

Central Coast Council

Tuggerah Lakes Estuary Coastal Management Program

Our progress on the recommendations from
the Tuggerah Lakes Expert Panel

Central
Coast
Council



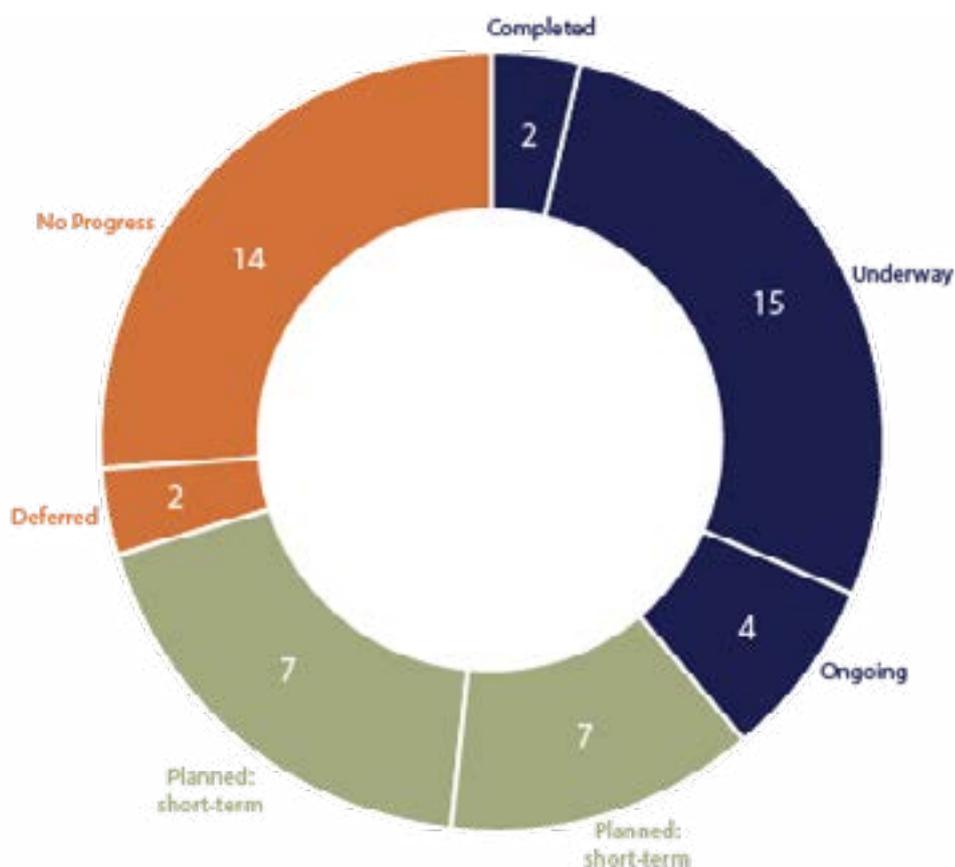
central coast
waterways
tuggerah lakes estuary

In 2020 the NSW Government established an independent Tuggerah Lakes Expert Panel (TLEP) in response to community concern over water quality in the Tuggerah Lakes estuary. The Expert Panel produced a report containing over 50 recommendations which was finalised in December 2020 and published in early 2021. Central Coast Council has welcomed the report and has made a genuine effort to enact and holistically integrate the recommendations into the development of our new Tuggerah Lakes Estuary Coastal Management Program (CMP). The CMP is currently in Stage 2 and is expected to be completed by mid-2024. Where recommendations sit outside of the scope of the CMP, we are finding other ways to deliver them through Council strategies and operational programs, and with our partner agencies.

In the interim, Council continues to deliver actions within the Tuggerah Lakes Estuary Management Plan (EMP), which is the current certified Coastal Zone Management Plan for the estuary. You can learn more about the progress of the EMP and CMP at loveourwaterways.centralcoast.nsw.gov.au and yourvoiceourcoast.com/waterways.

To mark the two-year anniversary of the Expert Panel’s Report, we are pleased to provide an update on our progress.

Of the 54 recommendations included in the report, **70% are either completed, underway, ongoing or planned via the CMP**. Many are complex and integrated, which take time to deliver in full. Several actions are outside of Council’s responsibility (e.g. establishing a Taskforce), not feasible at this time e.g. proposed funding streams) or require further concept validation (e.g. redirecting stormwater, large-scale foreshore engineering, second entrance investigation). Detail for each recommendation is provided in the tables below.





