

# Healthy Darwin Harbour

## Pathways and Partnerships

Darwin Harbour is globally significant as a tropical, macrotidal, monsoonal harbour that is generally in very good condition.

Darwin Harbour is highly valued by residents, the Larrakia People, harbour users, industry, government, community groups and the wider Australian and international communities, who derive a wide range of benefits from a healthy harbour.

There are major development proposals for Darwin Harbour, including significant plans for population growth, industrial expansion and resource processing

infrastructure, and consequent increases in shipping and dredging.

These developments pose risks for the natural, cultural, aesthetic and recreational values of the Harbour, which need to be managed carefully.

There has been some excellent research and monitoring in Darwin Harbour, but significant knowledge gaps remain. We need a better integrated approach to monitoring and research to ensure that we make best use of scarce resources, avoid unnecessary duplication and

strategically build scientific capacity.

We also need to ensure that we have mechanisms in place so that research and monitoring feed into policy and management, and vice-versa, to facilitate community participation and understanding.

This newsletter introduces research and monitoring partnerships and priorities that will be developed over coming months to establish a strategic, long-term, integrated monitoring and research program for the benefit of Darwin Harbour and its stakeholders.

### Managing Darwin Harbour into the future

How do we maintain good fishing?

How do we sustain healthy populations of dolphins, dugong and turtles?

Is the water polluted?

How can we support development while keeping our harbour healthy and respecting indigenous values?

Can Darwin Harbour be a model for sustainable development?

Can we retain the scenic beauty and our Territory lifestyle into the future?

*Darwin Harbour is highly valued by residents and visitors alike.*





## Regional context

Darwin Harbour is the most developed coastal waterway and catchment in northern Australia in a region where the waterways and catchments have significant natural and cultural resources. The catchments of adjacent waterways have protected

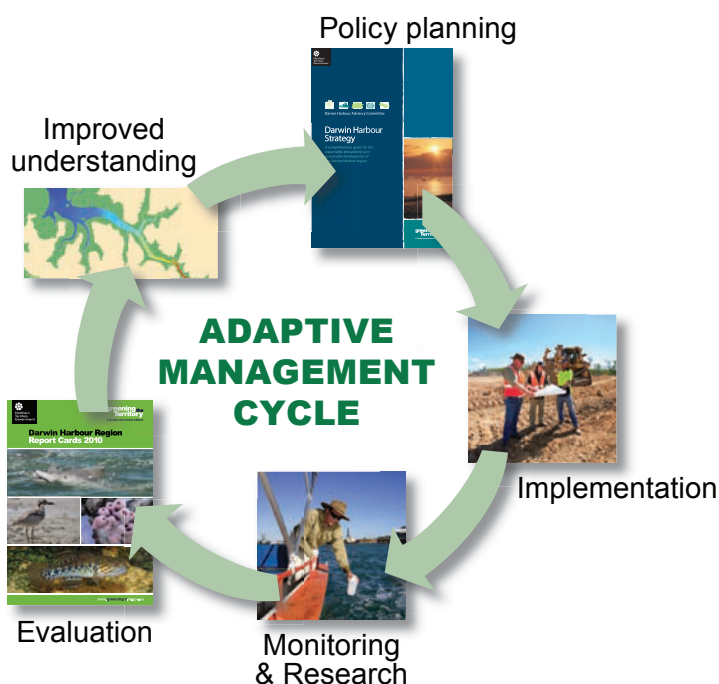
lands (e.g., Alligator River in Kakadu National Park) and indigenous land management (e.g., Arnhem Land rivers).

Assessing and tracking the impacts of Darwin Harbour development can be facilitated by using adjacent

waterways as natural reference points. Darwin Harbour is unique in that few tropical cities of Southeast Asia have stable economies and governments, sophisticated scientific capabilities and low population densities. Innovative approaches for dealing with coastal issues can be achieved in this setting.



Waterways and catchments of the Top End have significant natural and cultural resources.



