



# Darwin Harbour Advisory Committee

## TECHNICAL WORKSHOPS

### Current Knowledge and Future Needs

#### INTRODUCTION

The Darwin Harbour Advisory Committee hosted a series of technical workshops at Northern Territory University on 12<sup>th</sup>, 19<sup>th</sup> and 26<sup>th</sup> February 2003. These workshops followed the Darwin Harbour Public Presentations, which comprised brief presentations by scientists and stakeholders (see separate proceedings). Workshops aimed to discuss the issues of concern for the marine and estuarine environments (Workshop 1) and the terrestrial and freshwater environments (Workshop 2) of Darwin Harbour and its catchment. The third workshop discussed the values and uses of Darwin Harbour and its catchment and recommendations to protect or address these values and uses. This document provides a summary of the technical workshops only. Detailed workshop proceedings will be finalised in the near future and released publicly through the Department of Infrastructure, Planning and Environment website.

#### Participants

Participants in the workshops were invited and comprised scientists, Darwin Harbour Advisory Committee members, Darwin Harbour Working Group members as well as representatives from key industry, commerce and community groups. The first workshop contained 41 participants, while 32 participants attended the second workshop and 35 attended the third workshop.

Participants included representatives from the following organisations:

- Aboriginal Areas Protection Authority
- Australian Institute of Marine Science
- Biomarine International
- ConocoPhillips
- Darwin City Council/TOPROC/LGANT
- Darwin Harbour Advisory Committee
- Department of Business, Industry and Resource Development
- Department of Infrastructure, Planning and Environment
- Environment Centre of the Northern Territory
- Environmental Research Institute of the Supervising Scientist
- Land for Wildlife, Litchfield Shire Council
- Marine Harvest
- Museum and Art Gallery of the Northern Territory
- Northern Land Council
- Northern Territory University
- NT Chamber of Commerce and Industry

- Palmerston City Council
- Paspaley Pearls
- Perkins Shipping Pty Ltd
- Planning Action Network
- Save Darwin Harbour Group
- The Marine and Coastal Community Network
- Tropical Savannas CRC - Northern Territory University
- URS Australia

Process outline:

The participants were split into focus groups which each contained scientists, stakeholders and advisory committee or working group members. Each group contained a facilitator (preselected and briefed about proceedings) and a scribe to record discussions. Questions were asked of each focus group and responses generally reported back to the entire workshop group. Scribe notes and individual participant notes were collected at the end of each workshop and collated into a detailed workshop proceedings document. Detailed workshop proceedings will be circulated to all workshop participants for final comment prior to public release on the Department of Infrastructure, Planning and Environment website. This document provides a summary only of the detailed proceedings.

All documents prepared throughout the public consultation phase will be used by the Darwin Harbour Advisory Committee in the development of the Plan of Management for Darwin Harbour.

## **WORKSHOP 1: MARINE AND ESTUARINE ENVIRONMENTS OF DARWIN HARBOUR**

### Objectives of the workshop:

- To identify the major issues of concern for the marine and estuarine environments of the Darwin Harbour catchment;
- To identify generally what we need to know to assess the impact of these issues;
- To discuss in detail the research and monitoring requirements to assess impacts and to improve our understanding of the harbour environments.

### Questions

1. What are the current major management issues that affect the marine and estuarine environments of Darwin Harbour?
2. What is the relative and current importance of the identified issues?
3. For each of the nominated issues, what should we know about the marine and estuarine environments in order to assess the impacts of the issue and who should contribute to providing this information?
4. For each of five nominated monitoring streams (water quality and hydrodynamics, benthos/seagrasses/corals, mangrove ecosystems, fish and fisheries and other vertebrates) what we need to know before any monitoring is undertaken; what indicators should be monitored; what research should be undertaken; and what are the opportunities for collaboration and financial partnerships?

### Summary of Outcomes

#### **Question 1 and 2. Current management issues for the marine and estuarine environments of the Darwin Harbour Plan of Management area.**

The workshop identified the following management issues for the marine and estuarine environments and ranked them accordingly:

#### Issue

1. Habitat degradation and loss and impacts on biodiversity
2. Pollution
3. Data management
4. Fishing and harvesting practices
5. Modification of harbour hydrodynamics and sediment transport dynamics
6. Introduced flora, fauna and pathogens
7. Modification of catchment hydrology
8. Aquaculture
9. Climate change
10. Coastal erosion

11. Vessel disturbance
12. Extraction

**Question 3. Knowledge requirements for addressing issues identified and parties who can contribute to providing knowledge and undertaking management.**

Responses to these questions were extremely detailed. Full details will be provided in the detailed proceedings document. A summary only of the types of responses to this question is given in this document.