One of the key recommendations presented by the Expert Panel was that a communication reset was required. This report is one way we are providing open and transparent information to you, our community. We are also sharing our progress on our [yourvoiceourcoast/waterways](#) website, publishing an eNews ([register here](#)) and offering a range of opportunities for interested community members and stakeholders to participate in Community Focus Groups to help us deliver important tasks of the CMP including the development of an Entrance Management Strategy and a Wrack Management Strategy.

Central Coast Council is the lead agency on the following recommendations, with support from the NSW Government and others as required.

For reference, “Planned: short-term” refers to the development phase of the CMP (i.e. Stage 1-4 which will occur over the next two years); and “Planned: medium-term” refers to the implementation phase of the CMP (Stage 5; following certification), or within 5 years.

#	TLEP Theme	TLEP - Recommended Action	Status Dec 2022	Progress update - Dec 2022
1	Overarching	<u>Develop strategic and measurable plans for dredging, wrack management, nearshore water quality, stormwater management, entrance flood management and sustainable catchment development.</u> Integrate these plans into the TLCMP.	Planned:	This broad recommendation is itemised and included in the Tuggerah Lakes Estuary CMP Scoping Study as individual tasks to be completed in Stages 3 and/or 5. The Entrance Management Study and Interim Entrance Management Procedure were completed and published in 2022. An Entrance Management Options Paper which broadly considers management options beyond flood mitigation will be completed in early 2023. A Wrack Management Strategy is scheduled in Stage 3. Other recommendations will be included in Stage 5 where applicable.
2	Overarching	Communicate these plans (Action 1) thoroughly, openly and transparently with the community in a proactive manner.	short-term	Council maintains a range of online platforms to provide updates on CMP progress and other coastal and estuary management initiatives. The Tuggerah Lakes Entrance Management Study and Interim Management Procedure were promoted via Media Release and are published on Council's website. This action will continue as additional tasks are completed. Council recognised the importance of open and transparent communication and engagement via the Tuggerah Lakes Estuary CMP Community and Stakeholder Engagement Strategy. The yourvoiceourcoast/waterways website is the central location for updates on CMPs. We also publish an eNews which people can register for here.
5	Overarching	Have the Taskforce undertake an <u>independent audit of water sensitive urban design practices</u> , including erosion and sediment control practices, within Central Coast Council.	Underway	Whilst there is no Taskforce in place, Council's Development Control Team have prepared a business case for an Erosion and Sediment Control Officer to increase resources and capacity to address this recommendation. In addition, Council's Estuary Management Team have delivered accredited Erosion and Sediment Control Training to staff and industry personnel.

#	TLEP Theme	TLEP - Recommended Action	Status Dec 2022	Progress update - Dec 2022
6	Overarching	Develop a detailed dredging management strategy that outlines where, when and, most importantly, why dredging should be undertaken in the entrance channel. Further, the development of dredging plans should be based on a conversation with the community stakeholders and the best available science, with results reported back to the relevant stakeholders at prescribed intervals.	Planned: short-term	This recommendation is dependent on the outcomes of Stage 2 & Stage 3 CMP studies/ plans. Once the Tuggerah Lakes Entrance Options Paper is completed, if dredging is identified as an ongoing management strategy, this advice will be incorporated into the Entrance Management Strategy (part of Stage 3).
7	Overarching	<u>Implement an environmental levy</u> to secure a continual baseline funding source for Council and to help avoid the current reliance on ad hoc State or Commonwealth grants. Many other Councils in the region have benefitted significantly from an environmental levy and the TLEP is concerned that Tuggerah Lakes will fall significantly behind other similar systems without adequate funding.	Deferred	An Environmental Levy is not feasible at present. Other funding mechanisms will be investigated as part of the CMP Business Plan. This is likely to include grant funding to bolster general revenue contributions.
8	Overarching	Implement a stormwater levy to progress the related recommendations, to undertake audits of existing and proposed water sensitive urban design infrastructure and sediment control measures and provide Council with a sustainable means to maintain stormwater infrastructure.	Deferred	A Stormwater Levy is not feasible at present. Other funding mechanisms will be investigated as part of the CMP Business Plan. This is likely to include grant funding to bolster general revenue contributions.
9	Engagement and communication	<u>Focus engagement on learning together rather than solving 'the problem' or 'fixing' the Lakes.</u>	Underway	The Tuggerah Lakes Estuary Education and Communication Strategy was completed in 2021 with a key focus on shared learning, engagement and empowerment.

