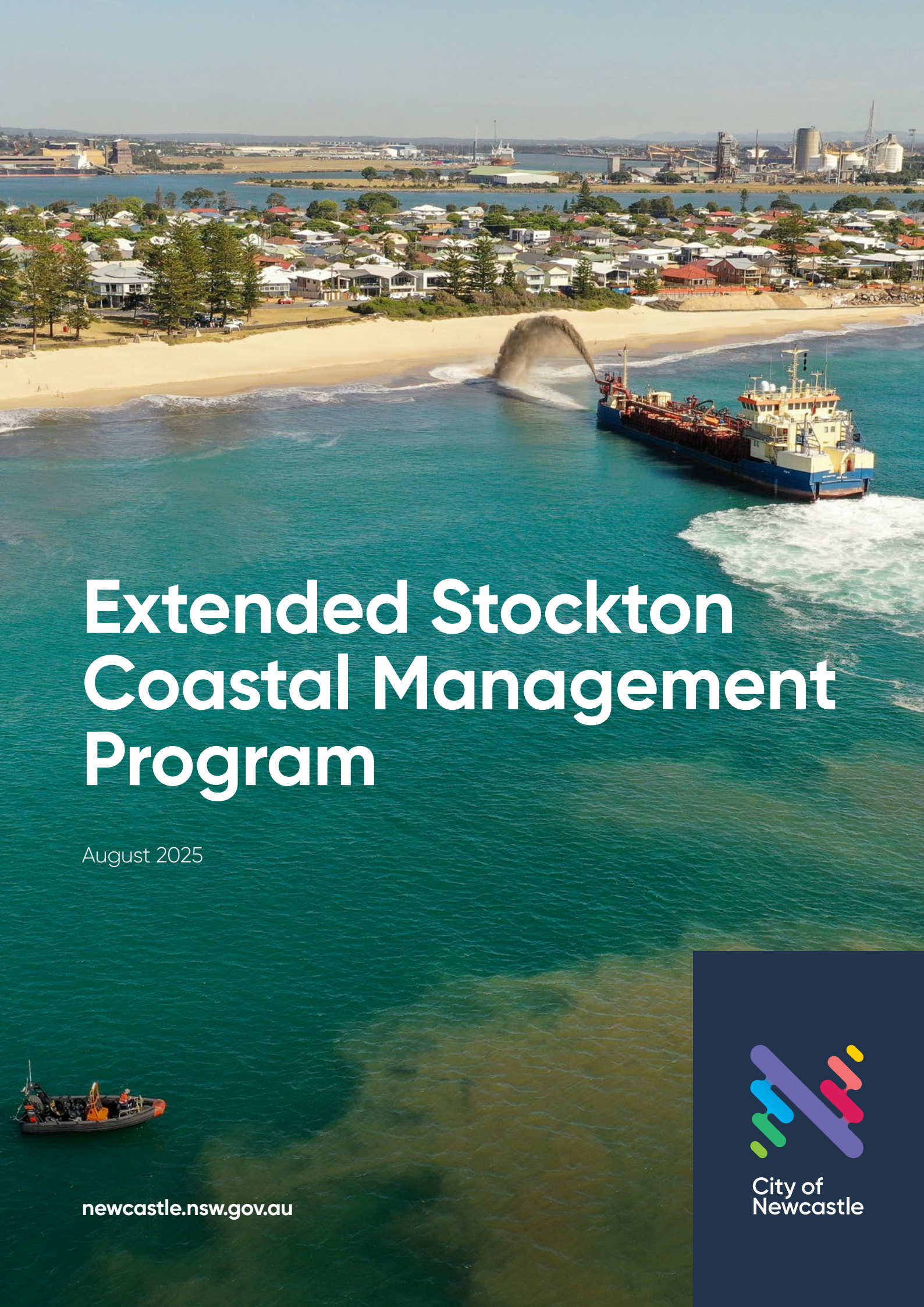

Extended Stockton Coastal Management Program

August 2025

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City of Newcastle

Acknowledgement

City of Newcastle acknowledges with the deepest respect the Traditional Custodians of this land, a people who belong to the oldest continuing culture in the world.

We recognise their continuing connection to the land and waters and unique cultural and spiritual relationships to the land, waters and seas.

We are grateful for the rich, diverse, living cultures of Aboriginal people. We recognise the history of truth that acknowledges the impact of invasion and colonisation on Aboriginal people and how this still resonates today.

We pay our respect to Elders, past, present and emerging, for they hold the memories, traditions, cultures and aspirations of Aboriginal people.

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Cover: Stockton amenity sand nourishment, October 2023. Picture supplied by NSW Government.

bluecoast
CONSULTING ENGINEERS

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Mitchell Street seawall, March 2022. Picture supplied by Brefni.

Foreword

We are pleased to bring you the Extended Stockton Coastal Management Program (CMP). The Extended Stockton CMP focuses on a medium to long-term coastal management strategy for a broadened geographical area covered by the Stockton CMP 2020, to include actions for the northern end of Stockton Beach from Meredith Street to the Newcastle - Port Stephens Local Government Area boundary.

Over time, erosion at Stockton has had significant effects on local landowners and the community and continues to affect many residents' sense of place in their home suburb.

This Extended Stockton CMP has been developed to ensure Stockton's coastal area is protected, enhanced and resilient, and that beach amenity, recreational uses and the sense of identity that our coastline provides our community is maintained. It simultaneously plans for and will deliver on the urgent protection of critical public assets in Stockton, identified at risk in the interim period ahead of the central strategy of the CMP, being mass sand nourishment, funded by the NSW Government under an election commitment in 2023 by now Premier Chris Minns.

We worked with the community, government agencies and other stakeholders to develop a CMP that balances environmental, social, cultural and economic considerations while outlining clear, practical actions to manage coastal hazards and to protect Stockton Beach into the future. The Extended Stockton CMP has been developed using scientific and economic investigations and provides an iterative program of adaptable risk mitigation actions. These actions have been designed to address identified threats and issues in a way that is feasible, viable and acceptable for City of Newcastle, adjacent property owners, NSW Government agencies, the Worimi Aboriginal community and the wider community over the next ten years.

During public exhibition, we heard that 90% of respondents are supportive of ongoing sand top-ups to support mass nourishment for Stockton. Stockton Beach is of intrinsic value to the Stockton and Newcastle community and visitors. There is a strong desire to preserve and protect its natural environment and character whilst responding to a changing climate. We'd like to thank all those who have taken the time to write into us, share their suggestions and help us to develop the Extended Stockton CMP. The supportive response we have received will help us to work towards ensuring Stockton Beach is enjoyed by the current community and future generations to come.

Lastly I must thank the many City of Newcastle staff who have dedicated the past few years of their lives to the finalisation of this CMP.

Jeremy Bath
City of Newcastle CEO

Executive summary

"An early winter solstice swim on Stockton beach. The early morning swimmers were leaving the water as the Stockton OvaArmers were going in. I caught a high five moment. Swimming in the mornings at Stockton is routine, a perfect way to greet the day with a wonderful community."

High fives on an early morning Stockton swim by Tracie O'Meara - Stockton Beach Photo Competition, open category winner.

Since NSW's first certified Coastal Management Program (CMP), the Stockton CMP, was gazetted in 2020, local governments across NSW have continued to prepare CMPs in line with NSW Government legislation, to outline the long-term strategy for managing the complexity of the coastal zone that is consistent with the principles of ecologically sustainable development.

Management of the coastal zone presents significant challenges, including increasing pressure from development, population growth, community use, coastal processes and a changing climate, which when combined, impact the coastal and oceanic environments and identity of these areas.

Stockton Beach is located on a sand peninsula, immediately north of the Hunter River. It is a highly dynamic coastal environment that has experienced ongoing and significant coastal erosion and inundation events, which have directly threatened coastal assets. The historic response to erosion impacts has significantly changed the identity of the suburb, requiring the installation of a range of temporary and permanent protection measures, including the relocation of assets and the removal of the old Stockton North Surf Life Saving Club that housed Stockton's only childcare centre. This, combined with the loss of what once was a wide sandy beach, has drastically altered the amenity of the area and created substantial community trauma.

The Extended Stockton CMP presents a long-term strategy for the adaptive, integrated and coordinated management of the Stockton coastline that reflects community and City of Newcastle (CN) objectives. In alignment with the objects of the NSW

Coastal Management Act 2016 (CM Act), the Extended Stockton CMP will deliver sustained benefits for amenity and coastal protection for the area.

The Stockton CMP 2020 identified large scale mass sand nourishment (mass nourishment) as the most feasible, viable and acceptable solution to the coastal erosion and coastal inundation risk. This aligns with CN and the community's objectives of asset protection and preserved beach amenity over the long term. Building on this foundation, the Extended Stockton CMP broadens the focus to include the medium to long-term coastal management options for the coastline from Little Beach to the Port Stephens LGA boundary and actions that complement the Stockton CMP 2020 mass nourishment strategy.

A sand movement study for the full Stockton Bight was undertaken in 2020 (**Supporting Documentation B**), which highlighted that the average annual northerly movement of sand out of the southern embayment is approximately 146,000 m^3 per year. This is significantly higher than previously estimated. The impact of the ongoing sand loss on Stockton is exacerbated by the blockage of natural sand supply from the south due to the impact of the Newcastle Harbour entrance training breakwaters, artificially deepened navigation channel and on-going maintenance dredging that, when combined, represents a physical barrier to natural sand bypassing. This identified sand deficit plays a crucial role in the understanding of coastal management along the coastal zone and has been pivotal in investigating and defining a sustainable solution for Stockton Beach.

Coastal erosion at Stockton has proceeded beyond an acceptable natural sandy buffer and the remaining buffer does not provide an adequate level of coastal protection or beach amenity. A probabilistic coastal erosion and recession hazard assessment (**Supporting Documentation C**), using the targeted findings of the Stockton Beach Sand Movement Study, concluded that the Extended Stockton CMP area is currently at high to extreme risk, with public assets under immediate threat, requiring urgent protection, and private assets anticipated to be under threat over the longer term.

The coastal management strategy identified within the Extended Stockton CMP has been developed using current scientific and economic investigations to provide an iterative program of adaptable risk mitigation actions to address identified threats and issues that are feasible, viable and acceptable for CN and the community over the next ten years.

The feasibility assessment and evaluation report (**Supporting Documentation E and F**) examined a range of coastal management options in terms of technical viability, social and amenity values, environmental impact, and economic feasibility. A long list of options was refined to a shortlist that included mass nourishment combined with either ongoing sand top-ups, an artificial headland, an artificial reef, or sand backpassing (transferring sand from north to south).

Using the outcome of both reports and following engagement with government agencies and the community, mass nourishment with ongoing sand top-ups was identified as the most feasible, viable, and acceptable solution to support the Stockton CMP 2020 mass nourishment strategy.

The Extended Stockton CMP establishes a pathway for the delivery of mass nourishment, while simultaneously planning and delivering urgent protection works for critical public assets in the short-term. Mass nourishment supported by a responsive program of regular ongoing sand top-ups is designed to return both amenity and access to the Stockton coastal zone, while also re-establishing a sand protection buffer between the ocean and public assets, avoiding the need for coastal protection structures to manage key risks beyond the immediate term. This management approach maintains the natural northerly flow of sand across the broader Stockton Bight.

The delivery of mass nourishment and the investigation of a governance, funding and implementation framework to support ongoing sand top-ups is the responsibility of NSW Department of Climate Change, Energy, the Environment and Water. Based on the coastal erosion impacts experienced at Stockton Beach as a result of the NSW Government owned harbour breakwater and deepwater navigation channel of the Port of Newcastle, CN and the community expect the NSW Government to continue playing the lead role in holistic beach nourishment, including the delivery of ongoing sand top-ups.

The Extended Stockton CMP replaces the Stockton CMP 2020, with its coastal management strategy and actions intended to be implemented over the next 10 years.

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Abbreviations

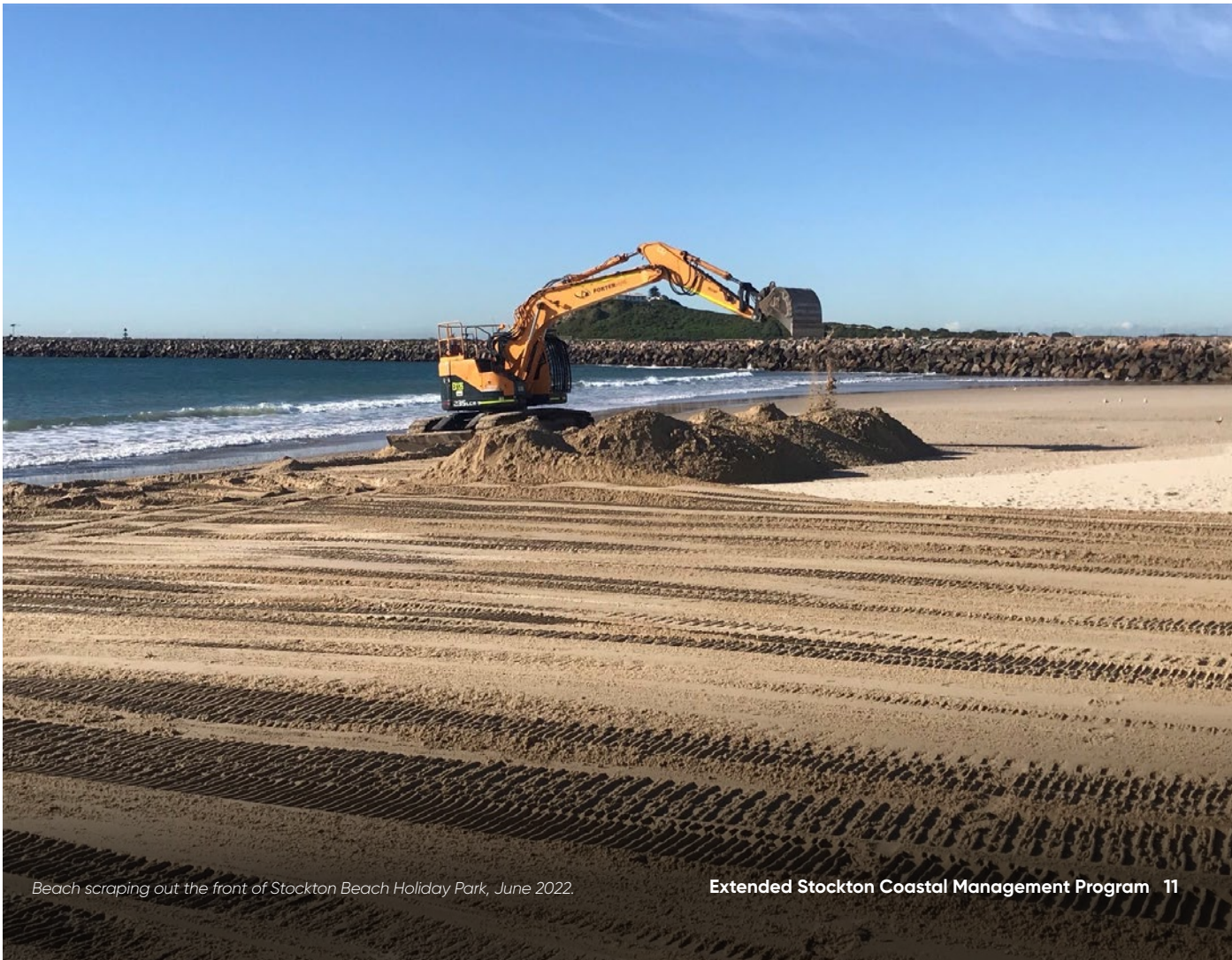
Abbreviation	Meaning
CM Act	Coastal Management Act 2016
CPW	Coastal Protection Works
CMP	Coastal Management Program
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CZEAS	Coastal Zone Emergency Action Subplan
CZMP	Coastal Zone Management Plan (a plan prepared under the former Coastal Protection Act 1979)
DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
DCJ	Department of Communities & Justice
DHA	Defence Housing Australia
DRNSW	Department of Regional NSW
EP&A Act	Environmental Planning and Assessment Act 1979
GIS	Geographical Information System
HW	Hunter Water
IAP2	International Association of Public Participation
IP&R	Integrated Planning and Reporting (in accordance with the Local Government Act 1993)
ISO	International Organisation for Standardization
LGA	Local Government Area
NSWPW	Public Works NSW
NPWS	National Parks and Wildlife Service
OEH	NSW Office of Environment and Heritage
PEMP	Project Environmental Management Plan
PoN	Port of Newcastle
RAP	Registered Aboriginal Parties
SEPP	State Environmental Planning Policy
TfNSW	Transport for NSW

1. Introduction

Stockton Beach is a highly dynamic coastal environment that has been extensively modified over the course of European settlement, in particular, the creation of the Hunter River breakwaters and dredging of the navigation channel. This modification has severely restricted the movement of sand into the Stockton Beach coastal zone significantly, exacerbating coastal erosion potential and diminishing the sandy buffer used for both protection and amenity purposes. With predicted climate change-related events like sea level rise and maintenance of the status quo, these characteristics are likely to be diminished to crisis levels. To date, a variety of management responses have been enacted to mitigate the erosion impact such as revetment construction, asset relocation, amenity beach nourishment, beach scraping and emergency protection works.

In response to coastal erosion and relocation of assets, on 17 February 2020 the Minister for Local Government issued a direction under the CM Act that CN expedite the submission of a draft CMP for the coastline at Stockton Beach, to the Minister administering the CM Act, by 30 June 2020.

This previously completed Stockton CMP 2020, identified mass nourishment as the most feasible, viable and acceptable solution to the coastal erosion risk, meeting CN and the community's objectives of asset protection and beach amenity over the long term. The subsequent presented Extended Stockton CMP establishes a pathway for the delivery of mass nourishment, whilst simultaneously planning and delivering on the urgent protection of critical public assets in the short, medium and long-term.



Beach scraping out the front of Stockton Beach Holiday Park, June 2022.

1.1 Purpose and scope

The preferred long-term coastal management strategy has been co-designed with the Stockton community, to address the key threats of coastal erosion and inundation within the CMP area. The Extended Stockton CMP presents a long-term strategy for the adaptive, integrated and coordinated management of Stockton's coastline between Little Beach and Port Stephen's LGA boundary. The long-term strategy for Stockton's coast is consistent with the objects in the CM Act chiefly to protect coastal environments and support social and cultural values of the area.

Specific management actions aligned with the implementation of the adopted management strategy are presented. The management actions make clear CN's priorities for the next ten (10) years. Details on how actions will be implemented, funded, monitored and reviewed are given.

1.2 Context of this CMP

1.2.1 NSW coastal management framework

In 2016, the NSW Government established a new framework to manage the coastal environment in an ecologically sustainable way for the social, cultural and economic wellbeing of the people of NSW (Figure 1). The Extended Stockton CMP has been prepared in accordance with the mandatory requirements for CMPs specified in the CM Act and accompanying NSW Coastal Management Manual (CM Manual; OEH, 2018).

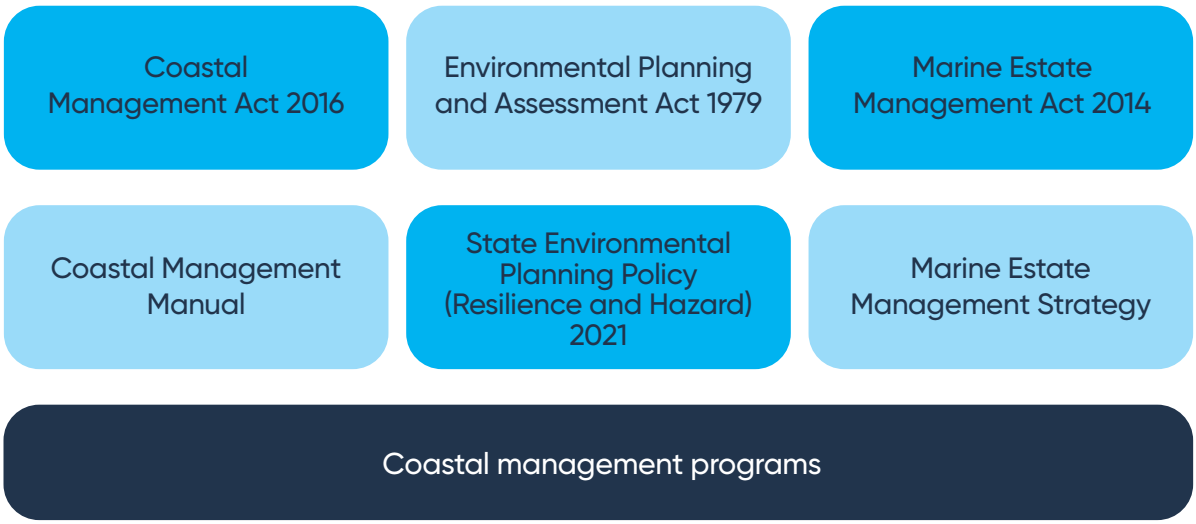


Figure 1. NSW coastal management framework.

The CMP has been developed in accordance with stages one to four of the five-stage CMP development and implementation process. The completed stages supporting this CMP are detailed in Table 1.

"The photo is of my dad enjoying the sunrise on the beach (who has lived in Stockton his whole life). I've always been captivated and amazed by Stockton beach, and I find an almost spiritual connection to the beauty of the beach. I've also lived in Stockton a good portion of my life."

Isolated bliss on Stockton Beach by Archibald Brown - Stockton Beach Photo Competition, Secondary School category winner.

Table 1. CMP stages and supporting documentation.

CMP stage	Supporting documentation	
Stage 1 Identify the scope of a CMP.	A	Newcastle Coastal Management Program Scoping Study (City of Newcastle, 2019).
Stage 2 Determine risks, vulnerabilities and opportunities.	B	Stockton Bight Sand Movement Study (Bluecoast, 2020a).
	C	Stockton Beach Coastal Erosion Hazard Study (Bluecoast, 2020b).
	D	Stockton Beach Coastal Inundation Assessment (Bluecoast, 2020d).
Stage 3 Identify and evaluate options.	E	Feasibility Assessment - Extended Stockton CMP (Bluecoast, 2023a).
	F	Evaluation Report - Extended Stockton CMP (Bluecoast, 2023b).
Stage 4 Prepare, exhibit, finalise, certify and adopt CMP.	G	CMP mandatory checklist.
	NA	This document including: • Appendix A – Agency letters of support. • Appendix B – Stockton Coastal Zone Emergency Action Subplan (CZEAS). • Appendix C – Evaluation of management actions.

Stockton amenity sand nourishment, October 2023. Picture supplied by NSW Government.

1.2.2 Local and regional planning context

The Extended Stockton CMP follows on from the certified and gazetted Stockton CMP 2020. The Stockton CMP 2020 was prepared under a shortened time frame resulting in a truncated spatial extent from Little Beach to Meredith Street. The development of the Extended Stockton CMP focuses on the assessment of medium-term coastal management options from Little Beach to the Port Stephens LGA boundary. It further develops the adopted mass nourishment strategy for the southern end of the embayment identified within the Stockton CMP 2020.

The Newcastle 2040 Community Strategic Plan (CN, 2025) is a shared community vision, developed as a guide to inform policies and actions throughout the city for the next 10+ years. It is structured using four main themes that set out the priorities and objectives for the future of the Newcastle LGA. While all themes have relevance to coastal zone management, the *Sustainable* theme and two of its priorities, Action on Climate Change and Nature-based solutions, are particularly pertinent to this CMP. The Newcastle Environment Strategy (NES) is a supporting strategy for the delivery of these priorities and outlines the focus areas which the development and delivery of the Extended Stockton CMP help to achieve.

CN committed to the United Nations Sustainable Development Goals (SDGs) in 2015. While CN recognises the importance of all 17 SDGs, the Extended Stockton CMP most closely aligns with seven of the 17. Newcastle 2040, the Newcastle Environment Strategy and the Extended Stockton CMP all contribute towards the shared global vision outlined within the SDGs.

NEWCASTLE 2040
it's our *future*
Community Strategic Plan

A shared vision that Newcastle will be a liveable, sustainable, inclusive global city.

Newcastle
ENVIRONMENT
Strategy 2023

The NES is an informing strategy of ***Newcastle 2040,*** providing a roadmap of how CN will achieve the sustainability priorities and objectives of the CSP over the next 10 years. The NES will be supported by five action plans.

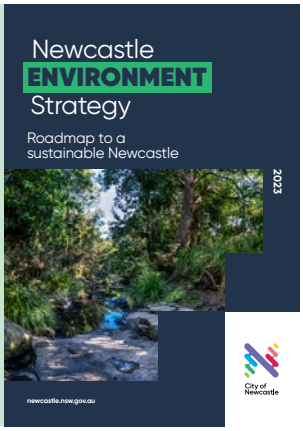


Table 2. Relevant priorities and objectives from Newcastle 2040 – Community Strategy Plan.

Sustainable Development Goals

Newcastle 2040

Theme	Priority	Objectives most relevant to CMP
1 Liveable	**1.1** Enrich neighbourhoods and places.	**1.1.1** Create and maintain vibrant, inclusive and well-designed public spaces **1.1.2** Promote sustainable and accessible urban design **1.1.3** Protect and celebrate Newcastle's heritage **1.1.5** Enhance and protect public safety
2 Sustainable	**2.1** Action on climate change.	**2.1.2** Assess and share climate risk **2.1.3** Support climate change adaptation by building resilient communities and urban and natural areas
	2.2 Nature-based solutions.	**2.2.1** Protect and regenerate natural systems **2.2.3** Support the transition to a water-sensitive city
3 Creative	**3.3** Connected and fair communities.	**3.3.2** Celebrate diversity and champion inclusion **3.3.3** Promote and support active and healthy communities
4 Achieving Together	**4.2** Trust and transparency.	**4.2.1** Foster genuine community engagement
	4.3 Collaborative and innovative approach.	**4.3.2** Encourage innovation and continuous improvement

Newcastle Environment Strategic Priorities the Extended Stockton CMP assist to achieve

- Expand our understanding of local climate risks on our built and natural environment and our community and integrate evidence-based climate risk management into organisational decision making, investment planning and service delivery.
- Apply adaptive management to urban planning and development, infrastructure design and natural area management in response to increased climate risks from flooding, coastal erosion and inundation, storms, heatwaves, heat stress, drought, and bush and grass fires.

- Build a network of high quality blue and green spaces that connects town centres, public transport hubs, schools and residential areas (a blue green grid) for enhanced liveability and biodiversity outcomes.

Other relevant local and regional plans and strategies of relevance to the development of this CMP include:

- Hunter Regional Plan 2041 (DPE, 2022).
- Greater Newcastle Metropolitan Plan 2036 (DPE, 2018).
- Newcastle Strategic Planning Statement (CN, 2021).
- Fern Bay and Stockton North Strategy (CN, 2020).
- Newcastle Coastal Revitalisation Strategy (Urbis, 2010).

1.2.3 Area covered by this CMP

In 2019, the Newcastle Coastal Management Program Scoping Study originally proposed that one CMP be developed for the entire open coastline within the coastal zone of the CN LGA, including the lower part of the Hunter Estuary and the Throsby Creek Catchment. The format was expected to be similar to that of the Newcastle Coastal Zone Management Plan 2018, with discrete sections for Stockton, Newcastle's Southern Beaches and with the addition of a section for the Lower Hunter Estuary. Due to the four-month timeframe imposed by the 2020 Ministerial Direction, a CMP for Stockton was fast tracked with a spatial scope truncated to the area between Little Beach and Meredith Street and the northern breakwater of the Hunter River. Post the production of the Stockton CMP 2020, it was determined that three (3) discrete CMPs would cover the Newcastle LGA:

i. Extended Stockton CMP

ii. Newcastle's Southern Beaches CMP and,

iii. the Hunter Estuary CMP.

The decision to separate them is a reflection of each area's unique physical, social and natural environment which influences the depth, breadth and subsequent timing of investigations and management option evaluations. This approach will enable future document review timing, to be targeted to what is most efficient and appropriate for each area. At the point of drafting this document the Hunter Estuary was at stage 2 and the Newcastle Southern Beaches was at stage 3 of the CMP process.

The area covered by this CMP is presented in Figure 2. The areas' extents are described as:

- the open coast (or seaward side of Stockton) including the nearshore area down to the -15m AHD from Little Beach and Newcastle Harbour's northern breakwater in the south to the City of Newcastle - Port Stephens Council LGA boundary in the north.
- extending inland (west) incorporating the coastal zone and the extent of coastal erosion 2120 hazard line. The area further west will be included in the Hunter Estuary CMP.

The Extended Stockton CMP area encompasses the following coastal management areas as defined in the CM Act and mapped in the State Environmental Planning Policy (Resilience and Hazard) 2021:

- Coastal environment area.
- Coastal use area.

The CMP area is adjacent to (though not containing) coastal wetlands.

In accordance with the CM Act, the Stockton Bight Sand Movement Study (**Supporting Documentation B**) takes a sediment compartment wide approach to understand coastal sand movements across the entire Stockton Bight sediment compartment (extending from Nobbys Head to Birubi Point) with consideration of climate change. This study underpins this CMP, which focuses on the management actions of the southernmost section of this sediment compartment, where significant and ongoing coastal erosion is occurring.

The remainder of the Stockton Bight will be incorporated in Port Stephens Councils' CMP. This decision was made in consultation with Port Stephens Council in reflection of the different management priorities for each area.

Figure 2. The Extended Stockton CMP area.

"Going to the Stockton Beach is one of my favourite things to do. I love the warm feeling of the sun on my back and the wet sand in my hands. Swimming in the water is like swimming in a crystal-clear bath. I love ducking under waves and playing with my family and best friends. Each one of us can play a role in protecting this amazing beach so that all can enjoy it as much as I do."

Hands of change by Isla Wall - Stockton Beach Photo Competition, Primary School category winner.

1.3 Vision and guiding principles

1.3.1 Vision

Our coastal environment is enhanced and resilient while maintaining the recreational amenity and sense of identity the coast provides to the community. Through sustainable and integrated management, the coastal zone will provide a liveable and urban character that strengthens community connections and wellbeing.

Management will be responsive and adaptable to current and future coastal hazard risks, including climate change, sea level rise and coastal erosion, to ensure the continued community use and enjoyment of our unique coastal area.

1.3.2 Objectives and guiding principles

The objects of the CM Act are to "*manage the coastal environment of New South Wales in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State*". Part 1, Section 3 of the CM Act sets out 13 objects of the CM Act (a. to m.). The management objectives of the coastal environment and coastal use management areas considered to be encompassed within the area covered by this CMP are set out in Part 2 (Section 7 to Section 9) of the CM Act. The objects of the CM Act and the management objectives of the relevant management areas have been considered and promoted when preparing this CMP. This is demonstrated in the supporting documentation and outlined further in Section 4 of this CMP.

Table 3 represents the guiding principles and objectives for the Extended Stockton CMP as defined by CN. The guiding principles and objectives for the Extended Stockton CMP:

- Were originally developed as part of the Newcastle CMP Scoping Study (CN, 2019a) to align with the objects of the CM Act and the management objectives of the relevant coastal management areas. These included protection of the environment, scenic, social and cultural values of the coast and adaptation to current and future projected coastal hazards. These were further refined with community and stakeholder input, as this CMP has evolved.
- Have been developed in accordance with the CM Act and guidance from the NSW Coastal Management Manual.
- Considers a range of timeframes (short, medium and long, see Section 1.4). The objectives have been specifically set, due to the differing circumstances and site conditions, forecast by anticipated factors, e.g., medium-term are set with the knowledge of delivery of mass nourishment as per Stockton CMP 2020. Short-term objectives are set with a high probability of a storm event resulting in identified assets exposed to coastal hazards. Long-term objectives are set post-delivery of the preferred management scheme which include mass nourishment.
- Considers a range of timeframes (short, medium and long, see Section 1.4).

Table 3. Extended Stockton CMP guiding principles and objectives.

Newcastle 2040 Priorities	Guiding Principles	Objectives		
		Short term Prior to mass sand nourishment (1 to 5 years)	**Medium term** After mass sand nourishment (5 to 30 years)	**Long term** (30+ years)
2.1, 2.2	Protect and enhance the environmental qualities of the coastal zone.	**1a.** Manage landfill risk. **1b.** Protect biodiversity values of the beach, dune and heath land. **1c.** Identify environmental risks and controls needed. **1d.** Address activities that degrade the quality of the coastal environment.	**1e.** Improve biodiversity values of natural assets. **1f.** Return beach environment through mass nourishment.	**1g.** Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.
2.1	Identify adaptable measures that facilitate the sustainable management and development of the coastal zone from coastal hazards into the future, including in response to the effects of climate change.	**2a.** Protect critical infrastructure at risk from coastal hazards. **2b.** Complete planning work for the delivery of mass sand nourishment.	**2c.** Mitigate impact of coastal hazards on public and private infrastructure. **2d.** Incorporate coastal hazard responses into land use and asset planning.	**2e.** Management planning reviewed in line with the mass nourishment monitoring. **2f.** Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.
1.1, 1.2, 2.1	Support inclusive vibrant and active places within the coastal zone that provide social, recreational and amenity opportunities, equity in access, strengthen social connections and maintain Newcastle's sense of identity as a coastal city.	**3a.** Deliver amenity nourishment. **3b.** Efficient management of existing beach sand. **3c.** Maintain existing authorised public access along the beach as conditions allow. **3d.** Investigate opportunities to improve public access to and along the beach.	**3e.** Improved beach amenity. **3f.** Identify spaces that can be transitioned to conversation areas and rehabilitated. **3g.** Improved public access to and along the beach.	**3h.** As appropriate, provide equitable access to the beach and effective links between development areas.
1.1, 1.2, 2.1	Retain and protect cultural items and areas to continue connection to the land and identification of the city's coastal communities and history.	**4a.** Manage known European and Aboriginal heritage items. **4b.** Support the identification and management of cultural heritage. **4c.** Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. **4d.** Support the community's social and cultural connections and values of the coastal zone.		

1.4 Timeframes covered by this CMP

A CMP is required to consider a range of timeframes (mandatory requirement MR2) to address current and future risks. A definition of the adopted timeframes for the Extended Stockton CMP are defined below:

- **Coastal hazard timeframes** – identification of coastal hazards and associated risk over immediate, 20-year, 50-year and 100-year planning periods.
- **Implementation timeframes:**
  - Short-term (interim, 1-5 years) – current period until delivery of mass nourishment. The delivery of mass nourishment is expected to occur within 2 to 5 years dependent on the completion of required investigations, design work, assessments and approvals as discussed in Section 4.1.1.
  - Medium term (5 to 30 years) – a 30-year period consistent with the recommended NSW Treasury economic analysis period for major new capital expenditure. For longer periods, it becomes more difficult to forecast costs and benefits of coastal management actions subject to uncertainty in coastal hazards, demographics and land-use. This timeframe encompasses multiple CMP reviews (at least once every 10 years).
  - Long term – period beyond 30 years subject to higher uncertainty that requires ongoing monitoring, review and adaptive management.

1.5 Community and stakeholder engagement

Effective community and stakeholder engagement forms a key aspect of the Extended Stockton CMP. Engagement with relevant northern government landholders, government agency stakeholders, the Port of Newcastle and members of the community has been undertaken throughout the development of both CMPs, since 2019. The extensive engagement undertaken for the Extended Stockton CMP, continues on from the engagement undertaken for the Stockton CMP 2020, as well as the Newcastle Coastal Zone Management Plan (2018).

Engagement activities were undertaken in accordance with CN's Community Engagement Strategy (2023), and with reference to the requirements of the CM Act and NSW Coastal Management Manual's mandatory requirements.

This CMP has been supported by extensive agency, stakeholder and community engagement to develop the guiding principles and objectives, evaluate management schemes and draft the management actions. Some of which is summarised in **Supporting Documentation A and F.**

Engagement involved:

- Over 30 Stockton Community Liaison Group workshops and meetings.
- Community surveys (typically delivered via CN's 'Have your say' website).
- Community drop-in sessions, including representation at sessions led by the NSW Government.
- Letterbox drops and regular printed updates made available throughout the Stockton community and online.
- Dedicated project website pages, videos and social media.
- *'Stockton In Your Eyes'* Photo Competition.
- A range of theme-based CMP action workshops.
- Northern government landholder and agency workshops, updates and one-on-one meetings/ discussions.
- Regular liaison with Worimi representatives for Stockton.
- Direct liaison with Port Stephens Council regarding integration with the Port Stephens CMP.

The broader Stockton community's long-term involvement in planning and advocating for a solution to Stockton's coastal erosion crisis, cannot be understated. Key community-driven actions include:

- Community rallies, including *2019 Save our Beach rally* and *2020 Stockton Beach red line rally.*
- 10,000 signature petition presented to the Honourable Speaker and Members of the NSW Legislative Assembly.

A list of key stakeholders is provided in Table 4, with additional information on selected stakeholders in the subsequent sections.

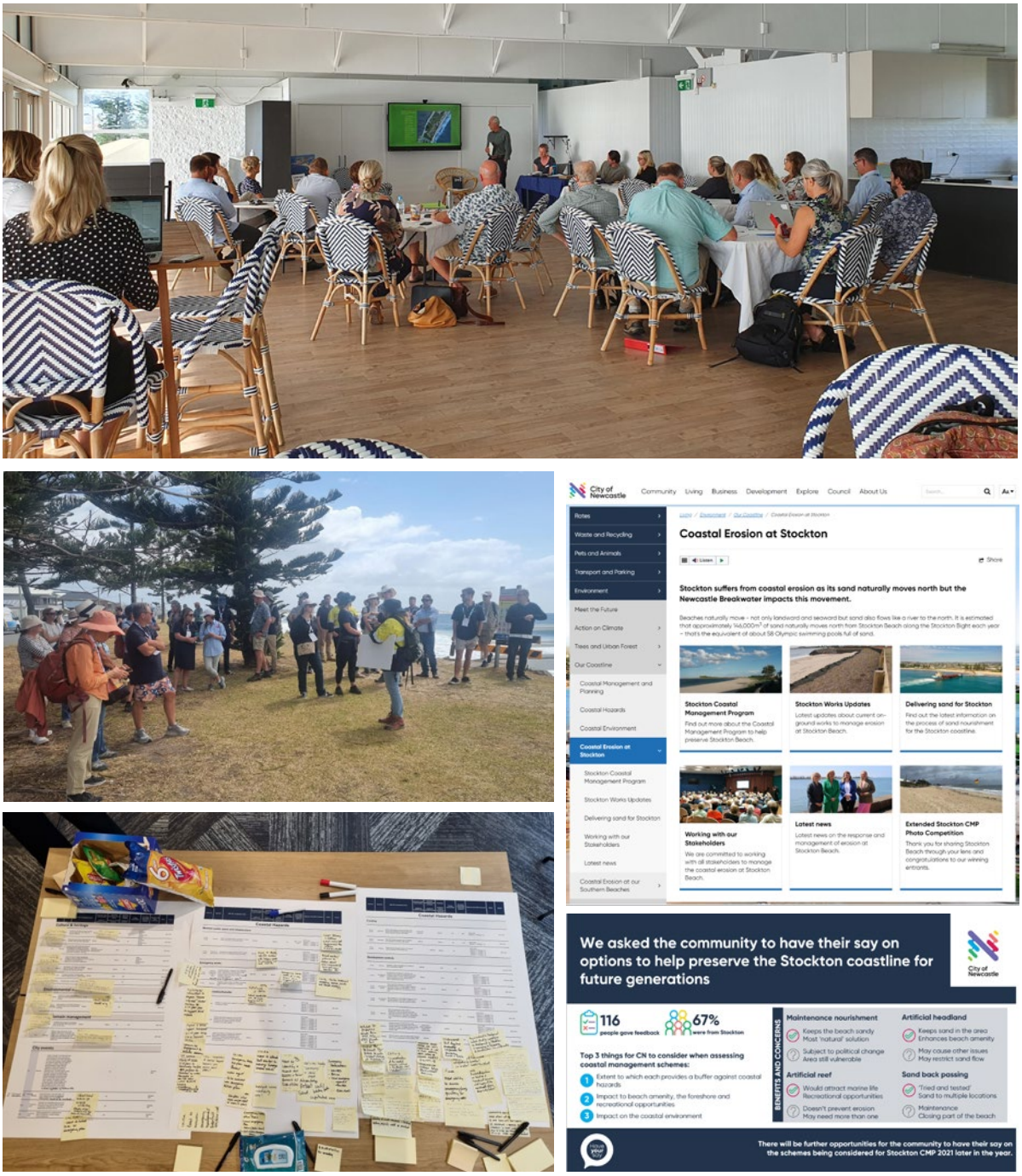


Figure 3. Example images from community and stakeholder consultation undertaken to support the CMP.

Table 4. Key stakeholders to the Extended Stockton CMP.

Category	Stakeholders
City of Newcastle	• Asset / Environment managers • Service Unit managers • Planning teams • Emergency Management teams
Government agencies, businesses or other stakeholders	• Department of Climate Change, Energy, the Environment and Water (DCCEEW) (action owner)
	Sand management / Newcastle Harbour stakeholders • Port of Newcastle (action owner) • Transport for NSW (TfNSW): seabed owner in Port of Newcastle lease area • Port Authority of NSW • Commonwealth Department of Climate Change, Energy, the Environment and Water
	Landowners • Department of Planning, Housing and Infrastructure - Crown Lands and Public Spaces (DPHI - Crown Lands) (including land below the mean high-water mark) (action owner) • Hunter Water (action owner) • Defence Housing Australia (action owner) • NSW Department of Communities and Justice (action owner) • NSW National Parks and Wildlife Services (north of CMP area) (action owner) • Worimi Conservations Lands Board of Management (north of CMP area)
	Coastal Zone Sub-Emergency Action Subplan stakeholders • NSW SES • NSW Police • Fire and Rescue NSW
	Other Government and non-government stakeholders • Port Stephens Council • Stockton Beach Taskforce (replaced by Stockton Special Advisory Panel in 2025) • Surf Life Saving NSW • NSW Coastal Council • Members of NSW / Federal Parliament • NSW Department of Primary Industries - Fisheries • Treasury NSW • Heritage NSW • Department of Primary Industries & Regional Development (previously Department of Regional NSW)
Traditional custodians	• City of Newcastle's Guraki Aboriginal Advisory Committee • Worimi Local Aboriginal Land Council (LALC) • Identified Worimi Registered Aboriginal Parties (RAPs) for Stockton • Worimi Conservation Lands Board of Management (WCLM) • Traditional custodians

Category	Stakeholders
Community groups	• Stockton Community Liaison Group (SCLG) • Stockton Community Group • Stockton Surf Life Saving Club • Stockton Nippers • Northside Boardriders • Fishing groups

1.5.1 Stockton Beach Taskforce

Consisting of government agencies, along with CN and community representatives, the Stockton Beach Taskforce (the Taskforce) was established in March 2020 to monitor and be consulted on the Stockton Beach mass nourishment program and the delivery of the remaining activities funded under the Commonwealth Coastal and Estuarine Risk Mitigation Program (CERMP).

The Taskforce originally chaired by the Deputy Premier, then Minster for Regional NSW, and finally Minister for the Hunter, was engaged, updated and consulted on arrangements to transition from implementation, monitoring and maintenance of mass nourishment in the longer term.

It provided a forum to engage with key stakeholders to help understand and develop solutions for Stockton Beach and was dissolved at the final meeting held in November 2024 where it was announced that a new Stockton Special Advisory Panel (SSAP) will be established and chaired by State Member for Newcastle Tim Crakanthorp.

