



Cultural and Social

EW-C01

Comprehensive community information program to accompany CMP implementation to explain key issues and actions

[Comment Here](#)

Issue: Poor community understanding of coastal and estuary issues has been identified during the community engagement as an issue. There is a lack of easy-to-digest information available for the community on coastal and estuary issues.

Existing Management: Community education, dissemination of information to schools and community groups, provision of resources for community groups to empower them to undertake local projects and citizen science, effective coasts and estuaries committee, use of social media to communicate with community.

Potential Management Action: Development of effective educational material including videos and fact sheets describing local coastal and estuary issues. Comprehensive community information program to accompany CMP implementation to explain key issues and actions. Community education on impacts from climate change resulting in increased tidal range, changes to entrance dynamics and changes in macrophyte composition and distribution. For Swan Lake and Berrara Creek, this should include the development and maintenance of a program of community engagement with coastal communities about entrance management.

Develop and execute a communications plan for Stage 5 of the CMP. Present information on Council's website and in community engagement activities that shows:

- The status of CMP Actions
- How estuarine systems function and how integrated management responses benefit local communities.

Bherwerre

EW-C02

Establish a CMP Governance Framework

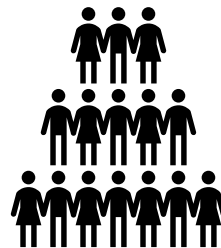
[Comment Here](#)

Issue: Poor communication between stakeholders, community and agencies leading to perceived lack of action on coastal management issues. This can sometimes lead to disagreements between stakeholders and responsible agencies for projects. This can lead to a community perception of lack of action or delays on urgent coastal and estuary rehabilitation projects.

Existing Management: Protocols have been put in place following the Shoalhaven CMP Scoping Study to provide effective communication between agencies, Council and stakeholders; including the establishment of a Coastal and Estuary Management Committee with agency representation to help facilitate effective communication between Council, Agencies and the community. A specific CMP working group can be established to focus effort and communication to ensure that the CMP meets its objectives.

Potential Management Action:

- Establish a CMP working group, to oversee the implementation of the CMP and ensure that it meets its objectives.
- Members should include staff from Council, relevant state government agencies, community and Aboriginal representatives.
- Clearly define its purpose, objectives and functions
- Define its roles and responsibilities of its members
- Execute the function of the working group.



EW-C03

Maintain a full-time CMP Coordinator

[Comment Here](#)

Issue: Lack of adequate resources available for management and coordination of delivery of the CMP, with resources stretched over various locations and management responsibilities.

Existing Management: Small Council team currently available to manage delivery of existing CMPs.

Potential Management Action: Maintain a full-time Coastal Management Program Coordinator role, in order to coordinate the development and execution of Council's suite of CMPs, develop the implementation strategy (including long-term funding options) and build Council's capacity to respond to coastal issues and risks.

EW-C04

Review Council's Coastal Management Planning policies every 10 years

[Comment Here](#)

Issue: Council's Coastal Management Policies need updating approximately every 10 years, to keep pace with best practice techniques, additional data collection and advances in scientific knowledge.

Existing Management: St Georges Basin Estuary Management Plan 2013

Potential Management Action: Review Council's coastal management planning policies for the 10 year CMP implementation lifecycle. This should include consideration of the latest environmental data, observed coastal hazard impacts, and state government policies. The review should consider:

- The Shoalhaven City Council Sea Level Rise Framework
- Coastal hazard maps and Council's various planning instruments..



Cultural and Social

EW-C05

Engage with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to develop a cultural educational and awareness program

[Comment Here](#)

Issue: Damage to or loss of non-Aboriginal and Aboriginal cultural heritage items; coastal hazards affecting cultural heritage e.g. inundation, erosion; lack of understanding from the community, leading to inadvertent or malicious damage, vandalism.

Existing Management: Development controls, existing public education measures.

Potential Management Action: This action would involve engaging with relevant Local Aboriginal Land Councils and local Traditional Owner groups to develop and roll out a cultural educational and awareness program – related to the Aboriginal Cultural Heritage (ACH) of the estuaries. Design of the program should be led by either relevant Local Aboriginal Land Councils or local Traditional Owner Groups.