#	TLEP Theme	TLEP - Recommended Action	Status Dec 2022	Progress update - Dec 2022
10	Engagement and communication	Work with the community to grow a shared understanding of the Lakes' management dilemmas – what is actually going on and what makes managing the Lakes so difficult.	Underway	<p>This approach was established through Tuggerah Lakes Estuary Education and Communication Strategy and CMP Community and Stakeholder Engagement Strategy which include for example, targeted Community Focus Groups (CFG) for key projects.</p> <p>A CFG has been established for the Tuggerah Lakes Entrance Options Paper to facilitate collaborative planning and management.</p> <p>In addition, innovative programs like the 2022 Changemakers Course offer education and empowerment opportunities to the local community.</p>
11	Engagement and communication	Build on the dilemma work to co-create a shared picture of the realistic and preferred outcomes for the Lakes.	Planned: short-term	<p>This approach was integrated into Tuggerah Lakes Estuary Education and Communication Strategy and CMP Community and Stakeholder Engagement Strategy and will include specific focus group activities in Stages 2, 3 & 4 of the CMP.</p>
12	Engagement and communication	Work with the community to design and agree to a decision-making process to determine potential and prioritised management actions, and to implement them.	Planned: short-term	<p>This approach was integrated into Tuggerah Lakes Estuary Education and Communication Strategy and CMP Community and Stakeholder Engagement Strategy and will include specific focus group activities in Stages 2, 3 & 4 of the CMP.</p>

#	TLEP Theme	TLEP - Recommended Action	Status Dec 2022	Progress update - Dec 2022
13	Entrance Channel	<p>Based on available information, the existing entrance should not be trained, nor extensively dredged. The existing studies indicate that there would be a minor increase in tidal exchange and that the potential impacts on water quality and ecology are not well understood. Potential adverse impacts include:</p> <p>a. If the entrance were opened permanently, it is highly likely that the average lake water levels would fall, exposing shallow fringing areas of the lakes during fortnightly neap tides and resulting in the generation of poor odours and groundwater seepage. This was experienced in 2020, following the floods in February and subsequent rain and storm events that caused the entrance to remain open for an extended period.</p> <p>b. Experience with entrances to other large coastal lagoons in NSW, has shown a tendency for the entrance to enter an unstable scouring mode with increasing activation and movement of sand through the entrance and ongoing excessive erosion of the entrance channel foreshores. This long-term geomorphic process has not been assessed by any of the modelling studies completed to date and may result in significant ecological and engineering implications.</p> <p>c. As sea levels continue to rise offshore of NSW, the issue of flooding around the fringes of estuaries as a result of ordinary astronomical tides and coastal storm surge will become increasingly important. Opening the entrance more broadly and permanently will exacerbate flooding from this process. The absence of a mapped coastal vulnerability area within State Environmental Planning Policy (Coastal Management) 2018 in relation to the tidal inundation hazard means that this is not presently understood.</p>	Underway	<p>This advice has been noted and carried forward into the Tuggerah Lakes Entrance Management Study and Interim Entrance Management Procedure as well as subsequent Stage 2 Studies and the Stage 3 Strategy.</p> <p>The initial task to complete this recommendation is a Tidal Inundation and Sea Level Rise Assessment. An appropriate pathway to achieve this is under discussion with the Department of Planning & Environment. For consistency, this assessment must integrate with the Floodplain Risk Management process. A new Flood Study for Tuggerah Lakes is currently in preparation.</p>
14	Entrance Channel	<p>Undertake <u>Coastal Vulnerability Area mapping and put forward as a Planning Proposal</u> as part of the TLCMP.</p>	Planned: medium-term	<p>The initial task to complete this recommendation is a Tidal Inundation and Sea Level Rise Assessment. An appropriate pathway to achieve this is under discussion with the Department of Planning & Environment. For consistency, this assessment must integrate with the Floodplain Risk Management process. A new Flood Study for Tuggerah Lakes is currently in preparation.</p>