Knowledge requirements

- Baseline studies of the harbour to map habitats; determine biodiversity; detail flora and fauna; assess water quality; assess pollutant loads and identify significant/critical species/habitats.
- Quantification of current sources of threat and impact.
- Understanding the ecological processes to determine how ecosystems will be affected by disturbances/threats.
- Development of predictive tools for assessing impacts of developments on habitats, biota, water quality etc.
- Development of thresholds of disturbance/impact to trigger management responses.
- Ongoing monitoring of parameters to detect disturbance.
- Understanding of the legislative/regulatory framework.
- Assessment of case studies in Australia and overseas to elucidate current best practice management.

Potential contributors

- Darwin Harbour Management Authority or Catchment Management Authority potentially established to oversee and coordinate management and monitoring.
- Federal Government
  - Australian Research Council
  - National Heritage Trust
  - Environment Australia
  - Agriculture, Fisheries and Forestry/Australian Quarantine and Inspection Service
  - Department of Defence
  - National Oceans Office
  - Bureau of Meteorology
  - Geoscience Australia
- NT Government
  - Department of Infrastructure, Planning and Environment
  - Department of Business, Industry and Resource Development
  - Power Water
  - Office of Environment and Heritage
  - Museum and Art Gallery of the Northern Territory
- Local Government

- Darwin City Council
- Palmerston City Council
- Coomalie Community Government Council
- Litchfield Shire Council
- Cox Peninsula Community Government Council
- Industry
- Tourism Industry
- Darwin Port Corporation and Marina Authorities
- Commercial and aquarium fishers
- Community
  - Volunteer Research Groups
  - Conservation Groups
  - Amateur Fishing Association of the Northern Territory
  - Northern Territory Seafood Council
  - Greening Australia
  - Waterwatch
- CRC for Sustainable Development of Tropical Savannas
- Northern Territory University
  - Centre for Tropical Wetlands Management
  - National Centre for Tropical Wetland Research
- Australian Institute of Marine Science
- Environmental consultants
- Commonwealth Scientific and Industrial Research Organisation
  - Centre for Research on Introduced Marine Pests
- Indigenous groups
  - Larrakia Nation
  - Northern Land Council

## **WORKSHOP 2: TERRESTRIAL AND FRESHWATER ENVIRONMENTS OF THE DARWIN HARBOUR CATCHMENT**

### Objectives of the workshop:

- To identify the major issues of concern for the terrestrial and freshwater environments of the Darwin Harbour catchment;
- To identify generally what we need to know to assess the impact of these issues.

### Questions

1. What are the current major management issues that affect the terrestrial and freshwater environments of the Darwin Harbour catchment?
2. What is the relative and current importance of the identified issues?
3. For each of the nominated issues, what should we know about the terrestrial and freshwater environments in order to assess the impacts of the issue and who should contribute to providing this information?

### Summary of Outcomes

#### **Question 1 and 2. Current management issues for the terrestrial and freshwater environments of the Darwin Harbour Plan of Management area.**

The workshop identified the following management issues for the terrestrial and freshwater environments and ranked them accordingly:

1. Habitat degradation and impacts on biodiversity
2. Modification of catchment hydrology
3. Pollution (including litter)
4. Introduced flora and fauna
5. Data management
6. Impacts of recreational and stock access
7. Groundwater extraction
8. Harvesting of native flora and fauna
9. Climate change

#### **Question 3. Knowledge requirements for addressing issues identified and parties who can contribute to providing knowledge and management.**

Responses to these questions were extremely detailed. Full details will be provided in the detailed workshop proceedings document. A summary only of the types of responses to this question is given in this document.

### Knowledge requirements

- Baseline studies to determine pollutant loads and concentrations in biota; to map habitats; to establish an inventory of biota and habitats; assess water quality flows and currents etc.
- Identification of threatening processes and quantification of current sources of threat and impact.
- Understanding the ecological processes to determine how ecosystems will be affected by disturbances/threats (eg importance of corridors; patterns of migration and movement; importance of fire; importance of groundwater).
- Development of predictive tools for assessing impacts of developments on habitats, biota, water flow, water quality etc.
- Research into ecological thresholds to trigger management responses (eg clearing thresholds).
- Research into transport vectors for weeds and pests.
- Research into methods for rehabilitation.
- Development of response programs for specific events (eg fish kills).
- Ongoing monitoring of parameters to detect disturbance.
- Understanding of the legislative/regulatory framework.

