

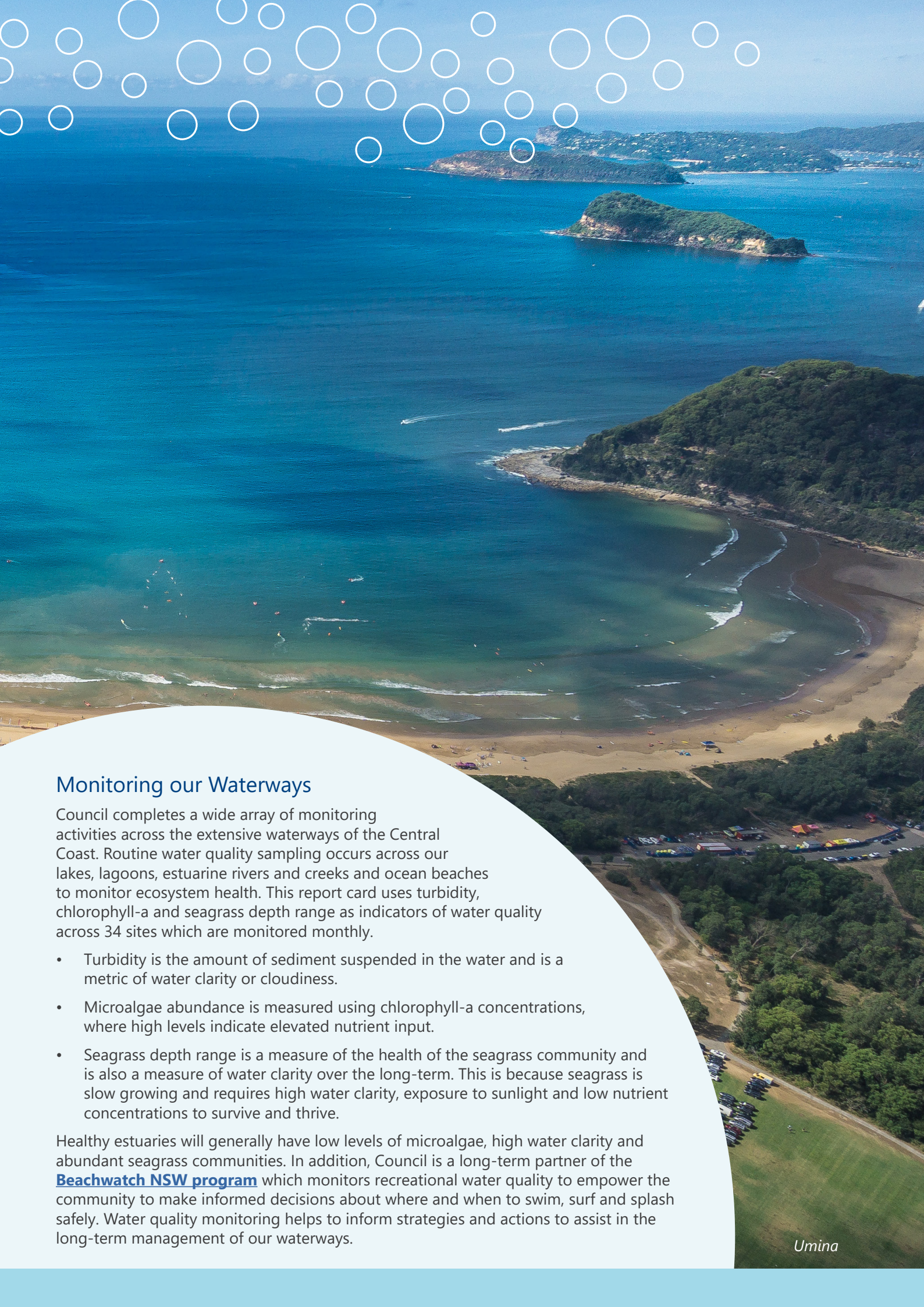


Central Coast Council

Waterways Report Card

2024-2025





Monitoring our Waterways

Council completes a wide array of monitoring activities across the extensive waterways of the Central Coast. Routine water quality sampling occurs across our lakes, lagoons, estuarine rivers and creeks and ocean beaches to monitor ecosystem health. This report card uses turbidity, chlorophyll-a and seagrass depth range as indicators of water quality across 34 sites which are monitored monthly.