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15	Entrance Channel	<u>Continue dredging of the entrance in the medium term</u>	Underway	Dredging was completed in 2020 and was proposed for 2022. Following multiple floods in 2022, the channel did not meet the triggers for dredging identified in the Entrance Interim Management Procedure in 2022 and as such, no dredging was carried out.
15a	Entrance Channel	...undertaking feasibility assessment to review (i) water level impacts, (ii) tidal exchange, (iii) clarity impacts, and (iv) socio-economic and tourism impacts. Use this information to ascertain whether dredging represents a reasonable ongoing investment.	Underway	This recommendation is underway as part of the Tuggerah Lakes Entrance Options Paper.
15b	Entrance Channel	If [dredging found to be a reasonable investment], develop and implement a practical and transparent monitoring program with improved dredging triggers and negotiate with relevant authorities to develop a protocol which enables rapid response and dredging when required. The TLEP note that entrance dredging may also be implemented to assist with flood management and the above processes should be integrated with Council's flood risk management procedures. This recommendation may be funded via the Coasts and Estuary Grant's program, if noted as a priority within the Coastal Management Program study for Tuggerah Lakes.	Planned: short-term	This recommendation is underway as part of the Tuggerah Lakes Entrance Options Paper and subsequent Entrance Management Strategy.
16	Entrance Channel	<u>Examine past dredging expenditure</u> and work with relevant agencies to <u>agree upon a clear and reliable funding structure for future dredging over the medium term</u> . Reliance upon contestable grants programs is unlikely to provide the required certainty of funding. The arrangement should be revisited once a final decision is made regarding the continuation of the dredging program.	Underway	This recommendation is underway as part of the Tuggerah Lakes Entrance Options Paper. Unfortunately, Council continues to rely on grant funding or general revenue to support the dredging program. Once a CMP is completed and certified, Council may be eligible for part-funding through the NSW Government Coast and Estuary Grants.

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18	Water quality and ecological	Where possible, <u>redirect stormwater into the rivers and creeks</u> to alleviate nearshore eutrophication (poor water quality).	Planned: medium-term	This recommendation requires a viability assessment which may occur as part of the Stage 2 catchment and receiving waters modelling project. Given the low grade from foreshore suburbs to either the lake or the creeks, the number of drains where this could be achieved successfully using gravity feed is likely to be limited.
20	Water quality and ecological	Implement a <u>strategic wrack harvesting program</u> based on DPIE plan (2013). This may include an upgrade of machinery and modification of collection methods.	Planned: short-term	A Wrack Management Strategy is included as an action in Stage 3 of the CMP. This will be part funded by a NSW Government Coast & Estuary grant. The project will include extensive community engagement to facilitate recommendations 9-12.
21	Water quality and ecological	Continue <u>rehabilitation and restoration of wetland habitats</u> that discharge to Tuggerah Lakes.	Ongoing	In 2020, Council reported that 30ha of coastal saltmarsh and 374ha of wetland habitat had been restored in the Tuggerah Lakes catchment since 2008. Since this report was published: <ul style="list-style-type: none"> - A further 16.1ha of coastal saltmarsh has been protected and restored using a range of actions including installation of no-mow markers to define the saltmarsh edge, wrack mulching and jute matting to suppress weed regrowth and bush regeneration to enhance the growth of native species. Many environmental volunteer groups also proudly restore coastal saltmarsh on the foreshores of Tuggerah Lakes. - A further 273.9ha of wetland habitat has been protected and restored, mainly using bush regeneration techniques to improve wetland resilience, reduce weeds and enhance native flora and fauna biodiversity. These areas act like the kidneys of the lakes and help to filter out nutrient and sediment pollution flowing from the catchments so it is vitally important to protect them.
22	Water quality and ecological	Undertake <u>further studies to quantify the importance of groundwater</u> nutrient inputs to the nearshore zone. If groundwater is found to be important, strategies such as the use of bioreactors should be investigated for feasibility.	Underway	A long-term research project was completed at Berkeley Vale in 2022. This body of work included catchment, groundwater, nearshore and offshore event- based sampling, hydrodynamic model (calibrated by drogues) and bathymetric survey. The study provides management options and useful information which can be applied elsewhere where similar issues present. Council will seek funding to trial management options in future grant applications.