### Potential contributors

- Darwin Harbour Management Authority or Catchment Management Authority potentially established to oversee and coordinate management and monitoring.
- Federal Government
  - Agriculture, Fisheries and Forestry
  - Environmental Research Institute of the Supervising Scientist
- NT Government
  - Department of Infrastructure, Planning and Environment
  - Department of Business, Industry and Resource Development
- Local Government
  - Darwin City Council
  - Palmerston City Council
  - Coomalie Community Government Council
  - Litchfield Shire Council
  - Cox Peninsula Community Government Council
- Community
  - Landcare
  - Coastcare
  - Waterwatch
- CRC for Sustainable Development of Tropical Savannas
- Extractive industry and horticulture associations
- Northern Territory University
  - Centre for Tropical Wetlands Management
  - National Centre for Tropical Wetland Research
- Australian Institute of Marine Science
- Environmental Consultants
- Commonwealth Scientific and Industrial Research Organisation

- Indigenous groups
  - Larrakia Nation
  - Northern Land Council

## **WORKSHOP 3: SOCIAL AND ECONOMIC CONTEXT FOR DARWIN HARBOUR AND ITS CATCHMENT**

### Objectives of the workshop:

- To identify the values and uses of Darwin Harbour and its catchment.
- To discuss how the Plan of Management can protect and address these values and uses.

### Questions

1. What are the current major values and uses of the Darwin Harbour Plan of Management area that you would like to protect or address?
2. How can the Plan of Management protect and address these values and uses?

### **Question 1. Current major values and uses of the Darwin Harbour Plan of Management area**

The workshop identified the following values and uses of the Darwin Harbour Plan of Management area:

#### *Environmental*

- Freshwater, estuarine and marine water quality/quantity
- Ground water quality/quantity
- Air quality
- Ecological health and biodiversity
- Flora, fauna and habitats of conservation significance and cultural/social significance
- Ecosystem function and processes
- Indigenous environmental values

#### *Economic*

- Economically and ecologically sustainable industry and agriculture (including uses such as general industrial development; commercial development; tourism; shipping/port activities; fishing; aquaculture; extractive industries/mining; agriculture/horticulture/forestry; research and development; defence and communication; water extraction/harvesting; indigenous uses and harvesting)
- Viable communities and cities
- Sustainable indigenous communities
- Individual economic wellbeing and opportunities

#### *Social/Cultural*

- Aesthetics
- Indigenous and cultural heritage
- Spiritual values

- Historic values
- Lifestyle and recreation (including fishing, boating, walking, cycling, hunting etc)
- Human health
- Community capacity for participation
- Public awareness and education
- Access to the environment
- Legislation that supports a vision and values for the environment
- Coordinated and integrated monitoring, planning and management

## **Question 2. Recommendations for the Darwin Harbour Plan of Management.**

Responses to this question were extremely detailed. Full details will be provided in the proceedings document. Some of the responses to this question are provided in this document as examples only.

- The Plan of Management should include a vision statement for the harbour, which will capture the core values of the harbour, to be maintained and managed sustainably. The plan, future processes, supporting legislation etc will be the mechanisms by which the vision is to be achieved.
- There needs to be an independent body/board to manage the harbour, to integrate legislation, monitoring and research in the region and which has the legislative teeth to make decisions that are in the best interests of the community and the harbour itself. This body would be involved in amending current legislation to ensure zoning and land use plans reflect community values and vision, and would also have a role in determining the appropriate development of the harbour. The board would be comprised of a broad range of people and would include representatives from community, government, industry, tourism etc.
- Research and monitoring programs (on-going) to improve understanding of the harbour ecosystems and to detect changes.
- Establish a formalised monitoring program of key indicators in the harbour with a regular reporting mechanism.
- The plan needs to balance protection of the harbour with the need to also allow a continued growth of Darwin.
- Provide clear guidelines for appropriate developments.
- The plan must have specific recognition's of the incremental nature of the impacts of development (there is no crisis point to trigger action until it is too late) and that there are economic costs associated with development if the environmental or social structure is impacted.
- Bottom up rather than top down management.

- Establish a transparent system for key actions for implementation of the plan with appropriate targets, timeliness and triggers so the community can see what action will be taken, by whom and when.
- Ensure appropriate review of existing policy and legislation and where necessary creating new policy and legislation to ensure the planning framework can deliver against the aims of the plan.
- Must plan for the long term and take the whole of the harbour catchment into account, especially accounting for the potential cumulative impacts of multiple proposals.
- Greater encouragement and incentives for community participation in environmental management.
- Establish specific strategies for inclusion of aboriginal community in access to jobs, planning process and other relevant aspects of harbour management.
- Foster information exchange and collaboration towards whole of catchment/harbour management.

## CONCLUSION

This document represents a summary of proceedings from the Darwin Harbour Technical Workshops. Once finalised, complete and detailed proceedings of the workshops will become available through the Department of Infrastructure, Planning and Environment Website at [www.ipe.nt.gov.au](http://www.ipe.nt.gov.au).

For further information, or to obtain a copy of the proceedings when they become available, please contact Samantha Fox on (08) 8999 4478.