

LGA-Wide Management Actions

LG1 Establish a CMP Governance Framework

- 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, and other groups
- Clearly define the purpose, objectives and functions of the working group
- Define the roles and responsibilities of the working group members
- Execute the function of the working group



LG2 Maintain a full-time CMP Coordinator

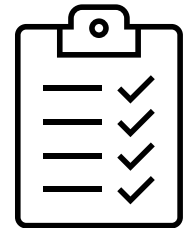
Maintain a full-time Coastal Management Program Coordinator role – in order to coordinate the development and execution of Council’s suite of CMPs, develop the implementation strategy (including long-term funding options) and build Council’s capacity to respond to coastal issues and risks.



LG3 Enact the CMPs Monitoring, Evaluation and Reporting (MER) Program to track progress and report on outcomes

This will include:

- Ongoing monitoring of CMP actions
- Annual review of actions to ensure they are appropriate and current
- Ongoing reporting of progress



LG4 Review Councils coastal management planning policies every 10 years

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
- The Shoalhaven City Council Coastal Hazard Mapping
- Lake Conjola Entrance Management Policy
- Council’s various planning instruments



LG5 Continue to work collaboratively with National Parks and Wildlife Service staff and volunteers to implement the NSW South Coast Shorebird Recovery Program

Continue to work collaboratively with National Parks and Wildlife Service (NPWS) 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
- Manage the impacts of vehicles, pest animals, and dogs on beaches, especially in regard to the breeding success of migratory shorebirds



LG6 Develop and implement a program of dune vegetation management and rehabilitation

Strategically manage and rehabilitate coastal dune systems through weeding, revegetation, erosion control, asset maintenance, feral animal control and fauna surveys – at the entrance spit, entrance channel foreshore immediately west of the spit, and on the northern side of the entrance channel.

Dune vegetation management will also include collaborating with, and supporting, Council endorsed Bushcare groups through providing educational opportunities, resources, mentoring and technical support. Collaboration with NPWS and the NSW South Coast Shorebird Recovery Program would also be required.



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LG7 Develop and execute a communications plan for Stage 5 of the CMP

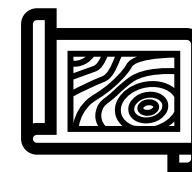
Present information on Council's website and in community engagement activities that shows:

- The status of CMP actions
- How coastal zone systems function and how integrated management responses benefits local communities



LG8 Continue Council's program of mapping endangered ecological communities (EECs) across coastal reserves

Carry out surveys to ground-truth and map the distribution and condition of EECs in coastal erosion risk areas using the *Biodiversity Conservation Act 2016*, Biodiversity Assessment Methodology.



LG9 Maintain and enhance ecological communities in coastal reserves

This action includes the ongoing implementation of ecological restoration works in coastal reserves, which would be informed by the Marine Vegetation Management Strategy (refer Action EV1) and ground-truthing surveys (refer Action LG8). Prioritisation will be given to areas that house endangered ecological communities (EECs), and targeted weed species control works.



LG10 Develop and maintain a program of community engagement with coastal communities about coastal hazard risk

Engage with foreshore reserve property owners, residents, beach goers, and community youth around issues such as:

- Recognising Aboriginal cultural heritage on the coast and within estuaries
- The importance and value of dune vegetation (e.g. trapping wind-blown sand and maintaining dune resilience, ecological functions and buffering against coastal hazards)
- Managing the interface between coastal bushland, estuary foreshore and private property, including edge impacts, encroachments, garden refuse dumping, vegetation retention, and weed management
- Importance of foreshore vegetation in stabilising foreshores, reducing erosion, creating habitat, filtering runoff to improve water quality
- Illegal pruning, poisoning and removal of trees, private vehicle access and illegal structures/items which restrict public use of the reserve. Enforce regulations in high conservation areas as a priority.



LG11 Review and update all Council asset management plans (AMPs), relevant to the Lake Conjola study area

Review and update all asset management plans (AMPs), relevant to Lake Conjola. AMPs by asset type will be updated by relevant asset custodian.

