



## Appendix C

Port Stephens Coastal Zone  
Emergency Action Subplan



**PORT STEPHENS**  
COUNCIL



# Port Stephens Coastal Zone Emergency Action Subplan

## Contact Information

### Rhelt Pty Ltd

ABN : 55 616 964 517

50 Yeo Street

Neutral Bay NSW 2089

Australia

### Lead Author:

Michael Rosenthal

[Michael.rosenthal@rhelm.com.au](mailto:Michael.rosenthal@rhelm.com.au)

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## Acknowledgements

### *Acknowledgement of Traditional Owners*

We acknowledge the Worimi as the original Custodians and inhabitants of Port Stephens.

May we walk the road to tomorrow with mutual respect and admiration as we care for the beautiful land and waterways together.

### *Acknowledgement of Financial Assistance*

Port Stephens Council has prepared this document with financial assistance from the NSW Government through its Coastal and Estuary Grants Program. This document does not necessarily represent the opinions of the NSW Government or the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW).



## Glossary and Abbreviations<sup>1</sup>

Term / Abbreviation	Description
<b>AHD</b>	Australian Height Datum
<b>AHIP</b>	Aboriginal Heritage Impact Permit
<b>Average recurrence interval (ARI)</b>	The long-term average number of years between the occurrence of an event of a specified magnitude. ARI is another way of expressing the likelihood of occurrence of an event.
<b>Asset</b>	Something of value and may be a natural or built asset of economic, social, recreational or environmental value.
<b>Beach erosion</b>	Landward movement of the shoreline and/or a reduction in beach volume, usually associated with storm events or a series of events, which occurs within the beach fluctuation zone. Beach erosion occurs due to one or more process drivers; wind, waves, tides, currents, ocean water level, and downslope movement of material due to gravity.
<b>Bureau</b>	Bureau of Meteorology
<b>CM Act</b>	NSW <i>Coastal Management Act 2016</i>
<b>CMP</b>	Coastal Management Program
<b>Coastal hazard</b>	Coastal hazards, as defined in clause 4(1) of the CM Act, include: <ul style="list-style-type: none"> <li>• Beach erosion</li> <li>• Shoreline recession</li> <li>• Coastal lake or watercourse entrance instability</li> <li>• Coastal inundation</li> <li>• Coastal cliff or slope instability</li> <li>• Tidal inundation</li> <li>• Erosion and inundation of foreshores caused by tidal waters and the action of waves, including the interaction of those waters with catchment floodwaters.</li> </ul>
<b>Coastal inundation</b>	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 run-up and overtopping of natural or built shoreline structures (e.g. dunes, seawalls).
<b>Coastal processes</b>	Coastal processes are the set of mechanisms that operate at the land-water interface. These processes incorporate sediment transport and are governed by factors such as tide, wave and wind energy.
<b>Coastal protection works</b>	In accordance with clause 4(1) of the CM Act and clause 2.16 of the Resilience and Hazards SEPP: <ul style="list-style-type: none"> <li>• beach nourishment activities or works, and</li> <li>• 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.</li> </ul>
<b>Coastal zone</b>	The coastal zone, as defined in clause 4(1) of the CM Act, means the area of land comprised of the following coastal management areas: <ul style="list-style-type: none"> <li>• the coastal wetlands and littoral rainforests area,</li> <li>• the coastal vulnerability area,</li> <li>• the coastal environment area,</li> </ul>

<sup>1</sup> Where possible, definitions have been taken from the Coastal Management Glossary (OEH, 2018a).

Term / Abbreviation	Description
	<ul style="list-style-type: none"> <li>the coastal use area.</li> </ul>
<b>CVA</b>	Coastal Vulnerability Area
<b>CZEAS</b>	Coastal Zone Emergency Action Subplan
<b>DCCEEW</b>	NSW Department of Climate Change, Energy, the Environment and Water
<b>DPE</b>	Former NSW Department of Planning and the Environment, now split into DPHI and DCCEEW
<b>DPHI</b>	NSW Department of Planning, Housing and Infrastructure
<b>DPIE</b>	Former NSW Department of Planning, Industry and Environment
<b>Emergency coastal protection works</b>	As defined in clause 2.16(4) of the Resilience and Hazards SEPP, means 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.
<b>EMPLAN</b>	Emergency Management Plan
<b>EP&amp;A Act</b>	NSW <i>Environmental Planning and Assessment Act 1979</i>
<b>Estuary</b>	Clause 4(1) of the CM Act defines an estuary 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.
<b>Foreshore</b>	The part of the shore, lying between the crest of the seaward berm (or upper limit of wave wash at high tide) and the ordinary low water mark, that is ordinarily traversed by the uprush and backrush of the waves as the tides rise and fall; or the beach face, the portion of the shore extending from the low water line up to the limit of wave uprush at high tide. The CM Act defines the foreshore as ‘the area of land between highest astronomical tide and the lowest astronomical tide’.
<b>Flood</b>	A general and temporary condition of partial or complete inundation of normally dry land areas, including inundation as a result of sea/ocean storms and other coastal processes or catchment flows.
<b>FM Act</b>	NSW <i>Fisheries Management Act 1994</i>
<b>High tide</b>	The maximum height reached by a rising tide. The high water is due to the periodic tidal forces and the effects of meteorological, hydrologic, and/or oceanographic conditions.
<b>Highest Astronomical Tide (HAT)</b>	<p>The highest level which can be predicted to occur under average meteorological conditions and any combination of astronomical conditions. In Australia HAT is calculated as the highest level from tide predictions over the tidal datum epoch (TDE), this is currently set to 1992 to 2011.</p> <p>The HAT and the Lowest Astronomical Tide (LAT) levels will not be reached every year. LAT and HAT are not the extreme water levels which can be reached, as storm surges may cause considerably higher and lower levels to occur.</p>
<b>km<sup>2</sup></b>	Square kilometres
<b>LEOCON</b>	Local Emergency Operations Controller
<b>LEMC</b>	Local Emergency Management Committee
<b>LEMO</b>	Local Emergency Management Officer
<b>LALC</b>	Local Aboriginal Land Council
<b>LGA</b>	Local Government Area
<b>LG Act</b>	NSW <i>Local Government Act 1993</i>
<b>m<sup>2</sup></b>	Square metres
<b>m<sup>3</sup></b>	Cubic metres

Term / Abbreviation	Description
<b>MHWM</b>	Mean High Water Mark
<b>NPWS</b>	NSW National Parks and Wildlife Service
<b>NP&amp;W Act</b>	NSW <i>National Parks and Wildlife Act 1974</i>
<b>NSW</b>	New South Wales
<b>NSW SES</b>	NSW State Emergency Service
<b>OEH</b>	Former NSW Office of Environment and Heritage
<b>PSC</b>	Port Stephens Council
<b>Resilience and Hazards SEPP</b>	State Environmental Planning Policy (Resilience and Hazards) 2021
<b>Revetment or seawall</b>	A type of coastal protection work which protects assets from beach erosion by armouring the shore with erosion-resistant material. Large rocks/boulders, concrete or other hard materials are used, depending on the specific design requirements.
<b>RTK</b>	Real Time Kinematic survey
<b>SEPP</b>	State Environmental Planning Policy
<b>SERM Act</b>	NSW <i>State Emergency and Rescue Management Act 1989</i>
<b>Shoreline</b>	The intersection between the sea and the land. The line delineating the shoreline is often approximated as the Mean High Water Mark (MHWM), however, the definition can vary depending on the application.
<b>SLSC</b>	Surf Life Saving Club
<b>Storm bite</b>	The landward limit of erosion in the dune system caused by storm waves. At the end of a storm the escarpment may be nearly vertical; as it dries out the sand slumps to a typical slope of one vertical to 1.5 horizontal.
<b>Storm tide</b>	An abnormally high water level that occurs when a storm surge combines with a high astronomical tide. The storm tide must be accurately predicted to determine the extent of coastal inundation.
<b>SWW</b>	Severe Weather Warning
<b>TfNSW</b>	Transport for NSW
<b>Tidal inundation</b>	The inundation of land by tidal action under average meteorological conditions and the incursion of sea water onto low lying land that is not normally inundated, during a high sea level event such as a king tide or due to longer-term sea level rise. For planning controls, it is defined as the land that is inundated up to the level of HAT.
<b>Wave overtopping</b>	Occurs when water from waves wash over the dune berm or foreshore structure causing flooding, damage to coastal defences, erosion behind structures, and can pose risks to public safety.
<b>Wave run-up</b>	The vertical distance above mean water level reached by the uprush of water from waves across a beach or up a structure.

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## 1 Introduction

Port Stephens Council (PSC or Council), with the assistance of NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW), have prepared this Coastal Zone Emergency Action Subplan (CZEAS) as part of the Port Stephens Coastal Management Program (CMP) (Rhelm, 2024). This CZEAS applies to the locations within the CMP study area identified as being at risk from coastal hazards, as listed in **Section 3** of this document.

This CZEAS has been prepared in accordance with:

- Clause 15(3) of the NSW *Coastal Management Act 2016* (CM Act), which requires that a CZEAS be prepared as part of a CMP;
- Mandatory requirement 11 of the NSW Coastal Management Manual (OEH, 2018b); and
- The Guideline for preparing a coastal zone emergency action subplan (DPIE, 2019), referred to herein as ‘the Guideline’.

As required by Clause 15(3) of the CM Act and detailed in the Guideline (DPIE, 2019), this CZEAS:

- Defines coastal emergency event triggers for emergency response actions (**Section 2**);
- Identifies the locations at risk that may be affected by beach erosion or coastal inundation that would constitute a coastal emergency (**Section 3**);
- Outlines the roles and responsibilities of all public authorities, including Council, and coordinates their response to emergencies immediately preceding or during periods of beach erosion or coastal inundation (**Section 4**);
- Describes the communication protocol for coastal emergency events (**Section 5**);
- Outlines emergency response action plans to be undertaken in the four phases of emergency management, including the locations and types of works that may be undertaken for the protection of property and assets (**Section 6**); and
- Informs 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 (**Section 6**).

### 1.1 Purpose and Objectives

In accordance with the Guideline (DPIE, 2019), the purpose of this CZEAS is to identify and facilitate the implementation of appropriate emergency response actions in order to:

- Protect human life and public safety;
- Minimise damage to Council property and assets;
- Minimise impacts on social environmental and economic values of the coastal zone; and
- Not create additional hazards or risk.

As specified in the CM Act, a CZEAS outlines the roles and responsibilities of all public authorities (including the local council) in response to coastal emergency events. These are events relating to storm activity or an extreme or irregular event that causes:

- Beach erosion; or
- Coastal inundation.

The Port Stephens coastal zone is subject to coastal hazards of coastal erosion and coastal inundation. Cliff instability has not been evaluated for the Port Stephens coastal zone and therefore is not considered herein.

Other coastal hazards identified in the CM Act (coastal lake or watercourse entrance instability and tidal inundation) are outside the scope of this CZEAS (DPIE, 2019). Shoreline recession and tidal inundation have been addressed in the CMP (Rhelm, 2024).

This CZEAS details arrangements for the four emergency phases as illustrated in **Figure 1-1**.



**Figure 1-1** Emergency response in the coastal management context (from DPIE, 2019)

## 1.2 Scope

The CM Act requires that a CZEAS be included in the CMP if the 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 due to storm activity or an extreme or irregular event.

No CVA has been prepared for the Port Stephens coastal zone. However, the coastal planning risk maps provided in Appendix E of the Port Stephens CMP (Rhelm, 2024) take into account the full range of coastal hazards investigated in the CMP Stage Vulnerability Assessments (BMT, 2021), as discussed in detail in the CMP.

As required by the Guideline (DPIE, 2019), a CZEAS prepared under a CMP must not include matters dealt with in any plan made under the *NSW State Emergency and Rescue Management Act 1989* (SERM Act). This CZEAS is consistent with plans prepared under the SERM Act including the State, regional and local Emergency Management Plans (EMPLANS) and subplans, as illustrated in **Figure 1-2**.



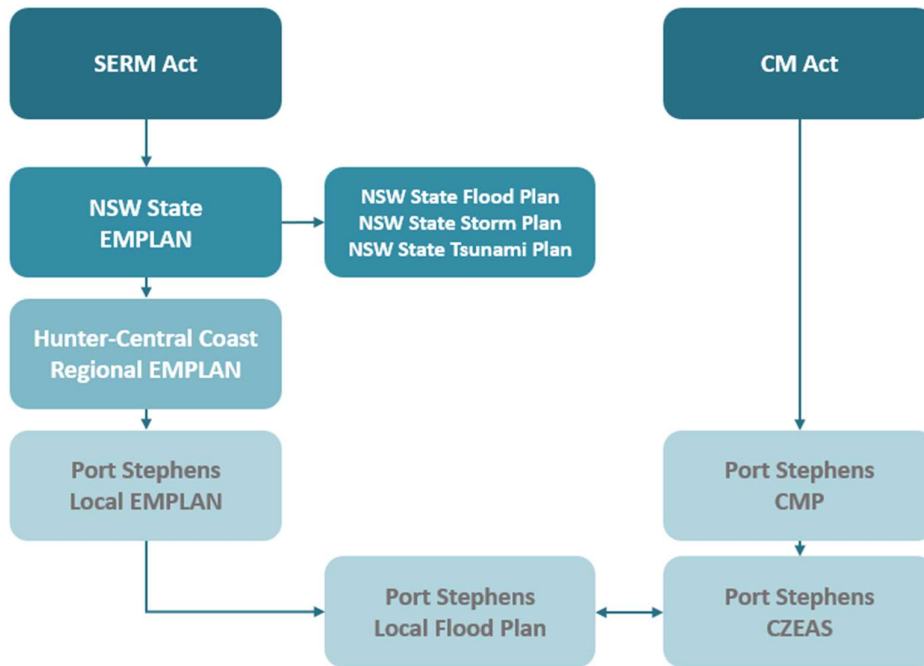


Figure 1-2 Statutory framework for emergency management in NSW and its relationship with the Coastal Management Act 2016 (adapted from DPIE, 2019)

The NSW State Emergency Service (NSW SES) is the designated combat agency for management of floods, tsunami and storms, including severe storms which cause beach erosion. The NSW SES prepares the State Storm Plan, State Flood Plan and State Tsunami Plan, which are subplans to the NSW State EMPLAN. The Emergency Operations Controller has responsibility for operations where no specific combat agency is nominated (DPIE, 2019).

Beach erosion caused by storm activity is within the scope of the NSW State Storm Plan (NSW SES, 2023). Emergency management of all forms of beach erosion is within the scope of this plan.

Flooding is within the scope of the NSW State Flood Plan (NSW SES, 2021) and the Port Stephens Local Flood Plan (NSW SES, 2022), which defines flood as a relatively high-water level which overtops the natural or artificial banks in any part of a stream, river, estuary, lake, or dam, and/or local overland flooding associated with drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves (including tsunami) overtopping coastline defences.

### 1.3 Consultation

Agencies other than Council involved in the implementation of this CZEAS, such as NSW DCCEEW, DPHI, NSW SES, and members of the Port Stephens CMP Stakeholder Reference Group were provided a copy of the draft CZEAS for review and comment. Their responses have been incorporated into the final draft version of this document. The final draft will be placed on public exhibition. Feedback from the public exhibition will be considered in the finalisation of the CZEAS.

## 2 Coastal Emergency Event Triggers

*This section defines a coastal emergency and triggers for emergency response actions.*

For the purposes of this CZEAS a coastal emergency event within the Port Stephens coastal zone is occurring when one or more of the below triggers are realised:

- When a public authority advises of a significant weather event that could impact any of the locations at risk identified in **Section 3**; that is, the Bureau of Meteorology (Bureau) has issued a Severe Weather Warning (SWW) for potentially hazardous or dangerous weather that covers the Port Stephens coastline (e.g. Hunter Region);
- Storm bite is occurring, or is expected to occur, at key locations identified as being at risk of beach erosion in **Section 3.1**, and has potential to adversely impact (or is already impacting) public or private assets and/or public safety and access; and/or
- Elevated water levels associated with a coastal storm (including wave run-up) is occurring or is expected to occur at the key locations identified as being at risk of coastal inundation in **Section 3.2**, with potential to impact (or already be impacting) public safety and access and/or public or private assets.

When identifying triggers for emergency erosion protection works (sand container placement and beach scraping), a balance needs to be found between predicted storm bite in large storm events and avoiding the triggers being reached too often, resulting in ‘false alarms’ where emergency erosion protection works are implemented unnecessarily as the thresholds for emergency response described in **Section 6** are not reached.