- Turbidity is the amount of sediment suspended in the water and is a metric of water clarity or cloudiness.
- Microalgae abundance is measured using chlorophyll-a concentrations, where high levels indicate elevated nutrient input.
- Seagrass depth range is a measure of the health of the seagrass community and is also a measure of water clarity over the long-term. This is because seagrass is slow growing and requires high water clarity, exposure to sunlight and low nutrient concentrations to survive and thrive.

Healthy estuaries will generally have low levels of microalgae, high water clarity and abundant seagrass communities. In addition, Council is a long-term partner of the [**Beachwatch NSW program**](#) which monitors recreational water quality to empower the community to make informed decisions about where and when to swim, surf and splash safely. Water quality monitoring helps to inform strategies and actions to assist in the long-term management of our waterways.

Ocean Outfall Benthic Studies

Council has engaged the University of Newcastle to develop a methodology for monitoring ocean outfalls servicing Environment Protection Licences 2647, 1802 and 1942. The methodology aims to assess the ecological and public health impacts, if any, from effluent discharge to open waters from near shore outfalls. The monitoring program will be undertaken over a 12-month period, developed in accordance with [Australian & New Zealand Guidelines for Fresh & Marine Water Quality](#).

Engagement of a consultant to undertake the monitoring program is in the final stages, with works proposed to commence by Nov 2025.



Figure 1. Winney Bay rock platform November 2024

Microbial Source Tracking

Environmental DNA (eDNA) is a method of microbial source tracking which can be used to identify sources of potential water contamination. It involves sampling the water to collect traces of DNA left behind by animals in the environment. This can help inform Council of which animals are using our waterways and could be influencing water quality. eDNA is increasingly being utilised by local utilities to identify sources of water contamination in recreational swim sites to inform catchment management activities. Council's Catchments to Coast (CtoC) and Water & Sewer (W&S) teams have been using this method of source tracking consistently in recent years. A review of previous methodologies and data was undertaken to inform the development of a Council-wide microbial indicator program to ensure environmental eDNA data collected for water quality sampling is consistent and comparable across monitoring programs. eDNA water sampling has been undertaken to complement previous works completed by Council at Terrigal Lagoon, Canton Beach & Gwandalan.



Figure 2. Microbial source tracking undertaken at Canton Beach March 2025

Water Quality Monitoring and Evaluation

The Terrigal Catchment Audit commenced in 2019 and is a subset of the Terrigal and Coastal Lagoons Audit, which was a comprehensive water quality improvement program in partnership between Central Coast Council, the NSW Department of Planning, Industry and Environment (NSW DPIE) and the University of Technology Sydney (UTS). The realisation of the Terrigal Lagoon audit commenced in June 2025 by Council's W&S team and aims to undertake water quality monitoring comparative of previous investigations to understand and quantify the benefit to the estuary of the asset remediation works completed in the 2019 audit. Once completed, this project will move into the Avoca Lagoon catchment to investigate potential sources of sewage contamination and identify high priority locations based on the review and opportunities from Terrigal Lagoon program. The findings will inform a program of works to repair or replace any of the sewerage reticulation system that may suffer from stormwater infiltration.

Terrigal Beach is also currently undergoing reassessment to evaluate water quality improvements achieved between 2010 and 2025 (pre to post remediation), with a focus on determining whether remediation efforts have resulted in measurable improvements.



Figure 3 Terrigal Lagoon Site 2 Sept 2025
30mm rainfall over previous 72 hours.

Water & Sewer Improvements

During 2025, the Council identified that one of the root causes of sewer discharges was due to the poor condition of manholes, which often had excessive intrusions and chokes.

To address this, Council set up an operational contract through a competitive tender process. This contract established a targeted approach to assess the condition of manholes that are at a high risk of causing sewer discharges. The contractor's scope of works includes performing a high volume of condition assessments coupled with minor repair works. Additionally, this setup enables our internal Council W&S employees to attend to urgent preventative maintenance as needed.

