



Greater Taree  
City Council

# State of the Manning

2014 Report Card



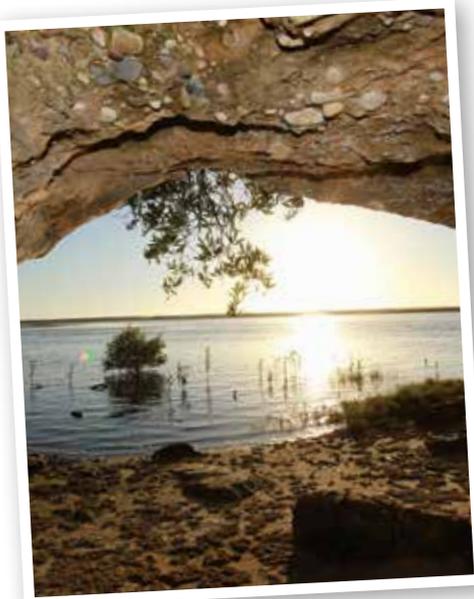
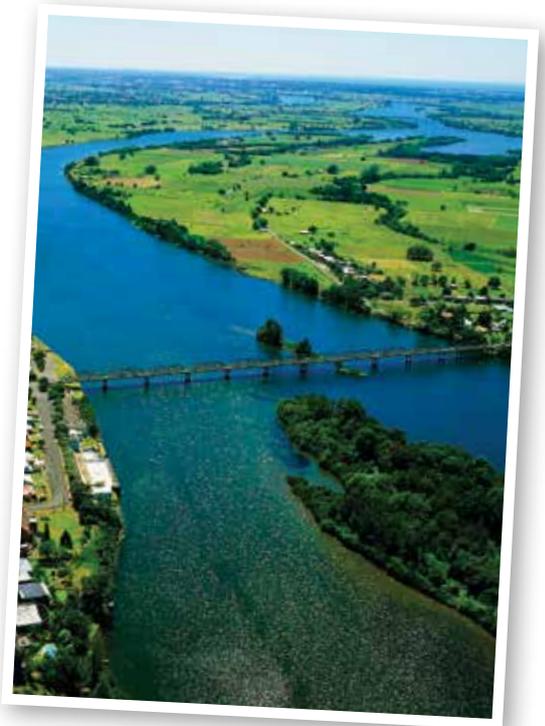
# The State of the Manning Report Card measures the ecological health of the Manning River estuary.

During the preparation of Council's Environmental Action Plan, the community identified the health of the river as one of the most important environmental issues in the Manning Valley. To effectively manage and protect the river, we need to firstly have an understanding of its health and condition. This is measured by sampling key water quality and biological indicators which will tell us if something is out of balance or unhealthy in the system.

Following an analysis of the data collected, each zone of the estuary was given a grading based on the condition of the waterway compared to what it would be under natural conditions.

Monitoring allows us to better understand how the estuary functions, informs management, assists in planning and enables communication of catchment health issues in the Manning River.

This is the first year of what is intended to be a long-term approach to tracking the health of the estuary and identifying areas or issues of concern.



## Manning River Catchment

The Manning River has a catchment area of 8,420 square kilometres, which makes it the sixth largest on the coast of NSW. The Manning River is unique on the NSW coast because it has two natural entrances at Harrington and Old Bar, both of which are mostly open.

The main land uses within the catchment are urban development,

cattle grazing, dairying, oyster growing and forestry. Significant areas of the catchment are also conserved within National Parks and Nature Reserves.

The majority of the catchment's population live in the estuarine zone around the town centres of Taree, Wingham, Cundletown, Harrington and Old Bar.

## Report Card Methodology

In developing the Report Card, the Manning River was divided into three zones: the upper, middle and lower estuary (see map). Six water monitoring transects were undertaken monthly between November 2013 and April 2014. Water quality data and seagrass depth was used to calculate the overall report card grade for each zone of the estuary.

The condition of each zone was established by comparing the monitoring data to trigger values. Trigger values are ecological health benchmarks set by the NSW Government that are based on the monitoring of over 130 estuaries across NSW. It is important to note that ecological health does not take into account issues associated with

human health such as drinking water quality, the recreational use of waterways, water-borne diseases, or shellfish harvesting.

The monitoring data was converted into a grading system for each zone, which can be compared from year to year. This grading system also enables the health of the Manning River estuary to be compared with other estuaries across NSW.

