Australian Government

**Land & Water Australia**

# The Engagement of Indigenous Australians in Natural Resource Management:

Key Findings and Outcomes from Land & Water Australia and the Broader Literature



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# Contents

# Abbreviations

| | | | | |
|---|---|---|---|---|
| **ACF** | Australian Conservation Foundation | | **IPAA** | Institute of Public Administration Australia |
| **ANU** | Australian National University | | **KWHB** | Katherine West Health Board |
| **ATSIC** | Aboriginal and Torres Strait Islander Commission | | **KLC** | Kimberley Land Council |
| **CAEPR** | Centre for Aboriginal Economic Policy Research -ANU | | **LWA** | Land and Water Australia |
| **CDEP** | Community Development Employment Program | | **MLDRIN** | Murray Lower Darling Rivers Indigenous Nation |
| **CDU** | Charles Darwin University | | **NAILSMA** | Northern Australian Land and Sea Management Alliance |
| **CFC** | Caring for Country Program | | **NGO** | Non Government Organisation |
| **CGC** | Commonwealth Grants Commission | | **NIC** | National Indigenous Council |
| **CLC** | Central Land Council | | **NHT** | Natural Heritage Trust |
| **COAG** | Council of Australian Governments | | **NLC** | Northern Land Council |
| **CSE** | CSIRO Sustainable Ecosystems | | **NTRETA** | Northern Territory Department of Resources Environment and the Arts |
| **CSIRO** | Commonwealth Scientific and Industrial Research Organisation | | **NTU** | Northern Territory University (now CDU) |
| **DAWA** | Department of Agriculture Western Australia | | **NWI** | National Water Initiative |
| **DK** | CRCDesert Knowledge Cooperative Research Centre | | **RIRDC** | Rural Industries Research and Development Corporation |
| **GIS** | Geographic Information System | | **R&D** | Research & Development |
| **GPS** | Global Positioning System | | **SSC** | State Services Commission (New Zealand) |
| **HSRC** | Health Service Research Centre | | **TR** | Tropical Rivers |
| **ICC** | Indigenous Coordination Council | | **TRaCK** | Tropical Rivers and Coastal Knowledge Research Hub |
| **ILC** | Indigenous Land Corporation | | **TSCRC** | Tropical Savannas Cooperative Research Centre |
| **IWRM** | Indigenous water resource management | | **UAD** | University of Adelaide |
| **JCU** | James Cook University | | **UMU** | Murdoch University |
| **NRM** | Natural Resource Management | | **WHO** | World Health Organisation |
| **OIPC** | Office of Indigenous and Policy Coordination | | | |
| **SRA** | Shared Responsibility Agreements | | | |

# Executive Summary

## Background

Australian Government programmes are directed to ensure appropriate opportunities are provided for Indigenous people to access and own land with which they have an ongoing traditional association, or which can assist with their continued social, cultural and economic development.

At the national level, the Government provides a range of programmes and services to support Indigenous people in natural resource management (NRM).  These are delivered largely through the Department of Environment and Water Resources under the Indigenous Australians Caring for Country banner.

Land & Water Australia is a statutory research and development corporation within the Australian Government Agriculture, Fisheries and Forestry portfolio. As such, it supports Australian NRM policies and programmes through investing in research which improves the way natural resources are managed for sustainability.

Land & Water Australia actively builds and maintains collaborative partnerships with industry, government and communities in NRM. This includes funding research projects which establish partnerships with Aboriginal and Torres Strait Islander people. These projects are aimed at supporting Indigenous people in NRM on their lands and also informing broader NRM policies and practices through traditional knowledge gained over millennia.

Land & Water Australia has a portfolio of NRM research concerning the relationship of Indigenous Australians to the environment and their involvement in NRM. This portfolio spans a number of its programs over the period from 2000 and comprises 12 completed projects and a further 12 projects in progress.

In order to make the results of the research more accessible to NRM policy makers, managers, practitioners, researchers and Indigenous community members, Land & Water Australia commissioned a synthesis of the knowledge being generated by the projects and from literature reviews. This report outlines the key messages, principles and outcomes that emerge from the totality of the research.

The outputs of the project include this synthesis report, a research fact sheet which is targeted to NRM managers and practitioners, a policy briefing for policy makers and a listing of the individual LWA funded projects and their outcomes (Appendix 1 of this report and also attached to the Policy Briefing and Research Fact Sheet).

 A further objective of the synthesis is to guide possible further investment by Land & Water Australia, particularly through its Social and Institutional Research Programme, or by other interested funders.

# Key Findings

The research that has taken place since 2000 is making a significant contribution to Indigenous engagement in NRM. In particular, it is generating and applying knowledge and methods that are leading to the formation of trust in relationships, the prerequisite for effective NRM. The research is also contributing to increased capacity for Indigenous NRM at national, regional, catchment and local community levels.

A key outcome of Land & Water Australia's portfolio of Indigenous research is the collaboration that is occurring between Indigenous communities, many of Australia's leading scientists from across diverse disciplines. This collaboration is leading to integrated actions and solutions to NRM challenges on Indigenous lands.

From successful experiences, many of the projects provide an understanding of working with Indigenous communities, the natural resource issues they are challenged with, and capacity for participation in NRM planning, strategy setting, policy development and onground activities. These understandings are critically important as Indigenous people are responsible for the land they own or occupy in many catchments and NRM regions.

The synthesis identifies research outcomes under several key themes:

1   **Values and methods for effective engagement of Indigenous Australians in NRM and knowledge management.**

2   **The nexus between land, water and health of Aboriginal people.**

3   **Developing Indigenous livelihoods through NRM, and**

4   **The implications for developing and implementing NRM policy in Indigenous Australia.**

## 1  Values and methods for effective engagement of Indigenous Australians in NRM and knowledge management

For effective landscape protection, restoration and rehabilitation, it is by engaging Indigenous people through practical activities 'on country' which leads to the most successful outcomes. In this way community members are also able to fulfill cultural responsibilities, meet social and economic needs and transfer knowledge across generations.

This research portfolio shows that critical factors are:

● **Understanding core Indigenous values**

In Indigenous NRM these are about the particularity of place, and about the cultural and spiritual values of water, plants and animals. This can present difficulties for Western scientific measurement; some of the research projects have adopted ways of incorporating traditional knowledge into NRM.

- **Engagement with Indigenous people**

  When engaging Indigenous people in projects, customs relating to gender, kinship and law are significant and so appropriate community members should be involved in the work. Research projects have found that participatory models which involve training opportunities and employment of local people have positive outcomes for communities and can lead to future employment opportunities for Indigenous people in NRM. The NRM agenda eventually needs to be driven by Indigenous land managers and their communities.

- **Data collection and knowledge management**

  Traditional knowledge is very specific to people and place. It involves intellectual property issues that need to be well recognised and understood by all parties. Baseline data requires an Indigenous perspective to be relevant for use, so databases need to be appropriately designed for specific users.

  ### PRINCIPLES

  Key principles to emerge from the synthesis:

  – Indigenous Australians understand landscapes are integrally connected

  – NRM is more effective when driven by a local people with a local agenda

  – NRM approaches are most appropriate when they build on the existing capacities of the group and allow on-going group learning and adaptation

  – NRM investment should be targeted towards long term projects which create opportunities and employment for local people

  – Clear working agreements with communities that protect peoples' rights and interests, in the data collected and future management of knowledge, are necessary in establishing confidence

  – An Indigenous traditional knowledge protocol which defines and respects Aboriginal intellectual property and associated intellectual property rights should be adopted to ensure high ethical standards

  – Intergenerational knowledge should be facilitated for long term impact

  – Resource materials and capacity building strategies are required for future self management

## 2  Land, water and human health

Land, water and human health are linked in Indigenous Australia and research is now trying to understand and even quantify the nexus. The Caring for Country programme is associated with better human health in Maningrita, such as lower body weight independent of factors such as age, gender and education level.

The long history of Aboriginal people's association with country is very important for achieving future environmental health. The research indicates that effective management for improved environmental health depends on mutual understanding of its environmental, scientific and cultural uses, seen from a range of perspectives.

## 3 Indigenous livelihoods through NRM

The traditional pastoral industry is facing difficulties and stations are looking for opportunities through diversification. Land use in areas managed by Indigenous Australians is a mixed regime of community cultural, recreation and harvesting activities, conservation, mining and exploration, small scale pastoral use such as agistment and tourism/outdoor recreation. Most production for markets is through the art industry. Commercial harvest of wild plant foods and harvest of camels are small-scale entrepreneurial activities in some regions. The establishment of commercial kangaroo harvesting is being explored through a Land & Water Australia sponsored PhD project.

A new Land & Water Australia project is investigating NRM and Indigenous employment opportunities from well managed fire regimes. As Indigenous people have always been active in fire management, this is an area where opportunities exist as results from good fire management include increased biodiversity and protection of cultural heritage sites.

Sustainable market-based instruments (e.g. payment for environmental services) will be established through the project with study sites in Cape York Peninsula, Arnhem Land, the Victoria River District, the Kimberley and the Northern Territory-Queensland border Gulf fire management project.

### PRINCIPLES

Key principles to emerge from the synthesis are:
- Sustainable tourism on Indigenous lands needs to be specifically designed for place and incorporate protection of cultural and biological diversity
- Successful Indigenous pastoral/diversified businesses are built through collaborative, long-term, participatory project processes
- Approriate engagement of Indigenous people in the management of projects helps to ensure ownership of the outcomes
- Flexibility is needed when establishing livelihood opportunities for different groups of Indigenous people arising from their involvement in enterprise development
- Reducing institutional complexity (e.g., multiple environmental and development approvals and administrative requirements) facilitates Indigenous enterprise development.

## 4 Implications for developing and implementing NRM policy in Indigenous Australia

With many current policies and programmes, there are difficulties with short timeframes, piecemeal approaches, shifting eligibility criteria, heavy reporting requirements and the lack of recurrent core funding. These difficulties constrain Indigenous communities in their efforts to respond to environmental problems and meet the social and cultural responsibilities of their community members. Hence, there is a need for more effective resource governance arrangements, management models and engagement approaches.

PRINCIPLES

Key principles to emerge from the synthesis are:

– Policy frameworks and processes that incorporate Indigenous administrative and management approaches enable Indigenous people to engage equally and result in fairness in resource distribution

– Effective policy development and implementation incorporate appropriate timeframes for genuine Indigenous participation

– Key individuals from government who provide quality commitment over a length of time improve working relationships between government and communities and help to build capacity in communities

– Recurrent funding and reduced administrative responsibilities may increase Indigenous capacity and engagement in NRM

– No one size fits all – policy must encompass the specific cultural values Indigenous people attach to place

# Research Outcomes

Through the 12 completed projects, knowledge has been generated and a range of changes have occurred in the NRM associated with the projects:

- There is greater knowledge and increased capacity in cross-disciplinary approaches required for effective research in Indigenous communities and better methods for understanding landscapes through integrating perspectives and ways of knowing country

- Guidelines have been developed for effective and equitable engagement with Indigenous communities

- Methods have been developed and documented for appropriate collection and storage of traditional ecological knowledge in culturally appropriate ways to provide baseline information that allows Indigenous people to more confidently contribute knowledge to NRM

- Indigenous people have gained employment in research and NRM through the projects

- A co-management model for ecologically sustainable tourism on Indigenous lands has been developed and implemented in the Anangu Pitjantjatjara Lands of Central Australia

- Agreements regarding river flow and sharing of benefits have been reached across affected communities in the Tropical Rivers regions and incorporated into mainstream NRM strategies

- Planning frameworks, including risk assessment and management for Indigenous pastoral properties, have been established in the East Kimberley; business plans for integrated property management and mixed enterprises are being developed

- The Indigenous fire management plan for Bow River Station is the first cross-cultural management plan to go before the Western Australian Pastoral Lands Board. This provides a model for incorporating cultural values in mainstream pastoral lease administration.

## Key Messages

Key messages to emerge from the research that can guide Australia's future response to Indigenous NRM include the following:

- Establishing, building and maintaining relationships must be adequately resourced because relationships are central to Indigenous values and the trust gained through participatory projects is critical to success

- More effective governance arrangements, management models and engagement strategies are needed. At present, Indigenous people are challenged to articulate their cultural relationship with land and water in policy development, programme design and project implementation

- Indigenous values are mostly non-market in nature. This poses critical management challenges in a policy environment that places emphasis on 'market' solutions. Priorities set by Aboriginal land managers tend to be very integrated across social, environmental and economic factors and could add significant value to current models of sustainability

- The core aspect of sustainability for Indigenous natural resource managers is inter-generational equity and continuity. It is only through its application that Indigenous knowledge will retain its relevance and be perpetuated by future generations

- Land, law, culture and language are inseparable for Aboriginal people. Each language links specifically to 'country'

- New culturally appropriate designs developed through participatory processes are needed for Indigenous business. One model will not fit all emergent Indigenous enterprise developments based on natural resources

- The CDEP scheme is an integral part of several land management strategies such as Caring for Country and Ranger programs. Current modifications to the scheme may threaten its potential to support such programmes

# Future Research

Some key areas the LWA projects suggested for further research are:

- Robust mechanisms to involve Aboriginal people in water planning, management and monitoring

- Estimations of actual resources required for non-market allocative systems in water management

- Quantifying the extent, quality and environmental role of ground and surface waters in the Tropical Rivers region to ensure allocations are available to protect environmental and cultural flows and to provide evidence of whether environmental and Indigenous cultural values complement and/or compete with each other

- Identifying how changes brought about by the National Water Initiative will impact upon Indigenous incomes, quality of life and welfare

- Evaluating rivers in regards to the major industries in the Tropical Rivers region

- Efficient water pricing systems

- Mechanisms for equitable allocation of water among stakeholders that vary greatly in terms of distribution of income and wealth, and

- Institutional arrangements for joint management of land.

This synthesis concludes that cross-cultural NRM research is resource intensive, particularly the investment of time in establishing the trusting relationships which lead to effective co-research and co-management in NRM. The imperative for future success is that we look to continue work in progress and focus on building on past research efforts. We must continue to reflect on analyses of broader outcomes through cross-cutting exercises, such as this synthesis.

# 1 The Legal and Policy Context for Indigenous NRM

NRM on land owned and controlled by Aboriginal and Torres Strait Islander people is shaped by the overall legal and policy context operating at national, state, regional and local levels. The key aspects of the national setting includes Indigenous land rights, Native title, the National Framework of Principles for Delivering Services to Indigenous Australians which was agreed by the Council of Australian Governments (COAG) in 2004, and the portfolio of activities under Indigenous Australians Caring for Country provided through the Department of Environment and Water Resources.

## 1.1 Land rights

Under Indigenous land rights policy, the Australian Government commenced purchasing privately owned land (especially in rural Australia) from the early 1970s for the benefit of Indigenous communities. The Australian and State Governments also began to legislate to return certain Crown land to Indigenous communities and to allow claims to other Crown land. For example, the Aboriginal Land Rights (Northern Territory) Act 1976 has resulted in almost 50 per cent of land in the Northern Territory being owned collectively by Indigenous people.