The program could involve educational methods such as:

- School programs involving planting days, stewardship sites and hands-on activities
- Signage at local sites such as beaches, estuaries and headlands (including the use of QR codes that includes elders speaking about the history of the area)
- Brochures and information provided to tourists at caravan parks and information centres
- Cultural tours to provide greater awareness of ACH values to both the local community and to the large population of seasonal visitors.

EW-C06

Provide opportunities and help build capacity of local Aboriginal Ranger programs, to enhance their role in management of Sea Country (including the estuaries)

[Comment Here](#)

Issue: Loss of connection between land and sea by Aboriginal people. Coastal hazards affecting cultural heritage e.g. inundation, erosion; lack of understanding from the community, leading to inadvertent or malicious damage, vandalism.

Existing Management: Development controls, public education program, Aboriginal heritage mapping, statutory and non-statutory planning controls.

Potential Management Action: This action would involve working with the Local Aboriginal Land Council and local Traditional Owner groups to bolster existing ranger programs and facilitate a greater role for these programs in coastal management across the estuaries in the Shoalhaven LGA.

- This will involve working with and supporting the ranger team coalition to help enhance/boost their capacity and awareness of coastal management
- Where possible, utilise Aboriginal ranger teams to undertake on ground works associated with erosion and environmental restoration, and monitoring programs
- Work collaboratively to help develop the next generation of junior rangers to be a part of future coastal management across the Shoalhaven LGA.

This action is consistent with Initiative #4 of the NSW Marine Estate Management Strategy (MEMS) – which aims to “Increase Aboriginal participation in Sea Country Management, planning and monitoring through employment and training of Aboriginal people at a regional and local level”.

EW-C07

Undertake an estuary-wide Aboriginal Cultural Heritage Survey, and development of local protection/management plans

[Comment Here](#)

Issue: The presence of undocumented Aboriginal heritage sites means that items that may qualify for heritage listing or status and existing Aboriginal cultural heritage may not be afforded the quality of care or protection that they may require or deserve. This can lead to deterioration of heritage items, significant loss of historical authenticity for items that are listed or those items that may qualify for heritage listing.

Existing Management: Statutory and non-statutory planning controls, Aboriginal heritage mapping.

Potential Management Action: This action would involve engaging with the relevant Local Aboriginal Land Councils, Traditional Owner groups and an archaeologist to undertake an updated cultural heritage survey of the coastal zone within the estuaries and in doing so:

- Fill existing information gaps within the LGA-wide Aboriginal Cultural Heritage Mapping and
- Update the Aboriginal Heritage Information Management System (AHIMS).

It is anticipated that there would be three main tasks for this action:

- Consultation with the relevant Local Aboriginal Land Councils and Traditional Owners and knowledge holders.
- An Aboriginal cultural heritage assessment, which should include survey fieldwork, recording of cultural heritage sites (such as middens sites) and detailed documentation of findings.
- The development and prioritisation of local, site-specific management plans for protection and preservation of these sites.



Tidal Inundation and Sea Level Rise



EW-I01

Investigate feasibility of moving public infrastructure landward. Review and update all Council asset management plans where assets are impacted by sea level rise and coastal inundation

[Comment Here](#)

Issue: Damage to public infrastructure and critical services due to increased frequency and duration of inundation due to future sea level rise and coastal/tidal inundation.

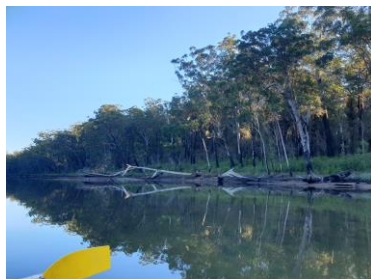
Existing Management: Council is drafting a Climate Change Adaptation Plan that includes actions to adapt to sea level rise on a city-wide scale. These actions include undertaking risk assessments for council assets to identify and prioritise areas, infrastructure, and assets at risk from coastal inundation, storms, and flooding, and ensuring that asset management plans consider risk of storms, sea level rise and inundation for Council assets and infrastructure.