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23	Water quality and ecological	Continue monitoring and adaptively managing the estuary to ensure the effectiveness of actions and adjust/improve where necessary.	Underway	The Central Coast Waterways Report Card is published annually by Central Coast Council and provides an overview of water quality results and trends for the preceding year. 2021 marked the 10th anniversary of the program in Tuggerah Lakes and came with some promising results – 69% of sites have improved, 19% of sites are stable and 12% of sites have declined. Current and past report cards can be viewed at https://loveourwaterways.centralcoast.nsw.gov.au/learn/health-our-estuary/tracking-health-our-waterways . Recent trends in Budgewoi Lake and Lake Munmorah have seen management response shift to focus more closely on these areas. Additional monitoring of groundwater, sediment condition, stormwater device performance, saltmarsh and wetland resilience and freshwater stream health is also underway to inform future management decisions. Additional variables to be consider through CMP development.
24	Water quality and ecological	Expand existing <u>community education and engagement program</u> – including web-based conceptual models, regular communications via social media etc, a daily water quality report through wide reaching media such as radio and television, community citizen science, community wrack collection.	Ongoing	This recommendation has been incorporated into the Tuggerah Lakes Estuary Education and Communication Strategy (2021). A daily water quality report is currently not viable with existing resources however this concept will be considered through the CMP as a part of the Monitoring, Evaluation and Reporting Program.
25	Water quality and ecological	Develop visual products - Importantly, information collected from the community should be captured within a visual product that is accessible to all. In combination with the scientific review, one option is to build upon the book Tuggerah Lakes – Way Back When an essential addition to residents’ coffee tables.	Underway	Council continues to develop and publish new physical and digital resources. This recommendation is included in the Tuggerah Lakes Estuary Education and Communication Strategy (2021). The Stage 2 CMP Synthesis Report and Entrance Options Paper propose the development of digital visual aids to improve communication and conceptual understanding of complex processes, values and interrelationships. The Tuggerah Lakes Community Handbook has recently been updated for printing and dissemination at Council events. A series of iBooks have also been developed which are paperless and accessible. Our series of iBooks can be viewed at https://loveourwaterways.centralcoast.nsw.gov.au/learn/educational-resources/download-our-interactive-ibooks .
26	Catchment management recommendations	Adopt a <u>policy of life cycle costing of stormwater treatment options</u> .	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.

#	TLEP Theme	TLEP - Recommended Action	Status Dec 2022	Progress update - Dec 2022
27	Catchment management recommendations	Undertake <u>Water Sensitive Urban Design (WSUD) capacity building within Council.</u>	Planned: medium-term	This action will be included in the CMP if not delivered sooner.
28	Catchment management recommendations	Develop and apply standard WSUD drawings for use in Council infrastructure works (e.g. roads, renewals) as well as by the development industry to ensure consistent standards and requirements are met (noted currently under development in Council).	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.
29	Catchment management recommendations	Improve <u>education and enforcement of Erosion & Sediment Control (E&SC) practices</u> , particularly at the lot scale. Consider proactive enforcement of erosion and sediment control practices, potentially through a third party (e.g. State Government).	Underway	Council's Development Control Team has prepared a business case for an Erosion and Sediment Control Officer to increase resources and capacity to address this recommendation. In addition, Council's Estuary Education Team are delivering accredited Erosion and Sediment Control Training to staff and building industry professionals.
30	Catchment management recommendations	<u>Adopt a maintain or improve conditions (from existing 2020 conditions) target for all future development</u> until sustainable loads are determined.	Planned: medium-term	This recommendation has been included in the Central Coast Regional Plan 2041 as Planning Priority 5 for the Tuggerah District. This is an important step forward and will result in changes to local planning controls to include "Neutral or Beneficial Effects" (NorBE) for both drinking water and urban catchments. Currently this target applies to drinking water catchments only.
31	Catchment management recommendations	<u>Include the adopted water quality treatment targets in the new Local Environmental Plan</u> to give Council greater powers to enforce.	Planned: medium-term	A target for "Neutral or Beneficial Effect" ("NorBE") is currently in place for Water Supply catchments only. Less stringent targets currently apply for urban areas, which arguably have a more significant impact on overall water quality and ecological health. These are included in the Civil Design Guidelines which inform the LEP and DCP. A review of water quality targets should be undertaken as a matter of priority in response to the Central Coast Regional Plan 2041 and the Stage 2 catchment and receiving waters model project.
32	Catchment management recommendations	Introduce <u>planning controls for single dwelling developments</u> to achieve water quality treatment	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.