1.5.2 Stockton Community Liaison Group

The Stockton Community Liaison Group (SCLG) was formed by the Lord Mayor in February 2018. It is chaired by a member of the community and consists of a group of leading locals including the CEO of the Worimi Aboriginal Land Council. The group has worked collaboratively to share community perspectives and local knowledge with City of Newcastle throughout the development of both the Stockton CMP 2020 and the Extended Stockton CMP. Other NSW Government representatives have attended SCLG meetings on an invitation basis, including but not limited to Office of Environment and Heritage (now Department of Climate Change, Energy, the Environment and Water), Hunter Water Corporation, Department of Planning, Housing and Infrastructure - Crown Lands and Public Spaces and Port of Newcastle. To date over 30 formal meetings have been held. The SCLG have been integral to CN during the development of the Extended Stockton CMP, providing meaningful feedback throughout all stages of its development.

Stockton Community Liaison Group site walk, June 2024

1.6 Stockton coastal zone

1.6.1 Worimi People

Maiangal Ngurra of the Worimi Nation are the original custodians of the Stockton Peninsula. Worimi Sea Country contains a diverse combination of waterways and environments which include oceanic waters, beaches and headlands, estuarine waters, brackish lakes and river systems. Each of these varied waterways provide a rich and varied supply of resources for the Maiangal Ngurra which has subsequently led to the development of a wide range of resource uses and associated activities. For this reason, there is also a high probability that Aboriginal sites may be found both under the seabed, in dunes and under land progradation/reclamation areas along the foreshore and further inland.

Maiangal Ngurra have maintained cultural connections to this country and environment which are visible through the Traditional storylines, artworks, dreamtime stories (Willy Price), dances (Pippi dance) and cultural teachings. Because of this ongoing cultural association, all the Land mentioned, and the environment contains significant cultural and spiritual values that are sacred to traditional Maiangal Ngurra. Many other tangible traditional sites that connect with this country include, ceremonial sites (Corroba Oval) Bora rings, burials, scar trees, and middens (AHIM Fern Bay 1). All these features show the connections that Maiangal Ngurra have to this area and illustrate an ancient history. Maiangal Ngurra culture is dependent on land associations and activities as they offer protection for our cultural practices and ensure the continuation of cultural connections for generations to come.

Like all Aboriginal people, Maiangal Ngurra have traditions and beliefs which govern their way of life. Storylines dictate that there existed a spiritual power that created life and gave it meaning. This includes the first laws that governed the way Aboriginal people lived and these remained unchanged for over thousands of years. It is said that this power stayed to make sure that all living things were living together in harmony, then stepped back into the sky to watch over the people and creations.

For Maiangal Ngurra, connection to country is a sense of belonging, that integrates the land, the ocean, the people and culture both in the past, present and future. It's a shared relationship in which everyone and everything has a purpose. CN understands and appreciates the importance of acknowledging, valuing and celebrating Aboriginal and Torres Strait Islander peoples, spirits, spiritual beliefs and culture. We embrace moving forward together and building a relationship with Aboriginal and Torres Strait Islander people based on mutual respect.

CN has an ongoing commitment to strengthening and maintaining relationships with Maiangal Ngurra as the traditional custodians of the land on which we live and work, to foster mutual respect, knowledge and understanding.

"Image was taken late last year off the beach near the Pines (Hereford Street). I am 3rd Generation Stocktonian and from the moment I could swim at the beach was my life as a child, that's all we had. I'm proud that my sons are now the 4th generation to live and breathe the ocean air of the best place on earth!"

God's country sunrise by Justin Martin - Stockton Photo Competition, open category highly commended.

"Every Sunday I go down to Stockton beach to meet with friends and reflect on the week we have had, albeit good or bad. After solving problems of the world and plenty of laughs, all is good."

Sunday sanctuary by Fran Lynch - Stockton Photo Competition, open category highly commended.

1.6.2 Coastal use area

The population of Stockton is expected to grow from 4,281 (2025) to 4,804 (2046), a predicted increase of 12.22%. This expected population growth up to 2046, could be driven primarily by increased housing development, both greenfield development and infill development, north of Corroba Oval (CN ID Community, 2025).

The northern end of Stockton Beach within the CN LGA is a low-density mixture of land uses including disability services facility (Stockton Centre), former defence services facility (Fort Wallace), former Hunter Water Corporation (HWC) sewage infrastructure facility, recreation area (Corroba Oval) and residential housing.

The southern section of Stockton is primarily residential with community facilities along the former hind dune areas of the beach south of the Stockton Surf Life Saving (SLSC) seawall, built and funded in 2016 by CN. These community facilities include the SLSC, Stockton Beach amenities building, Lexie's Café, Lynn Oval, Tennis Courts, Stockton Bowling Club, and the Stockton Beach Holiday Park.

As Section 1.5 outlines, consultation has been ongoing within the Stockton community for over a decade. Through these activities, CN has identified strong community opinions and connection to Stockton Beach, that have guided this CMP. Stockton's sense of identity is strongly connected to the community's relationship and ability to interact with the beach and coastline. A total of 873 people took part in the CN *'Love our Coast'* online community survey. 60% of respondents to the survey identified that what they love most about Newcastle's beaches is the beautiful natural environment. The Stockton Beach environment is heavily utilised for both passive and active recreation for residents and visitors including swimming, fishing, surf lifesaving activities, beach going and surfing. Fishing off the breakwater is also a popular activity.

The *'Stockton In Your Eyes'* photo competition sought to capture the community's voice in how they value and connect to Stockton Beach. Images showcased swimmers, fishermen, surfers, children, sport, nippers, friends, pets and vibrant sunrises. Descriptions spoke of the joy, solace and tranquility provided by each individual's relationship with the beach and often the subsequent pain at its loss. Over 60 entries were received that highlighted the strong relationship between the beach and the wellbeing and character of the entire community. The ongoing loss of the beach is felt acutely by all levels of the community and represents a deep-seated ongoing concern. Consultation with local businesses was undertaken as part of the economic analysis, which confirmed a high dependency of general retail, accommodation and food and beverage industries upon the utilisation of the beach.

Key community assets and popular beach access paths have been impacted by recent erosion events. At present, there are no formal beach access paths north of Corroba Oval however, the community regularly uses the beach and dunes for recreational activities including fishing and surfing and has expressed a strong desire for improved future access throughout this area.

Coastal erosion at the northern end of Stockton Beach, August 2024.

1.6.3 Coastal environment area

The coastal environment has been heavily modified within Stockton by historical activities and construction of infrastructure and dwellings. Stockton Beach and the adjacent Hunter River have been continually modified over the course of European settlement. Modifications that have impacted the beach environment and coastal use include the construction of the Hunter River breakwaters, capital and maintenance dredging of the navigation channel, seawall construction, beach nourishment, beach scraping and emergency, temporary, and permanent coastal protection works. Due to the Hunter River breakwater construction and navigation channel dredging, the Hunter River entrance is now a formalised harbour entrance, preventing its natural migration.

Dune systems remain along the coastline to the north of the Hunter Water site. These dune systems mainly comprise of sand scrub vegetation including Coast Banksia *(Banksia integrifolia)*, Coast Tea-Tree *(Leptospermum laevigatum)* and Old Man Banksia *(Banksia serrata)* with the shoreline predominantly consisting of Beach Spinifex *(Spinifex sericeus)*.

South of the Hunter Water site, the coastal vegetation community is highly modified with urban parklands and open spaces, dominated by exotic grasses and planted landscape species such as Norfolk Island Pine *(Araucaria heterophylla)*. Much of the dune vegetation that had been re-established east of the Stockton Beach Holiday Park and at Pitt Street Reserve has recently been lost to erosion. The extent and condition of vegetation within CN owned and managed properties on Stockton Bight were detailed in the CN Coasts and Estuary Vegetation Management Plan (Umwelt, 2014).

CN has undertaken an ecological audit of the beach environment (UoN, 2018). This audit included the Extended Stockton CMP area and will continue to inform further beach management approvals and activities, such as beach scraping.

As an early colonial settlement, there are multiple historical shipwrecks along the Stockton Peninsula, and some of these sites have recently been exposed off Stockton Beach (e.g. *Durisdeer* and *Berbice)*. The North Stockton Breakwater was built over the remains of at least 11 wrecks (including the *Adolphe)*. It is thought that Stockton Bight and the Oyster Bank is home to over 100 wrecks, many of which have never been formally located. Other historical items are the tank traps associated with the defence of Stockton Beach in World War II, along with the multiple Royal Australian Army amphibious vehicles (LVT4A tanks and DUKWs) are located offshore of Stockton Beach (CN, 2020a). Extensive remains of military fortifications are located at the northern extremity of the proposed area.

2. A snapshot of issues

Stockton Bight is one of the highest wave energy beaches in NSW and is a beach that grades from highly developed in the south to natural along its central and northern sections. It is a beach that is impacted by waves, tides, river flows, wind and human modification, all of which vary alongshore. Combined with the effects of climate change and sea level rise (SLR), these present an extremely complex and dynamic natural system that within and through which, there is considerable sand movement. The most complex part of the system is the southern area around the Hunter River entrance, Nobbys Head and Stockton Beach area.

2.1 Coastal processes and hazard assessment

The Newcastle CMP Scoping Study from 2019 (**Supporting Documentation A**) and subsequent Stockton Beach Coastal Erosion Hazard Study (**Supporting Documentation C**)**,** identified two coastal hazards for Stockton Beach with high to extreme risk rating:

1. **Coastal erosion:** This occurs when land is lost to the sea. It can occur over long periods (decades to centuries), due to a net loss of sand from the beach fluctuation zone[1]. In the short term (days to months), it can be worsened by beach erosion when large waves and high-water levels erode the upper beach, moving sand offshore to nearshore storm bars. After storms, sand moves back onshore, and the upper beach recovers.
2. **Coastal inundation:** This happens when oceanographic and atmospheric processes raise coastal water levels above normal, leading to usually dry land being flooded by sea water. Elevated water levels can also cause wave run-up and overtopping of natural or built shoreline structures, like dunes and seawalls.

2.1.1 Coastal erosion

Stockton Beach has experienced significant erosion events, leaving foreshore assets at risk and impacting beach amenity. In 2019 the Minister for Local Government declared Stockton Beach a 'Significant Open Coast Location'. Cyclic beach erosion and recovery are not believed to be the underlying cause. Recent erosion has progressed beyond the extents of historical cycles and an identified trend of long-term sand loss is underlying the issue. The present-day shoreline along Stockton Beach is at its most landward (receded) alignment since the harbour breakwaters were constructed. In response to the erosion events, CN has installed a range of temporary (e.g. sandbagging, rock bags structures) and permanent coastal protection measures in addition to the relocating assets like the Stockton Holiday Park cabins and demolition of the former Stockton North Surf Life Saving Club (child care centre) in 2019. Figure 4 shows the recent annual expenditure [2] on coastal management along approximately 2.4km of Stockton's open coast until the end of 2024.

1 CM Act defines beach fluctuation zone as 'the range of natural locations a beach profile occupies from its fully accreted condition to its fully eroded condition, with a) a landward limit defined by the escarpment resulting from the erosion associated with a 1% storm event or a more extreme event of record, whichever is the greater landward limit, and b) a seaward limit that is the 40m depth seaward of the highest astronomical tide for the open coast and 10m depth seaward of the highest astronomical tide for estuaries or tidal coastal lakes.'

2 Excludes the capital costs associated with the SLSC seawall construction in 2017.

Cabins being removed from the caravan park due to beach erosion following a large wave event in February 2020.

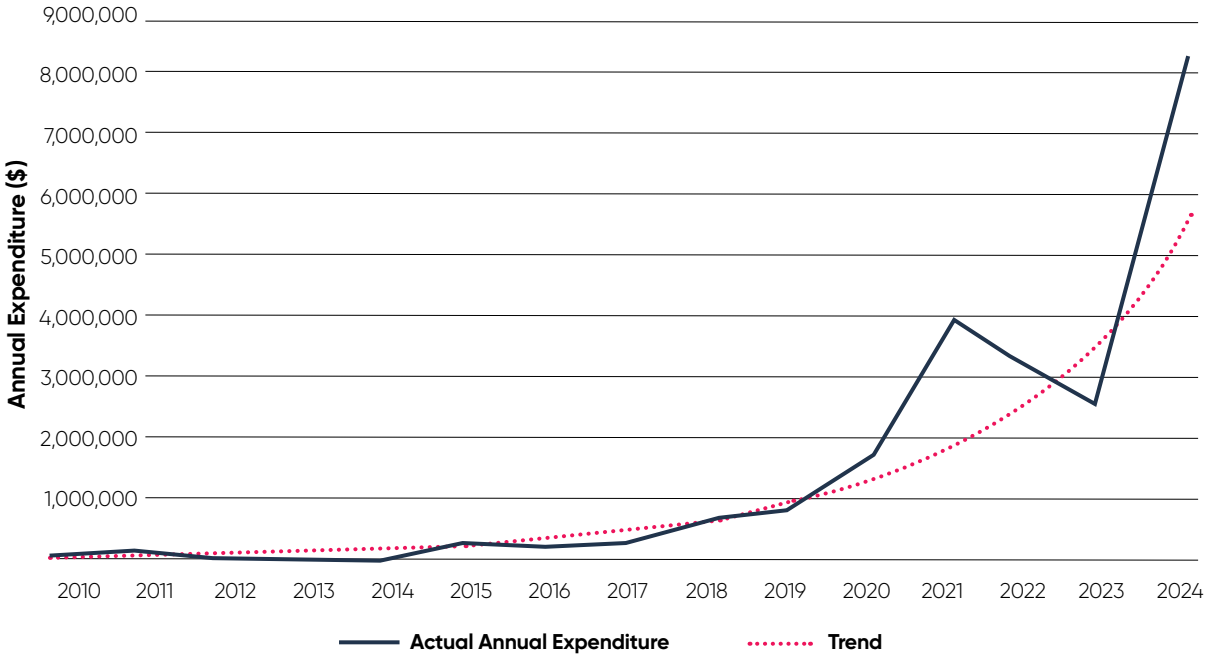


Figure 4. Recent annual expenditure for coastal management at Stockton.

Coastal management schemes are often expensive and robust scientific knowledge is essential for effective coastal planning. To fully appreciate the dynamics of the beach system, a 'sand movement study' of the entire Stockton Bight sediment compartment was completed in accordance with the CM Act (Bluecoast, 2020a). The Stockton Beach Sand Movement Study (**Supporting Documentation B**) adopted a data-driven approach to analyse Stockton Bights' sand budget. The drivers for the observed sand volume changes were described based on observational data, previous literature, and state-of-the-art numerical modelling and/or coastal processes knowledge with consideration of climate change projections including changes in storm and wave patterns and human intervention. Wherever possible, multiple lines of evidence have been used to cross-check, validate and provide greater confidence in the findings. A quantified conceptual sand movement model was developed to link together the drivers and volumes of annual sand movement. Considerable attention was paid to sand sources and sinks including the impact of the harbour entrance training breakwaters, channel deepening and sand placements.

The Stockton Beach Sand Movement Study estimated that about 146,000m^3 of sand is lost north from Stockton Beach each year[3]. The main causal mechanism of the long-term erosion observed at Stockton Beach[4] is explained by:

1. The blockage of natural sand supply from the Hunter River entrance and further south due to the impact of the entrance training breakwaters, artificially deepened navigation channel and on-going maintenance dredging that when combined, represents a physical barrier to natural sand bypassing (see Section 2.2). The on-going dredging activities result in the cumulative extraction of very large quantities of marine sand from the coastal sediment compartment as most sand is dumped offshore outside the compartment.

2. The natural net northward movement of sand that, under the action of waves, acts to move sand out of the southern embayment.

As a result, the coastal erosion at Stockton has proceeded beyond an acceptable natural sandy buffer (i.e., the buffer does not provide an acceptable level of coastal protection or beach amenity).

The downdrift starvation of the southern embayment, until recently, is reasoned to have not been readily observable on the shoreline due to most change being attributed to the deepening of the nearshore and onshore sand supply to the Stockton shoreline from the relict ebb tide delta.

A probabilistic erosion hazard assessment, projecting immediate and future erosion and recession hazard extents along Stockton Beach, including the effects of climate change and sea level rise, was completed in 2020 and has been used to inform the Extended Stockton CMP. The approach and adopted input parameters to the probabilistic modelling are discussed in Stockton Beach Coastal Erosion Hazard Study (**Supporting Documentation C**). The results from the probabilistic hazard modelling provide probabilities of exceedance (PoE) for coastal erosion and recession setbacks for every year in a 100-year planning horizon. As an example, the calculated 1% annual exceedance probability (AEP) erosion hazard lines for 2018, 2060 and 2120 are presented in Figure 5 (Bluecoast, 2020b).

3 On average sand, sourced from the port dredging activities, has been placed at a rate of 34,000m^3/yr, resulting in a net sand loss rate of 112,000m^3/yr (Bluecoast, 2020a).

4 Here Stockton Beach is taken to mean southern embayment from breakwater to Fort Wallace and across the full coastal profile from the crest of the dune down to the closure depth for wave driven sand movements.

Figure 5. Stockton Beach - coastal hazard - beach erosion

2.1.2 Coastal inundation

Coastal inundation occurs along the ocean-side of Stockton Beach when elevated ocean water levels and wave action (i.e., wave run up) leads to overwash of dune systems or overtopping of the coastal structures (e.g., Mitchell Street seawall). Historically, coastal inundation events have occurred in the 1920's, 1940's, 1950's and more recently during two coastal storms that occurred in February and July 2020 (Bluecoast, 2020d) as well as in April 2022.

Coastal inundation at Mitchell Street Stockton, April 2022. Picture supplied by Brian Hunt.

A coastal inundation hazard assessment was completed in 2020 at Stockton Beach and has been used to inform this CMP. The approach to the coastal inundation modelling is discussed in **Supporting Documentation D.** The results provide maps of the calculated 1% AEP coastal inundation extents and depths for the 2020, 2060 and 2120 planning periods, inclusive of climate change and sea level rise projections. An example showing the 1% AEP coastal inundation extent in 2120 is presented in Figure 6 (Bluecoast, 2020d).

Coastal inundation hazards from the combined effect of future erosion have not been modelled. The continued erosion downdrift of the Mitchell Street seawall, increases the risk of coastal inundation and/or ocean breaching the peninsula, because of the down sloping topography along this narrow stretch of the peninsula (i.e., continued coastal erosion lowers the dune crest of coastal barrier elevation as it proceeds). Without intervention, overwash and/or ocean breaching of the peninsula is at risk of occurring by 2040[5], increasing thereafter.

5 Overwash occurs when storms cause ocean water and coastal sediments to flow over the coastal barrier towards the Hunter River. A breach (or breakthrough) occurs when the volume of overwash is sufficient to scour a post-storm opening between the ocean and the river. The combined effect of future erosion and inundation on the risk of overwash and/or breaching has not been specifically assessed. This timeframe is therefore estimated based on information from separately considered erosion hazards (e.g., see Figure 5) and inundation hazards (e.g., see Figure 6) for Stockton Beach (Bluecoast, 2020b and 2020d). Given the uncertainty it is considered a conservative estimate.

Figure 6. Stockton Beach coastal inundation hazard.

"Stockton beach is my backyard, my playground. I go here to play after school and on weekends."

After school by Cooper Hogan - Stockton Photo Competition, Primary School category highly commended.

2.1.3 The deepwater shipping channel

The deepwater shipping channel that allows vessel movements into Newcastle Harbour is an asset of national significance. This asset has been developed over a period of over 200 years through investments, mostly made by the NSW Government, in breakwaters, channel deepening and maintenance dredging. The shipping channel provides significant benefits to the national economy with about $37 billion worth of trade each year occurring because of around 2,350 ship visits (around 4,700 ship movements) and 166 million tonnes of cargo handled by the port annually (Port of Newcastle, 2022). Beyond its role as a key trade gateway, the Port of Newcastle contributes significantly to the Hunter region, supporting thousands of jobs, actively investing in infrastructure that benefits the broader region, and strengthening the community through education initiatives and sponsorships.

Since 2014, port-related assets have been leased to the Port of Newcastle, a private company. The Port of Newcastle are currently responsible for the maintenance of the shipping channel. Between 2009 and 2019 maintenance dredging undertaken by David Allen placed on average 34,000m^3/yr of sand dredged from the harbour entrance to the nearshore area of Stockton Beach. The placement activity was ceased in 2022 when the NSW Government owned placement approvals expired (see **Supporting Documentation B**).

The shipping channel also has impacts. The Stockton Beach Sand Movement Study (Bluecoast, 2020a) used a data-driven approach to establish that the main underlying cause of the long-term loss of sand and resulting coastal erosion and inundation hazard at Stockton Beach is the breakwater, channel deepening and maintenance dredging (i.e., the deepwater shipping channel). The extent of these environmental impacts were not adequately assessed and addressed during the original planning and approvals process. As a result, the responsibility and associated costs to remedy their impact has largely fallen on CN as the delegated Crown Land manager of the strip of foreshore affected, rather than the NSW Government as the owner of the Harbour infrastructure or the operator of the Port.

Coastal erosion at Stockton Beach, August 2024.

2.2 Initial risk assessment

The CMP Scoping Study (**Supporting Documentation A**) completed an initial risk assessment for 160 locations across the Newcastle coastal zone. Section 9 of the Newcastle CMP Scoping Study provides an assessment and evaluation of cumulative risks to assets across the Newcastle LGA, with reference to the previous risk assessment undertaken in the Newcastle Coastal Zone Management Study (BMT WBM, 2014(b)) and assessment by CN staff. The risk assessment was adapted from the Threat and Risk Assessment Framework for the NSW Marine Estate (MEMA, 2015) that was applied in the NSW Marine Estate Threat and Risk Assessment Report (BMT WBM, 2017(b)). The risk assessment considered priority threats from the NSW Marine Estate Threat and Risk Assessment Report (BMT WBM, 2017(b)) and coastal management issues, as part of the overall assessment. It assessed the risk to environmental, economic, and social and cultural wellbeing, with consideration of population growth, demographic changes and the projected use and development of the Stockton coastal zone. Threats were classified from minimal to high at three time periods: immediate, 2050 and 2100. The coastal management issues of beach erosion, shoreline recession and coastal inundation were identified as having higher risk, with invasive species identified as of moderate risk.

2.3 Risk assessment

As part of the risk assessment, the 1%, 10%, 50% and 100% probability of exceedance (PoE) scenarios for coastal erosion and inundation were considered, for the 2020, 2040, 2060 and 2120 timeframes.

Within each of the 16 scenarios, the resulting impact of erosion and recession to a range of aspects were considered. A summary of the assets and land affected by recession and erosion is provided in Table 5 and further detail is provided in the Evaluation Report – Extended Stockton CMP, (**Supporting Documentation F)**.

Table 5. Assets affected from erosion for the business-as-usual base case.

Year	PoE	Private Property		Council and Non-Private Property				
		Buildings (no.)	Land (m^2)	Buildings (no.)	Land (m^2)	Pavement (m^2)	Shelter (no.)	Drainage (m)
2020	50%	0	2,004	1	4,045	132	0	0
	10%	0	9,036	17	14,419	1,518	0	0
	1%	0	18,333	19	22,286	3,209	0	0
2040	50%	4	20,818	26	34,017	5,775	3	0
	10%	10	29,649	30	42,238	8,455	4	0
	1%	22	39,078	32	51,277	11,130	4	4
2060	50%	26	39,688	33	55,741	12,065	4	13
	10%	37	55,056	36	66,692	14,281	5	29
	1%	49	72,935	36	76,239	16,813	5	43
2120	50%	117	144,754	41	131,622	30,775	6	421
	10%	179	198,922	43	176,531	38,002	6	553
	1%	217	243,905	44	212,332	50,906	7	886

In addition to coastal erosion, coastal inundation can damage properties and buildings. Estimates are available for the 1% annual exceedance probability (AEP) coastal inundation hazard (refer **Supporting Documentation F**) for each of the periods of time. No floor level data was available, but assuming a typical floor height of 0.3 metres above ground, Figure 7 provides a summary of the overground and potential overfloor flooding impacts.

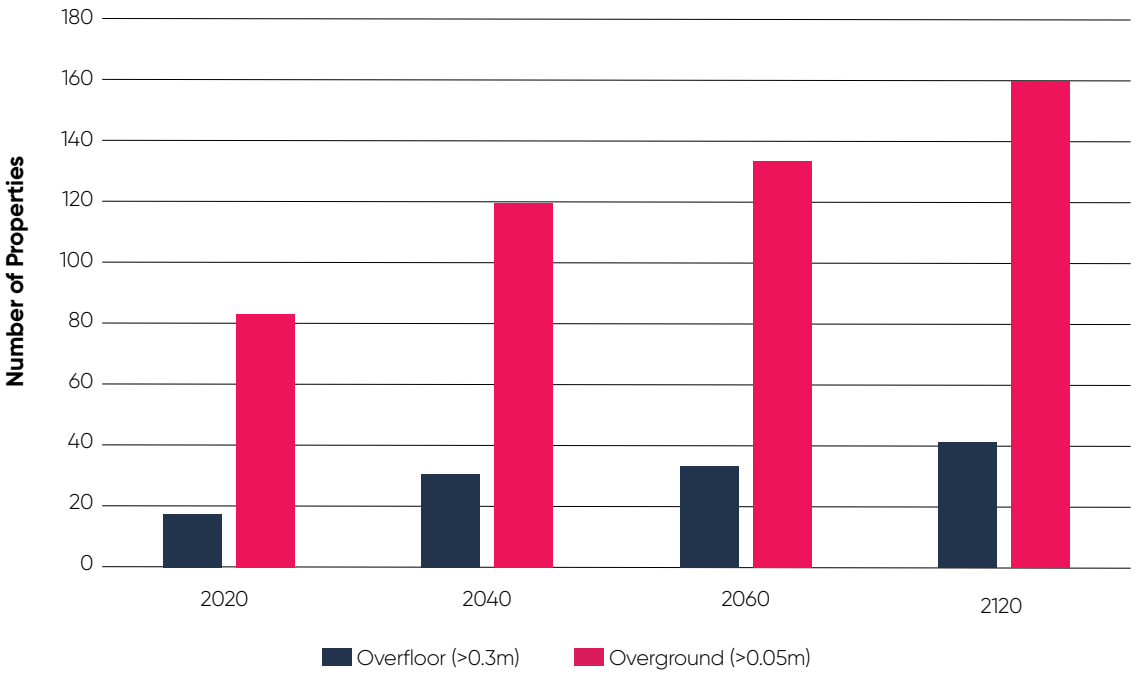


Figure 7. Estimated number of properties (including both private and non-private property) impacted by 1% AEP coastal inundation event.

Where existing (permanent) seawalls exist, these were expected to be maintained into the future, hence providing erosion protection to landward assets. Planned coastal management actions or emergency works were not considered in this base case risk assessment.

An evaluation of the risk profile of the Stockton suburb was completed as part of Stockton CMP 2020, using guidance provided by the international risk management standard, ISO 31000 (refer **Supporting Documentation C**). For this, the likelihoods of erosion and recession impacts (as above) were combined with consequences using standard risk consequence categories, as reflected in CN's risk management framework. CN's risk matrix, as presented in Table 6, was modified to only include the likelihoods represented by the hazard lines being considered. A preliminary consequences assessment using only the financial category, was undertaken due to the compressed timeframe for the development of the Stockton CMP 2020. The current and future financial risk levels at Stockton Beach were determined as presented in Table 7. This shows that the present-day risk profile is 'High' leading to 'Extreme' for future time periods. There is a strong possibility that the present-day risk profile for the suburb of Stockton would be assessed as 'Extreme' if social and environmental values were also considered.

In either case, the Stockton Bight Sand Movement Study (refer **Supporting Documentation B**) as well as erosion and recession (refer **Supporting Documentation C**) and coastal inundation (refer **Supporting Documentation D**) hazard assessments confirm that there are public assets at immediate threat requiring urgent protection, as well as longer term threats to assets.

Table 6. Extract from CN's risk matrix

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Severe
Likely	Low	Medium	High	Extreme	Extreme
Unlikely	Low	Low	Medium	High	High
Rare	Low	Low	Medium	High	High

Table 7. Assessed financial risk profiles at various time frames (refer Supporting Documentation C Bluecoast, 2020b).

Chance	Risk level by year			
	2020	2040	2060	2120
50% (Likely)	High	Extreme	Extreme	Extreme
10% (Unlikely)	High	High	High	High
1% (Rare)	High	High	High	High

Coastal erosion near Stockton Surf Club and Dalby Oval, July 2022. Picture supplied by Ron Boyd.

2.4 Priority management issues

The most significant coastal management issues affecting the Extended Stockton CMP area are outlined in Table 8. These issues have been consistently identified by coastal processes and hazard assessments (CZMP, 2018; **Supporting Documentation B, C, D**), risk assessments, the community and in the Newcastle CMP Scoping Study, (**Supporting Documentation A**).

Table 8. Overview of key priority issues across the coastal management areas.

Coastal management area	Priority issues
Coastal environment	The key environmental asset at Stockton is the beach. If the beach is lost, for example, by shoreline recession approaching existing or new coastal protection infrastructure, without ongoing nourishment and allowing the dry beach width to disappear, many of the environmental benefits derived from the beach are lost, including natural, social and cultural values.
Coastal use	Coastal recession leading to lack of sandy buffer to act as coastal protection, loss and relocation of foreshore assets, loss of beach amenity, loss of beach access, exposure of old landfills to coastal hazards and loss of beaches, dunes and natural features leading to increased exposure of coastal inundation. Coastal inundation has an immediate threat to public and private assets and potential safety hazard for people behind the seawalls as well as potential breaching of the Stockton peninsula as seawater flows towards the Hunter River, during extreme storms in future planning horizons. Coastal hazards are adversely affecting the cultural and built environment heritage, public open space and the surf zone. This has drastically altered the identity of the suburb.

3. Selecting the preferred coastal management strategy

3.1 Introduction

A long list of potential medium to long-term coastal management options were identified, which would complement the mass nourishment strategy identified in the Stockton CMP 2020. Delivery of mass nourishment for a stretch of beach from the northern breakwater up to a point 800m north of Meredith Street is therefore common to all management schemes. Mass nourishment acts to restore the sandy buffer back to what was available at Stockton Beach in the early 1990's (approximately 40m average widening of dry beach within the first year after sand placement). The Stockton CMP 2020 confirmed that this solution meets CN and the community's objectives for sustainable management of beach amenity and coastal asset protection at Stockton. A detailed description of the proposed mass nourishment using 'rainbowing' and bottom dumping methods is provided in **Supporting Documentation E** and the Stockton sand placement concept design (Bluecoast, 2023a).

The additional coastal management options investigated, seek to maintain the sandy buffer and provide a longer-term solution via ongoing renourishment campaigns (or sand top-ups) and/or stabilisation by a suitable control structure(s). Potential management options are characterised under three key themes, based on the way they address the main causal mechanism underlying Stockton's beach erosion problem (refer Section 2). The three key themes for the coastal management solutions considered are:

- 'Keep sand moving'
- 'Keep sand in the system'
- 'Hold the line'.

A fourth management theme (i.e. 'complementary management') was considered, which comprises options that are complementary to the above list and do not provide adequate benefits or are not feasible/acceptable on their own. Complementary management actions have been considered for all management schemes.

An overview of the process adopted for selecting the preferred coastal management strategy is shown in Figure 8. This included two key phases:

Feasibility assessment (refer **Supporting Documentation E**) – a coarse filter was applied to the long list of potential coastal management options to rule out options that were deemed not feasible. The most feasible coastal management options were then selected and combined with the mass nourishment strategy to develop a shortlist of coastal management schemes for the entire CMP area.

Options evaluation (refer **Supporting Documentation F**) – in pursuit of a medium to long-term coastal management strategy, four shortlisted, technically feasible coastal management schemes were evaluated, taking into account both economic and non-economic factors. Significant community and stakeholder consultation was undertaken to inform the evaluation of the non-economic factors.

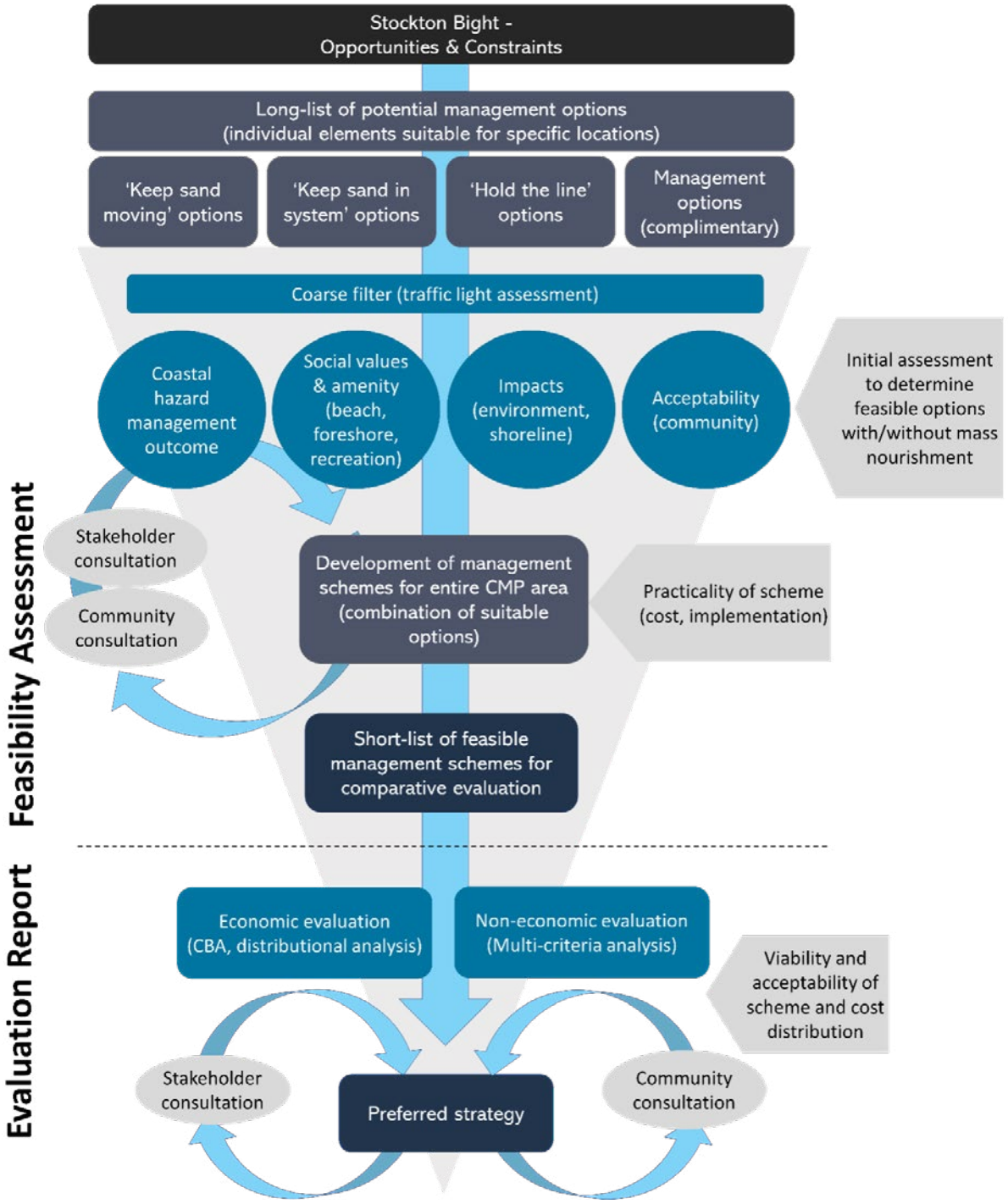


Figure 8. Overview of selection process of preferred coastal management strategy.

3.2 Shortlisting of coastal management schemes

An overview of the potential coastal management options considered in the shortlisting process is provided in Table 9. The four most feasible options identified for consideration in the development of adaptive, integrated and medium to long-term coastal management schemes for Stockton are described in Table 10. The business-as-usual base case adopted for evaluation of the four schemes is also described in Table 10. The coastal management schemes have been developed in iterative consultation with government agencies and community representatives. The identification process along with a description, rationale, performance assessment, implementation, the basis for cost estimates and adaptability for each of the four schemes is provided in the Feasibility Assessment for the Extended Stockton CMP, (**Supporting Documentation E**).

Table 9. Long list of potential coastal management options complementing mass nourishment.

Keep sand moving	Keep sand in the system	Hold the line	Complementary management
Maintenance (ongoing) nourishment	Groyne field	Seawall/ revetment	Dune building/ stabilisation
Fixed sand bypass system	Groyne (single)	Buried terminal revetment	Beach scraping
Modification/ removal of breakwater(s)	Artificial headland		Asset relocation (public assets)
	Offshore breakwater		Planned retreat (private assets)
	Artificial reef		Planning/ development controls
	Sand backpassing (pipeline)		Buffer area
	Sand backpassing (trucking)		

Table 10. Description of base case and shortlisted coastal management schemes.

Scheme	Theme	Description
0. Base case (Business-as-usual)	*None*	Taking into account historical sand placements by the Port of Newcastle, the historic long-term net sand loss rate was estimated to be 112,000m^3/yr from the southern Stockton sediment compartment. The base case assumes that currently unprotected areas will be impacted by the predicted erosion and coastal inundation hazards. The base case includes the on-going implementation of emergency works response as required (e.g., sandbagging, rock bag structures, etc), at specific locations along the foreshore. The base case used for comparative evaluation of the below management schemes has been described in detail in the Evaluation Report for the Extended CMP (**Supporting Documentation F)**.
1. Mass nourishment with regular sand top-ups	*Keep sand moving*	Mass nourishment to restore the sandy buffer and regular and on-going sand top-ups to maintain the buffer. This scheme seeks to restore the natural supply of sand to the Stockton sediment compartment at a rate equivalent to the long-term net sand loss rate (estimated to be 112,000m^3/yr). Sand would be sourced from outside the active coastal profile in the Stockton Bight sediment compartment (i.e., it would introduce new sand into the coastal system).
2. Mass nourishment and artificial headland	*Keep sand in the system*	Mass nourishment and the construction of a rock-armoured artificial headland located at the northern end of the Hunter Water site. The headland will result in stabilisation of the shoreline along the former landfill and the narrow stretch of the peninsula. A 10-yearly renourishment equivalent to an annual sand volume of approximately 56,000m^3/yr would be required to top up the sandy buffer between the northern breakwater and Corroba Oval.
3. Mass nourishment and artificial reef	*Keep sand in the system*	Mass nourishment and the construction of an artificial rock reef to the north of the Stockton township to act as a shoreline control structure. This scheme seeks to increase the longevity of the nourishment by reducing incoming wave energy and to locally reduce northerly sand transport rates. The artificial reef would also deliver surf amenity and habitat creation benefits. A 5-yearly renourishment with an approximate (and preliminary) annual equivalent of 87,000m^3/yr would still be required to be undertaken between the northern breakwater and Corroba Oval.
4. Mass nourishment and sand backpassing	*Keep sand in the system*	Mass nourishment and the construction of a sand backpassing system to transport sand from the northern area back, to specified outlet locations along the Stockton township frontage. Four 'Sand Shifter' sand collection units would be deployed approximately 500m north of the Hunter Water site to transfer >100,000m^3 of sand each year. This scheme seeks to increase the longevity of the nourishment by recycling sand in the active coastal system in the southern part of the Stockton Bight.

Note - The Stockton Beach Sand Movement Study estimated that about 146,000m^3 of sand is lost north from Stockton Beach each year. On average sand, sourced from the port dredging activities, has been placed at a rate of 34,000m^3/yr, resulting in a net sand loss rate of 112,000m^3/yr (Bluecoast, 2020a).

3.3 Economic evaluation

3.3.1 Cost benefit analysis

In accordance with the CM Act and the CM Manual and consideration of the Guidelines for Using Cost-Benefit Analysis to Assess Coastal Management Options (NSW Government, 2018), a Cost-Benefit Analysis for Stockton Beach was undertaken to provide an economic analysis of the four shortlisted coastal management schemes against a base case scenario with consideration of population growth (refer **Supporting Documentation F**).

The key benefits incorporated within this CBA assessment were in the form of reduced loss of property and land to both private landowners and CN; reduced coastal protection works and maintenance; and maintained beach area and associated non-use and use values.

The relative costs and benefits of each scheme in comparison to the base case suggest that all four schemes result in Benefit Cost Ratios (BCR) over 1, with Scheme 1 having the highest BCR (3.3), as highlighted in Table 11. Sensitivity testing of costs, benefit and delay showed that under all scenarios and discount rates tested, the scheme remains feasible, attesting to the strong feasibility of Scheme 1, as well as that of the other schemes with higher BCRs.

Table 11. Economic appraisal results ($M).

Output metric	Scheme 1	Scheme 2	Scheme 3	Scheme 4
PV COST	$12.8	$24.2	$21.9	$20.7
PV BENEFIT	$41.9	$44.3	$43.8	$41.8
NPV	$29.1	$20.1	$21.9	$21.1
BCR	**3.3**	**1.8**	**2.0**	**2.0**
NPVI	2.0	0.7	0.9	1.2
FYRR	14%	8%	9%	11%
IRR	26%	12%	14%	18%

3.3.2 Distributional analysis

A distributional analysis was undertaken by reviewing the key beneficiaries of all four schemes. The relative distribution of benefits is similar for all schemes. The largest beneficiaries of the schemes are beach users (i.e., the people of Newcastle and NSW who use and/or value the beach), who, for example, represent 69% of the total benefit for Scheme 1 (see Figure 9). Aside from the beach user benefit for Scheme 1, 14% of the benefit can be attributed to private landowners, 6% of benefit is received by Hunter Water through avoided coastal protection works, 7% can be attributed to avoided impacts to CN managed Crown Land and associated assets (including holiday park land values) and 4% is attributable as a producer surplus to the holiday park operators. Other federal and NSW state authorities (e.g., Defence Housing Australia, Department of Communities and Justice), do receive some additional avoided loss of land values (less than 0.1%) however, the magnitude of impacts is minor in comparison with other stakeholders.

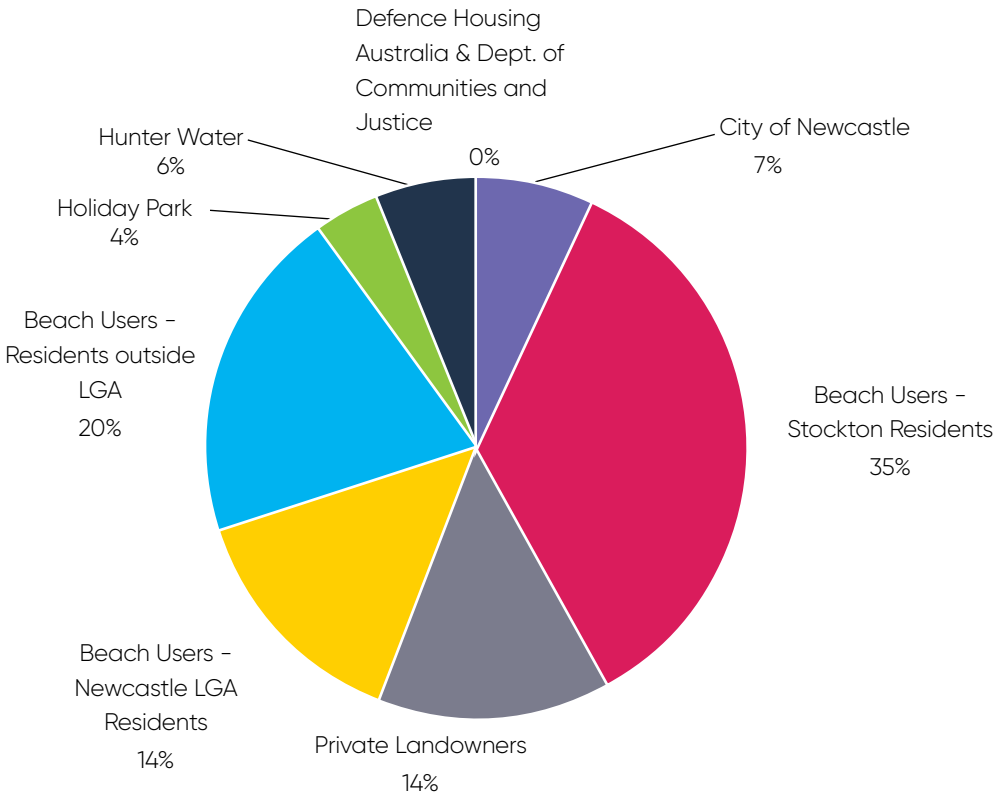


Figure 9. Overview of key beneficiaries of Scheme 1.

