

MORUYA RIVER ESTUARY

Estuary Ecosystem Health Report Card 2016-17

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Ecosystem Health

Based on the indicators assessed, the health of Moruya River is very good. Algae levels were always low, with water clarity generally high. The important habitats of seagrass, saltmarsh and mangroves all showed increases in distribution.

This assessment is based on chlorophyll a and turbidity collected by Council between July 2016 to June 2017, and estuarine vegetation change between 2012 and 2017 mapped on behalf of Council. Compared to the 2010-11 assessment, overall estuary health shows a slight improvement. Water clarity and algal levels improved at downstream sites, but showed a decline in clarity and increase in algal levels at the site furthest upstream.

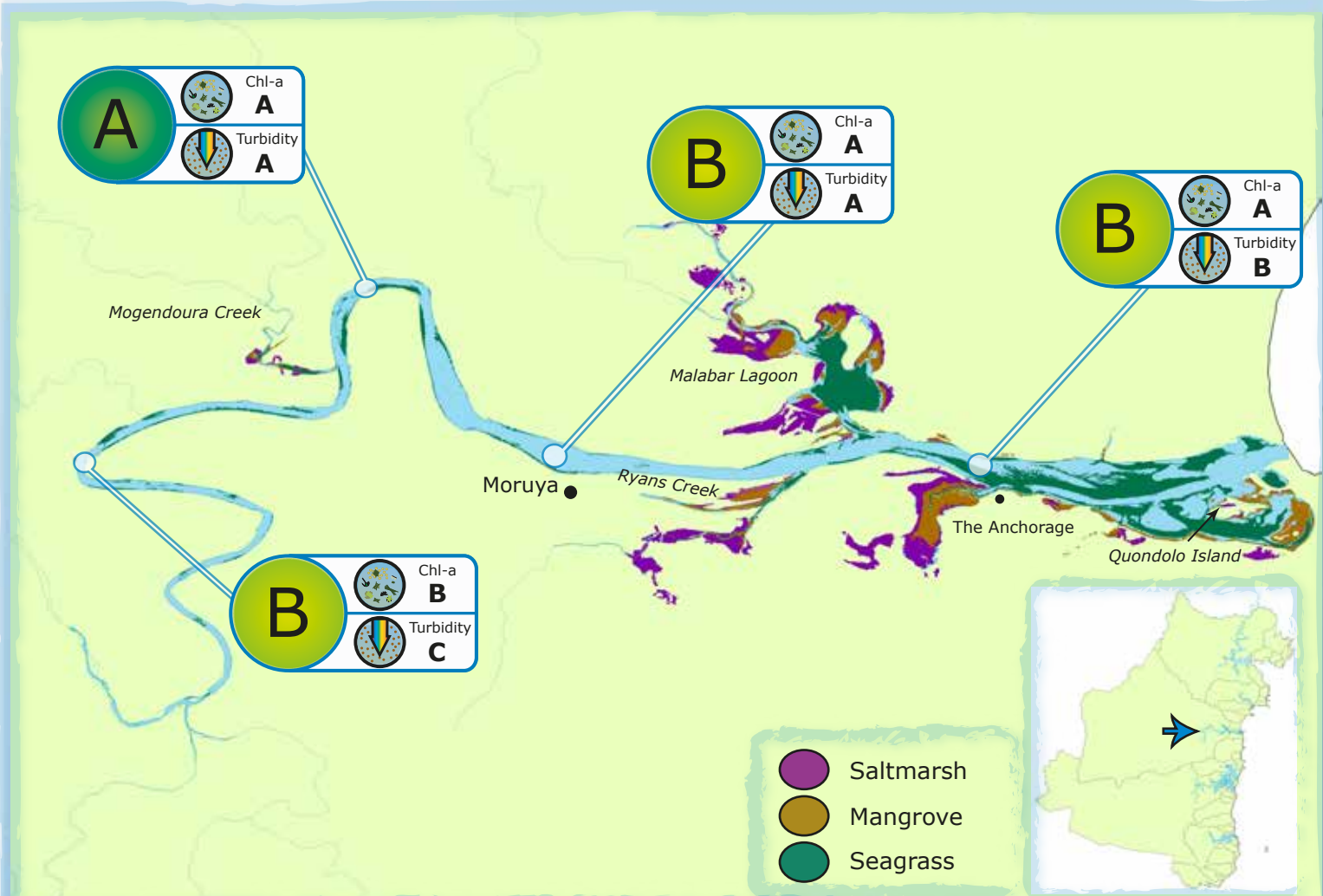
For more detailed information about Council's sampling program please refer to Council's website www.esc.nsw.gov.au/living-in/about/our-natural-environment/estuaries-of-eurobodalla/estuary-health-and-water-quality-monitoring

