

The background of the report card is an aerial photograph of the Tuggerah Lakes Estuary. The image is split into two distinct scenes. The left side shows a wide, calm body of water under a dramatic, orange-hued sky at sunset or sunrise, with a forested peninsula in the foreground. The right side shows a similar view but with a more overcast, grey sky and a different perspective of the water and surrounding land. The text "Report Card 2015" is centered over the left portion of the image.

Report Card 2015



Introduction

This is the fourth Ecological Report Card for the Tuggerah Lakes estuary. The ecological health data presented here was collected in the lake basins of the Tuggerah Lakes estuary during 2014/2015.

The estuary was divided into five zones (see map), with each zone receiving a health grade based on the data collected there throughout the year. As Council continues to monitor the health of the estuary, we will be able to establish whether long-term trends indicate the health of the estuary is improving, declining or remaining stable. This long-term monitoring allows us to make informed decisions when identifying areas in need of rehabilitation and conservation.

The Tuggerah Lakes Estuary

Located in Wyong Shire on the New South Wales Central Coast, the Tuggerah Lakes estuary consists of three shallow interconnected coastal lagoons – Lake Munmorah, Budgewoi Lake and Tuggerah Lake which open to the sea at The Entrance.

The lakes spread over 80 square kilometres, and stretch from the suburbs of Killarney Vale in the south to Lake Munmorah in the north. The catchment area is much larger, spanning over 710 square kilometres and covering 92% of Wyong Shire's land. It includes five major tributaries – Wyong River, Ourimbah Creek, Spring & Wallarah Creeks, Tumbi Creek and Saltwater Creek.

The Tuggerah Lakes estuary and catchment is a diverse area with a remarkable variety of habitats, landscapes, scenery, wildlife and native plants. The health and beauty of the estuary is vital to the district's strong tourism industry and sense of place. The foreshores and waterways provide a playground for our community to walk, ride, exercise, kayak, boat, fish, play and explore in beautiful natural surroundings.

Methods

The Tuggerah Lakes estuary Report Card is like a health check for our estuary. To calculate the report card grades, scientists from the NSW Office of Environment and Heritage (OEH) have assessed three important indicators of estuary health: .

- Chlorophyll-a – an indicator of microalgae and nutrient levels in the water. High levels of chlorophyll-a indicate high inputs of nutrients which can lead to algal blooms.
- Turbidity – a measure of water clarity or cloudiness. Elevated turbidity is caused by more sand, silt, clay and microalgae suspended in the water. Long periods of high turbidity will negatively affect estuary health.
- Seagrass depth range – a measure of water clarity. Seagrass grows slowly and depends on high water clarity, good access to sunlight and relatively low nutrient concentrations. Assessing changes in seagrass depth range over long periods of time can act as an indicator of clarity.

Healthy estuaries have low levels of microalgae and turbidity, and strong seagrass communities (noting that the Tuggerah Lakes estuary is shallow, sediment based and wind driven so will always be turbid to some degree).

The environmental information collected by OEH scientists compares the current ecological health of the Tuggerah Lake Estuary with ideal estuary health of waterways across the state. This produces a grading system from A to E for the 5 zones of the estuary (see map) which can be compared to 3 previous years in this report card.

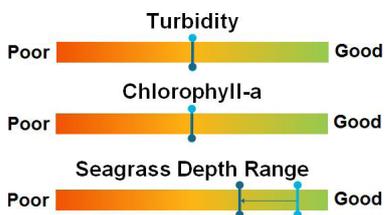
Tuggerah Lakes Estuary 2015



The Grades explained

- A** **Excellent** The indicators meet all benchmarks for more than most of the year. Equal to the best 20% of scores in NSW*.
- B** **Good** The indicators meet all benchmarks for most of the year. Equal to the next 30% of scores in NSW*.
- C** **Fair** The indicators meet some benchmarks for part of the year. Equal to the middle 30% of scores in NSW*.
- D** **Poor** The indicators met few benchmarks for part of the year. Equal to the next 15% of scores in NSW.
- F** **Very Poor** The indicators met few benchmarks for part of the year. Equal to the next 15% of scores in NSW.