## Adaptive management

The adaptive management cycle incorporates science, management and policy aspects of Darwin Harbour. The adaptive management cycle includes policy planning, illustrated by the Darwin Harbour Strategy, which is led by the Darwin Harbour Advisory Committee. Implementation of on-ground activities include storm water controls or sewage treatment facilities by private landholders and industries as well as governments. Monitoring conducted by industry and government agencies is used to track the public and ecosystem health of Darwin Harbour. The annual Darwin Harbour report card and beach advisories are examples of the evaluation of monitoring activities. An improved understanding of Darwin Harbour is obtained by these evaluations and used to inform policy planning.

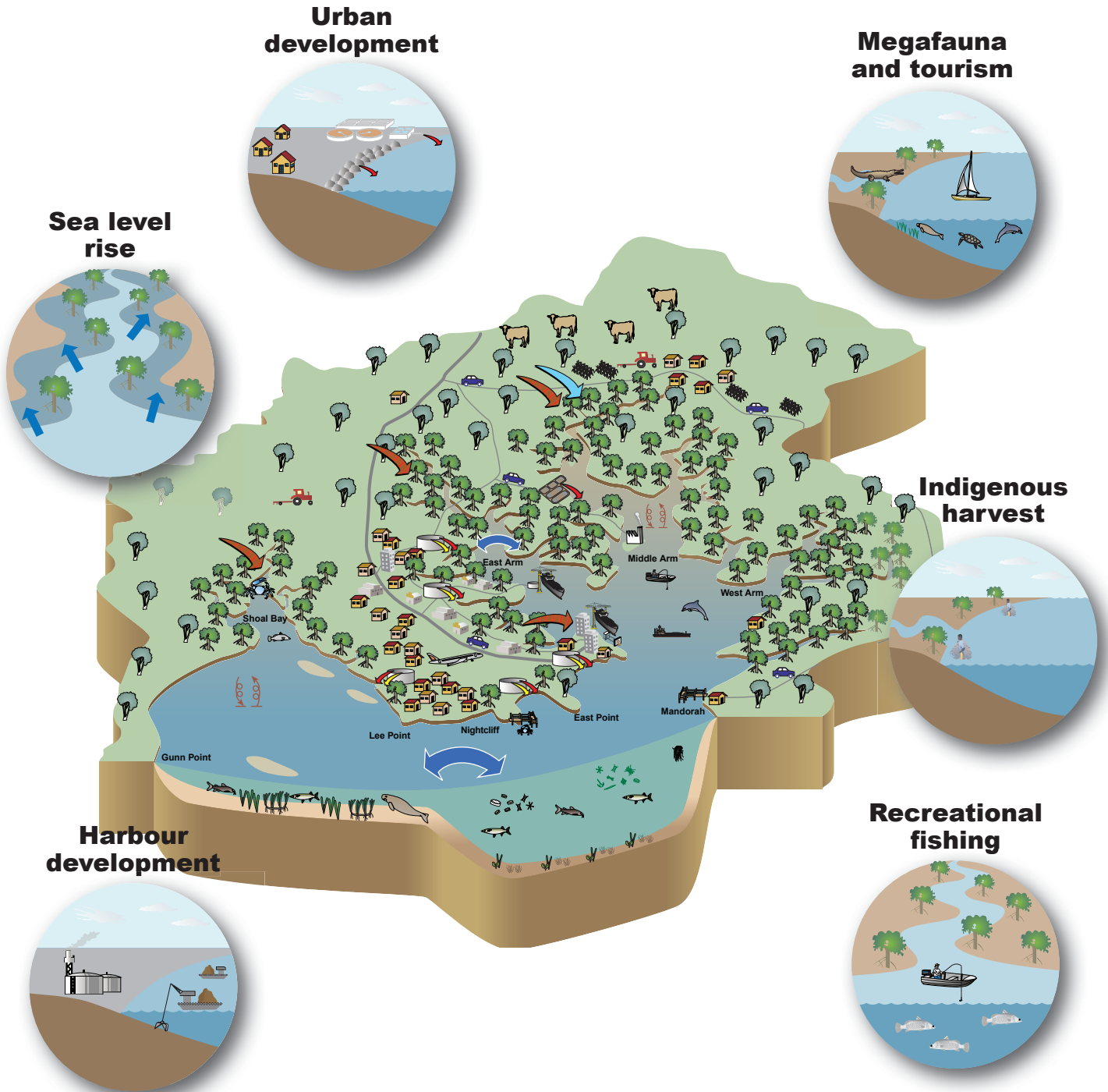
## Key features and major threats of Darwin Harbour

