Darwin Harbour Water Quality 2021

Water quality at a glance

In 2021, water quality in Darwin Harbour was very good overall. Myrmidon Creek received a B grade rating, whereas Buffalo Creek received a poor rating due to treated wastewater inflow from the Leanyer-Sanderson wastewater treatment plant. Notwithstanding these localised impacts the water quality of Darwin Harbour and its estuarine reaches remain in very good condition.

- ✔ No aquatic pest incursions were recorded
- ✔ Beaches were suitable for swimming during the dry season
- ✔ Darwin Harbour water quality was very good overall

Overall 2021 Grade **A**

WATER QUALITY GRADES

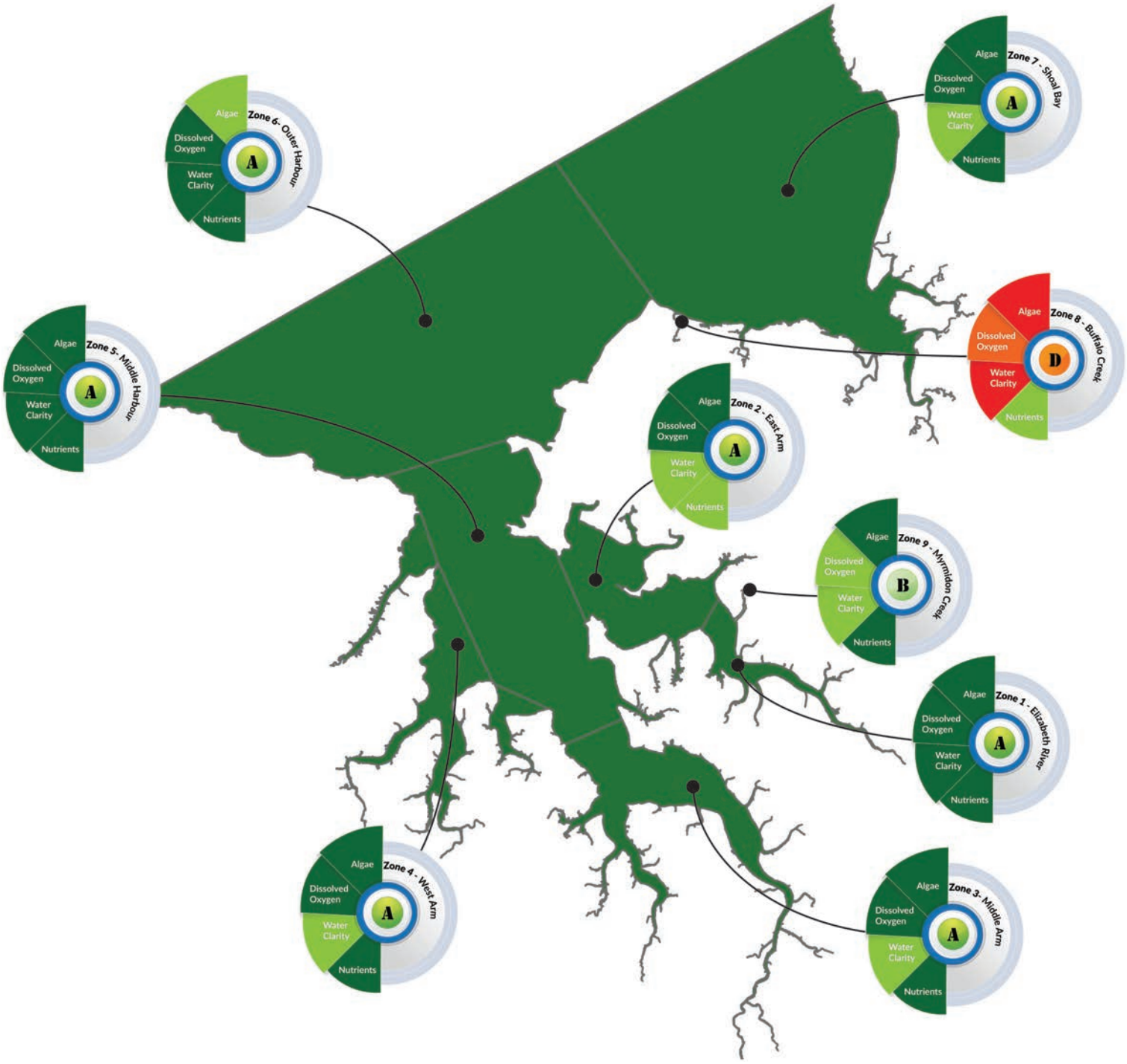
- **A** Very good water quality.
- **B** Good water quality.
- **C** Satisfactory water quality.
- **D** Poor water quality.
- **E** Very poor water quality.

