



Estuary Ecosystem Health Report Card 2015-16

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Ecosystem Health

Based on the indicators assessed, the health of Coila Lake is good. Results showed moderate to high levels of algae across the lake, with clear waters near the entrance and more turbid waters in the upstream reaches. There was an increase in the important habitat of saltmarsh, but a slight decrease in seagrass.

This assessment is based on chlorophyll a and turbidity collected by Council between July 2015 to June 2016, and estuarine vegetation change between 2006 and 2017 mapped on behalf of Council. Compared to the 2010-11 assessment, overall estuary health is similar. However, water clarity decreased and algal levels increased at most sites, whereas saltmarsh cover increased since the previous assessment.

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):	47.5
Estuary area (km ²):	7.1
Estuary volume (ML):	15441.6
Estuary type:	Youthful coastal lagoon
Entrance:	Intermittently open
Major tributaries:	Coila Creek
Average Yearly Rainfall:	934mm
(Stn No:69067) July 2015-June 2016:	1238mm (total)
Land Use (Area):	Urban: 6.2% Forest: 72.8%
(2005 data)	Rural: 19.0% Other: 2.0%

Coila Lake Estuarine Vegetation

 Saltmarsh A	 Mangroves N/A	 Seagrass B
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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 2015-16 Coila Lake overall received a poor rating for chlorophyll a with 60% of total samples exceeding guideline values, with these samples moderately exceeding the guideline. For all sites at least 50% of samples exceeded the guideline values. For the Coila Creek site 75% of samples exceeded the guideline and likely indicates excessive input of nutrients.



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 2015-16 Coila Lake overall received a fair rating for Turbidity with 42% of total samples exceeding guideline values, with these samples barely exceeding the guideline. All sites recorded some exceedances of the guidelines, however the Coila Creek site had 75% of samples exceeding the guidelines values.

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 Coila Lake decreased overall by 8% between 2006 and 2017 and therefore received a grade of good. Large decreases were observed in the lake entrance and north-western corner. However, increases were recorded around the main lake with an almost continuous strip of seagrass now mapped around the main lake which is a positive sign.



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.

There are no mangroves in Coila Lake so no comparison can be made.



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 Coila Lake increased by 32% between 2006 and 2017 and therefore received a grade of very good. Although some of this increase is likely due to additional field validation, expansion of saltmarsh has also occurred as a result of rehabilitation projects and an increase in the water level at which council opens the lake, allowing inundation of additional foreshore.