

Locations of Water Quality Programmes





Maintaining good water quality

There are a number of goals that we need to achieve over the next 1 - 5 years to maintain or improve water quality in the lakes. A “Water Quality Action Team” with people from Wyong Shire Council, NSW Department of Natural Resources, Hunter-Central Rivers Catchment Management Authority and the Estuary Management Committee/Advisory Board, will be set up to oversee the implementation of the action plan to achieve these goals:



1. Improve quality of stormwater from the catchment

New controls on the design and construction of stormwater drainage systems are required to limit the flow of sediments and nutrients into the lakes from new developments. Stormwater will be treated at common sites downstream, with costs shared by developers and those who will benefit from the developments.

Additional stormwater management devices are required in existing urban areas, while existing devices will be upgraded where necessary. More attention will be given to maintenance of stormwater treatment devices, such as gross pollutant traps and constructed wetlands, to make sure that they continue to function effectively.

A substantial increase in the maintenance budget to cater for new stormwater devices would have to occur.

While treating stormwater at “the end of the pipe” reduces sediments and nutrients entering the lakes, it is costly.

A more efficient way of controlling stormwater pollution in the long term is to reduce the amount of pollutants before they enter the system. One way to do this is to help landholders to make improvements to existing pollution control practices. Another, longer-term approach, is an education program to increase awareness of stormwater quality issues among the broader community

and inform people about what can be done to improve the situation.

Specific programs to improve stormwater quality include:

- Ensure that new developments don't increase nutrient and sediment loads and water flows above their natural levels
- Reduce nutrient and sediment loads from existing developments
- Maintain stormwater traps and collect information on the material removed. Knowing how much material is collected over time will help in assessing how effective stormwater quality control is.
- Help landholders and business to limit pollution at the source
- Educate people in the catchment (including residents, tourists and industry) about reducing pollution
- Develop an assessment tool that helps determine which sub-catchments need priority works
- Ensure all new development contains Water Sensitive Urban Design elements
- Improve stormwater quality entering Porters Creek Wetland through implementation of stormwater harvesting scheme



2. Ensure that the water at lakes beaches meets public health requirements

Monitoring of harmful bacteria at bathing beaches will continue in order to provide the public with information on potential health hazards. Monitoring is important for keeping the public informed and taking action when necessary, but it doesn't solve the problem. There will be new funds to identify the sources (human and animal) of contamination and develop measures to reduce this.

3. Reduce erosion of foreshores and stream banks

The main creeks running into Tuggerah Lakes are Saltwater, Tumbi, Ourimbah, Wyong and Wallarah/Spring. The lower sections of each are part of the estuary and the upper parts drain freshwater (and sediments, nutrients, etc.) from the 670km² catchment to the estuary. All of these creeks have experienced erosion of the banks and loss of vegetation that increases erosion during floods. This is what causes most of the sediment and nutrient loads to the estuary. This is a serious threat to the lakes' ecosystem and must be tackled. There would have to be a substantial increase in the funding allocated by Council for dealing with this problem. Reducing erosion is considered a high priority, as this will have a significant positive effect on the problem of water quality and on the ecology of rivers and creeks.

A review of the condition of the banks of all tributaries and riparian corridors as part of a prioritised program is essential to detail measures to reduce erosion, including re-vegetation, exclusion of livestock through negotiated arrangements with landholders and limiting boat wash in some areas.

4. Encourage sustainable use of water

High consumption of fresh water by industry, agriculture and residents is an important issue that affects both the quantity and quality of water entering the estuary. Freshwater is necessary for the wellbeing of the lakes system, however changes to the sources of this water (i.e. reducing river flows whilst increasing surrounding stormwater drainage discharge) can have a detrimental effect on the lake system. There is a danger that, with increasing demand for water from our rivers and creeks, what's left after community needs are met won't be enough to maintain a healthy ecosystem in the lakes. New funds need to be allocated to develop initiatives to support the sustainable use of water, including reducing demand by more efficient use of water and recycling.