NORTHERN TERRITORY GOVERNMENT

Water Quality Index 2021

Water Quality Index (WQI) is a single number which can be calculated easily and used to provide an overall description of the quality of water. It provides a methodology to summarise the quality of water using a single value and a corresponding scale.

The WQI across the 9 reporting zones has again highlighted that water quality is very good across the marine-estuarine sampling domain. However, the condition of the tidal creeks such as Buffalo Creek require further attention.



Four indicators of Algae, Nutrients, Dissolved Oxygen and Water clarity are combined into an overall Water Quality Index which is presented for each of the nine reporting zones.

Algae (Chlorophyll-a)

NP Nutrients (Nitrogen and Phosphorus)

DO Dissolved Oxygen

Water Clarity (Turbidity)

Water Quality 2021

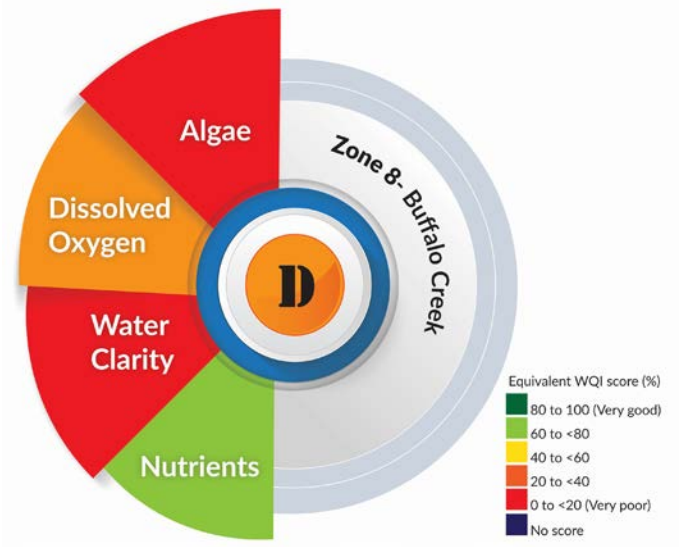
Annually the water quality of the harbour is assessed against the guidelines of the Darwin Harbour Water Quality Objectives. Nine zones represent different physical environments in the harbour, which feature diverse marine life and habitats such as seagrass beds, coral reefs and mangroves.

Water quality data for the Darwin Harbour was collected by the Aquatic Group of the Department of Environment, Parks and Water Security and supplemented by monitoring data from Power and Water Corporation and INPEX in 2021. Stakeholders work together in the region and continue to look for ways to integrate data and information to report on the health of Darwin Harbour.

Each reporting zone in the harbour was assessed for water quality in 2021 and assigned a grade against four key water quality health indicators. These are algae, water clarity, dissolved oxygen and nutrients. The grades reflect no major long-term change for reporting zones since 2012. Since the last reporting year the zone of Middle Arm and Myrmidon Creek have shown signs of improvement. Quite often these changes are associated with natural variation rather than any human induced changes.

Current issues for Darwin Harbour water quality

High nutrient loads from wastewater, urban and industrial run-off can cause excessive growth of algae, lower dissolved oxygen levels and reduce water clarity. The water quality of estuaries subject to these pressures can become degraded and in concert with limited tidal flushing, particularly in smaller tidal creeks, hypoxia can occur. Although much of the harbour is in very good condition impacts are discernable in some locations.



Areas for further investigation

- **Buffalo Creek and entrance to Shoal Bay:** Water quality is poor, as a result of high nutrient discharge from the Leanyer Sanderson Wastewater Treatment Plant. Water quality and sediments immediately downstream of the discharge are heavily impacted. The small tidal creek is also subject to increasing diffuse loads and stormwater from nearby urban areas. Ongoing infrastructure and operational improvements to improve discharge water quality are being undertaken by the Power and Water Corporation.

When algal biomass (measured as Chlorophyll-a) is high waterways can appear green and turbid. As this biomass decomposes oxygen becomes depleted in the water column.

Darwin Harbour water quality - reporting zone grade trend

**Long-term trend since 2012 reporting year.*

Zone	1	2	3	4	5	6	7	8	9
	Elizabeth Estuary	East Arm	Middle Arm	West Arm	Middle Harbour	Outer Harbour	Shoal Bay	Buffalo Creek	Myrmidon Creek
2021 Grade	A	A	A	A	A	A	A	D	B
Change since 2020	→	→	↗	→	→	→	→	→	↗
Long term trend*	→	→	→	→	→	→	→	→	→

Symbols indicate change since last annual reporting period and long-term grade trend.

↗ Increase ↘ decrease → no change

The full report can be found at www.depws.nt.gov.au/reportcards