

# Report Card 2016



#loveourlivinglakes



## Introduction

This is the fifth 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 2015/2016.

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 on the Central Coast of New South Wales, 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 Lake Munmorah in the north to Killarney Vale in the south. The catchment area is much larger, spanning over 710 square kilometres and taking in the plateau, river valleys and floodplains. This includes five major tributaries – Wyong River, Ourimbah, Spring/Wallah, Tumbi and Saltwater Creeks.

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.

Cover: Aerial photo of Tuggerah Lake – Andy Smith Photography.  
Above: Friends enjoying the lakes at Gorokan.

## 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).

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The environmental information collected by OEH scientists compares the current ecological health of the Tuggerah Lakes Estuary with ideal estuary health and compares the 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.

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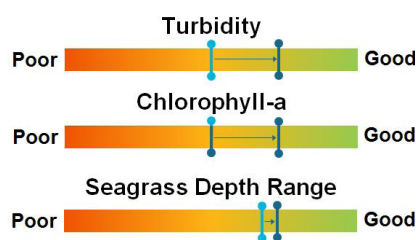
# Tuggerah Lakes Estuary 2016



## 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 never meet benchmarks. Equal to the worst 5% of scores in NSW.

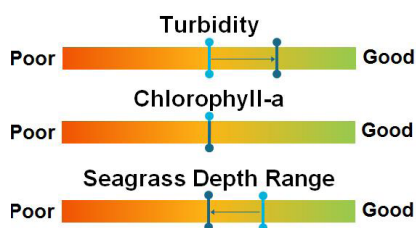
\*The NSW State Government coordinates a Monitoring, Evaluation and Review (MER) program for estuaries across NSW. This program is run throughout the State to help track estuary health over time. Central Coast Council engages expert scientists from the NSW Office of Environment and Heritage (OEH) to 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

**A** 2016 **B** 2015 **B** 2014 **B** 2013

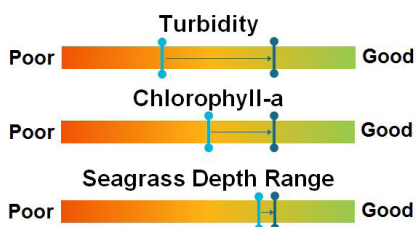
Long term average turbidity and chlorophyll-a concentrations were lower this year compared to last year, resulting in an improvement in the water quality grade. Seagrass depth range remained similar to last year. The improvements in water quality contributed to an improvement in the overall grade of Lake Munmorah.



### Budgewoi Lake

**B** 2016 **B** 2015 **C** 2014 **B** 2013

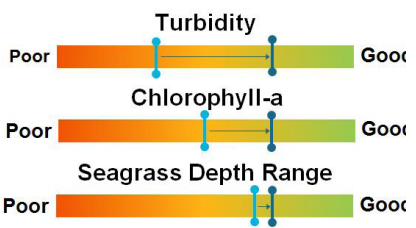
A small improvement in long-term turbidity was not enough to improve the water quality grade in Budgewoi, as high chlorophyll-a concentrations are consistently observed. After showing positive signs of growth last year, seagrass depth range decreased this year. There was no improvement in the overall grade.



### Tuggerah Lake North

**A** 2016 **C** 2015 **B** 2014 **C** 2013

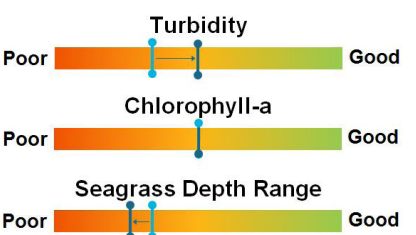
Observed average turbidity and chlorophyll-a concentrations were lower over the long-term compared to last year, resulting in an improvement in the water quality grade. The seagrass depth range was similar to last year, which had improved from the year before. The consistent seagrass depth range and improvements in water quality lead to an increase in the overall grade in this zone.



