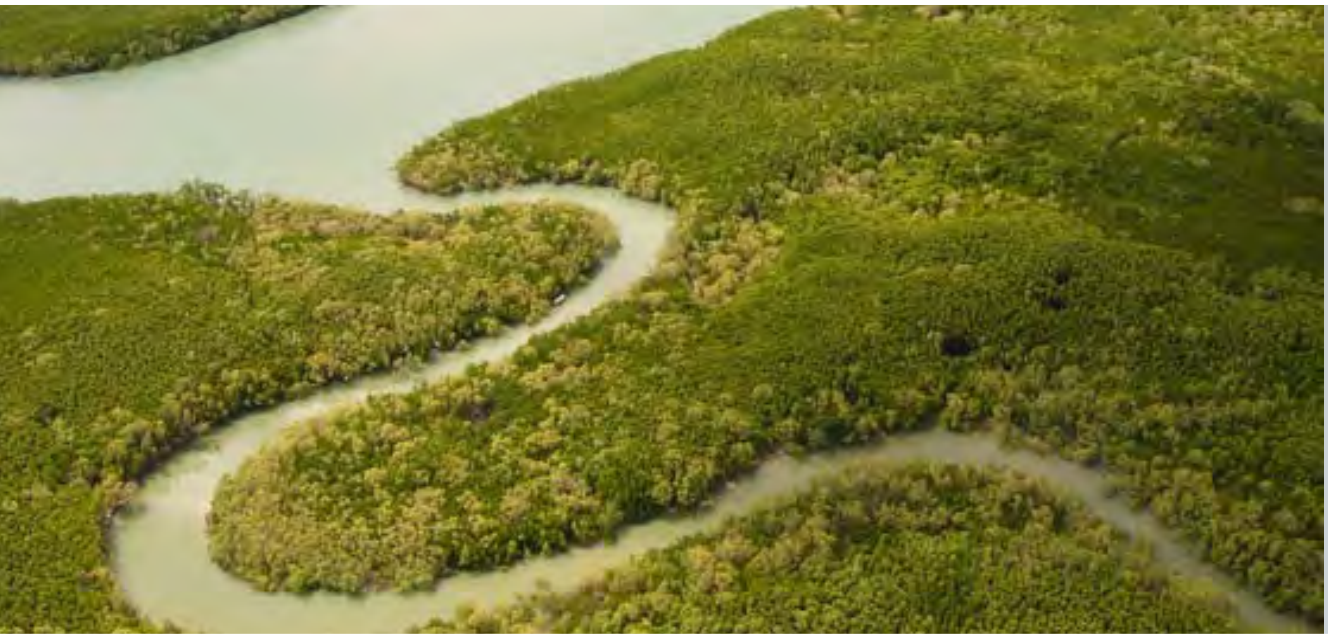
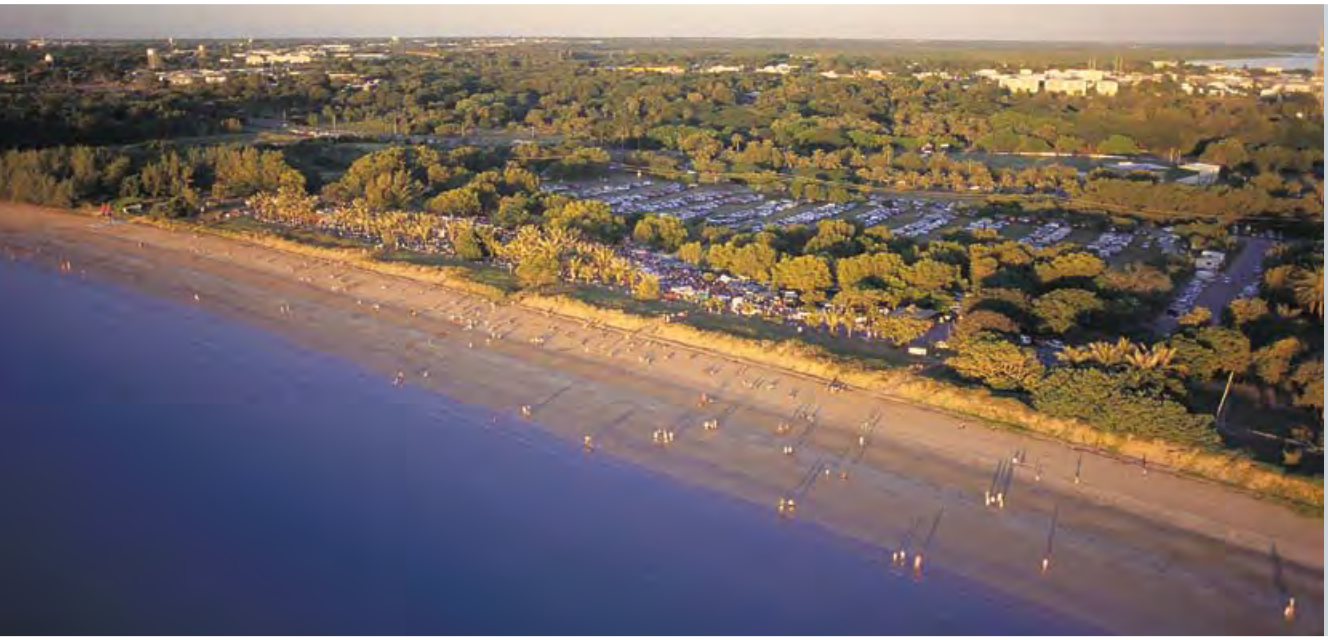
