | Costs | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 3,449,155 | $ 1,882,110 | $ 1,623,525 | $ 1,442,481 | $ - | $ - | 0.55 | 0.47 | 0.42 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,016,053 | $ 3,062,668 | $ 1,979,689 | $ 1,623,525 | $ - | $ - | 0.76 | 0.49 | 0.40 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,209,500 | $ 3,315,786 | $ 2,082,469 | $ 1,730,462 | $ 231,404 | $ - | 0.79 | 0.49 | 0.41 | 0.05 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| Life Cycle | Costs | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 3,408,487 | $ 1,882,110 | $ 1,341,918 | $ 1,023,743 | $ - | $ - | 0.55 | 0.39 | 0.30 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,640,538 | $ 1,980,607 | $ 1,510,293 | $ 1,097,489 | $ - | $ - | 0.54 | 0.41 | 0.30 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,656,579 | $ 1,984,793 | $ 1,533,301 | $ 1,120,615 | $ 13,478 | $ - | 0.54 | 0.42 | 0.31 | 0.00 | 0.00 |

**BCR CALCULATIONS - OPTION LS.05 - Bendalong Point: Long Term Adaptation Pathway for Manta Ray Road Option B: Reroute Road Access**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,051,176 | $ 1,882,110 | $ 1,474,682 | $ 1,213,225 | $ - | $ - | 0.46 | 0.36 | 0.29 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,130,815 | $ 2,390,572 | $ 1,698,122 | $ 1,340,080 | $ - | $ - | 0.58 | 0.41 | 0.32 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,142,850 | $ 2,441,848 | $ 1,717,404 | $ 1,371,697 | $ 56,107 | $ - | 0.59 | 0.41 | 0.33 | 0.01 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,183,612 | $ 1,882,110 | $ 1,623,525 | $ 1,442,481 | $ - | $ - | 0.45 | 0.39 | 0.34 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,183,612 | $ 3,062,668 | $ 1,979,689 | $ 1,623,525 | $ - | $ - | 0.73 | 0.47 | 0.39 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,227,137 | $ 3,315,786 | $ 2,082,469 | $ 1,730,462 | $ 231,404 | $ - | 0.78 | 0.49 | 0.41 | 0.05 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 4,046,910 | $ 1,882,110 | $ 1,341,918 | $ 1,023,743 | $ - | $ - | 0.47 | 0.33 | 0.25 | 0.00 | 0.00 |
| 50 Year NPV | $ 4,099,121 | $ 1,980,607 | $ 1,510,293 | $ 1,097,489 | $ - | $ - | 0.48 | 0.37 | 0.27 | 0.00 | 0.00 |
| 100 Year NPV | $ 4,102,730 | $ 1,984,793 | $ 1,533,301 | $ 1,120,615 | $ 13,478 | $ - | 0.48 | 0.37 | 0.27 | 0.00 | 0.00 |

**BCR CALCULATIONS - OPTION LS.30 - Mollymook Beach: Rock armoured coastal revetment along the Mitchell Parade road reserve shoreline**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| Life Cycle | Costs | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 12,317,399 | $ 2,804,287 | $ 2,520,527 | $ 2,315,604 | $ - | $ - | 0.23 | 0.20 | 0.19 | 0.00 | 0.00 |
| 50 Year NPV | $ 13,589,403 | $ 8,010,588 | $ 5,442,553 | $ 3,321,753 | $ - | $ - | 0.59 | 0.40 | 0.24 | 0.00 | 0.00 |
| 100 Year NPV | $ 13,781,635 | $ 8,657,401 | $ 5,686,994 | $ 4,204,309 | $ 739,224 | $ - | 0.63 | 0.41 | 0.31 | 0.05 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| Life Cycle | Costs | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 12,395,403 | $ 3,156,772 | $ 2,765,578 | $ 2,649,286 | $ - | $ - | 0.25 | 0.22 | 0.21 | 0.00 | 0.00 |
| 50 Year NPV | $ 14,432,691 | $ 13,855,051 | $ 8,542,950 | $ 5,252,613 | $ - | $ - | 0.96 | 0.59 | 0.36 | 0.00 | 0.00 |
| 100 Year NPV | $ 15,127,890 | $ 15,300,068 | $ 10,690,567 | $ 8,467,172 | $ 3,147,730 | $ - | 1.01 | 0.71 | 0.56 | 0.21 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| Life Cycle | Costs | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 12,249,252 | $ 2,804,287 | $ 2,240,393 | $ 2,029,098 | $ - | $ - | 0.23 | 0.18 | 0.17 | 0.00 | 0.00 |
| 50 Year NPV | $ 13,083,182 | $ 5,498,712 | $ 3,513,084 | $ 2,431,742 | $ - | $ - | 0.42 | 0.27 | 0.19 | 0.00 | 0.00 |
| 100 Year NPV | $ 13,140,831 | $ 5,847,412 | $ 3,611,249 | $ 2,691,725 | $ 189,985 | $ - | 0.44 | 0.27 | 0.20 | 0.01 | 0.00 |

**BCR CALCULATIONS - OPTION LS.110 - Kioloa Beach: Kioloa Coastal Protection Works**

| Discount Rate: | 5% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 2,891,911 | $ 3,891,990 | $ 3,049,476 | $ 2,508,811 | $ - | $ - | 1.35 | 1.05 | 0.87 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,190,555 | $ 4,948,481 | $ 3,513,801 | $ 2,771,257 | $ - | $ - | 1.55 | 1.10 | 0.87 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,235,688 | $ 5,057,784 | $ 3,556,254 | $ 2,844,260 | $ 119,411 | $ - | 1.56 | 1.10 | 0.88 | 0.04 | 0.00 |

| Discount Rate: | 3% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 2,910,225 | $ 3,891,990 | $ 3,357,265 | $ 2,982,886 | $ - | $ - | 1.34 | 1.15 | 1.02 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,388,545 | $ 6,333,378 | $ 4,093,879 | $ 3,357,265 | $ - | $ - | 1.87 | 1.21 | 0.99 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,551,766 | $ 6,882,636 | $ 4,319,604 | $ 3,596,095 | $ 492,742 | $ - | 1.94 | 1.22 | 1.01 | 0.14 | 0.00 |

| Discount Rate: | 7% | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Cycle | Costs | Benefits (Avoided Storm Damage Costs) - Probability of Exceedance | | | | | BCR - Probability of Exceedance | | | | |
| | | 1% | 5% | 10% | 50% | 90% | 1% | 5% | 10% | 50% | 90% |
| 10 Year NPV | $ 2,875,911 | $ 3,891,990 | $ 2,774,935 | $ 2,116,985 | $ - | $ - | 1.35 | 0.96 | 0.74 | 0.00 | 0.00 |
| 50 Year NPV | $ 3,071,704 | $ 4,097,734 | $ 3,125,180 | $ 2,269,483 | $ - | $ - | 1.33 | 1.02 | 0.74 | 0.00 | 0.00 |
| 100 Year NPV | $ 3,085,239 | $ 4,106,538 | $ 3,173,963 | $ 2,319,704 | $ 28,703 | $ - | 1.33 | 1.03 | 0.75 | 0.01 | 0.00 |

WATER TECHNOLOGY
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# APPENDIX E
# SUMMARY OF STAGE 3 COMMUNITY ENGAGEMENT RESPONSES

# E-1 Introduction

As part of Stage 3 of the Shoalhaven Open Coast and Jervis Bay CMP, Council and the project consultants directly engaged with the community through an online survey and feedback mapping platform. The purpose of the engagement was to ask the communities for their assistance in:

- Providing feedback on some of the management options that were proposed by the project team; and
- Providing suggestions and opinions regarding additional management options that could be included in the CMP.

Links to the online survey and feedback mapping platform were posted on Council's *Get Involved* webpage for the project and advertised on Council's social media accounts. The survey was open from 25 August until 16 October 2022. In total, 540 individual participant responses were received.

# E-2 Who Provided Feedback?

The online engagement portal garnered a significant number of responses from the local community. A total of 540 community members registered in the portal and provided responses, included members of the following 18 different community groups:

- Birdlife Shoalhaven
- Burrill Lake Community Association
- Callala Beach Progress Association
- Callala Bush Care
- Callala Foreshore Alliance
- Collingwood Beach Preservation Group
- Culburra Beach Seniors
- Huskisson Woollamia Community Voice
- Jervis Bay Cruising Yacht Club
- Jervis Bay Game Fishing Club
- Jervis Bay Sailing Club
- Lake Tabourie Community Consultative Body (CCB)
- Lake Wollumboola Protection Association
- Lake Wollumboola Bushcare Group
- Mollymook Dunecare / Bushcare
- Shoalhaven Heads Community Forum
- Shoalhaven Heads SLSC
- Shoalhaven Landcare
- Sussex Inlet & Districts Community Forum

Key findings from the online survey include:

- Question 1: What is your connection to the Shoalhaven coastal zone? (see Figure E-1):
  - 72% were residents of the Shoalhaven LGA.
  - 20% own property in the LGA but live permanently outside of the LGA.
- Question 2: If you like, please provide your name or the name your business, agency, or community group
  - Responses withheld due to confidentiality.
- Question 3: What is your age? (see Figure E-2):
  - 29% were between the ages of 60 to 69.