The purchase of land for Indigenous people is administered through the Aboriginal and Torres Strait Islander Land Fund and the Indigenous Land Corporation. The Corporation assists Indigenous communities to acquire and manage land in recognition of the fact that many have been dispossessed and dislocated from their traditional lands and are unable to assert native title rights.

## 1.2 Native title

The Commonwealth Native Title Act 1993 establishes a framework for the protection and recognition of native title. This stemmed from the 1992 decision by the High Court of Australia in the case of Mabo v Queensland (No. 2) that the common law of Australia recognises a form of native title to be determined in accordance with Indigenous traditional law and custom.

The Australian legal system now recognises native title where:

- the rights and interests are possessed under traditional laws and customs that continue to be acknowledged and bserved by the relevant Aboriginal or Torres Strait Islanders

- by virtue of those laws and customs, the Aboriginal or Torres Strait Islanders have a connection with the land or waters, and

- the native title rights and interests are recognised by the common law of Australia.

The Native Title Act establishes processes for determining where Native title exists, how future activity impacting upon Native title may be undertaken and providing compensation where Native title is impaired or extinguished. The Act gives Indigenous Australians who hold native title rights and interests, or who have made a Native title claim, the right to be consulted on and, in some cases, to participate in, decisions about activities proposed to be undertaken on the land. Indigenous Australians have been able to negotiate benefits for their communities including employment opportunities and heritage protection.

Indigenous people and other groups with an interest in Native title, including the Commonwealth, State and Territory Governments, miners and pastoralists are increasingly addressing Native title issues by negotiation and agreement. Conclusion of Indigenous Land Use Agreements, which further enhance the consensus-based mechanisms available under the Act, and determinations of Native title applications by consent are becoming more common, as familiarity with the provisions and processes of the Native Title Act increases.

## 1.3  The National Framework of Principles for Government Service Delivery to Indigenous Australians

In June 2004, the Council of Australian Governments (COAG) agreed to a National Framework of Principles for Government Service Delivery to Indigenous Australians. The principles identified effective environmental health systems and economic participation and development as priority areas along with issues of social disadvantage.

The Framework provides for the negotiation of Bilateral Agreements between the Australian Government and State/Territory Governments. The first such Agreement was signed by the Prime Minister and Northern Territory Chief Minister in April 2005. All other states and territories have since signed Agreements.

Following COAG agreement on the principles, the Australian Government has moved Indigenous specific programs into mainstream departments, established an appointed National Indigenous Council, refocussed coordination and planning of programs through regionally based Indigenous Coordination Councils (ICC), refocussed government engagement with communities on Shared Responsibility Agreements (SRA) and introduced contestability into community based service delivery (Taylor, 2006).

**Table 1**  The Structure of the Current Whole-of-Government Arrangements

| ICC structure | Features |
| --- | --- |
| **National** | A Ministerial Taskforce on Indigenous Affairs and a new advisory body of Indigenous people has been established alongside a Commonwealth departmental secretaries group working on Indigenous matters and the National Indigenous Council (NIC), consisting mostly of staff from ATSIC and taking responsibility for most of the programs that were formerly the responsibility of ATSIC. |
| **State/Territory** | Building on the former ATSIC regional and State/Territory offices, 29 regional offices of Commonwealth administrators involved in Indigenous affairs, called ICCs staffed by public servants from a range of departments were established. |
| **Local** | The intent is for ICCs to develop formal agreements with Indigenous communities and State/Territory government departments to guide a more whole-of-government and and whole-of-community approach to both funding and service delivery. |

The history of Indigenous policy leading to the National Framework has been summarised by Peter Taylor, who has many years of experience working in Aboriginal policy:

**Table 2**  The History of Indigenous Policy Development

| Period | Policy Direction |
| --- | --- |
| **1890s** | State and territory protection legislation |
| **1920s** | William Cowper and Aboriginal Advancement Movement |
| **1960s** | Citizenship referendum- voting rights (1967)<br>Equal pay in the pastoral industry (1967)<br>Commonwealth Office of Aboriginal Affairs established (1968) |
| **1970s** | NT Land Rights Act<br>Indigenous Incorporations Act<br>Income support reaches remote communities<br>Decline of mission/reserve systems and return to country movements<br>Self-determination policy (1972)<br>Department of Aboriginal Affairs replaces OAA, offices in all states by 1975<br>DAA begins national program to improve health services<br>WA AAPA established<br>Aboriginal Land Rights (Northern Territory) Act (1976)<br>NT Self-Government Act (1978) |
| **1980s** | State Territory land rights acts<br>Aboriginal Development Commission established for socio-economic development<br>National Aboriginal Health Strategy for housing and infrastructure services (1989) |

**Table 2**    The History of Indigenous Policy Developmentt ... CONTINUED

| Period | Policy Direction |
|---|---|
| **1980s** | ATSIC replaces DAA and ADC (1990) |
| | Mabo High Court decision (1992) |
| | Native Title Act |
| **1990s** | COAG National Commitment to Improve service delivery outcomes to Aboriginal People (1992) and bilateral Federal/state agreements established |
| **Since 2000** | COAG Reconciliation Framework advocates a 'whole of government' approach to addressing three priority areas of investing in leadership and governance, reviewing programs and services, and forging links with the business sector |
| | Abolition of ATSIC and Regional Councils, 2003 |
| | COAG trials begin at 8 sites (2002-04) |
| | ATSIS established (2003) |
| | Productivity Commission Indigenous Disadvantage Reporting Framework |
| | Ministerial Taskforce on Indigenous Affairs established (2004) |
| | ATSIC Regional Councils and ATSIS abolished- advisory structures established (2004) |
| | Sharing responsibility - partnerships and SRAs |
| | 'Mainstreaming' of Indigenous programs and streamlining service delivery |

*Source:Taylor (2006)*

# 1.4  Indigenous Australians Caring for Country

The Department of the Environment and Water Resources is the key Australian Government agency in supporting Indigenous people in NRM. It considers Indigenous Australians as a key partner in managing Australia's environment and cultural heritage (**http://www.environment.gov.au/indigenous/index.html**).

At the whole-of-government level, the Department participates in the following arrangements in relation to environmental and cultural heritage issues:

- The Ministerial Taskforce on Indigenous Affairs which coordinates the Australian Government's Indigenous policies and expenditure, and reports to Cabinet on directions and priorities

- The Secretaries' Group on Indigenous Affairs which provides advice and support to the Ministerial Taskforce and National Indigenous Council, and leads coordination across government agencies

- Shared Responsibility Agreements and Regional Partnership Agreements where there are environment and heritage  outcomes

- The Healthy Country Healthy People Schedule under the Overarching Agreement on Indigenous Affairs between the Commonwealth of Australia and the Northern Territory of Australia 2005–2010. This Schedule sets out improved joint working arrangements between the Australian and Northern Territory Governments in the area of supporting Indigenous engagement in sustainable land and sea management

- Sea Country Planning which helps Indigenous communities describe their objectives for the use, conservation and management of sea country and to work with others to achieve them

- Engagement with Indigenous Coordination Centres to develop strategic linkages and enhance information exchange regarding the environment and heritage programmes

Specific activities of the Department in supporting Indigenous Australians in NRM include the following:

## Land management

The Department provides support to Indigenous Australians to manage and protect the land through a variety of programs and initiatives. These include

- the Indigenous Land Management Facilitator Network;

- Indigenous protected areas;

- natural resource management;

- power and energy;

- parks and protected areas; and

- used oil recycling.

## Water management

The Department provides support to Indigenous Australians in managing and protecting water through the following programs and initiatives:

- Community Water Grants;

- Great Artesian Basin initiatives;

- inland waters initiatives;

- Lake Eyre initiatives; and

- Murray Darling Basin programs.

## Sea

The Department works in partnership with Indigenous people in the management of Australia's coast and sea. Specific areas of activity include:

- dugong protection;

- marine turtle harvesting management and research;

- Great Barrier Reef Marine Park initiatives; and

- Coasts and oceans grants and funding.

*The Sea Country - an Indigenous perspective* provides a review of the literature on Indigenous interests in and connections to the marine environment in the South-east Marine Region and includes the results of consultations with coastal Indigenous communities in the Region.

*Living on Saltwater Country* series of reports describe the interests and connections of Indigenous people to the marine environment in the Northern Marine Region and includes three reports on the results of consultations with coastal Indigenous communities in the Region. These include:

- Living on Saltwater Country literature review;

- Living on Saltwater Country: Cape York Peninsula Sea Country Management, Needs and Issues;

- Living on Saltwater Country: Southern Gulf of Carpentaria Sea Country Management, Needs and Issues; and

- Living on Saltwater Country: Goulburn Island to the QLD Border Sea Country Management, Needs and Issues.

## Heritage

The Department helps to protect and preserve areas and objects in Australia that are of particular significance to Indigenous people through the following legislation and programs:

- the Aboriginal and Torres Strait Islander Heritage Protection Act 1984;

- the Indigenous Heritage Programme;

- the National Heritage List; and

- the Protection of Movable Cultural Heritage Act 1986.

## Weather & seasons

The Bureau of Meteorology has developed an Indigenous Weather Knowledge website which provides an opportunity for communities to showcase their knowledge and for other Australians to learn more about Aboriginal and Torres Strait Islander life and culture.

# 2 Land & Water Australia's Indigenous Research Portfolio

The legal, policy and action frameworks described in Section 1, as well as their regional and local level application, are being supported by Land & Water Australia funded research concerning the engagement of Indigenous people in NRM. This comprises the biophysical, social, cultural, economic and legal aspects of NRM. Land & Water Australia's approach is based on building partnerships by integrating traditional knowledge with that gained from science.

Figure 1 shows the location of the research projects.

**Figure 1** Location of LWA's Indigenous projects

## 2.1  Current projects

Appendix 1 provides details of 24 Land & Water Australia projects including the duration of the projects, the project leaders, partners, study sites and the actual or expected policy implications and outcomes. A list of 12 current projects is provided below and 13 completed projects are listed in Section 2.2 (this includes a practical fire management workshop shown below as LWA project No. NAC1).

### Indigenous use of Fire for Biodiversity Management in Arid Australia Institutional change enabling kangaroo harvest to promote sustainable rangeland landscapes (LWA project No. UAD 17)

This PhD project is examining social, cultural and economic parameters affecting kangaroo harvest decisions and the development of policy frameworks and stakeholder support mechanisms which will result in a more sustainable commercial kangaroo industry.

### The regulation of Indigenous rights through environmental legislation (LWA project No. ANU 39)

A PhD which is examining the regulation of indigenous rights through environmental legislation and policy including the development of NRM theory. It is investigating how law and policy are responding to the recognition of Indigenous rights to land and waters in New South Wales and how these can be improved.

### Sustainable northern landscapes and the nexus with Indigenous Health (LWA project No. NTU7)

Using a number of measures, this project is determining if landscape health is different under contrasting Aboriginal land management regimes. It is comparing the health and well-being of Aboriginal participants in land management with non-participants. The project is also critically evaluating policy options for land management contributing to the development of Indigenous sustainable futures.

### Development of Indigenous knowledge capacity across north Australia (LWA project No. TRC3)

This project is developing a workable strategy for the systematic conservation and application of Indigenous knowledge to integrated NRM at the local, regional and northern Australia levels.

### Integrated natural and cultural resources management options for pastoral lands in the East Kimberley (LWA project No. TRC2)

This project is identifying options for implementing environmentally, culturally, and economically sustainable NRM outcomes at the property scale in the East Kimberley, with a particular emphasis on indigenous pastoral lands. It is also identifying institutional and policy impediments to, and opportunities for, developing sustainable pastoral management practices in the East Kimberley and more generally in northern Australia.

### Recognition of Indigenous values and rights in water management procedures (LWA project No. NTU 18)

In collaboration with Indigenous people, the project is developing methods for documenting cultural values of water and formats for acknowledging and conveying this traditional knowledge. By training Indigenous people in research and through fostering understanding of management processes, individuals will continue as ambassadors for water in their communities on the project's completion. Existing Indigenous rights and precedents from International and Australian law and negotiated agreements will be determined. The Project will initiate modifications to NRM structural arrangements, management processes and legislation to better reflect existing rights and emerging priorities surrounding Indigenous issues and water. It aims to create opportunities for Indigenous people to achieve economic gain from water, achieve rights and participate in decision making.

### Developing Institutional Arrangements for Indigenous Participation in the NWI(LWA project No. TRC13)

This project aims to develop Indigenous water policies, management models and economic opportunities arising from water use. It will provide sound information and knowledge to Indigenous organisations and communities and establish dialogue within and between Indigenous organisations and State water resource managers, the National Water Commission and researchers. The project will generate and recommend policy options for government, industry, research and non-government sectors on a range of issues including best-practice in Indigenous participation in water resource planning.

### An Agreement Based Approach to Customary Law Governance in Water Resource Management (LWA project No. NTU 23)

This project will negotiate a Governance of Water Agreement for N'gul (Anna's Reservoir). It will identify and demonstrate Indigenous livelihoods in land and water management from agreements about research and management, and benefit sharing approaches (i.e. rangers, researchers, linguists, negotiators, project managers). The project will demonstrate and communicate approaches for forming Agreements and best practice examples for research, protocols, traditional knowledge management and recognition of customary law that will significantly improve effective governance arrangements for water resource management.

### Valuing and managing the ecosystem services of tropical river systems (LWA project No. CSE 43)

The project will consult and collaborate with community, Indigenous, industry and government groups to develop an understanding of tropical river systems, their ecosystem services and their values. It will define issues and develop and evaluate options for their management. It will develop a framework for integrating social, cultural, environmental and economic values into tropical river decision-support systems. The aim is to develop appropriate methodologies and undertake case studies in tropical river systems in Queensland, the Northern Territory and Western Australia to estimate the value of ecosystem services through the impacts of a change in the performance of an ecosystem service on its associated values.

The project will document, evaluate and communicate the usefulness of the ecosystem services approach to maintaining values and to the management of tropical rivers to the community and to government as well as evaluate alternative communication strategies.

### Investigation of a Conservation Economy Model for Indigenous Northern Australia (LWA project No. ACF1)

The goal of this project is to prove the relevance of the concept of Ecotrust Canada's 'conservation economy' model for Indigenous and rural sustainable community development in northern Australia. It will examine the opportunities and limitations within the current Australian institutional settings that would affect the application of the principles and components of Ecotrust Canada's model.

### Fire management in northern Australia: integrating ecological, economic and social outcomes (LWA project No. TRC 6)

This project will develop practical and transferable strategies for the engagement of community and industry in the delivery of improved fire management outcomes. This is to be achieve through the establishment of sustainable market-based instruments (eg. payment for environmental services). The project will identify opportunities and options for improvement in local (ecosystem integrity) and regional (atmospheric) scale fire management outcomes, through more efficient use of existing human resources and infrastructure, refinement of management tools (APB, remote sensing) and information delivery.