This division of workload has already shown significant improvements in the quantity of assessments and the prioritization of manholes, resulting in time and cost savings in both identification and prioritisation processes. The contract commenced in June 2025, and within just 11 business days, 257 manholes were condition assessed, with 10 manholes identified as requiring urgent preventative maintenance. This contract will continue until December 2026.

Healthy Catchments, Healthy Waterways

Looking after and improving the ecological health of our lakes, lagoons, estuaries and rivers is a major focus of Council. Through implementation of our existing Coastal Zone Management Plans, operational activities, targeted grant funded programs and emergency works, Council has undertaken a large and varied amount of important work during 2024-25 aimed at stabilising, protecting and improving the health of our waterways and their catchments.



528 stormwater quality improvement devices (SQID) consisting of **442 gross pollutant traps** and **86 water quality basins**.



99 Clean4Shore field trips completed, **40.85 tonnes of waste removed**, **88,704 individual items collected**, and **909 volunteers** contributing **2,986 hours of service**.



14 Floating Landcare Trips across **3 Sites** totalling **456 hours of service**.



1,485 sewer manholes inspected and **74 rehabilitated**.



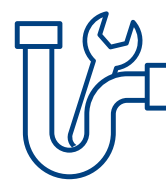
704 tonnes of material removed from urban channels for flood mitigation works.



1,421 swim site water quality samples collected as a part of Beachwatch program.



758 tonnes of material removed from **SQIDs**.



25km of sewer mains relined.

Managing our Waterways in reality means managing:

31km of Lake Macquarie foreshore and **90km²** of catchment

70km of Tuggerah Lakes foreshore and **790m²** of catchment

72.3km of Brisbane Water foreshore and **152.5km²** of catchment

1.86km² of coastal lagoon waterway and **34.56km²** of catchment

Many kilometres of **rivers and creeks**

More Information

centralcoast.nsw.gov.au/environment/coastlines/estuaries-lagoons-and-wetlands

loveourwaterways.centralcoast.nsw.gov.au

environment.nsw.gov.au/topics/water/water-quality/about-water-quality

waterquality.gov.au/anz-guidelines/resources/previous-guidelines/anzecc-armcanz-2000

Contact

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Lake Macquarie

For the eighth consecutive year, overall water quality and ecological health in Wyee, Chain Valley Bay and Crangan Bay have remained Excellent. Chain Valley Bay and Crangan Bay have relatively deep waters with a mostly forested catchment and no major tributaries, which contribute to the very good water quality observed in 2024-25. Conversely, Wyee Bay has an urbanised catchment and inflows from two major tributaries – Wyee Creek to the south, in addition to an average of 4,000 megalitres per day of relatively warm water used to cool Vales Point Power Station. Despite the catchment and tributary inputs, turbidity and chlorophyll-a levels were very good on all sampling days in 2024-25. Seagrass beds at both Point Wolstoncroft and Mannering Park had a reduced depth range and this was observed across most sites in Lake Macquarie, Tuggerah Lakes and Brisbane Water in 2025. This reduction in seagrass depth range caused Chain Valley Bay to have a drop in grade from Good to Fair, however Crangan Bay maintained an Excellent seagrass depth range grade. This may have been due to higher than average rainfall in November 2024 and January 2025 which may have reduced light availability and increased turbidity, impacting seagrass growth and distribution during the limited growing season.



Hawkesbury - Nepean River (including Brisbane Water)

In the Lower Hawkesbury, Mullet Creek's overall water quality grade improved from Fair to Good whilst Mangrove Creek remained stable, receiving a Good grade for 2024-25. Despite the overall water quality grades remaining stable at Patonga and Mooney Mooney Creek, there was a decrease in grade from Excellent to Good for algal abundance in Patonga Creek, whilst there was an improvement in water clarity from Fair to Good in 2024-25 in Mooney Mooney Creek. Patonga Creek maintained its excellent overall grade, largely due to the low development in the catchment, minimal tidal inflow which protect seagrass beds and greater flushing with ocean waters compared to the upstream creeks.