- 25% were between the ages of 50 to 59.

- Question 4: Where do you live? (see Figure F-3):
  - Culburra Beach (19% of responses)
  - Vincentia (13%)
  - Bawley Point (7%)
  - Callala Beach (7%)
  - Callala Bay (6%)
  - Mollymook Beach (4%)
  - Shoalhaven Heads (2%)
  - Sussex Inlet (2%)
  - All other locations in Shoalhaven LGA (Combined) (25%)
  - Outside of the Shoalhaven LGA (11%)

In total, participants left 1,306 responses in the Community Feedback mapping portal and 200 comments in the Community Suggestion mapping portal. Out of the responses, 414 respondents (82%) said that they would like to be kept informed about the progress of the CMP, and 93 (18%) said that they would not.

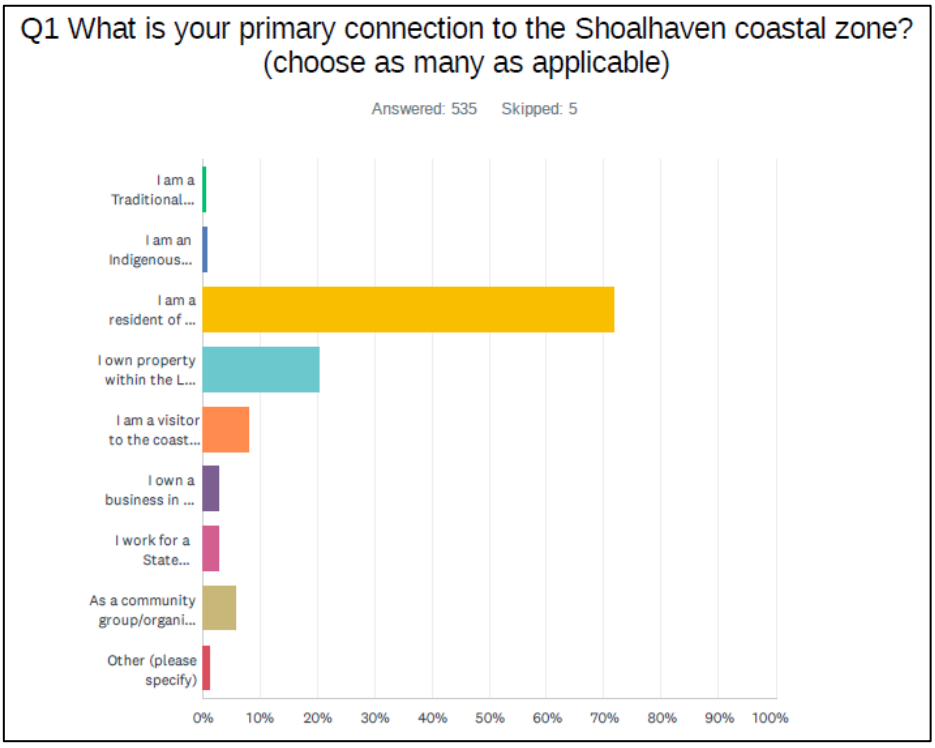


**Figure E-1 Community Survey Responses to Question 1**

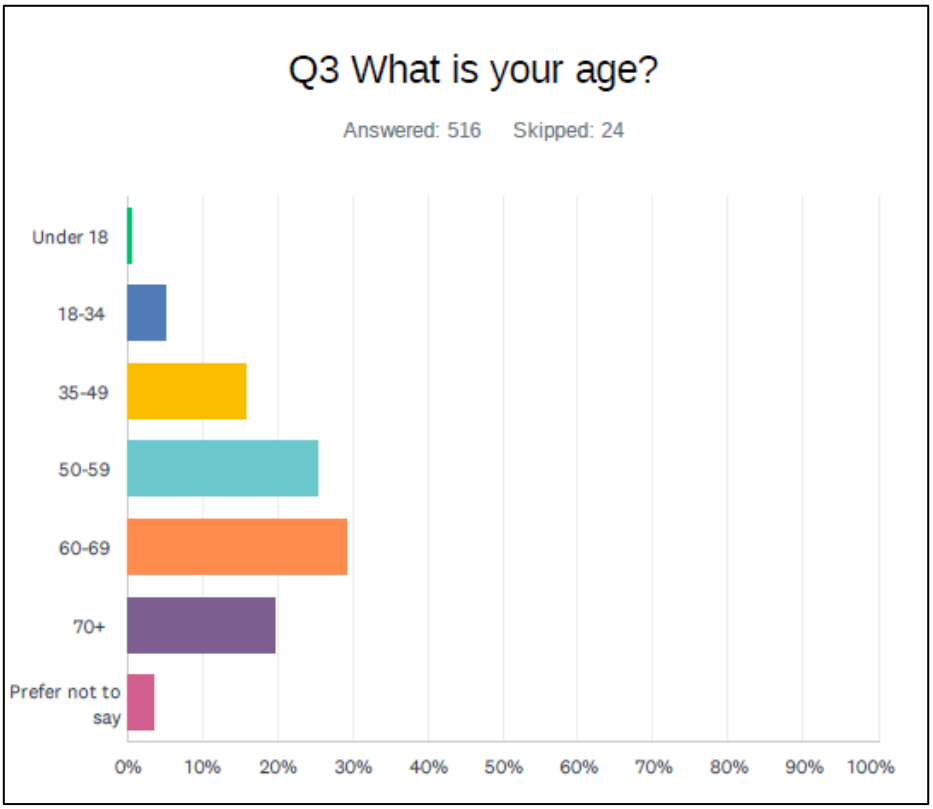


**Figure E-2 Community Survey Responses to Question 3**

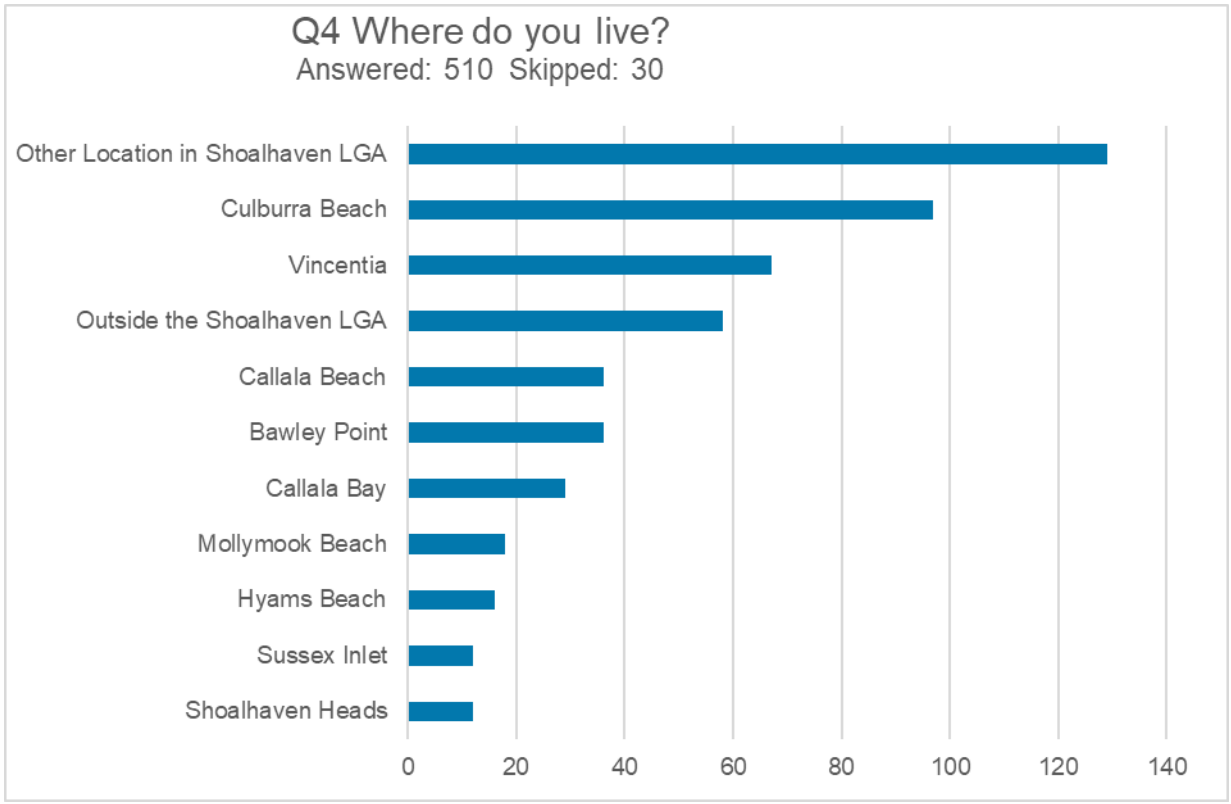


**Figure E-3 Community Survey Responses to Question 4**

# E-3 Feedback Portal Responses

The Community Feedback Mapping Portal allowed participants to provide feedback on the list of identified coastal management options for localities across the LGA. Each option was pinned to a specific location, allowing users to review options pertaining to their geographic areas of interest. Participants were asked to select if their view was “Support”, “Do Not Support”, or “Neutral” regarding the option. Additionally, participants could leave a comment pertaining to the option.