Include an asset management approach to provide for replacement, relocation or retrofitting of public assets that are currently in coastal risk areas – including boat ramps, wharves, jetties, water and wastewater infrastructure, stormwater drainage infrastructure, foreshore protection infrastructure, roads and accessways.

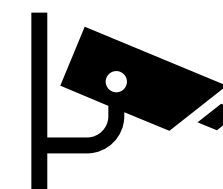


LG12 Develop a program for regular and ongoing monitoring of coastal assets and infrastructure

Undertake monitoring of assets and infrastructure exposed to coastal hazards including:

- Foreshore protection structures (revetments, seawalls,)
- Recreational assets including viewing platforms & coastal accessways
- Stormwater outlets and wastewater infrastructure

Include this monitoring in Councils asset management program.



LGA-Wide Management Actions

LG16 Include the Lake Conjola study area in a LGA wide coastal zone Aboriginal Cultural Heritage Survey, and development of local protection/management plans

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

- fill existing information gaps with 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 field work, and 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.



LG17 Engage with relevant Local Aboriginal Land Councils and local Traditional Owner Groups to develop a cultural educational and awareness program

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 coastal zone. 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 including 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



LG18 Provide opportunities and help build capacity to local Aboriginal Ranger programs, to enhance their role in management of Sea Country

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

- This would 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 dune restoration and monitoring programs.
- Work collaboratively to help develop the next generation of junior rangers to be part of future coastal management across the Shoalhaven LGA.

This action is consistent with Initiative #4 of the NSW Marine Estate Management Strategy – 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”.



Manage Foreshore Areas and Bank Erosion

FB1 Investigate, remediate and monitor impacted or vulnerable bank areas

This action would involve detailed design followed by remediation of bank areas within Lake Conjola that have been impacted or are vulnerable to erosion. The main tasks for this action would include:

- Preparation of detailed designs for treatment of eroding and unprotected foreshore areas (refer to Interactive Mapping) and working with relevant stakeholders to enable establishment or restoration of riparian vegetation where identified as lacking.
- Preparation of detailed designs for areas of inconsistent foreshore protection works, which include consideration of opportunities for installation of environmentally friendly seawalls and a uniform approach to foreshore protection.
- Establishment of an ongoing monitoring program to inform remediation actions. This monitoring would be included in Councils asset management program as per Action LG12.
- Progressive implementation of riparian vegetation restoration and/or seawall remediation works.



FB2 Management of stormwater runoff

This action would involve detailed design followed by implementation of management works for identified foreshore areas where uncontrolled stormwater runoff or discharge is impacting on public amenity and safety, foreshore stability, or lake water quality. In some areas this could be undertaken in conjunction with implementation of riparian vegetation restoration and/or seawall remediation works as per Action FB1. The main tasks for this action would include:



- Preparing detailed designs for the specific areas identified (refer to Interactive Mapping) where surface water runoff pathways and stormwater discharge outlets could be modified to better filter runoff and improve lake water quality.
- Consider opportunities for:
 - diversion of hazardous stormwater runoff and redirection of surcharge flows
 - stabilisation of existing stormwater outlets and improvement of energy dissipation
 - installation of warning signage near stormwater outlets to identify hazards
 - filtering of runoff with provision of a riparian vegetation buffer along the foreshore edge (7 locations, refer Interactive Mapping)
 - at source interception of runoff with raingardens or similar
 - replacement of hard drainage channels with grassed and vegetated swales (5 locations, refer Interactive Mapping)
 - installation of stormwater quality improvement devices (SQIDs) such as gross pollutant traps
- Establishment of an ongoing monitoring program to inform mitigation actions. This monitoring would be included in Councils asset management program as per Action LG12.
- Progressive implementation of mitigation works.

FB3 Management of watercraft storage

This action would involve the implementation of a removal program for ad hoc stored watercraft (e.g. dinghies, canoes, kayaks etc.) that are abandoned, derelict or illegally stored in public foreshore areas (refer to Interactive Mapping). This would be undertaken in conjunction with the development and implementation of formalised watercraft storage systems (e.g. dinghy/kayak racks, tie-up points, permitting system) in the identified foreshore areas around the lake (refer to Interactive Mapping). Ongoing monitoring and policing would be required to prevent re-occurrence of ad hoc watercraft storage.