### Tuggerah Lake Central

**B** 2016 **C** 2015 **B** 2014 **B** 2013

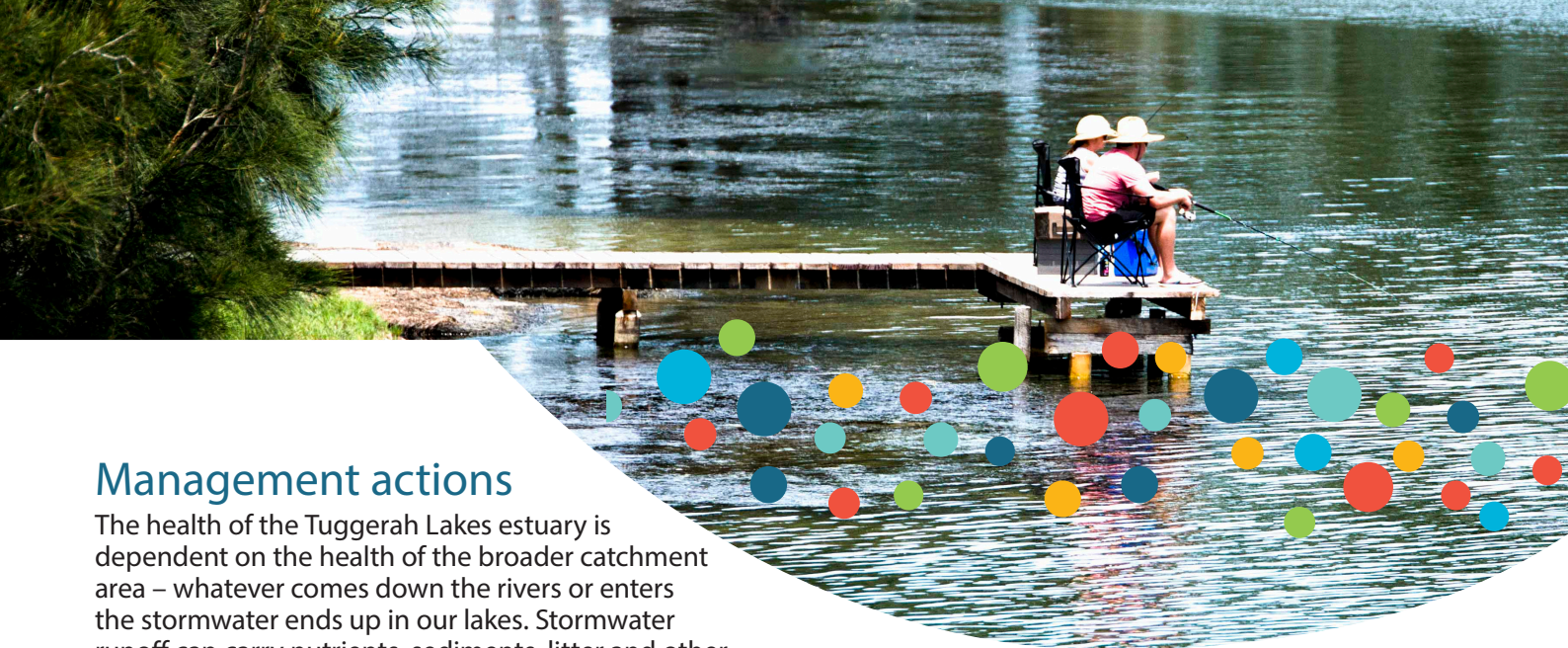
Observed turbidity and chlorophyll-a concentrations were lower over the long-term compared to last year. This, combined with consistent seagrass depth range from last year, resulted in an improvement in the overall grade.



### Tuggerah Lake South

**B** 2016 **C** 2015 **B** 2014 **B** 2013

There have been persistent problems with high turbidity and chlorophyll-a concentrations in this zone. Observed data from this year saw a small improvement in turbidity, but chlorophyll-a concentrations were similar to last year. Seagrass depth range remains poor in this zone. There was no change in the overall grade.



## 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 12-18 months Council has continued to:

- construct/ take ownership of 14 new gross pollutant traps which treat an additional 332ha of land
- create an industry leading saltmarsh swale to manage a 37.5ha, untreated stormwater catchment at Long Jetty
- remove 1250 tonnes of pollutants from the 122 GPTs and 30 constructed wetlands in the estuary catchment
- complete two major clean outs of constructed wetlands to ensure they are functioning as designed
- use a street sweeper to collect 200T of litter and sediment from the gutters in the Tuggerah Lakes catchment
- dredge 60,000m<sup>3</sup> of sand from the entrance channel to maintain exchange with the ocean and provide a sand buffer to protect the beaches to the south and north of the entrance
- remove 10,500m<sup>3</sup> of excess seagrass wrack and floating algae from the waterway to enhance water quality and improve circulation in nearshore areas
- remove weeds from 2.4ha of important foreshore vegetation and replant 12,700 new native plants to improve foreshore biodiversity at Long Jetty
- construct a 460m stretch of sand beaches at Canton Beach (2014-15) and Long Jetty (2015-16) to improve recreational amenity and enhance foreshore wrack assimilation
- investigate the location, extent and causes of “black ooze” around the foreshores of Tuggerah Lakes to help strategically manage water quality hot spots

- extend shared pathways and install fitness stations for the community to relax and enjoy the beautiful lake foreshores
- support over 40 local Landcare groups to help care for our bushland and foreshore reserves
- work in the community to teach them about the estuary through catchment tours, Waterwatch activities, school programs and community education programs
- celebrating all our beautiful lakes have to offer by facilitating the annual Wyong Lakes Festival.

### Simple things you can do to help keep your patch healthy

- Reduce your household water consumption so that less water is taken from the rivers and more is available for environmental flows.
- Put litter and pet droppings and garden waste in the bin – this will stop pollution before it occurs and keep our waterways and foreshores clean and tidy for everyone to enjoy.
- Wash your car on the grass or better still, at a car wash – this will reduce the amount of chemicals and detergent entering the stormwater system.
- Build a rain garden or install a rainwater tank to capture and reuse runoff from rooftops and hardstand areas.
- Report environmental vandalism to Council.
- 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.
- Keep to formed walking trails and boat ramps to minimise your impact.
- Get involved! Protect saltmarsh, wetlands and bushland first hand by joining your local Landcare group.

*Keeping our estuaries healthy is the responsibility of everyone who lives in, works in or visits the Central Coast. 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](http://www.loveourlivinglakes.com.au)

Tuggerah Lakes Estuary Management Plan (2006)

[www.wyong.nsw.gov.au/environment/tuggerah-lakes-estuary/estuary-management-plan](http://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](http://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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