3.4 Non-economic evaluation

For the appraisal of the coastal management schemes against non-economic criteria, a multi-criteria assessment (MCA) was completed (refer **Supporting Documentation F**). The weighted criteria address the overall CMP strategy and objects of the CM Act. The MCA allowed incorporation of community and stakeholder feedback and provides a robust non-economic evaluation of the four schemes.

Consultation used to inform the MCA evaluation included:

- Community and stakeholder submissions, following public exhibition of the draft Stockton CMP 2020.
- Targeted community and stakeholder consultation by CN, as part of the Extended Stockton CMP.
- Worimi LALC, Worimi Conservation Lands Board of Management and Worimi RAPs discussions.
- Workshops with agency stakeholders/landholders and the SCLG.
- Community (online) survey on the four Extended CMP management schemes between 6th April and 7th May 2021.

An overview of the MCA results and rankings are provided in Figure 10. Based on the non-economic evaluation, Scheme 1 (mass nourishment and ongoing sand top-ups) and Scheme 3 (mass nourishment and artificial reef) were recommended for further consideration as the preferred management strategy for Stockton Beach.

Score Low High Mass Nourishment +	Non-economic evaluation			
	Scheme 1 Sand Top-ups	**Scheme 2** Artificial Headland	**Scheme 3** Artificial Reef	**Scheme 4** Backpassing
Performance [50%]				
Environmental criteria [20%]				
Social criteria [20%]				
Implementation [10%]				
Rank (weighted)	1	4	2	3

Figure 10. Overview of MCA results and ranking of coastal management schemes.

3.5 Evaluation outcome

City of Newcastle selected *Scheme 1 – Mass nourishment with regular sand top-ups* as its preferred coastal management strategy to improve beach amenity and protect coastal lands. This decision followed review and discussion of the information presented in **Supporting Documentation F**, and with consideration of past feedback from the agency landholders, SCLG, the broader community, and Worimi representatives.

An overview of the key economic and non-economic evaluation results is provided in Table 12.

Table 12. Overview of economic and non-economic (MCA) evaluation results.

Coastal management scheme	Economic (BCR)	Non-economic (MCA score)
Scheme 1 – MN + Sand top-ups	3.3	2.7
Scheme 2 – MN + Artificial headland	1.8	2.0
Scheme 3 – MN + Artificial reef	2.0	2.4
Scheme 4 – MN + Backpassing	2.0	2.1

Note: MN – Mass nourishment, CBA – Cost-benefit analysis, BCR – Benefit-cost ratio, MCA – Multi-criteria assessment

Coastal inundation at Stockton Beach, March 2022.

4. Actions to be implemented

4.1 Coastal management strategy

4.1.1 Beach nourishment and sand management activities

The Extended Stockton CMP identifies mass nourishment with regular sand top-ups (Scheme 1) as the preferred coastal management strategy to improve beach amenity and protect coastal lands. Figure 11 provides a simple conceptual diagram of this preferred coastal management strategy. Holistic and integrated sand management is at the core of the preferred strategy and includes the following key elements:

- **Amenity sand nourishment:** Through Part A of the CERMP, the delivery of sand for amenity nourishment was completed in November 2023 by the Department of Regional NSW (DRNSW) and Public Works NSW (NSWPW) with 130,000 m^3 rainbowed along the southern end of Stockton Beach to aid in restoring beach margins and buffer widths against further storms. This was to provide short-term relief from shoreline recession in recognition of the longer timeframes to complete the additional investigations and approvals for mass nourishment.
- **Mass nourishment:** The aim of mass nourishment is to deliver sufficient sand to Stockton to restore the sandy beach, returning it to a state that meets the objectives of this CMP. Investigations completed through the Stockton CMP 2020 suggest this would be achieved through 2.4M m^3 of sand volume above the 2018 Coastal LIDAR survey. This translates into an average increase in beach width of around 40m during typical environmental conditions (**Supporting Documentation F**). By restoring the beach's sand, mass nourishment will improve its recreational amenity and protect coastal assets. Funding to the value of $21.5 million for the implementation of mass nourishment has been committed and is the responsibility of the NSW Government.
- **Ongoing and regular sand top-ups:** By proactively and regularly topping up the sand that will continue to be lost from Stockton's beach and dune systems, the restored Stockton Beach will be maintained. Sand top-ups will artificially reinstate the natural sand supply that would have occurred in the absence of the Newcastle Harbour infrastructure at a rate equivalent to the average annual northerly sand movement from the southern embayment of Stockton Beach (estimated to be 146,000m^3 /yr). However, exact volumes and approvals will need to be responsive to beach and weather conditions and climatic outlooks. Determining a governance, funding and implementation framework for ongoing sand-tops is the responsibility of the NSW Government.
- **Ongoing monitoring and decision support tool:** This tool will clearly identify when the sand buffer is not within the target range and to inform future sand placement locations and volumes.
- **Sand scraping:** This measure utilises available sand to increase dune volume and maintain existing access points, by moving sand from the lower part of the sub-aerial (or visible) beach to the upper beach and dunes. Sand scraping mimics the natural beach recovery process but increases the recovery rate compared with natural processes. CN has been utilising this technique successfully at Stockton and sand scraping is envisaged to continue to play a role across the coastline following delivery of mass nourishment.

Stockton Beach following amenity nourishment, December 2023.
Picture supplied by Ron Boyd.

Sand scraping in front of the Stockton Holiday Park June 2022.

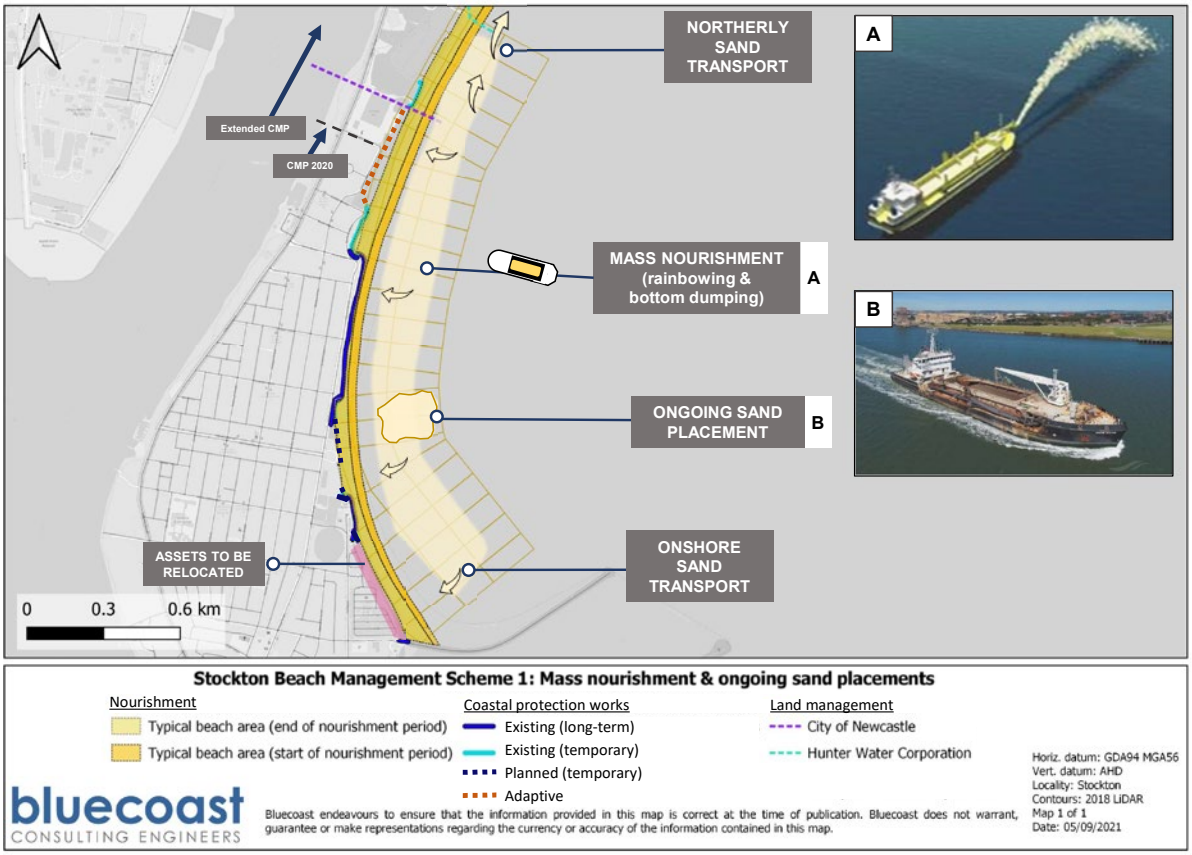


Figure 11. Conceptual diagram of mass nourishment and sand top-ups scheme, including existing and planned coastal protection works.

The indicative timing of works and sandy buffer (or beach health) performance over a 30-year period is shown in Figure 12. Following the delivery of amenity nourishment, mass nourishment quantities of sand should be delivered to Stockton as a priority, followed by regular sand top-ups. However, a project of this scale requires detailed planning, investigations, environmental assessments and approvals.

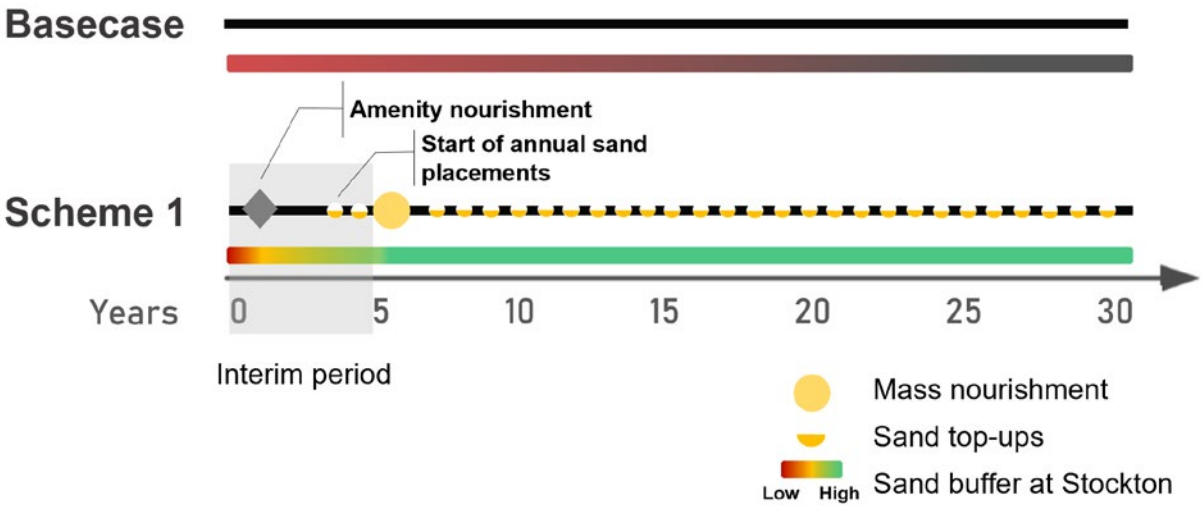


Figure 12. Indicative timing of works and sandy buffer (or beach health) performance over a 30-year period of beach nourishment.

Note: The bottom bar indicates the state of the sand buffer along Stockton Beach. The base case consists of business as usual, with continuation of PoN sand placements at the current rate but no new beach nourishment.

There is current uncertainty as to the best delivery model (i.e. most likely one exercise but could be multiple, smaller exercises) for mass nourishment. Sand could come from a range of possible sources, namely, offshore, nearshore, Newcastle Harbour (Area E, South Arm and/or North Arm of the Hunter River), or other opportunistic sources.

Several initiatives have been completed or are underway through Part B & C of the CERMP to secure and deliver sand for Stockton. These include offshore sand exploration activities; concept designs and the progression of approvals for sand placements at Stockton; and a site selection study for offshore sand sources (MEG, 2021; Bluecoast, 2022a; Bluecoast, 2022b; Bluecoast, 2023a; Bluecoast, 2023b and Bluecoast 2023c).

Following the NSW Government's June 2023 election funding commitment for the mass nourishment component, DCCEEW produced a blueprint for the implementation of the 'Stockton Beach Repair' project. A series of actions will be required before mass nourishment at Stockton can be realised. These are laid out as phases one to five in the Stockton Beach Repair Blueprint, a summary of which is provided below in Figure 13. The outcomes of further investigations, designs and/or environmental assessments will provide more certainty and detail to this element of the strategy. This may impact the proposed sequencing and costs of mass nourishment and sand top-ups as set out herein.

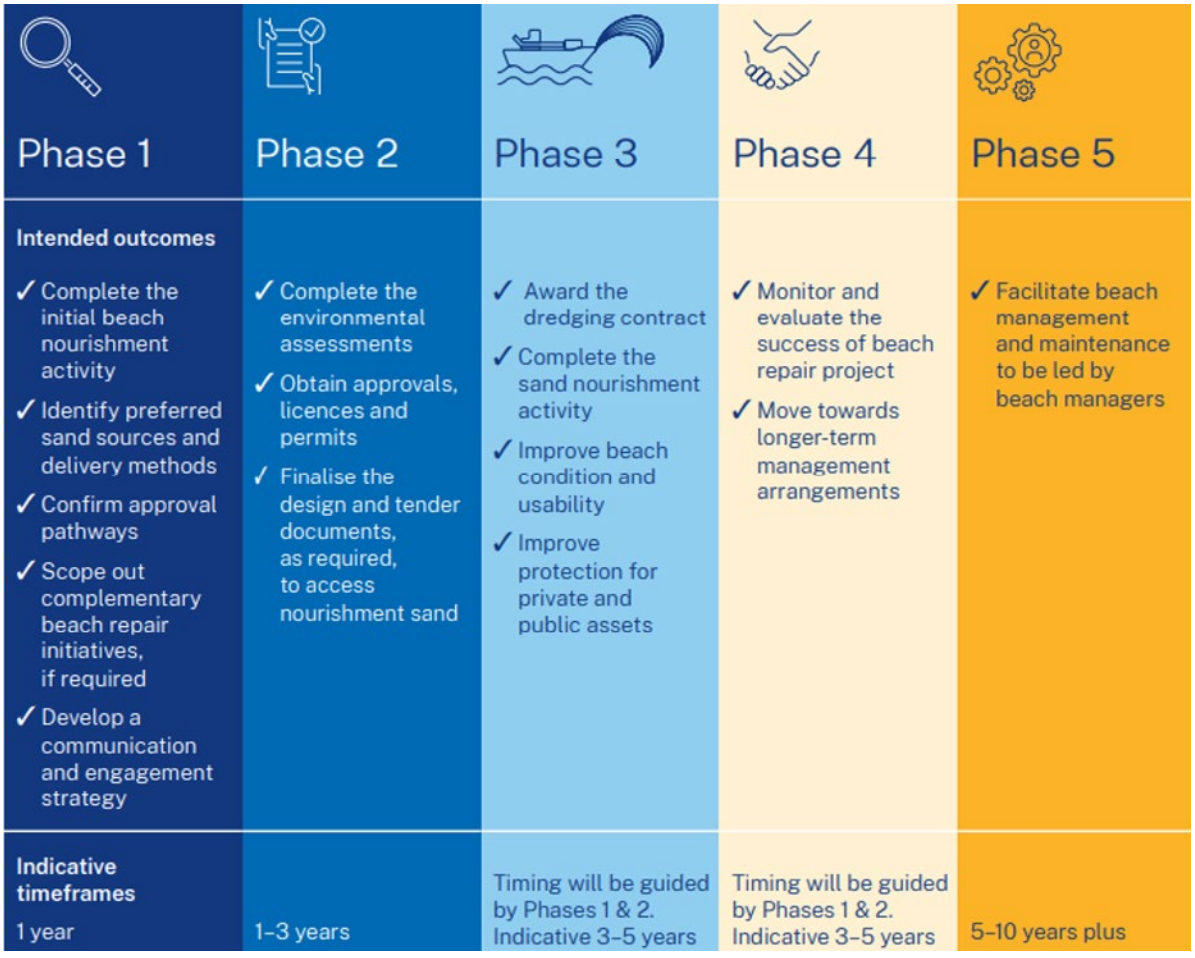


Figure 13. Delivery phases of the Stockton Beach Repair project (State of NSW, 2023).

A governance, funding and implementation framework to support the required sand top-ups has yet to be established. Ongoing sand placements should be delivered in an integrated manner with a strong preference for the use of local sand and sustainable sand management. Given the proximity to Newcastle Harbour and the requirement for ongoing maintenance dredging and/or periodic capital dredging, a strategic partnership with the PoN or other harbour dredging proponents and the public authority managing the beach nourishment program would significantly offset costs (RHDHV, 2020). For example, CN is currently completing desktop investigations into the potential to increase the proportion of the PoN's maintenance dredging that could be beneficially reused as sand top-ups at Stockton. If these initial indications are positive, further detailed assessment and approvals would be required to realise this opportunity, as would collaboration between all parties. CN has been and will continue to advocate that Stockton should be given priority access to any suitable material dredged that is generated by capital works in Newcastle Harbour. The PoN has indicated it would reinstate the placement of suitable sand to Stockton Beach from its maintenance dredging program upon the receipt of placement approvals (action BN1C).

Given the remaining uncertainties and challenges to be overcome, the approach to realising on-going sand top-ups will need to be flexible and adaptive depending on which future sources of sand are realised. In addition, monitoring of future beach conditions will be required to better understand Stockton Beach's sand needs. The proposed coastal monitoring program and decision-support tool outlined in Section 8 will address these points.

In June 2025, it was announced that the NSW Government was delivering on its 2023 election funding commitment to repair Stockton Beach by allocating $21.5million in the 2025-26 State Budget for mass nourishment. The newly formed Stockton Special Advisory Panel (SSAP) will be engaged, updated and consulted on the implementation of the 'Stockton Beach Repair' election commitment. The SSAP will provide a forum for the Minister for the Environment and the State member for Newcastle to engage with key stakeholders. The SSAP will monitor progress and be consulted on:

- key remaining activities funded under the CERMP
- the transition from the CERMP to delivery by the NSW Government of the $21.5 million mass sand nourishment funding commitment and governance framework
- arrangements to transition to implementation, monitoring and maintenance of mass nourishment in the longer term

Based on the coastal erosion impacts experienced at Stockton Beach as a result of the NSW Government owned harbour breakwater and deepwater navigation channel of the Port of Newcastle, CN and the community expect the NSW Government to continue playing the lead role in holistic beach nourishment, including ongoing sand top-ups. These impacts are compounded by the average annual northerly movement of sand out of the southern embayment. This expectation is further supported by the NSW Government's ownership of the sand nourishment placement area and coastal land north of Corroba Oval.

4.1.2 Activities complementary to beach nourishment and sand management

Beach nourishment will be supported by a multi-faceted approach to further strengthen the resilience of the Stockton coastline. This includes an investigation of land use planning controls to ensure future coastal development is compatible with hazard exposure, and adaptive design to support the continued functionality of essential infrastructure. A Social Impact Assessment will also be undertaken to further understand and enhance the community's adaptive capacity through engagement and education. This approach would ultimately reduce the reliance on emergency responses. However, it is acknowledged that emergency management, including education, will always remain necessary due to the unpredictability of severe weather events. Areas of residual coastal risk arising from storms or extreme or irregular events will be addressed through the Stockton CZEAS and supporting documentation.

In addition to the key sand management elements, further complementary coastal management actions, such as dune building and rehabilitation and improvements to beach access, are required following completion of the mass nourishment. Dune rehabilitation and access planning is relevant for the whole coastline and should be undertaken holistically, and in consultation with adjacent property owners north of Corroba Oval. This should consider the need to prevent illegal off-road vehicle access, to ensure public safety and to improve environmental integrity and dune stability.

South of Corroba Oval, will be guided by the development of a Public Domain Plan that utilises a place-making approach to collectively reimagine and design Stockton's open coast foreshore reserve spaces and how they interact with each other and the beach. North of Corroba Oval, in alignment with the Fern Bay and North Stockton Strategy and NSW Coastal Design Guidelines (2023), improved public pedestrian access must be investigated and identified as part of all future planning proposals that involve a change to existing planning controls, such as rezoning.

To further safeguard the future exposure of the Stockton Beach Holiday Park to coastal hazards, the revised Masterplan should consider the relocation and renewal of all permanent assets landward of the 2040 hazard line. Areas seaward of this line could be reserved for more flexible, low-impact and adaptable uses to accommodate changing coastal conditions.

Dune planting in front of the Stockton Holiday Park, 2024.

4.1.3 Immediate coastal hazard management

Recognising that the delivery of mass nourishment has significant implementation challenges and long lead times, the coastal management strategy includes short-term coastal protection works that are integrated with the longer-term mass nourishment. These include the construction of interim coastal protection structures and the maintenance of existing coastal protection works, such as the Mitchell Street seawall and temporary coastal protection works on the Hunter Water site.

The interim protection works will provide protection to areas containing critical assets and manage the risk of exposure of historical landfill material ahead of the delivery of mass nourishment. The engineering design and choice of construction material will be informed by the timing of the works relative to the delivery of mass nourishment, the need to preserve beach amenity and public access, safety considerations, current beach condition and potential environmental and asset infrastructure management implications. The type of structure and design life of the works will be sufficient to deliver an acceptable level of risk to landward assets, this may include sand filled geotextile containers, rock bags or interim works of a similar nature. While cost estimates are currently based on the use of rock bags, it is acknowledged that alternative methods may prove more suitable and cost-effective once project design works commence. The sequencing of work will be determined by the risk profile and prevailing beach conditions.

Coastal protection structures to address areas at immediate risk, as identified in Figure 14, include:

- Extension of existing seawalls as per Stockton CMP 2020 to protect critical assets such as Mitchell Street. Since 2020, extensions to the north and south of the Mitchell Street seawall have been completed, with the alignment and construction methodology of the southern works refined to allow for integration into other works planned for The Pines (as below). Interim protections structures to the north and south of the Stockton Surf Life Saving Club will be constructed under this CMP.
- A protection structure seaward of the old landfill under The Pines (**Supporting Documentation E**). This will provide the dual benefit of preventing the exposure of historic landfill material and protecting a significant community asset.
- Protection of Eames Avenue and the sporting facility at Corroba Oval, if threatened by coastal erosion in the short to medium term. While these areas are not at immediate risk[6], this CMP includes interim coastal protection works, for example rock bags, implemented in an adaptive manner if trigger points are reached, along these frontages. The trigger points are outlined Table 19.

Triggers for the removal of any interim coastal protection works will be determined against a suitable level of protection being provided by the delivery of the mass nourishment strategy and the Part 5 assessment process under the EP&A Act.

6 Probabilistic erosion hazard lines indicate that the probability of exposure of these assets to erosion in 2018 had an Annual Exceedance Probability (AEP) of much less than 1%. By 2040 and for the base case scenario (i.e. no beach nourishment), the AEP of exposure to beach erosion increases to around 10%.

4.2 Management actions

4.2.1 Overview

In-line with the adopted coastal management strategy, evidence-based management actions have been identified and developed for a ten-year period. The management actions have been developed to address the coastal management issues identified in each coastal management area described in Section 2 and in a strategic manner to facilitate the coordinated management of the Stockton coastline to reflect the numerous roles and responsibilities of the stakeholders involved, as outlined in Section 3 and **Appendix C**.

The CM Act requires that a CMP identify responsibility, indicative costs, viable mechanisms and timing of actions. Table 13 provides an overview of the information that will be provided in addressing these management actions. Table 14 outlines the management actions to be implemented by CN or by other public authorities. The key actions are mapped in Figure 14.

Additional information on the development of actions, including an action-by-action evaluation and alignment with CN's IP&R framework, is provided in **Appendix C**.

Table 13. Summary of information provided for each management action.

Column heading	Description of field
Action ID	Management actions have been given unique ID's that begin with one of the letter combinations: • BN: actions related to beach nourishment and implementation of the core sand management activities. • CH: actions related to implementation of coastal protection works or complementary coastal hazard management actions. • CU: actions related to the coastal use management area, such as improving beach access and use of the foreshore and beach. • CE: actions related to the coastal environment management area, including vegetation and stormwater management, and environmental monitoring. • H: actions related to cultural heritage, including Aboriginal and maritime heritage.
Management action	A brief description of the management action is provided.
Performance target	Describes the desired outcome(s) of the management action, providing a target against which success can be measured.
Lead agency	The lead agency responsible for implementing the action is identified. The lead agency is the owner of the action.
Supporting partners	Supporting partners are those stakeholders who are landowners, or who have an interest in the proposed management action and will be consulted when the management action is delivered. They don't have direct implementation responsibility for the action but may be a financial partner, if indicated.
Timeframe	This refers to the timeframes for the implementation of the action as defined in Section 1.4 and summarised as: • Short-term: current period until delivery of mass nourishment. The delivery of mass nourishment is expected to occur within 2 to 5 years. • Medium-term: post-delivery of mass nourishment through to a 30-year period i.e. 5 to 30 years. • Long-term: period beyond 30 years.

See page 10 for abbreviations.

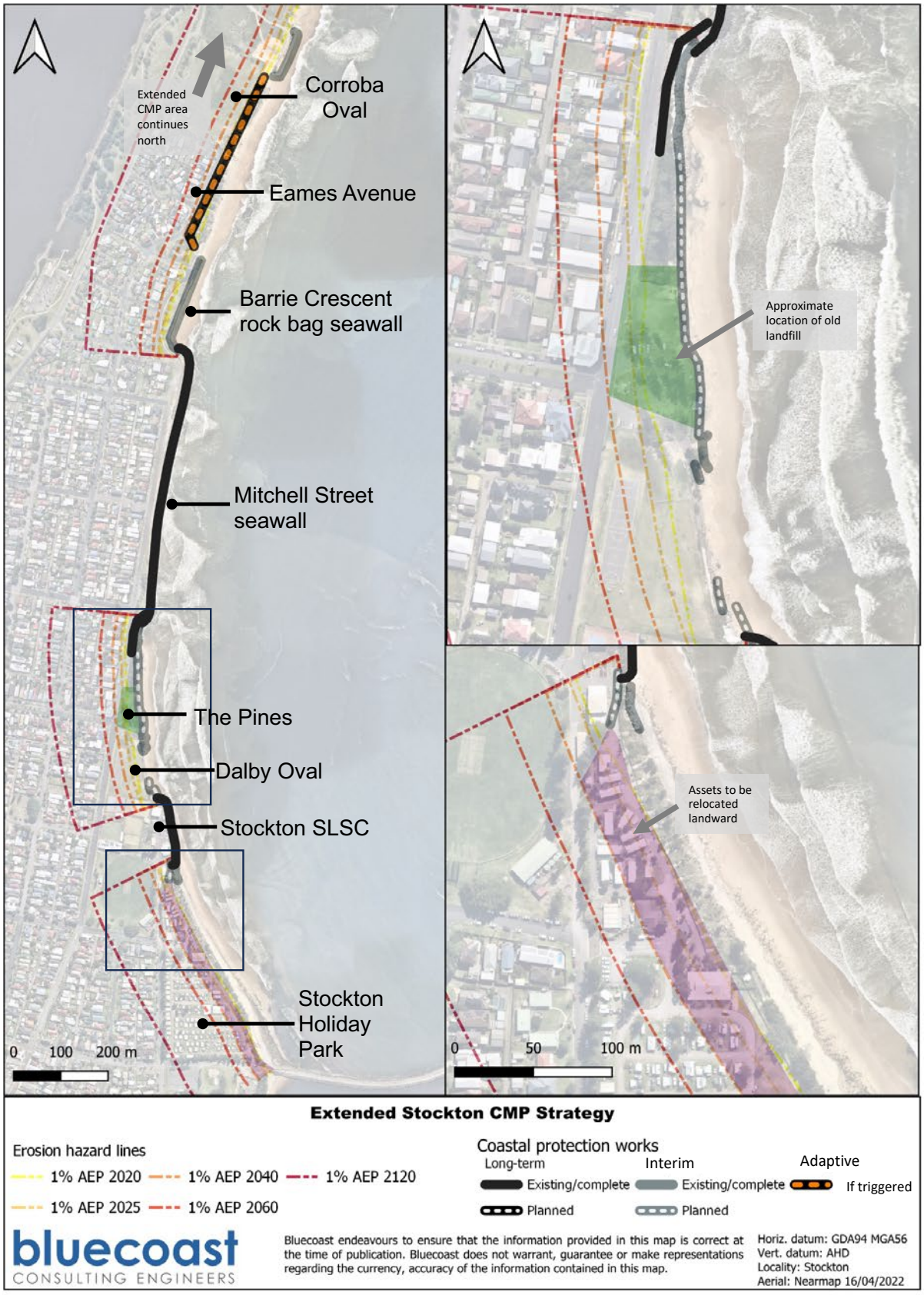


Figure 14. Map of key CMP actions.

Table 14. CMP actions to be implemented.

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Beach nourishment [BN] - Ongoing partnerships and strategies						
BN1A	Advocate that TfNSW request early in the project planning process, that a beneficial reuse hierarchy for the management of dredged material prioritises the nourishment of Stockton Beach for future capital dredging proposals within Newcastle Harbour.	Stockton Beach is identified as a priority location for beneficial reuse investigations for all future capital dredging projects within Newcastle Harbour.	CN	TfNSW, DPHI - Planning	Short	
BN1B	Suitable excess material from capital dredging projects (as and when such projects are required by Port of Newcastle operations) in Newcastle Harbour be prioritised for beneficial reuse as nourishment of Stockton Beach.	Suitable excess dredged material from all future capital dredging beneficially reused as nourishment of Stockton Beach.	Port of Newcastle	CN, DCCEEW, capital dredging proponent(s), TfNSW, DPHI - Planning	Short-Medium	
BN1C	Suitable material from maintenance dredging activities (as and when such projects are required by Port of Newcastle operations) in Newcastle Harbour be prioritised for beneficial reuse as nourishment of Stockton Beach in accordance with relevant approvals.	Placement in accordance with Stockton nourishment placement designs, specifications and receipt of all required approvals from the public authority leading delivery.	Port of Newcastle	CN, DCCEEW, DAWE and TfNSW, DPHI - Planning	Short	In the absence of PoN receiving all required approvals, PoN will provide suitable material from maintenance dredging activities (as and when such activities are required by Port of Newcastle operations) from Newcastle Harbour, for placement by third parties as nourishment of Stockton Beach, in accordance with and subject to Stockton nourishment placement designs, specifications and approvals.
Beach Nourishment [BN] - Pre-planning investigations, design and approvals						
BN2A	Undertake feasibility and design work plus environmental assessments and approvals for identified sand sources in offshore marine areas and the North Arm of the Hunter River.	Identification, investigation and environmental assessment of borrow areas sufficient to obtain main approvals, permits and licences for mass nourishment and sand top ups.	DCCEEW	CN, DPHI - Planning	Short	
BN2B	Undertake an initial desktop assessment and consult with relevant stakeholders regarding the benefits of placing mixed sediments from the maintenance dredging of Newcastle Harbour off Stockton Beach.	Determine the likely value of mixed sediment placements for nourishment of Stockton Beach.	CN	Port of Newcastle, DPHI - Planning	Short	
Beach nourishment [BN] - Implementation actions						
BN3A	Implement beach nourishment, in alignment with the Stockton Beach Repair Blueprint.	Mass nourishment works are completed that meet the objective of restoring the beach, improving it's recreational amenity and providing protection of public assets.	DCCEEW	CN	Short	
BN3B	Work collaboratively with the Stockton Special Advisory Panel, to investigate and determine a governance, funding and implementation framework for ongoing sand top-ups that incorporates the key learnings from the CERMP project and the Stockton Beach Repair project with consideration of mixed sediment placement and opportunistic sand sources.	Effective governance, funding and implementation framework and approval pathway for sand top ups identified.	DCCEEW	CN, Port of Newcastle, DPHI - Planning	Ongoing	

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Beach Nourishment [BN] - Dune maintenance actions						
BN4A	Identify the most efficient sand scraping operation subject to local conditions.	Sand scraping methodology reviewed and updated.	CN	HW & Crown Lands as landowners requiring consultation	Short	
BN4B	Conduct beach scraping in areas, north and south of the Mitchell Street seawall, in front of Corroba Oval, Dalby Oval and the Holiday Park, to increase dune volume and maintain existing access points.	Sand scraping implemented as conditions allow.	CN	HW & Crown Lands as landowners requiring consultation	Short	All works are to be undertaken in alignment with the Stockton nature assisted beach enhancement Review of Environmental Factors
BN4C	Undertake dune maintenance program and continue dune rehabilitation works prior to mass nourishment along the most vulnerable shorelines. This may include dune shaping, stabilising, fencing and sand scraping.	Dune maintenance program implemented.	CN, HW		Short	
BN4D	Post mass nourishment, conduct dune building and stabilisation to reinstate the coastal barrier along the most vulnerable shorelines.	Dune building and stabilisation works completed.	CN, HW		Medium	
Beach Nourishment [BN] - Monitoring actions						
BN5A	Undertake monitoring of the October/November 2023 amenity nourishment, as required in the CERMP grant scope of works.	Surveys completed in accordance with PEMP.	DCCEEW	CN	Short	
BN5B	Develop and implement coastal monitoring and decision-support system to inform sand and beach management.	Decision support tool provides operational efficiency and clearly identifies when the sand buffer is not within the target range.	DCCEEW	Port of Newcastle, CN	Short	Surveys would cover landward of dune crest (land component) to depth of closure (underwater component). Decision support system could be based on trigger values/ ranges using full profile/subaerial volumes to cover regular sand top-up requirements.
BN5C	Deliver targeted coastal monitoring of mass nourishment through the Stockton Beach Repair Project, in alignment with the Stockton Beach Repair Blueprint.	Coastal monitoring program implemented in accordance with PEMP (as updated from time to time). Innovation in methodology included.	DCCEEW	CN	Short-Medium	
BN5D	Undertake coastal monitoring to trigger coastal protection works (CPW), including beach scraping.	Coastal monitoring implemented.	CN		Short-Medium	

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Coastal assets [CH] - Pre-planning investigations						
CH1A	Audit coastline and update asset register(s) accordingly, to ensure natural and built coastal assets are adequately represented in service asset planning.	Asset register updated.	CN		Medium	
CH1B	Incorporate coastal hazards into CN's service asset planning.	Coastal hazards included in service asset plans.	CN		Medium	
CH1C	Develop a masterplan for the Holiday Park, investigating the landward re-location of cabins and the amenities block, the associated infrastructure changes, and future financial sustainability in response to coastal hazard exposure, as per Figure 14.	Reconfiguration of infrastructure identified within masterplan.	CN		Short	
Coastal assets [CH] - design and approvals actions						
CH2A	Finalise design and documentation of planned protection structures to address immediate risks to critical assets, as per Figure 14.	Design completed.	CN		Short	
CH2B	Conduct an environmental assessment and seek associated approvals for the protection structures, as outlined in CH2A.	Environmental assessment completed and associated approvals obtained.	CN		Short	
CH2C	Undertake condition assessment and design specification for renewal of the existing SLSC and Mitchell Street seawalls, including consideration of adaptation to climate change and ongoing maintenance.	Condition assessment, scope of works and tender designs completed.	CN		Short	
CH2D	Undertake a detailed design and obtain approvals, including cultural heritage assessments based on the outcomes of the Holiday Park masterplan (once developed).	Detailed design and approvals completed.	CN		Short	
CH2E	Undertake concept design and obtain approvals for interim protection structure at Eames Ave and Corroba Oval, including cultural heritage assessments, if triggered.	Concept design and environmental assessment completed and associated approvals obtained.	CN		Short	Design would be triggered if the erosion scarp comes within 25m of the seaward edge of the Eames Ave road, or a shore parallel line adjoining the floodlights on the seaward side of Corroba Oval.
Coastal assets [CH] - Implementation actions						
CH3A	Construct interim protection structures to address immediate risks at The Pines frontage.	Works completed.	CN		Short	
CH3B	Construct interim protection structures to address immediate risks at the northern end of the SLSC seawall and northern extension.	Works completed.	CN		Short	
CH3C	Construct interim protection structure to address immediate risks at the southern end of the SLSC seawall.	Works completed.	CN		Short	
CH3D	Reconfigure and construct infrastructure and building assets within the Holiday Park, that reflect the approved masterplan and development consent.	Works completed.	CN		Medium	
CH3E	If triggered, construct an interim protection structure to address coastal erosion along Eames Ave and Corroba Oval.	Works completed if triggered.	CN		Short	Works would be triggered if the erosion scarp comes within 15m of the seaward edge of the road at Eames Ave or a shore parallel line adjoining the floodlights on the seaward side of Corroba Oval.

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Coastal Assets - Maintenance and monitoring actions						
CH4A	Undertake renewal works to the Mitchell Street seawall as identified in condition assessment report.	Works completed.	CN		Short	
CH4B	Undertake renewal works to the SLSC seawall as identified in condition assessment report.	Works completed.	CN		Short	
CH4C	Undertake maintenance of the rock bag protection structure at northern end of Mitchell St seawall.	Works completed.	CN		Short	
CH4D	Undertake annual inspection of the northern breakwater, as per the PoN lease, and assess potential issues from coastal hazards, in relation to infrastructure operated by PoN.	Visual inspection of rock armour, public pathway and ancillary infrastructure.	Port of Newcastle	TfNSW	Ongoing	
CH4E	Undertake pro-active and reactive beach maintenance at stormwater discharge points along the Stockton coastline, prior to and after storm events, to prevent additional erosion and ponding.	Maintenance works are completed, as required.	CN		Ongoing	
CH4F	Conduct a seawall condition monitoring program within the Extended Stockton CMP area.	All built seawalls inspected and required actions reported in CN's works and assets annually. Every five years these assets are included in CN's fair value reporting.	CN		Ongoing	

City of Newcastle

Mitchell Street rock bag structure, June 2024. Picture supplied by Brefni.

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Complimentary coastal hazard actions [CH] - Management and planning						
CH5A	Resourcing the integrated delivery of on-ground works as detailed in this business plan.	2 x effective full-time staff engaged. Integrated delivery of the Extended Stockton CMP works program.	CN		Ongoing	
CH5B	Review of the Extended Stockton Coastal Management Program.	Extended Stockton CMP certified and reviewed.	CN	DCCEEW	Medium	
Complimentary coastal hazard actions [CH] - Development controls						
CH6A	Investigate mapping a Coastal Vulnerability Area (CVA) in the Resilience and Hazard SEPP for Stockton based on coastal hazard projection mapping, in consultation with Port Stephens Council, NSW public agencies and the community.	Investigation complete and mapping produced if required.	CN	DCCEEW, PSC	Short	
CH6B	Investigate the preparation of specific coastal hazard planning controls, consistent with any future CVA for Stockton and incorporate in the Newcastle LEP and DCP, in consultation with Port Stephens Council.	Investigation complete and planning controls to appropriately manage risk developed.	CN	PSC	Short	
CH6C	Review planning certificates and ensure they are updated in line with existing policies and best practice for properties affected by current and future coastal hazards.	Planning certificate notification reviewed.	CN		Short	
CH6D	Consider impacts of current and future coastal hazards when renewing, designing or constructing public assets/properties.	Incorporation of coastal hazards into project design documents.	CN		Ongoing	
Complimentary coastal hazard actions [CH] - Emergency works						
CH7A	Undertake emergency works to manage beach erosion before, during and after storm events, in accordance with the Stockton CZEAS in Appendix B.	Emergency response completed and subsequent grant funding applications lodged.	CN	NSW SES, Police, Local Emergency Management Committee	Ongoing	
CH7B	Review Emergency Operational Plan after each major event, or annually.	Review of Emergency Operational Plan completed, as required.	CN		Ongoing	
CH7C	Investigate the development of a Trigger Action Response Plan (TARP) for coastal inundation in consultation with SES and other relevant stakeholders.	Trigger Action Response Plan (TARP) developed.	CN	NSW SES, Police, Local Emergency Management Committee	Short	
Complimentary coastal hazard actions [CH] - Knowledge creation/transfer						
CH8A	Establish an expert panel, including emergency management personnel, to advise CN on coastal management matters.	Expert panel established.	CN		Short	
CH8B	Update and enhance CN's website with coastal management program information, including coastal processes and hazards, emergency management and on-ground works.	CN website updated.	CN		Ongoing	
Complimentary coastal hazard actions [CH] - Social and community						
CH9A	Undertake a Social Impact Assessment (SIA) to identify, predict and evaluate the likely social impacts of the Extended Stockton CMP against baseline conditions and propose proportionate project responses.	Improved understanding of the social impacts of the Extended Stockton CMP, with responses identified and delivered.	CN		Short	
CH9B	Develop and deliver a staged social resilience engagement and education program with the Stockton community and invested stakeholders. Informed by the above SIA (CH9A) and a trauma-informed methodology.	Improvement in social indicators of individual and community wellbeing and resilience.	CN		Medium	

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Coastal Use [CU] - Beach access - Pre mass nourishment						
CU1A	Undertake an audit of beach access points to assess and address public safety issues and erosion potential after each weather event.	Audit undertaken and response implemented.	CN		Short	
CU1B	Utilise a place-making approach, in the preparation of a Public Domain Plan for the Stockton coastal area.	Public Domain Plan developed and implemented.	CN		Short - Medium	The Public Domain Plan will build upon the Newcastle Coastal Revitalisation Strategy Master Plan and incorporate recommended planning controls and initiatives, to improve beach access, once mass nourishment is delivered.
CU1C	Retain Corroba Oval as a local level facility from a hazard exposure perspective.	Retain Corroba Oval as a local level facility.	CN		Short	
CU1D	Restrict illegal off-road vehicles, including four wheel drives, trail bikes and all-terrain vehicles, from Hunter Water, DHA and DCJ land.	Mechanism installed to restrict access.	HW, DHA, DCJ		Ongoing	
Coastal Use [CU] - Post mass sand nourishment						
CU1E	Undertake investigations into the feasibility of improving beach accessibility in the Stockton CMP area.	Plan for improved beach access.	CN		Medium	This may be through beach matting, beach wheelchairs for hire and other measures.
CU1F	Design and construct new access ways, as identified from public domain planning, including reinstating access over the existing seawalls post mass nourishment.	Accessways programmed and constructed.	CN		Medium	
CU1G	Investigate with the view to provide improved pedestrian beach access and carparking along the northern boundary of Corroba Oval, through the development of the Corroba Oval Master Plan.	A master plan that considers the site's role within the sporting precinct and connections to open spaces within Stockton.	CN		Medium	
CU1H	Support public authority landholders and ensure consultation/ engagement with the Worimi Conservation Lands Board of Management in any investigations into future ownership and linkages of beachfront land, to enable continuous public pedestrian access to and along Stockton Beach to the Worimi Conservation Lands.	Opportunities for improved access along Stockton Beach identified and created.	CN	NPWS, Crown Lands and Worimi Lands Conservation Board.	Ongoing	
CU1I	Require that landholders north of Corroba Oval identify, as part of all future planning proposals, how public pedestrian access to the beach will be provided, and how vehicle and other motorised access will be appropriately restricted.	Improved beach assess included as part of redevelopment.	CN	DHA, HW, DCJ	Ongoing	Depending on the use (and any future use) of the DCJ site, public access may need to be restricted for safety and security.