Potential Management Action: This action involves investigating the feasibility of moving identified vulnerable public infrastructure landward, e.g. sewage network and managing sewage overflows.

While the St Georges Basin Floodplain Risk Management Study and Plan covers catchment flooding and includes emergency management aspects, many of the actions in that Plan are relevant for coastal and tidal inundation hazards.

Specific actions for individual public assets identified as being at risk from coastal inundation (e.g. sewage pumping stations, water and sewer mains, roads, access paths etc.) have been developed separately, depending on the severity of the risk. Council should review and update all Asset Management Plans relevant to each asset at risk from coastal inundation. Specific activities may include implementing one way valves for stormwater, encouraging the installation of rainwater tanks, and upgrades to stormwater infrastructure drainage. Consultation with Transport for NSW would be required with respect to actions involving roads.

Learn from program of pothole repairs implemented following the East Coast Low events of March and April 2022 to improve response, continue to monitor performance/condition of infrastructure following coastal hazard events.



EW-I02

Develop long-term strategies beyond the CMP timeframe for adaption to sea level rise, integrating actions from Flood Risk Management Plan with CMP

[Comment Here](#)

Issue: Increasing depth, duration and frequency of coastal and tidal inundation of urban areas.

Existing Management: Development controls, monitoring, flood warning system and flood evacuation procedures.

Potential Management Action: This action involves supporting the implementation of actions from the Shoalhaven Flood Risk Management Plan and Council Climate Change Adaptation Plan, and identification of specific actions from these Plans to mitigate against sea level rise and coastal inundation in the CMP. There is also the need to ensure consistency between the actions in all three documents. Engage with NSW SES to update the Shoalhaven City Local Flood Plan with the results of coastal hazard studies to help manage coastal hazard emergencies.





Tidal Inundation and Sea Level Rise



EW-I03

Review Council's sea level rise projections for future planning purposes based on latest advice from the Intergovernmental Panel on Climate Change

[Comment Here](#)

Issue: The Intergovernmental Panel on Climate Change (IPCC) has revised global sea level rise projections in 2022 through its Sixth Assessment Report. The Shoalhaven Council Sea Level Rise Framework are no longer consistent with the most recent advice from the IPCC.

Existing Management: Shoalhaven Council Sea Level Rise Framework.

Potential Management Action: The Shoalhaven Sea Level Rise Framework requires review to ensure that sea level rise projections for planning purposes reflect state government policies, as well as the most recent science and advice from the IPCC.

EW-I04

Investigate engineering measures to mitigate against or prevent groundwater damage to building foundations and services and include these in development controls for new DAs

[Comment Here](#)

Issue: Sea level rise and coastal inundation have the potential to raise water tables in low-lying areas; the impact of this on the foundations of existing and future development is poorly understood.

Existing Management: Council Development Control Plan

Potential Management Action: Investigate impact of rising water tables and engineering measures to mitigate against or prevent groundwater damage to building foundations and services. Include these in development controls for new DAs.

EW-I05

Prepare and implement Coastal Zone Emergency Action Subplan (CZEAS)

[Comment Here](#)

Issue: Threat to public safety as a result of increased frequency and duration of coastal and tidal inundation events.

Existing Management: Development controls, monitoring, flood warning system and flood evacuation procedures.

Potential Management Action: Prepare and implement Coastal Zone Emergency Action Subplan (CZEAS): This action would involve the preparation of a Coastal Zone Emergency Action Subplan (CZEAS) for Sussex Inlet, St Georges Basin, Swan Lake and Berrara Creek. This would primarily address emergency response to tidal and coastal inundation events and would need to be consistent with the Shoalhaven City Local Flood Emergency Sub Plan 2014.





Ecological Environment

EW-E01

Encourage buffers and land management practices that allow wetlands to migrate with sea level rise

[Comment Here](#)

Issue: Changes in balance between habitat types, landward migration or loss of macrophyte communities due to future sea level rise and increasing frequency, depth and duration of coastal and tidal inundation. Over time, this may lead to loss or changes to biodiversity, and landward migration of estuarine vegetation. The Sanctuary Point shoreline is particularly vulnerable.