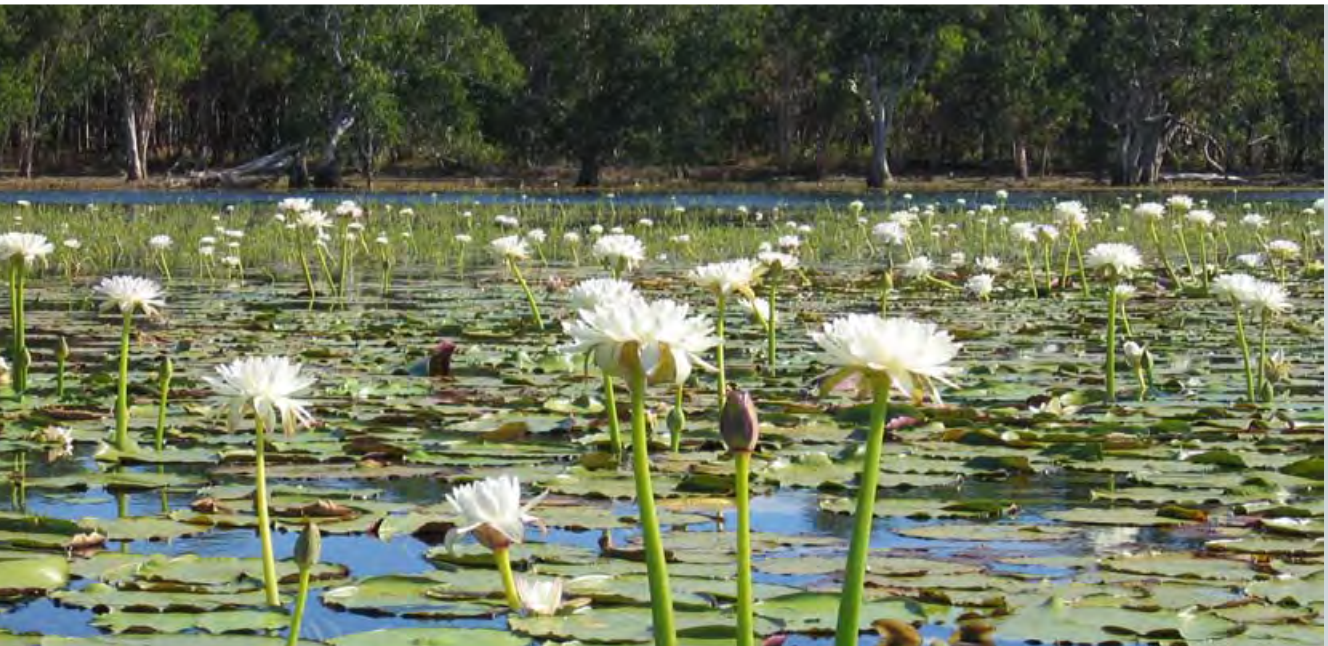
Darwin Harbour region