As more data is collected in the coming years, river managers will be able to establish whether the estuary's health is improving or declining. It will also be possible to assess the impacts of extreme events such as floods, identify trouble spots, and areas in need of protection and rehabilitation.

### Grade

### Score

A	Excellent
B	Good
C	Fair
D	Poor
F	Very Poor

Grading system used in monitoring data

# Manning River Estuary Sampling Zones



- Waterways
- Lower Estuary
- Middle Estuary
- Upper Estuary
- Manning Catchment

# Key Indicators of Ecological Health

A healthy waterway can generally be characterised by clear water and low levels of algae, and provides habitat for a wide range of plants and animals.

As a result turbidity, chlorophyll-a and seagrass depth have been chosen as the key indicators to help us monitor the ecological health of the Manning River estuary.

## pH (acidity)

In addition to monitoring the standard estuarine health indicators, pH was also measured to monitor areas of the estuary that may be affected by acid sulfate soil (ASS) runoff. All samples collected were within the acceptable range, which may be a reflection of the extensive work Council is currently undertaking to remediate ASS within the Big Swamp area – a state recognised ASS hot spot.

## Turbidity

Turbidity is a measure of the amount of sediment suspended in the water. It tells us how clear the water is and how much light is able to get through the water column. High turbidity levels can reduce light for seagrass growth, lead to the increased deposition of sediment bound nutrients in the system, and impact on sensitive habitats like mangroves and saltmarsh. Soil erosion caused by the clearing of riparian vegetation, agricultural practices and urban stormwater runoff is a major contributor of turbidity.



Cattle grazing on the riverbank

## Chlorophyll-a

Chlorophyll-a is a measure of microscopic algae in the water. Microscopic algae are water plants that rely on dissolved nutrients for growth. High levels of algae indicate high nutrient levels in the water. Excessive algal growth, or algal blooms such as blue-green algae, can result in reduced oxygen levels in the waterway. This process is known as 'eutrophication' and can suffocate fish and other aquatic organisms. Agricultural fertilisers and animal manure carried in stormwater runoff are two major sources of nutrient pollution.



Taking water samples  
Image courtesy of NSW Office of Environment & Heritage

## Seagrass

Seagrass forms an important part of estuarine habitat. The area it can occupy and depth to which it can survive is limited by light passing through the water column. Because seagrass can withstand short periods of low light levels due to poor water clarity (turbidity), tracking seagrass depth over a longer time period is a more effective way of detecting changes in the estuary. As this is the first year of the monitoring program a trend analysis wasn't conducted, but will serve as a baseline for future comparisons.