*Photos (above and below):
Andrew Rowland*



Water Quality Action Plan summary

Target	Benefits of meeting the target	Risks of doing nothing	Estuary Management Study issues addressed*	Fixing a symptom/ cause or providing an enhancement
<i>Maintain natural nutrient and sediment loads and water flows after new development</i>	Sediment/nutrient loads to the creeks and lakes should remain in check while the catchment continues to be developed	Waterways downstream of the development may experience algal blooms, poor water quality and damage to habitats like seagrass.	Main Issue: Changes in water quality can affect aquatic & semi-aquatic vegetation Other Issues: WE3, WF1, WG1, VR1, VF1	Cause
<i>Reduce nutrient and sediment loads from existing development</i>	Reduction in nutrient and sediment loads caused by development over the last 50 years.	Too much sediment and nutrients can cause algal blooms, poor water quality, and affect fish, sponges and seagrass.	Main Issue: Increased sediments and nutrients from exiting development affects water quality Other issues: WF1, VR1, VF1, VR2	Cause
<i>Maintain stormwater traps and collect information on the material removed</i>	Keep traps operational and informs management of changes in sediment and gross pollutant loads that would otherwise enter the estuary.	Traps export sediment and gross pollutants to the estuary. No opportunity to understand if loads are increasing/decreasing in response to catchment practices	Increased sediment and nutrient loads from existing development affects water quality	Symptom
<i>Help landholders and business to limit pollution at the source</i>	Improved dialogue with landholders, business operators and the community – a co-operative approach to pollution reduction	Continued poor practices leading to stormwater pollution EMS Issues Addressed	Main Issue: Protective measures applied to development are difficult to monitor and enforce Other Issues: LA2, LS2, LS3, WE2, WE3	Cause
<i>Educate people in the catchment (including residents, tourists and industry) about reducing pollution</i>	Reduce pollution at the source, reducing the need for expensive treatment devices and their maintenance. Healthier catchment habitats and urban streams.	Continued need to install treatment devices. Catchment and stream habitats continue to be degraded.	Main Issue: Toxic contaminants in runoff can affect aquatic ecology and human health Other Issues: VW3, VE3, VR2, SP3, DC3, WE2	Cause

Target	Benefits of meeting the target	Risks of doing nothing	Estuary Management Study issues addressed*	Fixing a symptom/ cause or providing an enhancement
<i>Develop an assessment tool that helps determine which sub-catchments need priority assistance</i>	Efficient allocation of resources to mitigate stormwater pollution. Sub-catchments most in need will be managed first.	Scarce resources spent in areas where the benefits may be small	Main Issue: Increased sediment and nutrient loads from existing landuses affects water quality Other Issues: WE4, WH3	Enhancement
<i>Ensure beaches meet primary water contact requirements (PP10)</i>	Healthier swimming conditions in the lakes	Recreational swimming spots unsuitable for swimming at certain times	Main Issue: Sources of pathogens and faecal coliforms in the rivers and estuaries are not well understood Other Issues: WH4	Symptom
<i>Stabilise foreshores and streambank erosion</i>	Keeps sediment loads in check and protects riparian habitat	Increased turbidity, smothering of habitat on the bed of the lakes and rivers, degradation of riparian habitat	Foreshore and streambank erosion adds sediment to waterways	Cause
<i>Reduce demand for river water that flows to the lake, by encouraging sustainable use of water in the community</i>	Current flow patterns to the estuary maintained for longer (or potentially increased)	Increased demand for water may see more water taken from rivers meaning less flowing to the estuary	Increasing population puts an increased demand on water supply	Cause
			* Full explanation of the addressed issues can be found in the Tuggerah Lakes Estuary Management Study (2005).	

Ecology Action Plan



Processes and issues

The Tuggerah Lakes Estuary depends to a large extent on the quality of the water entering the system, but this isn't the whole story because water is just one part of the estuary environment. The lakes ecosystem consists of the physical environment and the plants and animals that live in it, including us.

