

Tuggerah Lakes Estuary Report Card 2017



Introduction

This is the sixth 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 2016/2017.

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 floodplain. This includes five major tributaries – Wyong River, Ourimbah, Spring/Wallahah, 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: Yarramalong Valley is connected to Tuggerah Lake by Wyong River and its tributaries
– Andy Smith Photography*

Methods

The *Tuggerah Lakes Estuary Report Card* is like a health check for our estuary: it compares the current ecological health of the Tuggerah Lakes estuary with ideal estuary health.

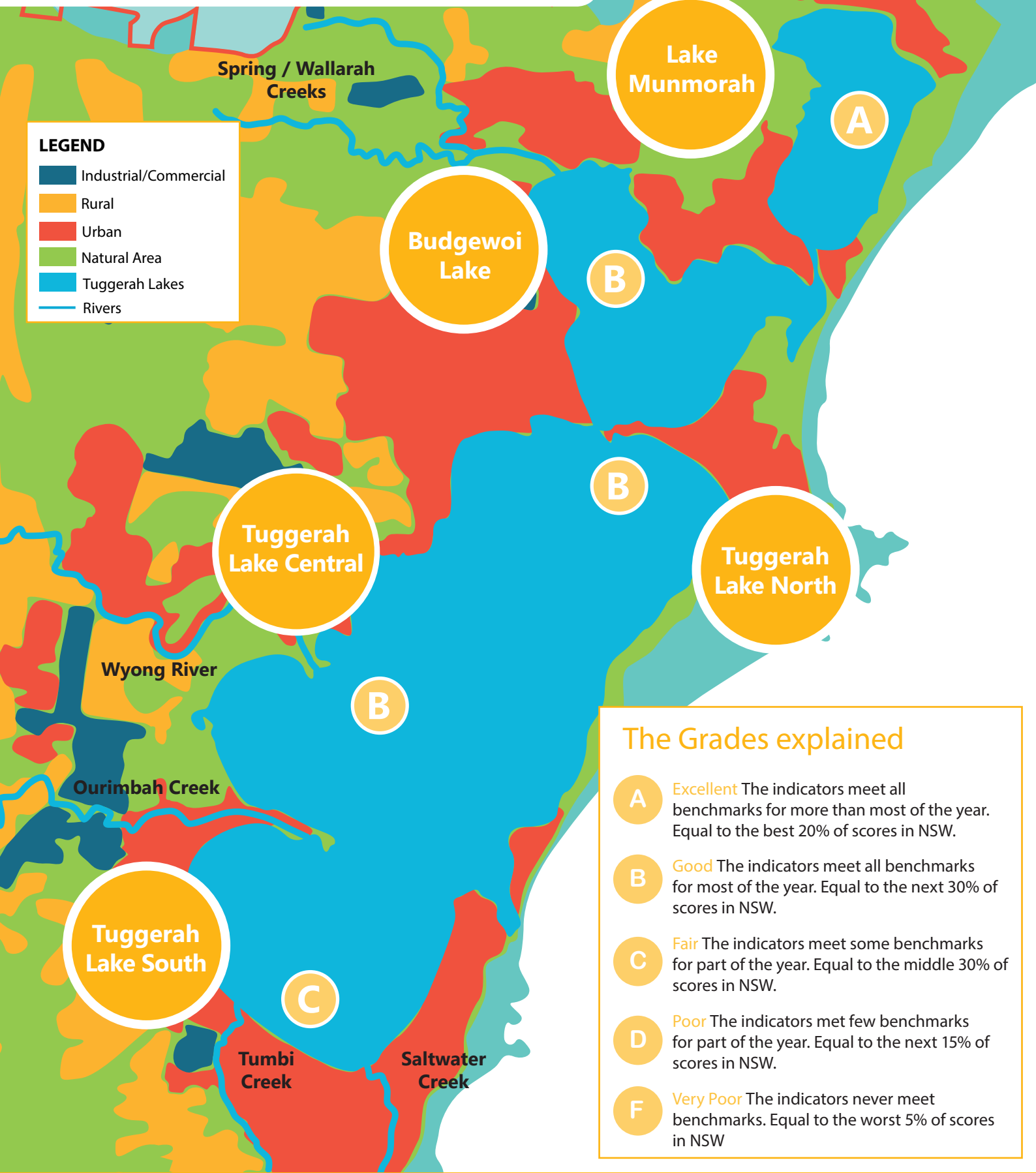
To calculate the report card grades, scientists from the NSW Office of Environment and Heritage (OEH) have assessed three important indicators of estuary health:

- Chlorophyll-a – an indicator of levels of microalgae and nutrients 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 biological indicator of water clarity over longer time periods. Seagrass grows slowly and depends on high water clarity, good access to sunlight and relatively low nutrient concentrations.

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 information collected by OEH scientists is converted into a grading system which compares the health of waterways across the state. The report card also shows data from the three previous years for comparison. The water quality in Tuggerah Lakes continues to be moderate to good.

Tuggerah Lakes Estuary 2017



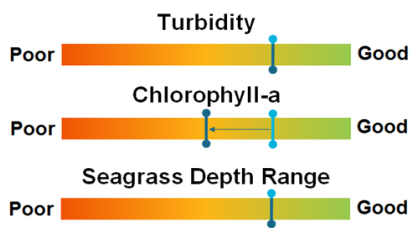
LEGEND

- Industrial/Commercial
- Rural
- Urban
- Natural Area
- Tuggerah Lakes
- Rivers

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.