Manage Foreshore Areas and Bank Erosion

FB4 Management of uncontrolled stock access to foreshore areas

This action would involve working collaboratively with farmers/foreshore landowners in conjunction with NSW Local Land Services (LLS) to support change in farming practices (e.g. stock access to lake foreshore). This would be done in conjunction with other site specific measures in identified deteriorated foreshore areas including:

- reinstatement of a riparian vegetation buffer along foreshore areas (as per Action FB1, refer to Interactive Mapping)
- installation of fencing to prevent foreshore stock access (foreshores of upper Lake Conjola and Conjola Creek near Fishermans Paradise)



FB5 Investigate appropriate and permissible use of public foreshores by private structures

This action would involve investigation of identified areas of the lake where public access to or along the foreshore may be impeded by the presence of private foreshore access ramps, jetties or pontoons. The investigation would include recognition of current leases/licences for foreshore structures and identification of illegal structures for removal. Possible areas that need to be checked include: the southern foreshore between Conjola Beach Boat Ramp and Aney St Boat Ramp; the southern foreshore between BIG4 Caravan Park and Deepwater Resort; and the Conjola Creek foreshore at Fishermans Paradise.

This action would be undertaken in conjunction with the development of Domestic Waterfront Structure Strategies for priority estuaries in NSW (<https://www.marine.nsw.gov.au/projects/domestic-waterfront-structure-strategies>), including Lake Conjola. These strategies would identify areas where it is suitable to build private structures with approvals and streamline the approvals process. The objective of the strategies would be to help maintain access to public waterfront areas and identify and protect sensitive environmental areas. This initiative is being led by DPI – Fisheries in partnership with local Councils; DPE – Crown Lands; DPE – Planning and Assessment; DPE – Environment, Energy and Science; Transport for NSW; and DPE – Natural Resources Access Regulator.



Improve Planning and Management Arrangements for the Lake Catchment Area

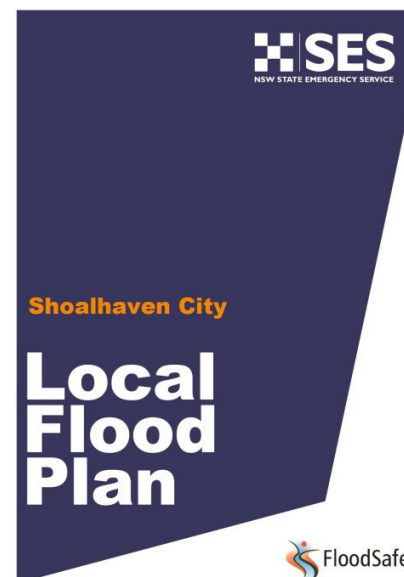
PM1 Review tidal and coastal inundation development and planning controls within LEP/DCP

This action would involve review of relevant development and planning controls within the Shoalhaven Local Environmental Plan 2014 and Shoalhaven Development Control Plan 2014 that apply to new development within flood prone land areas. This should include consideration of controls for non-habitable areas and incorporation of tidal/coastal inundation events as a hazard and suitable planning controls for management of permanent inundation associated with tidal inundation into the future with sea level rise.



PM2 Prepare and implement Coastal Zone Emergency Action Subplan (CZEAS)

This action would involve the preparation of a Coastal Zone Emergency Action Subplan (CZEAS) for Lake Conjola as part of the Lake Conjola CMP. This will primarily address emergency response to relevant coastal hazards as defined in the *Coastal Management Act 2016* and will need to be consistent with the Shoalhaven City Local Flood Emergency Sub Plan 2014.



PM3 Review future zoning of land and land use controls and categorisation within the Lake Conjola catchment

This action would involve the initial review (and ongoing periodic review) of future zoning of land within the Lake Conjola catchment. This should be undertaken with consideration of the protection and rehabilitation of existing estuarine and riparian vegetation and habitat, future migration of vegetation/habitat, and future inundation of land by tidal/coastal inundation processes under sea level rise.

