



## AUSTRALIA'S TROPICAL RIVERS – AN INTEGRATED DATA ASSESSMENT AND ANALYSIS

### PROJECT CONTEXT

Australia's tropical river systems are unique and form one of the last great river networks in less-impacted condition in the world today; together, they are an internationally significant asset. Although these systems are considered public resources, they are increasingly subject to degradation, restrictions on access, and claims for development. For the vision of sustainable development in northern Australia to be effectively realised, a better understanding of the tropical river systems is required. A first step in the process to achieve this is to integrate existing data and information for the biophysical and socio-economic characteristics of the tropical rivers. To address this, the Australian Government (Land & Water Australia and The Natural Heritage Trust 2) has funded a National Rivers Consortium project titled '*Australia's tropical rivers - an integrated data assessment and analysis*'. The project is being conducted over two years (2004-2006) by the National Centre for Tropical Wetland Research (NCTWR), and will:

- establish an information base for assessing status and change;
- undertake ecological risk assessments of major pressures; and
- trial a framework for the evaluation of goods and services provided by wetlands.

### OBJECTIVES

Specific objectives of the project are to:

- Compile a multiple-scale inventory of the habitats and biota of the rivers and wetlands of tropical Australia through the use of an integrated GIS, and where necessary develop and/or ensure consistency with other suitable typologies based on hydrological and landform features;
- Develop a risk assessment framework and undertake risk analyses for key catchments/significant locations and pressures, which meet stakeholder needs; and
- Provide a framework for analysis of the ecosystem services provided by the habitats and biota of the rivers and wetlands of northern Australia.

### APPROACH

The approach encompasses a desk-top analysis and targeted field-based component spanning northern Australia. Consultation processes are embedded throughout the project.

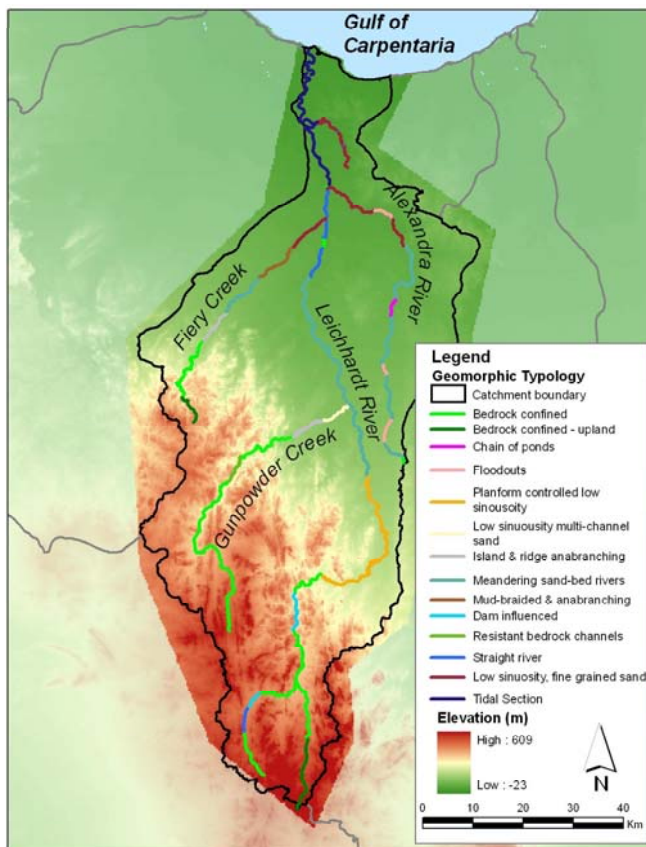
**Multiple-scale inventory:** The specific tasks for the multiple-scale inventory involve collation and interpretation of existing biophysical data for the region, and targeted field sampling. The basis of the model being used has been developed within Australia and subject to international critique and acceptance through the Ramsar Wetlands Convention and associated international mechanisms. The model has previously been applied to the Asian Wetland Inventory. The approach uses an integrated GIS, which supports developing data compatibilities and combining analyses at several scales through remotely sensed imagery, core and interlinked datasets and suitable habitat typologies (fig 1).

**Risk assessment framework:** There a number of key elements in developing the risk assessment framework. Firstly, identification of assets and threats within the focus catchments will be undertaken through a combination of consultations with stakeholders and reviews of existing reports and management plans. Both spatial and aspatial data related to assets and threats will also be collated. The spatial data will be compiled in a GIS and linked to the inventory. Secondly, conceptual models for each of the focus catchments will be developed, focussing on the interactions between key assets and threats. Finally, both semi-quantitative and quantitative risk analysis will be conducted on selected threats.

**Framework for analysis of ecosystem services:** The work related to this sub-project has been carried out by six postgraduate students from the University of Wageningen, The Netherlands. The catchments selected for developing the ecosystem services framework were the Mary River and Douglas-Daly catchments, Northern Territory. The students collated existing information and consulted with the many stakeholders within these catchments. Some of the framework has been populated with specific information and is currently being drawn together in a synthesis report.

### COMMUNICATION AND CONSULTATION

Consultation to date has involved establishing contacts with agencies, boards and representative panels in WA, QLD and the NT to introduce the project and seek collaboration and support, and access to information. A project Steering Committee composed of key stakeholders, reviews and discusses the project's directions and progress. A stakeholder workshop was held in Darwin in November 2004. The workshop was well attended by stakeholders representing government, non-government, indigenous, industry and research interests. Another stakeholder workshop is scheduled for later this year. All consultation is based on a communications plan and includes the ongoing exchange of information, collaboration, reporting and demonstrating initial outcomes.



**Figure 1** Example geomorphic typology for Leichhardt River, Qld (classification from GAR 2004 and Erskine & Saynor in press).

### OUTCOMES

The key outcome of this project will be increased knowledge of the status of aquatic ecosystems and the pressures that they face in an era of increased expectations of resource development. The knowledge base will be made available to resource managers and researchers. Adoption of the integrated and multiple-scale model for inventory and assessment will enhance our national capability to influence national and international decisions that affect natural resource management.

#### For further information

Dr Rick VanDam  
 Environmental Research Institute of the  
 Supervising Scientist  
 Tel: (08) 8920 1175  
 Email: Rick.VanDam@deh.gov.au