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33	Catchment management recommendations	Develop and adopt a <u>stormwater management / integrated water management plan for Porters Creek</u> to ensure development doesn't adversely impact Porters Creek wetlands through changes to flow regimes and increased pollutant loads. A number of investigations have been undertaken / are currently underway.	No progress	Council has recently completed the Porters Creek Wetland & Catchment Stormwater Modelling, Revegetation Plan and Monitoring Plan (Cardno 2022). The plan shows that the proposed revegetation will provide little reduction in stormwater flows entering the wetland from developments. Therefore, Council is currently investigating other potential new stormwater management opportunities for the wetland. Until such time as a new stormwater management strategy is developed & adopted, all new development will be assessed in accordance with Council's LEP, DCP and Civil Works Specifications.
34	Catchment management recommendations	Revise WaterPlan 2050 to develop an Integrated Water Resource Plan. Options should be considered in the context of the CMP and impacts on lake water quality and ecological health.	Completed	The Central Coast Water Security Plan (CCWSP) considered a range of criteria in the assessment of options to manage the region's supply/demand balance. These criteria aligned with the Central Coast Community Strategic Plan's focus areas and are described within the CCWSP (https://www.yourvoiceourcoast.com/sites/default/files/2021-12/central_coast_water_security_plan_november_2021.pdf) and associated Decision Making Framework factsheet (https://www.yourvoiceourcoast.com/sites/default/files/2021-08/technical_paper_factsheet_decision_making_framework_accessible.pdf).
35	Catchment management recommendations	Improve and ensure consistency of Development Assessment/Development Control Plan requirements during construction and establishment to <u>ensure handover of good water quality treatment assets.</u>	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.
36	Catchment management recommendations	Investigate options to <u>secure developer bonds by Council</u> to better reflect cost of rectification in the event of water quality asset failure.	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.
38	Catchment management recommendations	In the interim, <u>use the current models to set targets for maintaining / improving catchment loads,</u> and assessing the impact of development on future catchment loads.	Planned: short-term	This recommendation is included as part of the Stage 2 catchment and receiving waters model project.

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41	Catchment management recommendations	<u>Investigate the current impact to flows and water quality in Tuggerah Lakes caused by water supply offtake</u> as part of Council's Integrated Water Resource Planning (i.e. updated Water Plan 2050).	Completed	<p>Council has completed a wide range of monitoring activities prior to, during and following construction of the new Wyong River offtake and Mardi to Mangrove transfer infrastructure as guided by the projects Review of Environmental Factors and associated approvals. Ongoing monitoring and sampling for this infrastructure through the operational phase is now focused on activities required to manage drinking water quality and comply with the relevant requirements of our Water Access Licences.</p> <p>The Central Coast Water Security Plan (CCWSP) was formally known as the Integrated Water Resource Plan. The CCWSP considered a range of options to manage the regions supply/demand balance and improve resilience to future droughts. None of the recommended actions identified in the CCWSP involve changes to the rate of extraction from surface water sources. As a result, no additional monitoring will be required.</p>
43	Catchment management recommendations	Strengthen the current program and help foster ownership and improved understanding of Water Sensitive Urban Design (WSUD) in the catchment via <u>citizen science programs</u> .	Planned: medium-term	This recommendation has been incorporated into Tuggerah Lakes Estuary Education and Communication Strategy (2021).
45	Opportunities	Adopt a <u>catchment wide approach</u> for the Tuggerah Lakes CMP.	Underway	The Tuggerah Lakes CMP Scoping Study identifies the geographical scope of the CMP to include the estuary, catchment and entrance to the ocean. However, recent advice from the NSW Department of Planning and Environment limits the CMP scope to the mapped coastal zone. A concurrent Catchment Management Plan should be developed to address catchment issues.
46	Opportunities	<u>Integrate WSUD into Council renewal works</u> . All landscaping should consider WSUD, particularly urban renewal and growth projects. <u>Develop standard WSUD drawings to ease this process</u> .	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.
47	Opportunities	In high priority existing urban catchments, work with the community to <u>integrate streetscape systems such as raingardens and passively irrigated street trees</u> upstream of conventional drainage inlets, to treat stormwater prior to entering the stormwater system.	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.