In 2024-25, Narara Creek improved from a Fair to Good overall water quality grade which was primarily driven by a reduction in algae. Rainfall between October 2024 and April 2025 was well below the long-term average which is likely to have assisted in the improved algae grades across many Brisbane Water sites including Erina Creek, Narara Creek and Booker Bay. Despite lower algae concentrations in Narara and Kincumber Creeks, elevated nutrients were still recorded at both locations primarily linked to the highly urbanised catchments. Cockle Bay maintained its Excellent rating, aided by its proximity to Broken Bay which allows flushing with ocean water.

Elevated rainfall in January 2025 may have contributed to the decline in seagrass depth range in the Brisbane Water basin, moving from a Very Good to Good grade. Seagrass grades remained stable at Woy Woy Creek, Kincumber Creek and Erina Creek, with Good, Fair and Fair grades respectively.

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.

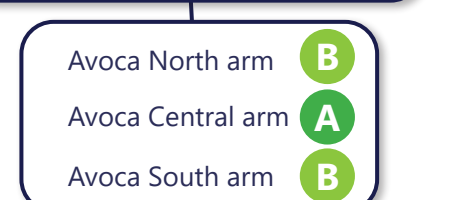
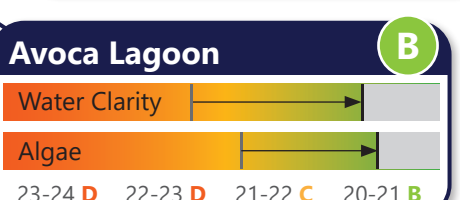
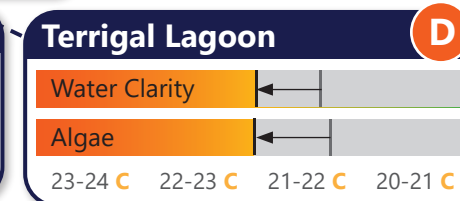
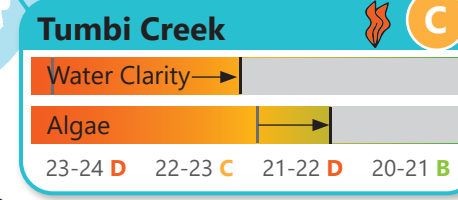
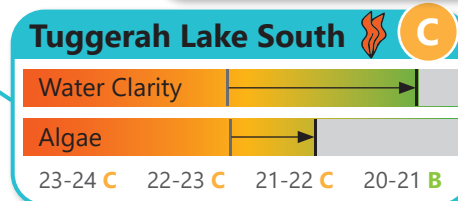
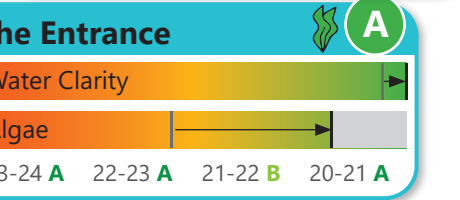
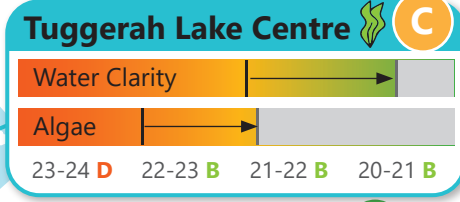
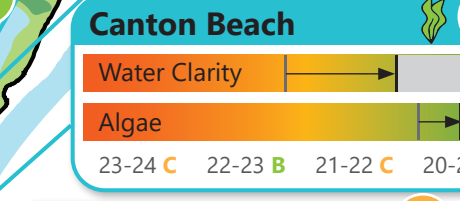
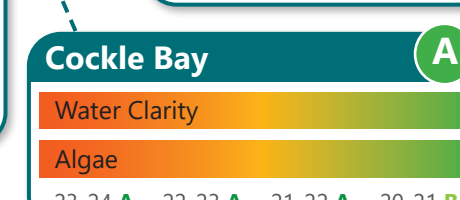
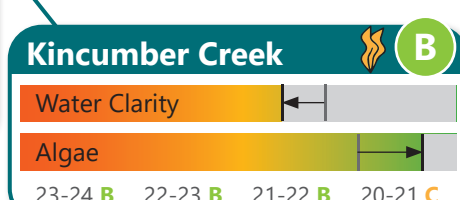
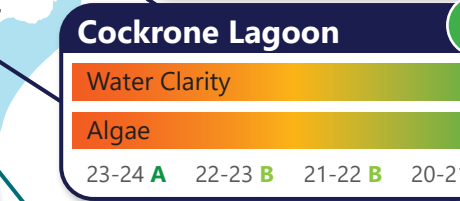
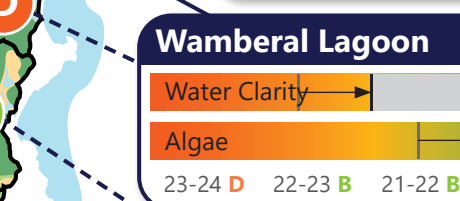
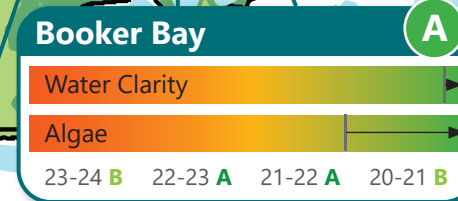
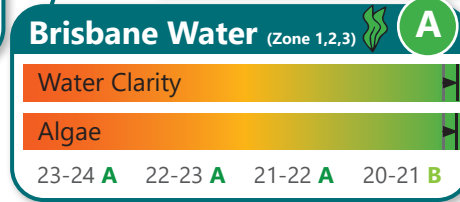
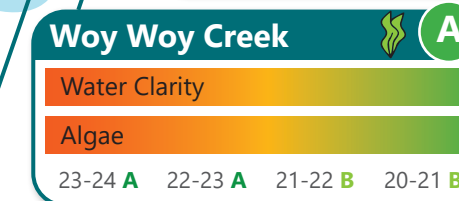
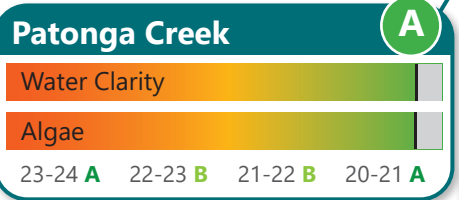