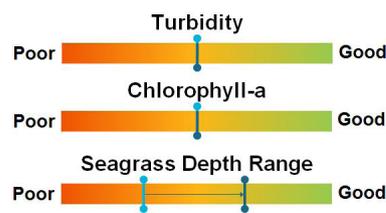
*The NSW State Government coordinates a Monitoring, Evaluation and Review (MER) program for estuaries across NSW. This program is run throughout the State to help track estuary health over time. Central Coast Council engages expert scientists from the NSW Office of Environment and Heritage (OEH) to collect and analyse water quality data for Tuggerah Lakes each year. The annual results are compared against the long-term MER dataset to determine an annual percentile class for each sample site and a corresponding grade. By comparing against the long-term, known minimum and maximum values for similar waterway types, the scores provide a good long-term reflection of water quality in the estuary and do not capture relative fluctuations between one waterway and another.



Lake Munmorah



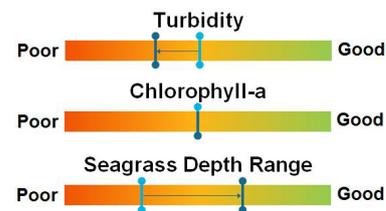
Decreases in seagrass depth range and consistently high turbidity and chlorophyll-a concentrations in Lake Munmorah resulted in a decrease in the overall grade for 2015. Since 2013, Lake Munmorah's health has declined from Excellent to Fair.



Budgewoi Lake



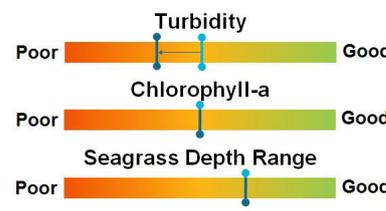
A positive recovery of seagrass in Budgewoi Lake led to an improvement in the seagrass depth range grade. However this was countered by consistently high chlorophyll-a and turbidity concentrations, meaning the overall grade is unchanged from last year.



Tuggerah Lake North



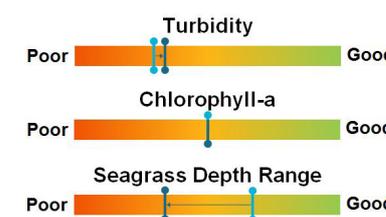
Marked increases in seagrass depth range improved the biological health grade, however these improvements were countered by increased average turbidity concentrations compared to last year, meaning there was no improvement in the overall grade for 2015.



Tuggerah Lake Central



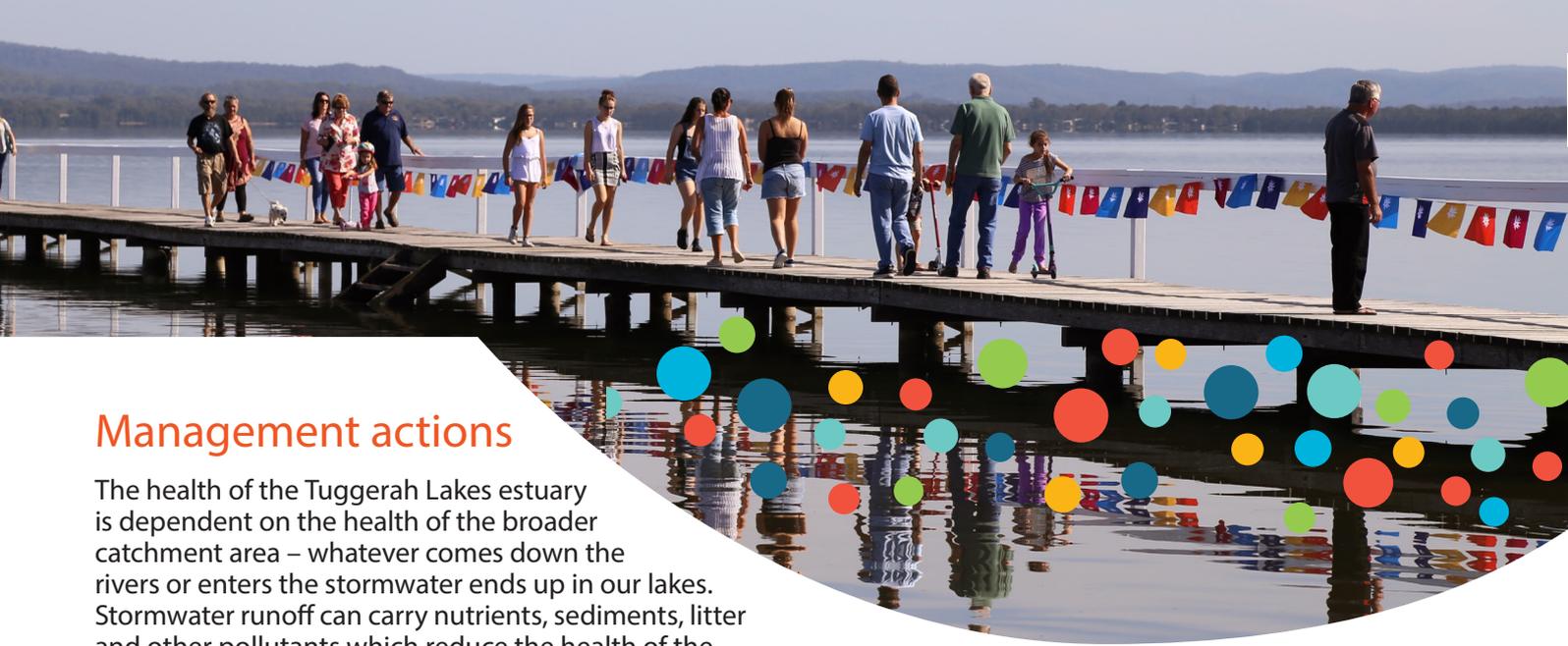
In the central zone of Tuggerah Lake there was a slight increase in turbidity concentrations compared to last year. Chlorophyll-a concentrations and seagrass depth range remained stable, resulting in no change in the overall grade in this zone for 2015.