Animals and plants require specific conditions in order to flourish. The places where they live and the conditions they require make up their habitats. If we destroy these, we destroy the communities that live in them. This not only makes for a poor environment, but it also damages the important ecological functions that support the lakes ecosystem. Loss of natural habitat in fact, is one of the biggest threats facing Tuggerah Lakes. If we are going to improve the environment of Tuggerah Lakes we must manage these wider ecological issues.

Historically, habitat conservation has occurred mainly in National Parks, because they receive most of the NSW Government allocation of money for ecological work. There is little direct funding for ecological work available to councils.

Photo (above): Andrew Rowland



Locations of Ecology Programmes





Maintaining the ecology of Tuggerah Lakes

There are several ecological management goals to achieve over the next 1 - 5 years. An “Ecology Action Team” drawn from Wyong Shire Council, NSW Department of Natural Resources, Hunter-Central Rivers Catchment Management Authority, Community Groups and the Estuary Management Committee/Advisory Board, will be set up to oversee the implementation of the action plan to achieve these goals:

1. Improve foreshore habitat

There is a need for significant new expenditure on rehabilitation of foreshore habitats, particularly the saltmarshes that used to surround much of the lakes. Saltmarshes are important, not only as habitat, but also because they help to break down seagrass wrack. Too much wrack can produce odours and reduce amenity and one way to “help” the system manage this wrack is to re-establish saltmarshes wherever we can. We need to identify areas suitable for restoration and then reduce the amount of damage that we do to them. Specific programs include:

- Improve and protect natural foreshore areas
- Maintain those areas that have been rehabilitated

2. Protect and restore catchment habitat

Because the wellbeing of the estuary depends to a large extent on what happens in the catchment (remember the water quality issue), we need to look at habitat loss and degradation beyond the edges of the lakes. One of the innovative aspects of the Plan is that it takes into account the links between what happens in the catchment and what happens in the lakes as a result. The fact is that the health of some catchment habitats has implications for estuary health and diversity.

For example, healthy catchment wetlands trap and retain sediment that would otherwise wash into the estuary or clog stormwater systems. Wetlands (and forests) also provide “green corridors” linking estuary and catchment and helping animals move between the two. This means that animals may move to repopulate areas where their numbers might have dwindled. They can’t do this if they can’t get there. It makes sense to conserve catchment wetlands to enhance these important functions.

There are two types of habitat that require our attention; those already degraded and in need of improvement and those not degraded but in need of protection.

Specific programs in this regard are:

- Identifying and protecting important natural catchment habitats
- Restoring degraded habitats in the catchment
- Monitoring key wetlands for signs of damage. This will provide information on when and where we need to step in and prevent further damage.

3. Protect estuary habitats

Many areas around Tuggerah Lakes are sensitive to human activities and some are so important to the functioning of the system that they require a high level of protection from human interference. These include the saltmarshes of Tuggerah Bay and the Budgewoi Sandmass. The saltmarshes are threatened by physical damage caused by horse training and motor vehicles, both of which destroy plants and break up the sediment surface leading to erosion and loss of the habitat.

4. Learn how changes to flow in the rivers affect plants and animals in the estuary

We need to know more about the ecological links between rivers and the estuary. The two largest creeks entering Tuggerah Lakes provide water to the Gosford-Wyong area. This takes water out of the system and has significantly impacted the flow of fresh water to the estuary, especially during droughts. A balance of fresh and seawater is essential for the health of the estuary. Additional work is required to find out how much fresh water the lakes need and assess whether present flows to the estuary are sufficient and what steps should be taken if they are not.