### TRaCK: Tropical Rivers and Coastal Knowledge Research Hub

TRaCK is a new $27 million program which aims to provide the science and knowledge that government, communities and industries need for the sustainable use and management of Australia's tropical rivers and estuaries. Several of the projects reported in this synthesis have already contributed to the development of the TRaCK initiative and form part of its ongoing activities. TRaCK will:

- Increase understanding of the environmental, cultural, economic and social benefits provided by tropical rivers and estuaries
- Develop methods and tools for assessing the implications of current use and potential development
- Identify opportunities to develop sustainable enterprises
- Build the capacity and knowledge of the local community to manage Australia's tropical rivers and estuaries, and
- In particular, TRaCK researchers will identify sustainable and culturally appropriate uses of riverine and estuarine resources, which offer opportunities for innovative enterprise development in remote and regional communities.

## 2.2  Completed projects

### Assessment of Social and Economic Values of Australia's Tropical Rivers (LWA project No. CSE 29)

The main aim of this project was to undertake a social and economic profiling and scoping study in relation to northern Australian rivers, floodplains, wetlands and estuaries. The outcome was improved knowledge of the socio-economic demographics of northern rivers regions.

### Indigenous kinship with country: intercultural values of natural resource management (LWA project No. ANU 37)

This PhD examined sustainable ecological management of indigenous lands. It provided cross-cultural models for ecologically sustainable tourism on indigenous lands. The project provided new knowledge on indigenous land, water and other resource management.

### Indigenous use of Fire for Biodiversity Management in Arid Australia (LWA project No. NAC 1)

This project conducted a practical fire management workshop. It contributed to Community education through the production of posters explaining fire management planning and techniques on the Ngaanyatjarra Lands. It also incorporated study tour outcomes into Ngaanyatjarra Fire Management Plans.

### Addressing Indigenous cultural requirements in water allocation planning (LWA project No. CSE26)

The aim of this project was to ensure Indigenous people, in a significant section of the Daly River catchment, understood the contemporary water resource management regime, especially water allocation planning. It demonstrated how Indigenous environmental knowledge could contribute to the determination of environmental water requirements. The project defined the Indigenous cultural values of water, investigated the means for incorporating and protecting cultural values of water and investigated the means for incorporating and protecting cultural values in the Daly River water allocation plan. It developed and communicated a generic framework and methods from the Daly experience for use in other tropical catchments, and elsewhere where Indigenous interests are similar.

### Biodiversity and cultural significance of fishes in King Edward River (LWA project No. UMU 22)

This project determined the fish species present throughout the main channel of the King Edward River, its tributaries and estuary and determined the habitat and spatial associations of the various fishes. The project documented the Kwini language names for each of the species as there is only one remaining full speaker of that language. It produced educational material to raise awareness of the species present and their cultural significance for integration into government departments, schools and communities located throughout the region. In addition, the project identified key Fish Habitat Protection Areas for the Department of Fisheries, WA.

## Fish Passage along the Fitzroy River, WA (LWA project No. KLC 7)

The aim was to better understand how the Camballin barrage on the Fitzroy Barrage affects fish passage along the river and to translate the results of the study to management actions via the Kimberley region NRM process. The outcome was an agreement across affected communities regarding river flow and sharing of benefits and the incorporation of this into mainstream NRM strategies.

## Indigenous engagement in water management across northern Australia's Indigenous estate (LWA project No. TRC4)

A primary aim was to contribute towards a determination of northern Australian Indigenous peoples' interests in, and aspirations for, river use, protection and management. In addition, it contributed towards informing northern Australian Indigenous representative organisations, and through them Aboriginal communities, about the Tropical Rivers Program and its research themes. Furthermore, it scoped Indigenous people's research issues, identified research questions and determined research priorities across northern Australia. It provided Land & Water Australia with guidance on research ethics and protocols for researchers collaborating with Indigenous communities in tropical rivers' research.

## Planning for Country (LWA project No. KLC 2)

The aim of this project was to identify datasets required by Aboriginal people for NRM planning and to develop processes that better enable access to and use of information. It established standards for representation and storage of ethnotaxonomic and ethnoecological data; developed mechanisms to ensure easy and equitable access to information by Aboriginal people; and undertook participatory and training processes to build social skills, planning and implementation capacity, and management structures.

## Data Management, GIS and cultural mapping with Kija and Jaru people in the upper Ord catchment (LWA project No. KLC 4)

This project created a database using information from ethnoecology research and other relevant spatial information relevant to cultural mapping. It collected individual, group and regional map biographies and collated them into a series of composite maps for presentation, education, management and regional planning purposes.

In addition, the project established and developed the use of the innovative software program CyberTracker to incorporate Aboriginal knowledge into a Geographic Information System (GIS) using palm computers linked to a Global Positioning System (GPS). It established a community-based GIS in the Warmun Community in collaboration with Aboriginal people from Halls Creek, from surrounding stations including Violet Valley, Bow River and from Norton Bore, Chinaman's Garden. A further outcome was skills-based capacity building and training for Aboriginal people in the use of GPS and GIS in the upper Ord catchment.

## Capacity Building and two-way learning for Kija, Miriuwung-Gajerrong and Balangarra people in the lower Ord Catchment. (LWA project No. KLC 5)

This project provided two-way information flow between scientific researchers and Aboriginal people in the upper and lower Ord Catchment. It included baseline information regarding ecosystem trends of the lower Ord River.

The project also aimed to improve Aboriginal people's skills base to enable use of land management tools such as GIS and GPS and to develop key skills in surveying, collection of research data, understanding the purpose of research and planning, ecological systems and development of information products.

The employment of local people by government NRM agencies via this project has paved the way for this route being the accepted norm for NRM agencies in the east Kimberley.

## Plants and Animals of Kija, Jaru country: Aboriginal knowledge conservation and ethnobiological research in the upper Ord catchment (LWA project No. KLC 3)

This project provided baseline information on Aboriginal perspectives for the upper section of the Ord catchment to add to the region's biological inventory. It added to the region's understanding of long-term ecosystem trends and ecological relationships between plants and animals.

The project also conducted ethno-biological research with senior Kija and Jaru speakers, recording baseline information on flora and fauna (including names in Aboriginal, English and Latin), relevant cultural information, their distribution, seasonal variation, traditional land use systems and contemporary use.

It sought to map bush tucker resources and their seasonal variation over 12 locations. The project recorded and conserved traditional knowledge to assist with its recognition and application to contemporary management.

The project established baseline information for economic valuations of the contribution of ecosystems to the Aboriginal economy and collected information about potential impacts of land uses (eg. irrigation, tourism, cattle) on Aboriginal economies (e.g., hunting, fishing, etc.). It refined the understanding of Kija and Jaru aspirations for natural resource management and the identification of ongoing collaborative research.

## Co-understanding place, people and water in Central Australia (LWA project No. ANU 42)

This project sought to articulate the different understandings of a significant place held by scientists, artists and traditional owners. Aspects of the project included:

- A consideration of the scientific, aesthetic, spiritual and utilitarian values of the place

- Exploring the congruences and dissonances between values which affect environmental management for the area

- Representing and communicating the plural values through visual and textual means (a perceptual output as well as a perceptual input), and

- Making the communication documents (a small book and an electronic version of the work) widely available to desert communities concerned about scientific, spiritual and aesthetic values for land with rich cultural and scientific heritage, but limited by depleted water resources.

### Participatory rural appraisal and planning: innovative methods of working with Aboriginal land managers (LWA project No. CLN 1)

With Aboriginal land owners, this project developed approaches and methods that facilitate active Aboriginal participation in describing and evaluating natural resources, and are suited to planning for ecological sustainability in the central Australian region. Aspects of the project included:

- Developing, describing and contributing to participatory processes of working with Aboriginal people that integrate natural resource assessment with other phases of land use planning

- Adapting and developing Participatory Rural Appraisal methods to map, describe and evaluate geographic and ecological features of Aboriginal land and its resources

- Adapting and developing Participatory Rural Planning methods to produce plans for integrated, multi-land use systems, and

- Identifying and documenting processes for training Aboriginal personnel and others working with Aboriginal organisations in Participatory Rural Appraisal and Planning methods.

## 2.3  Synthesis of the research results

### 2.3.1  Purpose of the synthesis

In order to make the results of the above research projects more accessible to a wide range of audiences, LWA commissioned a synthesis of the knowledge being generated by the projects and from the broader literature. A further objective of the synthesis is to guide possible further investment by, for example, Land & Water Australia's Social and Institutional Research Programme, or by other interested funders.

This synthesis builds on research forums that were held in 2004 and 2005, bringing together researchers from across the projects to present and co-ordinating efforts and findings. All agreed that the outcomes of the projects interrelate and add value to each other.

The forums showcased a range of innovations in both the research methods and outcomes. The innovation of most of the projects within the Land & Water Australia portfolio is as much about building and developing research processes and models as it is about environmental, economic and social outcomes for NRM.

The projects demonstrate that desired NRM outcomes cannot be achieved without the right cross-cultural approach. Building strong and ongoing relationships of mutual trust with Indigenous people and incorporating both Indigenous and western knowledge are strongly emphasised.

Aboriginal people are in control of a large proportion of Australia and are trying to maintain (or re-establish) responsibilities to country within a contemporary political framework. This is a collective challenge for Indigenous people and NRM agencies responsible for land and water management, although the emergent recognition of Aboriginal peoples' responsibility to Country is an exciting progression, exemplified by the suite of projects under analysis.

New knowledge has been generated and continues to be derived from these projects. There is an expectation in research today that it is essential to build on prior work and learnings (rather than re-inventing new projects) due to the importance of continuity and the common problem of community burn-out. So the projects also add great value and derive further value from research done outside of Land & Water Australia.

Recognising the value of Indigenous NRM research, Land & Water Australia increased its investment in this research in 2005-06 through the Social and Institutional Research Programme and the Tropical Rivers and Coastal Knowledge Programme.

## 2.3.2  Communicating the results

Communicating what we have learned and what has changed through this portfolio of research is a matter of conveying key messages from research that include many interacting biophysical, cultural, social, economic and political processes.

While individual research reports and fact sheets can be accessed on the Land & Water Australia website www.lwa.gov.au a view across the portfolio provides a richer story. The projects were funded through different programme areas in Land & Water Australia.

Given that the projects cut across a range of NRM issues, Land & Water Australia made a conscious decision not to bundle them into one 'Indigenous NRM' program within the corporation. It is, however, useful to analyse and capture the common themes and messages in an integrated way in order to compare issues and maximise the learnings from this research. It also serves to make it easier for those who need to use this knowledge and those with a general interest in this field to access research findings.

By involving key stakeholders in all stages of the projects, the knowledge is continually being communicated and used. Land & Water Australia will continue to harvest this new knowledge and make it readily available to the diverse range of stakeholders who stand to benefit from it — Indigenous Australians, the policy makers, the strategic planners particularly at the regional and catchment level, other land managers and the research community.

# 3  Results of the Research and Literature Synthesis

This report captures the principles, key messages and significant outcomes that emerge from the totality of the research and the broader literature review. Key themes which emerge from an overall perspective of the research and literature are as follows:

- The values and methods for effective engagement of Indigenous Australians in NRM and knowledge management

- The nexus between land, water and health of Indigenous people

- Developing Indigenous livelihoods through NRM, and

- The implications for developing and implementing NRM policy in Indigenous Australia.

## 3.1  Values and methods for effective engagement of Indigenous Australians in NRM and knowledge management

The research portfolio shows that critical factors are:

- Understanding core values

- Engagement with Indigenous people, and

- Data collection and knowledge management.

### 3.1.1  Core values

There are two aspects of this concept. The first aspect is understanding core Indigenous value of 'country' and the second relates to the core values and principles that should underpin research and NRM in Indigenous Australia.

It is important to recognise that values (such as the social, cultural and economic values of Australia's tropical rivers) change through time. So too have the theories of value' the frameworks for thinking about values and the terminologies of policy makers, managers, researchers and practitioners. These changes have, in turn, influenced the way in which values are conceptualised, identified, assessed, measured and ultimately used to make decisions about how to allocate resources to different and often competing interests.

Western intellectual traditions tend to favour either nature (the sciences) or culture (the humanities). They also often divide the temporal from the spatial. However, Indigenous landscapes are both natural and cultural, with historical and spatial dimensions.

Intellectual traditions shape and limit what we see and value in a landscape and determine our understanding and actions. Interdisciplinary methodologies open up new ways to see, act and understand. Landscapes need to be understood from a range of perspectives and in particular, the life and culture sustaining flows of water must be respected.

Aboriginal teachers in the projects demonstrated that Indigenous people 'dwell in country and country knows them'. Indigenous environmental management is, therefore, about the particularity of place, and about cultural and spiritual values woven through knowledge of water, plants and animals. Indigenous values associated with water often defy scientific measurement as they emphasise symbolic values to Indigenous identity, customary law and environmental philosophy.

With regard to the second aspect of values, there is broad-scale agreement in the literature on the core values and principles that should underpin research in Indigenous Australia (see for example Blishen et al, 1979, Putnam et al, 1993, Cornell and Kalt, 1995, Walsh and Mitchell, 2002, Pound et al, 2003, Dodson and Smith, 2003, Cornell, 2003, Pretty, 2003, Lyer et al, 2005, Ostrom, 2005).

The Aboriginal and Torres Strait Islander Social Justice Commissioner and the United Nations Development Program sum up those principles. They assert that research in Indigenous communities:

- Must be driven by a local agenda

- Must build on the existing capacities of the group

- Must allow on-going learning and adaptation within the group

- Requires long-term investments

- Requires that activities be integrated at various levels to address complex problems (ATSI Social Justice Commissioner, 2004:29, in Hunt, 2005).

The United Nations Development Program's default principles for capacity development are:

- Don't rush... build upon respect and self-esteem.

- Respect the value system and foster self-esteem ... which is context-specific.

- Scan locally and globally: reinvent locally ... which requires an enabling dynamic.

- Challenge mindsets and power differentials ... which needs attention and leadership.

- Think and act in terms of sustainable capacity outcomes ... this can be encouraged with conducive incentives.

- Establish positive incentives ... which is premised on ownership.

- Integrate support into national priorities, processes and systems ... this grows from existing capacities rather than creating new ones.

- Build on existing capacities rather than creating new ones ... this is most needed where weakest.

- Stay engaged under difficult circumstances ... it needs to work for poor people.

- Remain accountable to ultimate beneficiaries.

*Source: United Nations Development Program in Hunt, 2005.*

Given these principles, research in Indigenous communities necessarily involves a very close relationship between research and development. In this context, 'development' refers to capacity building in the broad sense that focuses on investment in human and social capital, and the strengthening of civil society (Hunt, 2005:1). Genuine partnerships are an essential starting point for effective capacity building and looking at what is already working and building on capabilities.

Hunt (2005) has provided an overview of current international directions in capacity building that rest on the human and social capital approach, and canvassed the implications for development in Indigenous Australia. She has found that most recent international development literature promotes a shift from partnership to ownership. Another essential element of current thinking on and approaches to international development is consideration of all components of the institutional system in which individuals, families and communities function.

