

# Darwin Harbour

## Summary

Water quality at the outer Harbour monitoring sites is in excellent condition.  
Water quality at the mid Harbour monitoring sites is in very good condition.

## Nature of system

- Estuarine system with outer estuary well mixed via tidal inflows and outflows
- Upper estuary and tidal creeks have long water residence times and are poorly flushed so are likely to be most prone to effects of pollution
- Maximum tidal height variation of nearly 8 m
- Perennial freshwater inflows from Howard River and Darwin River
- Extensive mangrove habitat and inter-tidal mudflats

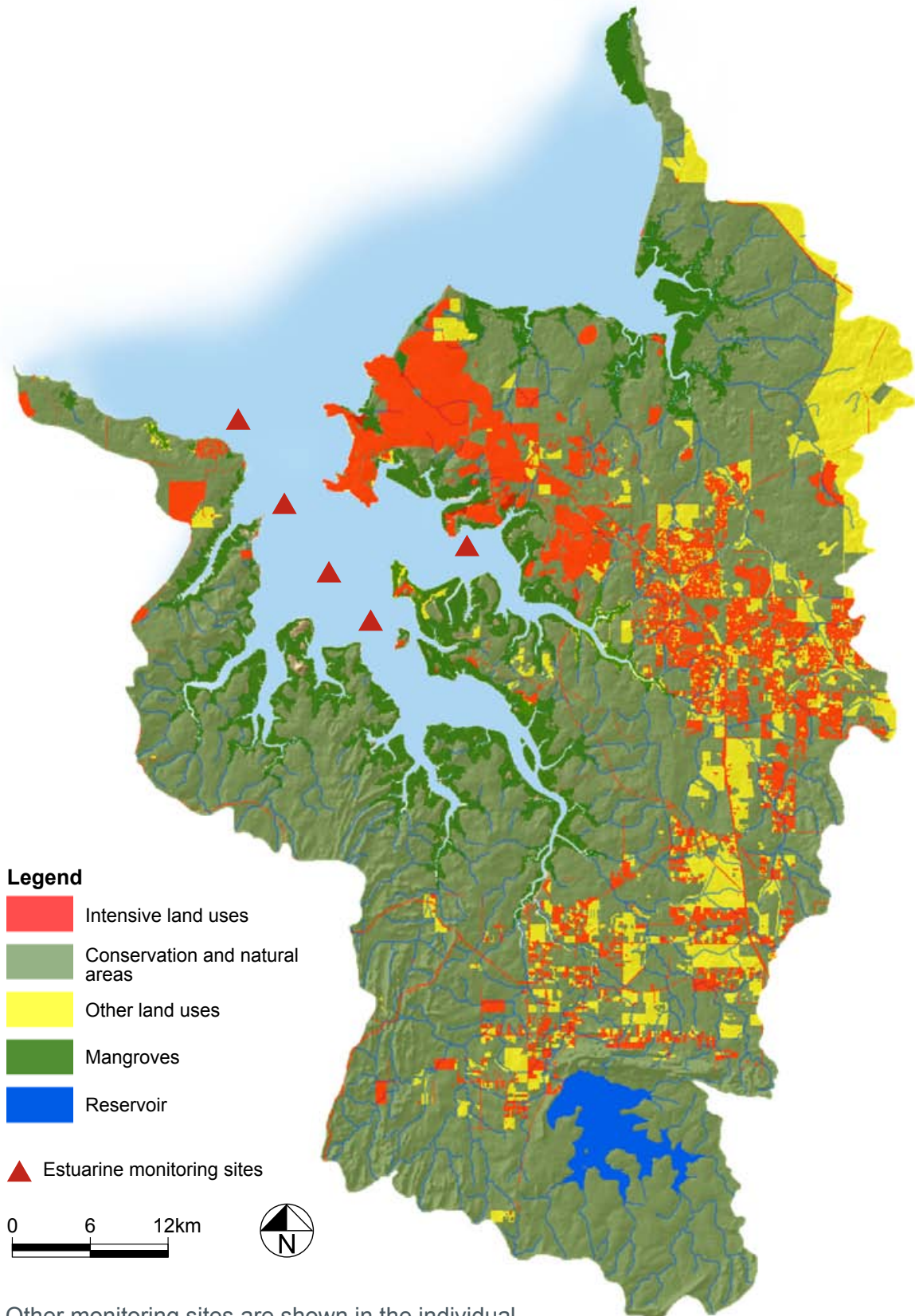
## Sources of pollution

- High sediment, nutrient, industrial and other human-related pollutant loads during the wet season
- Sewage treatment plant wastewater discharges at several points in the Harbour
- Other licensed wastewater discharges at several points in the Harbour
- Sediment and nutrient loads in stormwater runoff from rural, urban and industrial catchment diffuse sources during the wet season