In total, 1,306 responses were recorded on 137 possible management options across the Shoalhaven LGA. Based on the results, 108 options had overall support, 28 options did not have majority support, and 1 option remained neutral. The results are summarised in Table E-1.

**Table E-1 Summary of community feedback on list of actions (colour coded by overall result)**

| Option # | Option Name | Option Location | Support | Do Not Support | Neutral | Number of Responses | Result |
|---|---|---|---|---|---|---|---|
| LJ.01 | Investigate a trial groyne for long term erosion protection, including beach fill and monitoring | Callala Bay | 50% | 20% | 30% | 10 | Support |
| LJ.02 | Beach Scraping and foreshore restoration | Callala Bay | 80% | 7% | 13% | 15 | Support |
| LJ.03 | Sheaffe Street stormwater improvements | Callala Bay | 86% | 0% | 14% | 7 | Support |
| LJ.04 | Sailing Club Protection | Callala Bay | 100% | 0% | 0% | 8 | Support |
| LJ.06 | Implement Environmentally Friendly Moorings within the Bay | Callala Bay | 100% | 0% | 0% | 9 | Support |
| LJ.07 | Repair beach accessway (AssetID: 404298) | Callala Bay | 100% | 0% | 0% | 7 | Support |
| LJ.08 | Repair beach accessway (AssetID: 144926) | Callala Bay | 100% | 0% | 0% | 11 | Support |
| LJ.10 | Close beach accessway and rehabilitate the dune (AssetID: 49286) | Callala Bay | 67% | 33% | 0% | 15 | Support |
| LJ.11 | Close beach accessway and rehabilitate the dune (AssetID: 49290) | Callala Bay | 60% | 40% | 0% | 20 | Support |
| LJ.12 | Engage with residents about private access tracks | Callala Beach | 59% | 32% | 8% | 37 | Support |
| LJ.13 | Adaptation pathway for Community Hall and tennis club facilities | Callala Beach | 36% | 57% | 7% | 14 | Do Not Support |
| LJ.14 | Close beach accessway and rehabilitate the dune (AssetID: 49259) | Callala Beach | 65% | 35% | 0% | 17 | Support |
| LJ.15 | Repair beach accessway (AssetID: 10000907) | Myola | 90% | 0% | 10% | 10 | Support |
| LJ.17 | Refurbish the small section of rock seawall at the Huskisson Sea Pool. | Huskisson | 75% | 25% | 0% | 4 | Support |
| LJ.18 | Upgrade beach accessway (AssetID: 140150) | Huskisson | 100% | 0% | 0% | 7 | Support |
| LJ.19 | Foreshore Management Works at Moona Moona Creek Entrance. | Huskisson | 82% | 18% | 0% | 11 | Support |
| LJ.20 | Sand Redistribution Program for Moona Moona Creek foreshore. | Huskisson | 31% | 62% | 8% | 13 | Do Not Support |
| LJ.21 | Close beach accessway and rehabilitate the dune (AssetID: 140173) | Huskisson | 54% | 46% | 0% | 13 | Support |
| LJ.22 | Repair beach accessway (AssetID: 140167) | Huskisson | 100% | 0% | 0% | 5 | Support |
| LJ.23 | Close beach accessway and rehabilitate the dune (AssetID: 140164) | Huskisson | 86% | 14% | 0% | 7 | Support |
| LJ.24 | Stormwater Management Plan for Collingwood Beach | Collingwood Beach | 62% | 38% | 0% | 13 | Support |
| LJ.25 | Stormwater outlet upgrade at Church St | Collingwood Beach | 100% | 0% | 0% | 10 | Support |
| LJ.26 | Stormwater outlet upgrade at Bayswater Rd | Collingwood Beach | 91% | 0% | 9% | 11 | Support |
| LJ.27 | Adaptation / protection of Wastewater Assets | Collingwood Beach | 80% | 20% | 0% | 5 | Support |
| LJ.28 | Adaptation / protection of Wastewater Assets | Collingwood Beach | 71% | 29% | 0% | 7 | Support |
| LJ.29 | Investigate options for the future protection of the road along Ilfracombe Avenue | Collingwood Beach | 67% | 27% | 7% | 15 | Support |
| LJ.31 | Install beach accessway at the southern end of the beach | Collingwood Beach | 44% | 56% | 0% | 16 | Do Not Support |
| LJ.32 | Repair beach accessway (AssetID: 140307) | Collingwood Beach | 55% | 45% | 0% | 11 | Support |
| LJ.33 | Close beach accessway and rehabilitate the dune (AssetID: 140286) | Collingwood Beach | 32% | 68% | 0% | 19 | Do Not Support |
| LJ.34 | Close beach accessway and rehabilitate the dune (AssetID: 140292) | Collingwood Beach | 18% | 82% | 0% | 17 | Do Not Support |
| LJ.35 | Close beach accessway and rehabilitate the dune (AssetID: 140298) | Collingwood Beach | 29% | 71% | 0% | 17 | Do Not Support |
| LJ.36 | Undertake dune restoration at Nelsons Beach | Vincentia | 93% | 0% | 7% | 14 | Support |
| LJ.37 | Close beach accessway and rehabilitate the dune (AssetID: 156079) | Vincentia | 63% | 38% | 0% | 8 | Support |
| LJ.38 | Rename Chinamans Beach to a name of significance to local Traditional Owners | Hyams Beach | 86% | 5% | 10% | 21 | Support |
| LJ.39 | Entrance Management Policy for the creek at Hyams Beach | Hyams Beach | 38% | 54% | 8% | 13 | Do Not Support |
| LJ.43 | Little Hyams Beach dune management | Hyams Beach | 46% | 46% | 8% | 13 | Split |

| Option # | Option Name | Option Location | Support | Do Not Support | Neutral | Number of Responses | Result |
|---|---|---|---|---|---|---|---|
| LN.01 | Assess the condition of the SLSC rock revetment | Shoalhaven Heads | 67% | 0% | 33% | 3 | Support |
| LN.02 | Adaptation pathway for SLSC building: Option A | Shoalhaven Heads | 50% | 0% | 50% | 2 | Support |
| LN.03 | Adaptation pathway for SLSC building: Option B | Shoalhaven Heads | 50% | 0% | 50% | 2 | Support |
| LN.04 | Strategic reuse of "dry notch sand" at the Shoalhaven River northern entrance berm | Shoalhaven Heads | 57% | 29% | 14% | 7 | Support |
| LN.06 | Community engagement about dune management and informal access tracks | Culburra Beach | 58% | 35% | 8% | 26 | Support |
| LN.07 | Passive relocation of northern access loop road when damaged by storm events - to a more landwards location within existing parcel | Culburra Beach | 80% | 20% | 0% | 5 | Support |
| LN.08 | Investigate the feasibility of a buried rock armoured seawall structure to protect the public road along Allerton Avenue at the southern end of the beach | Culburra Beach | 69% | 13% | 19% | 16 | Support |
| LN.09 | Investigate options for the upgrade stormwater outlet at Allerton Avenue | Culburra Beach | 100% | 0% | 0% | 17 | Support |
| LN.11 | Repair beach accessway (AssetID: 158652) | Culburra Beach | 100% | 0% | 0% | 26 | Support |
| LN.12 | Close beach accessway and rehabilitate the dune (AssetID: 140009) | Culburra Beach | 15% | 85% | 0% | 96 | Do Not Support |
| LN.13 | Close beach accessway and rehabilitate the dune (AssetID: 140018) | Culburra Beach | 8% | 92% | 0% | 132 | Do Not Support |
| LN.14 | Close beach accessway and rehabilitate the dune (AssetID: 140025) | Culburra Beach | 16% | 82% | 1% | 91 | Do Not Support |
| LN.15 | Repair beach accessway (AssetID: 140043) | Culburra Beach | 86% | 10% | 3% | 29 | Support |
| LN.16 | Close beach accessway and rehabilitate the dune (AssetID: 49233) | Culburra Beach | 38% | 63% | 0% | 24 | Do Not Support |
| LN.17 | Long Term Adaptation pathway for SLSC building: Option A | Warrain Beach | 71% | 0% | 29% | 7 | Support |
| LN.18 | Long Term Adaptation pathway for SLSC building: Option B | Warrain Beach | 63% | 13% | 25% | 8 | Support |
| LN.20 | Close beach accessway and rehabilitate the dune (AssetID: 140080) | Warrain Beach | 48% | 48% | 4% | 25 | Split |
| LN.21 | Close informal beach accessway | Warrain Beach | 44% | 52% | 4% | 27 | Do Not Support |
| LN.23 | Investigate the need for a shoreline erosion protection structure at Beecroft Parade | Currarong Beach | 0% | 57% | 43% | 7 | Do Not Support |
| LN.24 | Investigate the potential for a trial groyne for long term erosion protection, including beach fill and monitoring | Currarong Beach | 30% | 50% | 20% | 10 | Do Not Support |
| LN.25 | Long Term Adaptation Pathway for mitigating coastal inundation hazard of Currarong Road | Currarong Beach | 67% | 0% | 33% | 3 | Support |
| LN.26 | Long Term Adaptation Pathway for mitigating coastal erosion hazard of Currarong Road | Currarong Beach | 67% | 0% | 33% | 3 | Support |
| LN.27 | Wastewater Management Plan | Currarong Beach | 100% | 0% | 0% | 3 | Support |
| LN.28 | Beachwatch Water Quality reporting | Currarong Beach | 100% | 0% | 0% | 6 | Support |
| LN.29 | Improving recreational access during peak summer periods | Currarong Beach | 67% | 33% | 0% | 3 | Support |
| LN.32 | Upgrade beach accessway (AssetID: 522783) | Currarong Beach | 75% | 25% | 0% | 4 | Support |
| LN.33 | Repair beach accessway (AssetID: 140100) | Currarong Beach | 100% | 0% | 0% | 3 | Support |
| LN.34 | Repair beach accessway (AssetID: 403994) | Currarong Beach | 100% | 0% | 0% | 4 | Support |
| LS.01 | Zoning Amendment | Cudmirrah Beach | 100% | 0% | 0% | 4 | Support |
| LS.02 | Repair beach accessway (AssetID: 155825) | Berrara | 100% | 0% | 0% | 2 | Support |
| LS.03 | Include best practice coastal management in the Bendalong Boat Harbour Master Plan | Bendalong Point | 100% | 0% | 0% | 4 | Support |
| LS.04 | Long Term Adaptation Pathway for Manta Ray Road: Option A | Bendalong Point | 33% | 67% | 0% | 3 | Do Not Support |