Estuary Information

Catchment area (km ²):	1423.7
Estuary area (km ²):	6.1
Estuary volume (ML):	10168.0
Estuary type:	Mature barrier estuary
Entrance:	Permanently open
Major tributaries:	Malabar Creek and Mogendoura Creek
Average Yearly Rainfall:	967.9mm
(Stn No:69142) July 2016-June 2017:	637.0mm (total)
Land Use (Area):	Urban: 1.9% Forest: 86.2%
(2005 data)	Rural: 10.7% Other: 1.1%

Moruya River Estuarine Vegetation

 Saltmarsh A	 Mangroves (unscored)	 Seagrass A
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Water Quality Indicators (Grades based on OEH Estuary Health Assessment Methodology)



Chlorophyll a indicates the amount of microscopic algae, called phytoplankton, growing in the water. Excessive input of nutrients from catchment runoff (urban stormwater, agricultural runoff, and sewage overflows) can increase chlorophyll a levels and lead to algal blooms and detrimental effects on estuarine plants and animals.

For 2016-17 the Moruya River overall received a very good rating for chlorophyll a with only 6% of total samples exceeding guideline values, with these samples barely exceeding the guideline. The sampling site furthest upstream had the highest percentage of exceedances at 17%.



Turbidity is a measure of light scattered by suspended particles such as sediment, algae and dissolved material in the water which affect its colour or murkiness. Turbidity can increase from sediments transported in catchment runoff (particularly after heavy rainfall), shoreline erosion and increased microscopic algae. Increased turbidity can have negative impacts on seagrasses and fish.

For 2016-17 the Moruya River overall received a good rating for turbidity with 7% of total samples exceeding guideline values, with these samples barely exceeding the guideline. The sampling site furthest upstream had the highest percentage of exceedances at 18%.

Grades



Very Good



Good



Fair



Poor



Very Poor

Estuarine Vegetation Indicators (Grades based on % gain or loss in extent)



Seagrasses are aquatic flowering plants that form meadows near shore. They are highly productive, provide nursery and foraging habitat (for fish, crustaceans and molluscs), bind sediments against erosion and help regulate nutrient cycling. They are very sensitive to changes in water clarity.

Seagrasses in the Moruya River increased by 11% between 2012 and 2017, therefore receiving a grade of very good. This is in addition to a 9% increase between 2006 and 2012. This increase has primarily occurred in the upper reaches of the river, upstream of Moruya and at Malabar Lagoon and is a positive outcome. However, seagrass appeared to be affected by siltation in Malabar Lagoon and showed signs of stress.



Mangroves grow between mid and high tide levels. They are an important food source, provide habitat for a number of species such as crabs and juvenile fish, protect shorelines and cycle nutrients and carbon. While an increase in mangroves can be a positive outcome where they are recolonising in areas previously removed, increases in mangrove distribution can sometimes be at the expense of other important habitat types such as saltmarsh, which could be viewed as a negative outcome.

Mangroves increased by 21% between 2012 and 2017, which is in addition to a 25% increase between 2006 and 2012. These increases have occurred at Malabar Lagoon, The Anchorage, and adjacent to Moruya Heads in areas previously mapped as saltmarsh. Mangroves were also mapped further upstream at Mogendoura Creek. Detailed investigations are required to determine if this change is positive or negative for estuary health.



Saltmarsh is a community of plants and animals that grows above the mangroves at the highest tidal levels. Saltmarsh is important in estuarine food webs, providing a site for invertebrate breeding and a feeding area for economically important fish and shorebirds. Saltmarsh decline is a worrying trend from a number of estuaries in NSW and has led to saltmarsh being listed as a threatened ecological community under the Biodiversity Conservation Act 2016. Declines in recent years have been linked to both increased sedimentation from catchment land use pressures and sea level rise.

Saltmarsh in the Moruya River increased by 19% between 2012 and 2017 resulting in a grade of very good. The recent increases have occurred around Racecourse Creek, Malabar Lagoon, south-west of The Anchorage. At some of these locations this is likely the result of reduced grazing pressure and is a positive sign for the estuary.