All definitions relevant to the triggers are in the Glossary, however key definitions are repeated below for ease of reference:

- **Severe Weather Warning (SWW):** The Bureau provides SWWs for potentially hazardous or dangerous weather, defined as follows (Bureau of Meteorology, 2023):
  - Sustained winds of gale force (63 km/h) or more,
  - Wind gusts of 90 km/h or more,
  - Very heavy rain that may lead to flash flooding,
  - Abnormally high tides (or storm tides) expected to exceed Highest Astronomical Tide (HAT),
  - Unusually large surf waves expected to cause dangerous conditions on the coast.
- **Storm bite:** The landward limit of erosion in the dune system caused by storm waves. At the end of a storm, the escarpment (storm bite) may be nearly vertical. As it dries out the sand slumps to a typical slope of 1 vertical to 1.5 horizontal.
- **Coastal inundation:** Coastal inundation occurs when a combination of marine and atmospheric processes increases the water level at the coast above normal elevations, causing land that is usually ‘dry’ to become inundated by sea water. The elevated water level may result in wave run-up and overtopping of natural or built shoreline structures (e.g. dunes, seawalls).
- **Wave run-up:** The vertical distance above mean water level reached by the uprush of water from waves across a beach or up a structure.
- **Wave overtopping:** Occurs when water from waves wash over the dune berm or foreshore structure causing flooding, damage to coastal defences, erosion behind structures, and risks to public safety.

Once a coastal emergency event is triggered, Council will activate this CZEAS and follow the actions detailed in the emergency response action plans for locations at risk (**Section 6**).

NSW SES Local Flood Emergency Sub Plans and the NSW State Storm Plan do not require activation. The arrangements set out in the plans are always active. NSW SES response operations for storms including coastal erosion can begin with the following:

- Receipt of an Australian Government Bureau of Meteorology warning such as a SWW for hail, flash flooding, damaging surf or a Tropical Cyclone Watch or Warning
- NSW SES response operations may begin prior to, during or following impact of a storm not covered by a formal warning (clause 5.1.1, page 16, NSW State Storm Emergency Sub Plan (2023)).

### 3 Locations at Risk

*This section identifies the locations that may be affected by beach erosion or coastal inundation that would constitute a coastal emergency event. Location names are consistent with the Port Stephens Local EMPLAN (PSC, 2022a) and Council’s asset register, reflecting suburb names.*

This CZEAS only applies to the known locations affected by beach erosion or coastal inundation, as described in this section. As discussed in **Section 6.23** this also includes parts of the coastal zone where there are known Aboriginal cultural heritage sites, or a high likelihood of occurrence of such sites.

It is possible that beach erosion or coastal inundation may also affect other locations within the Port Stephens coastal zone not addressed in this CZEAS. Should this be the case, Council should revise this Plan to include the newly identified locations at risk as the need arises.

#### 3.1 Beach Erosion

The locations subject to beach erosion risk within the Port Stephens coastal zone were identified based on review of beach erosion hazard mapping presented in the CMP Stage 2 (BMT, 2021) and has been informed by discussions with Council, combat agencies and DCCEEW.

There are seven locations within the Port Stephens coastal zone where there is a risk of beach erosion (refer **Table 3-1**). In addition to these specific locations, there are known Aboriginal cultural heritage sites and Aboriginal Places throughout the coastal zone that may be at risk from beach erosion, in addition to which there is high potential for previously unidentified archaeological and other culturally significant sites in the coastal zone.

Maps showing the locations listed in **Table 3-1** are presented in **Section 6**.

**Table 3-1 Locations at Risk of Beach Erosion**

Location	Description
<b>Shoal Bay (Section 6.5)</b>	Where Shoal Bay Road is closest to the shoreline (between Beach Road and Shoal Bay Avenue) the width of dune protecting the road from potential beach erosion is relatively narrow. Although there is no beach erosion hazard mapping available for Shoal Bay to establish the level of risk to the road, the potential risk to the road is considered unacceptable due to the critical role Shoal Bay Road plays as the sole access to Shoal Bay and Fingal Bay. There is also a known ongoing issue with beach erosion adversely impacting beach accessways and stairs within Shoal Bay.
<b>Corlette (Section 6.7)</b>	Based on historical observations, Sandy Point and Conroy Park are considered to be potentially exposed to beach erosion, with existing protection works present. Although there is no beach erosion hazard mapping available for Corlette to establish the level of risk, the potential risk associated with a failure of the existing protection is considered unacceptable. Emergency protection works are not included in this CZEAS for this area because the CMP includes actions <i>CH022 - Progress investigations, detailed design and costings for priority options from the Whitehead and Assoc. (2015) Management Plan for Sandy Point/Conroy Park, namely to demolish existing structures and construct new coastal protection works in Precinct 3, 4 and 5. and CH023 - Undertake maintenance works / repairs to the existing rock revetment in the CMP.</i> Implementation of these actions would be accelerated should the existing protection display signs of failure.
<b>Salamander Bay (Section 6.8)</b>	The western side of Salamander Bay and the adjacent reserves and private properties are potentially exposed to beach erosion. Although there is no beach erosion hazard mapping available for Salamander Bay to establish the level of risk, the potential risk is considered unacceptable and therefore emergency coastal protection works have been designed for this area.

Location	Description
<b>Soldiers Point (Section 6.9)</b>	The eastern shore of Soldiers Point and the adjacent public open space and private properties are potentially exposed to beach erosion and coastal inundation. Although there is no beach erosion hazard mapping available for Soldiers Point to establish the level of risk, the potential risk is considered unacceptable and therefore emergency coastal protection works have been designed for this area. However, assisted recovery of the beach following a storm event in the form of beach scraping.
<b>Anna Bay (Section 6.20)</b>	Although Birubi Point is subject to beach erosion, the present erosion hazard mapping does not indicate any risk to built assets. Hence, no emergency coastal protection works are considered necessary. However, assisted recovery of the beach following a storm event in the form of beach scraping.
<b>Fingal Bay (Section 6.21)</b>	Although Fingal Beach is subject to beach erosion, the present erosion hazard mapping does not indicate any risk to built assets. Hence, no emergency coastal protection works are considered necessary. However, assisted recovery of the beach following a storm event in the form of beach scraping.
<b>One Mile (Section 6.22)</b>	Although One Mile Beach is subject to beach erosion, the present erosion hazard mapping does not indicate any risk to built assets. Hence, no emergency coastal protection works are considered necessary. However, assisted recovery of the beach following a storm event in the form of beach scraping.
<b>Aboriginal Cultural Heritage Sites (Section 6.23)</b>	There is potential beach erosion risk to known and high potential Aboriginal cultural sites throughout the Port Stephens coastal zone. This includes risks to extensive coastal middens, burial sites and artefacts. The CZEAS applies to Council owned or managed land within the Coastal Environment Area.

### 3.2 Coastal Inundation

The locations within the Port Stephens coastal zone affected by coastal inundation are listed in **Table 3-2**. These locations have been identified based on the coastal inundation hazard mapping provided in the CMP Stage 2 (BMT, 2021).

**Table 3-2 Locations at Risk of Coastal Inundation**

Location	Description
<b>Shoal Bay (Section 6.5)</b>	Parts of Shoal Bay Road are at inundation risk in a 100 year ARI event. Public areas at risk include Marrungbangbaa Reserve and Shoal Bay Foreshore Reserve.
<b>Nelson Bay (Section 6.6)</b>	There is inundation risk in a 20 year ARI event or greater to part of Victoria Parade and Teramby Road. Public areas at risk include Little Beach Reserve, Nelson Bay Beach, Nelson Bay Foreshore Reserve, and Dutchmans Beach Reserve. Council assets at risk include the Nelson Bay Cruise Terminal Kiosk.
<b>Corlette (Section 6.7)</b>	There is inundation risk in a 20 year ARI event or greater to part of Sandy Point Road and Foreshore Drive. Public areas at risk include Bagnalls Beach, Conroy Park, and Carroll Reserve, Roy Wood Reserve. Council assets at risk include the Conroy Park amenities block.
<b>Salamander Bay (Section 6.8)</b>	There is inundation risk to private properties and roads in a 20 year ARI event or greater including Foreshore Drive. Port Stephens Drive, which serves as a key access road to the locality, is also at risk. Public areas at risk include Joe Redman Reserve, Bob Cairns Reserve and George Reserve.

Location	Description
	Council assets at risk include the Bob Cairns Reserve amenities block.
<b>Soldiers Point (Section 6.9)</b>	<p>There is inundation risk to private properties and roads in a 20 year ARI event or greater including the western ends of Resthaven Avenue, Bennett Lane and Brown Avenue.</p> <p>Public areas at risk include Wanda Beach Reserve, Kangaroo Point Reserve, Soldiers Point Foreshore Reserve, Everitt Park, Sunset Beach, Pearson Park, and Marys Beach at Yachett Point Reserve.</p>
<b>Taylors Beach (Section 6.10)</b>	<p>There is inundation risk to private properties and roads in a 20 year ARI event or greater, including Albert Street and Taylors Beach Road, which provides the sole access to Taylors Beach.</p> <p>Public areas at risk include Taylors Beach Foreshore Reserve.</p> <p>Council assets at risk include Taylors Beach Foreshore Reserve amenities block.</p>
<b>Lemon Tree Passage (Section 6.11)</b>	<p>There is inundation risk to private properties and roads in a 20 year ARI event or greater including Meredith Avenue, Shearman Avenue, Mackie Street, Cook Parade, Stanley Street, Cambridge Avenue, Marine Drive, John Parade, Richard Avenue, Short Street, Boyd Avenue, Elaine Avenue, Northumberland Avenue, Elizabeth Avenue and Torpey Avenue. In a 100 year ARI event, Oyster Farm Road, Stanley Street, and Ward Street are also at risk. Lemon Tree Passage Road, the only access into the Tilligerry Peninsula, is also at risk from coastal inundation.</p> <p>Public areas at risk include Rudd Reserve, Kooindah Park, Henderson Park, Koala Reserve Mangrove Boardwalk, Nyrang Reserve, John Parade Reserve, Malvern Reserve, and Gibber Point Reserve.</p> <p>Council assets at risk include the Henderson Park amenities block.</p>
<b>Mallabula (Section 6.12)</b>	There is inundation risk to private properties and roads in a 20 year ARI event or greater including The Parkway, Hart Avenue and Bay Street.
<b>Tanilba Bay (Section 6.13)</b>	<p>There is inundation risk to private properties and roads in a 20 year ARI event or greater including parts of Peace Parade. In a 100 year ARI event, parts of President Poincare Parade, President Wilson Walk, and Swan Street are at risk.</p> <p>Public areas at risk include Caswell Reserve, Tanilba Bay Boardwalk, Peace Park, Foster Park, Tanilba Park, Swan Park, Sunrise Park, Meridian Park, and Sunset Park.</p>
<b>Swan Bay (Section 6.14)</b>	There is inundation risk to private properties and roads in a 20 year ARI event or greater including Waterfront Road, Davis Road, and Swan Bay Road which serves as the only access road to the area.
<b>Karuah (Section 6.15)</b>	<p>There is inundation risk to private properties and roads in a 20 year ARI event or greater including Franklin Street.</p> <p>Public areas at risk include Longworth Park, and Memorial Park.</p> <p>Council assets at risk include Longworth Park Amenities Block.</p>
<b>Salt Ash (Section 6.16)</b>	<p>There is inundation risk to private properties and roads in a 20 year ARI event or greater including Lemon Tree Passage Road, and Marsh Road which serves as the only access road to the properties along it. Other roads at risk include David Drive, Janet Parade, Nelson Bay Road, Oakfield Road, Rookes Road, and Valerie Road.</p> <p>Public areas at risk include Lee Thompson Park Reserve.</p> <p>Council assets at risk include the Salt Ash Community Hall, and the Salt Ash RFS Station, which are both listed as evacuation centres.</p>
<b>Bobs Farm (Section 6.17)</b>	<p>There is inundation risk to private properties and roads in a 20 year ARI event or greater including Cromarty Lane, Fenninghams Island, Marsh Road, Nelson Bay Road, and Upton Lane. Fenninghams Island Road and Cromarty Lane serve as the only access roads to a number of private properties.</p> <p>Public areas at risk include Fenninghams Island Road Reserve.</p>

Location	Description
	Council assets at risk include Bobs Farm Public Hall, which is identified as an evacuation centre.
<b>Fullerton Cove (Section 6.18)</b>	There is inundation risk to private properties and roads in a 20 year ARI event or greater including Fullerton Cove Road, Lorikeet Circuit, and Sugar Glider Way.
<b>Boat Harbour (Section 6.19)</b>	Public areas at risk include Boat Harbour North Headland Reserve and Iluka Reserve.
<b>Anna Bay (Section 6.20)</b>	There is inundation risk to private properties and roads in a 20 year ARI event or greater including Nelson Bay Road, Port Stephens Drive, and Road 493. In a 100 year ARI event, Harris Road is also at risk.  Public areas at risk include Birubi Beach Reserve.
<b>Fingal Bay (Section 6.21)</b>	Public areas at risk include Fingal Bay Foreshore Reserve.
<b>One Mile (Section 6.22)</b>	Public areas at risk include One Mile Beach Reserve.

## 4 Roles and Responsibilities

*This section outlines the roles and responsibilities of all public authorities including Council and coordinates its response to coastal emergency events preceding, during and after periods of beach erosion or coastal inundation.*

**Table 4-1** describes the roles and responsibilities of the relevant agencies and personnel under this CZEAS. The responsibilities of the NSW SES and other agencies including Local Government Councils are described in the NSW State Storm Emergency Sub Plan (NSW SES, 2023) and relevant NSW SES Local Flood Emergency Sub Plans. Some specific responsibilities are expanded upon in **Table 4-1**.

**Table 4-1 Roles and responsibilities**

Agency	Responsibilities
<b>Port Stephens Council</b>	<ul style="list-style-type: none"> <li>• Prepare, maintain and update this CZEAS as necessary and provide the relevant agencies and organisations with a role under this CZEAS with a copy.</li> <li>• Implement the Prevention and Preparation Phase emergency actions prior to a coastal emergency event occurring (<b>Section 6</b>).</li> <li>• In the event of a coastal emergency at a location identified as being at risk from beach erosion or inundation, activate this CZEAS and implement the Response Phase emergency actions for the duration of the coastal emergency event (<b>Section 6</b>).</li> <li>• Implement the Recovery Phase emergency actions following a coastal emergency event (<b>Section 6</b>).</li> <li>• As identified in <b>Section 6</b>, implement (or authorise and coordinate) emergency coastal protection works (including construction of physical works where appropriate) to protect property and public assets from beach erosion and coastal inundation.</li> <li>• Assist the NSW SES with reconnaissance of areas susceptible to beach erosion and/or inundation.</li> <li>• Liaise with the NSW SES Incident Controller to provide advice regarding the need for response actions by the NSW SES, such as evacuations.</li> <li>• At their request, assist the NSW Police, NSW SES, and NSW SES Local Emergency Operations Controller (LEOCON) in dealing with a coastal emergency.</li> <li>• Provide engineering resources required for response and recovery phases.</li> <li>• Provide a range of support to the LEOCON.</li> <li>• Provide back-up radio communications.</li> </ul>
<b>Local Emergency Operations Controller (LEOCON)</b>	<ul style="list-style-type: none"> <li>• Monitor coastal emergency event operations.</li> <li>• Act as the combat/responsible agency in the event of beach erosion that is not caused by storm activity by controlling and coordinating emergency management of the coastal emergency event.</li> <li>• Act as the combat/responsible agency in the event of a landslip (HCCREMC, 2021).</li> <li>• Coordinate support to the NSW SES, if requested to do so.</li> </ul>
<b>Port Stephens Council Local Emergency Management Officer (LEMO)</b>	<ul style="list-style-type: none"> <li>• Provide executive support to the Local Emergency Management Committee (LEMC) and LEOCON in accordance with the Port Stephens Local EMPLAN (PSC, 2022a).</li> </ul>