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48	Opportunities	Consider including <u>passively irrigated street trees in all new developments</u> rather than conventional street trees.	No progress	An integrated Stormwater Management Plan would assist in validating and prioritising actions related to Water Sensitive Urban Design.
51	Opportunities	<u>Expand the Lakes Festival to celebrate successes.</u> For example, 'waterway warrior' awards to recognise significant community group achievements for improving catchment and <u>receiving water quality in Tuggerah Lakes.</u> It could also be used to announce <u>social media competition winners for programs promoting community action for improving waterway health, such as best (as voted) home raingarden or highest social media postings of '#Take3' (picking up rubbish near waterways).</u>	Ongoing	The popular annual event was back bigger than ever in its seventh year, with more than 30 events making a splash across the entire Central Coast from 4-13 November 2022. The 10-day festival featured a program of sporting, family, cultural, educational, art and live music events on and surrounding the waterways. Tuggerah Lakes specific activities include an Environmental Film Festival, kayak and bike tours, Light up the Lake, Underwater ROV, and the launch of Project Pelican.
52	Opportunities	<u>Use community education centre space (e.g. Marine Discovery Centre) to showcase water sensitive urban design,</u> including a raingarden. Include tools to educate and support people to build their own.	Planned: medium-term	This action is incorporated into Tuggerah Lakes Estuary Education and Communication Strategy (2021). Council continues to partner with the Marine Discovery Centre to raise awareness and educate.

The NSW Government is the lead agency on the following recommendations, with support as required.

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3	Overarching	Ensure a fully integrated Council, supported by funding and resources from the State and Commonwealth governments, with a focus on total catchment management.	Planned: short-term	Council has undergone significant change in recent years. The "One Way" organisational pillar identifies the need for an integrated, consistent and financially disciplined operational delivery model. Whilst a sustainable source of funding is unlikely at this time, Council has sought and received funding through Australian Government and NSW Government grant programs. Noting that Coastal Management Programs are limited to the mapped Coastal Zone, it is likely that a complimentary Catchment Management Program will be required to identify integrated catchment management actions.
4	Overarching	Establish a <i>Catchment Coordinator Taskforce</i> for a 5-year period, with review after 3 years to bring together the various State and Local Government authorities who play a critical role in catchment, waterway, fisheries, environmental, transport, and planning for the region.	No progress	This recommendation is identified for the State Government to lead. There has been no progress on this recommendation.
17	Entrance Channel	Establish a collaborative community guided group to <u>examine potential management options for a second connection to the ocean at Budgewoi Lake</u> . Further guidance is provided in the report.	No progress	This recommendation is identified for the State Government to lead. Initially a viability assessment should be undertaken to assess the potential value of such an intervention to achieving the community and waterway objectives identified in the CMP.
19	Water quality and ecological	Undertake large-scale re-engineering of shorelines where this work has not already been completed by Central Coast Council to improve connectivity and nearshore water quality.	Planned: medium-term	This recommendation is identified for the State Government to lead. Large-scale re-engineering is currently not financially viable, and the concept requires a viability assessment. Council has completed extensive foreshore regrading and restoration to date and this continues to expand laterally and support the connection of discrete fragments. The value of large-scale reengineering should be evaluated with this in mind, in addition to environmental impact, cost and the impact to recreational amenity during construction work. In 2022, active saltmarsh restoration works were completed at Tacoma, Rocky Point, Budgewoi Point and San Remo along with a range of passive restoration works.