Darwin Harbour and its catchment are influenced by a tropical, monsoonal climate. Darwin Harbour is relatively shallow (1–25 m) and macrotidal, with tides ranging from 0.1–8 m to 3–5 m (spring v. neap tides) resulting in variable flushing. The tropical habitats of Darwin Harbour (mangroves, seagrasses, corals and soft bottoms) support high biodiversity and iconic

megafauna (e.g., crocodiles, dolphins, dugong and sea turtles), which attract international and domestic tourists. As part of the Territory lifestyle, recreational fishing is a very popular Harbour use. Indigenous traditional owners, particularly the Larrakia People, actively use Darwin Harbour (such as intertidal food gathering of *Telescopium* molluscs).

Darwin, the capital of the Northern Territory, is growing rapidly with existing and planned natural gas

development from offshore gas fields. An influx of people has led to rapid urban development which results in increased discharges of partially treated sewage into Darwin Harbour. Darwin Harbour has experienced rapid relative sea level rise (7.5 mm per year since 1990), leading to inundation of low-lying coastal and floodplain lands. The penetration of salt water inland can result in shifts of salinity-sensitive species and localised flooding.



**Urban development**

**Megafauna and tourism**

**Sea level rise**

**Indigenous harvest**

**Harbour development**

**Recreational fishing**

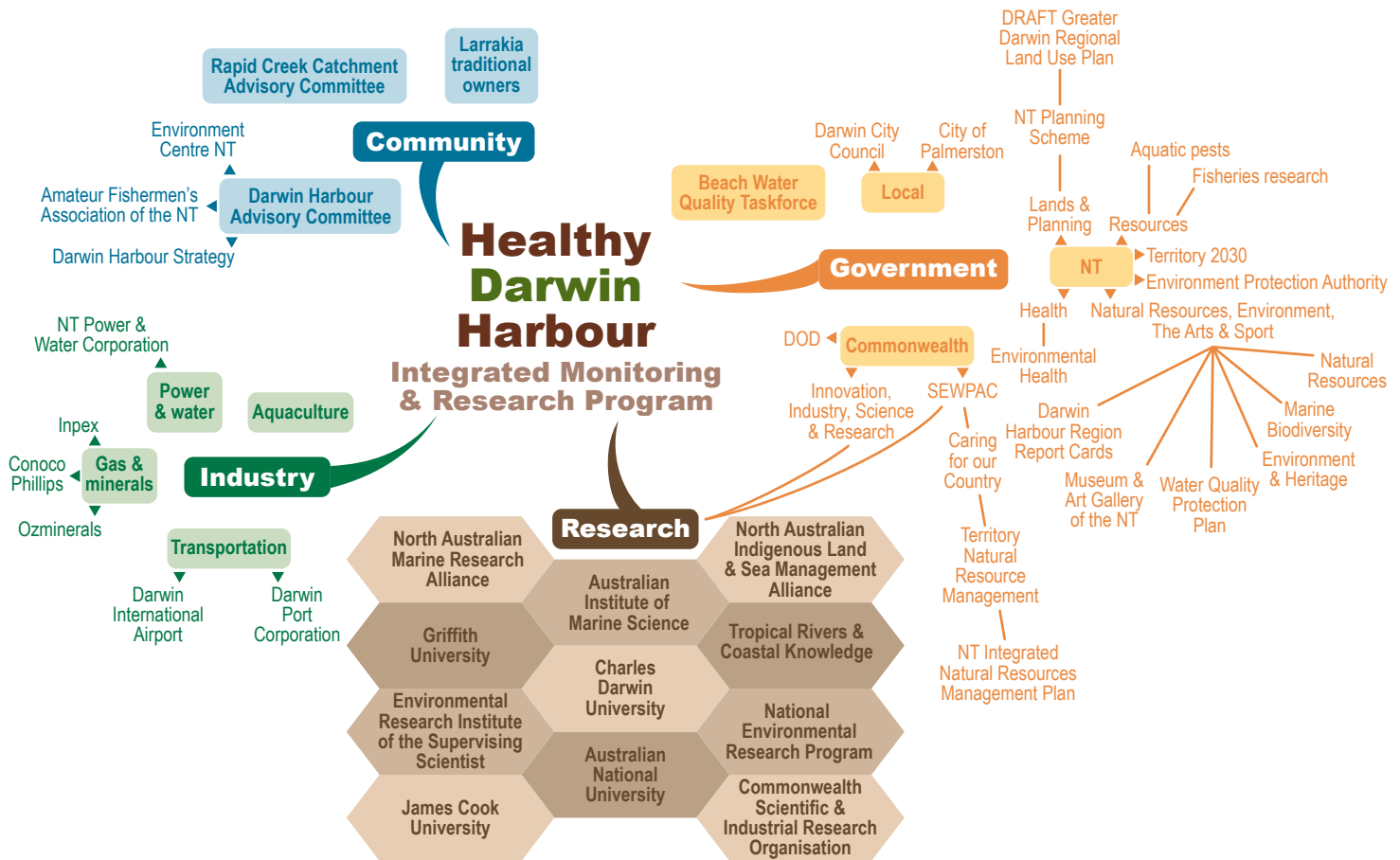
## Community, government, industry and research engagement