| Option # | Option Name | Option Location | Support | Do Not Support | Neutral | Number of Responses | Result |
|---|---|---|---|---|---|---|---|
| LS.05 | Long Term Adaptation Pathway for Manta Ray Road: Option B | Bendalong Point | 100% | 0% | 0% | 2 | Support |
| LS.06 | Washerwomans Beach dune restoration | Bendalong Point | 100% | 0% | 0% | 4 | Support |
| LS.07 | Repair beach accessway (AssetID: 392622) | Bendalong Point | 100% | 0% | 0% | 3 | Support |
| LS.08 | Repair beach accessway (AssetID: 550742) | Bendalong Point | 100% | 0% | 0% | 4 | Support |
| LS.09 | Repair beach accessway (AssetID: 155616) | Bendalong Point | 100% | 0% | 0% | 3 | Support |
| LS.10 | Upgrade beach accessway (AssetID: 155620) | Bendalong Point | 75% | 25% | 0% | 4 | Support |
| LS.12 | Close beach accessway and rehabilitate the dune (AssetID: 159661) | Bendalong Point | 30% | 70% | 0% | 10 | Do Not Support |
| LS.13 | Repair beach accessway (AssetID: 155651) | Inyadda Beach | 50% | 50% | 0% | 2 | Split |
| LS.14 | Close beach accessway and rehabilitate the dune (AssetID: 155667) | Manyana Beach | 33% | 67% | 0% | 6 | Do Not Support |
| LS.15 | Repair beach accessway (AssetID: 155665) | Manyana Beach | 100% | 0% | 0% | 1 | Support |
| LS.16 | Manyana Creek entrance tripper wall structure | Manyana Beach | 100% | 0% | 0% | 2 | Support |
| LS.17 | Upgrade beach accessway (AssetID: 155693) | Manyana Beach | 100% | 0% | 0% | 4 | Support |
| LS.18 | Close beach accessway and rehabilitate the dune (AssetID: 155694) | Manyana Beach | 14% | 71% | 14% | 7 | Do Not Support |
| LS.19 | Repair beach accessway (AssetID: 155707) | Cunjurong Point | 50% | 0% | 50% | 4 | Support |
| LS.20 | Sand stockpile for targeted and strategic beach nourishment | Conjola Area | 11% | 67% | 22% | 9 | Do Not Support |
| LS.22 | Dune maintenance | Narrawallee Beach | 100% | 0% | 0% | 3 | Support |
| LS.23 | Upgrade beach accessway (AssetID: 140188) | Narrawallee Beach | 100% | 0% | 0% | 1 | Support |
| LS.24 | Upgrade beach accessway (AssetID: 140191) | Narrawallee Beach | 100% | 0% | 0% | 1 | Support |
| LS.25 | Repair beach accessway (AssetID: 586677) | Narrawallee Beach | 100% | 0% | 0% | 1 | Support |
| LS.26 | Close beach accessway and rehabilitate the dune (AssetID: 140269) | Narrawallee Beach | 67% | 33% | 0% | 3 | Support |
| LS.27 | South Mollymook Coastal Protection Works | Mollymook Beach | 100% | 0% | 0% | 2 | Support |
| LS.28 | Landslide area rehabilitation at Mitchell Parade. | Mollymook Beach | 100% | 0% | 0% | 1 | Support |
| LS.29 | Landslide risk management (LRM) recommendations for lookout at Bannisters Point | Mollymook Beach | 100% | 0% | 0% | 2 | Support |
| LS.31 | Southern Tripper Wall for Blackwater Creek | Mollymook Beach | 100% | 0% | 0% | 4 | Support |
| LS.32 | Dune restoration and access management at South Mollymook | Mollymook Beach | 100% | 0% | 0% | 5 | Support |
| LS.33 | Sand Scraping and dune restoration at North Mollymook | Mollymook Beach | 100% | 0% | 0% | 4 | Support |
| LS.35 | Stormwater management along Beach Road, at North Mollymook Beach | Mollymook Beach | 100% | 0% | 0% | 1 | Support |
| LS.36 | Implement the Mollymook Beach Management Action Plan | Mollymook Beach | 50% | 0% | 50% | 2 | Support |
| LS.37 | Close beach accessway and rehabilitate the dune (AssetID: 155972) | Mollymook Beach | 29% | 71% | 0% | 7 | Do Not Support |
| LS.38 | Close beach accessway and rehabilitate the dune (AssetID: 155975) | Mollymook Beach | 80% | 20% | 0% | 5 | Support |
| LS.39 | Repair beach accessway (AssetID: 140353) | Mollymook Beach | 100% | 0% | 0% | 4 | Support |
| LS.40 | Repair beach accessway (AssetID: 140365) | Mollymook Beach | 100% | 0% | 0% | 4 | Support |
| LS.41 | Close beach accessway and rehabilitate the dune (AssetID: 155977) | Mollymook Beach | 33% | 67% | 0% | 3 | Do Not Support |
| LS.42 | Dune restoration and carpark upgrade at Collers Beach | Collers Beach | 100% | 0% | 0% | 3 | Support |
| LS.44 | Repair beach accessway (AssetID: 140380) | Collers Beach | 100% | 0% | 0% | 1 | Support |
| LS.45 | Repair beach accessway (AssetID: 404185) | Collers Beach | 100% | 0% | 0% | 1 | Support |
| LS.46 | Sand Redistribution at Central Harbour Beach | Ulladulla Harbour | 100% | 0% | 0% | 2 | Support |
| LS.47 | Investigate the potential for a trial groyne structure at Millards Creek Entrance | Ulladulla Harbour | 0% | 67% | 33% | 3 | Do Not Support |
| LS.48 | Engineering condition inspection for rock revetment | Ulladulla Harbour | 100% | 0% | 0% | 2 | Support |