Agency	Responsibilities
<b>Port Stephens Council Local Emergency Management Committee (LEMC)</b>	<ul style="list-style-type: none"> <li>Port Stephens Local Emergency Management Committee (LEMC) is responsible for plans in relation to the prevention of, preparation for, response to, and recovery from emergencies in the Port Stephens local government area. The LEMC is chaired by the General Manager and is comprised of senior representatives of each emergency service organisation operating in the local government area and a representative of organizations providing services to the functional areas in the local government area (PSC, 2024).</li> </ul>
<b>NSW State Emergency Service</b>	<ul style="list-style-type: none"> <li>NSW State Emergency Service is the combat Agency for Floods, Storms, and Tsunamis. This role includes damage control for coastal erosion and inundation from storm activity.</li> <li>Roles, responsibilities, and actions are outlined in the NSW State Flood Plan, Storm Plan and Tsunami plans.</li> <li>The SES acts as the combat/responsible agency for damage control and the coordination of community evacuation during the following coastal zone emergencies:               <ul style="list-style-type: none"> <li>Flooding (which includes coastal inundation),</li> <li>Storms, and</li> <li>Tsunamis.</li> </ul> </li> <li>Act as the combat/responsible agency in the event of beach erosion that is caused by storm activity (emergency management of beach erosion that is caused by storm activity is within the scope of the NSW State Storm Plan).</li> <li>Carry out required response tasks. These may include:               <ul style="list-style-type: none"> <li>Assist in the collection of flood/coastal inundation and beach erosion information for the development of intelligence,</li> <li>Evacuation,</li> <li>Delivery of warnings,</li> <li>Assist with removal of readily moveable items,</li> <li>Assistance activities as requested by council.</li> </ul> </li> <li>The NSW SES is not responsible for planning or conduct of emergency beach protection works or other physical mitigation works (PSC, 2022a) and as such is not authorised to undertake emergency coastal protection works.</li> </ul>
<b>Ambulance Service of NSW</b>	<ul style="list-style-type: none"> <li>Assist with the evacuation of at-risk communities (in particular elderly and/or infirm people) (PSC, 2022a).</li> </ul>
<b>NSW Police Force</b>	<ul style="list-style-type: none"> <li>Assist the NSW SES with delivery of evacuation warnings and the conduct of evacuations.</li> <li>Conduct road and traffic control operations in conjunction with Council and/or Transport for NSW (TfNSW).</li> <li>Coordinate the registration of evacuees.</li> <li>Secure evacuated areas (PSC, 2022a).</li> </ul>
<b>Fire and Rescue NSW</b>	<ul style="list-style-type: none"> <li>Assist the NSW SES with delivery of evacuation warnings and the conduct of evacuations.</li> <li>Provide equipment for pumping flood water out of buildings and from low-lying areas.</li> <li>Provide back-up radio communications.</li> <li>Assist with clean-up operations, including the hosing of flood affected properties (PSC, 2022a).</li> </ul>

Agency	Responsibilities
<b>Australian Government Bureau of Meteorology</b>	<ul style="list-style-type: none"> <li>• Issue public weather warning products before and during an event for Port Stephens; that is, Severe Thunderstorm Warnings, Severe Weather Warnings, Tropical Cyclone Watches and Tropical Cyclone Warnings (NSW SES, 2023) as well as Flood Watches and Flood Warnings (NSW SES, 2021).</li> </ul>
<b>Marine Rescue NSW Port Stephens</b>	<ul style="list-style-type: none"> <li>• Assist the NSW SES with delivery of evacuation warnings and the conduct of evacuations (PSC, 2022a).</li> </ul>
<b>Surf Life Saving NSW</b>	<ul style="list-style-type: none"> <li>• Assist the NSW SES with the warning and/or evacuation of at-risk communities and flood rescue operations (PSC, 2022b).</li> <li>• Assist Council in closing beaches and foreshore parks to public access during a coastal emergency event.</li> <li>• Implement coastal emergency action plans for Surf Life Saving Clubs (SLSCs).</li> </ul>

## 5 Communication Protocol for Coastal Emergency Events

*This section outlines the communications required before, during and after a coastal emergency event to inform 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.*

Port Stephens Council will provide information about anticipated coastal emergency events to residents near the hazard zones and the SLSCs, holiday parks and nearby businesses through the following mechanisms:

- Provide routine emergency management briefings to Council staff to communicate the strategy outlined in this CZEAS, including coastal emergency event triggers, locations at risk, roles and responsibilities and the emergency response actions, including ensuring they have the capacity to respond.
- Provide emergency management briefings to the public as needed, in particular affected landholders, to communicate the strategy outlined in this CZEAS, including coastal emergency event triggers, locations at risk, roles and responsibilities and the emergency response actions, including what actions a landholder may need to take and any assistance that may be available to them.
- Provide emergency management information (in the form of signage and brochures) at local community centres and at Council offices.
- Coordinate with the NSW SES to issue safety advice to landowners and the community of the likelihood of an impending emergency that would initiate actions under this CZEAS, ensure residents are aware of urgent hazards during emergency events and provide assistance with door-to-door communication as necessary.
- Communicate with relevant NSW State Government agencies if sand nourishment is being pursued.
- For areas with known or potential for Aboriginal cultural sites identified in **Section 6.23**, consult with the Aboriginal community, Local Aboriginal Land Councils (LALCs), Worimi Conservation Lands Board, DCCEEW, NPWS and Heritage NSW prior to any works being undertaken.
- Place barriers and signage at beach accessways and roads that are closed due to beach erosion and/or coastal inundation impacts.
- Provide up-to-date information on Council's website regarding beach and road closures and re-openings.

## 6 Emergency Response Action Plans for Locations at Risk

*This section outlines what actions are to be undertaken in the four phases of emergency management for the Port Stephens coastal zone as a whole and for each of the locations identified as being at risk in this CZEAS. It also identifies the locations and types of works that may be undertaken for the protection of property and assets.*

Council's ability to undertake the actions identified in this CZEAS will be dependent on the availability of resources during emergency events. Actions must not conflict with or impede NSW SES actions. Emergency coastal protection works must not be undertaken during extreme weather unless safe to do so, as emergency actions must not put Council or other agency staff or volunteers at risk.

Some overarching activities that apply to all locations in the Port Stephens coastal zone affected by coastal emergencies are detailed in **Sections 6.1 to 6.4**.

The tables in **Sections 6.5 to 6.23** detail the site-specific coastal emergency actions through the four phases of emergency response which apply to each of the individual locations at risk along the Port Stephens coastal zone.

Actions in this CZEAS aim to reduce risk:

- In areas where Council has chosen not to implement other coastal protection works to reduce the risk from coastal hazards as the level of risk has been evaluated as tolerable or acceptable;
- Where the risk from coastal hazards has not been reduced or eliminated because an agreed action in a CMP has not yet been implemented;
- Where risk from coastal hazards remains after other actions in the CMP have been implemented (i.e. there is a residual risk); and
- When rare and large or unexpected events occur, outside the design criteria or capacity of agreed management actions in the CMP.

### 6.1 Overarching Prevention (Phase 1) Actions

*This section details the Phase 1 preventative actions that apply to all locations at risk from coastal hazards. This includes education and awareness raising (**Section 6.1.1**) as well as monitoring of warnings from the Bureau (**Section 6.1.2**).*

*The locality specific Phase 1 actions, where applicable, are detailed in **Sections 6.5 to 6.23**.*

#### 6.1.1 Education and Awareness Raising

The key education and awareness raising activities relating to coastal emergency preparedness and response include:

- Provision of advice to the community, landholders and the NSW SES about the potential for a coastal emergency event and the types of responses that are permitted and not permitted; and
- Evaluation of the threat to life and property arising from a coastal emergency through publication of the Port Stephens CMP and this CZEAS, as well as education campaigns.

Council is to take primary responsibility for these activities with support from the NSW SES.

### 6.1.2 Monitoring of Forecasts

Council to monitor warnings issued by the Bureau which may impact the area, specifically the SWWs for the Hunter Region and Hunter Coastal Waters Forecast: Seal Rocks to Broken Bay and/or advice provided by agencies.

## 6.2 Overarching Preparatory (Phase 2) Actions

*This section details the Phase 2 preparatory actions that apply to all locations at risk from coastal hazards.*

Phase 2 actions include:

- Obtaining the relevant planning approvals, permits and licences required for activation of the CZEAS under the relevant legislation (**Section 6.2.1**); and
- Resourcing for the CZEAS, including stockpiling of materials for emergency coastal protection works and ensuring availability of plant and equipment for mobilisation during an event (**Section 6.2.2**); and
- Operational procedures and planning (**Section 6.2.3**).

The locality specific Phase 2 actions are detailed in **Sections 6.5 to 6.23**.

### 6.2.1 Planning Approvals

This section of the CZEAS identifies the planning approvals pathway and likely permits and approvals that may be required in order to implement the activities in this CZEAS. Any such permits, approvals or licences would need to be in place to enable implementation of the CZEAS and should be obtained following certification of the CMP.

#### **State Environmental Planning Policy (Resilience and Hazards) 2021 (the Resilience and Hazards SEPP)**

In addition to the CM Act, the main instrument that regulates development in the coastal zone is the Resilience and Hazards SEPP. Clause 2.16(3) of the SEPP provides that development for the purpose of emergency coastal protection works carried out on land in the coastal zone is exempt development if it is carried out by or on behalf of a public authority in accordance with a CZEAS. As per Clause 2.16(4), 'emergency coastal protection works' means '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.'

In the event private landowners would like the ability to undertake emergency coastal protection works in order to protect their property, they would need to obtain development consent from Council under the *Environmental Planning and Assessment Act 1979* (EP&A Act). Other permits and approvals may also be required for the works. No such works have been provided for in this CZEAS.

#### **Landowner Consent**

The emergency coastal protection works, beach scraping and other types of 'works' proposed in this CZEAS are generally located on land that is:

- Community land owned by Council;
- Crown land for which Council is the reserve trust manager; or
- Other Crown land (which includes all land below the Mean High Water Mark (MHWM)).

Under Clause 3.21 of the *Crown Lands Management Act 2016*, Councils manage Crown land as if it were public land under the *Local Government Act 1993* (LG Act). Hence, where this CZEAS provides for works on Crown land for which Council is the reserve trust manager, no landowner consent is required.

However, for any works proposed under this CZEAS on other Crown land (i.e. that is not under care and control of Council), landowner consent would be required. As noted above, this includes all land below the MHWM. It is recommended that Council consult with the Department of Planning, Housing and Infrastructure (DPHI) - Crown lands and Public Spaces to confirm this is the case, and if so, to obtain the necessary consent.

### **Works in the Marine Park**

The majority of the emergency protection works and beach scraping works proposed under this CZEAS would fall within the boundary of the Port Stephens-Great Lakes Marine Park. The landward boundary of the Marine Park is the MHWM. The Marine Estate Management (Management Rules) Regulation 1999 details the objects of each marine park zone and activities that are not permitted within specific zones.

Also of relevance is the *Fisheries Management Act 1994* (FM Act). Under Clause 199 of the FM Act, public authorities must give notification to the Minister before a public authority carries out or authorises dredging or reclamation work. Under the definitions provided under the Act, this includes any work that will involve excavation or placement of sand from or within a waterway and is therefore likely to apply to the activities proposed in this CZEAS, in particular the beach scraping works during the recovery phase. In addition, Clause 205 of the FM Act prohibits works that involve harm to marine vegetation (which includes seagrasses and mangroves) without approval from NSW Fisheries.

It is recommended that Council consult with NSW Fisheries and the Marine Park authority in relation to the need for any permits or licences to implement this CZEAS.

### **Works with Potential to Impact Aboriginal Cultural Heritage**

Aboriginal cultural heritage sites and places are protected under the *National Parks and Wildlife Act 1974* (NP&W Act), and in some cases under the *Heritage Act 1977*. The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010) provides guidance on the exercise of due diligence when carrying out activities that have potential to harm Aboriginal cultural heritage and whether or not consent in the form of an Aboriginal Heritage Impact Permit (AHIP) would be required for the works.

As stated in the Code of Practice, the due diligence process detailed in the Code may still apply to exempt development, except where it is defined as a 'low impact' activity in the National Parks and Wildlife Regulation 2019. Although the NP&W Act provides exemptions for emergency activities carried out under the SERM Act that are reasonably necessary in order to avoid an actual or imminent threat to life or property, it is possible that an AHIP may still be required for implementation of this CZEAS. There are a large number of listed cultural heritage sites and places within the Port Stephens coastal zone and there is significant potential for previously unidentified sites and values to occur.

It is recommended that Council engage with Heritage NSW regarding the need for an AHIP. Engagement with both the NPWS and Traditional Owners in relation to the CZEAS is recommended.

### **6.2.2 Materials and Machinery**

Resourcing for the CZEAS should be undertaken during Phase 2, including stockpiling of materials for emergency coastal protection works and ensuring availability of plant and equipment for mobilisation during an event.

### Stockpiling of Sand and Sandbags

Council is to maintain a stockpile of sandbags for the purpose of emergency coastal protection works. The bags should be stored out of direct sunlight and in accordance with manufacturer’s specifications. These will be stored at the nearest Council Depot. Sandbags are to be made of geotextile fabric or woven polypropylene fabric (not hessian).

Sandbag sizing should be based on what is practically suitable to be placed on a beach in an emergency situation and removed post-event within 90 days. This is typically a size that can be lifted and placed manually, with 40 kg bags available for this purpose. Emergency protection works with 40 kg bags are unlikely to be stable during all coastal conditions. Active management of the works, particularly at high tide, may be required in efforts to mitigate the effects of coastal hazards on land.

A 0.75 m<sup>3</sup> size bag can be adopted in emergency situations, however these larger size sandbags weigh approximately 1.4 tons when filled and require machinery to fill, place and remove. If this machinery is not available or able to safely access the works area, then this would prohibit works being successfully implemented.

The exact form of the response and size of sandbags to be used will therefore be influenced by the specifics of the location and situation.

An estimate of the number of sandbags to be stockpiled is provided in **Table 6-1**.

**Table 6-1 Estimate number of sandbags needed for emergency protection works.**

Sandbag size	Estimated number of bags needed for emergency protection works*
<b>40 kg</b>	10,000 for Shoal Bay Road 350 for every 10m of emergency protection works along Soldiers Point.
<b>0.75 m<sup>3</sup></b>	1,400 for Shoal Bay Road 45 for every 10m of emergency protection works along Soldiers Point.

*\*Note that either 40 kg or 0.75 m<sup>3</sup> bags would be used, depending on the availability of machinery and safe access.*

It is assumed that not all locations listed in this CZEAS would be affected by beach erosion at the same time. This allows for a potential reduction in the total number of sandbags required in the reserve stockpile. Should additional sandbags be needed, this will be identified before works begin, and the amount stockpiled will be sufficient to begin works and allow time for more stock to be delivered. Council should also stockpile suitably thick geotextile underlay to provide a stable base for the works. Details for the number of sandbags for each emergency protection works and where the sandbags should be placed is provided in the relevant location specific section below.

Council is also to stockpile suitable sand sources to fill the sandbags. Sand can be imported by Council to the site from a lawfully approved source (i.e. a commercial provider).

Should storage of sand be unavailable, Council can also identify if there is a suitable provider that has ongoing availability of the sand they need, and the ability to access that sand as needed. This would need to be confirmed annually or after an emergency event.

Specifications for the sand to be used are provided in **Table 6-2**.

Table 6-2 Specification for Sand Stockpile

Item	Open coast	Outer Port
<b>Median grain size (D50)</b>	<b>0.28 to 0.34</b> Material outside of this median grain size range to be considered on a case-by-case basis, with a preference for <u>slightly</u> coarser material.	<b>0.22 to 0.28</b> Material outside of this median grain size range to be considered on a case-by-case basis, with a preference for <u>slightly</u> coarser material.
<b>Fines content</b>	Fines fraction to be less than 5% by weight.	
<b>Gravel content</b>	Gravel fraction to be less than 2% by weight.	
<b>Mineralogy</b>	Quartz sand with less than 15% carbonate content. Shall not contain excessive amounts of organic matter, demolition material or other debris.	
<b>Colour</b>	Nourishment material should be of similar colour to the native beach sand.	
<b>Angularity</b>	Desirable that sand be rounded or sub-rounded.	
<b>Contamination</b>	Sand should be free of contaminants in accordance with: <ul style="list-style-type: none"> <li>• National Assessment Guidelines for Dredging (Commonwealth of Australia, Canberra, 2009)</li> <li>• National Ocean Disposal Guidelines for Dredged Material (Commonwealth of Australia, Canberra, 2002)</li> <li>• Australian Guidelines for Fresh and Marine Waters (ANZECC, 2000).</li> </ul> It should not contain Acid Sulfate Soils or Potential Acid Sulfate Soils.	

### Plant and Machinery

Council is to maintain the ability to mobilise required plant and equipment at short notice.