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37	Catchment management recommendations	Invest in the <u>upgrade of the existing modelling framework to determine sustainable catchment loads for the lakes</u> . This should be undertaken as a priority, including collecting data to better calibrate and refine models.	Planned: short-term	This recommendation is identified for the State Government to lead. This recommendation is included as part of the Stage 2 catchment and receiving waters model project.
39	Catchment management recommendations	Use the current catchment models as a basis for <u>investigating the treatment</u> performance and cost effectiveness of (i) existing treatment measures, (ii) future treatment options, including rural best management practices.	Underway	This recommendation is identified for the State Government to lead. This recommendation is included as part of the Stage 2 catchment and receiving waters model project. In addition, a Stormwater Device Performance Study is currently underway thanks to funding from the Australian Government.
40	Catchment management recommendations	<u>Review creek rehabilitation plans</u> and prioritisations due to the extent of works completed and changed river conditions since studies undertaken (10+ years). Consider learnings from current program in this review.	Planned: medium-term	This recommendation is identified for the State Government to lead. This recommendation is best delivered by Local Land Services to guide investment in catchment improvement and protection. This should be included as an action in the CMP.
42	Catchment management recommendations	Continue the significant work that Council has been undertaking in collaboration with Local Land Services to help <u>educate the community</u> .	Ongoing	This recommendation is identified for the State Government to lead. This is identified as a priority in the Tuggerah Lakes Estuary education and Communication Strategy (2021) and is delivered through partnerships and grant funding. In 2022 Council and LLS partnered to deliver a series of mid-week webinars followed up by weekend field visits. These focused on the importance of riparian vegetation for healthy waterways and linking landowners to funding through LLS to improve the riparian zone on their property. Council provides funding to LLS to support his work. Topics covered also include rainforest plant identification and planting and local wildlife such as platypus, frogs and bass.
44	Catchment management recommendations	<u>Community concerns related to heavy metal contamination from the Vale Point Ash Dam be reviewed as part of the TLCMP. Results of the State Government Enquiry into the Ash Dam may have further actions.</u>	No progress	This recommendation is identified for the State Government to lead as the regulatory authority for the power station and associated assets.
49	Opportunities	<u>Review the uptake and effectiveness of rural Best Management Practices through continued partnership with Local Land Services.</u>	No progress	This recommendation is identified for the State Government to lead via Local Land Services.
50	Opportunities	In partnership with Local Land Services and NSW Department of Primary Industries, <u>investigate the applicability of bioreactors in the catchment</u> for treating agricultural runoff.	No progress	This recommendation is identified for the State Government to lead via Local Land Services.

Useful References

[Tuggerah Lakes Expert Panel Terms of Reference](#)

[Tuggerah Lakes Expert Panel Report](#)

[Tuggerah Lakes Expert Panel Summary Report](#)

[Tuggerah Lakes Estuary Management Plan](#)

[Map of Projects](#)

[Love Our Waterways Education Website](#)

[Your Voice Our Coast – Waterways & CMP Website](#)

[Tuggerah Lakes Estuary Coastal Management Plan Scoping Study](#)

[Scoping Study Appendix A: Community and Stakeholder Engagement Strategy](#)

[Scoping Study Appendix B: Engagement Report](#)

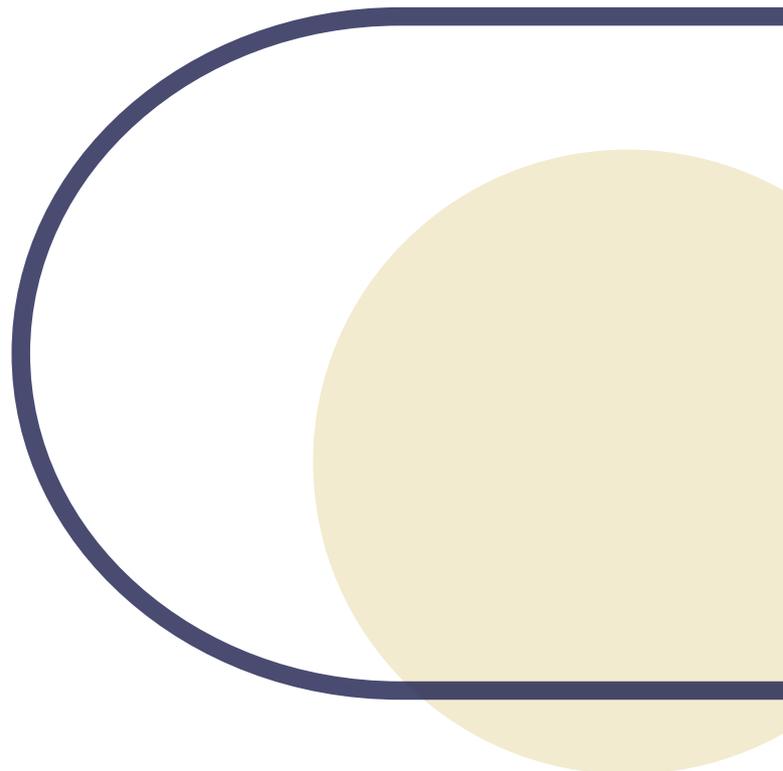
[Scoping Study Appendix C: Strategic Context Report](#)

[Scoping Study Appendix D: Environmental Context Report](#)

[Scoping Study Appendix E: EMP Implementation Summary](#)

[Scoping Study Appendix F: Tuggerah Lakes Expert Panel Recommendations List](#)

[Central Coast Waterway Report Cards](#)





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