| Option # | Option Name | Option Location | Support | Do Not Support | Neutral | Number of Responses | Result |
|---|---|---|---|---|---|---|---|
| LS.51 | Foreshore restoration works at Central Harbour Beach | Ulladulla Harbour | 100% | 0% | 0% | 1 | Support |
| LS.52 | Install dinghy racks | Ulladulla Harbour | 100% | 0% | 0% | 1 | Support |
| LS.53 | Erosion Monitoring South Ulladulla Harbour | Ulladulla Harbour | 100% | 0% | 0% | 1 | Support |
| LS.55 | Upgrade beach accessway (AssetID: 156115) | Ulladulla Harbour | 100% | 0% | 0% | 1 | Support |
| LS.56 | Repair beach accessway (AssetID: 140383) | Ulladulla Harbour | 100% | 0% | 0% | 1 | Support |
| LS.58 | Repair beach accessway (AssetID: 140413) | Rennies Beach | 100% | 0% | 0% | 1 | Support |
| LS.59 | Zoning Amendment | Racecourse Beach | 100% | 0% | 0% | 2 | Support |
| LS.60 | Zoning Amendment | Burrill Beach | 100% | 0% | 0% | 3 | Support |
| LS.64 | Repair beach accessway (AssetID: 155829) | Burrill Beach | 67% | 33% | 0% | 3 | Support |
| LS.66 | Zoning Amendment | Wairo Beach | 100% | 0% | 0% | 2 | Support |
| LS.67 | Close beach accessway and rehabilitate the dune (AssetID: 140449) | Wairo Beach | 20% | 80% | 0% | 5 | Do Not Support |
| LS.68 | Repair beach accessway (AssetID: 404213) | Wairo Beach | 100% | 0% | 0% | 1 | Support |
| LS.69 | Repair beach accessway (AssetID: 69) | Lake Tabourie | 100% | 0% | 0% | 3 | Support |
| LS.70 | Dune building and restoration | Bawley Beach | 0% | 67% | 33% | 6 | Do Not Support |
| LS.71 | Upgrade and formalise parking facilities and pedestrian access to the Bawley Point Headland and the Gantry. | Bawley Point Headland | 89% | 11% | 0% | 9 | Support |
| LS.72 | Investigate an Entrance Management Policy for the Cormorant Beach Lagoon | Cormorant Beach | 0% | 100% | 0% | 4 | Do Not Support |
| LS.73 | Install a water level gauge in the Cormorant Beach Lagoon / Wetlands | Cormorant Beach | 50% | 25% | 25% | 4 | Support |
| LS.74 | Cormorant Beach Pedestrian Access Management | Cormorant Beach | 75% | 0% | 25% | 4 | Support |
| LS.75 | Close beach accessway and rehabilitate the dune (AssetID: 140480) | Gannet Beach | 67% | 33% | 0% | 6 | Support |
| LS.76 | Close beach accessway and rehabilitate the dune (AssetID: 140490) | Gannet Beach | 43% | 57% | 0% | 7 | Do Not Support |
| LS.77 | Close beach accessway and rehabilitate the dune (AssetID: 140501) | Gannet Beach | 20% | 80% | 0% | 10 | Do Not Support |
| LS.78 | Close beach accessway and rehabilitate the dune (AssetID: 140504) | Gannet Beach | 56% | 44% | 0% | 9 | Support |
| LS.79 | Close beach accessway and rehabilitate the dune (AssetID: 140173) | Murramarang Beach | 23% | 77% | 0% | 13 | Do Not Support |
| LS.80 | Seawall monitoring and maintenance | Kioloa Beach | 100% | 0% | 0% | 5 | Support |
| LS.81 | Engineering condition inspection for rock revetment | Kioloa Beach | 100% | 0% | 0% | 4 | Support |
| LS.82 | Stormwater management | Kioloa Beach | 100% | 0% | 0% | 5 | Support |
| LS.83 | Formalise access and increase foreshore resilience | Merry Beach | 100% | 0% | 0% | 6 | Support |
| LS.84 | Long Term Adaptation Pathway for the Depot Beach vehicle access track | Depot Beach | 0% | 0% | 100% | 1 | Neutral |
| LS.85 | Dune building and restoration | Depot Beach | 67% | 0% | 33% | 3 | Support |
| LS.86 | Foreshore Management Works at North Durras Creek Entrance. | North Durras Beach | 67% | 0% | 33% | 3 | Support |
| **Grand Total** | | | **52%** | **44%** | **4%** | **1,306** | **Support** |

# E-4 Suggestion Portal Responses

The Community Suggestion Mapping Portal allowed participants to add their comments onto a map of the LGA using “pinpoints.” This allowed for community members to provide their own comments and suggestions pertaining to specific locations. Users could also choose to provide their name and contact email. In total, 187 comments were recorded in the Community Suggestion mapping portal. Suggestions were reviewed and categorised for consideration in the subsequent options assessment.

The highest number of suggestions were pinned to Callala Bay (37), followed by Culburra Beach (22), Callala Beach (14), Collingwood Beach (14), Narrawallee Beach (13), Mollymook Beach (11) and Huskisson (11).

