

Appendix F

Tuggerah Lakes Expert Panel Recommendations



The report includes a range of overarching recommendations, as well as specific themed recommendations related to community engagement and communication, entrance dynamics, water quality and ecology and catchment management.

It is important to note that Council will consider these recommendations through the CMP and that implementation is subject to available resources and funding.

These are listed below:

#	TLEP - Theme	TLEP - Recommended Action	Report Page	Council Support?	Consider through CMP	CMP Study / Activity /Action	CMP Stage/s	Responsibility
1	Overarching	Develop strategic and measurable plans for dredging, wrack management, nearshore water quality, stormwater management, entrance flood management and sustainable catchment development. Integrate these plans into the TLCMP.	343	Yes	Partly	Yes	Stage 2, Stage 3	Council (lead) State Government (input/ advice)
2	Overarching	Communicate these plans (Action 1: strategic and measurable plans for dredging, wrack management, nearshore water quality, stormwater management, entrance flood management and sustainable catchment development) thoroughly, openly and transparently with the community in a proactive manner.	343	Yes	Yes	Yes	All Stages	Council (lead) State Government (input/ advice)
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.	343	Yes	Partly	No	N/A	State Government (lead) Council / State / Commonwealth collaboration
4	Overarching	Establish a Catchment Coordinator Taskforce 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.	343	Provisional	No	No	N/A	State Government (lead)
5	Overarching	Have the Taskforce undertake an independent audit of water sensitive urban design practices, including erosion and sediment control practices, within Central Coast Council.	344	Yes	Yes	Modified	Stage 5	State Government (lead) Council (input/ support)

#	TLEP - Theme	TLEP - Recommended Action	Report Page	Council Support?	Consider through CMP	CMP Study / Activity /Action	CMP Stage/s	Responsibility
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.	344	Yes	Yes	Yes	Stage 2, Stage 3	Council (lead) State Government (input/ advice)
7	Overarching	Implement an environmental levy 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.	344	Provisional	No	No	N/A	Council (lead) State Government (support)
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.	344, 351	Provisional	No	No	N/A	Council (lead) State Government (support)
9	Engagement and communication	Focus engagement on learning together rather than solving 'the problem' or 'fixing' the Lakes.	345, 68	Yes	Yes	Yes	All Stages	Council (lead) State Government (input/ advice)
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.	345-346	Yes	Yes	Yes	All Stages	Council (lead) State Government (input/ advice)
11	Engagement and communication	Build on the dilemma work to co-create a shared picture of the realistic and preferred outcomes for the Lakes.	346	Yes	Yes	Yes	Stage 2, Stage 3	Council (lead) State Government (input/ advice)
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.	346	Yes	Yes	Yes	Stage 3	Council (lead) State Government (input/ advice)

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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>	346-347	Yes	Yes	Yes	Stage 3 and Stage 4	Council (lead) State Government (input/ advice)
14	Entrance Channel	Undertake Coastal Vulnerability Area mapping and put forward as a Planning Proposal as part of the TLCMP.	347	Yes	Partly	Partly	Stage 2	Council (lead) State Government (input/ advice)

#	TLEP - Theme	TLEP - Recommended Action	Report Page	Council Support?	Consider through CMP	CMP Study / Activity /Action	CMP Stage/s	Responsibility
15	Entrance Channel	Continue dredging of the entrance in the medium term	347	Yes	Yes	Yes	Stage 5	Council (lead) State Government (support)
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.	347-348	Yes	Yes	Yes	Stage 2	Council (lead) State Government (input/ advice)
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.	348	Yes	Yes	Yes	Stage 5	Council (lead) State Government (input/ advice)
16	Entrance Channel	Examine past dredging expenditure and work with relevant agencies to agree upon a clear and reliable funding structure for future dredging over the medium term. 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.	348	Yes	Partly	No	N/A	Council (lead) State Government (input/ advice)
17	Entrance Channel	Establish a collaborative community guided group to examine potential management options for a second connection to the ocean at Budgewoi Lake. Further guidance is provided in the report.	348	Provisional*	Partly	Yes	Stage 2 (modelling) & 5	*Pending viability assessment State Government (lead) Council (input/ support)

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18	Water quality and ecological	Where possible, redirect stormwater into the rivers and creeks to alleviate nearshore eutrophication (poor water quality).	349	Provisional	Partly	Yes	Stage 2/5	Council (lead) State Government (input/ advice)
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.	349	Provisional*	Partly	No	N/A	*Pending viability assessment State Government (lead) Council (input/ support)
20	Water quality and ecological	Implement a strategic wrack harvesting program based on DPIE plan (2013). This may include an upgrade of machinery and modification of collection methods.	349	Yes	Yes	Yes	Stage 3/5	Council (lead) State Government (input/ advice)
21	Water quality and ecological	Continue rehabilitation and restoration of wetland habitats that discharge to Tuggerah Lakes.	349	Yes	Yes	Yes	Stage 5	Council (lead) State Government (input/ support)
22	Water quality and ecological	Undertake further studies to quantify the importance of groundwater 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.	350	Yes	Yes	Yes	Stage 2/5	State Government (lead) Council (input/ support)
23	Water quality and ecological	Continue monitoring and adaptively managing the estuary to ensure the effectiveness of actions and adjust/improve where necessary.	350	Yes	Yes	Yes	Stage 5	Council (lead) State Government (input/ support)
24	Water quality and ecological	Expand existing community education and engagement program – 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.	350-351	Yes	Yes	Yes	All Stages	Council (lead) State Government (input/ support)