Aerial view of creek. Photo: Jeremy Freeman



Mindil Beach



Nymphaea violacea in Korebum Lagoon. *Nymphaea* is known as dambilinggwa to Larrakia people. Photo: Gisela Lamche

Summary

Water quality results

The Report Cards provide a snapshot of stream water quality from sites monitored in 2009, and water quality of estuarine sites monitored quarterly in late 2008 and 2009. Water quality at Darwin beaches was monitored in 2010. Water quality in outer Darwin Harbour, Elizabeth River, Darwin-Palmerston regions and outer Shoal Bay is in excellent condition. However, water quality at Buffalo Creek sites is in very poor condition. Water quality at the Myrmidon Creek monitoring site is in poor condition.

Water quality in the freshwater streams within the Harbour's catchments was assessed as being in good to excellent condition at the sites monitored. The water-bug community at the catchment biological monitoring sites is mostly unimpaired or equivalent to reference condition.

Differences in 'A to E' water quality ratings between years may not always reflect a real change in condition. Differences may arise from natural variability within short-term monitoring periods, and changes in methodology or sites.

Beach water quality monitoring

Results from monitoring of beaches, tidal creeks and sewage treatment plant mixing zone monitoring areas in 2010 are summarised in the Darwin Harbour Beaches Report Card.

Between June and September 2010 bacterial counts above guideline levels and presence of nuisance blooms led to beach closures. Investigations into all of the sources of the high bacterial counts are ongoing. Microbiological monitoring of beach waters and waterbodies like Little Mindil Creek, Mindil Creek, Rapid Creek and Vesteys Creek is continuing.

A bloom of maiden's tresses (*Lyngbya majuscula*) occurred in Darwin Harbour in May–June 2010, as in other years. *Lyngbya majuscula* can cause skin irritation in humans. Beaches were closed to assure public safety. Maiden's tresses and other cyanobacteria and algae can be observed as masses or slicks washed up on Darwin's beaches in the dry season. Examples of maiden's tresses, sea sawdust and sargassum seaweed are shown in the supplement to the Report Cards, *Other Projects and Monitoring*.

Monitoring and Report Cards

There is high community interest in water quality issues in Darwin Harbour, particularly given several beach closures and pollution incidents in 2010. The Darwin Harbour Integrated Monitoring and Research Plan is a comprehensive monitoring plan that is being progressed to assess the health of the Harbour. Monitoring at quarterly intervals at an additional seven estuarine sites has commenced in mid 2010 and the further development and implementation of the Darwin Harbour Integrated Monitoring and Research Plan will improve and expand on monitoring efforts.

The indicators 'total suspended sediment' and 'dissolved oxygen (%)' are under revision and new water quality objective values (local 'guidelines') will be based on a larger dataset than that from which they were developed. These Reports Cards therefore exclude total suspended sediment and dissolved oxygen (%) from the compliance and the 'A to E' water quality ratings for marine waters.

Other projects and monitoring

A snapshot of a few of the species that depend on the Harbour's waters is presented in the supplement to these Report Cards. A summary of selected research and monitoring activities in the Darwin Harbour region is also presented in the supplement to these Report Cards.

The Report Cards

This set of Darwin Harbour Region Report Cards describes the health of aquatic ecosystems across the Harbour and its catchment. They have been produced by the Aquatic Health Unit of the Department of Natural Resources, Environment, The Arts and Sport in conjunction with the Darwin Harbour Advisory Committee. Monitoring, laboratory analyses and data interpretation occur over time, so the Report Cards present data for late 2008–2009 for physical and chemical indicators. Water quality at Darwin beaches was monitored in mid 2010 and these results for microbiological monitoring are presented in the Darwin Harbour Beaches Report Card.