**Table E-2 Raw Suggestion Portal Responses**

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Bawley Point | Much greater enforcement of the dogs on beaches laws is required on all beaches in the Bawley/Kioloa area. As there is little enforcement the beaches are treated as a free-for-all by dog owners. Seldom do you see a dog on a leash. To comply with section | Not Progressed to Stage 3 | Suggestion covered by existing action, or a comment on existing action | |
| Bendalong Point | This clay cliff is eroding rapidly and endangering the track at the top. This is not natural beach erosion but is the result of quarrying conducted in the 1920s as such it requires urgent attention | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.06 |
| Bendalong Point | There is a midden here. Could it be acknowledged with educational signage and protected? | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S6.03 |
| Bendalong Point | Management of the creek and restoration of the dune vegetation, in conjunction with vehicular and pedestrian access. Particular note impacts from 2020 bushfires. Consideration of long term impacts from coastal hazards to road, power and Shoalwater assets | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.03 |
| Bendalong Point | Let's make more of a fuss of the Hooded Plovers by way of arched entrances with signage reminding folks to walk on the wet sand - "You're entering a hoodie beach". Could go in where ever these critically endangered birds are present. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.01<br>S5.02 |
| Bendalong Point | Ensure the development and zoning of this sensitive coastal hazard area is preserved, protected, and restricted for generations to come. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | Multiple |
| Bendalong Point | clean the Bendalong beach because it has lots of bear bottle caps and bear bottles. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | Multiple |
| Burrill Beach | Please make this park more inclusive for young teens and teens because if I want to go out and go to the park with my friends I can’t because we’re too tall/big for it | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Burrill Beach | I would like to see the burril lake park area be cleaned up as there is usually lots of rubbish around the area. | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Burrill Beach | Entry to beach from path from Princess Highway difficult due to wearing back of dune. Need a stable access point. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.123 |
| Burrill Beach | Entry to beach from Caravan park dificult due to wearing back of dune. 10 foot drop from. Need a stable access point. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.123 |
| Burrill Beach | Cars go up and around the street really fast and it's not safe for kids when they get off the bus and walk home. | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Burrill Beach | Can you please make this more inclusive for teens or young teens because myself being 12 I can't play on it because it's too small | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Burrill Beach | Can we have more social areas we don't have enough or maybe make the park we have a little more inclusive for older kids in there teens for clean the bathrooms more they stink | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Callala Bay | Vegetation vandalism hotspot, suggest a camera is required. Revegetation of the dune with native species. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.02 |
| Callala Bay | This is the best location for the dinghy racks. If you do it properly,up to about 40 bas | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.44 |
| Callala Bay | This is a vegetation vandalism hot spot. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S2.01 |
| Callala Bay | There is a set of access steps here which need to be repaired or removed. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.56 |
| Callala Bay | The plan seems to only involve removing existing access to the beaches and foreshore areas without considering the residents and visitors needs and | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.56 |
| Callala Bay | Tender/boat storage behind toilets | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.44 |
| Callala Bay | Signage advising of overflow boat & trailer parking at marine parade | Considered in Stage 3 | To be included for consideration as new Action in Stage 3 | LJ.45 |
| Callala Bay | Sea pool for residents use | Not Progressed to Stage 3 | Creation of a new seapool is likely outside the remit of CMP -but can be passed on to Council for consideration in strategic planning & delivery | |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Callala Bay | Sea pool | Not Progressed to Stage 3 | Creation of a new seapool is likely outside the remit of CMP -but can be passed on to Council for consideration in strategic planning & delivery | |
| Callala Bay | Sailing dinghy storage for the sailing club like Vincentia sailing club has | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.44 |
| Callala Bay | Repair stair access to the swimming spot amoung the rocks | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.56 |
| Callala Bay | repair of accessway, landslip making access dangerous. Need to control erosion and make access safe. eg move accessway away from erosion, rebatter steep slope and add protection | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 56 |
| Callala Bay | repair and formalization of safe beach accessway off sheaffe st, eg stairs. Support for runoff control from road | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 56 |
| Callala Bay | Remove abandoned boats on foreshore | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.44 |
| Callala Bay | Rehabilitate eroded hind dunes along the beach to Red Rock through exclusion, replanting and use of brush matting. | Not Progressed to Stage 3 | This Action is located in the Jervis Bay National Park area, and can be included in the JBNP Plan of Management | |
| Callala Bay | Need to repair access to the rock shelf from the headland at this point | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 56 |
| Callala Bay | need to improve the beach access at this point, especially to enable disabled and pram access to the beach | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 56 |
| Callala Bay | Lower section of stairs needs work | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 56 |
| Callala Bay | improved and safe formal accessway from nth side of boatramp | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 56 |
| Callala Bay | Improve vechile access point to be a better beach access point for off the beach craft | Not Progressed to Stage 3 | Not considered for long list, inconsistent Local and State Govt policy | |
| Callala Bay | Good location for dinghy racks, utilising the area behind toilets | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.44 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Callala Bay | Fix look out fencing | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.02 |
| Callala Bay | Erosion mitigation required. Removal of dinghy's along foreshore | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.44 |
| Callala Bay | disabled access off end of footpath | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 56 |
| Callala Bay | Develop sea grass in adjacent areas as an offset to allow swing moorings to be retained. The environmental moorings have a high failure rate. The area of seagrass affected is minuscule compared with the total ares in Jervis Bay. | Not Progressed to Stage 3 | This action has been passed on to DPI-Fisheries and JBMP as it aligns with the JBMP Plan of Management. | |
| Callala Bay | Develop a foreshore park with toilets | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Callala Bay | consideration of rock or sand bag foreshore protection along stretch of beach | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.04 |
| Callala Bay | Connect the Callala Bay cycle/walkway to the Myola cycle/walkway. During the summer holiday, people holidaying on Quay street have to walk and ride in the road, this includes children. An accident awaiting to happen. | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Callala Bay | Coastal processes study to better inform future management options - follow up on studies by Navy | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.00 |
| Callala Bay | Camera on jetty to monitor jet ski & boat infringements | Not Progressed to Stage 3 | Issue for TfNSW -but can be passed on to them | |
| Callala Bay | Booramine terrace traffic management, particularly in summer. Will be made worse if boat ramp is fixed so needs to be thought about in the boat ramp project | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Callala Bay | Beach scrape/remove sand build up that is killing sea grass | Not Progressed to Stage 3 | Not considered for long list, inconsistent Local and State Govt policy | |
| Callala Bay | Ban jet skis from here - we have seen them travel over and get stuck in the sea grass many times at low tide. and yes sort out the moorings as they destroy the sea grass as they swing - and we regularly have them breaking their moorings in storms which c | Not Progressed to Stage 3 | Issue for TfNSW -but can be passed on to them | |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Callala Bay | adopt an approach to tree vandalism by owners with potential sea views that provides disincentives for vandalism. Eg Put up a large structure or fence with a photo of what it used to look like. The people who did it don't get improved views. Fines as san | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S2.01 |
| Callala Bay | Address shoreline erosion issues with rock rubble to stop the erosion. Leave gaps for boat access to the beach. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.55 |
| Callala Bay | address limited car park issues with extended parking North of the ramp | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.44 |
| Callala Bay | accessway to be repaired. steps need to be repaired. Handrail to be added to aid access to water (crack in the rock for swimmers) | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.55 |
| Callala Beach | would it be possible for residents to build private access ways to the beach that don't damage the beach? this is more likely to be successful than asking them not to take the short cut from their back door | Not Progressed to Stage 3 | Not considered for long list, inconsistent Local and State Govt policy | LJ.55 |
| Callala Beach | This walkway has, until last year, provided some access (with assistance) for people with disabilities. It needs to be urgently repaired and then redesigned and built to comply with disabled access standards. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 57 |
| Callala Beach | This track is used for hauling kayaks, as there are no steps. Hauling kayaks up and down steps is very difficult. This track is partially obscured by undergrowth and rarely used for beach access as a result. Considering the number of beach access tracks, | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 57 |
| Callala Beach | The public entry path at Princess street is badly damaged and ha sresulted ina sp | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ. 57 |
| Callala Beach | The beach, the sand dunes and the delicate foreshore are regularly deeply damaged by the 4wds and boat trailers belonging to the fisherman who work along Callala Beach. Why is it possible for them to drive multiple vehicles up and down the dunes and be | Not Progressed to Stage 3 | This action has been passed on to DPI-Fisheries and JBMP as it aligns with the JBMP Plan of Management. | |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Callala Beach | Stop allowing commercial fisherman to drive heavy 4WD vehicles onto the beach and carry out dragnetting. This practice is bad for the environment and leaves scores of waste bycatch littering the beach. This is supposed to be a marine park, ho can this co | Not Progressed to Stage 3 | This action has been passed on to DPI-Fisheries and JBMP as it is covered by the JBMP Plan of Management. | |
| Callala Beach | Stabilise Wowly Creek western bank adjacent to beach access path to prevent it being under minded. Upgrade stairs to beach to make them more user friendly for those users with mobility issues. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.02 |
| Callala Beach | Restrict horse riding to below the high tide mark to prevent damage to the dunes. Commercial race horses are trained on the beach 6 days a week and cause considerable damage to the front of the dune and prevent regeneration of dune plants following storm | Not Progressed to Stage 3 | This action has been passed on to DPI-Fisheries and JBMP as it is covered by the JBMP Plan of Management. | LJ.47 |
| Callala Beach | Public accesses have been degraded by overuse and recent storm events and need some support and dune management - angled, dense native vegetation | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.57 |
| Callala Beach | I notified all Shoalhaven Councillors on 20 Mar 22 by email with video and photography of the destructive drag-net fishing practice that is occurring at Callala Beach and operating even in sanctuary zones which is illegal in most marine areas and directl | Not Progressed to Stage 3 | This action has been passed on to DPI-Fisheries and JBMP as it is covered by the JBMP Plan of Management. | LJ.46 |
| Callala Beach | Duplicate midden signs from CalLala Headland on Callala Beach side of the creek. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S6.03 |
| Callala Beach | Disabled access needs repair | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.57 |
| Callala Beach | Damage to the fore dune area preventing regrowth of erosion prevention plants and grasses. Horse riding should be restricted to times same as canines and ride below high tide to prevent further damage to dunes. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.48 |
| Callala Beach | As there is no access to the beach for disabled people and parents with prams a viewing platform overlooking the beach with seating would an option, also a coffee van parking area would make the area more social. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.47 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Collingwood Beach | We understand to importance of balanced vegetation on the dune system. however, the area here is abundant of banksia integrifolia some areas have up to 6 trees within a meter radius. over the past 10 years we have seen banksia Integrifolia invade the du | Not Progressed to Stage 3 | Not considered for long list, inconsistent Local and State Govt policy | LJ.30 |
| Collingwood Beach | There is a need to either upgrade or more regularly clear the stormwater drains at the corner of Ada St and Elizabeth Drive. This is now a regular flooding point in heavy downpours. As the only access point to the southern end of Vincentia, this really n | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.26 |
| Collingwood Beach | The road ends leading to the beaches should all be curb and guttered to reduce road side dirt gravel etc from washing onto the beach during storm events. at the moment there is a pit in the north eastern corner much of this area of the street is now erod | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.24 |
| Collingwood Beach | The pathway needs to be widened to allow pedestrian access, particularly in busy periods such as school holidays and Christmas holidays. The vegetation is unmanaged and prevents two people coming from different directions from passing easily. There is he | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.59 |
| Collingwood Beach | The dune plantings must be more diverse to protect and restore a more natural profile. Taller species are necessary for protection, from the wind, extensive root systems to protect dunes, better habitat opportunities for a wider range of bird and animal | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.02 |
| Collingwood Beach | The CMP should include an action for the Dune Vegetation PLan pased by Council at its meetings in Dec 2020 and 2021 plus the shared user path being kept free of any vegetation - i walk to the shops frequently with my shop trolley | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.02 |
| Collingwood Beach | Proximity of the brick fence and the mesh fence to each side of the access way creates tight passage for pedestrians. The path should widened or there needs to be more space in this tight area to allow easy passage for pedestrians, bike rides, scooter ri | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.59 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Collingwood Beach | Investigate options for revegetation of dune. Area has been subject to tree vandalism. Invastigate community education around importance of Banksias and Bangalay trees for dune stability. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.30 |
| Collingwood Beach | I was unable to find anything in the survey discussing dune vegetation. As considerable effort has been spent developing an appropriate dune care action plan (subsequently approved by Council) and how important the appropriate vegetation is in the devel | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.02 LS.30 |
| Collingwood Beach | I fully agree with this | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.29 |
| Collingwood Beach | I feel that all road ends towards the Jervis Bay should be curb and guttered and roads properly sealed to stop verge or nature strips from eroding during rain and storm events storm water should be slowed and disposed into the dune system in away which dI believe this is a fantastic idea and will protect the longevity of the dune | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.24 |
| Collingwood Beach | Do not close public beach access from Illfracombe St & Albion St . Public have a right to enter the beach from these entrance points. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.59 |
| Collingwood Beach | Concern regarding the vegetation protection offered by the plantings suggested by the planting guide. Observations of the natural dune systems around the Bay show a greater diversity of species and height of vegetation. taller plantings with deeper roo | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.30 |
| Collingwood Beach | Community Engagement Action needs to be taken to reach out to all the ratepayers with “hazzard lines through or adjacent to their properties”. This has been discussed numerous times with the appropriate staff at SCC, including as late as the Drop in | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S2.01 |
| Conjola Area | My suggestion is that there should life guards on Lake Conjola beach because that beach can get very dangerous. When I go there I can never find a safe spot without my Dad | Not Progressed to Stage 3 | Outside technical scope of this CMP | |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Conjola Area | My suggestion is that on Lake Conjola beach there should life guards | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Crookhaven River | The silts in the entrance do not always wash out with floods. Suggest the silts in the entrance be reviewed to see what the level of scour is with floods and what parts of the entrance do not change materially over time. | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Culburra Beach | We have been visiting and using this access for over 25 Years and have not see a any sign of erosion or dune degradation. Also closing of this access denies residents of the Bowery & the Retreat access to the beach. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | This has been our beach access since I was a small boy, we have owned a house that uses this beach access for the last 25 years. I know have children of my own and we need this acces to keep our young children off the roads. By closing this access all yo | General comment | General comment - considered in CMP development | LN.12 |
| Culburra Beach | Strongly against the closure of beach access at Palm Way. This beach track is used be families, elderly and tourists in the surrounding streets. As there is no beach access on any of the streets either side of Palm Way, resident rely on this beach access | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN. 42 |
| Culburra Beach | Sounds like an enormous waste of money - just seal with quality surface and drainage | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.07 |
| Culburra Beach | Significant erosion along dune here. 1930s rock seat remains roughly in same spot and marks how much erosion has occurred in relatively recent times. Residents continue to cut down trees along here and create private tracks onto beach which promotes fur | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.04 |