Initial review (and ongoing periodic review) of land use controls and categorisation within the Lake Conjola catchment should be undertaken in the context of the Waterway Health Risk Assessment completed for Lake Conjola, which identified areas where land use intensification should be avoided.

This activity would be undertaken in conjunction with Action LG4.



Entrance Management Interventions

EM1 Implement revised Entrance Management Policy



This action will be informed by the assessment work completed as part of the Lake Conjola CMP, which includes a review of trigger lake water level, breakout channel location and geometry, and ocean tide conditions for optimisation of mechanical openings. Also under investigation are alternative entrance management options including the maintenance of a 'dry notch', a modified managed entrance approach with occasional dredging of ebb tide channel, and engineering works to create a permanent entrance channel.

The outcomes of the work completed in the Lake Conjola CMP would be incorporated into an updated Lake Conjola Entrance Management Policy.



EM2 Improve public education on the impacts and safety risks of Lake openings

This action would be undertaken in conjunction with the program of community engagement developed for Action LG5. Council already has a wealth of entrance management information available (i.e. on their website) which can be utilised to support the objectives of future educational campaigns. The objectives would be to improve community knowledge of the principles and drivers of ICOLL entrance management, understanding of Council's policy and operational procedures, and to discourage illegal openings.

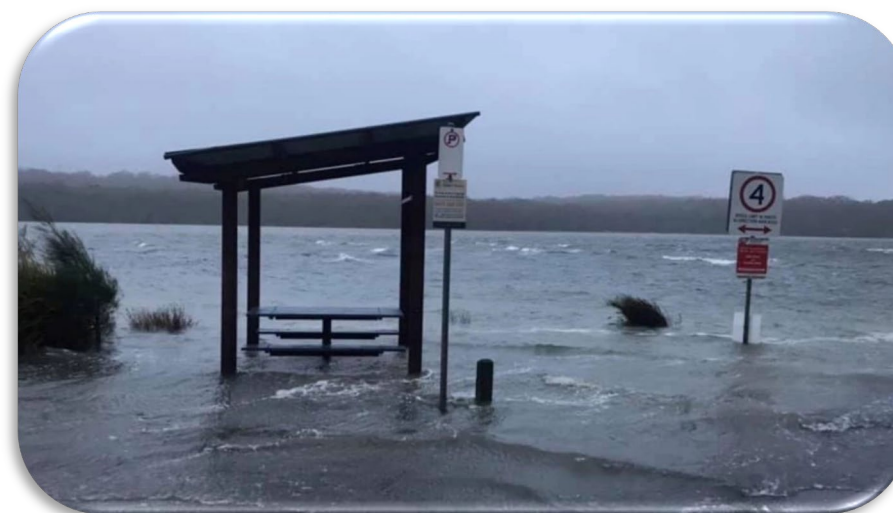
Preparation and Response to Inundation Events

IN1 Develop future management plans for public assets impacted by inundation



This action would involve the development of management plans for public assets that are predicted to be impacted by coastal and tidal inundation in the future and/or could be hazardous when submerged. The management plans would be informed by the Risk Assessment undertaken as part of Stage 2 and the establishment of an ongoing monitoring program included in Councils asset management program as per Action LG12. Actions within the management plans for particular assets could include:

- monitoring of the frequency of inundation and associated public amenity and public safety impacts
- relocation/reconstruction of assets that could be submerged
- closure of assets during periods of inundation
- removal of valuable assets from ground floor areas
- retrofitting or relocation of public infrastructure



IN2 Develop and implement Lake water level forecasting system

This action would involve the development of a water level forecasting system that uses forecast rainfall and ocean water level along with the prevailing entrance condition to estimate the level and extent of inundation on the foreshores of Lake Conjola. The system could be used by Council to plan entrance management interventions and also as a tool in flood emergency situations for the State Emergency Service (SES). The system could have in-built capability to issue notifications (e.g. SMS text messages or similar) to relevant personnel in Council and SES regarding predicted inundation events and could be used to plan road closures, evacuation routes, and the issuing of flood evacuation warnings to residents.