Capacity building methodologies that are currently advocated are substantially participatory. They include Capacities and Vulnerabilities Analysis (Eade and Williams, 1995), Participatory Rural Appraisal (Chambers, 1992; Mitchell, 2000), Appreciative Inquiry (Hall and Hammond, n.d.) and Asset-based Community Development (Foster and Mathie, 2001).

These approaches build on historic strengths. While all of these methods assist good participatory practice, specific strategies should be applied when adopting participatory methods to acknowledge that communities are not homogeneous and not necessarily cohesive. "…even geographically discrete communities can be fraught with divisions of a socio-economic, ethnic, age, gender and/or political nature" (Hunt, 2005:13).

Research projects funded by Land & Water Australia and by others are extending Australia's knowledge of participatory approaches for working with Indigenous people and there is a clear expectation by funding bodies for participatory approaches in NRM research.

These approaches are resulting in Indigenous people not only becoming more engaged in NRM, but also more aware of their rights and opportunities in relation to natural resources. For example, a study in the Wallis Lakes Catchment in northern NSW provides a method for valuing wild resource harvesting by Indigenous communities and provides a tested methodology and broad guidelines for undertaking studies on the economic significance of wild resources to Indigenous communities. The study demonstrates the importance of wild resource harvesting for Indigenous livelihoods by placing a dollar value on the contribution of those activities to annual income (Gray et al, 2005).

A significant challenge in Indigenous NRM is to adopt appropriate ways to work across cultures and the success of managing natural resources on country rests heavily on identifying appropriate approaches for cross-cultural relationships and management and institutional arrangements.

## 3.1.2 Engagement with Indigenous people

While no singular approach will be appropriate for all cross-cultural NRM research, participatory approaches tend to facilitate active local involvement in describing and evaluating natural resources, and are suited to planning for ecological sustainability. Importantly, when engaging Aboriginal people in research, customs relating to gender, kinship and law are significant and so appropriate people should be employed or involved in the work.

A general scepticism towards research is evident in some sectors of the Indigenous community. To address concerns about the relevance of research programs and the motivations and ethics of researchers, research organisations need to address Indigenous peoples' demands for research to be of more immediate and direct benefit, to involve Indigenous people more fully in formulation of research proposals and practice, and to increase the impact of their research on the policies affecting Indigenous communities. The research agenda eventually needs to be driven by Indigenous land managers and the community.

The rates and quality of research conducted in partnership with Indigenous communities will also be improved by ensuring high ethical standards in research where Indigenous people are involved, including research conducted by Indigenous organisations.

Some other strategies that have been recommended include bringing researchers and Indigenous organisations together to discuss and negotiate research project ideas, tailoring investments to encourage researchers to work collaboratively with Indigenous organisations and training and employment of Indigenous people. These strategies are expensive and time consuming to implement. Funds should be dedicated to projects that demonstrate a very high degree of Indigenous participation. A standard of paying Indigenous people for their expertise and participation in research activities could then become embedded in research practice.

Land & Water Australia's projects have found that participatory research models that involve training opportunities and employment of local people in research projects have positive outcomes for communities and can lead to future employment opportunities for Aboriginal people in NRM. Where the role of researchers facilitates Indigenous participants taking increasing authority for the research, the community will eventually have trained NRM ambassadors who know their rights and how to participate in NRM decision-making processes. There is a strong current focus amongst this suite of projects on integrated water resource management and appropriate involvement of relevant Indigenous stakeholders.

### Key Principles for Engagement with Indigenous People

- Research should be highly integrated recognising that the social, spiritual, cultural, economic and physical values of the Indigenous landscape are integrally connected

- Research is more effective when driven by a local agenda, and by local people

- Research approaches are most appropriate when they build on the existing capacities of the group and allow on-going group learning and adaptation

- Investment should be targeted towards long-term projects

- Research activities need to be integrated at various levels

- Research should create opportunities and employment for local people.

## 3.1.3  Data collection and knowledge management

Almost all of the 25 Land & Water Australia's Indigenous NRM research projects funded between 2000 and 2006, along with many key authors on research practice in Indigenous communities, expressed and adopted common principles in their research. They advocate that research needs to be carried out on country for it to be meaningful, appropriate and inclusive. It is through practical activities like getting old and young people out on country and engaging in landscape protection, restoration and rehabilitation, that people fulfil cultural responsibilities, meet social and economic needs and transfer knowledge across generations (Morgan et al, 2006).

The projects noted that opportunities presented by research for accessing country should be used to facilitate intergenerational knowledge and language transfer for ongoing cultural maintenance. With this style of research, cross-cultural methods that attempt to bridge and integrate knowledge systems require more time for introduction to country, explanation of sampling and research aims, telling of stories about place and language transfer and agreed knowledge management protocols.

### INDIGENOUS TRADITIONAL KNOWLEDGE

Indigenous traditional knowledge "...is concerned with much more than content; it is also about context. This involves an understanding of processes of transmission, expression and other factors that comprise what might be termed 'the political economy' of traditional knowledge systems" (Smallacombe et al, 2005:5).

The United Nations Convention on Biological Diversity (CBD) defines traditional knowledge as "...the knowledge, innovations and practices of indigenous and local communities around the world. It is developed from experience gained over the centuries and adapted to the local culture and environment. Traditional knowledge is transmitted orally from generation to generation. It tends to take the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language and agricultural practices" (CBD in Smallacombe et al, 2005). It should be noted that traditional knowledge is also fluid, innovative and adaptive - not static - and evolves over time and in different situations and environments. Thus indigenous knowledge is contemporary and 'living' – it is not limited to tradition.

Antons (2003) acknowledged that there are various definitions of traditional knowledge. "It can be seen as tradition based literary, artistic and scientific works, performances, inventions, discoveries, designs, marks, names and symbols, undisclosed information and all other tradition based innovations and creations resulting from intellectual activity in industrial, scientific, literary or artistic fields. This would include agricultural knowledge, scientific knowledge, technical knowledge, ecological knowledge, medicinal, knowledge, including related medicines and remedies, biodiversity related knowledge, expressions of folklore, names, geographical indications, symbols, movable cultural properties and also sacred sites, bones, languages, lands.

Knowledge may be traditional, but still considered mainstream in some cultures, like Asian cultures. A key question is: Do traditional owners want to protect their knowledge, or turn it into commercial advantage?

## PROTECTION, RECORDING AND INTELLECTUAL PROPERTY RIGHTS

Mechanisms that can be used for protection are heritage protection and nature conservation acts, equitable principles in combination with customary law" (Antons, 2003). Respecting the context for traditional knowledge, that being embedded firmly in people and place, also protects the misuse of indigenous knowledge and the traditional systems of knowledge custodianship naturally protect knowledge and culture.

Recording traditional knowledge is fundamental to protecting it. Intellectual property and appropriate use of knowledge is a key issue, however, for Indigenous NRM, as well as the integrated way in which people see 'country' that is difficult to record in western-based scientific research.

The systems of classification from western science are not necessarily relevant to Aboriginal land managers and are often not adequate in describing the interconnectedness of Indigenous landscape knowledge.

Once the knowledge is recorded it may be vulnerable to exploitation and misuse. "The principle of free, prior and informed consent is emerging as a norm in international standard developments (see for example Tamarang, 2005). This principle is contained in the CBD and in the Bonn Guidelines" (Smallacombe et al, 2005:18) and is becoming a universal expectation in Australian research, but remains a challenge.

Intellectual property rights related to traditional knowledge is the subject of several international forums including the United Nations Convention on Biological Diversity Secretariat and Conference of Parties and the World Intellectual Property Organisation. A difficulty in developing intellectual property rights to protect traditional knowledge is that much traditional knowledge is not tangible in the western sense of 'property'.

Morgan (2003) suggests that trademarks could provide an option to traditional knowledge holders for protecting their right to ownership and commercial advantage. "Indigenous people could make constructive use of the trademark system, such as adopting the use of certification mark to certain items. An example would be the National Heart Foundation's 'little tick' for certain products that meet its standards. But there is very little Indigenous people can do to stop people from using words from Indigenous languages as trademarks".

## CULTURAL MAPPING

Cultural mapping is a method that begins to blend the interconnected knowledge via spatially referenced databases for possible integration with Western-based science. Participatory cultural mapping such as that undertaken through a Land & Water Australia funded project in the East Kimberley helps overcome this issue by creating a repository for ecological and cultural information that is country and person-specific as well as appropriately managed and accessed. This assists in maintaining valuable knowledge that is being steadily lost for education of children. It also provides a starting point for the integration of knowledge, which can eventually lead to better cross-cultural analysis of data and products.

Due to the interplay of dual knowledge systems in cross-cultural NRM research, indigenous knowledge and supporting the rights and interests of Aboriginal knowledge holders are key considerations. The Alice Springs based Desert Knowledge Cooperative Research Centre (DK-CRC) is developing a comprehensive Indigenous engagement and knowledge management strategy.

A report prepared for the DK-CRC by Indigenous researchers Sonia Smallacombe et al (2005) provides a detailed discussion of these issues in the Australian and international contexts. Recommendations that are instructive for other researchers and research funding organisations are summarised below. A number of the recommendations of Smallacombe et al (2005) pertain specifically to the conduct of DK-CRC business which is not relevant more generally. For this reason, a summary which distils the main principles is provided.

## PRINCIPLES FOR RESEARCH IN INDIGENOUS AUSTRALIA

The recommendations from the DK-CRC project provide an excellent set of principles for research in Indigenous Australia and are as follows:

- Take steps to ensure that the distinction between traditional knowledge and intellectual property is made in the following ways:
  - Develop and implement an Indigenous traditional knowledge protocol[1]
  - Review and amend agreements, contracts and protocols specifically with regard to their provisions regarding intellectual property
- Develop a framework for fair and equitable access and benefit sharing arrangement with Aboriginal organisations and communities. This should incorporate provisions for free, prior and informed consent to be sought from Aboriginal people, and for measures that ensure recognition and protection of Aboriginal rights and interests in Traditional Knowledge, innovations and practices.
- To promote and apply Traditional Knowledge to the benefit of Indigenous peoples we must:
  - Fully acknowledge the holders of Traditional Knowledge
  - Involve them in defining how the knowledge will be applied
  - Compensate appropriately for the use of knowledge
  - Protect participants' rights and interests.

- A statement of this kind will:
  - Acknowledge Traditional Knowledge and respect the sovereignty over their knowledge which Indigenous people »»hold as a birth right
  - Form a basis to develop fair and equitable benefit-sharing arrangements with Aboriginal knowledge holders
- Introduce measures that recognise and respect Aboriginal customary law in practical ways, as the main source of authority and action whenever the use of Traditional Knowledge is contemplated.
- Adopt and follow protocols, guidelines and principles developed by Indigenous peoples in any area in which it is engaged in research.
- Monitor and review existing and emerging international standards in relation to Traditional Knowledge with a view to incorporating them into business practices and advocating improved policy and legislative approaches to the rights of Aboriginal Knowledge holders.
- Introduce processes to ensure adequate levels of awareness among owners of Traditional Knowledge about intellectual property rights and other developments. This should include:
  - Discussing the advantages and disadvantages of working with research and the implications for intellectual »»property systems
  - Discussing the relationship between intellectual property rights and traditional knowledge;
  - Developing resource materials and capacity-building strategies.
- Develop, and allocate sustained resources and effort to, an Aboriginal engagement strategy that will both help Aboriginal people engage. This involves:
  - Recognising the importance of relationship building including funding scooping projects specifically to help build relationships;
  - Collaboratively developing measures to allow for full and equal involvement of Aboriginal people in research and other activity covering recognition of prior learning and current expertise, skills development, formal acknowledgement of project leadership and joint authorship, leadership positions within the organisation;
  - Collaboratively developing an Aboriginal employment strategy, including setting milestones, auditing and providing clear lines of accountability for meeting targets;
  - Developing and assessing appropriate ways to feedback information from research projects to the people directly involved and to the wider Indigenous community;
  - Collaboratively designing processes for re-thinking research methodologies, practice and accountability in line with local Aboriginal perspectives and aspirations;
  - Designing benefit-sharing arrangements and appropriate levels of compensation from commercial development based on applying Aboriginal knowledge; and
  - Explicitly recognising the role played by engaging Aboriginal Knowledge in community development and building local capacity.

*Source:Adapted from Smallacombe et al (2005:vi-viii).*

The indigenous-focused NRM projects within the LWA portfolio have collectively addressed nearly all of these principles in part or in full across the breadth of work. It is important to acknowledge the contribution these projects have made to the emergent policy and protocols around involving indigenous people in research. LWA is funding research that is leading and informing the ongoing discussion around this topic.

## Key Principles for Projects: Data Collection and Knowledge Management

- Establish clear working agreements with communities that protect their rights and interests, including fair and equitable benefit sharing with Indigenous organisations and communities.

- Research should facilitate intergenerational knowledge and language transfer for ongoing cultural maintenance

- Adopt a clear Traditional Knowledge protocol which defines and respects Indigenous intellectual property and associated intellectual property rights

- Develop resource materials and capacity-building strategies

## 3.2  The nexus between land, water and human health of Aboriginal and Torres Strait Islander people

Land, water and human health are intimately integrated in Indigenous Australia and research is now trying to understand and even quantify the nexus. Spin-off benefits for Australia from Indigenous NRM and the livelihoods it creates are broader than ecosystem and cultural services.

They also include improved health and well being, educational and workforce participation by individual people as a result of motivation, validation, confidence, empowerment, physical exercise and skills development (Burgess et al 2005). As an example, the Caring for Country programme is suggested to be associated with better human health in Maningrida, such as lower body weight independent of factors such as age, gender and education level (Burgess et al, 2005).

There may be cost savings to taxpayers if these benefits are realised and particularly if current social and health problems are mitigated (Davies, 2006:3).

The Caring for Country programme is suggested to be associated with better human health in Maningrita, such as lower body weight independent of factors such as age, gender and education level.

The long history of Aboriginal people's association with country is very important for achieving future environmental health. For example, research in Cleland Hills provided insights into managed environmental change over the past 100,000 years and documents people sustainably dwelling in deserts for 35,000 years. The research

indicates that effective management for improved environmental health depends on mutual understanding of its environmental, scientific and cultural uses, seen from a range of perspectives. It is an Indigenous cultural landscape that is reliant on fossil groundwater and efforts are being made by the local community to build a traditionally managed conservation reserve free of vehicles, weeds and pests.

The importance of understanding how values are integrated is illustrated by the projects in the Tropical Rivers region which contains many rivers, estuaries and wetlands that have significant values. The water bodies provide many important ecological and economic services. These include:

- Environmental, aesthetic, bequest, and option values to Indigenous people that exist even when the rivers are not being 'used'

- The value of water as a basic requirement of life

- The direct and indirect values associated with rivers that accrue to the large number of Indigenous people for cultural purposes, fishing, recreation and health

- The aesthetic and recreational values of rivers provided to regional, national and international visitors

- Environmental flow requirements and the eco-system services they provide to the fishing, agriculture and tourism industries, and

- Water extracted from rivers for use in industries, particularly agriculture and mining.