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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.	351	Yes	Partly	Modified	Stage 5	Council (lead) State Government (input/ support)
26	Catchment management recommendations	Adopt a policy of life cycle costing of stormwater treatment options.	352	Yes	No	No	N/A	Council (lead) State Government (input/ advice)
27	Catchment management recommendations	Undertake Water Sensitive Urban Design (WSUD) capacity building within Council.	352	Yes	Partly	Yes	Stage 5	State Government (lead) Council (input/ support)
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).	352	Yes	Partly	Yes	Stage 5	Council (lead) State Government (input/ advice)
29	Catchment management recommendations	Improve education and enforcement of Erosion & Sediment Control (E&SC) practices, particularly at the lot scale. Consider proactive enforcement of erosion and sediment control practices, potentially through a third party (e.g. State Government).	352	Yes	Partly	Yes	Stage 5	State Government (lead) Council (input/ support)
30	Catchment management recommendations	Adopt a maintain or improve conditions (from existing 2020 conditions) target for all future development until sustainable loads are determined.	352	Provisional	No	No	N/A	Council (lead)
31	Catchment management recommendations	Include the adopted water quality treatment targets in the new Local Environmental Plan to give Council greater powers to enforce.	352	Provisional	No	No	N/A	Council (lead)

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32	Catchment management recommendations	Introduce planning controls for single dwelling developments to achieve water quality treatment	352	Yes	Partly	Yes*	Stage 5	*Related to SEPP State Government (lead) Council (input/ support)
33	Catchment management recommendations	Develop and adopt a stormwater management / integrated water management plan for Porters Creek 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.	353	Yes	Partly	Yes	Stage 5	Council (lead) State Government (input/ advice)
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.	353	Provisional	No	No	N/A	Council (lead) State Government (input/ advice)
35	Catchment management recommendations	Improve and ensure consistency of Development Assessment/ Development Control Plan requirements during construction and establishment to ensure handover of good water quality treatment assets.	353	Yes	Partly	Modified	Stage 5	Council (lead) State Government (input/ advice)
36	Catchment management recommendations	Investigate options to secure developer bonds by Council to better reflect cost of rectification in the event of water quality asset failure.	353	Yes	No	No	N/A	Council (lead) State Government (input/ advice)
37	Catchment management recommendations	Invest in the upgrade of the existing modelling framework to determine sustainable catchment loads for the lakes. This should be undertaken as a priority, including collecting data to better calibrate and refine models.	353	Yes	Yes	Yes	Stage 2	State Government (lead) Council (input/ support)
38	Catchment management recommendations	In the interim, use the current models to set targets for maintaining / improving catchment loads, and assessing the impact of development on future catchment loads.	353	Yes	Yes	Yes	Stage 5, if not initiated earlier	Council (lead) State Government (input/ support)

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39	Catchment management recommendations	Use the current catchment models as a basis for investigating the treatment performance and cost effectiveness of (i) existing treatment measures, (ii) future treatment options, including rural best management practices.	353	Yes	Yes	Yes	Stage 2	* Related to #37 State Government (lead) Council (input/support)
40	Catchment management recommendations	Review creek rehabilitation plans 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.	353	Yes	Yes	Yes	Stage 5	State Government (lead) Council (input/support)
41	Catchment management recommendations	Investigate the current impact to flows and water quality in Tuggerah Lakes caused by water supply offtake as part of Council's Integrated Water Resource Planning (i.e. updated Water Plan 2050).	353	Yes	No	No	N/A	Council (lead) State Government (input/ advice)
42	Catchment management recommendations	Continue the significant work that Council has been undertaking in collaboration with Local Land Services to help educate the community.	354	Yes	Yes	Yes	Stage 5	* Related to #42 State Government (lead) Council (input/support)
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 citizen science programs.	354	Yes	Partly	Yes	Stage 5	Council (lead) State Government (input/ advice)
44	Catchment management recommendations	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.	254-255	Yes	No	No	N/A	State Government (lead)
45	Opportunities	Adopt a catchment wide approach for the Tuggerah Lakes CMP.	354	Yes	Yes	Yes	All Stages	Council (lead) State Government (support)

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46	Opportunities	Integrate WSUD into Council renewal works. All landscaping should consider WSUD, particularly urban renewal and growth projects. Develop standard WSUD drawings to ease this process.	354	Yes	Partly	Yes	Stage 5	Council (lead) State Government (input/ advice)
47	Opportunities	In high priority existing urban catchments, work with the community to integrate streetscape systems such as raingardens and passively irrigated street trees upstream of conventional drainage inlets, to treat stormwater prior to entering the stormwater system.	354-355	Yes	Partly	Yes	Stage 5	Council (lead) Community groups
48	Opportunities	Consider including passively irrigated street trees in all new developments rather than conventional street trees.	355	Yes	Partly	Yes	Stage 5	Council (lead)
49	Opportunities	Review the uptake and effectiveness of rural Best Management Practices through continued partnership with Local Land Services.	355	Yes	Partly	Yes	Stage 5	* related to #40 State Government (lead) Council (input/ support)
50	Opportunities	In partnership with Local Land Services and NSW Department of Primary Industries, investigate the applicability of bioreactors in the catchment for treating agricultural runoff.	355	Yes	Partly	Yes	Stage 5	*related to #40 State Government (lead) Council (input/ support)
51	Opportunities	Expand the Lakes Festival to celebrate successes. For example, 'waterway warrior' awards to recognise significant community group achievements for improving catchment and receiving water quality in Tuggerah Lakes. It could also be used to announce 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).	355	Yes	Yes	Yes	Stage 5	Council (lead)
52	Opportunities	Use community education centre space (e.g. Marine Discovery Centre) to showcase water sensitive urban design, including a raingarden. Include tools to educate and support people to build their own.	355	Yes	Partly	Modified	Stage 5	Council (lead) State Government (input/ support)