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Coastal Environment [CE] - Vegetation management						
CE1A	Undertake dune vegetation maintenance program and continue dune rehabilitation works, in accordance with best practice, including invasive species control and the replanting of native colonising species.	Dune maintenance program undertaken.	CN, HW, DHA, DCJ		Short	Planning of works to have consideration of Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques (2001)
CE1B	Include landscaping with native provenance species in public domain works along the coastal section of the Stockton CMP area.	Improved ecological value of public spaces and dune health.	CN		Short	
CE1C	Provide support and assistance to Landcare volunteers.	Functioning Landcare group. Improved dune health.	CN		Ongoing	
CE1D	Develop a wrack management protocol that applies to Stockton Beach.	Minimum viable wrack levels maintained to support ecosystem functioning.	CN		Short	
Coastal Environment [CE] - Contamination management						
CE2A	Maintain/refurbish as required the temporary seawall and/or incrementally remove landfill material and other contamination on the former Hunter Water treatment plant site.	Waste is managed appropriately.	HW		Short	
CE2B	Identify the extent of the contaminated land at the DCJ site and determine and implement a management response.	Waste characteristics/extents determined and a management response identified and implemented.	DCJ		Short	
CE2C	Conduct on-ground works to manage the historical buried material along the erosion scar of Stockton Beach.	Works are completed.	CN		Short	
Coastal Environment [CE] - Stormwater management						
CE3A	Incorporate best practice stormwater quantity and quality management and Water Sensitive Urban Design (WSUD) into the design and delivery of capital projects, as well as Public Domain Plans and master plans.	Best practice stormwater quantity and quality management and WSUD are incorporated into projects and strategic planning documents.	CN		Ongoing	
CE3B	Prepare overarching stormwater management plans for critical sub catchments (those in the vicinity of coastal protection structures) that consider whole of catchment management, including drainage asset condition, catchment modelling, and related low lying land studies.	Identification and prioritisation of key stormwater management locations and actions for Stockton.	CN		Medium	
Coastal Environment [CE] - Environmental monitoring						
CE4A	Continue to monitor dune health and implement recommendations of monitoring program.	Improved dune health.	CN		Ongoing	
CE4B	Build capacity for community volunteers to undertake citizen science environmental monitoring.	Increased participation in citizen science programs.	CN		Ongoing	

Item	Management action	Performance target	Lead agency	Supporting partners	Timeframe (subject to available funding and resources)	Action notes
Culture and heritage [H]						
H1	Facilitate engagement with Traditional Custodians on how they would like to be involved in the implementation of the sand nourishment strategy and additional CMP actions.	Early and ongoing engagement in line with the Worimi Engagement Protocols.	CN	Traditional Custodians and Worimi LALC	Short	This should include targeted on-ground surveys of locations where sand (both on land and in the water) will be sourced, including access tracks.
H2	Develop an Unexpected Finds Protocol which considers Aboriginal cultural heritage, environmental heritage and maritime heritage.	Report completed and utilised to inform future planning.	CN	Traditional Custodians and Worimi LALC/ Heritage NSW	Short	This should include a data audit of all AHIMS sites in the subject area and for AHIMS to be updated accordingly.
H3	Incorporate Aboriginal cultural information and due diligence into CN projects and works, including the assessment of development applications and heritage interpretations.	Early and ongoing engagement in CN projects, in line with the Worimi Engagement Protocols. Consideration of cultural information in development applications.	CN	Traditional Custodians and Worimi LALC	Short	
H4	In consultation with Traditional Custodians, investigate and appropriately manage remnant Aboriginal heritage materials discovered on public lands.	Early and ongoing engagement in CN projects, in line with the Worimi Engagement Protocols.	CN	Traditional Custodians and Worimi LALC	Short	
H5	Build awareness of Aboriginal cultural values and sensitivities within CN staff, in relation to coastal management.	Participation of CN staff in cultural inductions/ training/meetings.	CN	Traditional Custodians and Worimi LALC	Medium	
H6	Implement dual naming of sites where appropriate.	Dual naming implemented, where appropriate.	CN	Traditional Custodians and Worimi LALC	Short	
H7	Support the continuation of cultural practices undertaken by Aboriginal people, including the sharing of those practices with others, in Stockton.	Support for the continuation of cultural practices undertaken in line with the Worimi Engagement Protocols.	CN	Traditional Custodians and Worimi LALC	Short	
H8	Support Aboriginal Place applications at Stockton.	Support supplied for Aboriginal place applications at Stockton.	CN	Traditional Custodians and Worimi LALC	Short	
H9	Explore opportunities for whale carcass management to incorporate Indigenous cultural protocols.	Opportunities identified and whale carcass management that incorporates Indigenous cultural protocols implemented.	CN, NPWS	Traditional Custodians and Worimi LALC	Short	
H10	Explore opportunities for the recognition and interpretation of heritage items and places, including archaeological sites and maritime heritage, in CN projects and works.	Opportunities for the recognition and interpretation of heritage items and places identified and incorporated into CN projects and works.	CN	Heritage NSW	Short	
H11	Integrate the consideration of cultural history and heritage including, heritage items, archaeological sites, historic shipwrecks and other maritime heritage within the Stockton CMP area into Public Domain Plans.	Cultural history and heritage considerations incorporated into Public Domain Plans.	CN	Heritage NSW	Medium	
H12	Investigate and appropriately manage heritage items, archaeological sites and maritime heritage (including underwater cultural heritage, historic shipwrecks and associated relics) on public lands, under threat from coastal hazards.	Listed heritage items appropriately managed.	CN	Heritage NSW	Short	

4.2.2 Actions to be implemented by CN or public authorities

The Extended Stockton CMP includes a total of 79 management actions. Table 15 provides a breakdown of the number of actions by category and lead agency.

Table 15. Number of management action by category and lead agency.

Category	Number of actions		
	All	CN lead agency	Other lead agency or shared leadership
Beach nourishment	**15**	5	10
Coastal assets	**19**	18	1
Complementary coastal hazards	**13**	13	0
Coastal use	**9**	8	1
Coastal environment	**11**	8	3
Culture and heritage	**12**	11	1
TOTALS	**79**	**63**	**16**

The CM Act requires that public authorities that are either affected by or have been identified as being the lead agency for the delivery of an action must agree to those actions. For the Extended Stockton CMP these public authorities are:

- DCCEEW (Conservation Programs, Heritage and Regulation Group)
- Hunter Water Corporation
- Defence Housing Australia
- Department of Communities and Justice
- National Parks and Wildlife Service
- Department of Planning, Housing and Infrastructure - Crown Lands.

The PoN is not a public authority, but a private company. As lessor of Newcastle's port area, the PoN plays a key role in sediment management around the lower Hunter River and the coastline adjacent to the river's entrance. Formal agreement for lead actions was supplied by PoN.

Formal letters of agreement are included in **Appendix A**.

The Stockton Beach Repair Blueprint outlined that the NSW Government would provide project governance, proactive communication and engagement, and a targeted monitoring program for the duration of the election funding commitment over five key phases.

This commitment was acknowledged in the 2025/2026 State budget.

Stockton amenity sand nourishment, October 2023.

5. CMP recommended changes to relevant planning controls

The coastal planning actions in the Extended Stockton CMP will provide an integrated approach to ensure future coastal development is compatible with current and future hazard exposure. These actions aim to protect public safety, minimise damage to public infrastructure and private property, preserve natural coastal processes and support resilient, adaptive design.

These include works to:

- Investigate mapping the Coastal Vulnerability Area (CVA) for Stockton in the Resilience and Hazard SEPP using coastal hazard projections identified by this CMP
- Investigate the inclusion of coastal hazard planning controls for Stockton in the Newcastle LEP and DCP that are consistent with the CVA
- Review and update planning certificates to reflect current policies and best practices for properties impacted by coastal hazards
- Consider coastal hazards and the Extended Stockton CMP when developing plans of management, public domain plans or other master planning documents
- Consider the risk of coastal hazards when reviewing or constructing public assets within the Extended Stockton CMP area. The location and design of the assets should consider the coastal hazards outlined in **Supporting Documentation C and D**.

6. A business plan

6.1 Value of implementing this CMP

The Extended Stockton CMP is a program of physical works, monitoring and investigations, and planning and education initiatives that target the coastal hazards and legacy issues impacting the coastline now and into the future. Actions also address threats to the environmental, social, cultural and economic values of the open coast.

Investment in this CMP provides an opportunity to restore the condition of the beach, environmental habitats, cultural spaces and recreational opportunities along Stockton's open coast, and in doing so, bring benefits to the public, in particular, mitigating the risks to people and property presented by coastal hazards.

6.2 Distribution of benefit

The actions contained within the business plan primarily mitigate coastal risks to public beneficiaries. As such, no 'beneficiary pays' models have been allocated to private beneficiaries in the business plan and therefore a coastal protection service charge would not be activated.

The scope of the completed cost benefit analysis for the medium to long-term coastal management schemes (refer Section 3.3) is limited and defined by the assumptions adopted within appraisal and the confines of cost benefit analysis framework.

The only parties that can be included in the analysis are those that receive either a direct or indirect benefit or cost from the proposed coastal works in comparison to a base case in which the works are not undertaken. It cannot incorporate external parties that contribute to the root cause of the base case. For example, the erosion issues of Stockton Beach are driven by the presence of the deepwater shipping channel to Newcastle Harbour. The costs associated with erosion and inundation hazard at Stockton Beach, or the proposed works cannot be attributed to the beneficiaries associated with the shipping channel (e.g., NSW Government, Port of Newcastle, associated industries and businesses, river users, etc.) unless they use the beach. This apparent inequity in the allocation of cost and benefits to the erosion solution at Stockton are relevant to ongoing funding discussions. A summary of the key beneficiaries considered in the CBA is presented in Section 3.3.2 (refer to **Supporting Documentation F**).

6.3 CMP business plan

Table 16 provides a summary of the additional information provided in the business plan. Some of the column headings (action ID, management action, lead agency and supporting partners) are repeated from the management action table, with these column headings described in Section 4.2.1.

A business plan has been developed for this CMP (Table 17) which outlines the key components of the funding strategy for the CMP, including the cost of proposed actions, proposed cost-sharing arrangements and other potential funding mechanisms.

"I live in Stockton and love to surf or try to surf"

Surf day by Poppi Ambler, Stockton Photo Competition, Primary School category highly commended.

City of Newcastle

Table 16. Summary of information provided in the CMP Business Plan.

Column heading	Description of field
Potential funding sources	CMP actions are expected to be funded through CN and NSW Government contributions and monetary grants. The funding already committed, as well as various funding sources, is outlined in Section 6.4.
Capital cost	Indicative capital cost estimates for the actions (where relevant). Cost estimates for the complex coastal engineered work have been based on feasibility level designs for the various works. Costs were based on the best available information and benchmarked against other similar projects. However, given the level of design maturity and nature of the cost build-up, the cost estimates should be considered Class 5, with an accuracy of ±50%. Actual costs will be dependent on engineering refinement during detailed design and market conditions at the time of tendering and during construction. Where the action would only require existing staff time, assets and services, these are noted as "Internal resources".
Operational / maintenance cost	Indicative operational or maintenance cost estimates for the actions (where relevant). As with the capital cost estimates, for complex actions, estimates are considered Class 5. These are provided as either annualised costs (denoted $/yr) or a single value that covers the CMP period. Where the action would only require existing staff time, assets and services, these are noted as "Internal resources".
Total cost over CMP Business Plan	This field provides the sum of capital and operational / maintenance costs over the 10-year CMP Business Plan. Capital, operational / maintenance and total costs are given in Australian dollars, (including GST) and are for the year 2024. CPI is not applied to any of the action cost.
CN **NSW Government** **Federal Government**	Based on the known or assumed cost sharing arrangements outlined in 'Potential funding sources' column (and Section 6.4), the total CMP cost has been proportioned across each of the main funding entities. This includes competitive grant applications.
Year 1 **Years 2 to 5** **Years 6 to 10**	To assist with scheduling the implementation of actions, an expenditure forecast for each action (timeline and budget) has been included in these columns.

Table 17. The Business Plan.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
						TOTALS:	**$26,525,000**	**$1,297,011**	**$23,787,667**	**$1,440,323**	**$404,000**	**$24,096,000**	**$2,025,000**
Beach nourishment [BN] - Ongoing partnerships and strategies													
BN1A	Advocate that TfNSW request early in the project planning process, that a beneficial reuse hierarchy for the management of dredged material prioritises the nourishment of Stockton Beach for future capital dredging proposals within Newcastle Harbour.	CN	TfNSW, DPHI - Planning	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
BN1B	Suitable excess material from capital dredging projects (as and when such projects are required by Port of Newcastle operations) in Newcastle Harbour be prioritised for beneficial reuse as nourishment of Stockton Beach.	Port of Newcastle	CN, DCCEEW, capital dredging proponent(s), TfNSW, DPHI - Planning	Any implementation costs over and above that of alternative material disposal methods for the capital dredging project would likely require funding by the NSW Government or other sand receiving entity.	Internal PoN resources	$0	$0	$0	$0	$0	$0	$0	$0
BN1C	Suitable material from maintenance dredging activities (as and when such projects are required by Port of Newcastle operations) in Newcastle Harbour be prioritised for beneficial reuse as nourishment of Stockton Beach in accordance with relevant approvals.	Port of Newcastle	CN, DCCEEW, DAWE and TfNSW, DPHI - Planning		No additional funding required over existing PoN operational budget. Maintenance dredging for navigational safety currently conducted by PoN.	No additional funding required over existing PoN operational budget. Maintenance dredging for navigational safety currently conducted by PoN.	$0	$0	$0	$0	$0	$0	$0
Beach Nourishment [BN] - Pre-planning investigations, design and approvals													
BN2A	Undertake feasibility and design work plus environmental assessments and approvals for identified sand sources in offshore marine areas and the North Arm of the Hunter River.	DCCEEW	CN, DPHI - Planning	This action is included in the scope of works under the Coastal and Estuarine Risk Mitigation Program (CERMP)	$1,600,000	$0	$1,600,000	$387,097	$0	$1,212,903	$0	$1,600,000	$0
BN2B	Undertake an initial desktop assessment and consult with relevant stakeholders regarding the benefits of placing mixed sediments from the maintenance dredging of Newcastle Harbour off Stockton Beach.	CN	Port of Newcastle, DCCEEW, DPHI - Planning	CN	$15,000	$0	$15,000	$15,000	$0	$0	$15,000	$0	$0

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
Beach nourishment [BN] - Implementation actions													
BN3A	Implement beach nourishment, in alignment with the Stockton Beach Repair Blueprint.	DCCEEW	CN	NSW Government funding commitment (Stockton Beach Repair Blueprint).	$21,500,000	$0	$21,500,000	$0	$21,500,000	$0	$0	$21,500,000	$0
BN3B	Work collaboratively with the Stockton Special Advisory Panel, to investigate and determine a governance, funding and implementation framework for ongoing sand top-ups that incorporates the key learnings from the CERMP project and the Stockton Beach repair project with consideration of mixed sediment placement and opportunistic sand sources.	DCCEEW	CN, Port of Newcastle, DPHI - Planning	Internal DCCEEW resources	$0	$0	$0	$0	$0	$0	$0	$0	$0
Beach Nourishment [BN] - Dune maintenance actions													
BN4A	Identify the most efficient sand scraping operation subject to local conditions.	CN	HW & Crown Lands as landowners requiring consultation	CN	$20,000	$0	$20,000	$20,000	$0	$0	$0	$20,000	$0
BN4B	Conduct beach scraping in areas, north and south of the Mitchell Street seawall, in front of Corroba Oval, Dalby Oval and the Holiday Park, to increase dune volume and maintain existing access points.	CN	HW & Crown Lands as landowners requiring consultation	CN, NSW Government competitive grant funds.	$0	$255,000 (annually for the first 3 years to take advantage of opportunities as they present themselves, after which it would be covered by BN4D.)	$765,000	$255,000	$510,000	$0	$255,000	$510,000	$0
BN4C	Undertake dune maintenance program and continue dune rehabilitation works prior to mass nourishment along the most vulnerable shorelines. This may include dune shaping, stabilising, fencing and sand scraping	CN, HW		Each landholder is responsible for the work on their own land. Allocating these costs proportionately is difficult to estimate, so costs have been based on a uniform cost along the CMP shoreline, equating to CN (85%) and HW (15%). Costs are subject to annual funding and resourcing allocations. CN to utilise internal resources and grant funding for their component	$0	$24,000/yr (for first 5 years)	$120,000	$34,000	$86,000	$0	$24,000	$96,000	$0

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
BN4D	Post mass nourishment, conduct dune building and stabilisation to reinstate the coastal barrier along the most vulnerable shorelines.	CN, HW		Proportional cost to each landowner is dependent on the scope of dune stabilisation required for each foreshore area. Because the most vulnerable areas are along the southern most shoreline, where the dune has been eroded, the majority of dune stabilisation (approx. 80%) is estimated to be required on land managed by CN. CN to utilise internal resources and grant funding for their component. The remaining 20% of dune stabilisation will be on HW land.	$1,800,000	$0	$1,800,000	$480,000	$1,320,000	$0	$0	$0	$1,800,000
Beach Nourishment [BN] - monitoring actions													
BN5A	Undertake monitoring of the October/November 2023 amenity nourishment, as required in the CERMP grant scope of works.	DCCEEW	CN	This action is included in the scope of works under the Coastal and Estuarine Risk Mitigation Program (CERMP).	-	$300,000 (total over CMP period)	$300,000	$72,581	$0	$227,419	$100,000	$200,000	$0
BN5B	Develop and implement coastal monitoring and decision-support system to inform sand and beach management.	DCCEEW	Port of Newcastle, CN	Cost sharing opportunity with PoN dredge surveys	$50,000	$25,000/yr (assumed to be from year 4 onwards)	$225,000	$0	$225,000	$0	$0	$100,000	$125,000
BN5C	Deliver targeted coastal monitoring of mass nourishment through the Stockton Beach Repair Project, in alignment with the Stockton Beach Repair Blueprint.	DCCEEW	CN	NSW Government funding commitment (Stockton Beach Repair Blueprint)	-	$10,000/yr (assumed from year 3 onwards)	$80,000	$0	$80,000	$0	$0	$30,000	$50,000
BN5D	Undertake coastal monitoring to trigger coastal protection works (CPW), including beach scraping.	CN		CN, NSW Government competitive grant funds		$10,000/yr	$100,000	$33,333	$66,667	$0	$10,000	$40,000	$50,000

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
						TOTALS:	**$28,320,000**	**$19,633,333**	**$8,686,667**	**$0**	**$8,185,000**	**$18,655,000**	**$1,480,000**
Coastal assets [CH] - Pre-planning investigations													
CH1A	Audit coastline and update asset register(s) accordingly, to ensure natural and built coastal assets are adequately represented in service asset planning.	CN		CN	$60,000	$0	$60,000	$60,000	$0	$0	$0	$60,000	$0
CH1B	Incorporate coastal hazards into CN's service asset planning.	CN		CN	$20,000	$0	$20,000	$20,000	$0	$0	$0	$20,000	$0
CH1C	Develop a masterplan for the Holiday Park, investigating the landward re-location of cabins and the amenities block, the associated infrastructure changes, and future financial sustainability in response to coastal hazard exposure, as per Figure 14.	CN		CN	$150,000	$0	$150,000	$150,000	$0	$0	$0	$150,000	$0
Coastal assets [CH] - Design and approvals actions													
CH2A	Finalise design and documentation of planned protection structures to address immediate risks to critical assets, as per Figure 14.	CN		CN, NSW Government competitive grant funds	$350,000	$0	$350,000	$116,667	$233,333	$0	$350,000	$0	$0
CH2B	Conduct an environmental assessment and seek associated approvals for the protection structures, as outlined in CH2A.	CN		CN, NSW Government competitive grant funds	$300,000	$0	$300,000	$100,000	$200,000	$0	$75,000	$225,000	$0
CH2C	Undertake condition assessment and design specification for renewal of the existing SLSC and Mitchell Street seawalls, including consideration of adaptation to climate change and ongoing maintenance.	CN		CN	$160,000	$0	$160,000	$160,000	$0	$0	$80,000	$80,000	$0
CH2D	Undertake a detailed design and obtain approvals, including cultural heritage assessments based on the outcomes of the Holiday Park masterplan (once developed).	CN		CN	$150,000	$0	$150,000	$150,000	$0	$0	$0	$150,000	$0
CH2E	Undertake concept design and obtain approvals for interim protection structure at Eames Ave and Corroba Oval, including cultural heritage assessments, if triggered.	CN		CN, NSW Government competitive grant funds	$150,000	$0	$150,000	$50,000	$100,000	$0	$0	$150,000	$0
Coastal assets [CH] - Implementation actions													
CH3A	Construct interim protection structures to address immediate risks at The Pines frontage.	CN		CN, NSW Government competitive grant funds	$6,100,000	$80,000 (once over 5 year design life)	$6,180,000	$2,060,000	$4,120,000	$0	$1,830,000	$4,270,000	$80,000
CH3B	Construct interim protection structures to address immediate risks at the northern end of the SLSC seawall and northern extension.	CN		CN	$4,000,000	$0	$4,000,000	$4,000,000	$0	$0	$800,000	$3,200,000	$0
CH3C	Construct interim protection structure to address immediate risks at the southern end of the SLSC seawall.	CN		CN, NSW Government competitive grant funds	$950,000	$50,000 (every 5 years)	$1,050,000	$350,000	$700,000	$0	$190,000	$810,000	$50,000

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
CH3D	Reconfigure and construct infrastructure and building assets within the Holiday Park, that reflect the approved masterplan and development consent.	CN		CN	$2,500,000	$0	$2,500,000	$2,500,000	$0	$0	$0	$1,250,000	$1,250,000
CH3E	If triggered, construct an interim protection structure to address coastal erosion along Eames Ave and Corroba Oval.	CN		CN, NSW Government competitive grant funds	$5,000,000	$0	$5,000,000	$1,666,667	$3,333,333	$0	$0	$5,000,000	$0
Coastal Assets - Maintenance and monitoring actions													
CH4A	Undertake renewal works to the Mitchell Street seawall as identified in condition assessment report.	CN		CN, NSW Government competitive grant funds	$7,000,000	$0	$7,000,000	$7,000,000	$0	$0	$4,600,000	$2,400,000	$0
CH4B	Undertake renewal works to the SLSC seawall as identified in condition assessment report.	CN		CN, NSW Government competitive grant funds	$960,000	$0	$960,000	$960,000	$0	$0	$240,000	$720,000	$0
CH4C	Undertake maintenance of the rock bag protection structure at northern end of Mitchell St seawall.	CN		CN, NSW Government competitive grant funds	$0	$90,000 (over life of CMP)	$90,000	$90,000	$0	$0	$0	$90,000	$0
CH4D	Undertake annual inspection of the northern breakwater, as per the PoN lease, and assess potential issues from coastal hazards, in relation to infrastructure operated by PoN.	Port of Newcastle	TfNSW	PoN		Internal PoN staff resources, no additional funding required over existing PoN operational budget.	$0	$0	$0	$0	$0	$0	$0
CH4E	Undertake pro-active and reactive beach maintenance at stormwater discharge points along the Stockton coastline, prior to and after storm events, to prevent additional erosion and ponding.	CN		CN	Internal CN resources	Internal CN resources	$0	$0	$0	$0	$0	$0	$0
CH4F	Conduct a seawall condition monitoring program within the Extended Stockton CMP area.	CN		CN	$0	$20,000/yr (annual over life of CMP)	$200,000	$200,000	$0	$0	$20,000	$80,000	$100,000

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
						TOTALS:	**$3,885,000**	**$2,965,000**	**$920,000**	**$0**	**$475,000**	**$1,910,000**	**$1,500,000**
Complimentary Coastal Hazard Actions [CH] - Management and planning													
CH5A	Resourcing the integrated delivery of on-ground works as detailed in this business plan.	CN		CN		$240,000/yr (annual over life of CMP)	$2,400,000	$2,400,000	$0	$0	$240,000	$960,000	$1,200,000
CH5B	Review of the Extended Stockton Coastal Management Program.	CN	DCCEEW	CN, NSW Government competitive grant funds	$250,000	$0	$250,000	$83,333	$166,667	$0	$0	$0	$250,000
Complimentary Coastal Hazard Actions [CH] - Development controls													
CH6A	Investigate mapping a Coastal Vulnerability Area (CVA) in the Resilience and Hazard SEPP for Stockton based on coastal hazard projection mapping, in consultation with Port Stephens Council, NSW public agencies and the community.	CN	DCCEEW, PSC	CN, NSW Government competitive grants funds	$30,000	$0	$30,000	$10,000	$20,000	$0	$30,000	$0	$0
CH6B	Investigate the preparation of specific coastal hazard planning controls, consistent with any future CVA, for Stockton and incorporate in the Newcastle LEP and DCP, in consultation with Port Stephens Council.	CN	PSC	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
CH6C	Review planning certificates and ensure they are updated in line with existing policies and best practice for properties affected by current and future coastal hazards.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
CH6D	Consider impacts of current and future coastal hazards when renewing, designing or constructing public assets/properties.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
Complimentary Coastal Hazard Actions [CH] - Emergency works													
CH7A	Undertake emergency works to manage beach erosion before, during and after storm events, in accordance with the Stockton CZEAS in Appendix B.	CN	NSW SES, Police, Local Emergency Management Committee	CN, NSW/Federal Government competitive grant funds	$1,000,000 (based on estimates from the five year average. $200,000 per annum for the first 5 years	$5,000/yr (annual monitoring budget)	$1,050,000	$350,000	$700,000	$0	$205,000	$820,000	$25,000
CH7B	Review Emergency Operational Plan after each major event, or annually.	CN		CN, NSW/Federal Government competitive grant funds	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
CH7C	Develop a Trigger Action Response Plan (TARP) for coastal inundation in consultation with SES and other relevant stakeholders.	CN	NSW SES, Police, Local Emergency Management Committee	CN, NSW/Federal Government competitive grant funds. Council will seek funding from a range of sources in accordance with Section 6.4.	Internal CN resources	$50,000	$50,000	$16,667	$33,333	$0	$0	$50,000	$0
Complimentary Coastal Hazard Actions [CH] - Knowledge creation/transfer													
CH8A	Establish an expert panel, including emergency management personnel, to advise CN on coastal management matters.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
CH8B	Update and enhance CN's website with coastal management program information, including coastal processes and hazards, emergency management and on-ground works.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
Complimentary Coastal Hazard Actions [CH] - Social and community													
CH9A	Undertake a Social Impact Assessment (SIA) to identify, predict and evaluate the likely social impacts of the Extended Stockton CMP, against baseline conditions, and propose proportionate project responses.	CN		CN	$80,000	$0	$80,000	$80,000	$0	$0	$0	$80,000	$0
CH9B	Develop and deliver a staged social resilience engagement and education program with the Stockton community and invested stakeholders. Informed by the above SIA (CH9A) and a trauma-informed methodology.	CN		CN	$25,000	$0	$25,000	$25,000	$0	$0	$0	$0	$25,000

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
						TOTALS:	**$1,465,000**	**$881,667**	**$576,667**	**$6,667**	**$40,000**	**$927,500**	**$497,500**
Coastal Use [CU] Beach access - Pre mass sand nourishment													
CU1A	Undertake an audit of beach access points to assess and address public safety issues and erosion potential after each weather event.	CN		CN	$0	$20,000/yr (annual cost over life of CMP)	$200,000	$200,000	$0	$0	$20,000	$80,000	$100,000
CU1B	Utilise a place-making approach, in the preparation of a Public Domain Plan for the Stockton coastal area.	CN		CN	$400,000	$0	$400,000	$400,000	$0	$0	$0	$400,000	$0
CU1C	Retain Corroba Oval as a local level facility from a hazard exposure perspective.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
CU1D	Restrict illegal off-road vehicles, including four wheel drives, trail bikes and all-terrain vehicles, from Hunter Water, DHA and DCJ land.	HW, DHA, DCJ	NPWS and Worimi Conservation Lands Board.	Each landholder is responsible for funding and delivering work on their own land, subject to annual funding and resourcing allocations.	$20,000*	$0	$20,000	$0	$13,333	$6,667	$20,000	$0	$0
Coastal Use [CU] Beach access - Post mass sand nourishment													
CU1E	Undertake investigations into the feasibility of improving beach accessibility in the Stockton CMP area. This may be through beach matting, beach wheelchairs for hire and other measures.	CN		CN, NSW Government competitive grants funds	$50,000	$0	$50,000	$16,667	$33,333	$0	$0	$50,000	$0
CU1F	Design and construct new access ways, as identified from public domain planning, including reinstating access over the existing seawalls post mass nourishment.	CN		CN, NSW Government competitive grants funds	$795,000	$0	$795,000	$265,000	$530,000	$0	$0	$397,500	$397,500
CU1G	Investigate with the view to provide improved pedestrian beach access and carparking along the northern boundary of Corroba Oval, through the development of the Corroba Oval Master Plan.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
CU1H	Support public authority landholders and ensure consultation/engagement with the Worimi Conservation Lands Board of Management with any investigations into future ownership and linkages of beachfront land, to enable continuous public pedestrian access to and along Stockton Beach to the Worimi Conservation Lands.	CN	NPWS, Crown Lands and Worimi Lands Conservation Board	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
CU1I	Require that landholders north of Corroba Oval identify how public pedestrian access will be provided to the beach within all future planning proposals and how other vehicles and other motorised access will be restricted.	CN	DHA, HW, DCJ	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0

*Note: The amount of $20,000 for fencing does not include costs relating to approvals/documentation and engagement of consultants.

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
						TOTALS:	**$2,125,000**	**$191,667**	**$1,905,333**	**$28,000**	**$85,000**	**$1,935,000**	**$105,000**
Coastal Environment [CE] - Vegetation management													
CE1A	Undertake dune vegetation maintenance program and continue dune rehabilitation works, in accordance with best practice, including invasive species control and the replanting of native colonising species.	CN, HW, DHA, DCJ		Each landholder is responsible for funding and delivering work on their own land, subject to annual funding and resourcing allocations. The proportion for the operational costs are difficult to estimate and have been based on a uniform cost along the CMP shoreline, equating to CN (50%); HW (10%); DHA (20%); DCJ (20%). CN to utilise internal resources and seek competitive grant funding for their component.	$0	$140,000 (over life of the CMP)	$140,000	$23,333	$88,667	$28,000	$28,000	$42,000	$70,000
CE1B	Include landscaping with native provenance species in public domain works along the coastal section of the Stockton CMP area.	CN		CN	$20,000	$0	$20,000	$20,000	$0	$0	$0	$20,000	$0
CE1C	Provide support and assistance to Landcare volunteers.	CN		CN	$10,000	$2,000/yr (annually over the life of the CMP)	$30,000	$30,000	$0	$0	$12,000	$8,000	$10,000
CE1D	Develop a wrack management protocol that applies to Stockton Beach.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
Coastal Environment [CE] - Contamination management													
CE2A	Maintain/refurbish as required the temporary seawall and/or incrementally remove landfill material and other contamination on the former Hunter Water treatment plant site.	HW		HW	$0	$1,750,000 (over life of CMP)	$1,750,000	$0	$1,750,000	$0	$0	$1,750,000	$0
CE2B	Identify the extent of the contaminated land at the DCJ site and determine and implement a management response.	DCJ		DCJ	$10,000*	$0	$10,000	$0	$10,000	$0	$10,000	$0	$0
CE2C	Conduct on-ground works to manage the historical buried material along the erosion scar of Stockton Beach.	CN		CN, NSW Government competitive grants funds	$60,000	$0	$60,000	$20,000	$40,000	$0	$30,000	$30,000	$0
Coastal Environment [CE] - Stormwater management													
CE3A	Incorporate best practice stormwater quantity and quality management and Water Sensitive Urban Design (WSUD) into the design and delivery of capital projects, as well as Public Domain Plans and master plans.	CN		CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
CE3B	Prepare overarching stormwater management plans for critical sub catchments (those in the vicinity of coastal protection structures) that consider whole of catchment management, including drainage asset condition, catchment modelling, and related low lying land studies.	CN		CN	$40,000	$0	$40,000	$40,000	$0	$0	$0	$40,000	$0
Coastal Environment [CE] - Environmental monitoring													
CE4A	Continue to monitor dune health and implement recommendations of monitoring program.	CN		CN	$0	$5,000/yr (annually over life of CMP)	$50,000	$50,000	$0	$0	$5,000	$20,000	$25,000
CE4B	Build capacity for community volunteers to undertake citizen science environmental monitoring.	CN		CN, NSW Government competitive grant funds	Internal CN resources	$25,000 (over life of CMP)	$25,000	$8,333	$16,667	$0	$0	$25,000	$0

*Note: Costs include only the initial engagement of consultants but additional costs may be required associated with remediation and/or ongoing management.

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

City of Newcastle

Beach scraping at Stockton Beach, May 2022.

Action ID	Management action	Lead agency	Supporting partners	Potential funding sources	Capital cost	Operational/ maintenance costs	Total cost over CMP business plan	Cost sharing			Year 1	Years 2 to 5 (forecast)	Years 6 to 10 (forecast)
								CN (Council)	State government (including HW)	Federal government			
						TOTALS:	**$105,000**	**$105,000**	**$0**	**$0**	**$5,000**	**$75,000**	**$25,000**
Culture and heritage [H]													
H1	Facilitate the engagement with Traditional Custodians on how they would like to be involved in the implementation of the sand nourishment strategy and additional CMP actions.	CN	Traditional Custodians and Worimi LALC	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H2	Develop an Unexpected Finds Protocol which considers Aboriginal cultural heritage, environmental heritage and maritime heritage.	CN	Traditional Custodians and Worimi LALC	CN	$55,000	$0	$55,000	$55,000	$0	$0	$0	$55,000	$0
H3	Incorporate Aboriginal cultural information and due diligence into CN projects and works, including the assessment of development applications and heritage interpretations.	CN	Traditional Custodians and Worimi LALC	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H4	In consultation with Traditional Custodians, investigate and appropriately manage remnant Aboriginal heritage materials discovered on public lands.	CN	Traditional Custodians and Worimi LALC	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H5	Build awareness of Aboriginal cultural values and sensitivities within CN staff, in relation to coastal management.	CN	Traditional Custodians and Worimi LALC	CN	Internal CN resources	$50,000 (over life of CMP)	$50,000	$50,000	$0	$0	$5,000	$20,000	$25,000
H6	Implement dual naming of sites where appropriate.	CN	Traditional Custodians and Worimi LALC	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H7	Support the continuation of cultural practices undertaken by Aboriginal people, including the sharing of those practices with others, in Stockton.	CN	Traditional Custodians and Worimi LALC	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H8	Support Aboriginal Place applications at Stockton.	CN	Traditional Custodians and Worimi LALC	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H9	Explore opportunities for whale carcass management to incorporate Indigenous cultural protocols.	CN, NPWS	Traditional Custodians and Worimi LALC	CN / NPWS	Internal CN / NPWS resources	$0	$0	$0	$0	$0	$0	$0	$0
H10	Explore opportunities for the recognition and interpretation of heritage items and places, including archaeological sites and maritime heritage, in CN projects and works..	CN	Heritage NSW	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H11	Integrate the consideration of cultural history and heritage including, heritage items, archaeological sites, historic shipwrecks and other maritime heritage within the Stockton CMP area into Public Domain Plans.	CN	Heritage NSW	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0
H12	Investigate and appropriately manage heritage items, archaeological sites and maritime heritage (including underwater cultural heritage, historic shipwrecks and associated relics) on public lands, under threat from coastal hazards.	CN	Heritage NSW	CN	Internal CN resources	$0	$0	$0	$0	$0	$0	$0	$0

Note 2 - CPI has not been included and projected costs will need to be refined at detailed design stage.

6.4 Funding sources

Delivery of this CMP is estimated to cost $62.425 million (2024 dollars) over 10 years. The breakdown of these costings and the potential cost sharing arrangements are outlined in Table 18.

Table 18. Total CMP Costs.

Category	Costs	Cost sharing			Forecast		
	Total	CN	NSW Government	Federal Government	Year 1 (estimate)	Years 2 to 5 (forecast estimate)	Years 6 to 10 (forecast estimate)
Beach Nourishment	$26,525,000	$1,297,011	$23,787,667	$1,440,323	$404,000	$24,096,000	$2,025,000
Coastal Assets	$28,320,000	$19,633,333	$8,686,667	$-	$8,185,000	$18,655,000	$1,480,000
Complementary Hazard	$3,885,000	2,965,000	$920,000	$-	$475,000	$1,910,000	$1,500,000
Coastal Use	$1,465,000	$881,667	$576,667	$6,667	$40,000	$927,500	$497,500
Coastal Environment	$2,125,000	$191,667	$1,905,333	$28,000	$85,000	$1,935,000	$105,000
Culture & Heritage	$105,000	$105,000	$-	$-	$5,000	$75,000	$25,000
TOTALS	**$62,425,000**	**$25,073,677**	**$35,876,334**	**$1,474,989**	$9,194,000	$47,598,500	$5,632,500

Based upon the timeframes for actions and cost estimates, $9.19M is required in Year 1, with an estimated cost forecast of $47.6M in Year 2 to 5 (inclusive), and an estimated $5.63M required over Year 6 to 10 of the program. It should be noted that it is difficult to definitively forecast costs for projects that are yet to undergo detailed design. Costs have not been indexed and projected costs will need to be refined at the detailed design stage. The estimated cost to CN to implement the CMP over 10 years is $25.07M.

Funding for management actions may be gained from various sources, including CN internal funds, competitive NSW or Federal Government grant programs and local stakeholders. Confirmed and potential funding sources include:

- CERMP jointly funded by the Australian Government ($4.7M) and City of Newcastle ($1.5M), delivery of which is the responsibility of DCCEEW.
  - Part A involved the provision of amenity nourishment completed in November 2023
  - Parts B and C involves the progression of feasibility and design work, plus environmental assessments and approvals, for identified sand sources from the north arm of the Hunter River (Part B) and offshore marine areas (Part C), to support both mass nourishment and sand top up quantities to meet the larger, longer-term requirements to offset underlying losses and forecasted sea level rise.
- $21.5 million NSW Government funding commitment for the delivery of mass nourishment as outlined in the Stockton Beach Repair Blueprint and confirmed in the 2025/26 State Budget.
- CN revenue generated by ordinary rate income and associated with the operation of the Stockton Beach Holiday Park.
- Competitive NSW Government funding mechanisms, including Coastal and Estuary Grants Program.
- Competitive Federal Government funding mechanisms.
- Contributions from land developers and owners for the northern section of Stockton Beach.

Moreover, beneficiaries of the deepwater shipping channel may be able to realise financial gains, by integrating their current entrance management practices with proposed Stockton Beach management options and in doing so, could form part of the ongoing funding strategy for the CMP (refer **Supporting Documentation E**).

6.5 Management action approvals and considerations

Coastal protection works as defined in section 4(1) of the CM Act are determined to be beach nourishment activities or works, and activities or works to reduce the impacts of coastal hazards on land adjacent to tidal waters including, but not limited to, seawalls, revetments and groynes. Examples of coastal protection works include, but are not restricted to, beach scraping, dune rehabilitation, beach nourishment, revegetation, dune stabilisation and fencing. Coastal protection works that are undertaken by a public authority are eligible for a Part 5 approval pathway under the EP&A Act, if identified in a certified CMP.

Some of the coastal management actions in the Extended Stockton CMP require approvals or authorisation from relevant landowners, or stakeholders with an interest in the land, where the management action is proposed. Where relevant, this support was obtained from relevant stakeholders through extensive consultation.

As per existing management practices, approvals and assessments or authorisations under various legislative instruments may be required and will be obtained prior to commencement of the management action. This includes, but is not limited to, assessments of European and Aboriginal heritage, environmental impacts and navigation. The location and suitability of future public access north of Corroba Oval will require consultation with property owners and will depend on the land use and safety and security considerations as well as any approvals or permits/licences that may be required.

Crown Reserve 79066, with a reserve purpose of public recreation, port facilities and services (gazetted on 9 November 1956), runs along the open coastline of the Extended Stockton CMP area. Where management actions are proposed on Crown Land, as per Section 4.2, relevant authorisations and approvals may need to be obtained under the NSW *Crown Land Management Act 2016*. Management actions undertaken on Crown Land will also need to consider Aboriginal Land Claims lodged under the NSW *Aboriginal Land Rights Act 1983*. All management actions will need to be compliant with the *Native Title Act 1993* (Commonwealth). The Extended Stockton CMP has been developed in consultation with representatives of Worimi and Maiangal Ngurra and consultation will continue throughout its implementation.

In alignment with Principle 3.1(b) of the adopted Newcastle Heritage Study, the research and publication of cultural knowledge and data is Indigenous-led, ethical and responsible, ensuring it has a positive impact on and for Indigenous people. Cultural knowledge gathered from Aboriginal and Torres Strait Islander peoples must only be obtained with free, prior and informed consent. Indigenous Cultural and Intellectual Property (ICIP) rights are respected, with the rights of Aboriginal and Torres Strait Islander peoples to own and control their cultural heritage recognised and protected.

The Underwater Cultural Heritage Act 2018 (UCH Act) currently protects sites in Commonwealth Waters, and under an Intergovernmental Agreement in 2010, all States have agreed to reflect the provisions of this Act within State legislation within five years of ratification of the UNESCO Convention for the Protection of Underwater Cultural Heritage (meaning that specific legislation with increased legislative powers will apply in relation to submerged Indigenous UCH sites / historic aircraft / historic maritime infrastructure within State waters. Given the actions within this CMP are likely to fall within that timeframe, specific reference to submerged UCH is required within the document.

6.6 Outstanding issues and risks

Despite advances and improved knowledge gained through the preparation of the Stockton CMP 2020 and the Extended Stockton CMP, as well as on other related investigations, there remain several variables and unknowns that may influence the implementation of the preferred coastal management strategy. For example:

- the actual costs of some elements of the preferred scheme may be higher or lower than anticipated. Sand may be delivered to Stockton through processes outside of the CMP, at little to no cost (e.g., increased beneficial reuse of harbour sediments, through maintenance dredging practices by PoN or port development projects resulting in major capital dredging that delivers sand to Stockton).
- proposed sand volumes to achieve coastal protection and amenity needs may be overestimated/ underestimated.
- project funding has not been secured to cover the full cost of the required on-going sand top-ups or some of the other complementary actions.

At the current level of development (i.e., strategic) this is considered normal for the nature of the project set out in the preferred coastal management strategy (Scheme 1). Undertakings of this nature are complex and require careful planning. Flexibility must be designed into the implementation strategy, to account for variables and unknowns. In developing the implementation strategy for the preferred scheme, consideration will be given to relevant work that has been undertaken outside the Extended Stockton CMP including but not limited to the:

- extensive sand sourcing investigations that have recently or are currently being undertaken including the Hunter River Area E, South Arm, North Arm and Stockton offshore sand exploration project and,
- sand placement concept design for Stockton Beach nourishment. For example, the sand placement concept design report (Bluecoast, 2023b) provides a sensitivity analysis to a range of beach nourishment volumes in terms of predicted beach width and level of coastal protection outcomes for a period of up to 10-years post-nourishment. Key results are provided in **Supporting Documentation F**.
- environmental assessments and approvals being progressed for sand placements at Stockton Beach.

Improving beach and foreshore access has been addressed in this CMP by seeking to include this requirement in future developments planned across the northern coastline. This situation will require monitoring and may become a focus of future CMPs.

Rock bag structure at Northern end of Stockton Beach, June 2022

7. Coastal Zone Emergency Action Subplan

The CM Act identifies specific emergency management considerations associated with beach erosion, coastal inundation and cliff instability. The CM Act (section 15(1)(e)) outlines that a Coastal Zone Emergency Action Subplan (CZEAS) must be included in a CMP if the local council's LGA contains land within the CVA, and if beach erosion, coastal inundation or cliff instability is occurring on that land.

Currently, no CVA map for Stockton, in accordance with the State Environmental Planning Policy (Resilience and Hazards) 2021, has been adopted and therefore no CVA has been identified. However, it is recognised that Stockton Beach has been impacted by coastal erosion on numerous occasions and it is considered appropriate to develop a CZEAS for this location.