#### 6.2.3 Operational Procedures and Planning

Following adoption of this CZEAS, Council is to develop an operations procedure to guide Council’s response to coastal emergency events (including resourcing, internal training, testing and periodic review).

An up-to-date list of contact details for key Council staff involved in coordinating actions under this CZEAS is to be developed and maintained on an ongoing basis. In addition to Council personal, it should include any individuals Council may need advice from (such as DCCEE staff) or as required to coordinate and integrate emergency responses with personnel from other emergency sectors.

#### 6.3 Overarching Response (Phase 3) Actions

The specific Response phase actions for each location affected by coastal hazards are identified in **Sections 6.5 to 6.23**.

If coastal erosion is caused during a storm the primary emergency coordination centre for the combat agency will be the NSW SES Incident Control Centre.

#### 6.4 Overarching Recovery (Phase 4) Actions

The specific Recovery phase actions for each location affected by coastal hazards are identified in **Sections 6.5 to 6.23**.

Overarching recovery actions are described below.



#### 6.4.1 Generic Beach Scraping Methodology – Recovery Phase

Beach scraping involves the relocation (by mechanical means) of sand from the intertidal zone to the upper beach or dune. The volumes practically able to be moved will not be sufficient to re-nourish the beach profile following a large erosion event; however, post-event beach scraping can be used to enhance the remaining dune and accelerate the natural process of dune re-building.

Beach scraping may be undertaken by Council if required to restore safe beach access following significant storm erosion and to assist beach recovery. Beach scraping can assist in providing safe public access and ensure access for surf life-saving personnel and equipment. The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event.

Designated areas for beach scraping are mapped in the relevant location specific sections. The following points provide general guidance for undertaking beach scraping:

- Exclusion zones or ‘no take areas’ are areas fronting significant assets (e.g. SLSCs, amenities building) where sand will not be harvested;
- Borrow areas will be within the intertidal area (between high water (1.0 mAHD for open coast and 0.65 mAHD for inner and outer Port) and low water (-0.65 mAHD). Sand is to be moved with a bulldozer in layers, with a shallow depth of 0.2 to 0.3 m per pass, to a maximum depth of up to 0.5 m;
- Sand is to be placed in the identified placement areas at the base of the dune scarp to form an incipient dune (space permitting) or to widen the dune face (steeper beach profile with less space or to reinstate beach access areas). Where placement is for an incipient dune, a small swale is left between the crest of sand placement and the existing dune system;
- If required, the beach berm and dune face should be groomed on completion as necessary to reduce public safety risks and/or improve beach amenity;
- Dune re-vegetation and stabilisation methods (sand fences, jute mesh and planting) should be considered as part of the works to stabilise the placed sand;
- Survey data (e.g. drone survey or real-time kinematic survey (RTK) of beach profiles) should be collected pre- and post-works.

#### 6.4.2 Post-Storm Event Reporting and Review

##### **Recording Coastal Emergency Impacts and Emergency Response Actions**

After a coastal emergency event, Council will record the following details in a database in order to maintain effective emergency actions and understand any changes in coastal conditions over time:

- Details of any beach erosion, coastal inundation, landslips or cliff instability and the weather conditions under which they were caused, including photographs, locations of assets and infrastructure that were damaged by the storm and details of the extent of damage;
- Details of any emergency coastal protection works undertaken, including the cost and the installation date;
- Details of any survey of the beach levels and other features that may be considered required to provide a greater understanding of the hazard or the event; and
- Review and update (if required) this CZEAS, in particular the Emergency Response Action Plan, in consultation with the NSW SES and any other relevant agencies.

The records of storm events, extent of damage and coastal protection works will assist Council to understand how climate change and/or extreme events are affecting its coastline and to better plan for retreat of some assets over time, to adapt to the effects of sea level rise and other factors such as increasing storm frequency and intensity.

#### **Critical Review of the CZEAS**

Once the locality-specific Recovery Phase activities detailed in **Sections 6.5 to 6.23** have been implemented, Council should also undertake a critical review the CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. The CZEAS and associated procedures should be revised if shortcomings or improvements are identified.

#### **Re-supply and Provisioning**

In addition, Council should replenish any emergency materials and supplies for future emergency events.

## 6.5 Shoal Bay

Shoal Bay is subject to beach erosion and coastal inundation.

Beach erosion threatens beach amenity, and public open space. There is potential for beach erosion to put at risk part of **Shoal Bay Road**, which is a key access road.

Coastal Emergency Protection Works are described for **Shoal Bay Road** and shown in **Figure 6-1**.

Public open spaces at risk include **Marrungbangbaa Reserve** and **Shoal Bay Foreshore Reserve**.

**Table 6-3** lists the response action plan for Shoal Bay, while an overview map of the area is provided in **Figure 6-2**.

**Table 6-3 Coastal Emergency Actions for Shoal Bay**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
Council to monitor beach/dune condition and determine if any thresholds have been reached to trigger potential emergency coastal protection works along Shoal Bay Road. The threshold is if the erosion scarp is within 6 m or less of the carriageway of the road. See <b>Figure 6-1</b> for guidance.	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Place appropriate equipment to construct emergency coastal protection works on stand-by.	Council
<p>Dune toe protection works should be undertaken during safe conditions if the following trigger is reached:</p> <ul style="list-style-type: none"> <li>Erosion scarp is at trigger line (<b>Figure 6-1</b>), located approximately 6 m from the Shoal Bay Road carriageway.</li> </ul> <p>The protection structure will be temporary and constructed using sandbags along the erosion scarp. The size of bags to be used will depend on the conditions and availability of machinery (See <b>Section 6.2.2</b>). If feasible, an underlying geotextile fabric layer should be placed under the bags to provide stability.</p> <p>Bags should be placed in a row to protect the entire length of road with the long edge perpendicular to the shoreline. The maximum height of works is to be 3 m.</p> <p>Emergency protection would span the entire length of shoreline within the area specified in <b>Figure 6-1</b>. This will prevent edge effect from exacerbating erosion beyond the works.</p>	Council

Action	Responsibility
Plant and equipment should access the area works area via the Shoal Bay boat ramp or the access way on Beach Road ( <b>Figure 6-1</b> ), avoiding disturbance to surrounding areas, in particular to any dune vegetation.	
Close affected Council managed roads subject to coastal inundation or erosion. <ul style="list-style-type: none"> <li>• Shoal Bay Road</li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• Marrungbangbaa Reserve</li> <li>• Shoal Bay Foreshore Reserve</li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard on adjoining land.	Council
<b>Phase 4 – Recovery</b>	
If the coastal emergency event threatens to cause damage or has caused damage to the sewage network, stormwater network or other infrastructure in this area, then it should, where feasible be relocated further landward when reinstated.	Council
If the coastal emergency event threatens to or has caused damage to Shoal Bay Road, then the coastal protection works designed under CMP action <b>CH017 - Undertake investigations to evaluate the risk to Shoal Bay Road from beach erosion and identify a suitable option to progress to detailed design</b> should be implemented as a high priority recovery action.	Council
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or re-opening the roads, beach and foreshore reserves.	Council
Repair Shoal Bay Road, if necessary.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery, as described in <b>Section 6.4.1</b> . A general area for recovery beach scraping is provided in <b>Figure 6-2</b> .	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.	Council
Remove any sandbags within 90 days.	Council
Restore access to beaches and reserves.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and stabilisation and re-vegetation.	Council
Issue orders under the LG Act and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council





Aerial Imagery: NSW Six Map



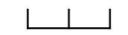
RG-01-01A

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Shoal Bay - Emergency Protection Works

**Legend**

- Road Carriageway Boundary
- Coastal Emergency Protection Works (6 m buffer)
- Access Point

0 0.01 0.02 km



Job Number: J1702  
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Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-1 Shoal Bay Coastal Emergency Protection Works





Figure 6-2 Shoal Bay CZEAS Overview



## 6.6 Nelson Bay

Nelson Bay is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to roads including part of **Victoria Parade** and **Teramby Road**.

Public open spaces at risk include **Little Beach Reserve**, **Nelson Bay Beach**, **Nelson Bay Foreshore Reserve**, and **Dutchmans Beach Reserve**. Council assets at risk include the **Nelson Bay Cruise Terminal Kiosk**.

**Table 6-4** lists the response action plan for Nelson Bay, while an overview map of the area is provided in **Figure 6-3**.

**Table 6-4 Coastal Emergency Actions for Nelson Bay**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Victoria Parade</b></li> <li>• <b>Teramby Road</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Little Beach Reserve</b></li> <li>• <b>Nelson Bay Beach</b></li> <li>• <b>Nelson Bay Foreshore Reserve</b></li> <li>• <b>Dutchmans Beach Reserve</b></li> </ul>	Council
Implement the emergency action strategy for the <b>Nelson Bay Cruise Terminal Kiosk</b> , developed as part of action <b>CH083</b> in the CMP.  In the absence of such a strategy, the building should be prepared for inundation by removing moveable objects (to higher elevation or away from site), placing sandbags (to prevent water entry), and evacuating the building.	Council
Liaise with other agencies, including TfNSW, Crown Lands and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council

Action	Responsibility
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair Victoria Parade and/or the car park if necessary.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-4</b> (Nelson Bay Beach) and <b>Figure 6-5</b> (Dutchmans Beach).	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.	Council
Restore access to beaches and reserves.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council





RG-01-02

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Nelson Bay

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Recovery Beach Scraping Areas
- Inundated Roads

**Emergency Key Facilities**

- Combat Agency Control / Operations Centres
- 🏠 Evacuation Centre
- + Water Treatment and Key Distrib Networks
- + Sewerage Treatment and Key Networks
- 📶 Mobile Phone Infrastructure Locations
- ✳️ PSC Buildings

0 0.1 0.2 km

Job Number: J1702  
Scale : 1:10000@A3  
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Created by : SJW  
Coordinate System : GDA94 / MGA zone 56



Figure 6-3 Nelson Bay CZEAS Overview





RG-01-02A

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Nelson Bay - Recovery Beach Scraping

**Legend**

- Council Managed Reserves
- Recovery Beach Scraping Areas
- ✱ PSC Buildings

0 0.02 0.04 km

Job Number: J1702  
Scale : 1:1600@A3  
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Coordinate System : GDA94 / MGA  
zone 56



Figure 6-4 Nelson Bay Beach - Recovery Beach Scraping





Aerial Imagery: NSW Six Map



RG-01-02B

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Dutchmans Beach - Recovery Beach  
Scraping

**Legend**

- Council Managed Reserves
- Recovery Beach Scraping Areas

0 0.01 0.02 km



Job Number: J1702  
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zone 56



Figure 6-5 Dutchmans Beach - Recovery Beach Scraping



### 6.7 Sandy Point and Corlette

Sandy Point and Corlette are subject to coastal inundation and potentially beach erosion. In a present day 20-year ARI event or greater, there is inundation risk to roads including part of **Sandy Point Road** and **Foreshore Drive**.

Public open spaces at risk include **Bagnalls Beach, Conroy Park, Carroll Reserve, and Roy Wood Reserve**. Council assets at risk include the **Conroy Park amenities block**.

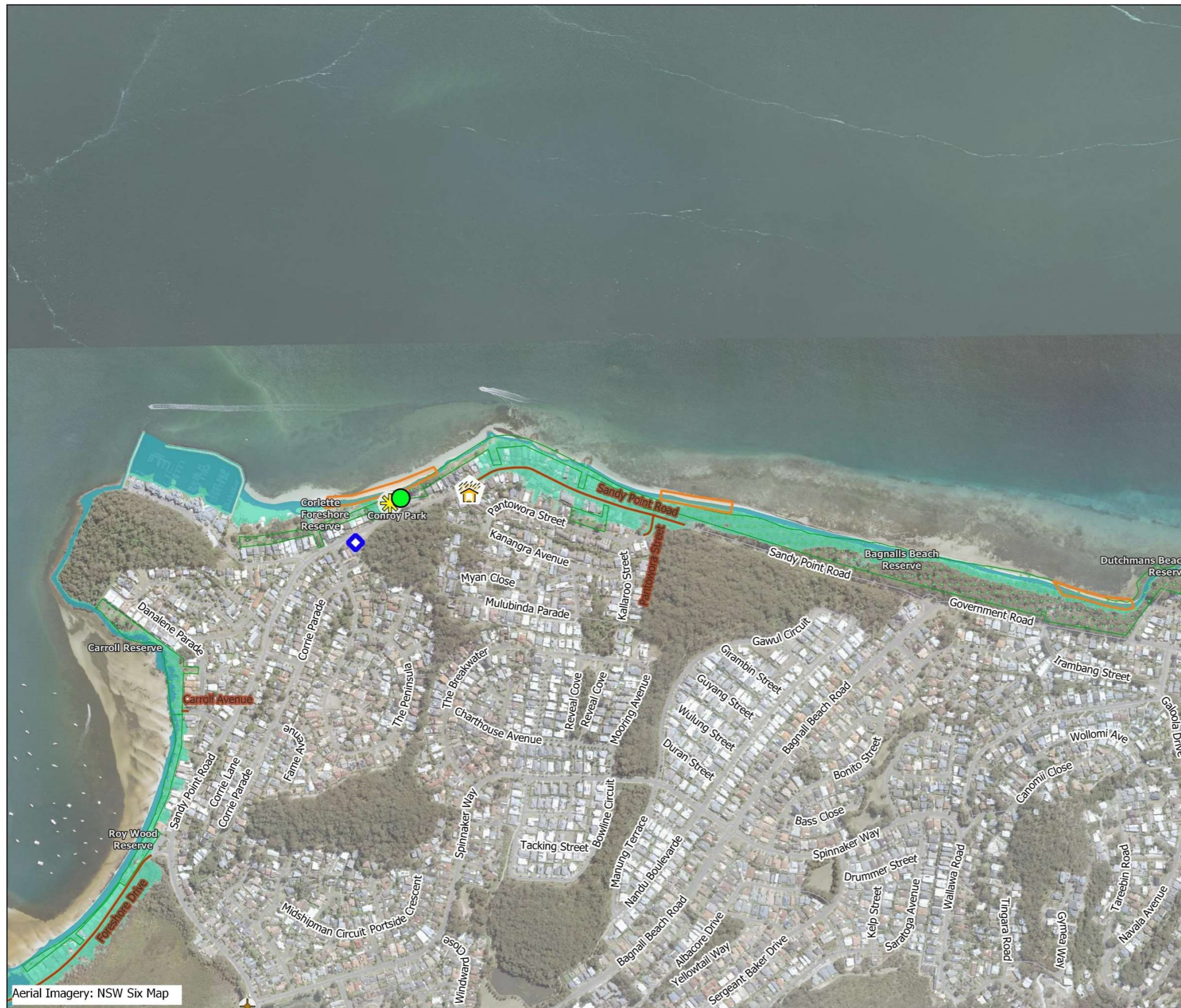
**Table 6-5** lists the response action plan for Corlette, while an overview map of the area is provided in **Figure 6-6**.

**Table 6-5 Coastal Emergency Actions for Sandy Point and Corlette**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Sandy Point Road</b></li> <li>• <b>Foreshore Drive</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Bagnalls Beach</b></li> <li>• <b>Conroy Park</b></li> <li>• <b>Carroll Reserve</b></li> <li>• <b>Roy Wood Reserve</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Inspect for damage or failure of the coastal protection structure at Sandy Point. If damage is identified, then engage a suitably qualified coastal engineer to inspect the structure and determine appropriate interim stabilisation works while Council progresses actions <b>CH022 - Progress investigations, detailed design and costings for priority options from the Whitehead and Assoc. (2015) Management Plan for</b>	Council

Action	Responsibility
<b>Sandy Point/Conroy Park, namely to demolish existing structures and construct new coastal protection works in Precinct 3, 4 and 5. and CH023 - Undertake maintenance works / repairs to the existing rock revetment</b> in the CMP (if they have not already been complete).	
Repair Sandy Point Road and/or the car park if necessary.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-7</b> (Conroy Park), <b>Figure 6-8</b> (Bagnalls Beach East), and <b>Figure 6-9</b> (Bagnalls Beach West).	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Restore access to beaches and reserves.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council





RG-01-03

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Corlette

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Recovery Beach Scraping Areas
- Access Point
- Inundated Roads

**Emergency Key Facilities**

- Evacuation Centre
- State Emergency Service Units
- Sewerage Treatment and Key Networks
- PSC Buildings

0 0.1 0.2 km

Job Number: J1702  
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Date : 23/01/2024  
Revision : 02  
Created by : SJW  
Coordinate System : GDA94 / MGA zone 56



Figure 6-6 Corlette CZEAS Overview





RG-01-03C

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Conroy Park - Recovery Beach Scraping

**Legend**

- Council Managed Reserves
- Recovery Beach Scraping Areas
- Access Point
- PSC Buildings

0 0.01 0.02 km



Job Number: J1702  
Scale : 1:1000@A3  
Date : 23/01/2024  
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Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-7 Conroy Park - Recovery Beach Scraping





RG-01-03A

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Bagnalls Beach (East) - Recovery Beach  
Scraping

**Legend**

- Council Managed Reserves
- Recovery Beach Scraping Areas

0 0.01 0.02 km



Job Number: J1702  
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zone 56



Figure 6-8 Bagnalls Beach East - Recovery Beach Scraping







RG-01-03B

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Bagnalls Beach (West) - Recovery Beach  
Scraping

**Legend**

-  Council Managed Reserves
-  Recovery Beach Scraping Areas

0 0.01 0.02 km



Job Number: J1702  
Scale : 1:1000@A3  
Date : 23/01/2024  
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Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-9 Bagnalls Beach West - Recovery Beach Scraping



### 6.8 Salamander Bay

Salamander Bay is subject to coastal inundation and potentially beach erosion. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads, including **Foreshore Drive**. **Port Stephens Drive**, a key access road to the area is also at risk from inundation under a present day 20-year ARI event or greater.