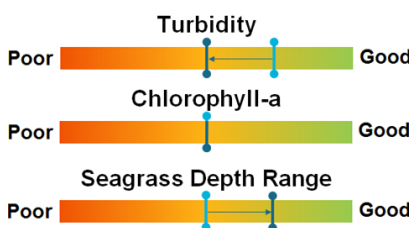
*The NSW State Government coordinates a Monitoring, Evaluation and Review (MER) program for estuaries across NSW. This program is run throughout the State to help track estuary health over time. Central Coast Council engages expert scientists from the NSW Office of Environment and Heritage (OEH) to collect 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 classes 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 2017 **A** 2016 **B** 2015 **B** 2014

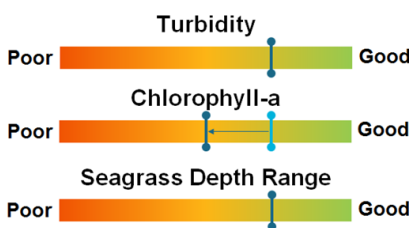
Heavy rainfall in winter 2016 followed by a long, dry spell resulted in generally good water clarity and favourable conditions for the growth of both seagrass and phytoplankton. Phytoplankton growth rates are reflected in the higher than average chlorophyll-a levels in Lake Munmorah, which frequently exceeded the trigger level. Water clarity and seagrass depth range remained good as for the previous year, and thus there was no change in the overall ecological health grade.



Budgewoi Lake

B 2017 **B** 2016 **B** 2015 **C** 2014

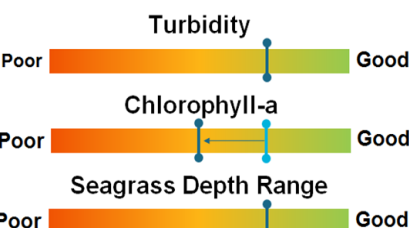
There was a decrease in the turbidity grade this year compared to last year and chlorophyll-a concentrations continued to exceed the trigger value on occasions throughout the sampling period. There were considerable gains in the seagrass depth range which resulted in no net change to the overall ecological health grade for this year and a promising trend for estuary health.



Tuggerah Lake North

B 2017 **A** 2016 **C** 2015 **B** 2014

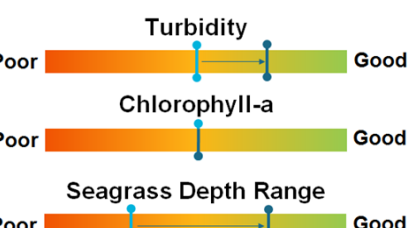
Chlorophyll-a concentrations exceeded the trigger value in some of the sampling months, mostly during the warmer summer months. This impacted the overall water quality grade and ultimately the overall ecological health grade. Water clarity and seagrass depth range were good, similar to last year.



Tuggerah Lake Central

B 2017 **B** 2016 **C** 2015 **B** 2014

Similarly with the northern section of Tuggerah Lakes, chlorophyll-a concentrations exceeded the trigger values frequently throughout the sampling period which impacted the water quality and overall ecological health grade. Water clarity and seagrass depth range were good, similar to last year.



Tuggerah Lake South

C 2017 **B** 2016 **C** 2015 **B** 2014

There was an improvement in the turbidity grade compared to last year, indicating improved water clarity. Chlorophyll-a concentrations still exceeded the trigger values frequently throughout the sampling period, meaning the positive gains in the turbidity did not increase the overall water quality grade. The good water clarity possibly provided favourable growth conditions for seagrass as the depth range grade improved.

Images above, left to right: Seagrass – *Zostera muelleri* is abundant in Tuggerah Lakes; a popular Lakes Festival cycle tour; the next generation enjoying the Saltmarsh Boardwalk at Killarney Vale; roosting Tawny frogmouth



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. 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:

- Constructed three new gross pollutant traps (GPTs) to reduce pollution washing into our waterways.
- Upgraded six existing GPTs to reduce pollution washing into our waterways.
- Created an industry leading saltmarsh swale to manage a large, untreated stormwater catchment at Long Jetty.
- Removed 1225 tonnes of pollutants from the 225 GPTs and 35 constructed wetlands in the estuary catchment.
- Completed four major clean outs of constructed wetlands to ensure they are functioning as designed.
- Used targeted street sweeping to collect 330 tonnes of litter and sediment from the gutters in the Tuggerah Lakes catchment.
- Removed 13,642m³ of excess seagrass wrack and floating algae from the waterway to enhance water quality and improve circulation in nearshore areas.
- Restored 1.15ha of Coastal Saltmarsh on the shores of Tuggerah Lake.
- Rehabilitated over 30ha of Swamp Oak Floodplain Forest to improve foreshore biodiversity.
- Maintained sand beaches at Canton Beach, Lake Munmorah and Long Jetty to improve recreational amenity and enhance foreshore wrack assimilation.
- Supported 36 Landcare and 11 Tidy Towns groups to help care for our bushland and foreshore reserves.
- Delivered an extensive estuary education and communication program with tours, information sessions, film screenings, school visits and resources including two Multi-Touch Books.

- Celebrated everything our beautiful lakes have to offer by facilitating the annual 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.
- Reduce, reuse and recycle your waste – Especially plastics which can cause big problems in our waterways!

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

More Information

For more information or to view our range of videos on the Tuggerah Lakes, 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

To view our FREE multi-touch books for iPad, iPhone and Mac, search "Central Coast Council" in the iBooks Store.

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Version 2



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