Mandatory requirements for a CMP, including the preparation of a CZEAS where required, have been identified in Part A of the NSW Coastal Management Manual (OEH, 2018). Further direction on the preparation of a CZEAS is provided in the "Guideline for preparing a coastal zone emergency action subplan" (DPIE 2019). The Stockton CZEAS **Appendix B** has been developed in accordance with this manual and guideline.

The purpose of the Stockton CZEAS is to outline the roles and responsibilities of all public authorities (including CN) in response to emergencies immediately preceding or during periods of beach erosion or coastal inundation, where the beach erosion or coastal inundation occurs through ocean storm activity or an extreme or irregular ocean event.

The CZEAS is an accompanying document to the CN Local Emergency Management Plan 2019 (Newcastle EMPLAN), which sets out the responsibilities of combat agencies, including the NSW Police, CN, NSW Ambulance Service, NSW State Emergency Service (NSW SES), Fire and Rescue NSW (FRNSW) and others, in response to emergency situations.

CN's internal emergency operational plans are an accompanying document to the Stockton CZEAS and will provide specific information to operationalise CN's actions. These plans will identify the responsible teams within CN for specific coastal hazard emergency response actions across the Newcastle LGA.

The Extended Stockton CZEAS replaces the Stockton CMP 2020's Appendix A CZEAS (south of Meredith Street) and Part B, Appendix D of the Newcastle CZMP (2018) (north of Meredith Street). The Newcastle Coastline South of the Harbour Coastal Erosion Emergency Action Subplan remains in force.

8. Monitoring, evaluation and reporting program

8.1 MER actions

Monitoring evaluation and reporting (MER) related actions have also been developed and form a key component of this CMP. The MER related management actions are designed to monitor, evaluate and report on specific components of the adopted coastal management strategy. These MER actions have been integrated into the CMPs management action table. For each MER related management action, a description of the action, lead and supporting organisations, performance targets, indicative timeframes and triggers has been provided. Furthermore, the CMP Business Plan provides indicative costs, funding sources, cost-sharing arrangements and an expenditure forecast for each of the MER related management actions.

The MER related management actions found in Table 14 and Table 17 are:

- **BN5A** - Undertake monitoring for the October/November 2023 amenity nourishment, as required in the CERMP grant scope of works.
- **BN5B** - Develop and implement coastal monitoring and decision-support system to inform sand and beach management.
- **BN5C** - Targeted coastal monitoring of mass nourishment delivered through the Stockton Beach Repair Project, in alignment with the Stockton Beach Repair Blueprint.
- **BN5D** - Coastal monitoring to trigger coastal protection works and beach scraping.
- **CH4D** - Undertake annual inspection of Northern Breakwater as per the PON lease and assess potential issues from coastal hazards, in relation to infrastructure operated by PoN.
- **CH4F** - Seawall condition monitoring program within the Extended Stockton CMP area.
- **CH7B** – Review Emergency Operational Plan after each major event, or annually.
- **CH9A** - Undertake a Social Impact Assessment (SIA) to identify, predict and evaluate likely social impacts against baseline conditions of the Stockton CMP and propose proportionate project responses.
- **CH9B** - Develop and deliver a staged social resilience engagement and education program with the Stockton community and invested stakeholders. Informed by the above SIA (CH9A) and trauma-informed methodology.
- **CE4A** - Continue to monitor dune health and implement recommendations of monitoring program.

Table 19 provides a summary of key MER related management actions and their intended use in tracking the implementation of this CMPs coastal management strategy, as part of Stage 5 of the CMP.

Table 19. Summary of key MER related management actions and their intended use in tracking CMP implementation (Stage 5).

Strategy component	MER actions	Detailed description	Key indicators[1]	Triggers[2]

Stockton's sandy buffer
Is to be restored and maintained to provide amenity and coastal protection outcomes.
	BN5A
	BN5B
	BN5C
		• BN5A is coastal monitoring to inform the performance of the amenity nourishment exercise and in doing so inform the development of detailed mass nourishment design and approvals. The detailed monitoring actions are set out in the PEMP (Bluecoast, 2023).
		• BN5B monitoring is intended to inform both mass nourishment and on-going sand top-ups. The decision-support tool is aimed at informing sand top-ups. It is to be developed by the nourishment coordinator and comprise of an automated analysis package that is designed to ensure that the monitoring data is effectively transformed into information that can be used to support sand management decisions (e.g. the quantity of sand top-ups required over the next 2-years) in the context of beach conditions and climate outlooks (e.g. El Nino Southern Oscillation forecast).
		• BN5C is DCCEEW led monitoring focused on mass nourishment as further developed from their Stockton Beach Repair Blueprint.
			• Beach volume is intended as the primary indicator. It is suggested that beach volume be calculated as the volume of sand relative to the 2018 Coastal LIDAR survey between:
			  • Reference baseline landward of dune crest and the -14m AHD depth contour.
			  • Northern breakwater and Fort Wallace.
			• Beach widths measured as the distance between an agreed top of beach baseline and the observed MSL shoreline.
				• Mass nourishment was triggered some time ago and should be completed as soon as practically possible.
				• Investigations completed for the Stockton CMP 2020 suggest, 2.4M m^3 above the 2018 level is an appropriate restorative mass nourishment quantity to accommodation a >100 year ARI storm between Barrie Crescent and the Hunter Water Land (Bluecoast, 2020c).
				• Sand top-ups, as envisaged in this CMP, are intended to maintain the sandy buffer on an ongoing basis (i.e. it is a proactive approach and not trigger based). However, if a more reactive approach was adopted, the restorative nourishment quantity could be used to guide the triggers for sand top-ups (e.g. beach volume at Stockton drops below 80% of the restorative quantity or say below 1.9M m2 (relative to 2018)).

Interim coastal protection works	BN5D CH4F	• The Stockton CMP 2020 contained erosion-based triggers for interim adaptive risk mitigation strategies such as temporary structures, managed retreat or opportunistic sand nourishment works. In subsequent years, observed erosion exceeded these triggers. CN has therefore proceeded with the design, approvals and implementation of interim coastal protection structures (e.g. the Barrie Crescent rock bag seawall) and an action to contain the old landfill under The Pines (CH 3A) is included in this CMP). • A notable remaining adaptive interim coastal protection structure yet to be triggered is at Eames Ave and Corroba Oval (refer to actions CH2E and CH3E).	• The 'erosion scarp' is the key indicator. The erosion scarp (or erosion escarpment) is a natural feature delineating the landward extent of beach erosion. For planning or setback triggers, the top of the erosion escarpment in its most landward position should be used.	• The design and approvals required for the Eames Ave and Corroba Oval protection works would be triggered if the erosion scarp comes within 25m of the seaward edge of the road at Eames Ave or a shore parallel line adjoining the floodlights on the seaward side of Corroba Oval (see CH2E). • The construction of these works would be triggered if the erosion scarp comes within 15m of the seaward edge of Eames Ave or a shore parallel line adjoining the floodlights on the seaward side of Corroba Oval (CH3E).
Social resilience	CH9A CH9B	• A Social Impact Assessment (SIA) is to be undertaken to improve understanding of the social impacts of the Stockton coastal zone changes, with possible mitigation and enhancement measures identified. • Informed by the SIA, a staged social resilience engagement and education program with the Stockton community, will be completed to improve social indicators for individual and community wellbeing and resilience.	• Social indicators for individual and community wellbeing and resilience will be developed as part of the SIA.	

Note: 1. Key indicators and how they are measured will be developed as part of the detailed design and planning investigations prior to the implementation of the mass nourishment project or for operations like on-going sand top-ups. This table therefore contains suggestions for consideration is those future undertakings.
2. Like key indicators, triggers for sand top-ups will be delivered via the design and planning investigations required to realise sand top-ups.

8.2 General MER of this CMP

In addition to the specific MER related management actions, this CMP includes general measures to ensure that the monitoring, evaluation and reporting of all management actions measure the performance of the CMP over a ten-year period.

To monitor, evaluate and report on the outcomes of this CMP, CN or other lead agencies, must maintain sufficient information and records to demonstrate how all actions have been implemented, and what has been achieved in connection with the Extended Stockton CMP. To support this process, performance targets have been identified for each management action. This includes whether coastal management actions have been carried out within the timeframes identified in the Extended Stockton CMP.

This CMP and all progressed actions should be reviewed to ensure the actions remain relevant and the implementation of the CMP is being achieved, through the achievement of performance targets. Where performance targets have not been achieved, then remedial actions may be required.

The management actions intended on supporting general MER efforts include:

- **CH5A** - Resourcing the integrated delivery of on-ground works as detailed in this business plan. The performance target for this action is two full-time Council staff engaged to support the delivery of this CMP.
- **CH5B** - Review of the Extended Stockton Coastal Management Program.

Rock bag construction. Picture supplied by Ron Boyd.

8.3 Integration with CN's IP&R framework

The Integrated Planning and Reporting (IP&R) framework, as shown in Figure 15 is a legislative requirement for councils under the NSW *Local Government Act 1993*. IP&R considers the longer-term future of an area and is based around a Community Strategic Plan which reflects the community's aspirations and needs for the future.

In accordance with the CM Act, the Extended Stockton CMP needs to align with CN's IP&R Framework. This aims to mainstream and integrate coastal management into CN's overall service delivery and asset management responsibilities, to improve implementation of the Extended Stockton CMP.

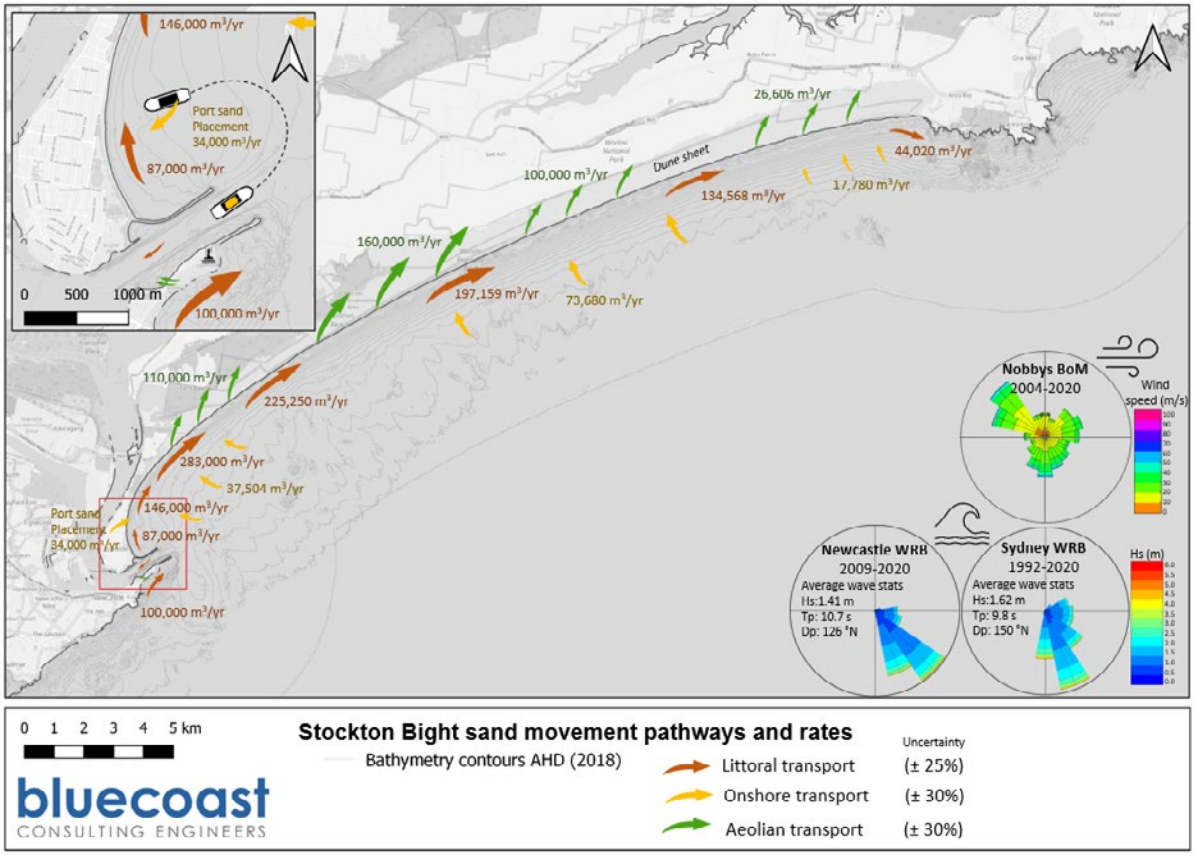
IP&R requires the preparation of a delivery program that sets out a four-year plan to achieve the objectives of the Newcastle 2040 Community Strategic Plan (CN, 2025) and supporting strategies. Table 2 outlines the relevant objectives of Newcastle 2040 that apply to the Extended Stockton CMP. The business plan in Section 6 outlines how the management actions within the Extended Stockton CMP will meet the objectives and strategies of the Newcastle 2040 Community Strategic Plan. The Extended Stockton CMP business plan (refer Section 6) should be reviewed on an annual basis. The business plan reflects the expected cost of the Extended Stockton CMP over the coming financial year and details the resourcing and financing arrangements to meet these costs, including the contribution from successful grant funding applications to undertake specific actions, and any contribution required from CN or other stakeholders.

Figure 15. The Integrated Planning and Reporting (IP&R) framework.

Stockton amenity sand nourishment, October 2023. Picture supplied by NSW Government.

9. Maps

The following section contains a series of mapping layers presenting an overview of the quantified conceptual model of sand movements in the Stockton Bight as well as modelled coastal erosion and recession hazard extents and coastal inundation hazard extents for the Extended Stockton CMP area.



Stockton Beach - Erosion Hazard Lines
Immediate (2020)

0 100 200 m

bluecoast CONSULTING ENGINEERS

Bluecoast endeavours to ensure that the information provided in this map is correct at the time of publication. Bluecoast does not warrant, guarantee or make representations regarding the currency and accuracy of the information contained in this map.

- 1% exceedance
- 10% exceedance
- 50% exceedance
- Seawall
- Assumed protection by seawall*

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: Nearmaps 23/04/2020
Map 1 of 4
Date: 1/05/2020
*Seawall protection maintained by Council

Stockton Beach - Erosion Hazard Lines
2040 Planning Period

0 100 200 m

bluecoast CONSULTING ENGINEERS

Bluecoast endeavours to ensure that the information provided in this map is correct at the time of publication. Bluecoast does not warrant, guarantee or make representations regarding the currency and accuracy of the information contained in this map.

- 1% exceedance
- 10% exceedance
- 50% exceedance
- Seawall
- Assumed protection by seawall*

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: Nearmaps 23/04/2020
Map 2 of 4
Date: 1/05/2020
*Seawall protection maintained by Council

Stockton Beach - Erosion Hazard Lines
2060 Planning Period

0 100 200 m

bluecoast CONSULTING ENGINEERS

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- 1% exceedance
- 10% exceedance
- 50% exceedance
- Seawall
- Assumed protection by seawall*

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: Nearmaps 23/04/2020
Map 3 of 4
Date: 1/05/2020
*Seawall protection maintained by Council

Stockton Beach - Erosion Hazard Lines
2120 Planning Period

0 100 200 m

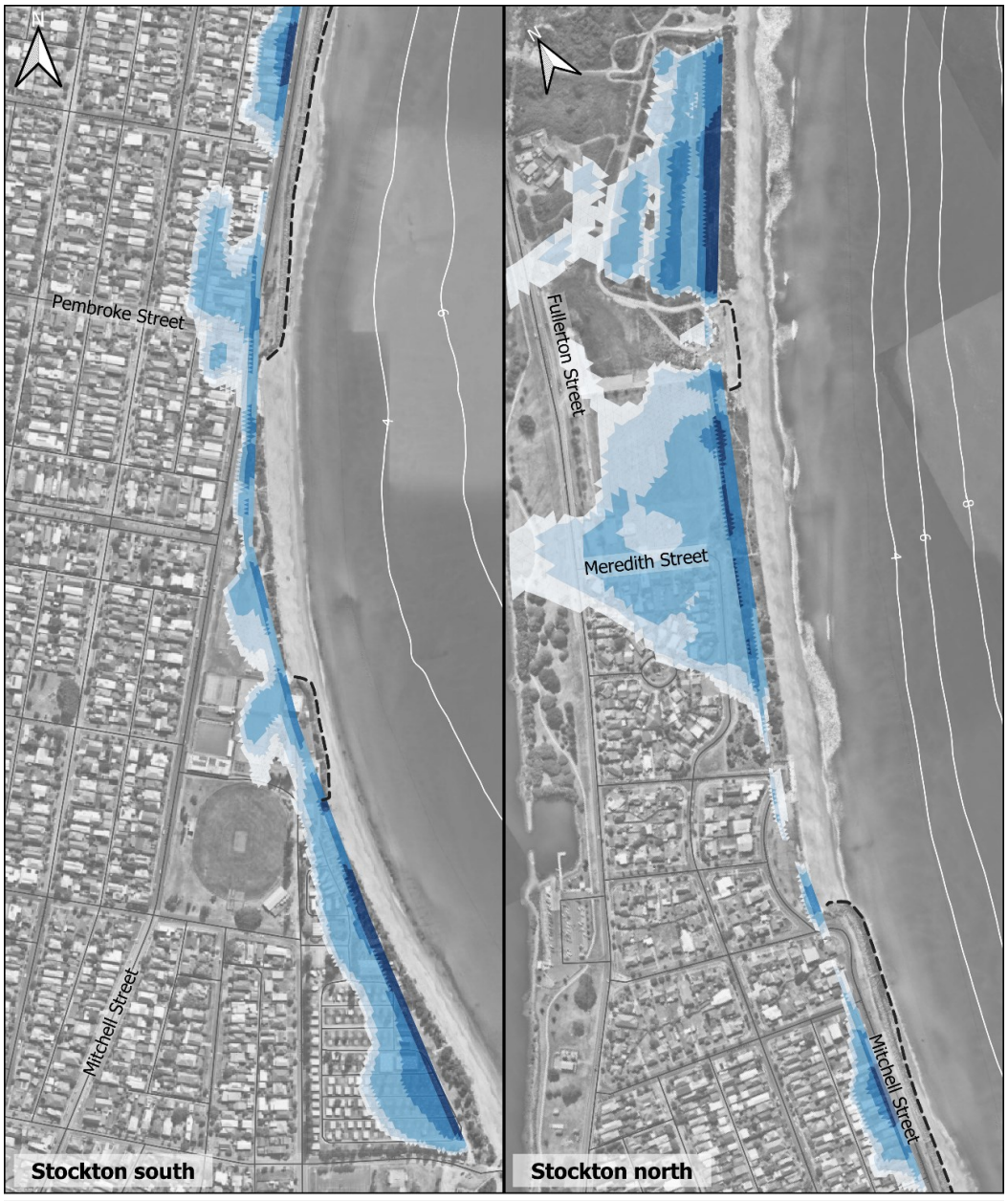
bluecoast CONSULTING ENGINEERS

Bluecoast endeavours to ensure that the information provided in this map is correct at the time of publication. Bluecoast does not warrant, guarantee or make representations regarding the currency and accuracy of the information contained in this map.

- 1% exceedance
- 10% exceedance
- 50% exceedance
- Seawall
- Assumed protection by seawall*

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: Nearmaps 23/04/2020
Map 4 of 4
Date: 1/05/2020
*Seawall protection maintained by Council

5.1 Present day (2020)



Stockton Beach - 1% Inundation Hazard (Immediate, 2020)

Notes: The presented maximum coastal inundation extents and depths are determined for the 2018 LiDAR DEM (DPIE) topography and do not account for physical obstructions by buildings, vegetation or built infrastructure. Drainage and infiltration of seawater are also not included in the results.

0 50 100 150 200 m

Maximum inundation depth (m)

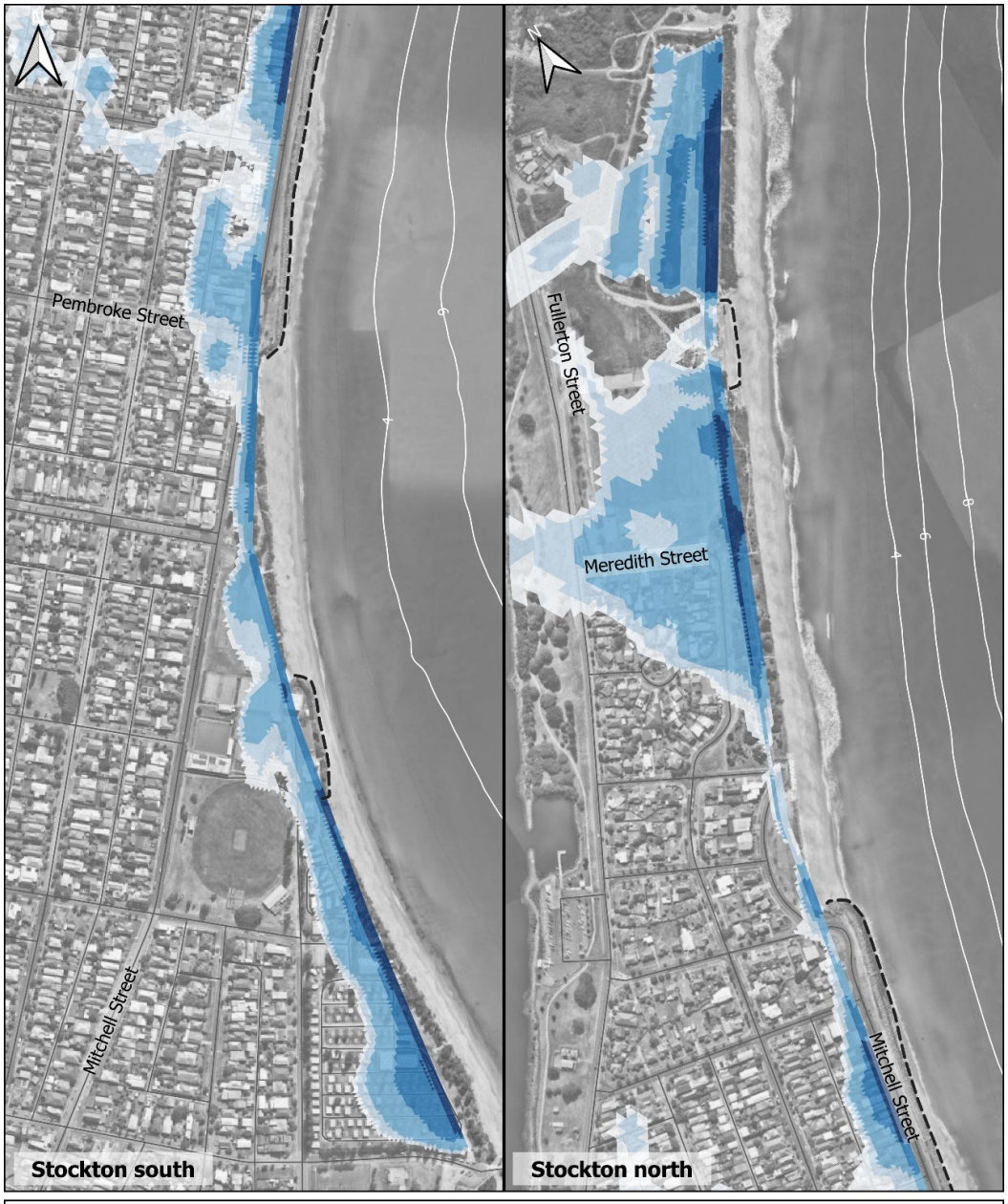
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 1.5

Seawall

Bluecoast endeavours to ensure that the information provided in this map is correct at the time of publication. Bluecoast does not warrant, guarantee or make representations regarding the currency, accuracy of the information contained in this map.

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: 23/04/2020
Map 4 of 4
Date: 03/12/2020

5.2 2040 planning period



Stockton Beach - 1% Inundation Hazard (0.13m SLR, 2040)

Notes: The presented maximum coastal inundation extents and depths are determined for the 2018 LiDAR DEM (DPIE) topography and do not account for physical obstructions by buildings, vegetation or built infrastructure. Drainage and infiltration of seawater are also not included in the results.

0 50 100 150 200 m

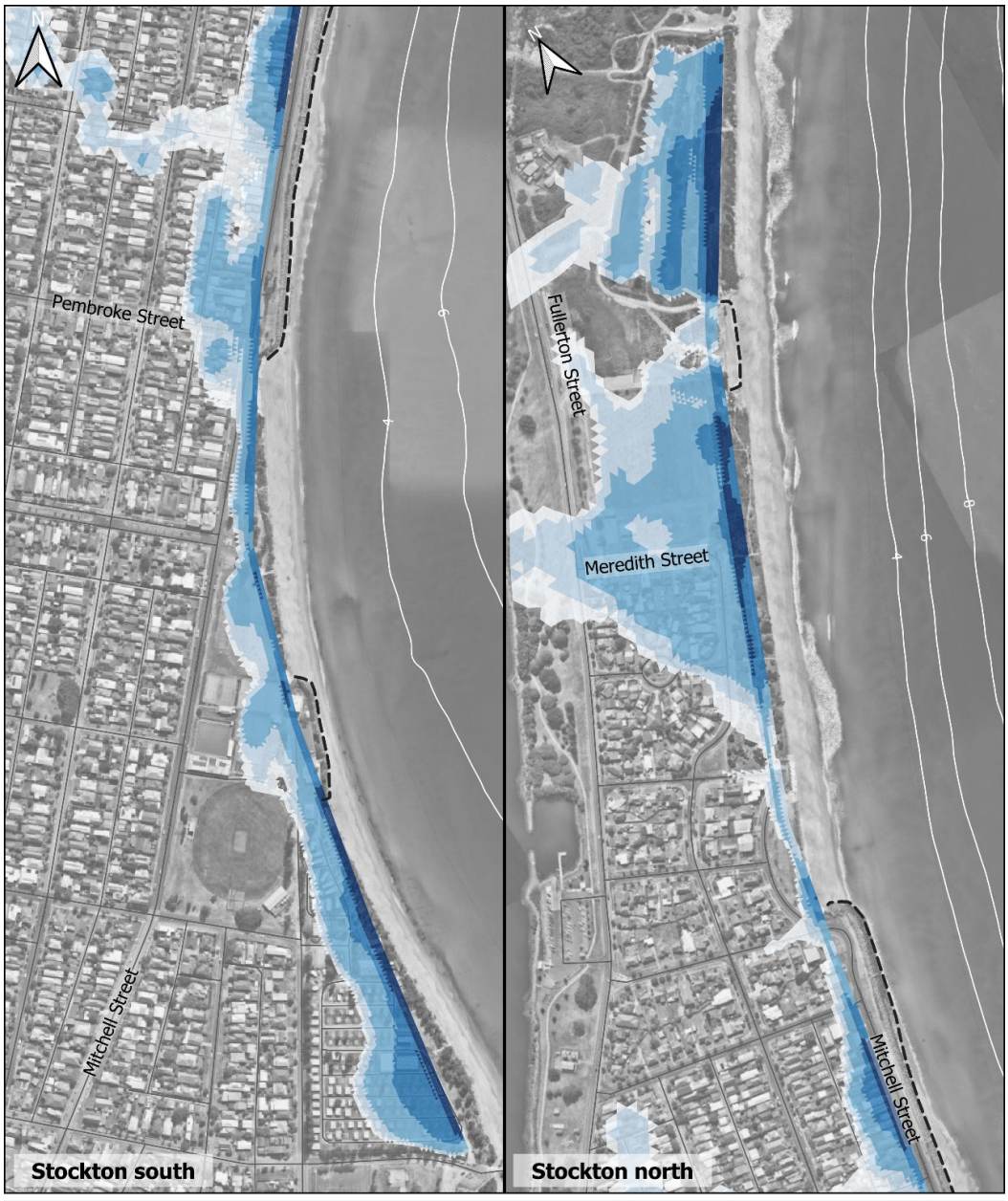
bluecoast CONSULTING ENGINEERS

Maximum inundation depth (m)
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 1.5
Seawall

Bluecoast endeavours to ensure that the information provided in this map is correct at the time of publication. Bluecoast does not warrant, guarantee or make representations regarding the currency, accuracy of the information contained in this map.

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: 23/04/2020
Map 4 of 4
Date: 03/12/2020

5.3 2060 planning period



Stockton Beach - 1% Inundation Hazard (0.30m SLR, 2060)

Notes: The presented maximum coastal inundation extents and depths are determined for the 2018 LiDAR DEM (DPIE) topography and do not account for physical obstructions by buildings, vegetation or built infrastructure. Drainage and infiltration of seawater are also not included in the results.

0 50 100 150 200 m

bluecoast CONSULTING ENGINEERS

Maximum inundation depth (m)

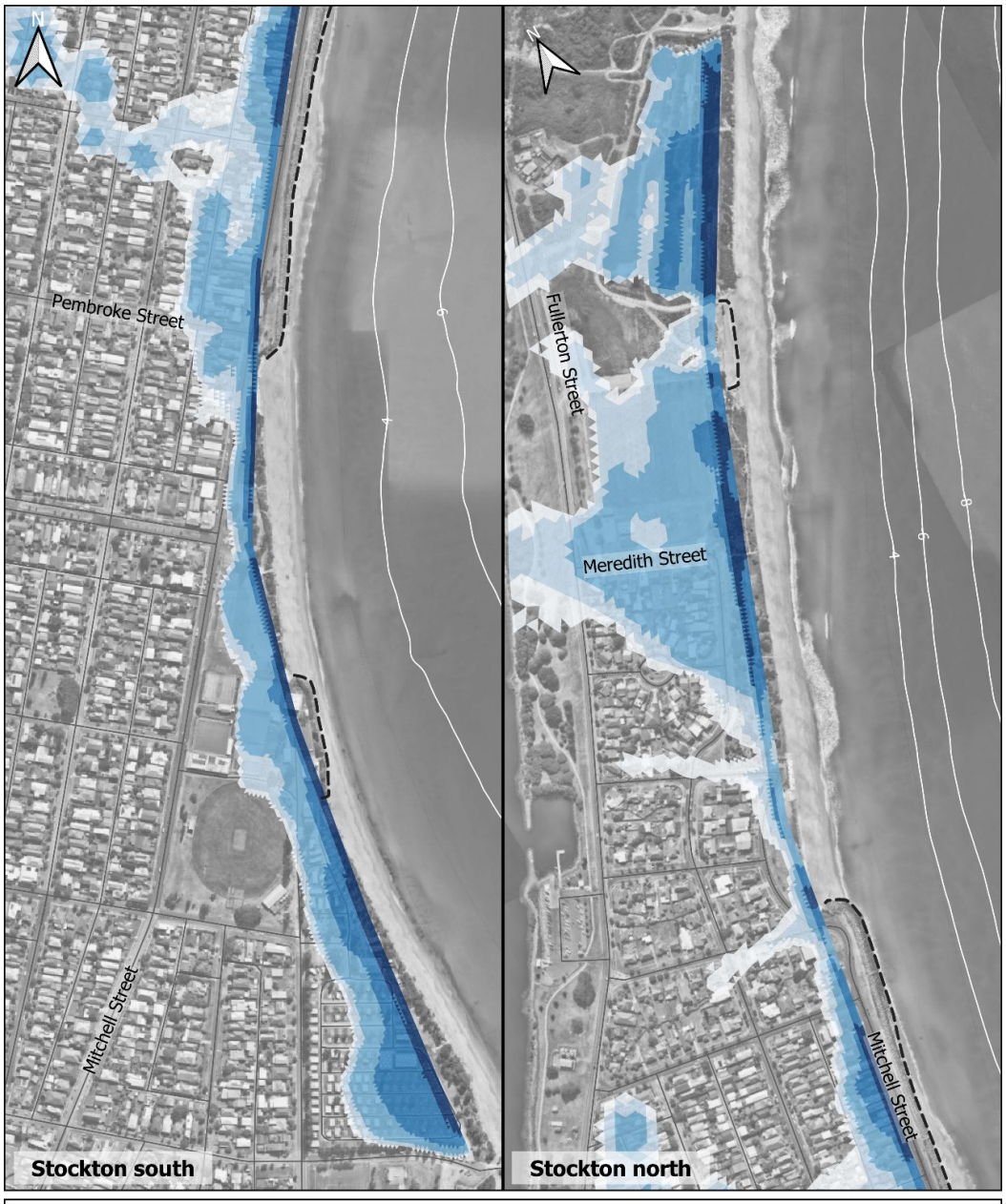
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 1.5

Seawall

Bluecoast endeavours to ensure that the information provided in this map is correct at the time of publication. Bluecoast does not warrant, guarantee or make representations regarding the currency, accuracy of the information contained in this map.

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: 23/04/2020
Map 4 of 4
Date: 03/12/2020

5.4 2120 planning period



Stockton Beach - 1% Inundation Hazard (1.33m SLR, 2120)

Notes: The presented maximum coastal inundation extents and depths are determined for the 2018 LiDAR DEM (DPIE) topography and do not account for physical obstructions by buildings, vegetation or built infrastructure. Drainage and infiltration of seawater are also not included in the results.

0 50 100 150 200 m

bluecoast CONSULTING ENGINEERS

Maximum inundation depth (m)

0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1.0
1.0 - 1.5

Seawall

Horiz. datum: GDA94 MGA56
Vert. datum: AHD
Locality: Stockton
Aerial image: 23/04/2020
Map 4 of 4
Date: 03/12/2020

10. Reference list

Bluecoast Consulting Engineers [Bluecoast], 2020a. *Stockton Bight Sand Movement Study.* Report prepared for City of Newcastle.

Bluecoast Consulting Engineers [Bluecoast], 2020b. *Stockton Beach Coastal Erosion Hazard Assessment.* Report prepared for City of Newcastle.

Bluecoast Consulting Engineers [Bluecoast], 2020c. *Cost benefit analysis for Stockton Beach coastal management program.* Report prepared for City of Newcastle.

Bluecoast Consulting Engineers [Bluecoast], 2020d. *Stockton Beach Coastal Inundation Assessment. Addendum to Stockton Beach Coastal Erosion Hazard Assessment. Technical Note prepared for City of Newcastle.* Report prepared for City of Newcastle.

Bluecoast Consulting Engineers [Bluecoast], 2022a. *Beneficial reuse of South Arm dredged material.* Report prepared for HCCDC & City of Newcastle. Version 4.00, issued 29 September 2022.

Bluecoast Consulting Engineers [Bluecoast], 2022b. *Addendum to South Arm Report: Feasibility of Area E as a borrow site for beach nourishment.* Memo prepared for HCCDC & City of Newcastle. Version 3.00, issued 6 October 2022.

Bluecoast Consulting Engineers [Bluecoast], 2023a. *Sand placement concept design - Stockton Beach nourishment.* Report prepared for HCCDC & City of Newcastle.

Bluecoast Consulting Engineers [Bluecoast], 2023b. *Stockton Beach Nourishment. Review of Environmental Factors for sand placement.* Report prepared for City of Newcastle.

Bluecoast Consulting Engineers [Bluecoast], 2023c. *Stockton Beach Nourishment. Project Environmental Management Plan. Sand placements for the nourishment of Stockton Beach.* Report prepared for City of Newcastle.

BMT WBM, 2012. *Newcastle City-wide Floodplain Risk Management Study and Plan.* Report prepared for City of Newcastle.

BMT WBM, 2014. *Newcastle coastal zone hazard study, final report*. Report prepared for City of Newcastle.

BMT WBM, 2016. *DHA Stockton Rifle Range Stockton Beach Coastal Engineering Assessment*. Report prepared for Department of Housing Australia.

Douglas Partners, 2022. *Preliminary Assessment of Fill Materials Stockton Beach Erosion Management Off Hereford Street, Stockton.* Report prepared for Newcastle City Council.

Environment Protection Agency, 2020. *Former Corroba Landfill, Stockton NSW*. Letter addressed to City of Newcastle dated 6 April 2020.

Ganic, E., 2020. *Managing coastal erosion at Jimmys Beach.* https://www.dredgingtoday.com/2020/12/01/video-managing-coastal-erosion-at-jimmys-beach/.

City of Gold Coast, 2013. *Operation of the Noosa Sand Recycling System.* https://bcoastcomau.sharepoint.com/:b:/s/Projects/EX4dsRdACcVMpMnLRlaF75cBVqmqHrV03eSxElRqvXbzOg?e=Ho1GTj.

City of Newcastle [CN], 2019a. *Newcastle Coastal Management Program Scoping Study.* Report prepared by City of Newcastle.

City of Newcastle [CN] 2020a. *Stockton Coastal Management Program.* Final document dated August 2020.

City of Newcastle [CN], 2022. *Newcastle 2024.* Community Strategic Plan. https://newcastle.nsw.gov.au/council/our-responsibilities/newcastle-2040.

City of Townsville, 2021. *Official website* – http://www.soe-townsville.org/strand/financing.html.

Department of Planning, Industry and Environment [DPIE], 2019. *Guideline for preparing a coastal zone emergency action subplan.*

DHI, 2006. *Stockton Beach Coastal Processes Study: Stage 1 – Sediment Transport Analysis and Description of On-going Processes*. Report prepared for City of Newcastle.

DHI, 2009. *Stockton Coastline Management Study: Coastal Zone Management Study Report*. Report prepared for City of Newcastle.

Mining, Exploration and Geoscience [MEG] 2021. *Stockton offshore sand exploration project*. Report published by Regional NSW. Department reference number: DOC21/1050036.

Muller, J., Wust, R. and Hearty, P., 2005. *Sediment transport along an artificial shoreline: "The Strand", Townsville, NE-Queensland, Australia*. Estuarine, Coastal and Shelf Science, 66, pp. 204-210.

NCCARF, 2017. What is a pathways approach to adaptation? (14/04/2021; www.coastadapt.com.au).

Noosa Council, 2018. *Asset Management Plan: Noosa Main Beach Sand Recycling System.* https://www.noosa.qld.gov.au/downloads/file/464/2018-04-10-s-o-agenda-attachment-1-to-item-6-sand-recycling-system-asset-management-plan-pdf.

NSW Government, 2018. *Guidelines for Using Cost-Benefit Analysis to Assess Coastal Management Options.* Office of Environment and Heritage.

Office of Environment and Heritage (OEH), 2018. *Our Future on the coast - NSW Coastal Management Manual.*

Port Stephens Council [PSC] and City of Newcastle [CN] 2020 *Fern Bay and North Stockton Strategy.*

Reeves Envico, 2020: *Jimmy's Beach Sand Transfer Station.* https://www.reevesenvico.com/jimmys-beach.

RHDHV, 2020. *Addendum A - RHDHV input information for a Cost Benefit Analysis for Stockton Beach.* Technical note prepared for City of Newcastle.

RHDHV, 2022. *Stockton Beach Terminal Protection Structures Feasibility Study and Concept Design Report.* Report prepared for City of Newcastle.

RHDHV, 2023. *Stockton Terminal Protection – Site 3 Extent Assessment.* Technical note. Technical note prepared for City of Newcastle.

Sunshine Coast Council, 2011. *Work starts Monday on Noosa's new sand shifter.* https://www.sunshinecoast.qld.gov.au/sitecore/content/Global-Content/News/Media-News/Work-starts-Monday-on-Noosas-new-sand-shifter.

Stockton CLG, 2021. *Community proposal for Coastal Planning – Hunter Water Lands.* Presentation to CLG by Ron Boyd.

University of Newcastle [UoN], 2018. *Ecological Audit of the Beach Environment, Newcastle.* Report prepared by UoN.

Umwelt, 2002. *Shifting sands at Stockton Beach.* Report prepared for City of Newcastle.

Umwelt, 2014. *Coast and Estuary Vegetation Management Plan.* Report prepared for City of Newcastle.

Umwelt, 2020. *Fern Bay Rifle Range – Preliminary Documentation Report.* Report prepared for Defence Housing Australia.

Warwich Daily News, 2012. *Ready to raise the sand bar.* https://www.warwickdailynews.com.au/news/pumped-and-ready-to-raise-the-sand-bar/1276727/.

WorleyParsons, 2012 *Stockton Beach Sand Scoping and Funding Feasibility Study*. Report prepared for City of Newcastle.

Mitchell Street seawall construction. Picture supplied by Brefni.

11. Glossary

Acceptable risk – a risk that, following an understanding of the likelihood and consequences, is sufficiently low to require no new treatments or actions to reduce risk further. Individuals and society can live with this risk without feeling the necessity to reduce risks further. Positive and negative risks are negligible or so small that no risk treatments are needed.

Accretion – the build-up of sediments to form land or shoaling in coastal waters or waterways.

Alongshore or Longshore – parallel to and near the shoreline.

Annual Exceedance Probability (AEP) – the probability as a percentage at which a given event is likely to occur in one year.

Asset – something of value and may be environmental, economic, social, recreational or a piece of built infrastructure.

Australian Height Datum (AHD) – the official national vertical datum for Australia.

Average Recurrence Interval (ARI) – the average or expected value of the periods between exceedances of a given intensity event over a given duration.

Bathymetric data – measurements of the shape of the bed or the depth of a body of water.

Beach fluctuation zone – CM Act defines beach fluctuation zone as 'the range of natural locations a beach profile occupies from its fully accreted condition to its fully eroded condition, with a landward limit defined by the escarpment resulting from the erosion associated with a 1% storm event or a more extreme event of record, whichever is the greater landward limit, and a seaward limit that is the 40m depth seaward of the highest astronomical tide for the open coast and 10m depth seaward of the highest astronomical tide for estuaries or tidal coastal lakes.'

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

Beach scraping – also referred to as 'nature assisted beach enhancement' (NABE) is a mechanical intervention to speed up the natural processes of berm and foredune recovery after a storm event.

Beach slope – the gradient at which the beach slopes seaward.

Bedrock – a general term for the rock, usually solid, that underlies soil or other unconsolidated, superficial material.

Beneficial reuse – placement or use of dredged material for some productive purpose. May involve either the use of the dredged material or the placement site as the integral component of the use.

Berm – on a beach, a nearly horizontal plateau on the beach face or backshore, formed by the deposition of beach material by wave action or by means of a mechanical plant as part of a beach renourishment scheme. Some natural beaches have no berm, others have several.

Built assets – built infrastructure.

Bypassing, sand – hydraulic or mechanical movement of sand from the accreting up–drift side to the eroding down-drift side of an inlet or harbour entrance. The hydraulic movement may include natural movement as well as movement caused by humans.

Closure depth – generally considered the seaward limit of littoral transport (collected over several years).

Coastal barrier – a barrier between the sea and other land or landforms or river/lake/lagoon (generically used herein for natural dunes or man-made structures).

Coastal environment area – land identified in the CM Act as land containing coastal features such as coastal waters of the State, estuaries, coastal lakes, coastal lagoons and land adjoining those features, including headlands and rock platforms. The SEPP (Resilience and Hazards) maps the extent of the coastal environment area for planning purposes.

Coastal inundation – coastal inundation occurs when a combination of marine and atmospheric processes raises the water level at the coast above normal elevations, causing land that is usually 'dry' to become inundated by sea water. Alternatively, the elevated water level may result in wave runup and overtopping of natural or built shoreline structures (e.g., dunes, seawalls).

Coastal lake or lagoon – a coastal water body that is generally closed off from the sea by a sandy barrier. Water levels and water quality may be quite different to the nearby ocean.

Coastal management program (CMP) – a long-term strategy for the coordinated management of land within the coastal zone, prepared and adopted under Part 3 of the CM Act.

Coastal protection works - defined in section 4(1) of the Coastal Management Act 2016 to be beach nourishment activities or works, and activities or works to reduce the impacts of coastal hazards on land adjacent to tidal waters including, but not limited to, seawalls, revetments and groynes. Examples of coastal protection works include, but are not restricted to, beach scraping, dune rehabilitation, beach nourishment, revegetation, dune stabilisation and fencing.