Public open spaces at risk include **Joe Redman Reserve**, **Bob Cairns Reserve**, and **George Reserve**. Council assets at risk include the **Bob Cairns Reserve Amenities Block**.

Coastal Emergency Protection Works are described for **Salamander Bay** and potential locations are shown in **Figure 6-10**.

**Table 6-6** lists the response action plan for Salamander Bay, while an overview map of the area is provided in **Figure 6-10**.

**Table 6-6 Coastal Emergency Actions for Salamander Bay**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Foreshore Drive</b></li> <li>• <b>Port Stephens Drive (access road)</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Joe Redman Reserve</b></li> <li>• <b>Bob Cairns Reserve</b></li> <li>• <b>George Reserve</b></li> </ul>	Council
Dune toe protection works should be undertaken during safe conditions, if the following trigger is reached in the section of shoreline mapped in <b>Figure 6-10</b> : <ul style="list-style-type: none"> <li>• Erosion scarp reaches the property boundary.</li> </ul> Works are only to proceed where the trigger has been reached.  The protection structure will be temporary and constructed using sandbags along the erosion scarp. The size of bags to be used will depend on the conditions and availability of machinery (See <b>Section 6.2.2</b> ). If feasible, an underlying geotextile fabric layer should be placed under the bags to provide stability.	Council

Action	Responsibility
<p>Bags should be placed in a row to protect the property boundary with the long edge perpendicular to the shoreline. The maximum height of works is to be 2 m.</p> <p>Emergency protection would prioritise sections of the shoreline most exposed at the time and remain within the area specified in <b>Figure 6-10</b>.</p> <p>Plant and equipment should access the works area via the closest access point identified in <b>Figure 6-10</b>, avoiding disturbance to surrounding areas, in particular to any dune vegetation.</p>	
<p>Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.</p>	Council
<b>Phase 4 – Recovery</b>	
<p>Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.</p>	Council
<p>Repair Foreshore Drive if necessary.</p>	Council
<p>Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery. The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-11</b> (Georges Reserve).</p> <p>The ‘borrow’ area should be restricted to within the intertidal zone and sand moved from the beach profile between elevations of 0.65 mAHD and -0.65 mAHD. Sand is to be moved in layers, with a shallow depth of 20 – 30 cm per pass, to a depth no greater than 0.5 m.</p> <p><b>Sand is to be placed in the identified placements areas at the base of the dune scarp to form an incipient dune (space permitting) or to widen the dune face (steeper beach profile with less space or to reinstate beach access areas). Where placement is for an incipient dune, a small swale is left between the crest of sand placement and the existing dune system.</b></p> <p><b>If required, the beach berm and dune face should be groomed on completion as necessary to reduce public safety risks and/or improve beach amenity.</b></p> <p><b>Dune revegetation and stabilisation methods (sand fences, jute mesh and planting) should be considered as part of the works to stabilise the placed sand.</b></p> <p>Survey data (e.g. drone survey of RTK beach profiles) should be collected pre- and post-works.</p> <p><b>See Section 6.4.1 for further detail.</b></p>	Council
<p>Maintain temporary safety fencing and associated warning signage, as necessary.</p>	Council
<p>Erect permanent warning signs if necessary.</p>	Council
<p>Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.</p>	Council
<p>Remove any sandbags within 90 days and remediate any edge effects caused by the temporary protection works.</p>	Council
<p>Restore access to beaches and reserves.</p>	Council
<p>Issue clean-up orders under the LG Act.</p>	Council
<p>Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.</p>	Council

Action	Responsibility
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act. and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council





RG-01-04

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Salamander Bay

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Recovery Beach Scraping Areas
- Area for potential Coastal Emergency Protection Works
- Access Point
- Inundated Roads

**Emergency Key Facilities**

- Rural Fire Service Brigade(s)
- Mobile Phone Infrastructure Locations
- PSC Buildings

0 0.1 0.2 km



Job Number: J1702  
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Figure 6-10 Salamander Bay CZEAS Overview





Aerial Imagery: NSW Six Map



RG-01-04A

Coastal Zone Emergency Action Subplan  
(CZEAS)  
George Reserve - Recovery Beach  
Scraping

**Legend**

-  Council Managed Reserves
-  Recovery Beach Scraping Areas
-  Access Point

0 0.01 0.02 km



Job Number: J1702  
Scale : 1:1000@A3  
Date : 23/01/2024  
Revision : 02  
Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-11 George Reserve - Recovery Beach Scraping



### 6.9 Soldiers Point

Soldiers Point is subject to coastal inundation and potentially beach erosion. In a present day 20year ARI event or greater, there is inundation risk to private properties and roads including the westward ends of **Resthaven Avenue, Bennett Lane, and Brown Avenue**.

Public open spaces at risk include **Wanda Beach Reserve, Kangaroo Point Reserve, Soldiers Point Foreshore Reserve, Everitt Park, Sunset Beach, Pearson Park, and Marys Beach at Yachett Point Reserve**.

Coastal Emergency Protection Works are described for **Soldiers Point** and shown in **Figure 6-12**.

**Table 6-7** lists the response action plan for Soldiers Point, while an overview map of the area is provided in **Figure 6-12**.

**Table 6-7 Coastal Emergency Actions for Soldiers Point**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
Council to monitor beach/dune condition and determine if any thresholds have been reached to trigger potential emergency coastal protection works along the eastern shoreline of the Soldier’s Point Peninsula. The threshold is if the erosion scarp reaches the property boundary. See <b>Figure 6-12</b> for guidance.	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Dune toe protection works should be undertaken during safe conditions, if the following trigger is reached in the section of shoreline mapped in <b>Figure 6-12</b> : <ul style="list-style-type: none"> <li>Erosion scarp reaches the property boundary.</li> </ul> Works are only to proceed where the trigger line has been reached. <p>The protection structure will be temporary and constructed using sandbags along the erosion scarp. The size of bags to be used will depend on the conditions and availability of machinery (See <b>Section 6.2.2</b>). If feasible, an underlying geotextile fabric layer should be placed under the bags to provide stability.</p> <p>Bags should be placed in a row to protect the property boundary with the long edge perpendicular to the shoreline. The maximum height of works is to be 2 m.</p> <p>Emergency protection would prioritise sections of the shoreline most exposed at the time and remain within the area specified in <b>Figure 6-12</b>.</p> <p>Plant and equipment should access the area works area via the closest access point identified in <b>Figure 6-12</b>, avoiding disturbance to surrounding areas, in particular to any dune vegetation.</p>	Council

Action	Responsibility
<p>Close affected Council managed roads subject to coastal inundation.</p> <ul style="list-style-type: none"> <li>• Resthaven Avenue</li> <li>• Bennett Lane</li> <li>• Brown Avenue</li> </ul>	Council
<p>Close affected Council managed reserves.</p> <ul style="list-style-type: none"> <li>• Wanda Beach Reserve</li> <li>• Kangaroo Point Reserve</li> <li>• Soldiers Point Foreshore Reserve</li> <li>• Everitt Park</li> <li>• Sunset Beach</li> <li>• Pearson Park</li> <li>• Marys Beach at Yachett Point Reserve</li> </ul>	Council
<p>Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.</p>	Council
<p><b>Phase 4 – Recovery</b></p>	
<p>Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.</p>	Council
<p>Repair damaged roads if necessary.</p>	Council
<p>Maintain temporary safety fencing and associated warning signage, as necessary.</p>	Council
<p>Erect permanent warning signs if necessary.</p>	Council
<p>Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.</p>	Council
<p>Remove any sandbags within 90 days and remediate any edge effects caused by the temporary protection works.</p>	Council
<p>Restore access to beaches and reserves.</p>	Council
<p>Issue clean-up orders under the LG Act.</p>	Council
<p>Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.</p>	Council
<p>Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.</p>	Council
<p>Issue orders under the LG Act and/or the EP&amp;A Act when properties are deemed structurally unsafe or pose a risk to the public.</p>	Council
<p>Replenish any emergency materials and supplies for future emergency events.</p>	Council
<p>Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.</p>	Council





Figure 6-12 Soldiers Point CZEAS Overview



### 6.10 Taylors Beach

Taylors Beach is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads including **Albert Street** and **Taylors Beach Road**, which serves as the only access to the area.

Public open spaces at risk include **Taylors Beach Foreshore Reserve**. Council assets at risk include **Taylors Beach Foreshore Reserve amenities block**.

**Table 6-8** lists the response action plan for Taylors Beach while an overview map of the area is provided in **Figure 6-13**.

**Table 6-8 Coastal Emergency Actions for Taylors Beach**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Albert Street</b></li> <li>• <b>Taylors Beach Road</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Taylors Beach Foreshore Reserve</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair Taylors Beach Road if necessary.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-14</b> (Taylors Beach).	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council

Action	Responsibility
Erect permanent warning signs if necessary.	Council
Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.	Council
Restore access to beaches and reserves.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council



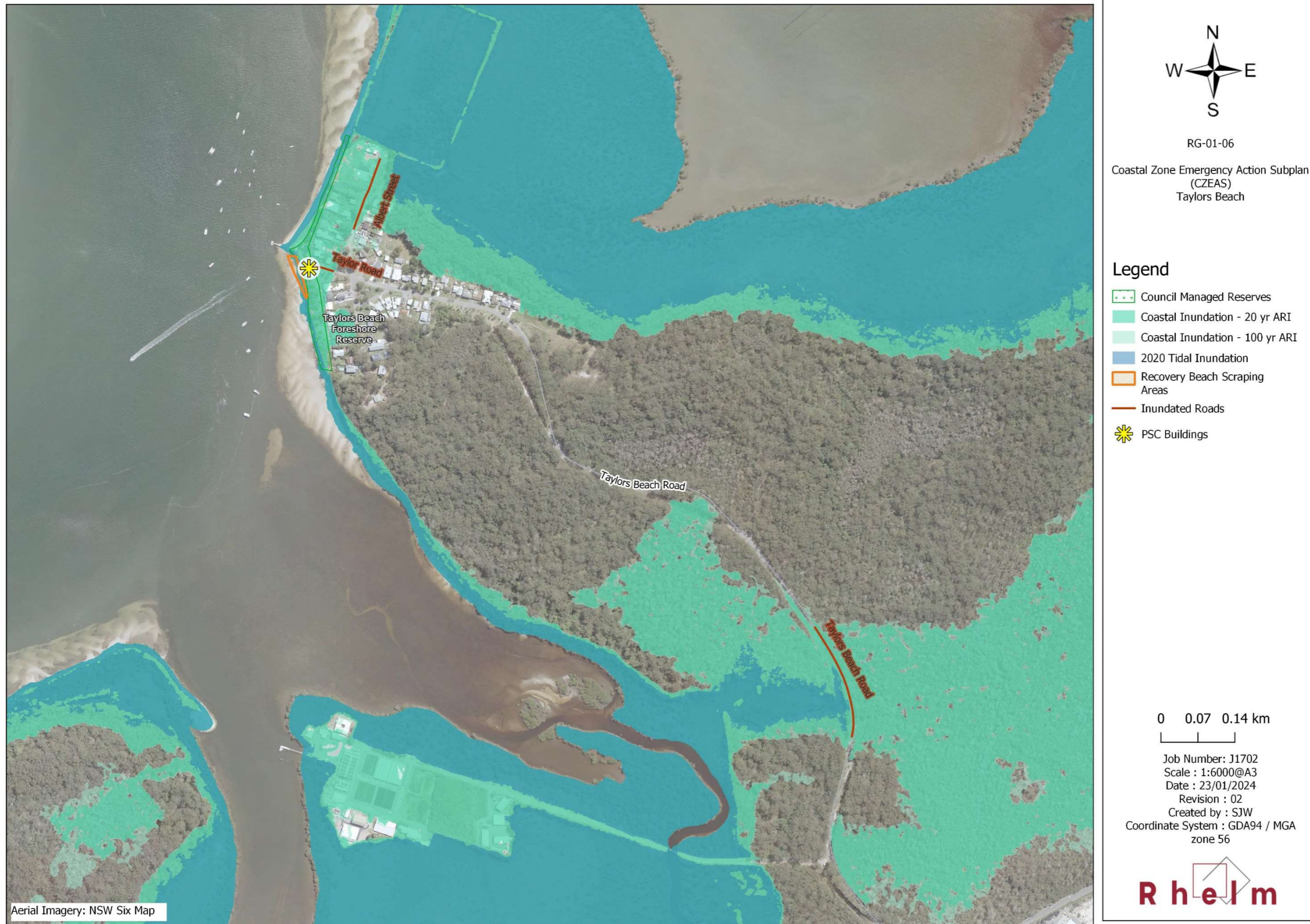


Figure 6-13 Taylors Beach CZEAS Overview





Aerial Imagery: NSW Six Map



RG-01-06A

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Taylors Beach - Recovery Beach Scraping

**Legend**

-  Council Managed Reserves
-  Recovery Beach Scraping Areas
-  PSC Buildings

0 0.01 0.02 km



Job Number: J1702  
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Coordinate System : GDA94 / MGA  
zone 56



Figure 6-14 Taylors Beach - Recovery Beach Scraping

### 6.11 Lemon Tree Passage

Lemon Tree Passage is subject to coastal inundation. In a present day 20-year ARI event, there is inundation risk to private properties and roads including **Meredith Ave, Shearman Avenue, Mackie Street, Cook Parade, Stanley Street, Cambridge Avenue, Marine Drive, John Parade, Richard Avenue, Short Street, Boyd Avenue, Elaine Avenue, Northumberland Avenue, Elizabeth Avenue, and Torpey Avenue**. In a 100 year ARI event, **Oyster Farm Road, Stanley Street, and Ward Street** are also at risk. **Lemon Tree Passage Road**, the only access into the Tilligerry Peninsula, is also at risk from inundation under a present day 20-year ARI event or greater.

Public open space at risk includes **Rudd Reserve, Kooindah Park, Henderson Park, Koala Reserve Mangrove Boardwalk, Nyrang Reserve, John Parade Reserve, Malvern Reserve, and Gibber Point Reserve**. Council assets at risk include the **Henderson Park amenities block**.

**Table 6-9** lists the response action plan for Lemon Tree Passage while an overview map of the area is provided in **Figure 6-15**.

**Table 6-9 Coastal Emergency Actions for Lemon Tree Passage**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• Meredith Ave</li> <li>• Shearman Avenue</li> <li>• Mackie Street</li> <li>• Cook Parade</li> <li>• Stanley Street</li> <li>• Cambridge Avenue</li> <li>• Marine Drive</li> <li>• John Parade</li> <li>• Richard Avenue</li> <li>• Short Street</li> <li>• Boyd Avenue</li> <li>• Elaine Avenue</li> </ul>	Council



Action	Responsibility
<ul style="list-style-type: none"> <li>Northumberland Avenue</li> <li>Elizabeth Avenue</li> <li>Torpey Avenue</li> <li>Oyster Farm Road</li> <li>Stanley Street</li> <li>Ward Street</li> <li>Lemon Tree Passage Road (access)</li> </ul>	
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>Rudd Reserve</li> <li>Koondah Park</li> <li>Henderson Park</li> <li>Koala Reserve Mangrove Boardwalk</li> <li>Nyrang Reserve</li> <li>John Parade Reserve</li> <li>Malvern Reserve</li> <li>Gibber Point Reserve</li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair damaged roads if necessary.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.	Council
Restore access to beaches and reserves.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Aerial Imagery: NSW Six Map



RG-01-07

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Lemon Tree Passage

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Inundated Roads

**Emergency Key Facilities**

- Evacuation Centre
- Mobile Phone Infrastructure Locations
- PSC Buildings

0 0.1 0.2 km

Job Number: J1702  
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Date : 23/01/2024  
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Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-15 Lemon Tree Passage CZEAS Overview



### 6.12 Mallabula

Mallabula is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads including **The Parkway, Hart Avenue** and **Bay Street**.