Photo (above): Andrew Rowland

Ecology Action Plan summary

Target	Benefits of meeting the target	Risks of doing nothing	Estuary Management Study issues addressed*	Fixing a symptom/ cause or providing an enhancement
<i>Improve and protect natural foreshore areas</i>	Foreshore areas will have fewer odours and be healthier. Council will also be meeting its legal obligations	Continued odour problem from wrack rotting in the water. Loss of saltmarsh and associated legal ramifications.	Main Issue: No existing plan for identifying, rehabilitating and managing significant foreshore areas. Other Issues: VE3, DS1, DT1	Cause
<i>Maintain the rehabilitated natural foreshore areas</i>	Rehabilitated natural foreshores are likely to remain health and improve foreshore appearance	The rehabilitated areas will become dominated by weeds and impacted by human activity like mowing.	Human activities can damage sensitive habitats	Cause
<i>Identify and protect important remaining catchment habitats</i>	Healthy habitats are protected from future damage	These areas are likely to be damaged by activities in their catchment, breaking an important link with the estuary. Problems can also be exported downstream.	Main Issue: Loss, fragmentation or degradation of habitat. Other Issues: VW1, VF2, VR4, DC2, DC3, DT1, DT2, DS2	Enhancement
<i>Restore degraded habitat in the catchment</i>	Restoration of natural areas upstream so they can filter pollutants and provide homes for animals important to the estuary (e.g. birds).	Damaged areas of the catchment can reduce habitat and add weeds and eroded sediment to the creeks and lakes.	Main issue: Loss, fragmentation or degradation of habitat Other issues: DT1, VW3, VF3, VR3	Enhancement
<i>Monitor key wetlands for signs they are being damaged</i>	Early detection of problems prevents longterm degradation and loss of important runoff filters and linking habitat	Wetlands would fail allowing sediments and nutrients to pass through, degrading more habitats downstream through smothering and weed invasion	No active monitoring and management of important wetlands	Symptom
<i>Control damaging activities in sensitive parts of the estuary</i>	Sensitive places get sufficient protection so they can be managed for future generations.	Important areas of the estuary may be damaged beyond recovery.	Main Issue: Human disturbance & built structures can threaten sensitive habitats. Other Issues: DT1, DS1, VE3, VE4	Cause
<i>Learn how changes to flow in the rivers affect plants and animals in the estuary</i>	Better understanding of whether environmental flows in rivers will help the estuary and creeks	Existing environmental flow regime will remain	Insufficient understanding of riverine ecological processes and riverine water quality to inform environmental flow management WF5, VR5	Cause * Full explanation of the addressed issues can be found in the Tuggerah Lakes Estuary Management Study (2005).

Socio-economic Action Plan



Issues

The Tuggerah Lakes provide us with important visual and recreational opportunities and also have considerable commercial value as a fishery, a source of cooling water for power generators, and as a tourist attraction. While Wyong Shire Council has, in the past, provided public amenities such as foreshore parks, beaches, boat-launching ramps, picnic areas, walking tracks, bicycle tracks, etc., new facilities are required to meet the increasing needs of a rapidly growing population. In future, targets need to be set for the expansion of important facilities around the lakes including additional facilities for recreation without impacting on important ecological and rehabilitation areas.

An important goal of this action plan is to provide facilities that bring people back to the estuary foreshores and waterways. These facilities will include better boat ramps, playgrounds and landscaped picnic and BBQ areas. At the same time the condition of the lakes beaches need to be improved with the focus on beach nourishment and cleaning. New initiatives, such as providing a cycle/walking track around one or more of the individual lakes, may also be considered.

One problem that the Management Study found was a lack of communication between Council, as the estuary manager, and local business. This essential

relationship should be improved because the estuary can provide many business opportunities, which we should encourage where they will not harm the environment.

Enhancing socio-economic values in Tuggerah Lakes

Over the next 5 years a “Socio-Economic Action Team” consisting of Business Leaders, Wyong Shire Council, NSW Department of Natural Resources, Hunter-Central Rivers Catchment Management Authority, Community Groups and the Estuary Management Committee/Advisory Board, will be set up to oversee the implementation of the action plan to achieve these goals:

1. Improve recreational facilities around the lakes and creeks

Because the lakes are such an important recreational resource, some public money must be allocated to providing better facilities for lake users. The aim is to attract more visitors to the lakes, rather than just provide basic amenities. Annual expenditure on maintenance will not only continue, but should be increased to cater for new facilities.