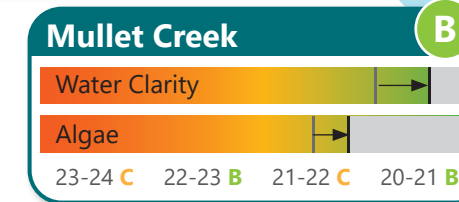
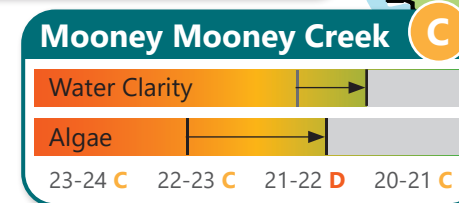
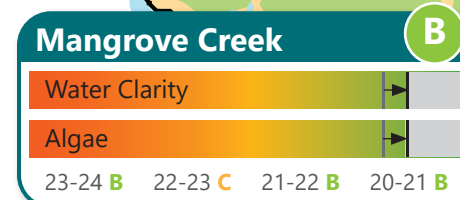
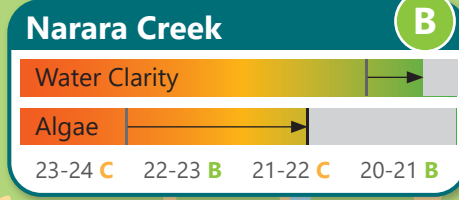
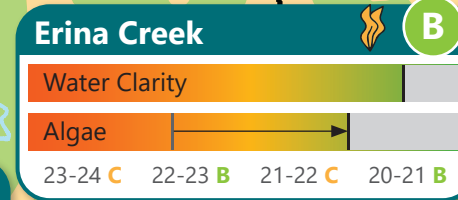
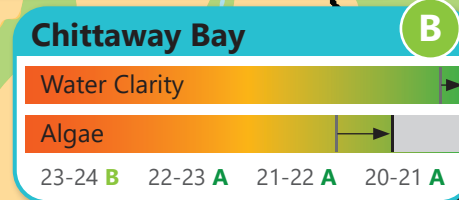
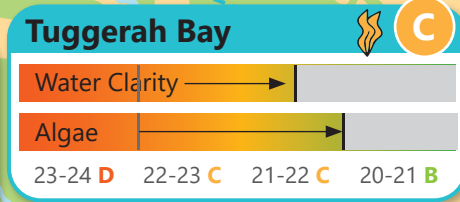
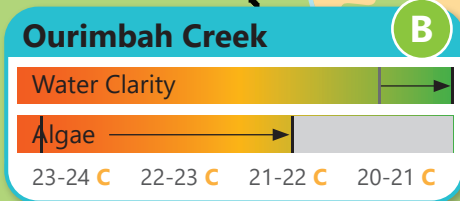
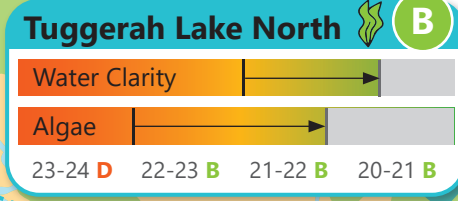
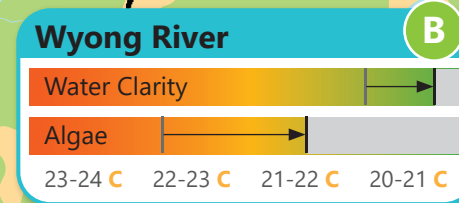
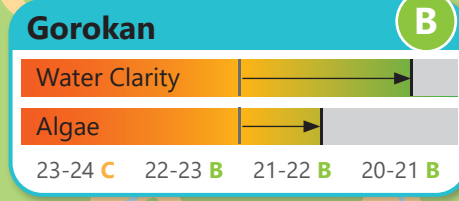
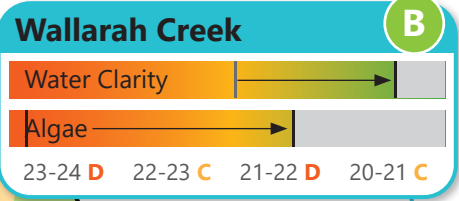
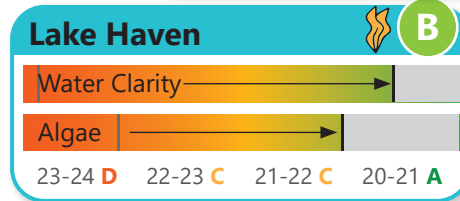
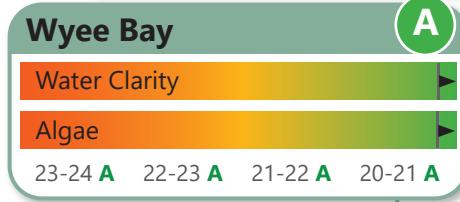
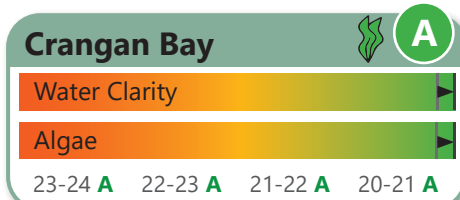
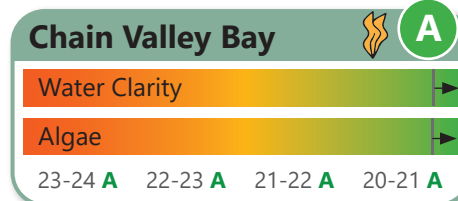
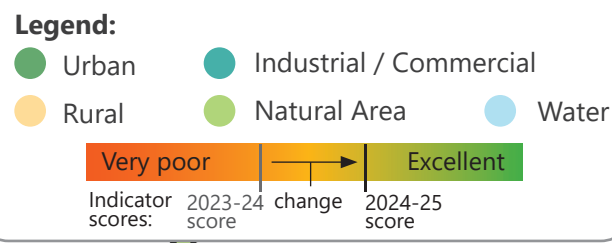
C Fair The indicators meet some benchmarks for part of the year. Equal to the middle 30% of scores in NSW.