## 3.3  Indigenous livelihoods through NRM

### 3.3.1  Economic activity on Indigenous lands

Land use on land owned or controlled by Indigenous Australians is a mixed regime of community cultural, recreation and harvesting activities, conservation, mining and exploration, agistment and other small scale pastoral use, and tourism/outdoor recreation.

Much of the production for markets is through the art industry (including craftwork and media) and is heavily reliant on cultural services – language and connection to country. Commercial harvest of wild plant foods and harvest of camels are small- scale entrepreneurial activities in some regions, with access to markets and the impact of irregular rainfall on supply limiting further development. A few settlements grow some food for local consumption. Trade and exchange in the informal economy is strong for goods in demand, which often include marihuana, alcohol and mingul/pituri (Davies, 2006:11-12).

Many of the benefits of maintaining Aboriginal people on country have values that are not currently recognised in the market economy. These include cultural services, managing biodiversity, local capacity to manage threats to ecosystem services, such as fire and feral predators, and safety risks for tourists. The research suggests that much of the NRM undertaken by Indigenous Australians may be under-valued. Davies, (2006) notes that "It's not that [remote indigenous people] have no work, but that the work they are doing is not recognised, valued or remunerated by the dominant society's economy."

Altman (2001, 2004) characterises economic activity on Indigenous lands as 'hybrid economies', encompassing three sectors: customary (including new technologies and knowledge), market and state. He notes indigenous competitive advantage is embedded in the customary sector, whether in production of good and services for domestic use or for sale and exchange. "...the 'customary economy' comprises a range of productive activities that occur outside the market and that are influenced by current cultural practices. Activities include hunting, gathering and fishing as well as a range of associated activities such as land and habitat management, species management and the maintenance of biodiversity" (Gray et al, 2005).

Others, such as Morphy and Sanders (2002), Ah Mat (2002), and Taylor (2003) call this a "welfare economy" because of indigenous economic and political dependence on government social security payments and government funded basic services. Ah Mat (2002), who aims to transform the welfare nature of this government investment into business activity by Aboriginal people, notes that the current "welfare economy" spawns considerable economic activity regionally and nationally and supports livelihoods for policy makers, government agents, consultants and academics, but leaves remote indigenous people income poor. Similarly, the study conducted by the Combined Aboriginal Organisations of Central Australia (Crough et al, 1989) found that a third of the economic activity in Alice Springs region is attributable to the presence of Aboriginal people and Aboriginal land (in Davies, 2006).

A current Land & Water Australia funded project is investigating Eco-trust, Canada's entrepreneurial 'conservation economy' model for Indigenous and rural sustainable community development. The conservation opportunities are unparalleled, yet inappropriate development may limit the extent to which the community engages in long-term, sustainable economic activities. Existing institutions may provide some services for capacity-building, including support for entrepreneurial initiatives, but the promotion of sustainability is weak and largely unconnected to economic outcomes. The project aims to test the suitability of the model and possibilities for implementing it in northern Australia. If applicable, the model would seek to provide meaningful work and good livelihoods through sustainable practices, ie. supporting vibrant communities and recognising Aboriginal rights and title. The research explores the model in northern Australia by suggesting new economic activities (see Appendix 1, Hill, ACF1).

### 3.3.2  Sustainable livelihoods

The sustainable livelihoods approach to economic development has evolved through different international development contexts. A recent review of how it is being used by various agencies concludes that it incorporates and summarises much of what is considered 'best practice' in development (Hussein 2002 in Davies, 2006).

"A *livelihood* is defined as the capabilities, assets (both material and social) and activities required for people to have a means of living (Chambers and Conway, 1991, Scoones, 1998, and Pretty, 2003). A livelihood is thus much more than a job. A sustainable livelihood is defined as a livelihood that "can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable

livelihood opportunities for the next generation; and [that] contributes net benefits to other livelihoods at the local and global levels and in the short and long term" (Chambers and Conway, 1991:26)".

A study conducted in the Wallis Lakes Catchment in northern NSW illustrates just how this can occur. Harvesting of wild resources (mostly aquatic harvest) in that catchment was valued at between $468 and $1,200 per adult per year; that is 3-8% of annual income, not including cultural and dietary/health values which are more intangible and harder to value in dollar terms. When those values are added the income is significant (Gray et al, 2005).

Four key outcome elements from livelihoods include:

- Creation of working days (income through wages for employment; production for sale or for domestic use/consumption; and recognition for being engaged in something others see as worthwhile)

- Quantitatively assessed poverty reduction (Lipton, 1991, 1993 in Scoones, 1998)

- Well-being and capabilities, adaptation, vulnerability and resilience (capacity to respond to shocks and stresses), and

- The sustainability of the natural resource base.

Generating livelihood outcomes "implies thinking in a non-sectoral, or cross-sectoral, way ... thinking across geographical areas, and across diverse social groups; [recognising] a wide range of potential actors and partners: private sector; government ministries, and non-government organisations; and working at a range of institutional and policy levels, from micro to macro" (Livelihoods Connect, 2003). Such broad analysis allows the most effective institutional changes to be designed and implemented. However these changes typically need to be quite targeted to be achievable and effective.

The Land & Water Australia funded research being undertaken by North Australia Indigenous Land and Sea Management Alliance to establish cross-cultural arrangements for water management is a example of the role of research itself in the development of Indigenous livelihoods from NRM (see Appendix 1, Craig, NTU 23 and Morrison, NTU 23 NTU18).

The research shows that the nature and structure of institutions will play a very important role in the development and success of the Indigenous livelihoods approach. Ultimately, institutions determine who has access to various assets, who makes decisions and on what basis, and who benefits from decisions and actions (Ostrom, 2005). "Understanding institutions, their diversity and complexity and factors that enable or inhibit change is critical to fostering sustainable livelihoods" (Davies, 2006:8).

Jocelyn Davies, (2006:1) with others, through the Desert Knowledge Cooperative Centre in Alice Springs, is currently undertaking a large study on sustainable livelihoods through management of desert natural and cultural resources. Her project is considering pastoralism, tourism and bush food industries and the cultural and environmental benefits they provide. With an anticipated 34% increase in working age

Indigenous people in arid regions from 2001-2016, 5,000 new jobs or income earning opportunities are needed just to maintain the status quo and these industries will need to plan for the expansion. ".

Davies' project seeks to understand how the support that desert resources provide for livelihoods can be impacted in order to foster sustainable livelihoods of desert people and how the yield of benefit to broader Australia, and awareness of that benefit, can be increased, in order to strengthen investment in desert resources. Davies provides an example of how the costs and benefits of undertaking this required work by alternate pathways or not doing it at all.

### 3.3.3  Indigenous enterprises

#### TOURISM

The research suggests that effective cultural and ecologically sustainable tourism on Indigenous lands requires redesigning eco-cultural tourism for Australian Indigenous landscapes rather than redesigning Indigenous landscapes to accommodate tourism. This requires that cultural and biological diversity be protected with involvement of Indigenous people responsible for country.

Sustainable livelihoods in tourism and the arts are now a reality for remote Pitjantjatjara Anangu homeland communities living on country in Central Australia. With a business planning model developed through research, traditional and modern criteria for economic viability and sustainability are integrated while protecting cultural and ecological diversity. The Cross-cultural Action Research Methodology being used translates the traditional Western research methodology into an Indigenous framework. This model places the researcher and research into a kinship relationship with the Indigenous people, place and knowledge being researched (James, 2005).

A key message of the research for the development of tourism as an Indigenous enterprise is that new culturally appropriate designs, not retrofits, are needed for Indigenous business and that one model does not fit all.

#### PASTORAL MANAGEMENT

The pastoral industry is presently struggling with a decline in cattle demand and prices. Many stations are flagging with no succession plans and several are considering the opportunities presented by diversification, especially tourism. Ten per cent of pastoral enterprises in South Australia now include tourism (Davies, 2006).

Land & Water Australia has invested in research concerned with Indigenous management of pastoral properties in the East Kimberley area to increase the capacity of land managers to manage fire, grazing and weeds. Strengthened capacity, it was assumed, would result in social and economic self-determination through development of models that combine cultural and economically sustainable NRM.

The project presents an example of how research can assist in building human and institutional capacity for diversified enterprise development on pastoral properties

and a model of cross-cultural research. The community of Bow River Station was able to develop a fire management plan through involvement in long-term participatory research. The plan serves the requirements of both the community and the Western Australian Pastoral Lands Board, bridging an institutional barrier.

The project reports note that Community Development Employment Projects (CDEP), which is an Australian Government funded initiative for unemployed Indigenous people, is an integral part of several land management strategies such as Caring for Country and Ranger programmes. The reports consider that current modifications to CDEP appear to threaten its potential to support such programs.

A model of smaller scale and mixed enterprises is popular for Aboriginal management of pastoral leases. With over 30 per cent of pastoral leases in the Kimberley (for example) being Indigenous owned, the legislative framework for administration of such leases may need reform to accommodate the small scale, mixed enterprise model.

Davies (2006) considers that stakeholders need to consider institutional capacity for managing mixed enterprises. Institutional arrangements that comprise pastoral leases and Native title along with diversified production and land-use is complex. A concerted effort and resources are required to build business plans and management skills for operating diverse enterprises that respect natural resource condition, including biodiversity, and that conserve cultural practices and culturally significant places.

### KANGAROO HARVESTING

Harvesting of kangaroos is an enterprise that offers economic and employment opportunities for Indigenous people. A current Land & Water Australia project in South Australia (see Appendix 1, Thompson, ADU37) has investigated the issues that arise in establishing a kangaroo harvesting industry.

The study sought to understand views of stakeholders in regards to kangaroo management. It found that the cultural beliefs of some Aboriginal groups preclude their involvement in commercial harvest of kangaroos.

In addition, long-term land degradation from traditional pastoral activities has reduced the productive capacity of many areas. As a consequence, economic opportunities through commercial harvesting are not presently being realised.

The research has recommended institutional and policy changes to improve extension services for supporting commercial kangaroo harvesting as a strategy for sustainable production in the rangelands.

The study has illustrated that sustainable enterprises in the rangelands can be developed if the issues that the commercial harvest of kangaroos may raise for some Aboriginal groups is understood and if Aboriginal people are appropriately engaged in enterprise management. This project demonstrates that different approaches and strategies will be required in different places with different communities.

## FIRE MANAGEMENT

Well managed fire regimes are an important component of landscape management. Good fire management results in increased biodiversity and protection of cultural heritage sites. Indigenous people have always been active in fire management and this is an area where Indigenous employment opportunities exist.

Biodiversity can be defined as an ecosystem good which generates many ecosystem services and whose maintenance in some desert regions is strongly related to the size, frequency, timing and intensity of fires (de Blas, 2005; Bird et al, 2005; Latz, 1995; Allen and Southgate, 2002, and Burrows et al, 2006).

Burning of key habitats to achieve biodiversity outcomes may be accomplished through various options including:

**1** Local Aboriginal people using modified traditional techniques to plan and implement burning

**2** Centrally managed fire crews doing on ground burning to implement a habitat management plan developed by conservation biologists, and

**3** Aerial incendiary burning to implement a habitat management plan developed by conservation biologists.

Each option or combination of options has different risk profiles in relation to the biodiversity outcomes and different social, economic and cultural costs and benefits for various groups of people. Option one can be expected to contribute most to livelihoods and wellbeing of desert Aboriginal people, including maintenance of traditional ecological knowledge, itself recognised as a biodiversity outcome (see Environment Australia, 2001). However, "other management options may well be cheaper ways of achieving those biodiversity outcomes that are not associated with maintenance of traditional knowledge" (Davies, 2006:2).

Two recent Land & Water Australia projects seek to explore these opportunities by improving cross-cultural approaches (see Appendix 1, Drenan, NAC1 and Russell-Smith, TRC 6). One project, on the Ngaanyatjarra Lands, focuses on education and training in fire management planning and techniques, while the other is concerned with developing livelihood opportunities through a mix of private and public sector sources. Both projects will actively engage Aboriginal and pastoral land owners in implementing cost-effective fire management on their land.

Together the projects will generate knowledge and a number of direct and practical benefits. The benefits include: a fire management plan for the Ngaanyatjarra Lands, incorporating the latest GIS and remote sensing techniques being applied in regional fire management; more efficient use of existing human resources and infrastructure; and refinement of management tools including use of Agricultural Protection Board services and information delivery. It is anticipated that these innovations will result in more predictable landscape scale fire behaviour, leading to reduced habitat impact, and greenhouse emissions. In particular, the occurrence of large and out-of-season wildfires will be reduced and rare and threatened flora, fauna cultural sites will be protected.

Sustainable market-based instruments (eg. payment for environmental services) will be established through study sites in Cape York Peninsula, Arnhem Land, Victoria River District, Kimberley and the NT-QLD cross-border Gulf fire management project. A model will be developed through the project to increase public and private sector funds invested in payment for environmental services.

## WATER MANAGEMENT

Land & Water Australia also currently funds a number of water projects. These have found a range of issues that can limit the claims of Aboriginal people for water access against competing groups. The issues include the legitimacy of cultural values, the multiplicity of approvals (environmental and development) required, and lack of access to potential grant monies or business support. The capacity to manage these issues is often low in Indigenous communities, particularly in remote locations. Conventional structures for enterprise development are often inapplicable in remote locations with small populations and limited supporting enterprise arrangements (Carson, 2006 pers. comm.)

The projects within the Land & Water Australia portfolio continue to probe the range of issues in natural resource management while identifying positive ways to engage and support Indigenous people to plan for and manage country. Developing opportunities for Aboriginal people to manage country within mainstream institutions and structures continues to be a challenge for researchers, government and community and the projects continue to identify gaps for future progress.

## 3.4  Implications for developing and implementing NRM policy in Indigenous Australia

### 3.4.1  Whole of government arrangements

The legal and policy context for Indigenous NRM was outlined in Section 1. As explained, the whole-of-government arrangements are established through the National Framework of Principles for Delivering Services to Indigenous Australians. Following COAG agreement on the principles, the Australian Government has moved Indigenous specific programs into mainstream departments, established an appointed National Indigenous Council, refocussed coordination and planning of programs through regionally based Indigenous Coordination Councils (ICC), refocussed government engagement with communities on Shared Responsibility Agreements (SRA) and introduced contestability into community based service delivery (Taylor, 2006).

The whole-of-government reforms are aimed at getting full value for Indigenous Australians from 'mainstream' programmes, i.e., programmes and services delivered by all governments for all Australians. In the past, Indigenous people have made comparatively little use of these programmes. This has put pressure on Indigenous-specific programs and, to some extent, may have compromised their effectiveness.

Within this context of federal-state-regional-community responsibilities, the experience of the Land & Water Australia funded research projects highlights the need for policy, programs and activities to take account of smaller settlements that represent the special and relevant location of many Indigenous people (Taylor, 2006).