Photo (above): Andrew Rowland
Photo (below): Julie Garratley



Locations of Socio-economic Programmes





Programs specific to this goal are:

- Provision of better facilities in foreshore recreation areas. This will be done in consultation with the community to ensure that appropriate facilities that people actually want and will use, are provided.
- Maintain foreshore recreation areas and beaches

2. Provide estuary-positive business opportunities

The aim here is to work with business in order to provide opportunities and seek co-operative solutions to problems. It might be surprising to hear that we have very little information on the needs of estuary-based business and historically, business proposals and activities have not been considered in estuary management. This is particularly true of tourism where we need better information on tourists' activities, motivations and expectations. A business group could be set up to provide a forum for discussing lakes-based business activities and opportunities within the context of sustainable environmental management.

3. Set sustainable targets for development

Most people would agree that there must be a limit to the impacts that the environment can take from human activities before it collapses. Put another way, the environment has a limited capacity to carry people because resources are limited. The idea of a "carrying capacity" is easy to understand in principle, but it's very difficult to measure, which is probably why it doesn't feature prominently in regional planning. Difficult or not, identifying the likely carrying capacity of the estuary is a key part of estuary management. The best management plan will be of little use if the demands made on the system are simply too much for it.

An attempt should be made to work out the carrying capacity of the Tuggerah system, both to inform regional planning and to identify potential additional capacity that we could get through good environmental practices.

The relevant program is to ensure development is based on sustainable catchment and estuary management principles.

4. Maintain creek mouths for navigation and water flow

Sediments naturally accumulate in estuaries, but, as mentioned earlier, our activities in the catchment have made the problem worse by increasing the amounts and rate of sediment washed down into the creeks and through stormwater. The build-up of sediment causes shoaling in the mouth of creeks, which can affect water quality, flooding and the ecology of the lower reaches. It also creates a significant navigation problem.

Substantial funding allocations need to be made to keep tributary creeks open. This may be done with a 5-year rolling plan to offset the enormous cost of obtaining approval for dredging which is presently done on a case-by-case basis. It's also worth noting that other management initiatives, aimed at stabilising the banks of creeks, would help to reduce the need for frequent dredging.

5. Maintain flow through the entrance

As mentioned earlier, the health of the Tuggerah Lakes system depends to a large extent on the balance between fresh water flowing in from the catchment and seawater brought in through the entrance by tides. Many will know that there are no strong tidal currents in most places in the Lakes. Apart from this, research elsewhere in New South Wales has shown that coastal lakes that are generally open have a greater amount and diversity of special animals that are important for breaking down nutrients in the sediments.

With this in mind, the current program of dredging the entrance should be maintained with a modest increase in funds to allow an assessment of the impact of dredging on the biological processes in the lakes. This will enable us to tailor the dredging program so that it has the greatest beneficial effect on the system.

Photo: Andrew Rowland

Socio-economic Action Plan summary

Target	Benefits of meeting the target	Risks of doing nothing	Estuary Management Study issues addressed*	Fixing a symptom/ cause or providing an enhancement
<i>Provide better facilities in foreshore recreation areas</i>	Encourage the community to take pride in the estuary and gain an appreciation of how healthy it is.	Lack of community ownership, pride and support. Continued negative perceptions.	Main Issue: Existing community perceptions about estuarine health. Other issues: SP5, SP1	Enhancement (addressing symptoms)
<i>Maintain foreshore recreation areas and beaches</i>	Ongoing provision of good beach conditions and facilities. People will continue to use the recreational areas in the long-term.	New facilities/monies are not managed	Some existing recreational facilities require upgrading	Enhancement
<i>Develop partnerships with business to solve common problems and improve economic opportunities</i>	Opportunities for business that are also good for, and encourage more use of, the catchment and the estuary.	Business is not a partner and so opportunities are lost to solve common problems and encourage compatible business	Main Issue: Little understanding of what existing industries need from estuary Other Issues: LA1, LA2, LD2, LS1, WE3, WP1, DC1, DC3	Cause
<i>Ensure development is based on sustainable catchment and estuary management principles</i>	New development will be compatible with long-term estuary health. Understanding the limits will give more certainty to development	Estuary may pass critical threshold and turn eutrophic again, resulting in degradation of existing estuarine and creek habitat	Main Issue: No ecologically sustainable target for catchment development Other Issues: SC1, VF2, SC2, DF3, SE2, SE3, LS3, WF1	Cause
<i>Maintain creek mouths for navigation and water flow</i>	Creek mouths remain open for boating and to allow water flow to and from the estuary	Excess sedimentation can produce an increased flood risk, navigation hazards and reduced flow	Main Issues: Risk of flooding Sedimentation, weirs, drains and river crossings can create migration barriers and affect natural flows WP2, WF2	Symptom
<i>Maintain current flows through the entrance</i>	Minimise flood risks, allows exchange of ocean water and provides a tourist attraction.	Potential for loss of tourism, and small potential for an increase in flood risk	Main Issue: Risk of flooding Other Issues: WE6	Enhancement * Full explanation of the addressed issues can be found in the Tuggerah Lakes Estuary Management Study (2005).