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.

Seagrass grade: indicates depth of sea grass and if growth is expanding or contracting

Very Good **Good** **Fair** **Poor** **Very Poor**



Tuggerah Lakes Estuary

Overall water quality improved in 2024-25 across Tuggerah Lake, Budgewoi Lake and Lake Munmorah and in the tributaries of Wyong River, Ourimbah Creek and Wallarah Creek. These improvements were driven by improvements to water clarity and lower algal abundance at the monitoring zones. All monitoring locations had either stable or improved water quality compared to the previous year, with twelve of the sixteen sites scoring Good or Excellent grades, and the remaining four assigned Fair grades. Conversely, seagrass depth range decreased at most seagrass monitoring sites despite improved water quality. A high rainfall event occurred in January 2025 at the peak seagrass growing season which is likely to have contributed to the decline in seagrass depth range across most monitoring sites in Budgewoi and Tuggerah Lakes. However, seagrass depth range improved from Fair to Good at Lake Munmorah. The improvement in overall water quality in the tributaries to a Good grade in 2024-25 is primarily driven by low algal concentrations prior to May 2025.

Whilst total annual rainfall over the sampling period was similar to the 15-year average, an east coast low in May 2025 dumped approximately 350mm of rainfall which caused a decline in water clarity and high algal abundance in the lakes and tributaries which impacted the overall grades of many of the near-shore sites. Rainfall delivers high nutrient and sediment loads from the catchment to the lake basin via the creeks and rivers, whilst runoff and stormwater drains deliver pollutants directly to the nearshore zone. The shallow nature of Tuggerah Lake, Budgewoi Lake and Lake Munmorah, and the restricted opening at The Entrance means that water remains in the lake for a long time. This long residence time means that pollutants from the catchment have an extended influence on water quality.



Toowoan Bay

Coastal Lagoons

Water quality results remain variable between the coastal lagoons with Wamberal Lagoon improving from Poor to Fair overall grade, whilst Terrigal Lagoon declined from Fair to Poor. Overall water quality improved significantly in Avoca Lagoon, with water clarity, algal abundance and the overall water quality all being awarded Good grades. Cockrone Lagoon also improved, with all three grades (water clarity, algae and overall water quality) now scored as Excellent. This improvement is likely linked to the lower annual rainfall compared to previous years. Rainfall can cause and increase dissolved organic nutrients in run-off which can increase algal growth in estuaries.

Improved water quality in both Avoca and Wamberal Lagoons in 2024-25 is likely due to the lagoons being closed for most of the year, and minimal rain in the days prior to sampling. Water quality in both Wamberal Lagoon and the southern arm of Avoca Lagoon are heavily influenced by their orientation and shallow nature. These lagoons hold a large volume of water and are typically not opened as frequently for flood mitigation. This greater water volume allows for better scouring during exchange with the ocean which removes fine sediment and excess nutrients. In addition, these two lagoons tend to close rapidly after opening to the ocean which helps to minimise sediment disturbance.

The decline in water quality in Terrigal Lagoon may be attributed to the frequent opening and closing of the entrance which disturbs bottom sediments causing reduced water clarity and elevated algae levels, particularly in shallow parts of the lagoon. Most of the lagoon opening events at Terrigal occurred manually for flood mitigation following periods of high rainfall hence catchment inputs may have also contributed to poor water quality. The northern end of Terrigal Lagoon had poor results which influenced the overall water quality grade.

Cockrone Lagoon had improved water quality in 2024-25, likely due to limited opening events. Cockrone Lagoon has several factors which support good water quality including its orientation which protect it from north-easterly summer winds, less urban development in the catchment, and the presence of wetland and riparian vegetation around much of the perimeter which act to filter sediment and nutrients from surface runoff.