**Table 6-10** lists the response action plan for Mallabula, while an overview map of the area is provided in **Figure 6-16**.

**Table 6-10 Coastal Emergency Actions for Mallabula**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>The Parkway</b></li> <li>• <b>Hart Avenue</b></li> <li>• <b>Bay Street</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair damaged roads if necessary.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council

Action	Responsibility
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





RG-01-08

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Mallabula

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Inundated Roads

**Emergency Key Facilities**

- Evacuation Centre
- Mobile Phone Infrastructure Locations

0 0.1 0.2 km

Job Number: J1702  
Scale : 1:8000@A3  
Date : 23/01/2024  
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Coordinate System : GDA94 / MGA zone 56



Figure 6-16 Mallabula CZEAS Overview



### 6.13 Tanilba Bay

Tanilba Bay is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads including parts of **Peace Parade**. In a 100 year ARI event, parts of **President Poincare Parade**, **President Wilson Walk**, and **Swan Street** are at risk.

Public open spaces at risk include **Caswell Reserve**, **Tanilba Bay Boardwalk**, **Peace Park**, **Foster Park**, **Tanilba Park**, **Swan Park**, **Sunrise Park**, **Meridian Park**, and **Sunset Park**.

**Table 6-11** lists the response action plan for Tanilba Bay, while an overview map of the area is provided in **Figure 6-17**.

**Table 6-11 Coastal Emergency Actions for Tanilba Bay.**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Peace Parade</b></li> <li>• <b>President Poincare Parade</b></li> <li>• <b>President Wilson Walk</b></li> <li>• <b>Swan Street</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Caswell Reserve</b></li> <li>• <b>Tanilba Bay Boardwalk</b></li> <li>• <b>Peace Park</b></li> <li>• <b>Foster Park</b></li> <li>• <b>Tanilba Park</b></li> <li>• <b>Swan Park</b></li> <li>• <b>Sunrise Park</b></li> <li>• <b>Meridian Park</b></li> <li>• <b>Sunset Park</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council

Action	Responsibility
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair Peace Parade if necessary.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-18</b> (Tanilba Bay Beach).	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Restore access to beaches and reserves.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





RG-01-09

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Tanilba Bay

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Recovery Beach Scraping Areas
- Inundated Roads

**Emergency Key Facilities**

- Evacuation Centre
- Rural Fire Service Brigade(s)
- Power Stns, Sub Stns and Key Dist Points

0 0.1 0.2 km

Job Number: J1702  
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Figure 6-17 Tanilba Bay CZEAS Overview





RG-01-09A

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Tanilba Bay - Recovery Beach Scraping

**Legend**

- Council Managed Reserves
- Recovery Beach Scraping Areas

0 0.03 0.06 km



Job Number: J1702  
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Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-18 Tanilba Bay - Recovery Beach Scraping



### 6.14 Swan Bay

Swan Bay is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads including **Waterfront Road, Davis Road** and **Swan Bay Road**. Swan Bay Road provides the only access to the area.

**Table 6-12** lists the response action plan for Swan Bay, while an overview map of the area is provided in **Figure 6-19**.

**Table 6-12 Coastal Emergency Actions for Swan Bay**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Waterfront Road</b></li> <li>• <b>Davis Road</b></li> <li>• <b>Swan Bay Road</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair damaged roads if necessary.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council

Action	Responsibility
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Figure 6-19 Swan Bay CZEAS Overview



### 6.15 Karuah

Karuah is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties.

Public open spaces at risk include **Longworth Park** and **Memorial Park**. Council assets at risk include **Longworth Park amenities block**.

**Table 6-13** lists the response action plan for Karuah, while an overview map of the area is provided in **Figure 6-20**.

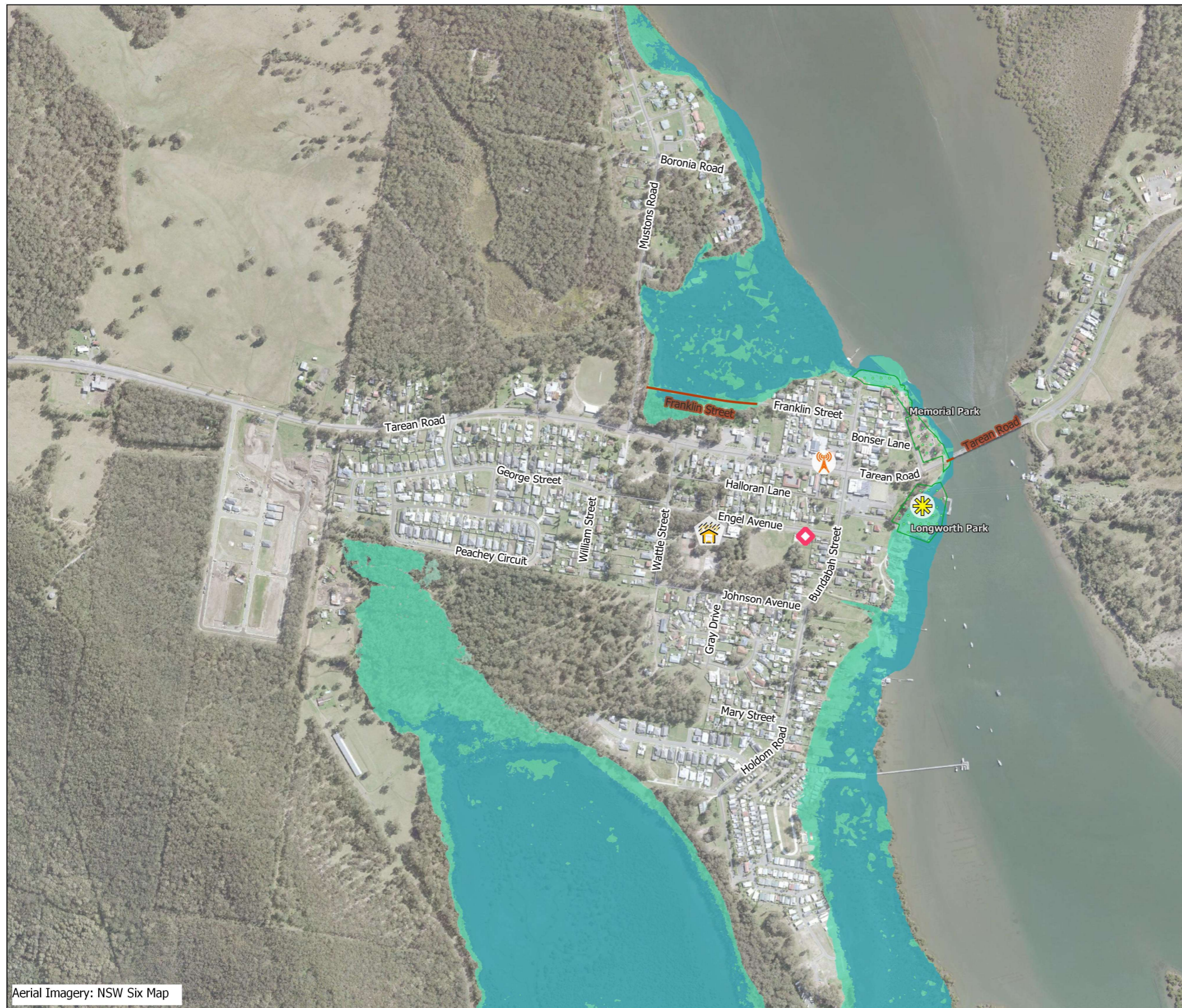
**Table 6-13 Coastal Emergency Actions for Karuah**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• Longworth Park</li> <li>• Memorial Park</li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.	Council
Restore access to beaches and reserves.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council



Action	Responsibility
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LGA Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Aerial Imagery: NSW Six Map



RG-01-11

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Karuah

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Inundated Roads

**Emergency Key Facilities**

- Evacuation Centre
- Rural Fire Service Brigade(s)
- Mobile Phone Infrastructure Locations
- PSC Buildings

0 0.1 0.2 km

Job Number: J1702  
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zone 56



Figure 6-20 Karuah CZEAS Overview



### 6.16 Salt Ash

Salt Ash is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads including **Lemon Tree Passage Road** and **Marsh Road**, both of which are key access roads and act as the sole access to a number of properties. Other roads at risk include **David Drive, Janet Parade, Nelson Bay Road, Oakfield Road, Rookes Road, and Valerie Road**.

Public open space at risk includes **Lee Thompson Park Reserve**. Council assets at risk include the **Salt Ash Community Hall** and the **Salt Ash Rural Fire Service Station**, which are both listed as evacuation centres.

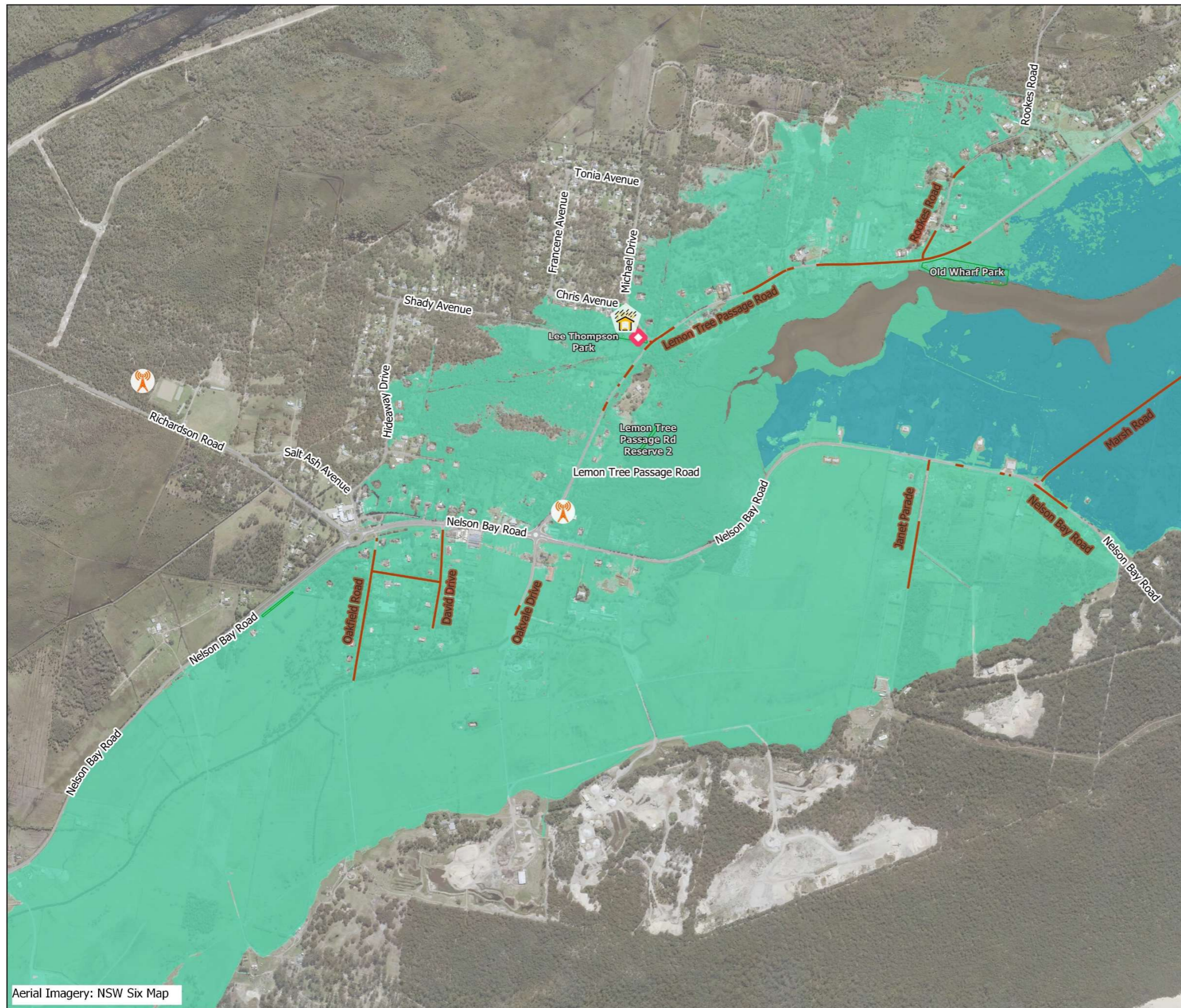
**Table 6-14** lists the response action plan for Salt Ash, while an overview map of the area is provided in **Figure 6-21**.


**Table 6-14 Coastal Emergency Actions for Salt Ash**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Lemon Tree Passage Road</b></li> <li>• <b>Marsh Road</b></li> <li>• <b>David Drive</b></li> <li>• <b>Janet Parade</b></li> <li>• <b>Nelson Bay Road</b></li> <li>• <b>Oakfield Road</b></li> <li>• <b>Rookes Road</b></li> <li>• <b>Valerie Road</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Lee Thompson Park Reserve</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council

Action	Responsibility
<b>Phase 4 – Recovery</b>	
Inspect public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair damaged roads if necessary.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance natural protective features, such as revegetation.	Council
Issue orders under the LG Act and/or EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council















RG-01-12

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Salt Ash


**Legend**

-  Council Managed Reserves
-  Coastal Inundation - 20 yr ARI
-  Coastal Inundation - 100 yr ARI
-  2020 Tidal Inundation
-  Inundated Roads

**Emergency Key Facilities**

-  Evacuation Centre
-  Rural Fire Service Brigade(s)
-  Mobile Phone Infrastructure Locations

0 0.1 0.2 km



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Figure 6-21 Salt Ash CZEAS Overview



### 6.17 Bobs Farm

Bobs Farm is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads including **Marsh Road, Fenninghams Island Road and Cromarty Lane**, which serve as the only access roads to the properties along them. Other roads at risk include **Nelson Bay Road**, and Nelson Bay Road, and **Upton Lane**.

Public open space at risk includes **Fenninghams Island Road Reserve**. Council assets at risk include **Bobs Farm Public Hall**, which also is listed as an evacuation centre.

**Table 6-15** lists the response action plan for Bobs Farm, while an overview map of the area is provided in **Figure 6-22**.

**Table 6-15 Coastal Emergency Actions for Bobs Farm**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Marsh Road</b></li> <li>• <b>Fenninghams Island Road</b></li> <li>• <b>Cromarty Lane</b></li> <li>• <b>Nelson Bay Road</b></li> <li>• <b>Upton Lane</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Fenninghams Island Road Reserve</b></li> </ul>	Council
Implement the emergency action strategy for the <b>Bobs Farm Public Hall</b> , developed as part of action <b>CH083</b> in the CMP.	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council



Action	Responsibility
Repair damaged roads if necessary.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Issue orders under the LG Act and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Aerial Imagery: NSW Six Map



RG-01-13

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Bobs Farm

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Inundated Roads

**Emergency Key Facilities**

- Evacuation Centre
- Rural Fire Service Brigade(s)
- Water Treatment and Key Distrib Networks
- Sewerage Treatment and Key Networks
- Mobile Phone Infrastructure Locations
- PSC Buildings

0 0.3 0.6 km

Job Number: J1702  
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Coordinate System : GDA94 / MGA zone 56



Figure 6-22 Bobs Farm CZEAS Overview



### 6.18 Fullerton Cove

Fullerton Cove is subject to coastal inundation. In a present day 20-year ARI event or greater, there is inundation risk to private properties and roads including **Lorikeet Circuit, Sugar Glider Way, Fullerton Cove Road** and **Nelson Bay Road**.