Tuggerah Lake South



There was a decrease in seagrass depth range compared to last year in the southern zone of Tuggerah Lake, however this did not affect the overall grade, as the grades for the water quality indicators were consistent when compared to last year. Turbidity remains a concern in this zone, which is likely to be impacting the seagrass depth range.



Management actions

The health of the Tuggerah Lakes estuary is dependent on the health of the broader catchment area – whatever comes down the rivers or enters the stormwater ends up in our lakes. Stormwater runoff can carry nutrients, sediments, litter and other pollutants which reduce the health of the estuary. What we all do in the catchment impacts the estuary, however by working together we can improve and protect it.

Actions Council has taken to help

Council has a strong commitment to the health of the estuary and its catchment. In the past 12 months Council has continued to:

- construct and upgrade gross pollutant traps, wetlands and other stormwater infrastructure to reduce sediment, litter and nutrient loads from the catchment
- regularly clean out gross pollutant and sediment traps to ensure waste ends up in landfill instead of the lakes
- protect and improve natural wetlands, riparian vegetation and saltmarsh, to help reduce erosion and filter runoff before it enters the estuary
- dredge The Entrance channel (when triggers are met) to maintain exchange with the ocean
- remove excess seagrass wrack and floating algae to enhance the water quality of the estuary and improve circulation of water into nearshore areas
- provide recreational facilities for the community to relax and enjoy the beautiful lake foreshores.

Simple things you can do to help keep your patch healthy

- Put litter and pet droppings in the bin – this will stop pollution before it occurs and keep our waterways and foreshores clean and tidy for everyone to enjoy.
- Build a rain garden or install a rainwater tank to capture and reuse runoff from rooftops and hardstand areas.
- Keep to formed walking trails and boat ramps to minimise your impact.
- Report environmental vandalism to Council.
- Reduce your household water consumption so that less water needs to be taken from the rivers and more is available for environmental flows.
- Wash your car on the grass or better still, at a car wash that recycles water – this will reduce the amount of chemicals and detergent entering the stormwater system.
- Use less fertiliser on your lawn or grow a native garden which doesn't need as much fertiliser – this helps reduce the nutrients entering the lake which can cause algal blooms.
- Dispose of garden waste in your green bin, not by dumping it in reserves and stormwater channels – this will help stop the spread of weeds.
- Get involved! Protect saltmarsh, wetlands and bushland first hand by joining your local Landcare or Waterwatch group.



Keeping our estuary healthy is the responsibility of everyone who lives in, works in or visits our Shire. We all impact the lake, let's make our impacts positive.

More Information

For more information or to view our range of videos on the Tuggerah Lakes, including a fantastic animation please visit www.loveourlivinglakes.com.au

Tuggerah Lakes Estuary Management Plan (2006)

www.wyong.nsw.gov.au/environment/tuggerah-lakes-estuary/estuary-management-plan

Office of Environment and Heritage (2013) Assessing estuary ecosystem health: sampling, data analysis and reporting protocols

www.environment.nsw.gov.au/resources/soc/130125esthlthprot.pdf

ANZECC (2000) National Water Quality Management Strategy: The Guidelines

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Version 2



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