The view across Darwin CBD and city with part of the Charles Darwin National Park in the background. Photo: Tourism NT

**Darwin Harbour catchment showing rivers and land use**



Other monitoring sites are shown in the individual Report Cards. Seven new estuarine sites were added in mid 2010 (not shown), including Darwin's beaches, East Point and Elizabeth River.












**Darwin Harbour outer area marine ambient water quality**

Indicator and units	Water quality objective	Current condition	Number of samples	Compliance
 <b>Electrical conductivity</b> (μS/cm)	NA	54200	7	
 <b>Turbidity</b> (NTU)	NA	3.1	7	
 <b>pH</b>	7.0–8.5	7.9–8.3	7	✓
 <b>Dissolved oxygen</b> (%)	80–100	70–77	4	*
 <b>Total suspended solids</b> (mg/L)	<10	22	7	*
 <b>Chlorophyll a</b> (μg/L)	<1	0.5	7	✓
 <b>NOx</b> (μg N/L)	<10	8	7	✓
 <b>Ammonia</b> (μg N/L)	<20	6	7	✓
 <b>Total nitrogen</b> (μg N/L)	<440	200	7	✓
 <b>Total phosphorus</b> (μg P/L)	<20	10	7	✓
 <b>Filterable reactive phosphorus</b> (μg P/L)	<10	5	7	✓