Taylor states that: "The structural circumstances facing Indigenous populations are increasingly diverse and locationally dispersed leading to variable constraints and opportunities for social and economic participation. The trends that emerge are seen to spatially align with particular categories of place that transcend State and Territory boundaries…"

"There are emerging demographic 'hot spots' in the sense that particular Indigenous population dynamics in particular regions are giving rise to particular issues of public policy concern. The implication for policy is that whole-of-government approaches need to consolidate around these 'hot spots' settings so that we have a clear national statement and approach to policy for outstations, with the same for town camps, for growing remote Indigenous towns, for regional country centres, and for poor city neighbourhoods…"

"Failure to recognise the implications of demographic trends in these settings may be significant not only in terms of Indigenous well-being, but also for social cohesion and a compounding of existing high levels of disadvantage with resultant high downstream costs to governments in addressing the consequences".

The question of flexibility in policy and governance is one that recurs throughout the literature and debate. Rowse (2000) notes that the discussion of Indigenous governance and self-determination is dominated by the complexities of both internal and external accountability and capacity building that relate to such devolution of power. However, if "… government is thought of more as a process than as a structure, then there is no need to categorise organisations as either, internal or external to government, or indeed as either internal or external to the Indigenous community" (Sanders, 2002:8).

There is a large body of interdisciplinary scholarship that has contributed much to understanding of good governance by exploring the circumstances in which Indigenous people exercise self-governance to manage common property sustainably (see Ostrom, 1990).

This research emphasises the importance of understanding how trust, cooperation and reciprocity are developed and maintained (Davies, 2006). A Northern Territory review of governance training for Indigenous organisations and communities found that the training, instead of engaging broad processes of Indigenous self-determination, was more concerned with organisational and compliance skills (Willis 2004 in Hunt 2005:18). This may be a reflection of the focus on organisational transparency set by high public expectations for accountability.

The effective implementation of the whole-of-government arrangements and the development of appropriate processes is being supported by Land & Water Australia funded research. This is covering the biophysical, social, cultural, economic and legal aspects of NRM and recognises the importance of partnerships with Indigenous communities and the need to integrate traditional knowledge and that gained from science.

A key outcome of Land & Water Australia's portfolio of research is the collaboration that is occurring between Indigenous communities, many of Australia's leading scientists from across disciplines (archaeologists, historians, environmental scientists, sociologists, geologists, geographers, lawyers, anthropologists, plant ecologists), policy makers, NRM managers and practitioners and Indigenous and other artists. This collaboration is leading to integrated actions and solutions to NRM challenges on Indigenous lands.

Many of the projects provide understanding from successful experience of how to work with Indigenous communities, the natural resource issues Indigenous Australians are challenged with, and their capacity for participation in NRM planning, strategy setting, policy development and on-ground programs. This is critically important to national regional and local NRM as Indigenous people are responsible for land they own or occupy in many catchments and NRM regions.

Aboriginal people see their landscape and the ecological and cultural management of that landscape in a very connected way, so a highly integrative policy and research approach is critical.

Through this research, Australia has gained an better understanding of how to work with Indigenous communities, the natural resource issues Aboriginal people are challenged with, and capacity for more equitable cross-cultural management strategies, policy development approaches and programs.

There is an emergent emphasis on natural resource-based planning that aims to engage Aboriginal people meaningfully to empower them to participate in the development of enterprise to create livelihood opportunities through land and water management.

Current institutional arrangements and reforms in NRM are complex. They embody different legal systems, and ethnic and linguistic diversity. Indigenous people are involved in land and water management activity to differing degrees. Through research, increased capacity for combining aspects of traditional approaches and western science has been built. Co-management of natural resources has increased.

### 3.4.2  Governance arrangements and management models

Observations from research projects about the implementation of many present policies and programs highlight issues such as short time-frames, piecemeal approaches, shifting eligibility criteria, heavy reporting requirements and the lack of recurrent core funding. In particular under current arrangements, Indigenous people are challenged to articulate their cultural perspectives. These issues are seen as constraints to Indigenous Australians in their efforts to respond to environmental problems and meet the social and cultural needs of their community members.

The research demonstrates that there is a need for more effective resource governance arrangements, management models and engagement approaches. For example, there are differing degrees of Indigenous engagement with non-Indigenous management

systems and a significant knowledge gap pertaining to people's attitudes towards the National Water Initiative and other related policies and programs.

This is being addressed by initiatives such as the formation of an Indigenous Water Policy Group with membership from across the tropical savannas. The group aims to provide Indigenous representation in ongoing water reform discussion and to position Indigenous people to respond to and be involved in water planning.

The research suggests Indigenous people need to be resourced to engage effectively and build their own institutions in order to respond to the various demands of water policy reform. Some projects acknowledge and are focusing on the need for, even facilitating, strong governance arrangements for effective engagement of Indigenous Australians in NRM.

Within the broad Australian Indigenous policy framework, there is no significant source of resourcing for Indigenous governance capacity-building. International institutional arrangements for Indigenous capacity-building provide some examples of how institutions in other countries overtly and directly support the development of self-governance. These include the Native Nations Institute for Leadership Management and Policy in the USA, the Africa Capacity Building Initiative, INTRAC (based in the UK) and The Community Development Resource Association (CDRA) in South Africa, (Hunt, 2005).

### 3.4.3  Institutional arrangements

The experience of the research projects suggests that if NRM policy and institutional arrangements with Indigenous land managers are to be sustainable and effective in the longer-term, then agreements need to be put in place that are accountable to the governance structures of communities.

Arrangements for Indigenous land managers to engage in policy are more effective if they include organisational and representative arrangements which can operate at a broad scale (see Appendix 1, Weir, ANU39). There is also evidence that the quality of commitment and length of time a key individual from government gives to a community influences that community's capacity for NRM management. Relationships formed over time have a positive impact on capacity building (Arthur, 2006).

The potential common law property rights in customary use under Native Title legislation, alongside recreational and commercial use, should be recognised by authorities. The report on the Wallis Lakes community (Gray et al, 2005) suggests that "…efficient resource use requires that the property rights and interests of all stakeholders in wild resources are recognised, and all fisheries, effort, including the customary, is accurately monitored" (Gray et al, 2005:xi).

Several current projects continue to build on Australia's knowledge of how to improve institutional arrangements for the engagement of Indigenous people in NRM. Their processes are providing sound information and knowledge to Indigenous organisations and communities and are facilitating dialogue within and between Indigenous organisations and state and national natural/water resource managers. One project has

convened a representative group from Indigenous organisations to consider and develop Indigenous water policies, management models and economic opportunities arising from water use (see Appendix 1, Morrison, TRC 13; Weir, ANU39).

### 3.4.4 Recognising non-market values in water and other resource policies

Research projects in the Tropical Rivers regions show there is a high level of concern in Indigenous communities over the possible distributional consequences of water and water-related policy. Protecting basic levels of water - both quantity and quality - presents a significant challenge for those charged with managing water resources, both surface and ground water, in the region.

Many of the basins in the Tropical Rivers region have fewer than 500 persons and very little industry. 'Values' are almost exclusively non-market in nature, which poses some management challenges in a national policy environment that places emphasis on 'market' solutions since these systems typically work best when there are many participants).

The research projects show that values in the Tropical Rivers region are beginning to compete with one another and conflicts between different stakeholder groups are beginning to emerge. Broad-scale tropical agriculture, mining and tourism are intensifying across the region and increasing consumptive use of both surface and ground water is occurring in areas that have relatively unproductive aquifers and/or little perennial surface water. This will increase pressures on scarce water resources (Jackson and O'Leary, 2006; Stoeckl et al, 2006, and Straton, LWA Project No. CSE43.)

Some studies are suggesting that it may be necessary for water to be set aside and water quality regulations set in the region for Indigenous communities. This is due to values Indigenous communities place on water, like those associated with the environment, being typically non-priced. However, it will be difficult to quantify a flow sufficient to meet an intangible value and give voice to the various values.

Pressures on Australia's water resources mean that it is important to look at both supply-side and demand management solutions. There are complex, yet poorly understood, relationships between ground and surface waters in these regions and a surrogate environmental flow, of which little is still known, will not satisfactorily address Indigenous cultural requirements.

When developing a combined approach, the research shows that different regions may require different policy combinations and that different approaches to thinking about 'values' may lead to significantly different allocative outcomes (Stoeckl et al, 2006).

### 3.4.5  Need to incorporate the Indigenous view of landscapes and water into policy

A common message from the research portfolio is the need for policy makers in serving Indigenous Australians to engage with them and their communities in an adequate and appropriate way. The foundation for such engagement is the recognition that the Indigenous view of landscape and water is universally holistic, but that Indigenous aspirations will vary from region to region and from time to time (McFarlane, 2004 and Gray et al, (2005). For example, some communities will aspire to commercial outcomes from NRM while others will not.

### 3.4.6  Recognition of Indigenous rights, interests, access and management

A further issue in the effective implementation of policy is clear recognition of rights. McFarlane (2004) cites a number of cases where Indigenous rights to water have been recognised and suggests that the decisions in those cases were based on the following principles:

- "The common law will recognise native title rights and interests to water".

- In most parts of Australia the relevant water legislation did not extinguish all native title rights and interests, but will usually apply to regulate the exercise of those rights and interests.

- Non-native title rights and interests (such as the interests of lease and licence holders and statutory authorities) in the area of the determination must be identified and dealt with in the determination.

- It will be usual for the determination to provide that the principles of co-existence will apply between non-native title rights and interests and native title rights and interests, however, in the event of any conflict, non-native title rights will prevail (or have priority) over native title rights.

- Native title rights and interests are subject to the valid laws of the State/Territory/ Commonwealth (as the case may be)" (McFarlane, 2004:9).

The Yorta Yorta case illustrates the kinds of agreements that can be reached that integrate cultural, social, economic and environmental imperatives and aspirations, despite the failure of claims through the courts. It demonstrates strong Indigenous aspirations in relation to water and the opportunities water presents for self-determination, community cohesion, employment and the sustainability of future generations.

The Aboriginal Water Trust in NSW through the Murray Darling Basin Commission's Living Murray Program is a further example of the opportunities to develop effective working relationships and institutional relationships, given appropriate processes, resources and time.

http://thelivingmurray.mdbc.gov.au/implementing/indigenous_partnerships

The National Water Initiative (NWI), Sections 52-54, clearly sets out how Indigenous water and management access is to be achieved.

**1**  The parties will provide for Indigenous access to water resources, in accordance with relevant Commonwealth, State and Territory legislation, through planning processes that ensures:

   **i**   the inclusion of Indigenous representation in water planning wherever possible; and

   **ii**  water plans will incorporate Indigenous social, spiritual and customary objectives and strategies for achieving ii. these objectives wherever they can be developed.

**2**  Water planning processes will take account of the possible existence of native title rights to water in the catchment or aquifer area. The parties note that plans may need to allocate water to native title holders following the recognition of native title rights in water under the Commonwealth Native Title Act 1993.

**3**  Water allocated to native title holders for traditional cultural purposes will be accounted for" (Intergovernmental Agreement on a National Water Initiative, 2004:par.23).

The NWI identifies issues where Indigenous interests are to be considered beyond that given to the general public. McFarlane, (2004:14) has summarised those areas as follows:

- Indigenous access to water resources

- Inclusion of Indigenous representatives in water planning where possible

- Water plans incorporating Indigenous social, spiritual and customary objectives

- Strategies for achieving those objectives where they can be developed

- Possible water allocation for Native title holders

- Separate accounting of water allocated for traditional cultural purposes

- Possible inclusion of Indigenous and cultural values in considering the other public benefits component of planning, and

- Possible restrictions on trading where management of features of major Indigenous, cultural, heritage or spiritual significance.

The opportunities of the National Water Initiative for Indigenous Australians are currently being explored through several current LWA funded projects (see Appendix 1, eg: Donna Craig, NTU 23; Jessica Weir, ANU 39; Anna Straton, CSE43; Naomi Rea, NTU18; Joe Morrison, TRC13; and Sue Jackson, TRC4 and CSE26.)

## 3.4.7  The importance of stakeholder/inter-sector collaboration

Research results have also clearly shown that collaboration between stakeholders is a fundamental requirement for improved NRM effectiveness and it needs to take account of the informal and voluntary arrangements as well as the formal or contractual arrangements.

In a recent review, Wakerman and Mitchell, (2005) found that successful inter-sectoral collaboration depends on many of the same values as have been identified for research through LWA funded projects. In summary, they include:

- The need for agreement between all members of the group involved in the collaboration about the objective of the collaboration and the issues related to the objective

- The potential for conflict must be recognised and processes for dispute resolution put in place

- Trust between participants involving respect for, and willingness to accept, other participants' points of view

- Inclusion of the relevant stakeholders as the absence of key players can be a barrier to success. "The credibility of collaborations is dependent on the credibility, visibility and influencing power of the participants" (Wakerman and Mitchell, 2005:12)

- Consistency of membership because turnover of staff leads to the loss of corporate memory and continuity. The lack of membership consistency was identified as a barrier to success in the South Australian Government's Working Together project (IPAA 2002 in Wakerman and Mitchell, 2005)

- Ownership of the initiatives of the collaboration by the community where the collaboration involves the community as participants

- Community representatives having the ability to represent their communities' views appropriately

- Balanced power relations within the collaborating group (Wakerman and Mitchell, 2005:16)

- Clear definitions of roles and responsibilities within the collaboration. For example, geographical service responsibility boundaries may differ between participants. "A high level of trust is required for participants to share power, 'turf' and resources. The participants need to be willing to share risks, responsibilities and rewards (Himmlemen, 2001). A key to developing trust is the level of mutual respect for each participant's contribution, as outlined earlier. A number of authors comment on the time required to develop new ways of working and building relationships (Gray 2002, Angus 1999 cited in Gray 2002, Harris et al 1995" in Wakerman and Mitchell, 2005:18)

- Agreement from the outset on the level of commitment and control of resources beyond termination of the collaboration

- Representatives need to be champions of the collaboration within their organisations

- Willingness to change the existing systems, and

- Collective evaluation across participants such that "...the total impact of the collaboration is captured and not just the effect on a single participant or program. It also needs to be regular and be used as a feedback to the collaborating partners (Bruner, et al, 1992)" (in Wakerman and Mitchell, 2005:22).

Consistent with the findings of Wakerman and Mitchell (2005), LWA projects found that, "a key reason for collaboration is often the recognition that dividing complex problems into discrete and rigid agency responsibilities with different policies, resourcing

and operational guidelines is ineffective. ...a key question for agencies involved in collaboration needs to be: Is the collaboration an effective use of resources, given the agencies' accountability for use of resources This may involve cost benefit analysis, which can be difficult where the objectives target long term social or health issues" (Wakerman and Mitchell, 2005:24).

### 3.4.8 Alternative observations on community-based environmental management

Lane and Corbett (2005) argue that community-based environmental management, such as that endorsed through the NHT regional program delivery arrangements, can fail to achieve expected outcomes. They consider that the institutional arrangements put in place need to acknowledge power relations and Indigenous environmental management perspectives. In addition, the authors believe guidelines and program delivery mechanisms, as they are implemented in Indigenous owned and controlled areas, should more closely reflect Indigenous culture and recognise Indigenous plurality. The authors also argue that the processes for developing, submitting and assessing funding allocations is a significant constraint to the participation of Indigenous people in key decision-making and in accessing funds (Lane and Corbett, 2005:153).