Existing Management: CMP including inundation mapping, development controls, state and federal legislation

Potential Management Action: Work with relevant landholders to secure buffers around the identified estuarine wetland areas with ability to migrate landwards with sea level rise (SLR) (see maps in Stage 2 report). Buffers to enable future land use conducive for the establishment of wetlands with SLR. Changed land use management to support estuarine vegetation communities to be achieved through a variety of voluntary incentive schemes, including land purchase and blue carbon. Continue NSW DPI macrophyte mapping to monitor variability and long-term trends.

EW-E02

Protect estuarine vegetation from vandalism

[Comment Here](#)

Issue: Instances of vandalism of estuarine vegetation have occurred, and there is a lack of understanding of best practice for vegetation management.

Existing Management: Shoalhaven City Council Vegetation Vandalism Prevention Policy

Potential Management Action: Protect foreshore vegetation from vandalism, undertake community education on best practice vegetation management and continue to implement the Shoalhaven City Council Vegetation Vandalism Prevention Policy.



EW-E03

Review of Council's Local Environment Plan alongside the development of a Planning proposal to map a Coastal Vulnerability Area.

[Comment Here](#)

Issue: Development pressures resulting in a reduction in estuary health, perceived incorrect zoning of environmentally sensitive areas.

Existing Management: Development controls, state and federal legislation.

Potential Management Action: This action involves undertaking a review of Council's Local Environment Plan and Development Control Plan alongside the development of a Planning proposal to map a Coastal Vulnerability Area (CVA).

The CVA map would identify areas where coastal wetlands and environmentally sensitive areas are vulnerable to impacts from future sea level rise or foreshore erosion. From the mapping of migration pathways in Action EW-E01 as well as mapping of ecologically sensitive areas, the zoning of these and development controls that apply can be reviewed.

Development of management strategies e.g., rezoning of land to allow for future migration of estuarine vegetation communities.





Ecological Environment

EW-E04

Continue to work collaboratively with National Parks and Wildlife Service staff and Volunteers to implement the NSW South Coast Shorebird Recovery Program

[Comment Here](#)

Issue: Threats to shorebirds at estuary entrances and throughout the estuaries of St Georges Basin/Sussex Inlet, Swan Lake and Berrara Creek due to human activity and coastal hazards

Existing Management: NSW South Coast Shorebird Recovery Program

Potential Management Action: Continue to work collaboratively with National Parks and Wildlife Service staff and Volunteers to implement the NSW South Coast Shorebird Recovery Program, to:

- Raise awareness amongst residents and visitors of migratory shorebirds which are protected under international agreements, and federal and state legislation
- Manage the impacts of pest animals, vehicles, dogs and unauthorised estuary entrance openings especially in regard to the breeding success of migratory shorebirds.



EW-E05

Develop a program to monitor key environmental parameters

[Comment Here](#)

Issue: Limited or out-dated information available on key indicators of estuarine health e.g. erosion rates, estuary entrance berm growth rates following closure, migration and health of estuarine vegetation.

Existing Management: Ad-hoc monitoring of environmental parameters.

Potential Management Action: This should include developing a regular monitoring program that includes entrance monitoring (e.g. BeachStat, Inlet Tracker at Swan Lake, CoastSnap at Berrara), water quality monitoring based on recommendations from the CMP Stage 2 report, foreshore vegetation, wetland vegetation, seagrass monitoring, seabird monitoring, and ongoing monitoring of at risk assets.

Survey information at the berm at the entrance to Swan Lake should be collected following a closure event, and at regular intervals thereafter to monitor the rate of berm closure. Monitoring of water levels during coastal or tidal inundation events, and monitoring of eroding foreshores at known hotspots in each estuary using satellite imagery and RTK GPS survey, to better assess erosion rates and ongoing erosion and inundation risk.

Continue to carry out surveys of endangered ecological communities (EECs) to ground-truth and map these communities using the Biodiversity Conservation Act Biodiversity Assessment Methodology.

EW-E06

Implement environment protection works to enhance ecological communities in coastal reserves within the CMP Study Area.