Coastal sediment compartment – an area of the coast defined by its sediment flows and landforms. Coastal sediment compartments may be mapped at primary, secondary or tertiary (local) scales. Boundaries are generally defined by structural features related to the geologic frameworks that define the platform of the coast.

Coastal threat – a process or activity that is putting pressure on or impacting on the health or function of a coastal ecosystem, or on the amenity and social or cultural value of the coastal landscape. Examples include the discharge of effluent or poor-quality stormwater into coastal lakes and lagoons, discharges from acid sulfate soils, or the spread of invasive species. High recreational demand can also be a threat to coastal ecosystem health.

Coastal use area – land identified by the CM Act and SEPP (Resilience and Hazards) as being land adjacent to coastal waters, estuaries, coastal lakes and lagoons where development is or may be carried out (now or in the future).

Coastal vulnerability area – defined in the CM Act as land subject to seven coastal hazards.

Coastal wetland – wetlands are areas that are inundated cyclically, intermittently or permanently with fresh, brackish or saline water and have soils, plants and animals in them that are adapted to, and depend on, moist conditions for at least part of their lifecycle. Coastal wetlands include marshes, mangroves, swamps, melaleuca forests, casuarina forests, sedgelands, brackish and freshwater swamps and wet meadows.

Coastal zone – as defined in the CM Act and SEPP (Resilience and Hazards): the area of land comprised of the following coastal management areas: the coastal wetlands and littoral rainforest area, the coastal vulnerability area, the coastal environment area and the coastal use area.

Consequence – the outcome or impact of a hazard or threat.

Damage (to seawalls) – defined as any displacement or dislodgement of armour units.

Digital elevation model (DEM) – gridded elevation data to represent terrain.

Dune ridge – shore-parallel sand ridge that forms part of a dune system.

East Coast Low – an intense low-pressure system that occurs off the east coast of Australia, bringing storms, high waves and heavy rain. East coast lows generally occur in autumn and winter off NSW, southern Queensland and eastern Victoria.

Economic evaluation – an assessment that helps decision-makers to understand the socioeconomic implications of adopting alternative management options and to make choices that will provide net benefits to the community. Cost-benefit analysis is a type of economic evaluation that considers and evaluates a wide range of costs and benefits associated with a proposal, in qualitative or quantitative (monetary) terms (with future costs and benefits reduced to today's prices), compared with a base case.

Elevated still water levels – ocean water level raised due to a storm surge.

El Niño southern oscillation (ENSO) – a year-to-year fluctuation in atmospheric pressure, ocean temperatures and rainfall associated with El Niño (warming of the oceans in the equatorial eastern and central Pacific). El Niño tends to bring below average rainfall.

Erosion – the wearing away of land by the action of natural forces. On a beach, the carrying away of beach material by wave action, tidal currents, littoral currents, or by deflation.

Estuary – CM Act defines as any part of a river, lake, lagoon, or coastal creek whose level is periodically or intermittently affected by coastal tides, up to the highest astronomical tide.

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

Geotextile – a synthetic fabric which may be woven or non–woven and used as a filter.

Hydrodynamic – relates to the specific scientific principles that deal with the motion of fluids and the forces acting on solid bodies immersed in fluids, and in motion relative to them.

Highest Astronomical Tide (HAT) – the highest level which can be predicted to occur under average meteorological conditions.

Holocene – an epoch of the Quaternary period, from the end of the Pleistocene, about 8,000 years ago, to the present time.

Incipient dune – the most seaward and immature dune of the dune system. Vegetation characterised by grasses such as spinifex. On an accreting coastline, the incipient dune will develop into a foredune.

Infiltration – the process at which water is absorbed into the ground.

Intermittently closed and open lakes and lagoons (ICOLL) – coastal lakes and lagoons where the entrance may be closed to the sea from time to time and for varying periods, by accretion of a berm.

Inundation – flooding of land area.

IPCC – Intergovernmental Panel on Climate Change.

Interdecadal Pacific Oscillation (IPO) – an irregular interdecadal sea surface temperature in the Pacific Ocean that modulates the strength and frequency of the El Niño Southern Oscillation.

Joint probability – the probability of two events occurring at the same time.

King tides – any high-water level that is well above the average, commonly applied to two spring tides that are the highest for the year, one during summer and one in winter.

LiDAR – Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges.

Littoral – of or pertaining to a shore, especially of the sea. Often used as a general term for the coastal zone influenced by wave action, or, more specifically, the shore zone between the high and low water marks.

Lowest Astronomical Tide (LAT) – the lowest levels which can be predicted to occur under average meteorological conditions.

Maintenance dredging – the recurrent dredging of sediment from a waterway, including existing navigation channels, approaches and berths, to allow safe navigation by commercial or recreational boating traffic.

Mean High Water Neaps (MHWN) – the height of mean high-water neaps is the average throughout a year of the heights of two successive high waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is least.

Mean High Water Springs (MHWS) – the height of mean high-water springs is the average throughout a year of the heights of two successive high waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is greatest.

Mean Low Water Neaps (MLWN) - the height of mean low water neaps is the average throughout a year of the heights of two successive low waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is least.

Mean Low Water Springs (MLWS) – the height of mean low water springs is the average throughout a year of the heights of two successive low waters during those periods of 24 hours (approximately once a fortnight) when the range of the tide is greatest.

Mean Sea Level (MSL) – the average level of the sea over longer periods of time.

Morphological response – change in beach shape/slope due to an event.

Multi-criteria analysis – a logical and structured decision-making tool for complex problems involving multiple factors or criteria, where a consensus is difficult to achieve. It may involve processes such as ranking, rating (with relative or ordinal scales) or pairwise comparisons. The process allows participants to consider, discuss and test complex trade-offs among alternatives.

Natural assets – the natural beach, dunes, and vegetation.

Numerical modelling – computer software modelling used to simulate coastal processes.

Overtopping – the process of water passing over a hard coastal structure such as seawall.

Overwash – the process of water passing over a dune.

Pleistocene – the geological epoch that lasted from c. 2.58 million to 11,700 years ago, spanning the Earth's most recent period of repeated glaciations. First epoch of the Quaternary period, between the Pliocene and Holocene epochs.

Probabilistic hazard assessment – a risk-based approach to managing coastal hazard that takes uncertainty into account by considering both the likelihood and consequence of hazard occurrence. It applies a stochastic simulation to evaluate coastal processes. The technique uses a distribution of values for each parameter to account for expected variation, or uncertainty, rather than single values. Parameters are then combined by a monte-carlo technique to produce a probabilistic forecast of future hazard extents.

Quaternary – current and most recent of the three periods of the Cenozoic Era in the geologic time scale of the International Commission on Stratigraphy. It follows the Neogene Period and spans from 2.58 million years ago to the present.

Recession – a continuing landward movement of the shoreline; or a net landward movement of the shoreline over a specified time.

Refraction – the process by which the direction of a wave moving in shallow water at an angle to the contours is changed. The part of the wave advancing in shallower water moves more slowly than that part still advancing in deeper water, causing the wave crest to bend toward alignment with the underwater contours; or the bending of wave crests by currents.

Revetment or seawall – a type of coastal protection work which protects assets from coastal erosion by armouring the shore with erosion–resistant material. Large rocks/boulders, concrete or other materials (such as geotextile sand containers) are used, depending on the specific design requirements.

RCP – Representative Concentration Pathway is a greenhouse gas concentration trajectory adopted by the IPCC.

Residual risk – the risk which remains after managing and reducing risks. It may include, for example, risks due to very severe storms or from unexpected hazards.

Resilience – the ability of a system (human or natural) to adapt to changing conditions (including hazards or threats, variability and extremes), and rapidly recover from disruption due to emergencies. Resilient systems or communities have the capacity to 'bounce back' after a disrupting event such as a major storm or an extended heat wave, to moderate potential damages, take advantage of opportunities, maintain or restore function or to cope with the consequences.

Rip – a narrow, strong shore normal current in the nearshore area of most wave-dominated beaches (i.e. most beaches along the open coast of NSW). They are fed by along shore feeder currents initiated by the deflection of waves at the shoreline. There are diverse types of rips on NSW beaches and they affect beach safety.

Riparian – pertaining to the banks of a body of water, such as an estuary.

Sand budget – quantitative analysis of the movement and distribution of sediment (or sand) within a coastal region. Accounts for the sources of sand, such as erosion from coastal cliffs, discharge from rivers or onshore sand supply, and the processes that transport it, such as wave action or longshore sand movements. The coastal sand budget also includes the sinks or locations where sand is deposited, such as on the beach or in a coastal lagoon.

Scour – loss of beach/sediment at the toe of a hard structure or dune.

Sediment transport – the process whereby sediment is moved offshore, onshore or along shore by wave, current or wind action.

Semi-diurnal tide – two high and two low tides a day.

Sensitivity – the degree to which a built, natural or human system is directly or indirectly affected by changes in hazards, threats or climate conditions.

Significant wave height – the average height of the largest 1/3rd of waves in a given period.

Southern Oscillation Index – the normalised mean atmospheric pressure difference between Tahiti and Darwin, measured at sea level. The SOI is negative during El Niño and positive during La Niña.

Stakeholder – a person or organisation with an interest or concern in something.

Storm surge – the abnormal rise in sea level during a storm, measured as the height of the water above the normal predicted astronomical tide.

Sustainable management – develops and implements proposals that meet the needs of present communities without compromising the ability of future generations to meet their own needs.

Swell waves – ocean waves that travel beyond the area where they are generated.

Tidal delta – where an inlet of a barrier estuary or open coastal lake is dominated by tidal processes, a flood tide delta develops inside the entrance, as tidal currents transport marine sand into the estuary. Ebb tide deltas may also occur outside the mouth of an estuary.

Tidal plane – a plane of reference for elevations, determined from the rise and fall of the tides.

Tidal limit – the maximum upstream location on a watercourse at which a tidal variation in water level is observed.

Toe – the 'bottom' or 'front' of a hard structure.

Tolerable risk – a risk that, following an understanding of the likelihood and consequences, is low enough to allow the exposure to continue, and at the same time high enough to require new treatments or actions to reduce risk. Society can live with this risk but believe that as much as is reasonably practical should be done to reduce the risks further. Note that individuals may find this risk unacceptable and choose to take their own steps, within reason, to make this risk acceptable. Residual risks are considered tolerable only if risk reduction is impractical.

Training walls – walls constructed at the entrances of estuaries and rivers to improve navigability.

Trigger – pre-negotiated decision-making points and commitments, so that action on coastal risks is taken when necessary, and when it is most convenient and affordable for the affected community.

Tropical cyclone – intense low-pressure system in which winds of at least 63km/hour whirl in a clockwise direction, in the southern hemisphere around a region of calm air.

Unacceptable risk – a risk that, following an understanding of the likelihood and consequences, is so high that it requires actions to avoid or reduce the risk. Individuals and society will not accept this risk, and measures should be put in place to reduce risks to at least a tolerable level.

Vulnerability – a function of exposure and sensitivity of assets to a hazard, which determines the potential impacts of the hazard. For instance, the vulnerability of coastal assets may be influenced by the extent and impact of environmental, social and economic factors such as saline contamination of soils from flooding, erosion of built-up and natural areas, loss of vegetation, disruption to use, or access, or continuity of service, or loss of amenity, corrosion of built structures, undermining of foundations or damage to contents. Vulnerability also considers the adaptive capacity which is the capacity to adapt or the resilience in the system to manage the impacts and changes.

Wave climate – the seasonal and annual distribution of wave height, period and direction.

Wave runup - the maximum vertical extent of wave uprush on a beach or structure above the still water level (SWL).

Wave setup - occurs as waves approach the coast and transform over the nearshore beach profile where radiation stresses and ultimately wave breaking force elevated water levels at the shoreline.

Wind waves (or sea) – ocean waves resulting from the action of the wind on the surface of the water.

WRB – Waverider Buoy used to measure ocean wave conditions.

Appendix A

Letters
of support

City of
Newcastle

Communities and Justice

F24/931

Ms Phillipa Hill
Environmental Strategy Manager
City of Newcastle
PO Box 489
NEWCASTLE NSW 2300

Attention Charly Wellard, Senior Environmental Strategist

Dear Ms Hill

Letter of support – Extended Stockton Coastal Management Program

Thank you for providing the Department of Communities and Justice (DCJ) with an update on the Extended Stockton Coastal Management Program (CMP), following the extensive consultation process. It is greatly appreciated.

It is noted that the changes/recommendations to the draft CMP requested previously by DCJ have been addressed. It is also noted that NSW Department of Climate Change, Energy, the Environment and Water has been identified as the lead agency for the two management actions. This is supported.

It is appreciated that, although DCJ is a 'supporting partner', you have added into the CMP a note regarding public safety and security as an Action Note in the Action Plan that states:

'Depending on the use (and any future use) of the DCJ site, public access may need to be restricted for safety and security.'. This, too, is supported.

DCJ recognises that the CMP was required to be drafted and submitted to the Minister under a direction issued on 17 February 2020 under Section 13 of the Coastal Management Act 2016 (CM Act), in accordance with the requirements of Division 2 of the CM Act for the coastline at Stockton Beach. DCJ further recognises that the CMP has been developed using current scientific and economic investigations, which provides an iterative program of adaptable risk mitigation actions to address identified threats and issues.

The Extended Stockton CMP further clarifies the strategic aims that guide the management, preservation, improvement, promotion, and rehabilitation of Stockton Beach, and provides specific actions to mitigate identified threats and issues that are to be implemented over the next ten years.

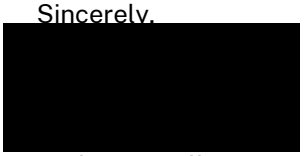
The Extended Stockton CMP presents a long-term plan for the management of the Stockton coastline and will be a collaborative approach between local government and several Australian and NSW Government agencies. **For these reasons, the content and intent of the draft Extended Stockton CMP (including the amendments made as a result of the consultation process) is supported by DCJ.**

Department of Communities and Justice
Postal address: Locked Bag 5000, Parramatta NSW 2124
W www.dcj.nsw.gov.au
T (02) 9377 6000
ABN 36 433 875 185

We appreciate having been included as an integral part of the CMP process and that you have included all DCJ's recommendations and requested changes in the final version of the CMP. DCJ supports the CMP being adopted and finalised.

Please contact Tony Ciesiolka, Director Strategic Infrastructure Risk and Resilience, at anthony.ciesiolka@dcj.nsw.gov.au or on 0400 311 528 if you have any questions or require further clarification.

Sincerely,



Katherine Tollner
Executive Director
Infrastructure and Assets

Date: 1 August 2025

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5 AUGUST 2025

Charlene J. Wellard
Planning Advisor
City of Newcastle PO Box 489
NEWCASTLE NSW 2300

By Email: cjwellard@ncc.nsw.gov.au

Dear Charlene,

LETTER OF SUPPORT - EXTENDED STOCKTON COASTAL MANAGEMENT PROGRAM (CMP)

We refer to our recent discussions and correspondence in relation to the Extended Stockton Coastal Management Program (CMP), and in particular to the three identified actions that relate to Port of Newcastle, defined below.

Action ID	Management action	Lead agency
BN1B	Suitable excess material from capital dredging projects (as and when such projects are required by Port of Newcastle operations) in Newcastle Harbour be prioritised for beneficial reuse as nourishment of Stockton Beach.	Port of Newcastle
BN1C	PoN to place suitable material from maintenance dredging activities (as and when such activities are required by PoN operations) from Newcastle Harbour as nourishment of Stockton Beach, in accordance with and subject to Stockton nourishment placement designs, specifications and receipt by PoN of all required approvals from the public authority leading delivery.	Port of Newcastle
CH4D	Undertake annual inspection of the northern breakwater, as per the PoN lease, and assess potential issues from coastal hazards, in relation to infrastructure operated by PoN.	Port of Newcastle

PORT of NEWCASTLE

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In accordance with the requirements of the *Coastal Management Act 2016*, I can confirm that Port of Newcastle are supportive of the three actions identified in the above table and will continue to work collaboratively with City of Newcastle on this matter.

Yours sincerely,

Glen Hayward

Executive Manager Marine and Operations

Department of Climate Change, Energy, the Environment and Water

Our ref: DOC25/635284

Ms Charlene Wellard
Senior Environmental Strategist
City of Newcastle
PO Box 489
Newcastle NSW 2300

By email: cjwellard@ncc.nsw.gov.au

Dear Ms Wellard

I refer to City of Newcastle's request for a letter of support from the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for Council's Extended Stockton Coastal Management Program (CMP).

I commend Council on preparing the CMP, recognising the significant effort and resources that have been expended in its development. We are pleased to have been able to contribute to this process.

I confirm that the Department supports the strategic intent of the CMP and the specific management actions where DCCEEW is identified as a lead agency, specifically:

- **BN3B**: Work collaboratively with the Stockton Special Advisory Panel, to investigate and determine a governance, funding and implementation framework for ongoing sand top-ups that incorporates the key learnings from the CERMP project and the Stockton Beach Repair project with consideration of mixed sediment placement and opportunistic sand sources;
- **BN5B**: Develop and implement a coastal monitoring and decision-support system to inform sand and beach management;
- **BN2A**: Undertake feasibility and design work plus environmental assessments and approvals for identified sand sources in offshore marine areas and the North Arm of the Hunter River;
- **BN3A**: Implement beach nourishment, in alignment with the Stockton Beach Repair Blueprint;
- **BN5A**: Undertake monitoring of the October/November 2023 amenity nourishment, as required in the CERMP grant scope of works; and
- **BN5C**: Deliver targeted coastal monitoring of mass nourishment through the Stockton Beach Repair Project, in alignment with the Stockton Beach Repair Blueprint.

As you would appreciate, any DCCEEW financial contribution would be subject to the availability of government funding, consistency with grant funding guidelines and other state-wide priorities.

I acknowledge the continued commitment of Council in sustainably managing the Stockton coastline and look forward to our continued partnership.

If you have any further questions about this issue, please contact Neil Kelleher, Senior Team Leader, Water Floodplains and Coast, Hunter Central Coast Branch, at Neil.Kelleher@environment.nsw.gov.au.

Sincerely

[redacted]

Joe Thompson
Director Hunter Central Coast
Conservation Programs, Heritage and Regulation (CPHR)

5 August 2025

5 August 2025

Jeremy Bath
Chief Executive Officer
City of Newcastle
Po Box 489
Newcastle NSW 2300

Dear Mr Bath

Re: Letter of Support – Extended Stockton Coastal Management Program

Defence Housing Australia (DHA) appreciates the opportunity to review the Extended Stockton Coastal Management Program (CMP), and we express our general support for the management actions items that DHA is a nominated action owner for action item CE1A, and CU1D and supporting partner for CU1I as outlined in the draft document.

As a landholder within the Stockton Coastal Zone, DHA recognises the critical importance of sustainable coastal management and the need for integrated action to address the challenges of coastal erosion, inundation risks, and the protection of environmental and cultural assets.

We acknowledge the proposed mass nourishment strategy, coastal resilience efforts, and collaborative approach with stakeholders. DHA is committed to ensuring that our landholdings in and around the Fort Wallace area are managed in line with the management actions outline in the CMP to safeguard public and private assets while enhancing the amenity and resilience of the Stockton coastline.

As a supporting partner, DHA will remain engaged in the ongoing development and implementation of these management actions and will continue to coordinate with the City of Newcastle and other relevant agencies in support of the CMP's goals.

Thank you for your efforts in preparing this comprehensive plan. DHA looks forward to continued collaboration on the sustainable future of Stockton Beach and the surrounding coastal zone.

Yours sincerely,

[redacted]

Tom Allison
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4 August 2025

Our Ref: HW2006-1824/14/4.054

Chief Executive Officer
City of Newcastle
PO Box 489
NEWCASTLE NSW 2300

Extended Stockton Coastal Management Program (CMP) – Letter of Support

Hunter Water acknowledges the extensive technical investigations and high level of consultation that has been undertaken by the City of Newcastle in relation to the draft Extended Stockton CMP (which has been in development since 2020).

Hunter Water also acknowledges the commitment by the NSW Government to deliver a mass sand nourishment program for Stockton as soon as practicable, which will form a key deliverable of the Extended Stockton CMP. Mass sand nourishment has been identified as the most cost-effective solution to mitigate the ongoing impacts of coastal erosion, which has created a major hazard to public and private infrastructure at Stockton.

The Extended Stockton CMP has identified the breakwall associated with the Port of Newcastle as a primary cause for the ongoing coastal erosion at Stockton. Hunter Water acknowledges the complex ongoing work involved with sourcing sand and determining the most effective way to return sand to the Stockton embayment.

Hunter Water owns the following land off Fullerton Street, Stockton:

- Lot /DP 1101273, which has an operational wastewater pump station and sewer main; and
- Lot 202/DP1150470, which has an operational sewer main and decommissioned infrastructure associated with the former Stockton Wastewater Treatment Works (WWTW) and the former Corroba landfill area. As identified in the Extended Stockton CMP, the landfill area is currently protected from erosion by a temporary geocontainer seawall. The seawall was constructed in 2019 with a design life of 5 – 7 years. As Hunter Water has decommissioned the Stockton WWTW, it has no ongoing operational need for much of this land.

Hunter Water commits its support to undertake the actions within the Extended Stockton CMP which have been assigned to our organisation. Funding has been allocated to ensure that these actions can be addressed over the implementation period of the CMP.

For any ongoing consultation regarding the Extended Stockton CMP, please contact Angus Seberry (Group Manager, Environment) on angus.seberry@hunterwater.com.au.

Kind regards,

[redacted]

Grace MacPherson
Executive Manager, Business Services and Assurance

NSW National Parks and Wildlife Service

Mr Jeremy Bath
CEO
Newcastle City Council
PO Box 489
NEWCASTLE NSW 2300

Attention: Charlene J Wellard

Dear Mr Bath

I refer to email correspondence from Charlene Wellard of 7 August 2025 seeking the NSW National Parks and Wildlife Service (NPWS) support for the Extended Stockton Coastal Management Program (CMP).

There are lands gazetted under the NSW National Parks and Wildlife Act 1974 (NPW Act) within the study area of this CMP, however NPWS has been included in actions and implementation of the CMP is likely to impact the Worimi Conservation Lands (WCL) to the north. The WCL comprises Worimi national park, regional park and state conservation area. It is Aboriginal owned and jointly managed by the WCL Board of Management in partnership with NPWS under the Aboriginal ownership provisions of the NPW Act. The WCL Board and NPWS are stakeholders in the CMP.

Council has indicated that NPWS is listed in the following actions:

- A lead agency with City of Newcastle for Action:
  H9: Explore opportunities for whale carcass management to incorporate Indigenous cultural protocols.
- A supporting partner for Actions:
  CU1D: Restrict illegal vehicles including four-wheel drive, trail bike and all-terrain vehicles access from Hunter Water, DHA and DCJ land.
  CU1H: Support public authority landholders and ensure consultation/engagement with the Worimi Conservation Lands Board of Management with any investigations into future ownership and linkages of beachfront land, to enable continuous public pedestrian access to and along Stockton Beach to the Worimi Conservation Lands.

NPWS supports the inclusion of the above actions in the CMP. NPWS also reiterates the importance of the CMP recognising and mitigating risks to the Worimi Conservation Lands.

NPWS participation in actions is subject to funding availability and reserve management priorities. NPWS must be consulted prior to any works proposed on NPWS estate.

Please notify NPWS when the CMP is certified and include a link to the final version. If you have any further questions about this matter, please contact lee.pointen@environment.nsw.gov.au and cc adam.faulkner@environment.nsw.gov.au.

PO Box 488G Newcastle NSW 2300 | 117 Bull Street Newcastle NSW 2302 | Tel: (02) 4908 6800
www.nationalparks.nsw.gov.au

Yours sincerely

[redacted]

Richard Colbourne
A/Manager Hunter Coast Area Park Operations
National Parks and Wildlife

14 August 2025

Department of Planning, Housing and Infrastructure

Ref: LBN25/995
Your Ref: correspondent's reference

Charlene J Wellard
Senior Environmental Strategist
Newcastle City Council

cjwellard@ncc.nsw.gov.au

cc: Neil.Kelleher@environment.nsw.gov.au

07 August 2025

Subject: Extended Stockton Coastal Management Program 2025

Dear Charlene,

Thank you for your correspondence concerning the Extended Stockton Coastal Management Program July 2025 (herein referred to as the CMP).

As is required under section 15(4)(b) of the *Coastal Management Act 2016* (CM Act), agreement is being sought from the Department of Planning, Housing and Infrastructure – Crown Lands and Public Spaces (the Department), to actions in the CMP that would be carried out by the Department or that relate to land or assets owned and/or managed by the Department.

The Department has reviewed the actions in the CMP that are relevant to the management and administration of Crown land, including where we have been nominated as a 'lead' or 'partner' for the implementation of an action. The Department is pleased to provide formal agreement to the CMP under section 15(4)(b) of the CM Act. This agreement does not exclude or replace the need for authorities to undertake the various planning, regulatory and approval processes that may be required under the *Environmental Planning and Assessment Act 1979* or *Crown Land Management Act 2016* (CLM Act) as part of implementing the CMP.

To ensure clarity regarding nourishment actions/activities at Stockton Beach, the Department's role will be limited to offering information, guidance and any necessary authorisations under the *CLM Act*. The Department will not be responsible for or act as the proponent or lead for any future nourishment activity at Stockton Beach.

Further, it is noted that the CMP includes a Coastal Zone Emergency Action Subplan (CZEAS). Upon certification of the CMP it is recommended that Council request a licence under the CLM Act for the purpose of implementing the CZEAS for the life of the CMP (10 years). This licence application will be duly considered by the Department.

The CMP is the result of a comprehensive planning and consultation process, and Council is to be congratulated on finalising this important, strategic document for the management of the Extended Stockton Areas. The Department looks forward to working with Council during the implementation phase of the CMP.

If you have any questions, please do not hesitate to contact Grant Nelson, Senior Project Officer Coastal Unit, at grant.nelson@crownland.nsw.gov.au or 0498 946 746.

Yours sincerely

[redacted]

Tim Deverell
Director Regional Operations East
Crown Lands and Public Spaces

Appendix B

Stockton Coastal Zone Emergency Action Subplan

Extended Stockton Coastal Management Program

City of Newcastle

August 2025

Acknowledgement

City of Newcastle acknowledges with the deepest respect the Traditional Custodians of this land, a people who belong to the oldest continuing culture in the world.

We recognise their continuing connection to the land and waters and unique cultural and spiritual relationships to the land, waters and seas.

We are grateful for the rich, diverse, living cultures of Aboriginal people. We recognise the history of truth that acknowledges the impact of invasion and colonisation on Aboriginal people and how this still resonates today.

We pay our respect to Elders, past, present and emerging, for they hold the memories, traditions, cultures and aspirations of Aboriginal people.

Enquiries

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Definitions

Beach	An area that is generally composed of sand or pebbles or similar sediment that extends landwards from the lowest astronomical tide to the line of vegetation or bedrock or structure.
Beach erosion	The offshore movement of sand from the sub-aerial beach during storms or an extreme or irregular weather event.
BOM	Bureau of Meteorology
Combat agency	The agency identified in the Local, Regional or State Emergency Management Plan (EMPLAN) as the agency primarily responsible for responding to a particular emergency.
Coastal emergency	Beach erosion, coastal inundation or cliff instability occurring through storm activity or extreme or irregular events which threatens to endanger the safety or health of people, destroys, damages or threatens to destroy or damage any property.
Council	City of Newcastle
CMP	Coastal Management Program
Coastal protection works	Activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters and includes sea walls, revetment and beach nourishment.
CN	City of Newcastle
CM Act	*Coastal Management Act 2016*
CZEAS	Coastal Zone Emergency Action Subplan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EMPLAN	Emergency Management Plan
Emergency coastal protection works	Works comprising the placement of sand, or the placing of sandbags for a period of not more than 90 days, on a beach, or a sand dune adjacent to a beach, to mitigate the effects of coastal hazards on land. (Clause 2.16, SEPP Resilience and Hazards) 2021.
LEMO	Local Emergency Management Officer
LEOCON	Local Emergency Operations Controller
NSW SES	NSW State Emergency Service
SLSC	Surf Life Saving Club
Subaerial beach	Sandy beach above 0m Australian Height Datum (AHD).

1. Introduction

1.1 About this document

This Coastal Zone Emergency Action Subplan (CZEAS) forms part of the Extended Stockton Coastal Management Program (CMP). This CZEAS has been prepared in accordance with the *Coastal Management Act 2016* (CM Act) and the accompanying NSW Coastal Management Manual (OEH, 2018), specifically the *Guidelines for preparing a coastal zone emergency action subplan* (DPIE, 2019), herein referred to as the Guidelines.

1.2 Purpose and scope of the CZEAS

The CM Act identifies specific emergency management considerations associated with beach erosion, coastal inundation and cliff instability. Section 15(1)(e)) of the CM Act outlines that a CZEAS must be included in a CMP if the local council's Local Government Area (LGA) contains land within the Coastal Vulnerability Area (CVA), and beach erosion, coastal inundation or cliff instability is occurring on that land.

While at the commencement of the State Environmental Planning Policy (Coastal Management) 2018 (CM SEPP), no Coastal Vulnerability Area (CVA) map was adopted and therefore no CVA has been identified within the Newcastle LGA, it is recognised that Stockton Beach has been impacted by coastal erosion on numerous occasions and it is considered appropriate to develop a CZEAS for this location. It replaces the:

- previous version of this subplan which covered the section from Pirate Point to Meredith Street, Stockton (CMP 2020).
- emergency subplan forming Appendix D of Part A of Newcastle Coastal Zone Management Plan (CZMP 2018) for the beach areas north of Meredith Street, Stockton.

The purpose of the Stockton CZEAS is to identify and facilitate the implementation of appropriate emergency responses for coastal hazard related emergencies. The aims of the CZEAS are to:

- protect human life and public safety.
- minimise damage to property and assets.
- minimise impacts on social, environmental and economic values.
- not create additional hazards or risks.

In accordance with the Guidelines, this CZEAS has been prepared to facilitate effective emergency responses by:

- identifying the locations that may be affected by beach erosion or coastal inundation that would constitute a coastal emergency (see Section 2.4).
- outlining the roles and responsibilities of all public authorities (including City of Newcastle (CN)) and coordinating their response to emergencies immediately preceding or during periods of beach erosion, coastal inundation and cliff instability.
- defining a coastal emergency and triggers for emergency response actions.
- identifying the locations and types of works that may be undertaken for the protection of public property and assets.
- outlining what actions are to be undertaken in the prevention, preparation, response and recovery phases of coastal emergency management.
- informing the public and potentially affected property owners about their responsibilities during a coastal emergency and what actions they are and are not permitted to undertake.

Actions in the Stockton CZEAS aim to reduce risk:

- in areas where CN has chosen not to implement permanent or interim coastal protection works to reduce coastal hazard risks, which have been evaluated as tolerable or acceptable.
- where coastal hazard risks have not been reduced or eliminated because an agreed action in the Stockton Coastal Management Program 2020 (Stockton CMP 2020) or the Extended Stockton CMP has not yet been implemented.
- where coastal hazard risks remain after other actions have been implemented (residual risk).
- when rare and very large or unexpected events occur, outside the design criteria or capacity of agreed management actions in the Stockton CMP 2020 or Extended Stockton CMP.

The Stockton CZEAS is intended to be a supporting document to CN's Local Emergency Management Plan 2019 (Newcastle EMPLAN). The Newcastle EMPLAN sets out the responsibilities and coordinating arrangements for a range of emergencies, between CN[1] and combat agencies, including NSW Police, Ambulance Service, NSW State Emergency Service (SES), Fire and Rescue NSW (FRNSW) and others. The Newcastle EMPLAN is being reviewed and updated in 2024, presenting an opportunity for this CZEAS to be referred to in the EMPLAN.

1.3 Extent of the CZEAS

This CZEAS covers the entire Extended Stockton Beach CMP area, being the open coast from Pirate Point, Little Beach to the Newcastle / Port Stephens LGA boundary (see Figure 1).

1.4 Consultation on this CZEAS

Effective community and stakeholder engagement formed a key aspect of the Extended Stockton CMP. Relevant northern landholders, government agency stakeholders and members of the community were consulted throughout the development of the Extended Stockton CMP and engagement activities were undertaken in accordance with CN's Community Engagement Policy (2018). Consultation was further guided by the requirements of the CM Act and NSW Coastal Management Manual's mandatory requirements.

As part of developing this CZEAS, two workshops were held in June 2023 to consult with key stakeholders involved in coastal emergency responses at Stockton, including NSW SES, Fire and Rescue NSW, NSW Police, Hunter Water, Department of Primary Industries and CN. Feedback was captured at these workshops on the effectiveness of the CZEAS in the Stockton CMP 2020 and were incorporated into this revised version of the subplan.

1.5 Emergency Operational Plans

CN's internal emergency operational plans are an accompanying document to the Stockton CZEAS and will provide specific information to operationalise CN's actions in the Stockton CZEAS and identify the responsible team within CN for coastal hazard emergency response actions across the Newcastle LGA.

1 CN is not a combat agency.

Figure 1: Extended Stockton CMP area spatial extent and land holders/managers.

2. Overview of hazards and key locations at risk

2.1 Overview

The CM Act identifies specific emergency management considerations associated with beach erosion, coastal inundation and cliff instability.

The Extended Stockton CMP identifies locations within the CMP area at risk of beach erosion and coastal inundation, listed in Table 1. Maps showing beach erosion hazard (for 2020, 2040, 2060 and 2120) are contained in the *Stockton Beach coastal hazard assessment* (Bluecoast, 2020).

Stockton is located on a sand peninsula and is relatively flat and of low relief. There are no cliffs and no cliff instability hazards. Cliff instability is therefore not discussed further herein.

2.2 Beach erosion

Beach erosion is defined as the offshore movement of sand from the subaerial beach during storms or an extreme or irregular weather event. A beach erosion emergency occurs when public and private assets or life, are at risk and can occur without a storm event, for example:

- from large and long period swell events from a distant wave generation source, which can cause significant and sudden erosion, particularly when coinciding with spring tides.
- as a result of erosion from low to moderate swells acting on a depleted beach profile.
- from slumping of the erosion escarpment or erosion protection structures after an event has passed.

At Stockton, typical hazards from beach erosion include:

- reductions in the foundation capacity of the ground supporting coastal infrastructure, either directly because of undermining, or indirectly because the adjacent area has eroded.
- high, unstable, near-vertical back-beach erosion escarpments. Unstable vertical dune erosion scarps can collapse suddenly creating a hazard to persons/ property at the crest and near the toe of the scarp.
- damage/ failure/ outflanking of existing coastal protections (e.g., Mitchell Street seawall), potentially creating dangerous situations.
- vehicles driving on sealed surfaces e.g., roadways/ carparks where the founding material has been eroded or undercut.
- unsafe beach accessways.
- exposure of waste/ contaminated waste by erosion or failure of protective seawalls (e.g., sandbag protection structure at Corroba Oval landfill).
- destabilisation of trees.
- submerged objects e.g., tank traps.

2.3 Coastal inundation

Coastal inundation occurs when a combination of marine and atmospheric processes raise water levels above normal elevations at the coast, causing land that is usually 'dry' to be inundated by seawater. It is often associated with storms, resulting in elevated still water levels (storm surge), wave set-up, wave run-up, and overwash or overtopping flows.

At Stockton, coastal inundation landward of the beach, occurs because of waves:

- overwashing across the coastal barrier system, including the dunes.
- overtopping seawalls, revetments and entrance training structures (breakwaters).

Wave overwash and overtopping can result in inundation of foreshore areas, roads, private properties and low-lying land adjacent to the coast. It can result in risks to public and private assets and present public safety risks, in areas of wave overtopping coastal structures, which can be hazardous to pedestrians and motor vehicles, and in areas of wave overwash over dunes.

Inundated areas can experience water moving with significant velocity from wave overwash/overtopping. High velocities will typically be experienced closer to the coastline, with velocities and inundation depths dissipating further inland.

2.4 Assets and key locations at risk

Table 1 outlines the assets and infrastructure that are within the Zone of Reduced Foundation Capacity (ZRFC) at the 2050 planning horizon (Bluecoast, 2020) and/or within 1% AEP coastal inundation zones in 2020 (Bluecoast, 2021). Risk maps, showing the erosion hazard lines for various planning periods and likelihoods, overlaid with public assets, are provided in Appendix B of the *Stockton Beach coastal erosion hazard assessment* (Bluecoast 2020). The main coastal emergency hazards associated with these assets and infrastructure are also outlined in this assessment.

Table 1: Assets and infrastructure at risk of coastal hazards along Stockton Beach.

Location	Structures/ assets at risk	Coastal hazards
Little Beach	Dune systems. Beach accessways.	• Loss of beach accessways and dune fencing. • Loss of dune habitat and vegetation. • Exposure of unexpected finds (e.g., Aboriginal artefacts, including burials and shells).
Holiday Park frontage	Holiday Park facilities, including the road, water, sewer, amenities block, caretakers' residence, remaining cabins, playgrounds and sewer pump out for amenities block. Office, residence and commercial building ("Lexie's"). Beach accessways.	• Dune erosion and oceanic inundation threatening permanent assets. Temporary infrastructure (camping or glamping tents) should be adaptable and easily moved. • Outflanking of the northern breakwater, should dune erosion continue. • Loss of beach accessways. • Loss of dune habitat and native vegetation. • Damage to geotextile, sand container (geobag), temporary seawall south of the SLSC seawall. • Exposure of unexpected finds (e.g., Aboriginal artefacts, including burials and shells).
SLSC seawall	Carpark and civil drainage. SLSC amenities/storage facility. SLSC building. Dalby Oval adjacent sport areas (e.g., tennis court/ bowling court). CN lifeguard tower and toilet block.	• Outflanking of the SLSC revetment, threatening car park infrastructure at the southern end, and SLSC building/areas of Dalby Oval at the northern end. • Overtopping of SLSC revetment affecting car park. • Loss of civil drainage infrastructure. • Oceanic inundation threatening all listed assets.
Dalby Oval frontage (between SLSC and Mitchell Street seawalls)	Hereford Street monument and associated car parks/ access. Mitchell Street roadway and parking area. Private property. Beach accessways.	• Exposure of identified buried historic civil/ building waste and potential associated contaminated soils around Hereford Street monument area. • Dune erosion affecting Mitchell Street roadway/ parking area, as well as private property south of Mitchell Street seawall. • Damage to temporary rock bag and geobag protections (e.g., rock bag structures in the southern and northern areas). • Loss of beach accessways. • Loss of dune habitat and native vegetation. • Exposure of historic civil/ building waste (potentially contaminated). • Exposure of unexpected finds (e.g., Aboriginal artefacts, including burials and shells). • Oceanic inundation of all listed assets.

Location	Structures/ assets at risk	Coastal hazards
Mitchell Street revetment	Mitchell Street rock revetment. High-pressure gas main along Mitchell Street. Timber access stairways connecting Mitchell Street. Mitchell Street roadway and footpath. Recreational furniture. Private properties.	• Coastal inundation of Mitchell Street roadway and adjacent properties. • Overtopping of revetment causing damage behind the revetment, along Mitchell Street roadway (e.g., recreational furniture). • Damage and failure of Mitchell Street seawall. • Damage to temporary structures on both ends of the Mitchell Street revetment that were placed to protect from outflanking. • Loss of beach accessways.
Barrie Crescent	Barrie Crescent roadway. Carpark and road drainage.	• Damage to rock bag seawall protecting Barrie Crescent and Stone Street roadway and civil drainage systems adjacent to revetment. • Erosion of dune and destabilisation of coastal open space along Eames Avenue. • Overtopping/ coastal inundation of roadway infrastructure (especially to the north).
Eames Avenue frontage	Dune systems. Beach accessways. Dune fencing. Private properties.	• Erosion of dune and destabilisation of coastal open space. • Exposure of unexpected finds (e.g., historic civil/ building waste). • Coastal inundation affecting private properties, especially in the northern area. • Loss of beach accessways and dune fencing. • Loss of dune habitat and vegetation. • Exposure of unexpected finds (e.g., Aboriginal artefacts, including burials and shells).
Corroba Park area	Corroba Oval sport facilities. Dune systems. Dune fencing/ beach accessways. Fullerton Street. Private properties (e.g., Hunter Water).	• Erosion of dune and destabilisation of coastal open space. If erosion is allowed to continue, (i.e., mass nourishment is not delivered) then shoreline recession could mean future erosion events would threaten the sporting facility, including the lights of the seaward side of the oval. • Coastal inundation up to Fullerton Street, including private property buildings. • Loss of beach accessways and dune fencing. • Loss of dune habitat and vegetation. • Exposure of unexpected finds (e.g., Aboriginal artefacts, including burials and shells).
Natural coastal open space to the north (up to Port Stephens LGA boundary)	Dune systems. Dune fencing/ beach accessways. Hunter Water sandbag wall.	• Erosion of dune and destabilisation of coastal open space. • Loss of beach accessways and dune fencing. • Loss of dune habitat and vegetation. • Exposure of unexpected finds (e.g., Aboriginal artefacts, including burials and shells). • Exposure of unexpected finds (e.g., historic civil/ building waste). • Exposure of historic landfill site.

3. Emergency coastal management

3.1 Defining a coastal emergency

This CZEAS defines a coastal emergency as:

'Beach erosion or coastal inundation occurring through storm activity or extreme or irregular weather events which:

- *threatens to endanger the safety or health of people in the Extended Stockton CMP area, or*
- *destroys or damages, or threatens to destroy or damage any property in the Extended Stockton CMP area, or*
- *causes a failure of, or a significant disruption to an essential service or infrastructure, and*
- *which requires a significant and co-ordinated response.'*

This definition was informed by Clause 15(3) of the CM Act and Clause 1(4) of the State Emergency and Rescue Management Act 1989 (SERM Act). The term 'property' is defined in Section 4 of the SERM Act and includes property, assets and the environment.

The broader use of the term 'emergency' as defined in Clause 1(4) of the SERM Act and used in plans under the SERM Act, are outside the scope of this CZEAS. This includes emergency management under local, regional or State Emergency Management Plans (EMPLANs). The objective of an EMPLAN is to ensure the coordinated response by all agencies having responsibilities and functions in emergencies. During an emergency, hazard specific EMPLANs are implemented by the identified lead Combat Agency.

When a potential or actual coastal emergency is identified, it is important that the lead Combat Agency is identified. Figure 2 provides a simplified flow chart establishing the lead Combat Agency during a coastal emergency. During a coastal emergency, the lead Combat Agency will be the NSW SES when storm activity triggers a response as per the EMPLAN. Storm activity that triggers an EMPLAN is defined in the NSW State Storm Plan 2018 and typically involves a severe weather warning (or tropical cyclone warning) issued by the Bureau of Meteorology (BOM). CN would follow the direction of the Combat Agency and provide support as outlined within CN's Flood Emergency Sub-Plan 2022, Newcastle EMPLAN 2019, NSW State Storm Plan 2023 and this CZEAS.

When the coastal emergency is not triggered by storm activity, for example, a large swell and high tide overtopping seawalls and presenting a risk to life or property CN are the lead agency. Action 1.4.3 of the NSW Storm Plan 2018 identifies that the response to coastal emergencies not caused by storm activity will be controlled and coordinated by the Local Emergency Operations Controller (LEOCON). However, if the severity of such a coastal emergency response is outside the resources and capabilities of CN, then CN may request assistances from appropriate agencies. If required, the Newcastle EMPLAN could be implemented following a request from the Local Emergency Management Officer (LEMO), in consultation with the LEOCON and NSW SES.

The event triggers for such occurrences, are set out in the following sub-section (Section 3.2).