Knowledge and Management Action Plan



Issues

The earlier Process and Management Studies brought together what we know about how the Tuggerah Lakes Estuary works and provided a sound basis for this Estuary Management Plan. However as indicated earlier, those studies also made it obvious that there is much that we don't know. We need to devote some of our resources to filling those gaps in our knowledge and understanding of the system, so that management achieves the environmental and social outcomes that we desire. Another reason to continually acquire knowledge about the system is that things change. The environment changes over time; social and economic conditions change and management must be quick to adapt in order to remain effective.

Council, in partnership with universities, could devote a modest amount of funds to filling gaps in our knowledge of the system to support this adaptive management. This knowledge will also be passed on to the community through public information programs.

Knowledge is important, but we also need an effective management structure to carry out the Plan. Other coastal councils have found that setting up an estuary management unit within Council, that can focus on the health of the estuary, is a good way to deliver effective management.

An adaptive management approach

A "Knowledge and Management Action Team", made up of representatives of Wyong Shire Council, NSW Department of Natural Resources, Hunter-Central Rivers Catchment Management Authority, Community Groups and the Estuary Management Committee/Advisory Board, will be set up to oversee the implementation of the action plan to achieve these goals:

1. Establish an estuary management unit

Managing a system as large as Tuggerah Lakes is complicated and requires the co-ordinated efforts of all sections of Council and a number of government and non-government organisations. To make sure this goes smoothly, an estuarine management unit will be set up to co-ordinate implementation of the Plan. The unit would be responsible for preparation and implementation of the annual action plans. Most importantly, the activities of this unit will be transparent and it would be accessible to the community. Setting this unit up is considered to be one of the main priorities for the Plan, because this will get the ball rolling.

Programs specific to this goal are:

- Identify, set up and assist an entity that could implement this Plan
- Develop strategies for obtaining ongoing funding
- Develop reporting mechanisms

2. Learn more about key processes in the estuary

There will always be new issues and questions that arise that need to be understood and managed. That's why it's necessary to allocate resources to continual gathering of knowledge about the system. This goal is important because it will fill gaps in our knowledge and support adaptive management, keeping it focussed and effective in the long term. High priority questions that need answering over the next 5 years include how freshwater flows from the catchment interact with the estuarine waters. Which is more important to the functioning of the system, continual stormwater flows or occasional big floods from rivers? How much freshwater does the system need?

Photo: Andrew Rowland

Locations of Knowledge and Management Programmes





Other important questions include how healthy is the lake fishery?; can the plants and animals in the system give us an early warning of changes in its ecology?; how will a rise in sea level affect the system? Answers to questions like these will determine how and where resources are allocated for environmental management.

3. Develop partnerships with universities

Wyong Shire Council has used the expertise of local universities for many years. The goal is to formalise this relationship so that the best academic expertise can be brought to bear on difficult estuary management problems. In this way innovative solutions can be found with relatively minor funding by Council. The Council could take the initiative in identifying academic institutions with appropriate expertise in environmental management and establishing partnerships with them over the short term.

4. Keeping you informed about the estuary and its management

The estuary is a very valuable resource and we must be kept informed of its condition, the problems facing it and management issues. It is important to know how our money is being spent and about the successes and failures of management actions and how management is adapting in response to these. The Management Study made it clear that there are still many misconceptions about the health of the system. The estuary unit will use Council's

education resources to provide accurate and up-to-date information so that you are properly informed about how your estuary is doing. To help this along, Council staff should receive appropriate training in estuary management so that there will be a consistent approach across all of Council.