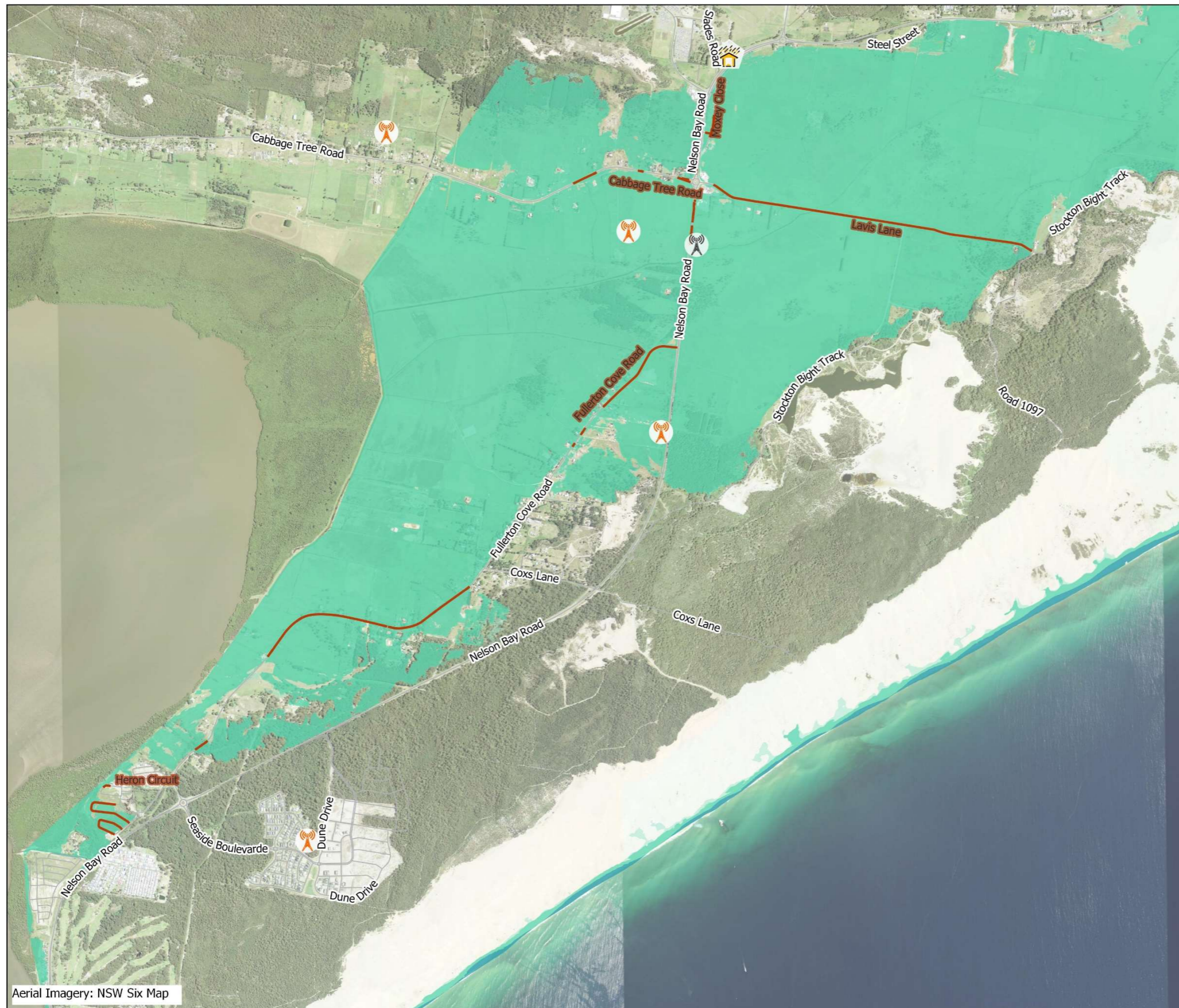
**Table 6-16** lists the response action plan for Fullerton Cove, while an overview map of the area is provided in **Figure 6-23**.


**Table 6-16 Coastal Emergency Actions for Fullerton Cove**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• Lorikeet Circuit</li> <li>• Sugar Glider Way</li> <li>• Fullerton Cove Road</li> <li>• Nelson Bay Road</li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Repair damaged roads if necessary.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Issue orders under the LG Act and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council

Action	Responsibility
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council










RG-01-14

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Fullerton Cove


**Legend**

- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Inundated Roads

**Emergency Key Facilities**

-  Evacuation Centre
-  Power Stns, Sub Stns and Key Dist Points
-  Mobile Phone Infrastructure Locations

0   0.3   0.6 km



Job Number: J1702  
Scale : 1:25000@A3  
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Coordinate System : GDA94 / MGA zone 56




Figure 6-23 Fullerton Cove CZEAS Overview



### 6.19 Boat Harbour

Boat Harbour is subject to coastal inundation. In a present day 20-year ARI event or greater, public open spaces at risk include **Boat Harbour North Headland Reserve** and **Iluka Reserve**.

Although Boat Harbour Beach is subject to beach erosion, the present erosion hazard mapping does not indicate any risk to built assets. Hence, no emergency coastal protection works are considered necessary.

**Table 6-17** lists the response action plan for Boat Harbour, while an overview map of the area is provided in **Figure 6-24**.

**Table 6-17 Coastal Emergency Actions for Boat Harbour**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Boat Harbour North Headland Reserve</b></li> <li>• <b>Iluka Reserve</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-24</b> .	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Restore access to beaches, reserves and headlands.	Council
Issue clean-up orders under the LG Act.	Council



Action	Responsibility
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Figure 6-24 Boat Harbour CZEAS Overview



### 6.20 Anna Bay

Anna Bay is subject to coastal inundation. In a present day 20 Year ARI event or greater, there is inundation risk to private properties and roads including **Nelson Bay Road, Port Stephens Drive** and **Road 493**. In a 100 year ARI event, **Harris Road** is also at risk.

Public open space at risk includes **Birubi Beach Reserve**.

Although Stockton Beach is subject to beach erosion, the present erosion hazard mapping does not indicate any risk to built assets. Hence, no emergency coastal protection works are considered necessary.

**Table 6-18** lists the response action plan for Anna Bay, while an overview map of the area is provided in **Figure 6-25**.

**Table 6-18 Coastal Emergency Actions for Anna Bay**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed roads subject to coastal inundation. <ul style="list-style-type: none"> <li>• <b>Nelson Bay Road</b></li> <li>• <b>Port Stephens Drive</b></li> <li>• <b>Road 493</b></li> <li>• <b>Harris Road</b></li> </ul>	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>Birubi Beach Reserve</b></li> </ul>	Council
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to	Council

Action	Responsibility
be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-26</b> (Birubi Beach).	
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Restore access to beaches, reserves and headlands.	Council
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Aerial Imagery: NSW Six Map



RG-01-16

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Anna Bay

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Recovery Beach Scraping Areas
- Access Point
- Inundated Roads

**Emergency Key Facilities**

- Evacuation Centre
- Rural Fire Service Brigade(s)

0 0.1 0.2 km



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zone 56



Figure 6-25 Anna Bay CZEAS Overview





Figure 6-26 Birubi Beach - Recovery Beach Scraping



### 6.21 Fingal Bay

Fingal Bay is subject to coastal inundation. In a present day 20 Year ARI event or greater, public open space at risk from coastal inundation includes **Fingal Bay Foreshore Reserve**.

Although Fingal Beach is subject to beach erosion, the present erosion hazard mapping does not indicate any risk to built assets. Hence, no emergency coastal protection works are considered necessary.

**Table 6-19** lists the response action plan for Fingal Beach, while an overview map of the area is provided in **Figure 6-27**.

**Table 6-19 Coastal Emergency Actions for Fingal Beach**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council and SLSC
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li><b>Fingal Bay Foreshore Reserve</b></li> </ul>	Council
Implement the <b>Fingal Bay SLSC</b> emergency action strategy, developed as part of action <b>CH083</b> in the CMP.	SLSC
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-27</b> .	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Restore access to beaches, reserves and headlands.	Council
Issue clean-up orders under the LG Act.	Council

Action	Responsibility
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





RG-01-17

Coastal Zone Emergency Action Subplan  
(CZEAS)  
Fingal Bay

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Recovery Beach Scraping Areas
- Access Point

**Emergency Key Facilities**

- Evacuation Centre
- Rural Fire Service Brigade(s)
- Mobile Phone Infrastructure Locations

0 0.03 0.06 km



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zone 56



Figure 6-27 Fingal Bay CZEAS Overview



## 6.22 One Mile

One Mile Beach is subject to coastal inundation. In a 20 year ARI event or greater, public open space at risk includes **One Mile Beach Reserve**.

Although One Mile Beach is subject to beach erosion, the present erosion hazard mapping does not indicate any risk to built assets. Hence, no emergency coastal protection works are considered necessary.

**Table 6-20** lists the response action plan for One Mile Beach while an overview map of the area is provided in **Figure 6-28**.

**Table 6-20 Coastal Emergency Actions for One Mile Beach**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to advise landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
Alert residents if risk level is high and if any emergency management actions are being implemented.	NSW SES
Erect temporary signage of dangers and/or closure to the beach (including accessways) and affected foreshore reserves.	Council and SLSC
Increase surveillance of coastal hazards at this location.	Council
Close affected Council managed reserves. <ul style="list-style-type: none"> <li>• <b>One Mile Beach Reserve</b></li> </ul>	Council
Implement the <b>One Mile Beach SLSC</b> emergency action strategy, developed as part of action <b>CH083</b> in the CMP.	SLSC
Liaise with other agencies, including TfNSW, Crown Land and NPWS if debris from coastal hazards creates a safety hazard in adjoining areas.	Council
<b>Phase 4 – Recovery</b>	
Inspect the beach, public assets and properties after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event. A general area for recovery beach scraping is provided in <b>Figure 6-28</b> .	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Erect permanent warning signs if necessary.	Council
Restore access to beaches and headlands.	Council



Action	Responsibility
Issue clean-up orders under the LG Act.	Council
Assess the structural integrity of unprotected assets affected by or damaged during the coastal emergency event. Geotechnical, structural and/or coastal engineering investigations may be required to understand residual risk following a coastal emergency event.	Council
Undertake works to re-establish or enhance the natural protective features of the coast, such as dune shaping and revegetation.	Council
Issue orders under the LG Act and/or the EP&A Act when properties are deemed structurally unsafe or pose a risk to the public.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Aerial Imagery: NSW Six Map



RG-01-18

Coastal Zone Emergency Action Subplan  
(CZEAS)  
One Mile

**Legend**

- Council Managed Reserves
- Coastal Inundation - 20 yr ARI
- Coastal Inundation - 100 yr ARI
- 2020 Tidal Inundation
- Recovery Beach Scraping Areas
- Access Point

0 0.03 0.06 km



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zone 56



Figure 6-28 One Mile CZEAS Overview



### 6.23 Aboriginal Cultural Sites

The Port Stephens coastal zone has significant Aboriginal cultural heritage sites. This includes extensive coastal middens, scarred trees, burial sites, ceremonial sites and archaeology, as well other cultural aspects and values that are of importance to the Worimi and broader Indigenous community. Beach erosion can adversely impact these sites, which are located throughout the Port Stephens coastal zone. Should these sites be exposed during a coastal erosion event, there may be a number of actions to ensure that these sites are suitably managed appropriately in accordance with the Worimi’s wishes, where safe to do so.

It is noted that, while there are a number of known sites, the high potential for cultural heritage sites throughout the coastal zone means that there may be previously unidentified sites that are at risk from beach erosion. The subject area where this section of the CZEAS applies is indicated in **Figure 6-29 to Figure 6-33** and includes Council owned land or Crown land for which Council is the Trust Manager; noting, however, that the only Council controlled land to which this CZEAS would apply is that located along the open coast or estuarine shoreline that may from time to time be impacted by coastal erosion).

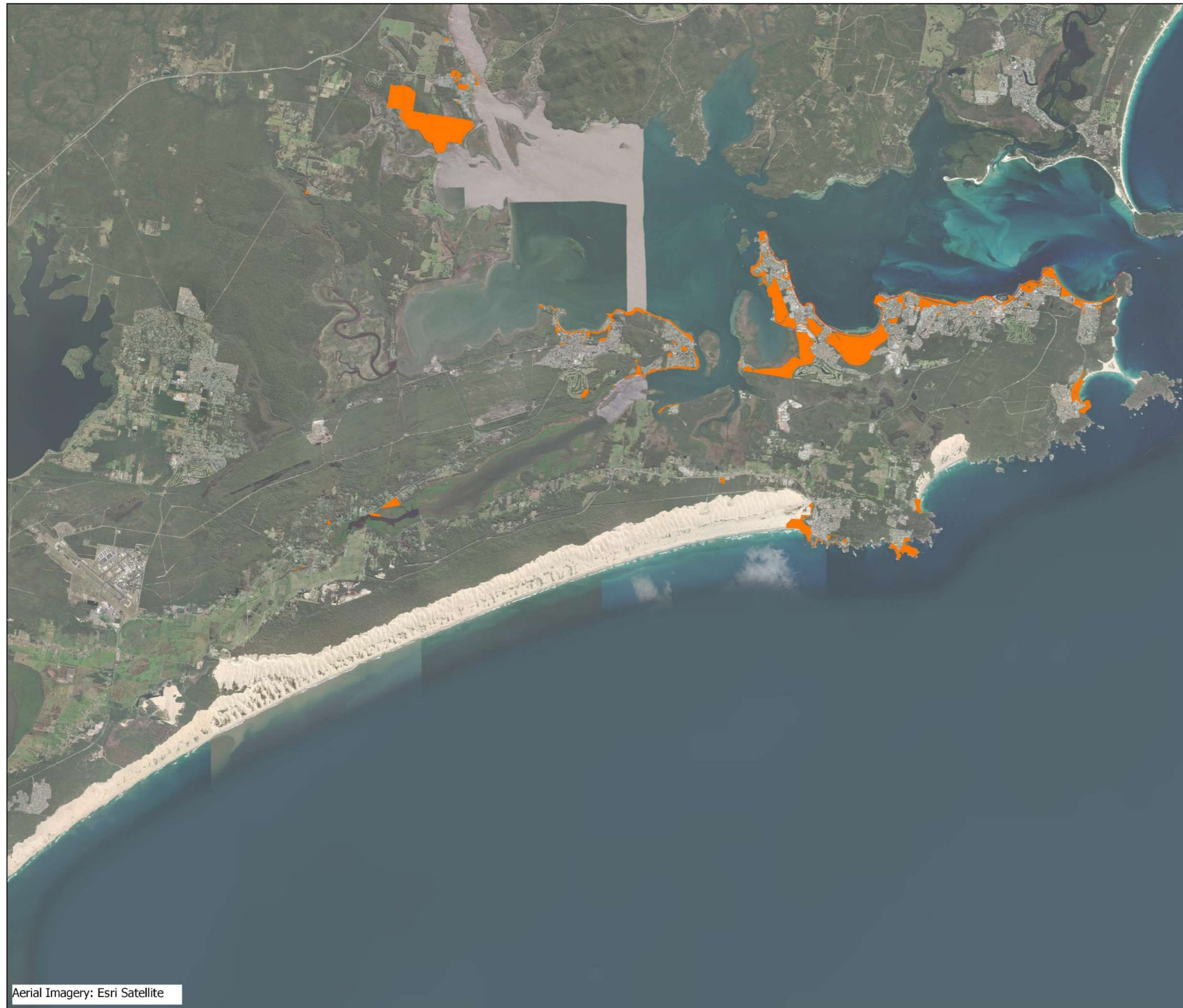
Therefore, the emergency response action plan for Aboriginal cultural heritage sites in **Table 6-21** applies to both known and previously unidentified cultural heritage sites on the subject land.