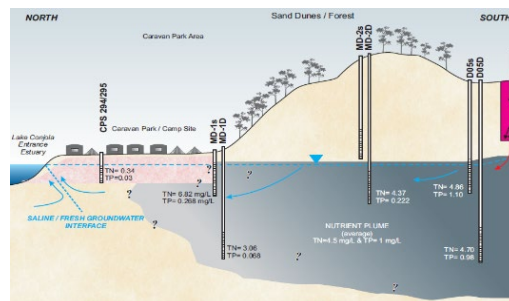
Council have initiated this process by recently engaging a consultant to deliver the Shoalhaven ICOLL Catchments Flash Flood Warning System Scoping Study.

Maintain and Improve Water Quality

WQ1 Work with Shoalhaven Water to consider findings of ongoing groundwater monitoring, including the need for any interception of additional treatment

This action would involve Council reviewing the results of the groundwater monitoring and reporting program required by legislation for the effluent discharged into the dune exfiltration system as part of the Conjola Regional Sewerage Scheme. This program should include ongoing assessment of:

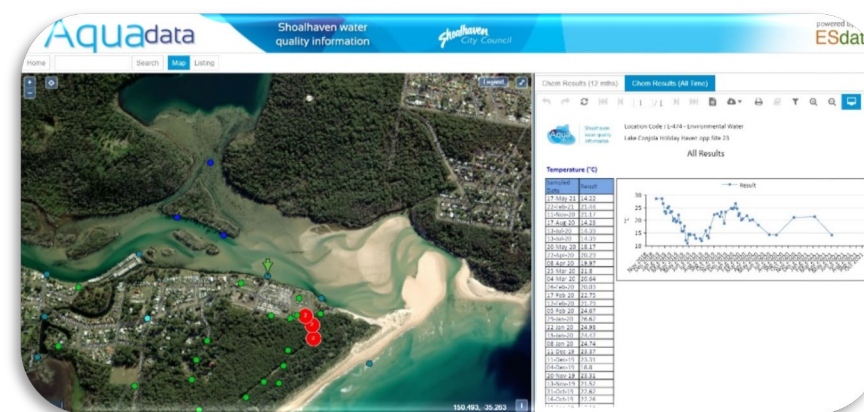
- the likelihood of the nutrient plume continuing to migrate and affecting Lake Conjola and / or Pattimores Lagoon, and if so the likely impacts
- the capacity of the groundwater system and environment (estuary and lagoon) to naturally attenuate the nutrients
- whether the mass and concentration of nitrogen and phosphorus being discharged into the groundwater can be further reduced
- potential options for interception and additional treatment of the groundwater



WQ2 Continue and refine surface water monitoring and reporting program

This action would involve the refinement and continuation of the existing surface water monitoring and reporting program, including maintenance of the Aquadata online portal for public access to water quality sampling results. Recommended refinements to the existing program include:

- completing sampling consistently at a selected (rationalised) number of sites that provide adequate spatial coverage across the lake waterbody, to facilitate improved analysis of events impacting water quality
- recording of a range of ancillary information during each water sampling site visit to aid in interpretation of collected data, including weather conditions, recent rainfall quantity and dates, water levels, tide condition, and open/closed status of the entrance
- inclusion of algal bloom monitoring
- increased review, interpretation and public dissemination of Aquadata water quality monitoring results
- implementation of warning signage and closure of lake areas in the event of poor water quality conditions for primary contact recreation (e.g. swimming, water skiing etc.)



WQ3 Develop and implement water quality controls into future development

This action would involve a review and update of the water quality development and planning controls within the Shoalhaven Local Environmental Plan (LEP) 2014 and Shoalhaven Development Control Plan (SDCP) 2014 that apply to new development within the Lake Conjola catchment area. This review would consider the following aspects:

- Pollutant reduction targets for future development within the Lake Conjola catchment to be based on Neutral or Beneficial Effect (NorBE) for all greenfield development
- Possible future application of the "Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions" (OEH, 2017) for Lake Conjola.
- avoiding land use intensification in high risk areas as per mapping in "Shoalhaven Local Government Area Estuary Health Diffuse Source Pollution Risk Assessment Mapping" (DPIE, 2020)
- inclusion of a range of Stormwater Quality Improvement Devices (SQIDs) to meet NorBE outcomes including incorporating wetlands and raingardens in private and public development