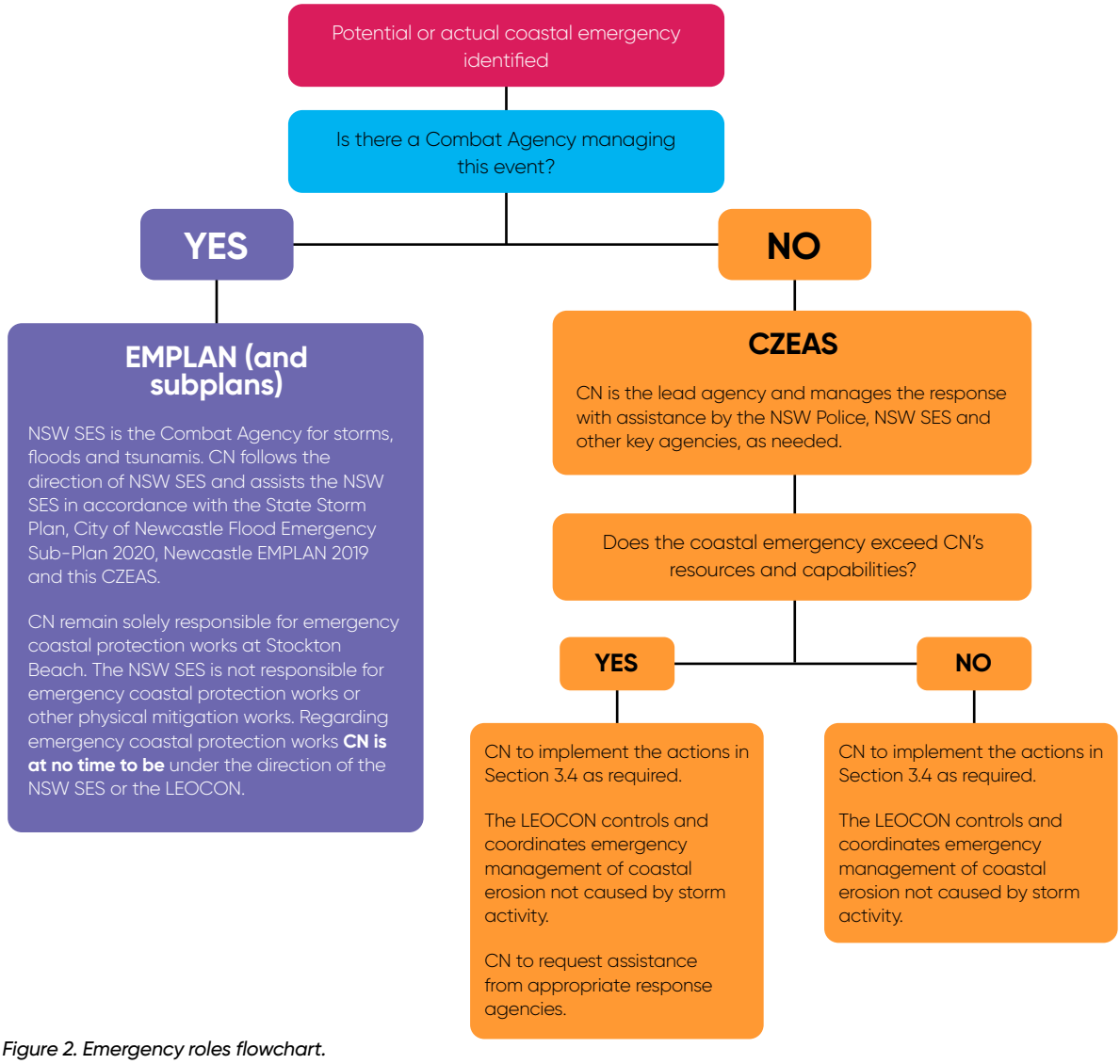

Figure 2. Emergency roles flowchart.

3.2 Event triggers (defining when a coastal emergency will be initiated)

As discussed above, a coastal emergency can be initiated in one of two ways:

- Storm activity and severe weather warnings that trigger the initiation of an EMPLAN.
- A non-storm activity trigger, based on the local knowledge within CN as the coastal manager in the Extended Stockton CMP area. A coastal emergency triggered in this regard should only be for circumstances related to an extreme or irregular event (as per S15(3) of the CM Act). CN's triggering of emergency coastal protection works, as set out in this subplan, is in accordance with Section 5.7.1 of the NSW State Storm Plan 2023.

Figure 3 illustrates these two triggers for initiation of an emergency response for a coastal erosion or inundation event at Stockton. This figure also provides the criteria adopted to initiate emergency coastal protection works.

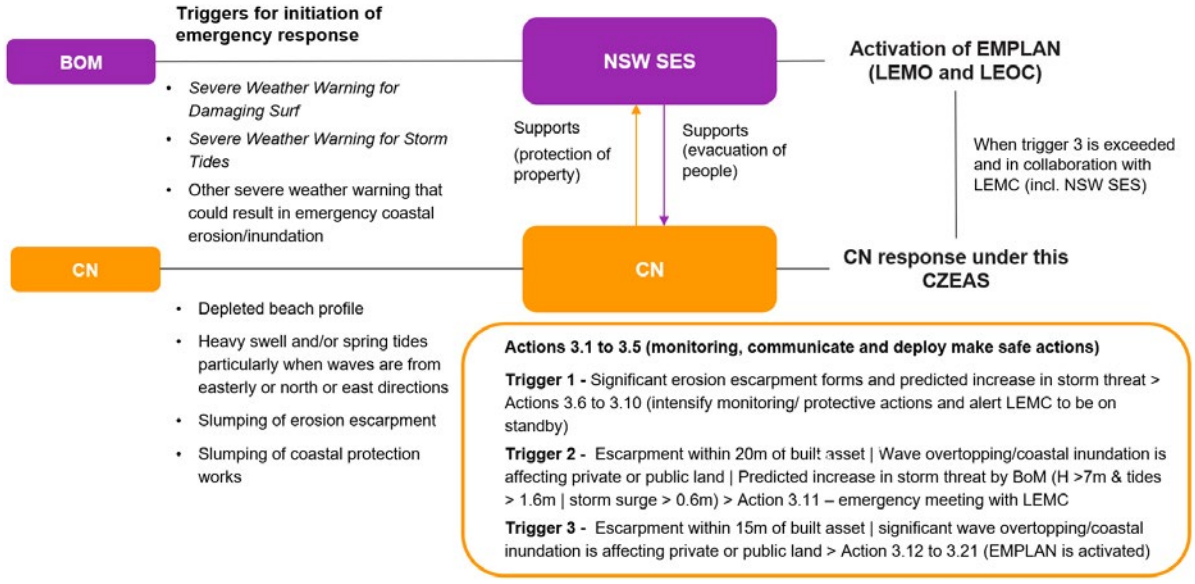

Figure 3. Summary of criteria to initiate a coastal emergency response.

3.2.1 Storm activity ('severe' weather warnings)

The Australian Government's Bureau of Meteorology (BOM) provides severe weather warnings for potentially hazardous or dangerous weather, including damaging or destructive winds, heavy rain, abnormally high tides and damaging waves. The BOM specifies the following thresholds when issuing warnings for 'severe storms' (see Clause 2.1.2 of the NSW State Storm Plan 2023):

- Wind speeds equal to or exceeding 90 km/h (damaging), 125 km/h (destructive) or average wind speed equal to or exceeding 63 km/h.
- Rainfall of sufficient intensity to cause flash flooding (generally equal to or exceeding the one in 10-year average recurrence interval).
- Waves equal to or exceeding five metres in height in the surf zone.
- Sea level higher than 50cm above the Highest Astronomical Tide (abnormally high tides and storm surges).

Other thresholds for tornadoes and hailstones are also captured but are not relevant herein.

When the waves are expected to be powerful enough to cause damage to property or significant erosion to beaches, the BOM will issue a *Severe Weather Warning for Damaging or Dangerous Surf.*

Section 5.1.1 of NSW Storm Plan 2018 identifies that storm response operations will be initiated by NSW SES:

- on receipt of a Bureau Severe Weather Warning.
- on receipt of a Bureau Severe Thunderstorm Warning or Detailed Severe Thunderstorm Warning.
- on receipt of a Bureau Tropical Cyclone Watch or Warning.
- on verbal advice from the BOM to the NSW SES.
- prior to, during or following the impact of a storm not covered by a formal warning.

3.2.2 Non-storm activity triggers

Coastal emergency situations at Stockton Beach can still develop in the absence of a BOM Severe Weather Warning. These generally occur when the beach is depleted of sand and during a long period swell from an easterly direction (lower in height required to trigger a BOM warning), combined with high tides, that create hazardous conditions. These hazardous conditions have included:

- beach and dune erosion threatening or damaging property.
- wave overtopping seawalls.
- overwashing of dunes to inundate local road and properties.

Defining triggers for these types of events is difficult and requires significant local knowledge. When considering if a coastal emergency is likely to occur, CN shall consider:

- **The condition of the beach prior to adverse conditions developing**, including the sand levels across the beach berm and surf zone. Lower sand levels (and volumes) can greatly increase the impact of the erosive effects of a storm. CN's staff monitor the beach levels (through visual observations and drone surveys), to account for these levels in initiating an emergency response.
- **Predicted wave conditions, including wave height, direction and period, as well as the duration of the wave event.** CN staff keep a historic record of erosion events along Stockton Beach and the associated offshore swell conditions. These records show that swells from the south have limited erosion effects in southern Stockton when wave heights are less than 4 metres from the south-east. Easterly and north-easterly waves, however, cause erosion sufficient to threaten coastal assets at much smaller heights. Such knowledge is key to identifying potential damaging storms and initiating an emergency response.
- **Predicted tidal range and tidal anomaly generated by storm surge.**
- **Presence and influence of coastal protection structures.** CN staff keep a record of all existing structures which have a risk of outflanking at the edges and a risk of scour at the base of the structures.
- **Condition of dune vegetation.** Dune vegetation provides a buffer to coastal erosion. Dune vegetation levels vary, according to the use of the beach, seasons and coastal works. CN staff regularly monitor vegetation levels to account for these levels in initiating an emergency response.

Initially, these triggers activate the early emergency response actions in Table 4, without initiating an EMPLAN response or mobilisation of the SES. Should the coastal emergency exceed the resources and capacity of CN, the EMPLAN can be initiated in consultation with the LEMC and the SES.

3.3 Roles and responsibilities

State-wide roles and responsibilities of emergency service organisations are set out in the NSW EMPLAN, NSW Storm Plan 2018 and NSW Flood Plan. Regionally, specific roles and responsibilities for agencies within the Newcastle LGA are set out in the Newcastle EMPLAN 2019. Regional roles and responsibilities of key agencies during floods, coastal inundation and coastal erosion are detailed further in CN's Flood Emergency Subplan. Table 2 lists emergency response agencies and their roles and responsibilities under the CZEAS.

Co-ordination roles across coastal emergency response agencies are described as:

- **LEOCON** (Local Emergency Operations Controller): is a police officer stationed within the Newcastle LGA and appointed by the Regional Emergency Operations Controller (REOCON). As stated above, the NSW Storm Plan dictates that emergency management in response to coastal erosion, that is not caused by storm activity, will be controlled and coordinated by the LEOCON.
  The LEOCON is responsible, when requested by a Combat Agency, to co-ordinate the provision of resource support. LEOCONs would not normally assume control from a Combat Agency unless the situation can no longer be contained. Where necessary, this should only be done after consultation with the REOCON and in agreement with the Combat Agency and involve an appropriate level of control.
- **LEMC** (Local Emergency Management Committee (LEMC) is a representative committee (as per the SERM Act), which includes CN's CEO, LEOCON, and senior members of each of the emergency service organisations operating in the Newcastle area. The LEMC is responsible for the preparation and review of plans in relation to the prevention of, preparation for, response to and recovery from (PPRR) emergencies in the Newcastle LGA.
- **LEMO** (Local Emergency Management Officer) is a CN officer who provides executive support to the LEMC and LEOCON, in accordance with the SERM Act.

Table 2. Roles and responsibilities for coastal emergency response agencies at Stockton.

Agency	Responsibilities
City of Newcastle	CN is a designated public authority with responsibility for the care, control and management of public land, which includes much of the Stockton foreshore and local roads. CN's responsibilities regarding coastal emergencies are summarised as: • if elected to be undertaken, the carrying out (or authorising and coordinating) of emergency coastal protection works identified in Section 3.6, to protect public and private assets from coastal erosion and inundation. • implementing the emergency actions set out in Section 3.6, as relevant, prior, during and following a coastal emergency in the Extended Stockton CMP area. • assisting, at their request, the lead Combat Agency (NSW SES) or other combat agencies (NSW Police or LEOCON) in dealing with coastal emergencies. • assisting the NSW SES with reconnaissance of areas susceptible to coastal erosion and/or inundation and providing advice regarding the need for response actions by the NSW SES, such as evacuations. • preparing, maintaining and updating this CZEAS as necessary and providing the NSW SES with a copy.

Agency	Responsibilities
NSW SES **(Newcastle unit member)**	The NSW State Emergency Service has the following functions: a) to protect persons from dangers to their safety and health, and to protect property from destruction or damage, arising from floods, storms and tsunamis. b) to act as the combat agency for dealing with floods (including the establishment of flood warning systems) and to co-ordinate the evacuation and welfare of affected communities, c) to act as the combat agency for damage control for storms and to co-ordinate the evacuation and welfare of affected communities, d) to act as the combat agency for dealing with tsunamis and to co-ordinate the evacuation and welfare of affected communities, e) as directed by the State Emergency Operations Controller, to deal with an emergency where no other agency has lawful authority to assume command of the emergency operation, f) to carry out, by accredited SES units, rescue operations allocated by the State Rescue Board, g) to assist the State Emergency Operations Controller to carry out emergency management functions relating to the prevention of, preparation for and response to, and to assist the State Emergency Recovery Controller to cary out emergency management functions relating to the recovery from, emergencies in accordance with the State Emergency and Rescue Management Act 1989, to assist, at their request, members of the NSW Police Force, Fire and Rescue NSW, the NSW Rural Fire Service or the Ambulance Service of NSW in dealing with any incident or emergency. h) to maintain effective liaison with all emergency services organisations, i) to carry out such other functions as may be assigned to it by or under this or any other ACT, or by the State Emergency Operations Controller of the Minister. The function of the State Emergency Service is to be exercised in accordance with the *State Emergency and Rescue Management Act 1989* and, in particular, with the requirements under the State Emergency Management Plan, or any state of emergency under that Act.
NSW Police Force	The Newcastle EMPLAN 2019 sets out the responsibilities of the NSW Police Force during coastal emergencies, and includes: • law enforcement. • search and rescue. • controlling and coordinating the evacuation of victims from the area affected by the emergency. • responding to referrals of cases of refusal to evacuate (i.e., in accordance with an Evacuation Order).
Bureau of Meteorology (BoM)	The Bureau of Meteorology (BoM) is Australia's national weather, climate and water agency, and provides regular forecasts, warnings, monitoring and advice, including drought, floods, fires, storms, tsunami and tropical cyclones. The release of 'severe' weather warnings provides the trigger for the initiation of EMPLAN response operations for a coastal erosion/inundation event (see section 3.1).
Ambulance Service of NSW	Assist with the evacuation of at-risk community members (elderly and/or infirm people).

Agency	Responsibilities
Fire and Rescue NSW (FRNSW)	• Assist the NSW SES with delivery of evacuation warnings and the conduct of evacuations. • Provide equipment for pumping flood water out of buildings and from low-lying areas. • Provide back-up radio communications. • Assist with clean-up operations, including hosing of flood affected properties. • Respond to hazardous materials incidents occurring on land (above the low water mark). From the low tide mark to 3NM from Nobby's Lighthouse is the responsibility of the Port of Newcastle with FRNSW being a supporting agency.
Surf Life Saving NSW	Assist the NSW SES with the warning and/or evacuation of at-risk communities and flood rescue operations.
Hunter Water and other northern landholders	Respond, if required, to coastal emergencies, to protect landward assets/landfills on respective land tenures. Any emergency coastal protection works must be in accordance with the SEPP (Resilience and Hazards) 2021 and are subject to the appropriate approvals.

3.4 Map of emergency coastal protection works

Potential locations for emergency protection works are shown in Figure 4. In arriving at these potential locations, consideration was given to the following:

- the adopted Extended Stockton CMP strategy of mass nourishment is expected to be delivered within five years of the CMP's certification, with on-going sand top-ups thereafter and amenity nourishment delivered in the interim.
- the location of existing and planned permanent or interim coastal protection works, which are depicted in Figure 4. Planned permanent or interim protection structures are those within the Stockton CMP 2020 or related to actions in this Extended Stockton CMP. Where a planned permanent/interim structure has not been delivered at the time of a coastal emergency, emergency works would be considered in these locations and are therefore included as potential locations.
- While not shown on the map, beach nourishment as an emergency coastal protection response, would be preferred for all of the Extended Stockton CMP shoreline, in the case that such works could be implemented shortly following a storm.

In addition to the above overarching considerations, further location specific rationale is provided in Table 3. In any given coastal emergency, locations requiring emergency coastal protection works will be dependent on a range of variables including (but not limited to) swell size, swell direction, the current state of the beach and the condition of existing protective measures (rock revetment, rock bags and sandbags).

Table 3. Rational and description of emergency coastal protection works by shoreline frontage.

Shoreline frontage	Rationale for potential locations of emergency coastal protection works
Holiday Park	A new development masterplan for the Holiday Park is planned in the short term (see Extended Stockton CMP action CH1C), which will consider the landward relocation of all assets behind the 2040 ZRFC hazard line (CN, 2023). Seaward of the 2040 hazard line, there could be a focus on more flexible, low impact and adaptable uses to accommodate changing coastal conditions e.g., glamping. This will enable the park to adapt and migrate forward and backward. The renewal of permanent infrastructure landward will ensure longevity of the park's infrastructure and safeguard the investment. The rationale for emergency coastal protection works in this area is to avoid outflanking in front of the Holiday Park and on the southern side of the SLSC seawall, which would threaten Lexies Cafe in addition to outflanking of the breakwater. Emergency coastal protection works would only be required in the event that the planned permanent coastal protection structures were not already in place in this location. There are actions in the CMP associated with the design, planning approvals and construction of these structures. For this CZEAS, the emergency coastal protection works proposed for this location would consist of: • Extent: (south to north) from the King Street breakwater to marry into the southern end of the existing SLSC seawall (see Figure 4). • Form: The form of the emergency works will be in line with those set out in the SEPP (Resilience and Hazards) 2021.
Seawalls (SLSC, Mitchell Street and Barrie Cresent rock bag structure)	There are existing engineered structures along these frontages and therefore no new emergency coastal protection works would be required. However, emergency measures to ensure these structures do not fail structurally (e.g., from outflanking or excessive toe scour) should be considered, as well as responses to mitigate coastal inundation from excessive wave overtopping of these structures.

Shoreline frontage	Rationale for potential locations of emergency coastal protection works
Dalby Oval and 'The Pines'	This frontage was the focus of a feasibility assessment and included management options that considered the foreshore assets, as well as the risks associated with the historical landfill (Bluecoast, 2023). The preferred interim management option, prior to the delivery of mass nourishment, was to nourish and protect all but the southern portion. The locations for potential emergency coastal protection works aligns to the outcomes of this feasibility assessment and are included herein as a precautionary measure, should any coastal emergencies trigger the need for a protection response, prior to the interim works being completed. Emergency coastal protection works would only be required in the event that the planned permanent coastal protection structures were not already in place in this location. There are actions in the CMP associated with the design, planning approvals and construction of protection works along this frontage, based on the outcomes documented in the feasibility assessment. For this CZEAS, the emergency coastal protection works proposed for this location would consist of: • Extents: two separate structures - being (1) just north of the existing SLSC revetment, to limit outflanking; and (2) from just south of 'The Pines' to marry into the southern end of the existing permanent seawall that is located at the southern end of the Mitchell Street rock revetment (see Figure 4). These extents are as per the planned coastal protection works in the Extended Stockton CMP. • Form: The form of the emergency works will be in line with those set out in the SEPP (Resilience and Hazards) 2021.
Eames Ave (north of Griffith Ave)	Should erosion progress landward to threaten the road, emergency coastal protection works would be implemented to protect this asset. This is consistent with the protection of critical infrastructure approach, taken by CN in the Stockton CMP 2020 and the Extended Stockton CMP. Located along the northern end of Stockton, the Eames Ave frontage is exposed to strong ocean swells. Based on previous experience, any coastal protection works, emergency works, or otherwise, would likely need to be constructed from rock bags (or more stable material). As this falls outside the planning provisions for emergency coastal protection works, CN would need to seek prior approval for these coastal protection works (see Section 3.5). The triggers for initiation of emergency (or otherwise) coastal protection works along this frontage are defined in Figure 3. Trigger 3 is an escarpment of 15m from the built asset, which in this case would be 15m from the seaward side of the Eames Ave roadway. For this CZEAS, the emergency coastal protection works proposed for this location would consist of: • Extent: (south to north) married onto the northern end of Barrie Cresent rock bag seawall and extending to just beyond the northern end of Meredith Street (see Figure 4). • Form: The form of the emergency works will be in line with those set out in the SEPP (Resilience and Hazards) 2021.

Shoreline frontage	Rationale for potential locations of emergency coastal protection works
Corroba Oval	Corroba Oval is a high usage sportsground all year round and home to three local clubs, including premier cricket and local school and community clubs. There is no other CN sportsground available in a nearby location that meets the field of play size and infrastructure requirements, and this specific sport facility's guidelines. In the event of a coastal emergency threatening Corroba Oval, CN's intent would be to protect it because the social impact of a significant community asset being out of action for potentially multiple years is considered unacceptable. As with the Eames Ave frontage, a rock bag structure (or more stable material) would likely need to be constructed. The triggers for initiation of emergency (or otherwise) coastal protection works along this frontage are defined in Figure 3. Trigger 3 is an escarpment of 15m from the built asset, which in this case would be 15m from the floodlights located on the seaward side of the oval. For this CZEAS, the emergency coastal protection works proposed for this location would consist of: • Extent: (south to north) just south of Griffith Street and extending to just beyond the northern end of Corroba Oval (see Figure 4). • Form: The form of the emergency works will be in line with those set-out in the SEPP (Resilience and Hazards) 2021.
Hunter Water site	The parts of the Hunter Water site that currently require coastal protection (i.e. the former landfill area) already have temporary coastal protection works in place. These were constructed in 2019, with an anticipated design life of five to seven years. Any emergency coastal protection works required by Hunter Water, would need to be in line with existing approvals (i.e. to repair/modify the existing coastal protection works) or the SEPP (Resilience and Hazards) 2021.
Hunter Water site to LGA boundary	There are no emergency coastal protection works identified within the CMP area to the north of the Hunter Water site. In the case that coastal erosion exposed yet unknown sites that warranted emergency protection (e.g. landfill materials that cannot be practically removed, sites of cultural heritage value, unacceptable risk to infrastructure etc.), appropriate emergency measures would need to be implemented in accordance with relevant regulations and guidelines.

Figure 4: Potential locations of emergency coastal protection works.

3.5 Required approvals

Section 27 of the CM Act contains provisions dealing with the granting of development consent for development for the purpose of coastal protection works, with Section 4 (1) of the CM Act defining coastal protection works to mean:

a. beach nourishment activities or works, and

b. activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters, including (but not limited to) seawalls, revetments and groynes.

Section 2.16 of the SEPP (Resilience and Hazards) 2021 states that development for the purpose of coastal protection works may be carried out by or on behalf of a public authority:

a. without development consent - if the coastal protection works are identified in the relevant certified Coastal Management Program, or beach nourishment, or the placing of sandbags for a period of not more than 90 days, or routine maintenance works or repairs to any existing coastal protection works, or

c. with development consent - in any other case.

The SEPP (Resilience and Hazards) 2021 also provides that development for the purpose of emergency coastal protection works is exempt development if it is carried out by or on behalf of a public authority in accordance with a Coastal Zone Emergency Action Subplan. Emergency coastal protection works means works comprising:

- the placement of sand, or
- the placing of sandbags[2] for a period of not more than 90 days, on a beach, or a sand dune adjacent to a beach, to mitigate the effects of coastal hazards on land.

For CN to construct emergency coastal protection works that are not consistent with the above (i.e., anything other than the placement of sand, or sandbag protection for 90 days) planning approvals will be required.

If the works are identified in a certified CMP, then the development permitted without consent planning pathway can be used (i.e. assessment via a Review of Environmental Factors (REF) under Part 5 of the EP&A Act).

If the emergency coastal protection works do not fit into any of these categories, development consent would be required, and a Joint Regional Planning Panel with coastal expertise would be the consent authority.

2 As defined in the SEPP (Resilience and Hazards) 2021. .

3.6 Actions of the CZEAS

This CZEAS includes actions during the four phases of the emergency management cycle:

1. Prevention: actions are provided in Table 4.
2. Prepare: actions are provided in Table 5.
3. Respond: actions are provided in Table 6.
4. Recover: actions are provided in Table 7.

The implementation of actions detailed in Table 4 to Table 7 are dependent on several factors, including ensuring the WHS requirements for personnel, available resources, the necessary agreements and approvals, budget and time constraints. All of these factors will need to be considered in determining whether the emergency actions will be reasonable and feasible to implement.

Detailed information to operationalise the actions outlined in Table 4 to Table 7 will be included in CN's accompanying Emergency Operational Plans - Coastal Incident & Inundation. This plan will set out internal delegations for actions within the tables below, against current roles within the organisation and will be reviewed and updated as necessary. Care is required to ensure that this Emergency Operational Plan, as they apply to Stockton, remain consistent with and does not go beyond what is described herein (i.e. the Emergency Operational Plan - Coastal Incident & Inundation should add details to aid implementation and should not add any further actions or change the locations/extents of emergency coastal protection works).

Prevention and mitigation measures in relation to infrastructure works, asset management, land use and development controls are not within the scope of this CZEAS.

Table 4: Phase 1: prevention emergency response actions.

Action ID	Timing	Responsibility (Support)	Action /Reporting
1.1	Within 12 months	LEMO	Support the NSW SES / NSW Police / FRNSW to review, develop, and align agency specific emergency incident actions, evacuation and communication plans for Stockton, through the Local Emergency Management Committee. These should be consistent with this Stockton CZEAS and be incorporated into the next scheduled review of the Newcastle EMPLAN (2019).
1.2	Within 12 months	CN	Review existing evacuation plans, in collaboration with the NSW SES, with the aim to identify new evacuation places and to investigate effective integration of the Stockton Beach Holiday Park evacuation plan into CN's emergency procedures.
1.3	Within 12 months	CN	Ensure that all references to the Coastal Zone Management Plan (Stockton) in the Newcastle EMPLAN are reviewed and updated as necessary to reflect the Extended Stockton CMP.
1.4	Ongoing	CN (EMC)	Establish and deliver CN's Emergency Operational Plans, to guide CN's response to coastal emergencies across the disaster management cycle. Informed by this CZEAS, these Plans will set out internal delegations, resourcing, training, testing and post action reviews and documentation to support any common operating platform for CN. Monitor and evaluate the implementation of CN's Emergency Operational Plans after an emergency event and amend where necessary. Any amendments to the Emergency Operational Plans need to be consistent with and not go beyond the scope of this CZEAS.

Action ID	Timing	Responsibility (Support)	Action /Reporting
1.5	Within 3 months and ongoing	CN	Prepare a communications strategy that provides information to the community before, during and after emergency events. This strategy is to establish CN contacts and roles for the implementation of this strategy. Confirm internal arrangements for media/spokesperson roles. Advise owners of affected properties that their dwellings may be at risk in a coastal emergency. Provide ongoing information to residents and property owners about safe recreational usage, coastal erosion, and inundation hazards. Engage with the Worimi Registered Aboriginal Parties, in accordance with the Worimi Engagement Protocols. Promote a clear single point of contact and information source for all public enquiries. Investigate any opportunities to embed the AIIMS roles for communications during coastal emergency events.
1.6	Within 12 months	CN	Investigate partnering with the NSW SES, to provide general information to Stockton residents and owners about coastal erosion and inundation hazards. Investigate partnering with the NSW SES, to engage with a subset of potentially impacted residents to build local community resilience, e.g., by supporting residents to have their own household and neighbourhood emergency plans.
1.7	Ongoing	CN	Support leaseholders of CN properties to prepare emergency response and /or business continuity plans. Provide best available coastal hazard and warning information to leaseholders for the purposes of these plans.
1.8	Ongoing	CN	Maintain a map (see Figure 4) and create a database of all current coastal structures with their type and condition. Conduct regular updates of the asset register following each major storm event, and when existing structures are modified or when new structures are constructed.

Table 5: Phase 2 (prepare) emergency response actions.

Action ID	Timing	Responsibility (Support)	Action / reporting
2.1	Ongoing	CN	Conduct informal weekly monitoring of beach conditions, including weather (measurements, warnings and forecasts), wave forecasts (height and direction), water level (tidal) predictions, real time wave data (height, period and direction), real time water level data (including consideration of elevated water levels due to storm surge), and beach behaviour (extent of erosion, beach width, erosion escarpment and historical beach behaviour at times of storms) Tools such as the Australian Coastal Early Warning System (https://coastalews.wrl.unsw.edu.au/) should be considered, particularly as this system is further developed, to give a seven-day forecast of beach erosion and coastal flooding hazards. Report significant change in weather conditions, beach conditions or erosion escarpment to CN management.
2.2	Ongoing	LEMO	Distribute an up-to-date contact list to the LEMC with after-hours emergency phone contacts for early warning purposes in case of a storm event, including but not limited to internal CN contacts, Stockton SLSC, Stockton Beach Holiday Park, NSW SES, NSW Police, FRNSW, Hunter Water, DPE and the designated Public Information Officer (or similar).
2.3	Ongoing	CN	Maintain procedures and guidelines, including the Worimi Engagement Protocols, for monitoring, emergency inspections, damage/risk assessments, and "make safe" and reactive works, to ensure public and worker safety, including site inspections of relevant assets and hazard areas (Section 2.4 and Section 3.4). Management of storm debris (potentially including slag, contaminated soil, asbestos and other potentially hazardous waste materials. Such material may require special attention to minimise risks to the environment and public health). Installation, monitoring and maintaining exclusion zones and other "make safe" measures (barriers, fences and signage). This may include CN managed: • public accessways to the beach and dune fencing. • beach facilities and open space. • roads and footpaths. • emergency work sites. • locations of identified waste at risk of being exposed to erosion. Removal and dismantling of the above exclusion and "make safe" measures.
2.4	Ongoing	CN	Ensure site suitable barriers, fencing and signage are available and ready for deployment to effectively close or "make safe" CN managed: • public accessways to the beach. • beach facilities and open space. • roads and footpaths. • emergency work sites. • locations of waste at risk of being exposed by erosion.

Action ID	Timing	Responsibility (Support)	Action / reporting
2.5	Within 12 months	CN	Undertake the design and necessary environmental and cultural assessments, and obtain the required approvals, for potential coastal protection works, e.g., rock bags, where these works would be expected to fall outside the definition of emergency coastal protection works in the SEPP (Resilience and Hazards) 2021.
2.6	Every 6 months	CN	Prepare logistics and supply chain contingency plans for the likely resources needed to implement potential emergency works, for example, geotextile products, geobags, sandbags, sand and ancillary equipment. Review the list of suppliers for, and availability of, non-stockpiled materials which may be required for intended emergency works, such as sand or rock.

Table 6: Phase 3 (response) emergency response actions.

Trigger	Action ID	Responsibility (Support)	Action /Reporting
BOM issues a "Severe Weather Warning for Damaging Surf" OR "Severe Weather Warning for Storm Tides" OR CN staff identify a likely coastal erosion event	3.1	CN	Undertake regular monitoring and reporting of weather, wave forecasts and beach conditions.
	3.2	CN	Undertake regular on-ground monitoring of environmental conditions and beach behaviour and close all potentially impacted areas.
	3.3	CN	Notify relevant CN staff that a coastal erosion event is possible or likely. Confirm the availability of labour and resources for "make safe" arrangements and inspections for the duration of an emergency event, including the early warning, response and early recovery phases. Confirm and circulate emergency contact details to LEMO. Follow the requirements of the Worimi Engagement Protocols.
	3.4	CN	Deliver early warning and response components of communications strategy as situation develops. Consult with LEMO / other agencies, as required.
	3.5	CN	Identify areas where "make safe" measures are needed and deploy. Consider where potential emergency coastal protection measures may be required in high-risk areas and deploy as necessary, where approval processes have already been prepared.
Significant erosion escarpment forms and predicted increase in storm threat. Note: Actions in response to this trigger are to be applied to all trigger responses below	3.6	CN	Increase the frequency of web-based monitoring and keep records of any weather warnings/reports of erosion.
	3.7	CN	Gather evidence of erosion escarpment and provide LEMO/ Combat Agency coordinator. Respond with "make safe" or site management, as required and practical.
	3.8	CN	If access is required to facilitate emergency actions or actions under the direction of the LEMO/Combat Agency, implement necessary temporary access works.
	3.9	CN	Monitor and assess roads, and if considered unsafe, organise temporary closures through barricades and safety signage.
	3.10	CN	Notify all appropriate stakeholders, including the LEMO, with a request to be on standby for a possible emergency meeting.

Trigger	Action ID	Responsibility (Support)	Action /Reporting
Top of erosion escarpment within 20m of built asset with predicted increase in storm threat OR Wave overtopping/ coastal inundation is affecting private or public land OR Predicted increase in storm threat by BoM (waves exceeding 7m and tides exceeding 1.6m or storm surge greater than 0.6m)	3.11	CN (LEMO)	Inform LEMO that an emergency meeting with relevant stakeholders is required. LEMO will notify relevant stakeholders in consultation with Combat Agency coordinator. (NSW SES)

Trigger	Action ID	Responsibility (Support)	Action /Reporting
Top of erosion escarpment within 15m of a built asset with a predicted increase in storm threat OR Significant wave overtopping/ coastal inundation is affecting private or public land.	3.12	CN (LEMO, NSW SES Incident Controller)	When requested by the LEOCON, in conjunction with the NSW SES, and as required: Establish and maintain a Local Emergency Operations Centre (LEOC) and provide the LEOCON with executive support through the LEMO. When this occurs, CN's Incident Management Team (IMT) need to consider backfilling the role of the Emergency Management Coordinator (EMC) if the EMC is also the LEMO. Provide support staff for the LEOC. Provide human resources, plant, equipment, materials and services, as required, in dealing with an incident or emergency. Provide support to combat agencies and functional area agencies, as required, including: • reconnaissance of the area affected by the emergency. • conduct a post-disaster damage assessment. Assist, at their request, the NSW Police, Fire and Rescue NSW, Ambulance Service and NSW SES in dealing with any incident or emergency. Assist in any other emergency management prevention, preparedness or recovery operations, including emergency management training, for which the CN's training and equipment is suitable. At the request of the LEOCON, coordinate disaster recovery operations, excluding welfare assistance to disaster victims for whom Department of Family and Community Services – Community Services is responsible. Provide the engineering resources required for response and recovery operations, including: • damage assessment. • clearing and re-establishing roads and bridges. • demolishing and shoring-up buildings and removing debris. • constructing and maintaining temporary levees and evacuation routes, when appropriate. • erecting barricades and fences for public protection. Providing a liaison officer and executive support to the LEOC and LEOCON or Combat Agency Controller. Providing an appropriately qualified officer to assist the District Environmental Functional Area Coordinator in relation to environmental emergency management matters.

Trigger	Action ID	Responsibility (Support)	Action /Reporting
	3.13	CN (LEMO)	Gather evidence and/or coastal and geotechnical engineering advice from suitably qualified person(s), where required, of erosion escarpment/inundation, including location and other appropriate information. Provide evidence to emergency meeting stakeholders (3.12)
	3.14	CN (LEMO)	Provide evidence to the LEOC/LEMC to determine whether an evacuation plan should be triggered / implemented for private / CN buildings, facilitated through a meeting called by the Combat Agency coordinator or LEOCON via the LEMO.
	3.15	CN	Revisit need to trigger or update emergency access (3.8) or road closures (3.9)
	3.16	CN	Contact CN's utility service providers to request the disconnection of electrical and gas services, and/or sewerage / water to CN facilities, if required.
	3.17	CN	Liaise with managers of the Stockton Beach Holiday Park to: • assist with barricading and fencing the Holiday Park's beach accesses. • assist with traffic management. • authorise closure and opening of the Holiday Park in coordination with Holiday Park managers. • assist the NSW SES/ NSW Police, if requested, in the evacuation of residents, as required.
Decision is made during emergency meeting to implement emergency coastal protection works	3.18	CN	Transport all necessary materials and equipment for "make safe" erosion control or inundation protection to locations where emergency response works are required.
	3.19	CN	Restrict public access where emergency coastal protection works are to be implemented.
	3.20	CN	Implement emergency coastal protection works (this may include on Crown Land with appropriate permissions) and record all actions taken. Measures are to be undertaken in consultation with a suitably qualified coastal or geotechnical engineer. Emergency coastal protection works, and other implementation actions, may include a range of activities, including: • emergency coastal protection works as defined in the SEPP (Resilience and Hazards) 2021, (sand and sandbags placed for no more than 90-days). • coastal protection works, as an emergency response, where designs and approvals have already been obtained (for more details, see Table 3). • repair of existing emergency coastal structures in place. • erecting temporary barriers. • emergency vehicle access. • containment of waste at risk of exposure by erosion.

Table 7: Phase 4 (recover) emergency response actions.

Trigger	Action ID	Responsibility (Support)	Action /Reporting
Storm and erosion event has abated and safe to conduct post- storm activities	4.1	CN	Conduct a handover of roles and site management, as works transfer from early response to late recovery works, according to the roles and responsibilities defined in CN's Emergency Operational Plans. Conduct built and natural asset inspections and risk assessments of any damage incurred. Define clean-up needs and work orders, including for: • beach debris. • exposure of building/civil waste or contaminated soils. • exposure of unexpected finds exposed by erosion (e.g., Aboriginal artefacts). This process should be addressed with the Worimi Indigenous Archaeologist / Worimi RAPs, and in accordance with the Worimi Engagement Protocols.' • updated "make safe" works requests (including signage/exclusion). "Make safe" measures (e.g., sandbags) are removed if their removal does not cause an immediate increase of risk to public safety/ assets. If the risk still exists, the emergency structures should be maintained until interim protection measures (sand nourishment/ rock bags/ rocks) are implemented following the approval process within the CMP framework. • short and medium repairs to damaged infrastructure and assets and access ways. • short- and medium-term repairs to dune systems and vegetation. • scope and implement short to medium term remedial actions, as required. Notify appropriate Worimi Registered Aboriginal Parties (RAPs), as per the requirements of the Worimi Engagement Protocols. Implement required/preventative works that are referenced in the Extended Stockton CMP, once safe / coastal system has sufficiently recovered.
	4.2	CN	Monitor the performance of emergency coastal protection works and tasks identified in 4.1. This would include removing any emergency coastal protection works placed in an emergency within their 90-day limits, as required under the SEPP (Resilience and Hazards) 2021. Take remedial action, as required.
	4.3	CN	Deliver early and medium-term recovery components of communications strategy. Release warnings of any persisting hazards e.g., high, unstable or near vertical erosion escarpments collapsing without notice.

Trigger	Action ID	Responsibility (Support)	Action /Reporting
	4.4	CN	Ensure power, sewerage and water services are safely reconnected within CN facilities.
	4.5	CN	Contact utility service providers to request reconnection of electrical services to the affected area.
	4.6	CN	Request written damage assessments by suitably qualified professionals to confirm any evacuated CN facilities are safe. Co-ordinate return of evacuated people and belongings to CN facilities and areas deemed safe.
	4.7	CN	Restock emergency materials and supplies for future erosion events.
	4.8	EMC	Conduct a post-event debrief with the emergency response team, to review lessons learned and opportunities for improvement.
	4.9	CN	Communicate with the community on further actions to be undertaken.
Review of emergency actions	4.10	LEMO	Post emergency, review the CZEAS and CN's Emergency Operational Plans, and update documents as required.
	4.11	CN	Review and collate records of the event, actions taken and issues identified and retain for reporting or future reference.

3.7 Stockton CZEAS implementation and review

This Stockton CZEAS applies from the date of gazettal of the Extended Stockton CMP. CN will monitor and evaluate the implementation of the Stockton CZEAS after an emergency event and amend where necessary.

Operational changes and adjustments will be made to CN's accompanying Emergency Operational Plans, as set out in Section 4, in accordance with the Stockton CZEAS.

4. References

Bluecoast, 2020. *Stockton Beach coastal erosion hazard assessment.* Report prepared for the City of Newcastle.

Bluecoast, 2021. *Technical Note – Stockton Beach coastal inundation assessment.* Report prepared for the City of Newcastle.

Bluecoast, 2023. *Feasibility Assessment Stockton Extended CMP.* Report prepared for the City of Newcastle.

NSW Government, 2022. NSW *coastal water marine pollution plan - A sub plan of the State Emergency Management Plan and the National Plan for Maritime Environmental Emergencies.*

Office of Environment and Heritage, 2018. *NSW Coastal Management Manual.*

City of Newcastle and State Emergency Management Committee, 2022. *City of Newcastle Flood Emergency Sub Plan.*

NSW State Emergency Service, 2018. *Newcastle Coastal Zone Management Plan (CZMP).*

City of Newcastle, 2019. *Newcastle Local Emergency Management Plan (Newcastle EMPLAN).*

State Emergency Management Committee, 2018. *New South Wales State Emergency Management Plan (NSW EMPLAN).*

State Emergency Management Committee, 2021. *New South Wales State Flood Plan.*

State Emergency Management Committee, 2018. *New South Wales Storm Plan.*

New South Wales Government, 2016. *NSW Recovery Plan.*

Appendix A: Planning and legislative context

Introduction

The legislative framework and its relationship with emergency coastal management at Stockton is illustrated in broad terms in Figure 5. The Stockton CZEAS was developed consistently with plans prepared under the State Emergency and Rescue Management Act 1989 (SERM Act). The scope of each legislation and requirements, in relation to the Stockton CZEAS, are detailed in the following sections.

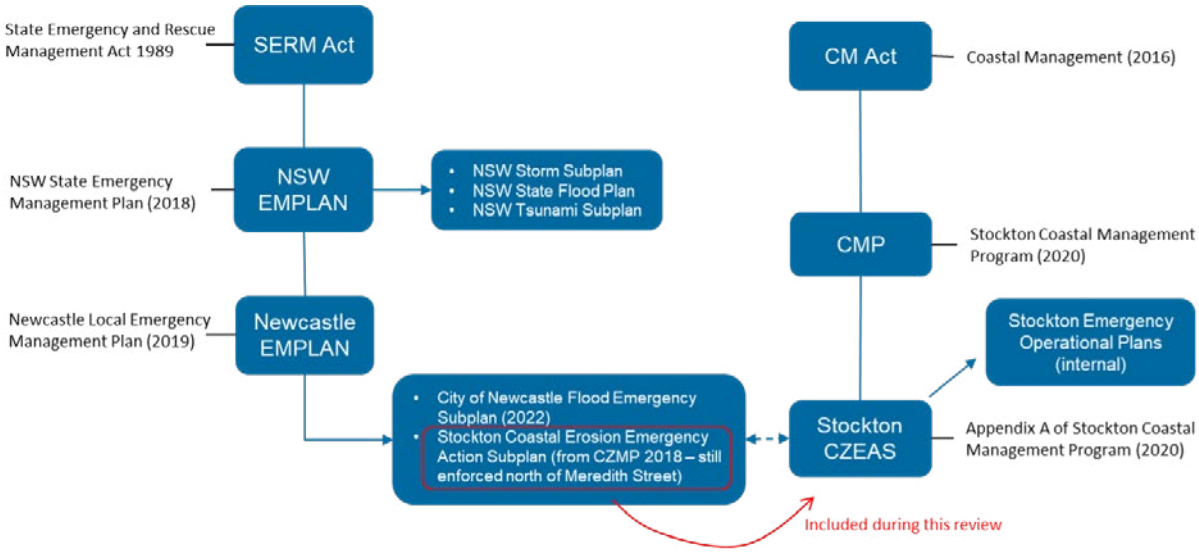

Figure 5: Legislative framework and its relationship with coastal management at Stockton.