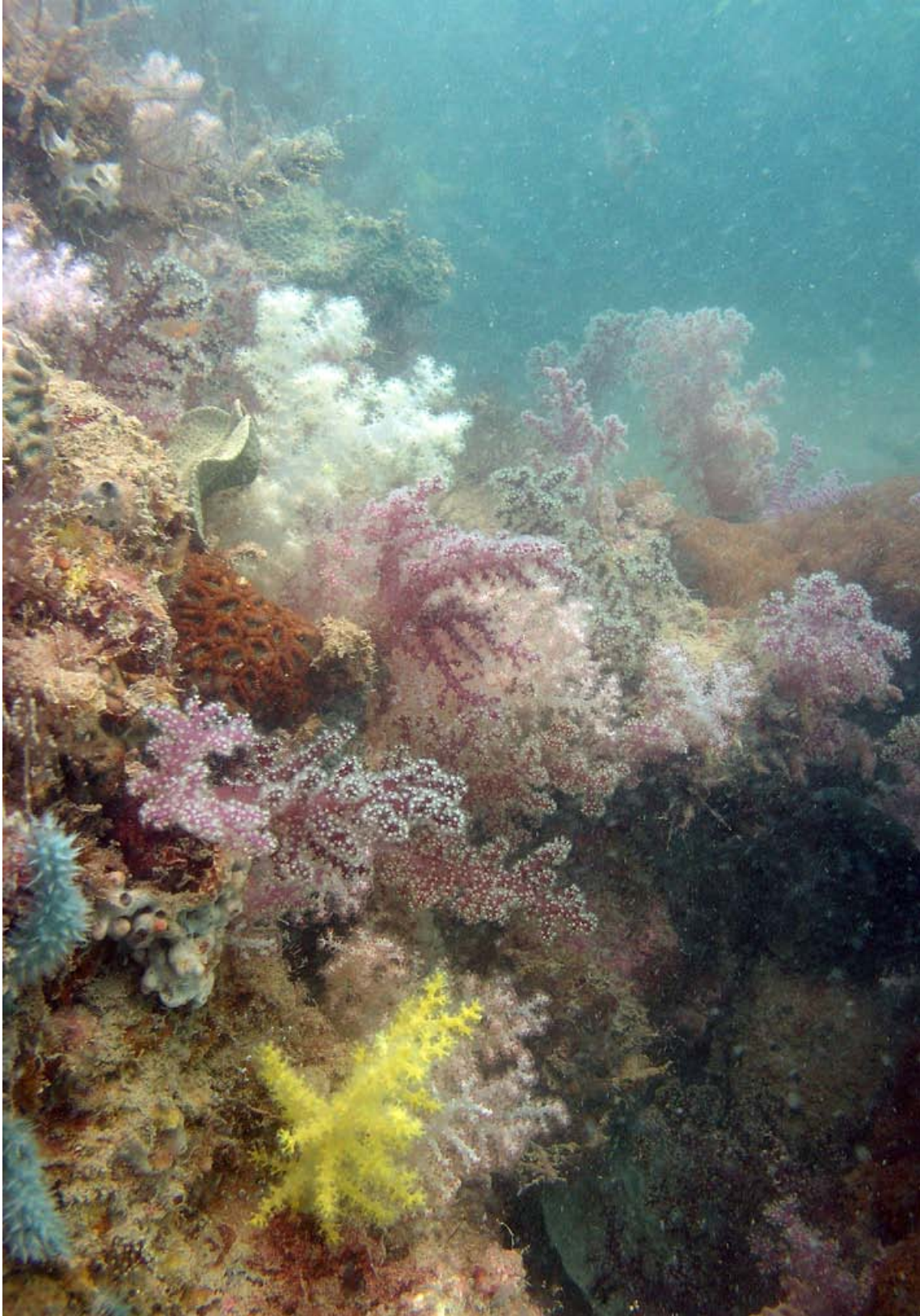
Period sampled for current condition is Sep 2008 to Dec 2009. NA Not available. \* WQO currently under revision

**Darwin Harbour mid estuary area marine ambient water quality**

Indicator and units	Water quality objective	Current condition	Number of samples	Compliance
 <b>Electrical conductivity</b> (μS/cm)	NA	54350	28	
 <b>Turbidity</b> (NTU)	NA	2.3	28	
 <b>pH</b>	7.0–8.5	7.9–8.2	28	✓
 <b>Dissolved oxygen</b> (%)	80–100	65–76	21	*
 <b>Total suspended solids</b> (mg/L)	<10	20	28	*
 <b>Chlorophyll a</b> (μg/L)	<2	0.8	28	✓
 <b>NOx</b> (μg N/L)	<20	5	28	✓
 <b>Ammonia</b> (μg N/L)	<20	5	28	✓
 <b>Total nitrogen</b> (μg N/L)	<270	200	28	✓
 <b>Total phosphorus</b> (μg P/L)	<20	10	28	✓
 <b>Filterable reactive phosphorus</b> (μg P/L)	<5	6	28	✗



Period sampled for current condition is Sep 2008 to Dec 2009. NA Not available. \* WQO currently under revision



This photo shows predominantly soft corals found in Darwin Harbour. Hard corals are well represented in the Darwin Harbour region - over 120 species are known. This is surprising given the environmental conditions - species composition reflects the harbour's turbid nature and coral reefs are restricted to hard substrates with strong currents.

Coastal development and human activities can affect coral communities through increased sediment and pollution entering the Harbour. Pollution can include oil and chemical spills, and contaminants entering waterways from stormwater. Stormwater can increase nutrient, sediment and contaminant levels which in turn can reduce biodiversity.

Sewage loads can increase algal growth, which can reduce water quality and biodiversity.

NRETAS' Biodiversity Group has been involved in Darwin Harbour and Northern Territory projects such as marine biodiversity surveys, habitat mapping, ecological studies and conservation planning. Photo: Tony Ayling