**Table 6-21 Coastal Emergency Actions for Aboriginal Cultural Heritage Sites**

Action	Responsibility
<b>Phase 1 – Prevention</b>	
See <b>Section 6.1 - Overarching Prevention (Phase 1) Actions</b>	Council
Work in partnership with the Aboriginal community, LALCs, DCCEEW, NPWS and Heritage NSW to understand and provide advice to the community, landholders and the NSW SES about the potential for a coastal emergency event and the types of responses that are permitted and not permitted.	Council, DCCEEW, LALCs
<b>Phase 2 – Preparation</b>	
See <b>Section 6.2 - Overarching Preparatory (Phase 2) Actions</b>	Council
Where feasible, identify the most appropriate emergency coastal protection works including access and location. These specific locations proposed for emergency coastal protection works should be identified and appropriate emergency coastal works, thresholds and triggers for action should be developed in consultation with the Aboriginal community, LALCs, DCCEEW, Heritage NSW and affected landholder(s). The appropriate emergency coastal protection work is considered to be site protection using sandbags or beach nourishment.	Council
Prepare an environment impact assessment for emergency coastal protection works and gain necessary approvals from state agencies.	Council
<b>Phase 3 – Response</b>	
Implement the communication protocol in conjunction with the combat agency (NSW SES) to discuss actions with the Aboriginal Community, LALCs, Heritage NSW, DCCEEW, NPWS, landholders, residents, public authorities and other organisations that a coastal emergency is likely or is occurring and that actions in this CZEAS are to be implemented.	Council and NSW SES
If any emergency management actions are being implemented, alert Aboriginal community, LALCs, Heritage NSW, DCCEEW, NPWS, landholders, residents, public authorities.	Council
Erect temporary signage of dangers or closure to the beach.	Council
Alert land managers about access requirements.	Council

Increase surveillance of coastal hazards at this location.	Council and Traditional Owners
Place appropriate equipment on stand-by.	Council
<p>Protection works should be undertaken in safe conditions, if the following triggers are reached:</p> <ul style="list-style-type: none"> <li>Exposure of Aboriginal cultural site occurs and Aboriginal community and/or NSW Government agencies have discussed, and emergency protection works are required.</li> </ul> <p>The emergency protection structure will be temporary and constructed as a stack of sandbags placed along the toe of the escarpment. Emergency protection would prioritise sections of the shoreline and assets most exposed at the time.</p> <p>Upon identifying the need for emergency coastal protection works, a suitably qualified coastal engineer, along with the appropriate Aboriginal community representative, likely a Traditional Owner, should be consulted to determine the details of the design.</p> <p>Plant and equipment for undertaking the works should avoid disturbance to surrounding areas, in particular damage to Aboriginal cultural assets and existing dune and cliff vegetation.</p>	Council and Traditional Owners
<b>Phase 4 – Recovery</b>	
Inspect the beach and cultural sites after damaging storm events and carry out works to ensure the area is safe, including general clean up and clearing of any exposed debris, before taking down signage or reopening the area.	Council and Traditional Owners
Beach scraping may be undertaken if required to restore public beach access following significant storm erosion and to assist beach recovery in accordance with the methodology in <b>Section 6.4.1</b> . The location and scale of beach scraping activities will depend on the damage caused by the event and will need to be determined at the time of the event and with consultation with Traditional Owners and a coastal engineer.	Council
Erect permanent warning signs if necessary.	Council
Remove any sandbags within 90 days.	Council
Monitor the condition, performance and impact of any coastal protection works or emergency coastal protection works.	Council
Restore access to beaches and headlands.	Council
Maintain temporary safety fencing and associated warning signage, as necessary.	Council
Replenish any emergency materials and supplies for future emergency events.	Council
Critically review this CZEAS, communications protocol/plan and operational procedures to ensure they achieved their performance objectives. Amend if shortcomings or improvements are identified.	Council





Aerial Imagery: Esri Satellite



RG-01-19

Coastal Zone Emergency Action Subplan  
(CZEAS)

**Legend**

■ Council Controlled Land

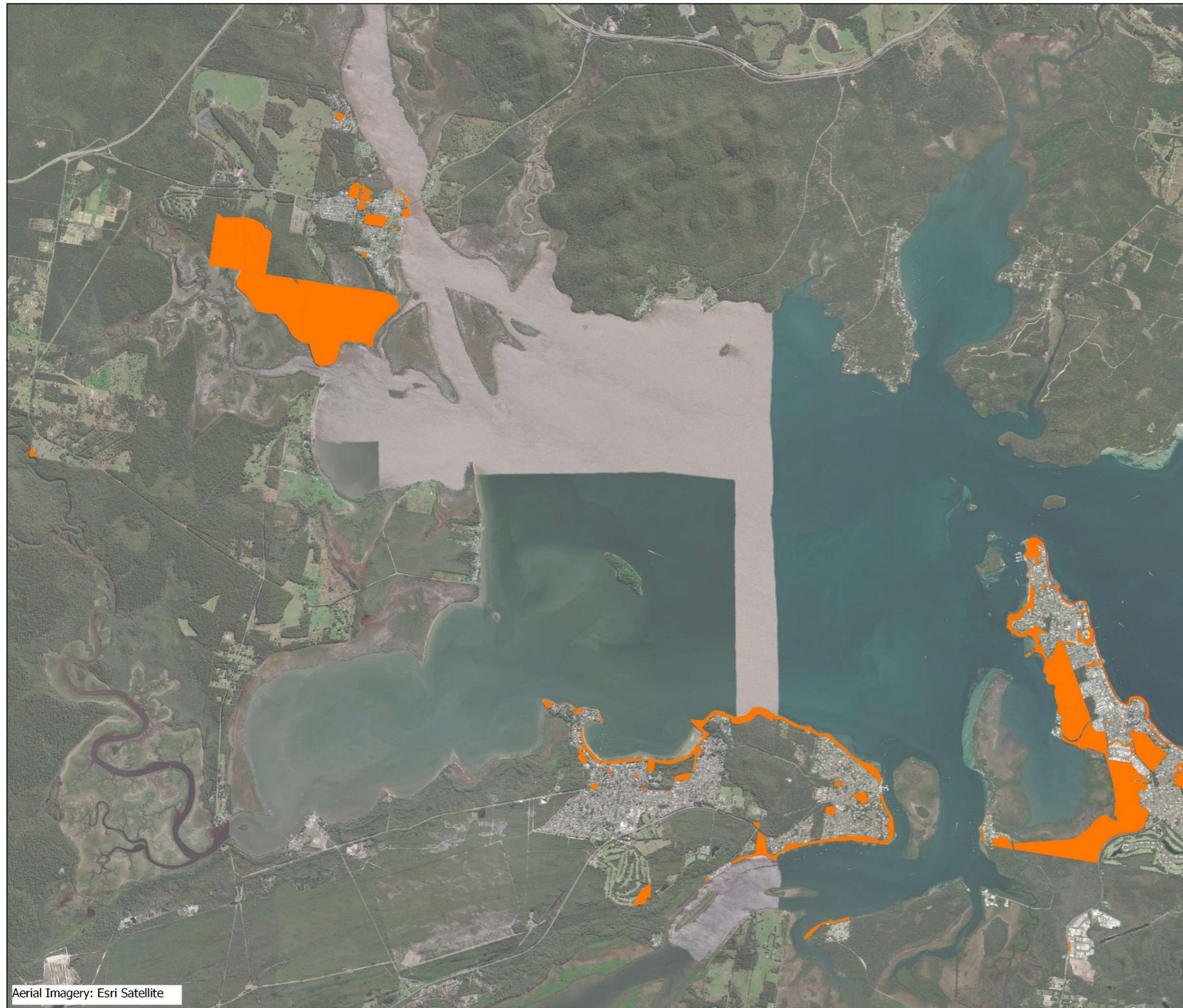
0 1 2 km  
|-----|-----|

Job Number: J1702  
Scale : 1:110000@A3  
Date : 29/01/2024  
Revision : 02  
Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-29 Council Managed Land with Known or Potential Aboriginal Cultural Heritage Sites (LGA Overview)





Aerial Imagery: Esri Satellite



RG-01-19a

Coastal Zone Emergency Action Subplan  
(CZEAS)

**Legend**

■ Council Controlled Land

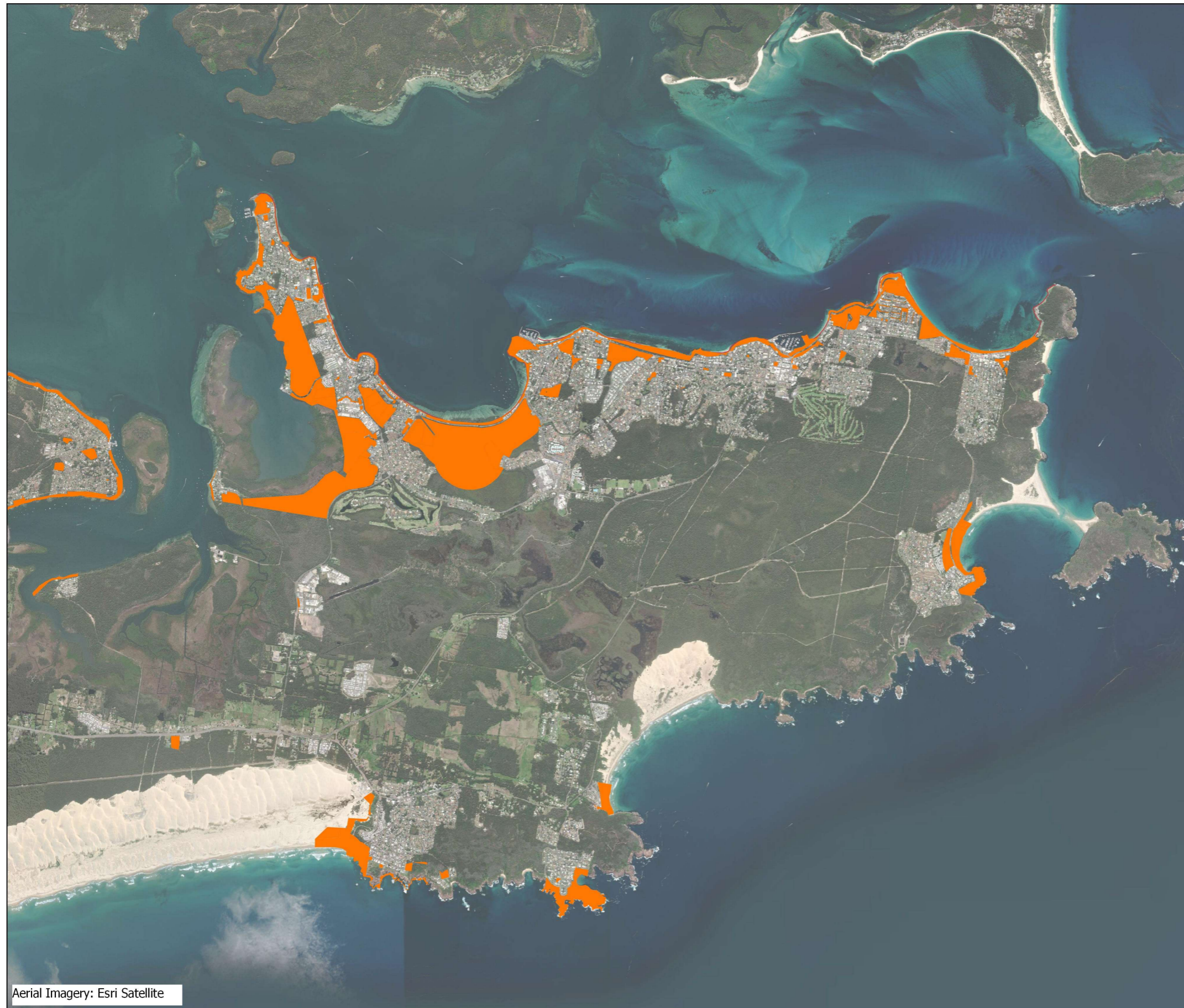
0 0.6 1.2 km

Job Number: J1702  
Scale : 1:50000@A3  
Date : 29/01/2024  
Revision : 02  
Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-30 Council Managed Land with Known or Potential Aboriginal Cultural Heritage Sites (Inner Port)





RG-01-19b

Coastal Zone Emergency Action Subplan  
(CZEAS)

**Legend**

■ Council Controlled Land

0 0.6 1.2 km



Job Number: J1702  
Scale : 1:50000@A3  
Date : 29/01/2024  
Revision : 02  
Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-31 Council Managed Land with Known or Potential Aboriginal Cultural Heritage Sites (Outer Port)





Aerial Imagery: Esri Satellite



RG-01-19c

Coastal Zone Emergency Action Subplan  
(CZEAS)

**Legend**

 Council Controlled Land

0 0.3 0.6 km

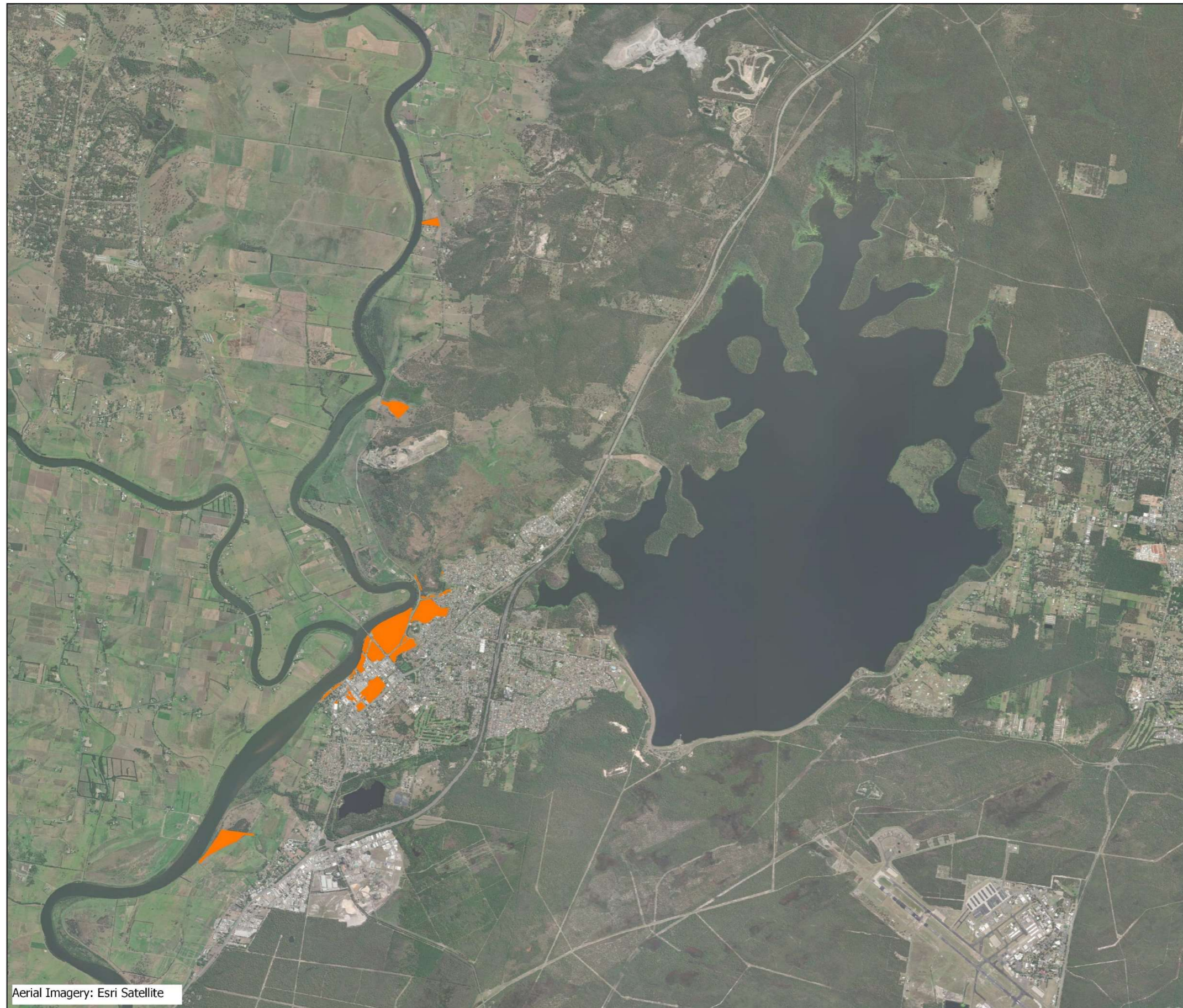


Job Number: J1702  
Scale : 1:30000@A3  
Date : 29/01/2024  
Revision : 02  
Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-32 Council Managed Land with Known or Potential Aboriginal Cultural Heritage Sites (Salt Ash)





Aerial Imagery: Esri Satellite



RG-01-19d

Coastal Zone Emergency Action Subplan  
(CZEAS)

**Legend**

■ Council Controlled Land

0 0.6 1.2 km

Job Number: J1702  
Scale : 1:50000@A3  
Date : 29/01/2024  
Revision : 02  
Created by : SJW  
Coordinate System : GDA94 / MGA  
zone 56



Figure 6-33 Council Managed Land with Known or Potential Aboriginal Cultural Heritage Sites (Inland Areas)



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Rhelm Pty Ltd

ABN 55 616 964 517

ACN 616 964 517

Head Office

Level 1, 50 Yeo Street

Neutral Bay NSW 2089

[contact@rhelm.com.au](mailto:contact@rhelm.com.au)

+61 2 9098 6998

[www.rhelm.com.au](http://www.rhelm.com.au)