[Comment Here](#)

Issue: Environment protection works required in some areas to rehabilitate land toward its natural state

Existing Management: Ad-hoc monitoring of environmental parameters.

Potential Management Action: Implement environmental protection works to enhance ecological communities in coastal reserves within the CMP Study Area. Environmental protection works include one or more of the following activities: bush regeneration, revegetation, wetland protection works, erosion protection works, dune restoration works, ecological burning, and controlling of weeds. Priority would be given to those areas that house endangered ecological communities (EECs), and targeted weed species control works.



Foreshore Erosion



EW-FE01

Investigate feasibility of moving public infrastructure landward. Review and update all Council asset management plans where assets are impacted by foreshore erosion.

[Comment Here](#)

Issue: Damage to public infrastructure and critical services due to foreshore erosion.

Existing Management: Council is drafting a Climate Change Adaptation Plan that includes actions to adapt to sea level rise on a city wide scale. These actions include undertaking risk assessments for council assets to identify and prioritise areas, infrastructure, and assets at risk from erosion, coastal inundation, storms, and flooding, and ensuring that asset management plans consider risk of storms, sea level rise and inundation for Council assets and infrastructure.

Potential Management Action: This action involves investigating the feasibility of moving identified vulnerable public infrastructure landward, e.g. sewage network and managing sewage overflows.

Specific actions for individual public assets identified as being at risk from coastal erosion through the Stage 2 Erosion Assessment undertaken in accordance with the MEMS-developed Decision Support Tool (e.g. sewage pumping stations, water and sewer mains, roads, access paths etc.).

Council should review and update all Asset Management Plans relevant to each asset identified as at risk from foreshore erosion. Continue to monitor performance/condition of infrastructure following coastal hazard events.



EW-FE02

Implement foreshore erosion actions recommended for specific sites as a result of the Foreshore Erosion Assessment undertaken for Stage 2 of the CMP

[Comment Here](#)

Issue: Damage to the estuarine environment, public infrastructure and critical services due to foreshore erosion.

Existing Management: No comprehensive management strategy to address erosion along public foreshores within the estuaries is currently available.

Potential Management Action: Progressively implement the recommended foreshore management actions for areas documented in this CMP as being subject to foreshore erosion, with priority given to those sites identified as posing the highest risk to infrastructure and the environment. The Stage 2 Erosion assessment was undertaken in accordance with the MEMS-developed Decision Support Tool to recommend actions for specific sites.

Monitor the effectiveness of the measures and share findings with relevant stakeholders, to enable ongoing refinement and improvement of the state-wide Decision Support tool. Assess whether intervention is necessary, allow erosion to occur if natural process and consequence is low. For example, erosion along the natural foreshores in the upstream reaches of Berrara Creek – collapsed foreshore vegetation could be used as “large woody debris” to protect the toe of the slope from undercutting due to tidal flows

Water Quality



EW-WQ01

Revised Council water quality monitoring program with continued estuary health monitoring program by DPE-EHG

[Comment Here](#)

Issue: There is currently inconsistent monitoring of water quality and estuary health across the estuaries in the study area. The limited nature of the available data compromises ability to assess long term trends in water quality and estuary health.

Existing Management: Council Water Quality monitoring program, DPE-EHG estuary health monitoring program

Potential Management Action: A review of the existing Council water quality monitoring program, including sanitary inspections on an as-needs basis, event sampling and continued publication of water quality results on Council website. Results should be interpreted for the community, with summary information about estuary health and swimming water quality provided in accordance with the NSW Water Quality Objectives.



EW-WQ02

Review Council Pollution Incident Response Plans and strategies relating to key infrastructure facilities including sewerage and water infrastructure

[Comment Here](#)

Issue: Overflows from sewage pumping network stations (all catchments) , which may become more frequent with increasing frequency, depth and duration of coastal and tidal inundation.

Existing Management: Council currently hold Environmental Protection Licenses (EPLs) for its sewage treatment plants, and a Pollution Incident Response Management Plan (PIRMP).

Potential Management Action: Council should review and update its Pollution Incident Response Plans in relation to particular sewage treatment facilities subject to an increasing risk from coastal and tidal inundation with sea level rise.