Seagrass  
Image courtesy of NSW Office of Environment & Heritage

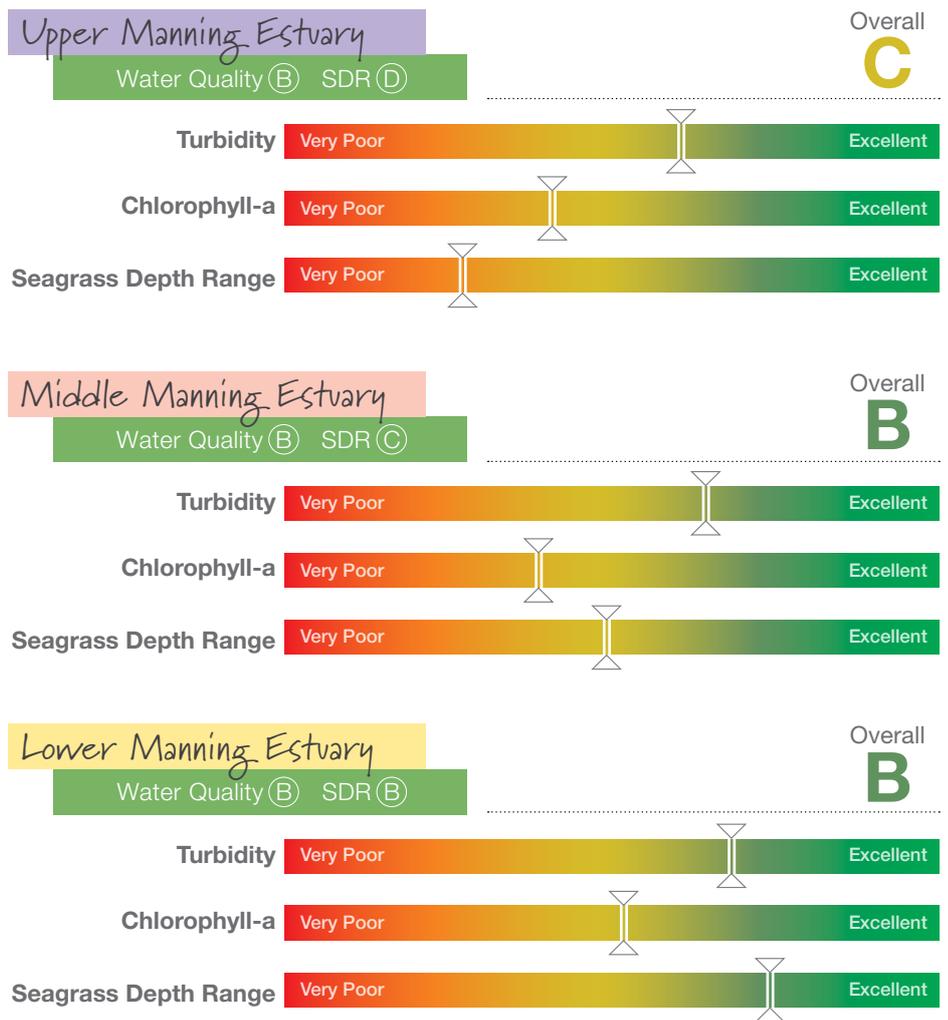
# Report Card Results

Overall, water quality in the Manning River estuary is fair to good.

The river experienced high turbidity levels following periods of rainfall, particularly in the middle section of the estuary. This is likely to have a significant impact on the health of the system if the intensity and frequency of rainfall events increase and sources of sediment from the catchment are not reduced.

Chlorophyll-a concentrations were consistently high in the estuary, which indicates that the system is currently acting as a massive nutrient sink. It was the high chlorophyll-a levels that had the most impact on the water quality component of the report card gradings, particularly within the upper estuary.

Differences in turbidity, chlorophyll-a and salinity can all influence seagrass growth. Seagrass depth was poor in the upper estuary but increased with distance downstream with good depth readings recorded in the lower estuary.



## Understanding the Impacts

The Manning River catchment supports various land uses such as agriculture, light industrial uses and urban development. These are all activities that have the potential to impact upon the health of the estuary.

Some of the challenges faced in the catchment include the loss of riparian vegetation, riverbank and roadside erosion, sedimentation, soil acidity, nutrient rich runoff from urban areas and farmland, and pollution of the waterways as a result of litter and other contamination.

When it comes to the management of the river, it is important to bear in mind that the health of the river is directly connected to the overall health of the river's catchment. To this end,

it is important to have a sound understanding of catchment processes and the source of issues that affect the river's health.

The data collected as part of this program will serve as a baseline upon which to build further monitoring in the future. While improvements in the water quality of the Manning River are unlikely to be achieved in the short term, long term improvements are possible through appropriate management actions, such as efforts to reduce sediment and nutrient inputs into the waterway.

## Estuary Management Actions

Council has adopted an Estuary Management Plan for the Manning River that provides a range of recommendations to improve the health of the estuary. Many of these recommendations cannot be undertaken by Council alone, and will require a collaborative approach to achieve the desired outcomes. There are a number of projects and actions currently being undertaken by various government agencies, community and industry groups, and landholders to protect and improve the health of the Manning River.

This year Council introduced a new environmental levy that will provide funding for the improved management of our local environment. To guide these improvements, an Environmental Action Plan was prepared in consultation with the community, which identified estuary and water quality issues as high priorities for action.

Council has already initiated significant on ground works through the Cattai Wetlands and Big Swamp projects to address some of the impacts on water quality within the lower Manning estuary caused through the disturbance of acid sulfate soils.

Other projects recently undertaken by Council to address poor water quality include:

- ✓ erosion control improvements on unsealed gravel roads, which are a huge contributor of sediment to the river;
- ✓ the protection and stabilisation of eroding riverbank sites at Wingham and Taree through the construction of rock fillets and re-establishment of native vegetation;
- ✓ the control of invasive environmental weeds such as Sharp Rush, which degrade coastal wetlands and limit the ability to filter out nutrients;
- ✓ regular inspections of on-site sewerage management systems located near waterways to ensure they are operating effectively; and
- ✓ the refurbishment of a major gross pollutant trap on Browns Creek to stop litter from entering the Manning River.



This project was supported through the NSW Government's Estuary Management Program.



Cleaning of Gross Pollutant Traps



Green Corps Team planting trees at Pelican Bay



Infilling of drain at Big Swamp