| Culburra Beach | Removing beach access from Eastwood avenue is part of living would have a big impact on the community. There are already fences to keep people of dunes and on a path. There are already numerous paths from private properties to the beach that have a gre | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Culburra Beach | Regarding proposed closure of access track LN14, one of the key features of buying our property was the attraction of having direct beach access. The proposal would mean driving to the nearest access point to access the beach. Residents do their best to | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Please.do not reduce access options - I walk here everyday and often need to use alternate access if high tide has changed the sand formation so I can get down and back up to my car. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Over recent years residents along this stretch have removed bush and promoted growth of grass to widen old tracks or create new ones for easy beach access. Fa4 too man6 private tracks are or will promotie erosion. Protective dune vegetation is disappeari | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Objection to closing formal stair access from Eastwood Ave to the beach. - The existing access is predominately a formal stair and observation platform accessed via Eastwood Ave. In all the years we have been using this access, there is no evidence of er | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Laise with Shoal water to relocate the sewerage outfall near the Bombara at Penguin Head further out to sea. When there is a power outage near the sewerage treatment works untreated sewerage flows back into Tilbury Cove. The outfall is used to discharge | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Culburra Beach | In recent months pine trees and banksias on private properties along the foreshore have been removed. If this is allowed by Council it should consider changing the DCP to have them and other significant flora excluded. If not allowed, it should be clearl | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.04 |
| Culburra Beach | I have put in submissions opposing the proposed closure of public walkways. You haven't made the case. And why choose the particuarl walkways you have chose. It is discriminatory. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | DONT CLOSE THE TRACK, people will make their tracks to get down the beach which will impact the dune more than the existing track which may I add has been there for a very long time at least 20 years +, everyone has the right to have access and use the b | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Culburra Beach | Don't close the track, people will make their own tracks which may be worse for the dune system the people on top of the dunes already have their own tracks that go down to the beach on their property and it's not fair to the residents to loose acces | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Don't close the track, people will make their own tracks so it is essentially pointless and worse for the health of the dune, everyone has the right to have access to the beach | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Don't close the track, people are going to make their own tracks which will be worse for the dunes | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Don't close the track people will make more and it will be worse for the dune system, all residents and holidaymakers are allowed access to the beach not just the rich that live on the dunes and have their own private tracks | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Destruction of trees and bushes on public land on foreshore near Tilbury Cove causing land slippage. Liaison with property owners where this has occurred to plant native flora to stop further land slippage. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S2.02 |
| Culburra Beach | Currently the land/pathway at the end of Mia Way is clasified as a Road Reserve. It should be reclassified a s Coastal reserve | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S4.03 |
| Culburra Beach | Closing this access will deny access to the Beach for all the residents living in The Bowery and The Retreat. Our family has been using this beachaccess for 20 years and we have not seen signs of erosion or dune degradation caused by this access. While | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Culburra Beach | Closing Eastwood Ave access is a foolish move and will result in people creating their own paths down to the beach. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.42 |
| Depot Beach | Would these works involve sand placement only? If the foreshore works will be taking place from below the mean high water level then a Marine Estate permit will be required. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.85 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Gannet Beach | This area of reserve is heavily weed infested and vandalised. It requires extensive rehabilitation work. Also, the stormwater outlet at the marked point often washes rubbish into the bush and onto the beach. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S2.01 |
| Gannet Beach | This area of beach reserve is heavily weed infested and vandalised. It requires extensive rehabilitation work. Also, the stormwater outlet at the marked point often washes rubbish into the bush and onto the beach. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.75 |
| Gannet Beach | Support this proposal but if works are to be conducted from the intertidal area of the beach a permit will be required. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S7.01 |
| Gannet Beach | I would suggest an education program for the people in the streets surrounding the Cormorant Wetland (Lurnea, Terragong, Murramarang and Tingira) as to the ecological importance of the wetland and in particular to discourage illegal tree removal and buil | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Gannet Beach | do not want this pathway close LS.76 Bawley Gannet Beach | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S7.05 |
| Greenfield Beach | I love this beach | General comment | General comment - considered in CMP development | |
| Huskisson | There is a Domestic Waterfront Structures Strategy in the works at DPI - Fisheries for Currambene Creek and Moona Creek | Not Progressed to Stage 3 | Action passed on to DPI-Fisheries | |
| Huskisson | The public reserve at Moona Moona Creek is ruined by the lack of control of storm water. Water comes from the caravan park and sits in the reserve becoming stagnant and a health hazard. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.19 |
| Huskisson | take action to stop the flooding which occurs over theb SUP north of Church | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Huskisson | Protection of mangrove systems in Moona Moona and Currambene Creek | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Huskisson | Protection of mangrove systems and estuaries in Moona Moona and Currambene creeks | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.19 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Huskisson | Preserve mangroves and estuary environments by minimising foreshore and upstream developments and protecting riparian zones | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.19 |
| Huskisson | Preserve mangroves and estuary environments by minimising foreshore and upstream developments and protecting riparian zones | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.19 |
| Huskisson | Preserve mangroves and estuary environments by minimising foreshore and upstream developments and protecting riparian zone | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.19 |
| Huskisson | Preserve mangroves and estuary environments by minimising foreshore and upstream developments and protecting riparian zone | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.19 |
| Huskisson | Preserve mangroves and estuary environments by minimising foreshore and upstream developments and protecting riparian zone | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.19 |
| Huskisson | I would love to see Council work with the State Government on some citizen science projects relating to the health of JB. A great model that I have been involved with is the Regional Report Cards that operate in Queensland, particularly along the Great | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S1.06 |
| Hyams Beach | Stormwater management on this section of cliff needs to be integrated into the coastal management program. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S7.03 |
| Kioloa Beach | These works and those at LS 81 will also require permits under Marine Estate legislation. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.82 |
| Lake Conjola | This is not a user friendly ap for people not brought up in the computer era. Those people should be included as they (in my opinion) are effected more broadly by these decisions as they are usually home and really do need the tranquility of beaches esp | General comment | General comment - considered in CMP development | |
| Lake Conjola | Revisit dune rehabilitation work on the southern side of Lake Conjola entrance, considering dune vegetation and fencing. | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Lake Conjola | Can we vinyl wrap all beach bins with "Take 3 for the sea" logo and info please? SCC should really (further) back this initiative. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S1.09 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
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| Lake Tabourie | Works on this Council managed beach access track should be considered in conjunction with nearby track. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.125 |
| LGA-wide | General Ideas without location: There should be a dashboard on Council webpage that provides the status of CMP actions - for public information purposes | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S1.03 |
| LGA-wide | General comments: Undertake an audit of sotrmwater outlets that considers their invert levels: SO we can figure out where we need to raise them over time with Sea Level Rise | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S1.07 |
| Manyana Beach | Need to fix the stairway heading from QuebecStreet to the beach. The stairs are different heights/depths & are extremely slippery in the wet & after wet weather | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.116 |
| Manyana Beach | Fix the stairway heading to beach from Quebec Street. The stairs are different heights/depths & are extremely slippery in wet weather | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.116 |
| Mollymook Beach | you should fix this pathway so pedestrians can go down it and enjoy the beach | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.119 |
| Mollymook Beach | This road is near my house, there are lots of bunny's running around along the streets! I love these bunny's but when I walk to the bus stop sometimes I see dead bunny's because of cars flying round coners..I would love love love something to slow | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Mollymook Beach | This is a general idea - but placing it here. Council should work with local unis to establish local research priorities. Chris told me that this is done in other places like COffs Harbour. There are plenty of Unis who Council can work with. And this can | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S1.10 |
| Mollymook Beach | There used to be a pulic walkway behind the dune here in between the dune and the private properties. this should be reinstated. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.119 |
| Mollymook Beach | The CMP could address the issue that residents are often excluded from walking on the public land between housing blocks and the dune beach area. Often the pathways are "appropriated" by local house owners extending their lawns etc, or even erecting fen | General comment | General comment - considered in CMP development | |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
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| Mollymook Beach | provide new walkway below road using existing terrace in bank to link with timber staircase. this will alleviate pedestrian traffic conflict. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.119 |
| Mollymook Beach | property owner engagement re rationalising beach access tracks to two. All properties to have dune boundary fencing | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.119 |
| Mollymook Beach | Please can council check if stormwater is still running down the cliff and eroding it | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.29 |
| Mollymook Beach | near my home there is this road and cars fly around this corner and hit our bunny's that run around the streets☹ Can u try to put a crossing or a speed bump to slow down cars. Thank you | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Mollymook Beach | Erosion along Mollymook | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.30 |
| Mollymook Beach | Clean the reserve | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Narrawallee Beach | This tidal sandflat area that endangered shore birds forage for food needs to be better protected from off leash dogs. Also dogs are often walked across the sandflat at low tide and then taken across to the sand spit shore bird breeding area, or into th | Not Progressed to Stage 3 | Outside technical scope of this CMP. Covered by separate Council policy. | |
| Narrawallee Beach | The NO Dogs signage should mention that there is a fine - and a way of being a more effective deterrent. There are signs here but they get ignored becuase ppl dont care about getting caught | Not Progressed to Stage 3 | Outside technical scope of this CMP. Covered by separate Council policy. | |
| Narrawallee Beach | More dog parks | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Narrawallee Beach | management of runoff from new development/drainage line that is impacting on dune stability near pumping station. Quantity of water increased over time, new drains possibly connected to drainage line? | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.22 |
| Narrawallee Beach | management of overland runoff impacting on beach accessway south of shower. build up of dune has worsened access and concentrated overland flow, need to factor in access and increased concentrated flow into dune buildup works in future. Solution for ove | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.22 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Narrawallee Beach | management of foreshore weeds, particularly bad concentration of weeds along the track, too difficult for volunteers alone. Track surface has been badly affected by rain, people using alternate side areas through bush so dont have to walk through mud, op | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.22 |
| Narrawallee Beach | I suggest the council grows more trees to make the air cleaner and for the scenery | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Narrawallee Beach | I suggest that council lets the cafe at the inlet (Jane and Cane) re-open to because there is no cafe at all in Narrawallee | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Narrawallee Beach | fencing of foreshore and planting to avoid more erosion of accessway. beach scraping to build up foreshore, then formalise a smaller accessway instead of access over all foreshore. investigate similar solutions for rest of narrawallee beach access tracks to | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.22 |
| Narrawallee Beach | consideration of more footpaths to key points of access to beach eg surfers avenue and victor avenue, linking back to existing path along matron porter drive | Considered in Stage 3 | To be included for consideration as new Action in Stage 3 | |
| Narrawallee Beach | Clean up the reserve | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Narrawallee Beach | better communication between council and local interest groups like bushcare around works, projects in area that council doing. eg temp signs with contact number at location of new project area | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S1.03 |
| Narrawallee Beach | A lot of large of stabilising trees being removed for redevelopments. Need to strengthen policies around removal of important stabilising trees, which help hold cliff etc together. Cumulative impact of individual approvals somehow needs to be factored in | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.22 |
| North Durras Beach | The proposed works should align with the ICOLL entance management policy through the Marine Estate Management Strategy. The physical works will require a permit under the Marine Estate Management Act. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.86 |
| Red Point | Jerinja LALC should be consulted on any management issues in this area | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | Multiple |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Rennies Beach | Rennies is becoming very popular in summer for families. Over last 10 years it has grown from surfers only to sometimes 100+ swimmers. If beaches to north of harbour can get these services for families why not families to the south? Racecourse beach is | General comment | General comment - considered in CMP development | |
| Rennies Beach | Need more off liked areas . This would be a perfect location. Supply bins for pet clean up | Not Progressed to Stage 3 | Outside technical scope of this CMP. Covered by separate Council policy. | |
| Rennies Beach | Handrail requires replacement Greater access for more people, ramp to beach or similar | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.122 |
| Seven Mile Beach | Minimise and manage implications of new Beach Rd development on run off, drainage, light pollution, nature and greenspace loss and general degradation. Please stop developing anywhere near here! | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Seven Mile Beach | Collaboration with National Parks, Kiama Council, Dept Of Environment and other collaborators required | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | Multiple |
| Seven Mile Beach | Collaboration with National Parks, Kiama Council, Dept Environment required for ongoing protection and management | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | Multiple |
| Shoalhaven Heads | This is PRIMARY sand dune. These very large residential houses should not have been built on this land!! Not only is it sensitive dune, it is also right opposite a sign just inside the track on the other side of the road that talks about it being sensiti | General comment | General comment - considered in CMP development | LN.01 |
| Shoalhaven Heads | There is a dune management plan - this plan needs to be in the CMP to ensure overburden sand is removed to allow access to the beach at peak season for the lifesavers | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.01 |
| Shoalhaven Heads | The dunes in front of the surf club require urgent stabilisation as dunes are being eroded and vegetation is being lost at high tide. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.01 |
| Shoalhaven Heads | Excess sand from the notch should go first to the public space in front of the caravan park to create a sand beach for residents and visitors | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.04 |
| Shoalhaven Heads | Dune stabilisation works urgently required at Surf Club. Vegetation falling into the water at high tide. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.03 |
| Shoalhaven Heads | Dune stabilisation urgently required in front of the surf club as dunes are being eroded and vegetation lost. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LN.03 |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
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| Shoalhaven Heads | Can there please be actions to maintain the walkways to the beach in this area | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S7.05 |
| Shoalhaven Heads | A safe access for beach users and cleaning up logs and vegetation from the beach. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S5.02 |
| Sussex Entrance | The erosion at the Sussex Entrance is huge. The boats are allowed to travel 6 Km whilst people swim. The birds nesting on the inlet shore are swamped when boats pass at high tide.reduce the speed to 4 km. Pls stop jetskies they are a danger, they do not | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Sussex Inlet | Please deepen the channel through Sussex Inlet to reduce flooding in Sussex and St George's Basin. It has been on the "to do" list for far too long and is getting worse | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Ulladulla | My suggestion is to help clean up the skate-park of the rubbish | Not Progressed to Stage 3 | Outside technical scope of this CMP | |
| Ulladulla Harbour | update Millards Creek Natural Resources management plan - road stormwater and sediment are big issues. | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Ulladulla Harbour | Remove the weier | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Ulladulla Harbour | Improve walking tracks to protect and improve cultural and environmental heritage value of headland. Existing tracks should be improved and signposted | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.121 |
| Ulladulla Harbour | I think in the Millards Creek we need to clean up all the rubbish. It is dumped in to the creek which obviously gets sent out into the ocean. The erosion there is getting to get out of control, the sides are about to colapse into the creek. Also the eros | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Ulladulla Harbour | Continue boardwalk to base of steps to allow greater access to pool and mitigate erosion Weed control Handrail on steps | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LS.121 |
| Vincentia | Provide stacked boat accommodation to remove plethora of boats on foreshore and parked in streets | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.53 |
| Vincentia | Preserve remnant urban trees. Wildlife corridors and soil stabilisation and sub-surface drainage 'natural' pumps and filters. | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |

| Locality | Your comment | CMP Progression Status | Preliminary Response | Related to Option |
|---|---|---|---|---|
| Vincentia | Preserve remnant urban trees. Wildlife corridors and soil stabilisation and sub-surface drainage 'natural' pumps and filters. | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |
| Vincentia | My concern is for the large scale tree clearing that has occurred throughout the LGA. Looking at the aerial picture of Plantation Point reveals a great number of tall trees have been cleared from this area. As part of the dune rehabilitation suggested | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | LJ.36 |
| Vincentia | Excess runoff from increased development and surface runoff eroding creek and beach. | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S7.03 |
| Warrain Beach | Access issues - steps need to be assessed, sand track- erosion control needed, track near toilet block dangerous use, need good access for people that are less mobile - less mobile people use sand track but it is subject to erosion | Considered in Stage 3 | Suggestion covered by existing action, or a comment on existing action | S7.05 |
| Willinga Lake | Willinga lake beach dune management is not included in the survey although Ganet Beach lagoon is. The lake has lost bits prawns and fish as it has filled by sand and farm run off. It used to fill higher before council stated opening it to protect the Baw | Not Progressed to Stage 3 | Outside study area of this CMP, but considered/transferred to other CMP | |

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS


## Melbourne

15 Business Park Drive
Notting Hill VIC 3168
Telephone (03) 8526 0800

## Sydney

Suite 3, Level 1, 20 Wentworth Street
Parramatta NSW 2150
Telephone (02) 9354 0300

## Brisbane

Level 5, 43 Peel Street
South Brisbane QLD 4101
Telephone (07) 3105 1460

## Adelaide

1/198 Greenhill Road
Eastwood SA 5063
Telephone (08) 8378 8000

## Perth

Ground Floor, 430 Roberts Road
Subiaco WA 6008
Telephone (08) 6555 0105

## New Zealand

7/3 Empire Street
Cambridge New Zealand 3434
Telephone +64 27 777 0989

## Wangaratta

First Floor, 40 Rowan Street
Wangaratta VIC 3677
Telephone (03) 5721 2650

## Geelong

51 Little Fyans Street
Geelong VIC 3220
Telephone (03) 8526 0800

## Wimmera

597 Joel South Road
Stawell VIC 3380
Telephone 0438 510 240

## Gold Coast

Suite 37, Level 4, 194 Varsity Parade
Varsity Lakes QLD 4227
Telephone (07) 5676 7602

**watertech.com.au**