State Emergency and Rescue Management Act 1989

The overarching framework for emergency management in New South Wales is established by the *State Emergency and Rescue Management Act 1989 (SERM Act).* The SERM Act defines an emergency as follows:

1. In this Act: emergency means an emergency due to an actual or imminent occurrence (such as fire, flood, storm, earthquake, explosion, terrorist act, accident, epidemic or warlike action) which:
   - **a.** endangers, or threatens to endanger, the safety or health of persons or animals in the State, or
   - **b.** destroys or damages, or threatens to destroy or damage, property in the State, or
   - **c.** causes a failure of, or a significant disruption to, an essential service or infrastructure, being an emergency, which requires a significant and coordinated response.
2. For the purposes of the definition of emergency, property in the State includes any part of the environment of the State. Accordingly, a reference in this Act to:
   - **a.** threats or danger to property includes a reference to threats or danger to the environment, and
   - **b.** the protection of property includes a reference to the protection of the environment.

The SERM Act outlines roles and responsibilities for all emergency management in New South Wales. The Act specifies:

- That emergency management committees are established at the state, regional and local levels.
- That emergency management plans (EMPLANs) are prepared and reviewed at the state, regional and local level.
- Arrangements for controlling emergency operations.
- Responsibilities of emergency operations controllers.

Arrangements established by the SERM Act are explained in Emergency Management Arrangements for NSW (NSW Government, 2016) and on the NSW Emergency website. The NSW State Emergency Management Plan 2018 (NSW EMPLAN) describes the NSW approach to emergency management, the governance and coordination arrangements, and roles and responsibilities of agencies. The objectives of the NSW EMPLAN are to:

- Provide clarity as to command and control, roles and coordination of functions in emergency management across all levels.
- Emphasise risk management across the full spectrum of prevention, preparation, response and recovery.
- Emphasise community engagement in the development and exercise of plans as well as in their operational employment.
- Ensure that the capability and resourcing requirements of these responsibilities are understood.

The NSW SES is the designated combat agency for the management of floods, tsunami and storms, including severe storms which can be associated with coastal erosion.

The NSW SES prepared the NSW Storm Subplan, NSW State Flood Plan and NSW Tsunami Subplan, which are subplans to the NSW EMPLAN.

Coastal erosion caused by storm activity is within the scope of the NSW Storm Plan (NSW SES, 2018); which clarifies the respective roles of the NSW SES and local government in relation to coastal erosion as follows:

- Local Government is to activate Coastal Zone Erosion Emergency Action Sub Plans as required (Action 5.2.10).
- Local Government is to implement emergency works - including construction of physical works (Action 5.3.6.b).
- NSW SES coordinate the protection (relocation/ removal) of readily moveable household and commercial contents where time and resources permit when property is at risk from coastal erosion (Action 5.3.6.a).
- NSW SES will control and coordinate the evacuation of affected communities/properties when there is a risk to public safety (Action 5.7.2).

Under Action 1.4.3 of the NSW Storm Plan, the emergency management of coastal erosion that is not caused by storm activity will be controlled and coordinated by the Local Emergency Operations Controller (LEOCON).

Coastal Management Act 2016

The *Coastal Management Act (2016)* (CM Act) identifies specific emergency management considerations associated with beach erosion, coastal inundation and cliff instability. Section 15(1)(e)) of the CM Act outlines that a Coastal Zone Emergency Action Subplan (CZEAS) must be included in a CMP if the local council's Local Government Area contains land within the coastal vulnerability area (CVA), and beach erosion, coastal inundation or cliff instability is occurring on that land.

While at the commencement of the State Environmental Planning Policy (Resilience and Hazards) 2021, no Coastal Vulnerability Area (CVA) map was adopted and therefore no CVA has been identified within the Newcastle LGA, it is recognised that Stockton Beach has been impacted by coastal erosion on numerous occasions and it is considered appropriate to develop a CZEAS for this location.

Mandatory requirements for a CMP, including the preparation of a CZEAS where required, are identified in Part A of the NSW Coastal Management Manual (OEH, 2018). Further direction on the preparation of a CZEAS is provided in the "Guideline for preparing a coastal zone emergency action subplan" by the Department of Planning, Industry and Environment (DPIE, 2019).

Below are the relevant statutory provisions from the Coastal Management Act 2016, Section 15, Matters to be dealt with in coastal management program, that apply to this CZEA.

1. A coastal management program must—

(a) identify the coastal management issues affecting the areas to which the program is to apply, and

(b) identify the actions required to address those coastal management issues in an integrated and strategic manner, and

(c) identify how and when those actions are to be implemented, including those to be implemented by local councils under Chapter 13 of the *Local Government Act 1993*, those to be implemented under environmental planning instruments and development control plans under the *Environmental Planning and Assessment Act 1979* and those to be implemented by public authorities (other than the local council), and

(d) identify the costs of those actions and proposed cost-sharing arrangements and other viable funding mechanisms for those actions to ensure the delivery of those actions is consistent with the timing for their implementation under the coastal management program, and

(e) if the local council's local government area contains land within the coastal vulnerability area and beach erosion, coastal inundation or cliff instability is occurring on that land, include a coastal zone emergency action subplan.

2. A coastal management program may also include other matters as may be authorised or permitted by the coastal management manual.

3. A *coastal zone emergency action subplan* is a plan that outlines the roles and responsibilities of all public authorities (including the local council) in response to emergencies immediately preceding or during periods of beach erosion, coastal inundation or cliff instability, where the beach erosion, coastal inundation or cliff instability occurs through storm activity or an extreme or irregular event. For the purposes of this subsection, those roles and responsibilities include the carrying out of works for the protection of property affected or likely to be affected by beach erosion, coastal inundation or cliff instability.

4. A coastal management program must not include the following—

(a) matters dealt with in any plan made under the *State Emergency and Rescue Management Act 1989* in relation to the response to emergencies,

(b) proposed actions or activities to be carried out by any public authority or relating to any land or other assets owned or managed by a public authority, unless the public authority has agreed to the inclusion of those proposed actions or activities in the program.

Relevant mandatory requirements of the NSW Coastal Management Manual Part A - Requirements for preparing a CMP which includes a proposed or mapped coastal vulnerability area:

10. Where coastal hazards have been identified in a coastal management area, a CMP must identify proposed coastal management actions for those hazards.

11. If the CM Act requires that a coastal zone emergency action subplan be prepared, it must identify any requirements for how emergency coastal protection works, within the meaning of the CM SEPP, are to be carried out.

Note: Clause 19(4) of the SEPP (Resilience and Hazards) 2021, defines emergency coastal protection works to mean 'works comprising the placement of sand, or the placing of sandbags for a period of not more than 90 days, on a beach, or a sand dune adjacent to a beach, to mitigate the effects of coastal hazards on land'.

City of Newcastle's Local Emergency Management Plan 2019

Annexure C of the City of Newcastle's Local Emergency Management Plan 2019 (Newcastle EMPLAN) provides a summary of the hazards that may cause loss of life, property, utilities, services and/or the community's ability to function within its normal capacity, i.e., those hazards identified as having the potential to create an emergency, as well as a Combat Agency responsible for responding to the emergency..

The risk associated with coastal erosion at Stockton is described as "major beach erosion certain and dunal recession likely. Potentially dangerous inundation of eastern areas of Stockton and possible building damage or collapse because of undermining of foundation or wave action". Coastal erosion is rated as "Likely", with "Major" consequence, resulting in a "High" risk prioritisation.

The probabilistic hazard assessment undertaken in accordance with the Coastal Management Manual, indicates that Stockton Beach is currently at high to extreme risk, with public assets at immediate threat requiring urgent protection.

Annexure D of the Newcastle EMPLAN contains a table which lists eight supporting documents, including outdated references to the Emergency Action Subplan as part of the CZMP (2018) and City of Newcastle's Flood Emergency Sub Plan. It is recommended that all references relevant to the Stockton CZEAS in the Newcastle EMPLAN are reviewed and updated as necessary.

Appendix C

Evaluation of management actions

City of Newcastle

Action ID	Management action	Is this a new action or has the action significantly changed from the Adopted Stockton 2020 CMP?	CM Act objects addressed?	Alignment with other strategic documents, policies and acts at Local, State and Commonwealth Level?	Alignment with Stockton CMP objectives?	Is this action practical? Can it be done? (Does the action align with the roles and responsibilities of the action owner, Does the action owner have the financial capacity and internal expertise to deliver. Is the action legal?)	Is this action acceptable? Should it be done? (Does the action have any unacceptable financial, environmental or social impacts)	Is this action effective? Will it work? (Is the option feasible from a technical, engineering and/or construction perspective? Is the action adaptable to changing condition? Is there a high level of confidence the action will address the issue)	Alignment with IP&R Framework
Beach nourishment [BN] - ongoing partnerships and strategies									
BN1A	Advocate that TfNSW request early in the project planning process, that a beneficial reuse hierarchy for the management of dredged material prioritises the nourishment of Stockton Beach for future capital dredging proposals within Newcastle Harbour.	Yes	Yes - aligns with Object J	No misalignment noted	1f) Medium term objective - Return beach environment through mass nourishment. 2c) Medium term objective - Mitigate impact of coastal hazards on public and private infrastructure. 3e) Medium term objective - Improve beach amenity.	Yes - see formal acceptance letter	Yes - minimal impact as in these cases sand is being dredged anyway.	Yes - this source has the capacity to aid supply of beach nourishment at Stockton.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
BN1B	Suitable excess material from capital dredging projects (as and when such projects are required by Port of Newcastle operations) in Newcastle Harbour be prioritised for beneficial reuse as nourishment of Stockton Beach.	Yes	Yes - aligns with Object J	No misalignment noted	1f) Medium term objective - Return beach environment through mass nourishment. 2c) Medium term objective - Mitigate impact of coastal hazards on public and private infrastructure. 3e) Medium term objective - Improve beach amenity.	Yes - see formal acceptance letter	Yes - minimal impact as in these cases sand is being dredged anyways.	Yes - this source has the capacity to aid supply of beach nourishment at Stockton.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
BN1C	Suitable material from maintenance dredging activities (as and when such projects are required by Port of Newcastle operations) in Newcastle Harbour be prioritised for beneficial reuse as nourishment of Stockton Beach in accordance with relevant approvals.	Yes	Yes - aligns with Object A	No misalignment noted	1f) Medium term objective - Return beach environment through mass nourishment. 2c) Medium term objective - Mitigate impact of coastal hazards on public and private infrastructure. 3e) Medium term objective - Improve beach amenity.	Yes - practical for PoN to place sand at Stockton rather than taking offshore once sand placement design and approvals are complete.	Yes - minimal impact as in these cases sand is being dredged anyways.	Yes - this source has the capacity to aid supply of beach nourishment at Stockton.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities

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Beach Nourishment [BN] - Pre-planning investigations, design and approvals									
BN2A	Undertake feasibility and design work plus environmental assessments and approvals for identified sand sources in offshore marine areas and the North Arm of the Hunter River.	Yes	Yes - aligns with Object A	No misalignment noted	2b) Short term objective - Complete planning for the delivery of mass nourishment.	Yes - funding for the delivery of the action has been received through the CERMP. The responsibility of DRNSW/NSWPW is limited to the CERMP scope of works	Yes - local sand sources should be investigated.	Yes - both areas were identified as a feasible borrow areas for mass nourishment and ongoing top-ups refer to South Arm Report (Bluecoast 2022a & 2022b) and the Stockton offshore sand exploration project report (MEG 2021)	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
BN2B	Undertake an initial desktop assessment and consult with relevant stakeholders regarding the benefits of placing mixed sediments from the maintenance dredging of Newcastle Harbour off Stockton Beach.	Yes	Yes - aligns with Object A	No misalignment noted	1f) Medium term objective - Return beach environment through mass nourishment 2c) Medium term objective - Mitigate impact of coastal hazards on public and private infrastructure 3e) Medium term objective - Improve beach amenity	Yes - these studies are planned.	Yes - subject to outcomes of investigations. Mixed dredge material has the potential to provide a cost-effective sand source.	Yes - if study outcomes are positive will assist with delivery of nourishment to Stockton.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
Beach nourishment [BN] - implementation actions									
BN3A	Implement beach nourishment, in alignment with the Stockton Beach Repair Blueprint.	Yes	Yes - aligns with Objects B and F	No misalignment noted	1f) Medium term objective - Return beach environment through mass nourishment 2c) Medium term objective - Mitigate impact of coastal hazards on public and private infrastructure 3e) Medium term objective - Improve beach amenity	Requires funding commitments and completion of approvals and design actions above.	Yes - this is the preferred coastal management scheme at Stockton.	Yes - provision of mass nourishment has been evaluated in detail as the preferred coastal management option.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities

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BN3B	Work collaboratively with the Stockton Special Advisory Panel, to investigate and determine a governance, funding and implementation framework for ongoing sand top-ups that incorporates the key learnings from the CERMP project and the Stockton Beach repair project with consideration of mixed sediment placement and opportunistic sand sources.	Yes	Yes - aligns with Object B and F	No misalignment noted	1f) Medium term objective - Return beach environment through mass nourishment 2c) Medium term objective - Mitigate impact of coastal hazards on public and private infrastructure 3e) Medium term objective - Improve beach amenity	Requires funding commitments and completion of approvals and design actions above.	Yes - this is required to maintain the preferred coastal management scheme at Stockton.	Yes - provision of nourishment top-ups have been evaluated in detail as the preferred coastal management option.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
Beach Nourishment [BN] - dune maintenance actions									
BN4A	Identify the most efficient sand scraping operation subject to local conditions.	Yes	Yes - aligns with Object B	No misalignment noted	1b) Short-term objective - Protect biodiversity values of the beach, dune and heath land. 3b) Short term objective - Efficient management of existing beach sand.	Yes - beach scraping is something CN already do as BAU process.	Yes - this is a preferred short-term management option for stakeholders.	Yes - amenity can be improved with improved sand scraping regime.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
BN4B	Conduct beach scraping in areas, north and south of the Mitchell Street seawall, in front of Corroba Oval, Dalby Oval and the Holiday Park, to increase dune volume and maintain existing access points.	Yes	Yes - aligns with Object B	No misalignment noted	1b) Short-term objective - Protect biodiversity values of the beach, dune and heath land. 3b) Short term objective - Efficient management of existing beach sand.	Yes - beach scraping is something CN already do as BAU process.	Yes - this is a preferred short-term management option for stakeholders.	Yes - amenity can be improved with improved sand scraping regime.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities

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BN4C	Undertake dune maintenance program and continue dune rehabilitation works prior to mass nourishment along the most vulnerable shorelines. This may include dune shaping, stabilising, fencing and sand scraping.	Yes	Yes - aligns with Object B	No misalignment noted	1b) Short term objective - Protect biodiversity values of the beach, dune and heath land. 1c) Short term objective - Identify environmental risks and controls needed. 1d) Short term objective - Address activities that degrade the quality of the coastal environment.	Yes - dune maintenance is practical to undertake.	Yes - this is a preferred short-term management option for stakeholders.	Yes - dune management is an effective action to maintain and improve condition of coastal dunes.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
BN4D	Post mass nourishment, conduct dune building and stabilisation to reinstate the coastal barrier along the most vulnerable shorelines.	Yes	Yes - aligns with Object B	No misalignment noted	1e) Medium term objective - Improve the biodiversity values of natural assets. 1f) Medium term objective - Return beach environment through mass sand nourishment.	Yes - CN will seek funding from range of sources to undertake dune maintenance.	Yes - dune management is an important process to ensure the benefits of preferred mass nourishment option are realised.	Yes - dune management is an effective action to maintain and improve condition of coastal dunes.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
Beach Nourishment [BN] - monitoring actions									
BN5A	Undertake monitoring of the October/November 2023 amenity nourishment, as required in the CERMP grant scope of works.	No	Yes - aligns with Object B	No misalignment noted	3a) Short term objective - Deliver amenity nourishment.	Yes - targeted monitoring is practical method to assess performance and inform future nourishment campaigns.	Yes - no unacceptable impacts noted.	Yes - will provide important data and knowledge.	Newcastle 2040 Plan 4.3.2 Encourage innovation and continuous improvement 4.3.3 Data-driven decision-making and insights
BN5B	Develop and implement coastal monitoring and decision-support system to inform sand and beach management.	Yes	Yes - aligns with Object F	No misalignment noted	2e) Long-term objective - Management planning reviewed in line with the mass nourishment monitoring.	Yes - targeted monitoring is practical method to assess performance and inform future nourishment campaigns.	Yes - no unacceptable impacts noted.	Yes - will provide important data and knowledge.	Newcastle 2040 Plan 4.3.2 Encourage innovation and continuous improvement 4.3.3 Data-driven decision-making and insights
BN5C	Deliver targeted coastal monitoring of mass nourishment through the Stockton Beach Repair Project, in alignment with the Stockton Beach Repair Blueprint.	No	Yes - aligns with Object F	No misalignment noted	2e) Long-term objective - Management planning reviewed in line with the mass nourishment monitoring.	Yes - coastal monitoring is a standard practice to inform coastal management actions.	Yes - no unacceptable impacts noted.	Yes - provides critical coastal monitoring information.	Newcastle 2040 Plan 4.3.2 Encourage innovation and continuous improvement 4.3.3 Data-driven decision-making and insights

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BN5D	Undertake coastal monitoring to trigger coastal protection works (CPW) and beach scraping.								Newcastle 2040 Plan 4.3.2 Encourage innovation and continuous improvement 4.3.3 Data-driven decision-making and insights
Coastal assets [CH] - Pre-planning investigations									
CH1A	Audit coastline and update asset register(s) accordingly, to ensure natural and built coastal assets are adequately represented in service asset planning.	No	Yes - aligns with Object H	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - standard asset management practice.	Yes - no unacceptable impacts noted.	Yes - this is an effective tool for CN to manage coastal assets.	Newcastle 2040 Plan 2.1.2 Assess and share our climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH1B	Incorporate coastal hazards into CN's service asset planning.	No	Yes - aligns with Object H & I	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - good asset management practice.	Yes - no unacceptable impacts noted.	Yes - this is an effective way for CN to manage coastal assets into the future.	Newcastle 2040 Plan 2.1.2 Assess and share our climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH1C	Develop a masterplan for the Holiday Park, investigating the landward re-location of cabins and the amenities block, the associated infrastructure changes, and future financial sustainability in response to coastal hazard exposure, as per Figure 14.	No	Yes - aligns with Object D & G	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards. 2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - a masterplan is practical.	Yes - no unacceptable impacts noted.	Yes - this is an effective way for CN to plan for re-location.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
Coastal assets [CH] - design and approvals actions									
CH2A	Finalise design and documentation of planned protection structures to address immediate risks to critical assets, as per Figure 14.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance the action is considered acceptable.	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas

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CH2B	Conduct an environmental assessment and seek associated approvals for the protection structures, as outlined in CH2A.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance the action is considered acceptable.	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH2C	Undertake condition assessment and design specification for renewal of the existing SLSC and Mitchell Street seawalls, including consideration of adaptation to climate change and ongoing maintenance.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance the action is considered acceptable.	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH2D	Undertake a detailed design and obtain approvals, including cultural heritage assessments, for works included in the Holiday Park Master Plan. Based on the outcomes of the Holiday Park masterplan (once developed).	Yes	Yes - aligns with Object F	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - it is assumed the masterplan will produce practical measures.	Yes - it is assumed the masterplan will produce acceptable measures.	Yes - it is assumed the masterplan will produce effective measures.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH2E	Undertake concept design and obtain approvals for interim protection structure, including cultural heritage assessments, if the erosion scarp comes within 25m of the seaward edge of the Eames Ave road, or a shore parallel line adjoining the floodlights on the seaward side of Corroba Oval.	Yes	Yes - aligns with Object F	No misalignment noted	2a) Short to medium term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance the action is considered acceptable.	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas

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Coastal assets [CH] - Implementation actions									
CH3A	Construct interim protection structures to address immediate risks at The Pines frontage.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance this action is considered acceptable. Significantly cheaper than alternative of landfill removal.	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH3B	Construct interim protection structures to address immediate risks at the northern end of the SLSC seawall and northern extension.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance from CMP 2020 the action is considered acceptable. Acceptability depends on design potential for significant price creep. May affect financially viability further investigation required	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH3C	Construct interim protection structure to address immediate risks at the southern end of the SLSC seawall.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance from CMP 2020 the action is considered acceptable. Acceptability depends on design potential for significant price creep. May affect financially viability further investigation required	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH3D	Reconfigure and construct infrastructure and building assets within the Holiday Park, that reflect the approved masterplan and development consent.	No	Yes - aligns with Object F	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.	Yes - seawalls are practical for CN to implement.	Yes - this is considered acceptable.	Yes - protecting the landward end of the King Street breakwater is a practical measure.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas

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CH3E	If triggered, construct an interim protection structure to address coastal erosion along Eames Ave and Corroba Oval.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - seawalls are practical for CN to implement.	Yes - on balance from CMP 2020 the action is considered acceptable. Acceptability depends on design potential for significant price creep. May affect financially viability further investigation required	Yes - if overtopping is managed, it will work for a short period which is assumed to extend to the delivered of mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
Coastal Assets - Maintenance and monitoring actions									
CH4A	Undertake renewal works to the Mitchell Street seawall as identified in condition assessment report.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - maintenance of assets is effective where the assets is performing it's intended function.	Yes - this is acceptable.	Yes - maintenance is practical.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH4B	Undertake renewal works to the SLSC seawall as identified in condition assessment report.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - maintenance of assets is effective where the assets is performing it's intended function.	Yes - this is acceptable.	Yes - maintenance is practical.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH4C	Undertake maintenance of the rock bag protection structure at northern end of Mitchell St seawall.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards.	Yes - maintenance of assets is effective where the assets is performing it's intended function.	Yes - this is acceptable.	Yes - maintenance is practical.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH4D	Undertake annual inspection of the northern breakwater, as per the PoN lease, and assess potential issues from coastal hazards, in relation to infrastructure operated by PoN.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards. 2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - inspections of assets is effective.	Yes - this is acceptable.	Yes - inspections are practical.	Newcastle 2040 Plan 2.1.2 Assess and share our climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas

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CH4E	Undertake pro-active and reactive beach maintenance at stormwater discharge points along the Stockton coastline, prior to and after storm events, to prevent additional erosion and ponding.	No	Yes - aligns with Object F	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards. 2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - maintenance of beach at stormwater outlets is effective.	Yes - this is acceptable.	Yes - beach maintenance is practical.	Newcastle 2040 Plan 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH4F	Conduct a seawall condition monitoring program within the Extended Stockton CMP area.	No	Yes - aligns with Object F	No misalignment noted	2e) Long-term objective - Management planning reviewed in line with the mass nourishment monitoring.	Yes - asset monitoring is a Council BAU process.	Yes - no unacceptable impacts noted.	Yes - provides critical asset information.	Newcastle 2040 Plan 4.3.2 Encourage innovation and continuous improvement 4.3.3 Data-driven decisions & insights
Complementary Coastal Hazard Action [CH] - Management and planning									
CH5A	Resourcing the integrated delivery of on-ground works as detailed in this business plan.	No	Yes - aligns with Object H	No misalignment noted	All	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.2 Create and maintain vibrant, inclusive and well-designed public spaces 2.12 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient urban and natural areas 2.2.1 Regenerate natural systems
CH5B	Review of the Extended Stockton Coastal Management Program.								Newcastle 2040 Plan 1.1.2 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.3 Support climate change adaptation by building resilient urban and natural areas 4.3.3 Data-driven decisions & insights
Complementary Coastal Hazard Action [CH] - Development controls									
CH6A	Investigate mapping a Coastal Vulnerability Area (CVA) in the Resilience and Hazard SEPP, for Stockton based on coastal hazard projection mapping in consultation with Port Stephens Council, NSW public agencies and the community.	No	Yes - aligns with Object H	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.	Yes - this is practical. Aligns with actions within the Local Strategic Planning Statement	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.2 Well-designed places 2.1.3 Support climate change adaptation by building resilient urban and natural areas 4.3.3 Data-driven decisions & insights

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CH6B	Investigate the preparation of specific coastal hazard planning controls, consistent with any future CVA, for Stockton and incorporate into the Newcastle LEP and DCP, in consultation with Port Stephens Council.	Yes - wording changed	Yes - aligns with Object H	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.	Yes - this is practical. Aligns with actions within the Local Strategic Planning Statement	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.2 Well-designed places 2.1.3 Support climate change adaptation by building resilient urban and natural areas 4.3.3 Data-driven decisions & insights
CH6C	Review planning certificates and ensure they are updated in line with existing policies and best practice for properties affected by current and future coastal hazards.	No	Yes - aligns with Object H & I	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.2 Well-designed places 2.1.3 Support climate change adaptation by building resilient urban and natural areas 4.3.3 Data-driven decisions & insights
CH6D	Consider impacts of current and future coastal hazards when renewing, designing or constructing public assets/ properties.	No	Yes - aligns with Object H & I	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.2 Well-designed places 2.1.3 Support climate change adaptation by building resilient urban and natural areas 4.3.3 Data-driven decisions & insights
Complementary Coastal Hazard Action [CH] - Emergency works									
CH7A	Undertake emergency works to manage beach erosion before, during and after storm events, in accordance with the Stockton CZEAS in Appendix B.	No	Yes - aligns with Object F	No misalignment noted	2a) Short-term objective - Protect critical infrastructure at risk from immediate coastal hazards. 2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - this is practical, however, there is a need for secondary emergency response to phase to reinstate beach accessways and other areas once these are made safe to do so.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 2.1.3 Support climate change adaptation by building resilient urban and natural areas
CH7B	Review Emergency Operational Plan after each major event, or annually.	No	Yes - aligns with Object F	Yes but there is a need to alignment with relevant state storm emergency subplans.	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards .	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 2.1.3 Support climate change adaptation by building resilient urban and natural areas

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CH7C	Develop a Trigger Action Response Plan (TARP) for coastal inundation in consultation with SES and other relevant stakeholders.	Yes	Yes - aligns with Object H	No misalignment noted	2d) Medium term objective - Coastal hazard responses incorporated into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 2.1.3 Support climate change adaptation by building resilient urban and natural areas
Complementary Coastal Hazard Action [CH] - Knowledge creation/transfer									
CH8A	Establish an expert panel, including emergency management personnel, to advise CN on coastal management matters.	No	Yes - aligns with Object F	Yes, there is a need to alignment with relevant state emergency plans.	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards. 2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas
CH8B	Update and enhance CN's website with coastal management program information, including coastal processes and hazards, emergency management and on-ground works.	No	Yes - aligns with Object H	No misalignment noted	2a) Short term objective - Protect critical infrastructure at risk from immediate coastal hazards . 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 2.1.2 Assess and share our climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 4.2.1 Foster genuine community engagement
Complementary Coastal Hazard Action [CH] - Social and community									
CH9A	Undertake a Social Impact Assessment (SIA) to identify, predict and evaluate the likely social impacts of the Extended Stockton CMP, against baseline conditions, and propose proportionate project responses.	Yes	Yes - aligns with Object H	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective. This work will better qualify and respond to the social and community impacts of coastal hazards management	Newcastle 2040 Plan 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 3.3.3 Promote and support active and healthy communities 4.3.3 Data-driven decision-making and insights

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CH9B	Develop and deliver a staged social resilience engagement and education program with the Stockton community and invested stakeholders. Informed by the above SIA (CH9A) and a trauma-informed methodology.	Yes	Yes - aligns with Object H	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective. This work will better qualify and respond to the social and community impacts of coastal hazards management	Newcastle 2040 Plan 2.1.2 Assess and share climate risk 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 3.3.3 Promote and support active and healthy communities 4.3.3 Data-driven decision-making and insights
Coastal Use [CU] - Beach access - Pre mass nourishment									
CU1A	Undertake an audit of beach access points to assess and address public safety issues and erosion potential after each weather event.	No	Yes - aligns with Object B	No misalignment noted	3c) Short term objective - Maintain existing authorised public access along the beach as conditions allow.	Yes - inspection and management of beach access assets is a practical measure for Council.	Yes - no unacceptable adverse impacts.	Yes - this is an effective way to improve management of beach accesses.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 3.3.3 Promote and support active and healthy communities
CU1B	Utilise a place-making approach, in the preparation of a Public Domain Plan for the Stockton coastal area. The Public Domain Plan will build upon the Newcastle Coastal Revitalisation Strategy Master Plan and incorporate recommended planning controls and initiatives, to improve beach access, once mass nourishment is delivered.	Yes	Yes - aligns with Object B	No misalignment noted	3g) Medium term objective - Improved public access to and along the beach.	Yes - public domain planning is standard practice for local government.	Yes - public domain planning done in consultation with land managers and stakeholders is expected to be acceptable	Yes - appropriate planning will lead to improved coastal environmental outcomes.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
CU1C	Retain Corroba Oval as a local level facility from a hazard exposure perspective.	Yes	Yes - aligns with Object B	No misalignment noted	2d) Medium term objective - Incorporate coastal hazard responses into land use and asset planning. 2f) Long term objective - Plans and strategies in place to improve the resilience of the community to the impacts of an uncertain climate future including impacts of extreme storm events.	Yes - continuation of existing land use.	Yes - continued use of the site as a sporting oval is expected to be acceptable.	Yes - not allowing a change of land use will reduce exposure to coastal hazards in the future.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 3.3.3 Promote and support active and healthy communities

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CU1D	Restrict illegal vehicles, including four wheel drives, trail bikes and all terrain vehicles, from Hunter Water, DHA and DCJ land.	Yes	Yes - aligns with Object B	No misalignment noted	1d) Short term action - Address activities that degrade the quality of the coastal environment.	Yes - fencing of inappropriate access tracks (and related works) is within respective landholders capabilities.	Yes - removal of inappropriate access improves coastal environment. 4WD users re-directed to legally accessible locations subject to relevant permits.	Yes - appropriate intervention methods will lead to improved coastal environmental outcomes.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
Coastal Use [CU] Beach Access - Post mass sand nourishment									
CU1E	Undertake investigations into the feasibility of improving beach accessibility in the Stockton CMP area. This may be through beach matting, beach wheelchairs for hire and other measures.	Yes	Yes - aligns with Object B	No misalignment noted	3d) Short term objective - Investigate opportunities to improve public access to and along the beach. 3g) Medium term objective - Improved public access to and along the beach. 3h) Long term objective - As appropriate, equitable access to the beach with effective links between developments.	Yes - Council can use these studies to inform societal needs.	Yes - positive societal impact improving beach accessibility.	Yes - outcomes of the study will provide recommendations on whether Stockton is suitable for this type of accessibility upgrade.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
CU1F	Design and construct new access ways, as identified from public domain planning, including reinstating access over the existing seawalls post mass nourishment.	No	Yes - aligns with Object B	No misalignment noted	3d) Short term objective - Investigate opportunities to improve public access to and along the beach. 3g) Medium term objective - Improved public access to and along the beach. 3h) Long term objective - As appropriate, equitable access to the beach with effective links between developments.	Yes - outcomes from the planning exercise should be implemented where funding allows.	Yes - no unacceptable adverse impacts, and positive societal impact improving beach access.	Yes - this is an effective way to improve access and promote the amenity improvements from mass nourishment.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems 3.3.3 Promote and support active and healthy communities
CU1G	Investigate with the view to provide improved pedestrian beach access and carparking along the northern boundary of Corroba Oval, through the development of the Corroba Oval Master Plan.	Yes	Yes - aligns with Object B	No misalignment noted	3d) Short term objective - Investigate opportunities to improve public access to and along the beach. 3g) Medium term objective - Improved public access to and along the beach. 3h) Long term objective - As appropriate, equitable access to the beach with effective links between developments.	Yes - Ongoing master planning can be used to progress this action.	Yes - no unacceptable adverse impacts, and positive societal impact improving beach access.	Yes - masterplans are an effective process that Council uses to capture and progress this type of action.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 3.3.3 Promote and support active and healthy communities

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CU1H	Support public authority landholders and ensure consultation/engagement with the Worimi Conservation Lands Board of Management with any investigations into future ownership and linkages of beachfront land, to enable continuous public pedestrian access to and along Stockton Beach to the Worimi Conservation Lands.	Yes	Yes - aligns with Object B	No misalignment noted	3f) Medium term objective - Identify spaces that can be transitioned to conversation areas and rehabilitated. 3g) Medium term objective - Improved public access to and along the beach.. 3h) Long term objective - As appropriate, equitable access to the beach with effective links between developments.	Yes - actions from these strategies should be pursued.	Yes - no unacceptable adverse impacts, and positive societal impact improving beach access linkages.	Yes - if incorporated into these plans they are an effective measure to progress the action.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 3.3.3 Promote and support active and healthy communities
CU1I	Require that landholders north of Corroba Oval identify how public pedestrian access will be provided to the beach within all future planning proposals and how other vehicles and other motorised access will be restricted.	Yes	Yes - aligns with Object B	No misalignment noted	3f) Medium term objective - Identify spaces that can be transitioned to conversation areas and rehabilitated. 3g) Medium term objective - Improved public access to and along the beach. 3h) Long term objective - As appropriate, equitable access to the beach with effective links between developments.	Yes - this existing DCP action should be implemented. This is in alignment with the Newcastle DCP 2012 6.15 and the Fern Bay and Stockton North Strategy.	Yes - no unacceptable adverse impacts, and positive societal impact improving beach access.	Yes - investigations progress towards ultimate objective, to improve beach access.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 3.3.3 Promote and support active and healthy communities
Coastal Environment [CE] - Vegetation management									
CE1A	Undertake dune vegetation maintenance program and continue dune rehabilitation works, in accordance with best practice, including invasive species control and the replanting of native colonising species.	Yes	Yes - aligns with Object A	No misalignment noted	1b) Short term objective - Protect biodiversity values of the beach, dune and heath land. 1c) Short term objective - Identify environmental risks and controls needed. 1d) Short term objective - Address activities that degrade the quality of the coastal environment. 1e) Medium term objective - Improve the biodiversity values of natural assets. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.	Yes - dune vegetation management is practical to undertake.	Yes - this is a preferred short-term management option for stakeholders.	Yes - dune vegetation management is an effective action to maintain and improve condition of coastal dunes.	Newcastle 2040 Plan 2.2.1 Regenerate natural systems

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CE1B	Include landscaping with native provenance species in public domain works along the coastal section of the Stockton CMP area.	No	Yes - aligns with Object A	No misalignment noted	1b) Short term objective - Protect biodiversity values of the beach, dune and heath land. 1e) Medium term objective - Improve the biodiversity values of natural assets. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.	Yes - landscaping with native species is practical to undertake.	Yes - this is a preferred short-term management option for stakeholders.	Yes - landscaping with native species is an effective action to improve conditions of coastal dunes.	Newcastle 2040 Plan 1.1.1 Create and maintain vibrant, inclusive and well-designed public spaces 2.2.1 Regenerate natural systems
CE1C	Provide support and assistance to Landcare volunteers when revegetation activities are undertaken in the Stockton CMP area.	No	Yes - aligns with Object A	No misalignment noted	1b) Short term objective - Protect biodiversity values of the beach, dune and heath land. 1e) Medium term objective - Improve the biodiversity values of natural assets. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.	Yes - supporting Landcare is a practical measure.	Yes.	Yes - Landcare in dune systems is effective.	Newcastle 2040 Plan 2.2.1 Regenerate natural systems
CE1D	Develop a wrack management protocol that applies to Stockton Beach.	Yes	Yes - aligns with Object A	No misalignment noted	1b) Short term objective - Protect biodiversity values of the beach, dune and heath land. 1e) Medium term objective - Improve the biodiversity values of natural assets. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.	Yes - wrack management is considered practical in the Stockton context.	Yes - expected to be supported by stakeholders and community.	Yes - wrack management is common practice at other locations more effected by wrack than Stockton.	Newcastle 2040 Plan 2.2.1 Regenerate natural systems
Coastal Environment [CE] - Contamination management									
CE2A	Maintain/refurbish as required the temporary seawall and/or incrementally remove landfill material and other contamination on the former Hunter Water treatment plant site.	Yes	Yes - aligns with Object A	No misalignment noted	1a) Short term objective - Manage landfill risk.	Yes - land manager has capacity to undertake these works.	Yes - this intervention will reduce the risk of negative environmental impacts from further erosion.	Yes - this is a preferred option to address landfill risk.	Newcastle 2040 Plan 2.1.3 Support climate change adaptation by building resilient communities and urban and natural areas 2.2.1 Regenerate natural systems

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CE2B	Identify the extent of the contaminated land at the DCJ site and determine and implement a management response.	Yes	Yes - aligns with Object A	No misalignment noted	1a) Short term objective - Manage landfill risk. 1c) Short term objective - Identify environmental risks and controls needed. 1d) Short term objective - Address activities that degrade the quality of the coastal environment.	Yes - land manager has capacity to undertake this investigation.	Yes - this intervention will reduce the risk of negative environmental impacts from further erosion.	Yes - this investigation will provide further information on contaminated land risk	Newcastle 2040 Plan 2.2.1 Regenerate natural systems
CE2C	Conduct on-ground works to manage the historical buried material along the erosion scar of Stockton Beach.	Yes	Yes - aligns with Object A	No misalignment noted	1a) Short term objective - Manage landfill risk. 1d) Short term objective - Address activities that degrade the quality of the coastal environment.	Yes - land manager has capacity to undertake this work.	Yes - this intervention will reduce the risk of negative environmental impacts from further erosion.	Yes - this work will reduce exposure to risks during future storm erosion events.	Newcastle 2040 Plan 2.2.1 Regenerate natural systems
Coastal Environment [CE] - Stormwater management									
CE3A	Incorporate best practice stormwater quantity and quality management and Water Sensitive Urban Design (WSUD) into the design and delivery of capital projects, as well as Public Domain Plans and master plans.	Yes	Yes - aligns with Object A	No misalignment noted	1c) Short term objective - Identify environmental risks and controls needed. 1d) Short term objective - Address activities that degrade the quality of the coastal environment. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.	Yes - land manager has capacity to undertake this work.	Yes - this intervention will reduce the risk of negative environmental impacts	Yes - this intervention will reduce negative impacts from urban stormwater to the environment and align CMP actions with stormwater drainage service delivery	Newcastle 2040 Plan 2.2.3 Support the transition to a water-sensitive city
CE3B	Prepare overarching stormwater management plans for critical sub catchments (those in the vicinity of coastal protection structures) that consider whole of catchment management, including drainage asset condition, catchment modelling, and related low lying land studies.	Yes	Yes - aligns with Object A	No misalignment noted	1c) Short term objective - Identify environmental risks and controls needed. 1d) Short term objective - Address activities that degrade the quality of the coastal environment. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.	Yes - CN has capacity to undertake this work.	Yes - this long term planning will best manage the risk of flooding and environmental impacts	Yes - it will integrate the stormwater management aspects of individual projects and maintenance services and practically support 'at source' (as opposed to 'end of pipe') stormwater management.	Newcastle 2040 Plan 2.2.3 Support the transition to a water-sensitive city

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Coastal Environment [CE] - Environmental monitoring									
CE4A	Continue to monitor dune health and implement recommendations of monitoring program, improving the health of the dune system.	Yes	Yes - aligns with Object A	No misalignment noted	1c) Short term objective - Identify environmental risks and controls needed. 1d) Short term objective - Address activities that degrade the quality of the coastal environment. 1e) Medium term objective - Progressively improve the biodiversity values of natural assets. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles.	Yes - CN has capacity to undertake this work.	Yes - this long term planning will reduce the risk of flooding and coastal inundation risk.	Yes - this work will be expected to lead to an improved coastal environment.	Newcastle 2040 Plan 2.2.1 Regenerate natural systems 4.3.2 Encourage innovation and continuous improvement 4.3.3 Data-driven decision-making and insights
CE4B	Build capacity for community volunteers to undertake citizen science environmental monitoring	Yes	Yes - aligns with Object A	No misalignment noted	1c) Short term objective - Identify environmental risks and controls needed. 1d) Short term objective - Address activities that degrade the quality of the coastal environment. 1e) Medium term objective - Improve the biodiversity values of natural assets. 1g) Long term objective - Enhance the coastal environment and be consistent with Ecologically Sustainable Development (ESD) principles. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - CN can assist in building the capacity in the community.	Yes - citizen science, monitoring and participation in coastal management is expected to be acceptable.	Yes - citizen science, monitoring and participation in coastal management is expected to lead to an improved coastal environment and coastal use.	Newcastle 2040 Plan 2.2.1 Regenerate natural systems 4.3.2 Encourage innovation and continuous improvement 4.2.1 Foster genuine community engagement 4.3.3 Encourage innovation and continuous improvement
Culture and heritage [H]									
H1	Facilitate the engagement with Traditional Custodians on how they would like to be involved in the implementation of the sand nourishment strategy and additional CMP actions. .	Yes	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion 4.2.1 Foster genuine community engagement

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H2	Develop an Unexpected Finds Protocol which considers Aboriginal cultural heritage, environmental heritage and maritime heritage.	Yes	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - already underway.	Yes - this is acceptable.	Yes - will give greater certainty to identification of significant sites and triggers for Aboriginal Heritage Impact Permits where required	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion
H3	Incorporate Aboriginal cultural information and due diligence into CN projects and works, including the assessment of development applications and heritage interpretations.	No	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion 4.2.1 Foster genuine community engagement
H4	In consultation with Traditional Custodians, investigate and appropriately manage remnant Aboriginal heritage materials discovered on public lands.	YES	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion 4.2.1 Foster genuine community engagement
H5	Build awareness of Aboriginal cultural values and sensitivities within CN staff, in relation to coastal management.	YES	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion 4.2.1 Foster genuine community engagement

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H6	Implement dual naming of sites within the Stockton CMP area, where appropriate.	No	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion
H7	Support the continuation of cultural practices undertaken by Aboriginal people, including the sharing of those practices with others, in Stockton.	Yes	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion 4.2.1 Foster genuine community engagement
H8	Support Aboriginal Place applications at Stockton.	Yes	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion
H9	Explore opportunities for whale carcass management to incorporate Indigenous cultural protocols.	Yes	Yes - aligns with Object C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion 4.2.1 Foster genuine community engagement

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H10	Explore opportunities for the recognition and interpretation of heritage items and places, including archaeological sites and maritime heritage, in CN projects and works within the Stockton CMP area.	No	Yes - aligns with Object B, C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protect and celebrate Newcastle's heritage 3.3.2 Celebrate diversity and champion inclusion 4.2.1 Foster genuine community engagement
H11	Integrate the consideration of cultural history and heritage including, heritage items, archaeological sites, historic shipwrecks and other maritime heritage within the Stockton CMP area into Public Domain Plans.	No	Yes - aligns with Object B, C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protected heritage places 3.3.1 Support strong social and cultural connections 3.3.2 celebrate diversity and champion inclusion
H12	Investigate and appropriately manage heritage items, archaeological sites and maritime heritage (including underwater cultural heritage, historic shipwrecks and associated relics) on public lands, under threat from coastal hazards.	No	Yes - aligns with Object B, C	No misalignment noted	4a) Manage known European and Aboriginal heritage items. 4b) Support the identification and management of cultural heritage. 4c) Improved acknowledgement of Worimi people's spiritual, social and customary importance of the Stockton coastal zone. 4d) Support the community's social and cultural connections and values of the coastal zone.	Yes - this is practical.	Yes - this is acceptable.	Yes - this is effective.	Newcastle 2040 Plan 1.1.3 Protected heritage places 3.3.1 Support strong social and cultural connections 3.3.2 celebrate diversity and champion inclusion

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