Photo (above): Andrew Rowland

Knowledge and Management Action Plan summary

Target	Benefits of meeting the target	Risks of doing nothing	Estuary Management Study issues addressed*	Fixing a symptom/ cause or providing an enhancement
<i>Identify and assist the organisation who will manage and implement the estuary management plan</i>	Single independent entity responsible for implementing the EMP and creating more transparency/ accountability	Estuary funds could be redistributed to other Council needs. Projects may not be as targeted to estuarine outcomes, or subject to rigorous evaluation.	Main Issue: Community scepticism about estuarine knowledge, management intentions and management approach. Other Issues: KG2, KG1	Cause
<i>Develop strategies for securing ongoing catchment and estuary management funding</i>	Catchment and estuarine management can provide ongoing outcomes.	Many of the important catchment management projects will never be funded or undertaken	Main Issue: Lack of funding and resourcing for further work on key management questions Other Issues: LS4	Cause
<i>Continue to learn about how key parts of the lakes work so that they can be managed better</i>	Estuary will always be managed using the best available information and therefore funds will be spent wisely	Expensive options/actions may be misdirected or have no effect	Main Issue: Understanding of key estuarine processes is not complete Other Issue: KG3, WH1	Cause
<i>Develop partnerships with universities to get innovative approaches to catchment and estuary management</i>	Cost-effective way of accessing high quality, best practice information on new ways of managing the catchment and estuary.	Application of incorrect or inappropriate technology that creates problems and wastes funds.	Main Issue: Difficult to fund and resourcing further studies into estuarine processes, health trends, and key management questions Other Issue: KG3	Enhancement
<i>Provide the community with up to date information on the estuary</i>	Community that is in touch with the estuary and able to offer good feedback on estuarine management actions and priorities	The community will not be able to hold Council/estuarine manager accountable – their opinions will be less relevant if they are based on outdated or inaccurate information	Main Issue: Community are not actively informed through the most effective media channels Other issues: KC1, SP4, KC2, KC3 * Full explanation of the addressed issues can be found in the Tuggerah Lakes Estuary Management Study (2005).	Cause

Consulting with all stakeholders



At all stages of the Estuary Management Plan, stakeholders have been invited to provide input. During the early stages of the Plan State Agencies, Council staff, local businesses and community groups were involved in workshop groups to help direct the preparation of the Plan. In addition, open days were held at local shopping centres. Once the Plan had been prepared to draft stage, it was put on public exhibition

and a number of field day sessions held around the lakes to discuss the Plan one-on-one. Council received a number of submissions from the community, local business, State Agencies and other local governments. These submissions were considered and all relevant suggestions have been incorporated into the Final Plan.

Photo (above): Andrew Rowland

Timeline: The NSW Estuary Management Process

1997	1997 – 2001	2001	2002 – 2005	2005	2006	2006	Present	Future
Wyang Council's Estuary Management Committee set up.	Biological and physical information collected.	Public exhibition of the Estuary Process Study. Public comment invited.	Develop management objectives and options.	Public exhibition of Estuary Management Study. Public comment invited.	Develop management actions and costs. Public comment invited.	Public exhibition of Estuary Management Plan.	Review community comments. Publish final plan.	Regular monitoring and review of outcomes.

YOU ARE HERE!

What happens now?



We value your comments

The most important part of the Plan happens now – the implementation. Over the next 5 years, the actions listed in each of the Action Plans will be considered by the working groups and put into action around the estuary and in the catchment. As the owners of the Plan, you, the local community have a role to play in ensuring that the Estuary Management Plan produces the outcomes that you want for your estuary, so please stay involved!

You can also find information about the Tuggerah Lakes Estuary Process Study, Tuggerah Lakes Estuary Management Study and the Tuggerah Lakes Estuary Management Plan on Wyong Council's website:

www.wyong.nsw.gov.au

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