Lane and Corbet present a case for centralised bureaucracy because it is impersonal and enables procedural fairness. "By reducing, even removing, the role of institutional authority in decision-making community-based approaches lose the means of mediating the effects of material and discursive power and create and reproduce injustice and inequality" (2005:155).

Similarly, in reference to the National Water Initiative, McFarlane (2004:17) considers that, "... involvement in planning and management is but one part of the total picture. It does not deal with Indigenous aspirations for a share of the economic benefits that flow from NRM nor does it deal with the desired shift from consultation to negotiation on matters that affect the lives of traditional owners."

## Principles for NRM Policy and Program Design

- **Effective policy frameworks and processes will incorporate Indigenous administrative and management approaches to enable Indigenous people to engage equally and result in fairness in resource distribution.**

- **Effective policy development and implementation will incorporate adequate timeframes for genuine Indigenous participation.**

- **Key individuals from government providing quality commitment over a length of time will result in improved working relationships between government and communities and will build capacity in communities.**

- **Recurrent funding and reduced administrative responsibilities may increase Indigenous capacity and engagement in NRM.**

- **No one size fits all – flexible and appropriate policy will explicitly take account of the specific cultural values Indigenous people attach to place.**

# 4  Tangible Outcomes, Key Messages and Knowledge Gaps

This synthesis of research results and the literature reviews demonstrate that Land & Water Australia funded research is making a significant contribution in the area of Indigenous engagement in NRM. In particular, stakeholders are generating and applying knowledge and methods that are leading to the formation of trust in relationships, the prerequisite for effective cross-cultural NRM.

The research is also contributing to increased capacity for the engagement of Indigenous people in NRM at multiple levels from national to regional to local and institutional. The projects are also using improved research approaches that deliver actual benefits to Indigenous communities.

## 4.1  Outcomes

The results of 12 completed Land & Water Australia projects show that knowledge has been generated and a number of changes in NRM have occurred:

- Australia now has greater knowledge of, and increased capacity in, the cross-disciplinary approaches required for effective research in Indigenous communities and better methods for understanding landscapes through integrating perspectives and ways of knowing country.

- Australia also has guidelines for effective and equitable engagement with Indigenous communities.

- Methods have been developed and documented for appropriate collection and storage of traditional ecological knowledge in culturally appropriate ways to provide baseline information that allows Aboriginal people to more confidently contribute knowledge to NRM.

- Indigenous people have gained employment in research and NRM through projects.

- A co-management model for ecologically sustainable tourism on Indigenous lands has been developed and implemented in the Anangu Pitjantjatjara Lands of Central Australia.

- Agreements regarding river flow, sharing of benefits were reached across affected communities in the Tropical Rivers regions and have been incorporated into mainstream NRM strategies.

- Planning frameworks, including risk assessment and management for Indigenous pastoral properties have been established in the East Kimberley and business plans for integrated property management /mixed enterprises are being developed.

- The Indigenous fire management plan for Bow River Station is the first cross-cultural management plan to go before the Western Australian Pastoral Lands Board. This provides a model for incorporating cultural values in mainstream pastoral lease administration.

## 4.2  Key messages

Key messages to emerge from the research portfolio funded by LWA that can guide Australia's future response to Indigenous NRM include the following:

- Establishing, building and maintaining relationships must be adequately resourced because relationships are central to Indigenous values and the trust gained through participatory projects is critical to success.

- More effective governance arrangements, management models and engagement strategies are needed. At present, Indigenous people are challenged to articulate their cultural relationship with land and water in policy development, program design and project implementation.

- Indigenous values are mostly non-market in nature. This poses critical management challenges in a policy environment that places emphasis on 'market' solutions. Priorities set by Aboriginal land managers tend to be very integrated across social, environmental and economic factors and could add significant value to current models of sustainability.

- The core aspect of sustainability for Indigenous natural resource managers is inter-generational equity/continuity. It is only through application that Indigenous knowledge will retain its relevance and thus be perpetuated by future generations.

- Land, law, culture and language are inseparable for Indigenous peoples. Each language links specifically to country.

- New cultural appropriate designs developed through participatory processes are needed for Indigenous business. One model will not fit all emergent Indigenous natural resource-based enterprise developments.

- The CDEP scheme is an integral part of several land management strategies such as Caring for Country and Ranger programmes. Current modifications to the scheme may threaten its potential to support such programmes.

## 4.3  Knowledge gaps

Many of the early Land & Water Australia projects scoped opportunities and priorities for further research. The current 12 projects are seeking to make a further contribution to Australia's knowledge and skills in the engagement of Indigenous people in NRM, particularly in regard to appropriate institutional and economic strategies and arrangements.

A major new programme involving investment of $27 million - the Tropical Rivers and Coastal Knowledge Research Hub (TRaCK) - aims to provide the science and knowledge that government, communities and industries need for the sustainable use and management of Australia's tropical rivers and estuaries.

There is focus in water projects on more efficient functioning of future water resource markets taking into account Indigenous property rights in water and their communal nature. For example, in 2007 the Ti-Tree Water Resources Strategy (2002) will be amended to provide for Indigenous values, participation and rights to water.

Increased Indigenous livelihood opportunities in land and water management are expected to emerge from agreements, two-way research and management, and benefit sharing approaches (i.e. rangers, researchers, linguists, negotiators, project managers).

## Processes and protocols for equitable inclusion of Indigenous people

In relation to future opportunities for Indigenous NRM, there remain knowledge gaps that will need to be overcome to realise the opportunities. Many of these pertain to understanding and improving institutions for the engagement of Indigenous Australians in NRM. Research has found that in the early stages of implementing whole-of-government institutions and processes, the initial preoccupation has been with developing working arrangements and partnerships between governments. Development of processes and protocols for equitable inclusion of Indigenous people in these arrangements is now following, albeit slowly and requiring further research and evaluation of practices.

## Improved inter-sectoral collaboration

According to Hooper-Briar and Lawson (1994), there is little evidence that inter-sectoral collaboration improves outcomes for individuals, families or communities. A difficulty in demonstrating outcomes is that many of the desired outcomes of these collaborations are complex and change occurs over a long period. It is important to keep a historical perspective, remembering how long the problem or issue has existed.

Hooper-Briar and Lawson argued that there are also problems in the way that these approaches are usually evaluated as the emphasis or measurement tends to be on outcomes rather than processes.

By contrast, the literature that is reviewed here is clear that Indigenous engagement and cross-cultural NRM will only be effective if driven by processes that value different perspectives and capabilities. Therefore, evaluation methodologies need to recognise that small successes and changes in process indicators are important such as successful collaborations and the evolution of stable working relationships.

## Rigorous evaluation of case studies

A research effort is required to provide rigorous evaluation of case studies and analysis of the barriers to, or factors that contributed to the success of inter-sectoral projects. Such evaluation could inform current and future efforts to address complex multi-sectoral problems. In particular, this type of effort is needed, in remote areas where diseconomies of scale and a cross-cultural setting provide specific challenges and opportunities.

Important questions to address in evaluation include:

- How is power institutionalised in current policy and program models and how could it be more fairly balanced

- How can the complex institutional arrangements for diversified enterprise development be simplified?

- What are the capacity gaps in each sector/partner group for diversified enterprise cultural 'markets' development and increased Indigenous income/employment opportunities?

- In what ways could institutions be restructured to represent NRM more holistically to make them more accessible and appropriate for Indigenous stakeholders and what are the constraints to change?

- What are appropriate livelihoods for indigenous economic development?

Evaluation is instructive to monitor progress toward goals and knowledge also needs to be generated to inform new policies. Good research can provide an evidence base for policy and can estimate and recommend mitigation strategies for negative impacts that new policies could potentially generate. This report identified the following research questions to inform future directions:

- How will changes brought about by the National Water Initiative impact upon Indigenous incomes, quality of life and welfare?

- What is the value of rivers to the major industries in the Tropical Rivers region?

- What are efficient water pricing systems and what actual resources are required for non-market allocative systems in water management?

- What is the extent, quality and environmental role of ground and surface waters in the Tropical Rivers region to ensure allocations are available to protect environmental and cultural flows and will environmental and Indigenous cultural values complement and/or compete with each other?

- Investigation of prospects for new (efficient) infrastructure investments and enterprises.

- How much exploitation of wild resources by Indigenous communities is actually occurring and are there issues of depletion as a result of Indigenous harvesting of wild resources?

- What are the opportunities for increased exploitation of wild resources, Indigenous employment and income?

- To what extent do Indigenous communities aspire to undertake commercial exploitation to enhance livelihoods and does this vary across regions?

- What value do Australians place on having Indigenous people or pastoral families living in remote desert regions or on having the natural and cultural resources of those regions well maintained?

Much has been learned and key principles have been documented and in many areas are being applied. There is still, however, some further research needed to strengthen this area of NRM and the issue of ongoing implementation through institutional arrangements is critical.

## Indigenous aspirations, equitable shares of benefits and intellectual property

Some further research questions are identified in these three areas.

Firstly, Moran (2005) recognised that through research into Indigenous aspirations, with the best intentions, researchers often generate wish lists that are unrealistic and create false expectations and loss of trust. So the key questions are:

- What are appropriate research approaches for understanding the aspirations of Indigenous stakeholders while avoiding these pitfalls?

- How to find the balance between effective engagement and the raising of unrealistic expectations?

Secondly, research in Indigenous NRM is resource intensive and relationships take a long time to establish. This can lead to large research investment in particular areas where relationships have been built and can result in substantial capacity development in those communities. There would be merit in ascertaining ways to ensure an equitable share of these benefits from research across regions and communities.

Thirdly, intellectual property (IP) remains an important issue in Indigenous NRM. There is a need for local people to be using their knowledge confidently to support their own development and to lead them into a sustainable economy. Several questions remain to be addressed:

- How do Indigenous people at the local level identify IP and how do they see IP applying to their interests?

- Is there a 'best way' to protect Indigenous IP?

- What work is required for Australian laws/agreements/protocols to reflect international standards?

- How can Indigenous IP and economic rights and interests be adequately protected in the context of research for commercial purposes?

Cross-cultural NRM research is resource intensive. In particular, there is an expensive investment of time in establishing relationships and trust that can lead to appropriate cross-cultural co-research and co-management in NRM. Therefore, it is imperative that we look to continue work that has commenced and focus on building on past research efforts. Importantly we must continue to reflect on analyses of broader outcomes through valuable cross-cutting exercises such as this.

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# Appendix 1
## Land & Water Australia's Indigenous Projects (since 2000)

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Investigation of a conservation economy model for Indigenous northern Australia (ACF 1), 2006-2007** <br> **Project leader: Rosemary Hill CSIRO/ACF** | | | |
| LWA, ACF, Australian Tropical Forest Institute, Kimberley Land Council, Balkanu Cape York Corporation, Gundjeihmi Aboriginal Corporation, Arnold Bloch Leibler, The Poola Foundation (Tom Kantor Fund); The Wilderness Society, The Christensen Fund, Bendigo Bank. <br><br> **Consultants**: NAILSMA, CAEPR, Community Sector Innovation. | Across north Australia | Examination of the opportunities and limitations within the current Australian institutional settings that would affect the application of the principles and components of Eco-trust Canada's model. | Shift to a cross-cultural model of sustainable community. <br><br> Economies that support vibrant communities and recognise Aboriginal rights and title. |
| **Sustainable northern landscapes and the nexus with Indigenous health, ( NTU 7), 2003–07** <br> **Project Leader: David Bowman CDU** | | | |
| LWA, NTU | Arnhemland, Greater Darwin region, Gulf of Carpentaria and Kimberley regions. | Information and evidence to inform health and land-use policy so it more overtly recognises the link between landscape management and Indigenous health. | Evidence that there is a demonstrable link between continued NRM and biodiversity preservation; and the significant association between participation in NRM and indicators of health and wellbeing. |
| **An agreement based approach to customary law governance in water resource management, (NTU 23), 2006–08** <br> **Project leader: Donna Craig CDU** | | | |
| LWA, CDU, Anmatyerr Community Government Council, Macquarie University, NT Parks and Wildlife. | Daly River region, Fitzroy River region, Southern Gulf region. | Anna's Reservoir, Anmatyerr region NT. | Inform governments on appropriate governance arrangements to assist them in achieving the goals and rights specified in water, environment and Indigenous policy. <br><br> A coherent approach for using contractual agreements for customary law governance in water management. |

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Valuing and managing the ecosystem services of tropical river systems, (CSE 43), 2006–09**<br>**Project Leader: Anna Straton CSIRO** | | | |
| LWA, CSIRO | Daly River region, Fitzroy River region, Southern Gulf region. | Knowledge of institutions guiding and governing relevant activities and how these impede or enhance ability to realise the value of tropical river ecosystem services. | Improved management options for maintaining ecosystem services' abilities to support human values and activities.<br><br>A framework for integrating non-market values into tropical river decision-support systems. |
| **Development of Indigenous knowledge capacity across north Australia, (TRC 3), 2003–07**<br>**Project leader: Joe Morrison NAILSMA** | | | |
| LWA, NAILSMA, TSCRC Balkanu Cape York Development Corporation and the Kimberley Land Council/Kimberley Language Centre | Across North Australia | Indigenous knowledge and culture maintained.<br><br>Indigenous people having greater capacity to contribute to and drive the NRM agenda. | Traditional owners with increased capacity and resources to be in a position to drive broader NRM development so it appropriately incorporates Indigenous knowledge and greater recognition of the value and significance of Indigenous knowledge for NRM. |
| **The regulation of Indigenous rights through environmental legislation , (ANU 39), 2004–08**<br>**Project leader: Jessica Weir ANU (PhD)** | | | |
| LWA, ANU | Lower Murray and Darling Rivers -Lake Boga and Tumut | Revealed Indigenous peoples' experiences of ecological change along the Murray and analysed how they wish to participate in current water management approaches.<br><br>Highlights arguments the traditional owners make about the relationship between ecological restoration and economic wellbeing, including the concept of a "cultural economy".<br><br>MLDRIN is a grassroots example of how traditional owners have developed a form of representation that can engage with NRM bureaucracies at a broader scale, beyond the Nation group.<br><br>For longer-term sustainability of NRM policy agreements with traditional owners, those agreements need to be accountable to the governance structures and processes that the traditional owners respect - organised and effective representation which can operate at a broader scale, and is still responsible to the governance structures of the Nation groups. | An understanding and respect for the life sustaining flows of river water for all people.<br><br>An understanding of the particular water issues facing traditional owners, and the initiatives they have undertaken to address these issues.<br><br>A valuable model for other Indigenous peoples and governments to consider as a way of overcoming the inherently complex process of engagement between Indigenous and state governance structures. |