EW-WQ03

Collect maintenance data on existing Gross Pollutant Traps (GPTs) to enable an internal assessment of the effectiveness of existing stormwater runoff treatment/GPTs

[Comment Here](#)

Issue: Potential contaminants associated with urban area runoff and stormwater - litter/gross pollutants, hydrocarbons, metals, pesticides.

Existing Management: No data on the effectiveness of existing stormwater control measures is currently available.

Potential Management Action: Collect maintenance data on existing Gross Pollutant Traps (GPTs) to enable an internal assessment of the effectiveness of existing stormwater runoff treatment and GPTs. This will assist in informing future practice with Council with respect to confirming locations for installation of additional GPTs, and assessing best practice methods for stormwater runoff treatment.

EW-WQ04

Develop and implement water quality controls for future development

[Comment Here](#)

Issue: Development or future potential development resulting in a reduction in estuary health.

Existing Management: Existing development controls in Council Local Environment Plan/Development Control Plan, state and federal legislation.

Potential Management Action: Continue to apply Neutral or Beneficial Effect (NorBE) on water quality for all greenfield development proposed in the catchments of the St Georges Basin, Swan Lake and Berarra Creek as a minimum standard. Application of the risk based framework for stormwater management to be considered into the future, particularly where it demonstrates a higher level of water quality mitigation than NorBE, likely to be more relevant for infill development and development of already cleared land.

Navigation and Safety



EW-BN01

Assess effectiveness of signage and facility design in other areas and implement best practice for future facility upgrades

[Comment Here](#)

Issue: The Sussex Inlet and St Georges Basin areas experience high demand for waterway access, and there is the potential for conflict between waterway groups. There are numerous existing facilities for boating and navigation, which are in varying states of repair across the estuaries.

Existing Management: Ad-hoc upgrades to facilities where funding allows.

Potential Management Action: Investigate potential upgrades of boating and navigation facilities in locations suggested in the Stage 2 CMP Boating and Navigation Study, to improve safety and reduce conflicts. Implement best practice for future upgrades with reference to relevant Guidelines and Standards and relevant best practice examples from other areas. Investigations will be required for design and environmental approvals for upgrades.

Specific examples of areas where upgrades may be beneficial include Basin View Boat Ramp, Island Point Road Jetty, Erowal Bay Boat Ramp, Ski Beach, Wrights Beach Boat Ramp, Neilson Lane, Seacrest Boat Ramp, Lions Park; and installation of lights on navigation aids.



EW-BN02

Undertake a detailed investigation into the feasibility of targeted dredging within the Sussex Inlet channel at key shallow points

[Comment Here](#)

Issue: A review of the most recently available bathymetric survey for Sussex Inlet has identified areas where the existing channel is shallower than the Australian Standards requirements for navigation for the largest vessels that currently use Sussex Inlet.

Existing Management: Boat users must rely on experience, judgement and existing boating maps to be aware of hazards.

Potential Management Action: Undertake a detailed investigation into the feasibility of targeted dredging within the Sussex Inlet channel at key shallow points. Shallow locations were identified in the Stage 2 CMP Boating and Navigation Study. These include locations near the mouth of St Georges Basin where it connects with the inlet channel, and at several locations between Alamein and The Haven. This does not include the highly dynamic ocean entrance bar, where dredging is not recommended. The investigations would involve detailed environmental assessments including seagrass mapping, sediment sampling, and sediment transport modelling, as well as cost benefit analysis. Undertake ongoing monitoring of sand movements via regular survey to assess long term sustainability of dredging.



EW-BN03

Implement an LGA-wide boating education program targeting both local and visiting recreational boaters

[Comment Here](#)

Issue: Safety concerns due to difficulties for inexperienced recreational boaters navigating local waters in the Study area.

Existing Management: Navigation aids, speed limits, web camera for assessing bar conditions, requirement for boaters to check in with Marine Rescue.

Potential Management Action: This action involves developing an education and awareness program for boaters in the area. The program would include developing educational materials and signage regarding the importance of checking in with Marine Rescue, being mindful of the conditions and the dangers of navigating the entrance bar at Sussex Inlet.

