



Darwin Harbour Water Quality 2020

Water quality at a glance

In 2020, water quality in Darwin Harbour was very good overall. Myrmidon Creek received a C 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 2020 Grade

B⁺



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.

Improvements to reporting in 2020.

The Darwin Harbour Integrated Report (DHIR) project was initiated by the Darwin Harbour Advisory Committee in 2019 to develop a stakeholder driven framework for an integrated report on the overall health of Darwin Harbour. This integrated framework moves us beyond water quality to report in a more holistic way and reflect key values held by the community. The new integrated report card will develop a suite of new indicators to report on the ecological, social, cultural and economic health of Darwin Harbour. Similar to a school report card, the Darwin Harbour Integrated Report Card will provide performance driven numeric grades and indices that reflect the health of the harbour on a regular basis.

To support the DHIR a 'Water Quality Index' has been developed by the Department of Environment, Parks and Water Security (DEPWS) with assistance from Australian Institute of Marine Science.







What is the WQI?

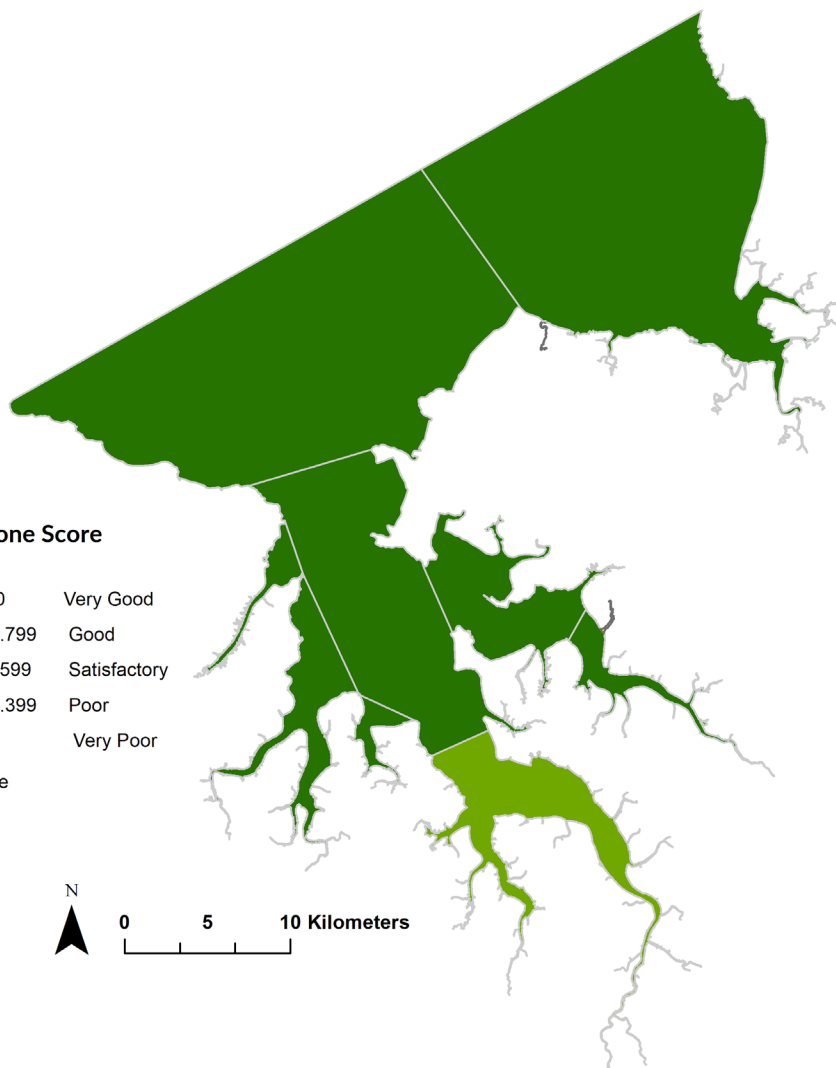
Water Quality Index (WQI) is a single number which can be calculated easily and used to provide an overall description of the quality of water. It provides a methodology to summarise the quality of water using a single value and a corresponding scale.

The WQI combines a number of water quality parameters and expresses the water quality in a comprehensible way such as "very good", "good", "poor" or allocates a respective grade. Data used to inform the index will be drawn from the DEPWS water quality monitoring program and other stakeholders in the region.



Reporting Zone Score Score (0 - 1)

	>0.8 -1.0	Very Good
	>0.6, <0.799	Good
	>0.4, <0.599	Satisfactory
	>0.2, <0.399	Poor
	<0.199	Very Poor
	No Score	



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

Water Quality 2020

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 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 Santos in 2020.

Each reporting zone in the harbour was assessed for water quality in 2020 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 and the trend since the last reporting year with the exception of Middle Arm and Myrmidon Creek.

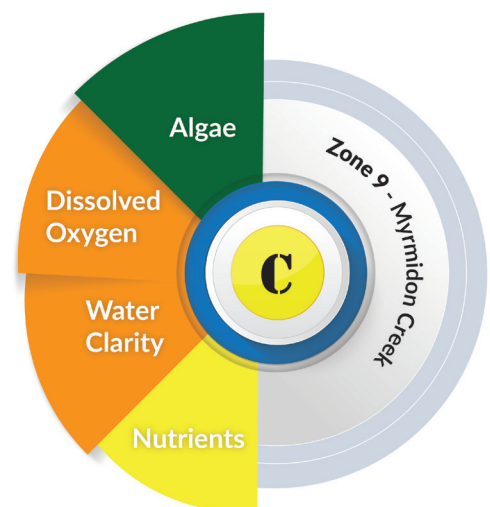
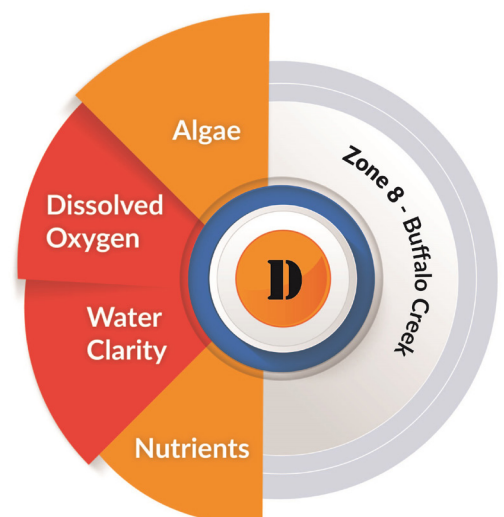
Current issues for Darwin Harbour water quality

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.

- **Myrmidon Creek and entrance to East Arm and Elizabeth River:** Water quality in Myrmidon Creek indicates some influence from the discharge of treated wastewater from the Palmerston Wastewater Treatment Plant. This larger creek system tends to flush more readily and any impact is localised. Although water quality in East Arm and Elizabeth River remain in very good condition, proposed development in the catchments surrounding this area of the estuary pose increasing threats to water and sediment quality. The cumulative impact of current and proposed developments need to be considered in future planning and management to protect water quality and aquatic ecosystems.



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
2020 Grade	A	A	B	A	A	A	A	D	C
Change since 2019									
Long term trend*									

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



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