The Report Cards are aligned with the Darwin Harbour Strategy and the Territory 2030 Strategy. The Report Cards contribute to the strategies by providing knowledge to ensure we are maintaining a healthy environment for marine and freshwaters, to foster community awareness of water-related environmental issues, and therefore manage natural resources.

Our harbour, our life, our future

Life in Darwin and the Top End means being able to live among a variety of unspoilt environments and wildlife. How many other cities can boast of having green turtles (doedlirra to Larrakia people), dugong (damaldanggala, Larrakia), barramundi (damabila, Larrakia), sea eagles (garngarn, Wadjigin name), magpie geese (gakkingga, Larrakia), brahminy kites (butumba, Larrakia), mud crabs (madla, Larrakia) and agile wallabies (milula, Larrakia) in the Harbour and the suburbs?

Compared to other Australian ports and tropical ports around the world, the Darwin Harbour region is only partially modified. The Darwin region faces increasing population and industrial growth in the near future. This growth will intensify pressure on the Harbour environment and the wildlife it supports.

A bloom of maiden's tresses (*Lyngbya majuscula*) occurred in the Harbour in May–June 2010, as in other years. Maiden's tresses washed onto several beaches. Beaches were closed to assure public safety. Further investigation and monitoring to determine possible linkages between the bloom and bacteria levels is continuing. This photo was taken at a tidal creek at Vesteys Beach in June 2010. Photo: Julia Fortune

Water resources in the region support a diverse range of aquatic ecosystems and species which are significant cultural and recreational assets. However, the discovery of the aquatic freshwater weed cabomba (*Cabomba caroliniana*) in Darwin River in 2004, reminds us of the vulnerability of the environment to exotic species. Water resources in the region include perennial and seasonally flowing waterways, lagoons, floodplains, springs and estuaries. To protect these important natural resources, land and sea managers need to understand them as completely as possible.

The Darwin Harbour region stretches from Gunn Point in the north, to south of the Darwin River Dam. The region has a population of over 120,000 people within the cities of Darwin and Palmerston, and the Litchfield and Cox Peninsula shire areas. Catchments draining to the Harbour include the Elizabeth River, Blackmore River, Shoal Bay catchments and several smaller urban and rural ones. The area covers over 3,200 km^2 – 65% of which is terrestrial and 35% coastal and marine. Much of the region is undeveloped, with about 20% of the catchment being urban or rural land use.

Culture – land and sea country

Larrakia Nation 2010

It is traditional for Larrakia people to share our culture in the ‘first person’. Darwin Harbour, has been home to the Gulumoerrgin (Larrakia people), for thousands of years. For the Larrakia, the region’s environments are ‘cultural landscapes’ that are vital to our well being.

Larrakia ‘country’ consists of both land (gwalwa) and sea (gunumitjanda). There are tidal mudflats and mangrove (moerroerrlma) lined waterways, lagoons, floodplains, freshwater creeks and woodland (matboerrma). The sea itself comprises a variety of plant (mayoema) and animal (majawa) resources, which are managed, harvested, hunted and fished by the Larrakia People. Larrakia people have oral traditions and written documentation of our unbroken relationship to our land, our sacred sites, stories and resources. Larrakia people like to refer to ourselves as ‘saltwater people’ and consider the species that are not hunted including saltwater crocodiles, dolphins and whales an important part of our ancestry.

The Aquatic Health Unit

The Northern Territory Government’s Department of Natural Resources, Environment, The Arts and Sport (NRETAS) has an Aquatic Health Unit. The Northern Territory Government has an established record in monitoring and collaborative research in fresh, marine and estuarine water quality including biological health projects in the Darwin Harbour region and selected catchments in the Top End of the Northern Territory.

The NRETAS Aquatic Health Unit has expertise in aquatic ecology, limnology, estuarine science, catchment water quality modelling and water quality evaluation. Research and projects undertaken by the Northern Territory Government and its collaborators include:

- development of a Water Quality Protection Plan for Darwin Harbour
- ecological health assessment of aquatic habitats
- urban and rural catchment event-based pollutant load assessment
- assessment of nutrient and sediment budgets