There are many people in a variety of sectors of society that directly affect Darwin Harbour, including community groups, various levels of government, different industries and research organisations. The community groups include the traditional owners—particularly the Larrakia People—recreational fishermen and environmental groups. Three levels of government are involved in Darwin Harbour, including local government (e.g., Darwin City Council, City of Palmerston), Northern Territory government departments (e.g., Department of Resources, Department

of Lands and Planning, Environment Protection Authority, Natural Resources, Environment, The Arts and Sport), and federal government departments (e.g., Sustainability, Environment, Water, Population and Community, Defense).

The natural gas industry, particularly Conoco-Phillips and INPEX, is present (or proposes to be) in Darwin Harbour to transport gas using underwater pipelines from offshore gas fields, use coastal lands for gas processing facilities and port development and dredge extensively to support shipping. Darwin is a major transportation hub, with port development and shipping to support minerals and live cattle industries and an international airport.

A variety of research institutions (e.g., Charles Darwin University, Australian Institute of Marine Science), alliances between agencies and institutions (e.g., North Australian Marine Research Alliance, North Australian Indigenous Land and Sea Management Alliance), and programs (e.g., Tropical Rivers and Coastal Knowledge, National Environmental Research Program) conduct research in Darwin Harbour. The proposed Darwin Harbour Integrated Monitoring and Research Program, currently engaged in a monitoring review, and the Beach Water Quality Taskforce, evaluating the public health issues in coastal waters, has participants from community, government, industry and research sectors.



This newsletter was produced as part of a small workshop held at Charles Darwin University on 21 September 2011. Workshop participants included Profs. Andrew Campbell, Karen Gibbs and Michael Douglas from Charles Darwin University, Simon Townsend, Julia Fortune, and John Drewry from Northern Territory Department of Natural Resources, Environment, The Arts and Sport and Bill Dennison and Jane Thomas from the Integration and Application Network, University of Maryland Center for Environmental Science, USA. Design and layout by Jane Thomas.

### Photo credits

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