WQ4 Investigate and manage potential sewage inflows

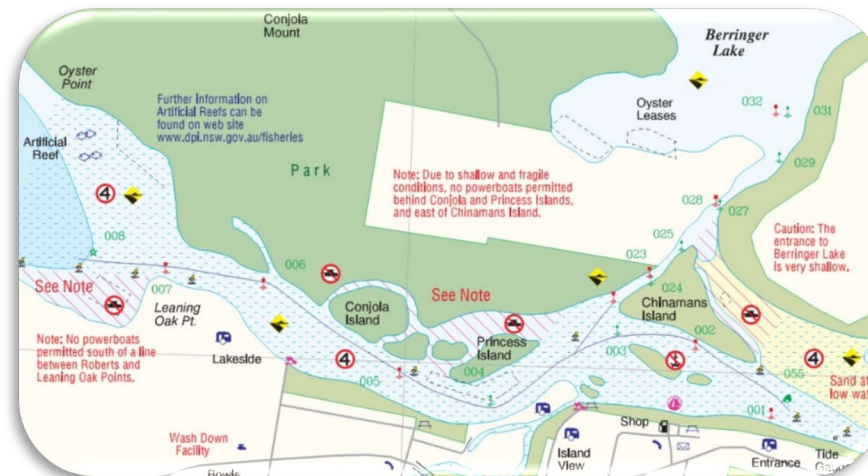
In operation from 2008, the Conjola Wastewater Treatment Plant (WWTP), owned and operated by Shoalhaven Water, enabled the majority of properties around Lake Conjola to transition away from on-site septic tanks, mitigating significant potential diffuse sources of bacteriological pollution into the waterbody. Continue to work with Councils Environmental Health Officers to better understand any potential impacts from remaining septic tanks on lake water quality. Ensure compliance and enforcement continues on any septic tanks not performing in accordance with current requirements.

Protect and Rehabilitate Estuarine and Riparian Vegetation and Habitat

EV1 Protect and/or rehabilitate riparian and foreshore areas to enhance estuarine vegetation

This action would involve a range of measures to ensure the protection of existing riparian and estuarine vegetation, as well as rehabilitation of currently impacted areas, and would consider the following aspects:

- consider acquisition and protection of key locations, notably Coastal Wetlands and Littoral Rainforest areas, and working with landholders to investigate options for modified land management or voluntary acquisition based on incentives and funding such as Blue Carbon
- reservation of land to allow for spatial migration of vegetation/habitat under sea level rise (refer Interactive Mapping)
- installation of informative signage and fencing in key areas to protect vegetation and habitats
- Council support of volunteer based rehabilitation initiatives such as Bushcare/Parkcare/Dunecare, community based revegetation campaigns, and other community "ownership" projects
- continuation of existing Council programs for pest control (e.g. foxes, rabbits, Indian Mynas) and weed management and biosecurity
- enforcement of existing policies/controls on access restrictions to sensitive areas (e.g. boating and pedestrian access)
- undertake rehabilitation works in damaged vegetated areas, in conjunction with Action LG9 and Action FB1 (refer Interactive Mapping)
- Revegetation of riparian areas in 9 locations (as per Action FB1, refer to Interactive Mapping)
- Possible future preparation of a Marine Vegetation Management Strategy for the lake waterbody and foreshores as part of a Marine Estate Management Strategy project. This strategy would review and build on the existing work of the CMP.



Maintain and Improve Recreation and Amenity

RA1 Improvement and enhancement of boating access and navigation in Lake Conjola

This action would involve the implementation of the following improvements to boating access and navigation in collaboration with Transport for NSW and in accordance with the [South Coast Boating Network Plan](#):

- seek funding for and complete detailed design and construction of Stage 2 of the boat ramp works at Havilland Street, Conjola Park, comprising:
 - an additional 20 car-trailer spaces and turning bay;
 - amenities block;
 - tap for wash down bay; and,
 - provision of non-powered craft dry storage.