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Recognition of Indigenous values and rights in water management procedures, (NTU 18) 2004–08**<br>**Project leader: Naomi Rea CDU** | | | |
| LWA, the Anmatyerr Community, the Anmatjere Community Government Council NRETA, Charles Darwin and Macquarie Universities, Central Land Council and DK-CRC. | Anmatyere and Ti Tree Regions of Central Australia. | A model for recognizing Indigenous values and rights to water in NRM process and structure through acknowledging customary law within Australia's Water Resource Management frameworks.<br><br>Implications for managing Australia's freshwater resources, sustainable livelihoods, Indigenous enterprises and community development.<br><br>Inform IWRM in the NT by demonstrating ways in which water allocation plans or water resource strategies can accommodate Indigenous interests, participation and laws. | Anmatyerr rights to water and values provided for in NT water management planning and institutions as a model both for Indigenous Australians and for Integrated Water Resource Management.<br><br>Ti-Tree Water Resource s Strategy (2002) by 2007 will be amended to provide for Indigenous values, participation and rights to water. |
| **Institutional change enabling kangaroo harvest to promote sustainable rangeland landscapes, (UAD 17), 2004–07**<br>**Project Leader: Dana Thomsen Uni Adelaide (PhD)** | | | |
| South Australia | LWA, University of Adelaide, RIRDC, AIATSIS | Aboriginal people are willing to talk about kangaroo management and there is a desire to be involved in decision making processes. This willingness provides government and industry decision makers with an opportunity to involve Aboriginal people in kangaroo management in a meaningful and positive way. | Improved extension services and institutions enable adoption of commercial kangaroo harvesting as a strategy for sustainable production in the rangelands.<br><br>Landholders with potential to derive income from the sustainable use of wildlife. |

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **East Kimberley pastoral and cultural project, (TRC 2), 2004–07** **Project leader: Paul Novelly DAWA** | | | |
| LWA, TSCRC, ILC, DAFWA, KLC | East Kimberley –Bow River & Violet Valley Stations. | Substantial differences in jurisdictional arrangements for NRM across the tropical savannah regions would make it highly unlikely that a single policy for managing an integrated approach to NRM could be effective.  Personal relationships between government officers and clients in the context of Indigenous-non-Indigenous interactions and organizations may influence access to a program as much as the official program or departmental guidelines. The commitment and length of a key individual from government to a community can be linked to that community's capacity for NRM management.  The CDEP scheme is an integral part of several land management strategies such as CFC & ranger programs. Current modifications to the scheme appear to threaten its potential to support such programs. | Improved management strategies for fire, grazing, weeds etc with Indigenous people managing more economically viable pastoral properties driven by Indigenous people.  Fire management plan provides a model for institutional and mainstream administrative change. |
| **Fire management in northern Australia: integrating ecological, economic and social outcomes, (TRC 6), 2006–07** **Project Leader: Jeremy Russell-Smith TSCRC** | | | |
| Cape York Peninsula, Arnhem Land, Victoria River District , Kimberley, and NT-QLD cross-border Gulf fire management project. | LWA, TSCRC, Australian Greenhouse Office, Gulf of Carpentaria Cross-border fire management, Qld- Southern Gulf Catchments & Queensland Rural Fires, NT - NHT component , Northern Territory NHT (Greenhouse emissions from savanna fires), National Disaster Mitigation Program, Northern Territory NHT – Cross sectoral fire management projects, WA NHT – Kimberley Region Fire Management Project. | Policy environment encouraging further private sector investment in fire management and "offset" activities, particularly in relation to greenhouse emissions. | Aboriginal and pastoral land owners more actively engaged in implementing cost-effective fire management on their land, funded by a mix of private and public sector sources. |

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| 'Developing institutional arrangements for Indigenous participation in the NWI, (TRC 13), 2006–07 Project Leader: Joe Morrison NAILSMA | | | |
| LWA, TSCRC (NAILSMA), CAEPR, CSIRO Ord region | Fitzroy valley of the Kimberley | Mechanisms to enhance the participation of Indigenous people in multi-stakeholder and collaborative water management structures and processes, including methods to evaluate and bench-mark Indigenous participation.<br><br>Advise the Tropical Rivers Consortium currently under development.<br><br>Increased knowledge within the Indigenous and water policy communities about the NWI, and a heightened awareness and ability to respond to the opportunities and challenges raised by different options. | Improved basis for water management in northern Australian rivers by building the capacity of north Australian Indigenous organisations and communities. |
| TRaCK: Tropical Rivers and Coastal Knowledge Research Hub (a major $27m programme), 2006–10 Project leader: Michael Douglas | | | |

# Appendix 2

## Land & Water Australia's Indigenous Projects (since 2000), completed projects

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Indigenous kinship with Country: intercultural values of natural resource management, (ANU 37) 2002–05** <br> **Project leader: Diana James ANU** | | | |
| Indigenous kinship with Country: intercultural values of natural resource management, (ANU 37) | Anangu Pitjantjatjara Lands of Central Australia | All Indigenous lands projects funded through DITR, LWA and other government agencies should consider the cultural and ontological (philosophy of life/nature) aspects of the project to be assessed concurrently or prior to the economic, environmental and social impact assessment of viability and long term sustainability of the project. | Sustainable livelihoods in tourism and the arts for remote Anangu homeland communities living on their Country. <br><br> Best practice cross-cultural business planning model that incorporates traditional and modern criteria for economic viability and sustainability and protects cultural and ecological diversity. <br><br> Cross-cultural translation schema that can be applied to business management models and ethics of intellectual copyright for a burgeoning Indigenous tourism and arts. |
| **Participatory rural appraisal and planning: innovative methods of working with Aboriginal land managers, (CLN 1), 1996–2000** <br> **Project Leader: Paul Mitchell & Fiona Walsh CLC** | | | |
| LWA, CLC, NHT, ILC | Southern areas of the NT | Planning framework for property management in Indigenous lands. | Better ways of working with Aboriginal land managers to assess resources and plan the use of their land. |
| **Co-understanding of place, people and water in central Australia, (ANU 42)** <br> **Project leader: Libby Robin ANU** | | | |
| LWA, ANU, artists from the Ikuntji Arts Centre, the traditional owners of the country around Puritjarra | Cleland Hills, Northern Territory | Landscapes need to be understood from a range of perspectives. Better methods for understanding landscapes involve integrating perspectives and ways of knowing Country. | Understanding landscapes by integrating perspectives and ways of knowing Country. |

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Addressing Indigenous cultural requirements in water allocation planning, (CSE 26), 2004–06**<br>**Project Leader: Sue Jackson CSIRO** | | | |
| LWA, CSIRO, NHT, NLC, NTRETA, ARG. | Daly River region | Critique of current water resource management institutions and the way in which they address Indigenous values in the Daly River region.<br><br>Research informed NT Government policy now explicitly acknowledges Indigenous interests in water (e.g. NHT Regional Plan).<br><br>Robust, practical and acceptable mechanisms still need to be developed to involve Aboriginal people in water management and monitoring the outcomes. | |
| **Biodiversity and cultural significance of fishes in King Edward River ( UMU 22), 2002–05**<br>**Project leader: David Morgan** | | | |
| LWA, Murdoch University, Kimberley Language Resource Centre. | 42 sites on the King Edward River and Carson River and their tributaries. | The collection and storage of data (and its intellectual property) must be carefully managed. | Incorporating traditional Indigenous knowledge into NRM education systems. |
| **Indigenous interests in tropical rivers: research and management issues scoping study, (TRC 4), 2003–05**<br>**Project Leader: Sue Jackson (CSIRO/NAILSMA)** | | | |
| LWA, NAILSMA, CSIRO | Kowanyama, Daly River, Ord River, Fitzroy River. | Bureaucratic requirements and the lack of recurrent core funding constrain the Indigenous sector in its efforts to respond to environmental problems and meet the social and cultural responsibilities of Indigenous community members.<br><br>More effective resource governance arrangements, management models and engagement methodologies are needed -in particular, research with an action research orientation that seeks to work directly with communities in identifying problems and addressing information and knowledge needs. | Increased benefit to Indigenous Australians from direct Indigenous stakeholder input to the research agenda from the outset of the Rivers Program in terms of the key river management and research issues of concern to Indigenous people in the tropical rivers program area. |

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Assessment of social and economic values of Australia's tropical rivers, (CSE 29), 2004–06** <br> **Project Leader: Dan Walker CSIRO** | | | |
| LWA, CSIRO, JCU | NT, QLD, WA with focus groups in Katherine, Derby and Mt Isa. | The policy, legal and administrative frameworks associated with the NWI remain extremely complex and few people understand the way in which this complex set of rules plays out. <br><br> Basic levels of water quantity and water quality need to be vigilantly protected – not just on the surface but also underground because scarcity has the potential to intensify the external effects that one person's activities has upon others. <br><br> In these basins, 'values' are almost exclusively non-market in nature, which poses some interesting management challenges in a policy environment that places much emphasis on 'market' solutions (since these systems typically work best when there are many participants). <br><br> In the Tropical Rivers region, it may be necessary to set aside 'water' and/or set water quality regulations that protect and/or give voice to the various values as pressures on Australia's water resources mean that it is important to look at both supply-side, and demand management solutions. <br><br> Management resources required for non-market allocative systems are typically large by comparison with those required for market systems. <br><br> The challenge for policy is to determine how best to combine market and non-market approaches so as to get the best overall result and one size is unlikely o fit all regions. Ddifferent policy combinations may be needed. | Improved knowledge of socio-economic demographics in Northern Rivers regions of northern Australia. |

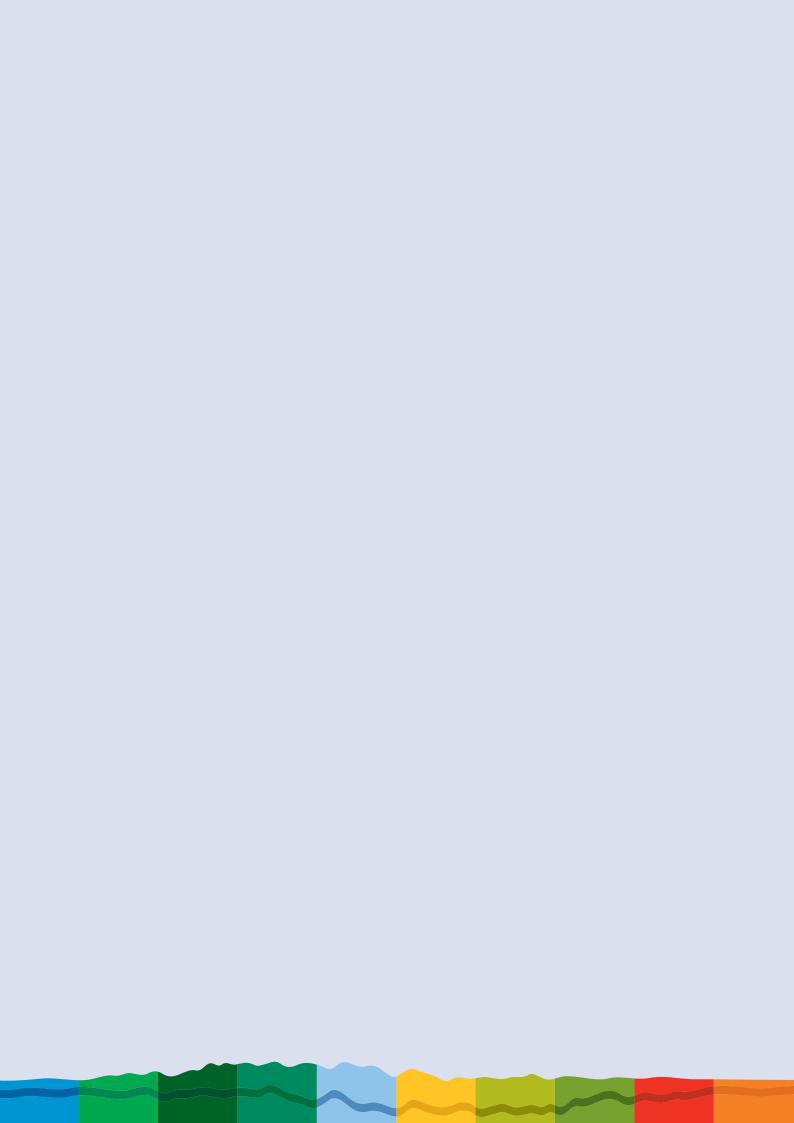| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Planning for country (KLC2), 2000–02** **Project Leader: Kimberley Land Council Kylie Pursche** | | | |
| LWA, KLC | Miriuwung-Gagerrong and Balangarra people in the lower Ord, in the East Kimberley | Engaging Indigenous people in NRM and land management decision-making processes and engaging institutional bureaucracies in indigenous decision-making processes is fundamental to developing any economic opportunities for Aboriginal people. | Building the capacity of people and institutions to involve Aboriginal people in planning processes. |
| **Plants and animals of Kija, Jaru country (KLC.3), 2000–02** **Project leader: Kimberly Land Council, Kylie Pursche** | | | |
| LWA, KLC | Kija and Jaru country in the East Kimberley. | Western science is not necessarily relevant to Aboriginal land managers and is often not adequate in describing the interconnectedness of Indigenous landscape knowledge. | Compile traditional ecological knowledge in culturally appropriate ways to provide baseline information to allow Aboriginal people to contribute knowledge to NRM processes. |
| **Data Management, GIS and cultural mapping with Kija and Jaru people in the upper Ord catchment, (KLC.4), 2000–02** **Project Leader: Kimberley Land Council Kylie Pursche** | | | |
| LWA, KLC | Kija and Jaru country in the East Kimberley. | Western science is not necessarily relevant to Aboriginal land managers and is often not adequate in describing the interconnectedness of Indigenous landscape knowledge. | Compile traditional ecological knowledge in culturally appropriate ways to provide baseline information to allow Aboriginal people to contribute knowledge to NRM processes. |
| **Capacity building and 2-way learning for Kija, Miriuwung-Gagerrong and Balangarra people in the lower Ord catchment, (KLC.5) 2000–02** **Project Leader: Kimberley Land Council Kylie Pursche** | | | |
| LWA, KLC | Kija, Miriuwung-Gagerrong and Balangarra people in the lower Ord catchment in the East Kimberley. | Two-way learning helps to overcome institutional barriers to Indigenous involvement. The employment of local people by agencies via this project has paved the way for this as being the accepted norm for agencies in the East Kimberley (Aboriginal people employed within 2 local Govt NRM agencies as a result). | To enhance the capacity and opportunities for Aboriginal people to be meaningfully involved and employed in NRM arenas. |

| Partners | Study site/s | Policy implications | Proposed outcomes (proposed change as a result of this project) |
|---|---|---|---|
| **Fish passage along the Fitzroy River, ( KLC.7), 2000–02** <br> **Project leader: David Morgan, Jean Fenton** | | | |
| LWA | Camballin barrage Fitzroy River | Inform debate about the impact of artificial structures in tropical rivers (weirs, dams etc) and could contribute to discussion about water resource management of the Fitzroy (or other rivers). | Agreement across affected communities regarding river flow and sharing of benefits and the incorporation of this into mainstream NRM strategies. |

# The Engagement of Indigenous Australians in Natural Resource Management:

## Key Findings and Outcomes from Land & Water Australia and the Broader Literature