Australian Government
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knowledge for managing Australian landscapes

Kantri is for Laif
(Country is for Life)

A Strategy for the Promotion of Indigenous Knowledge and the Development of Indigenous Livelihoods on the Remote north Australian Indigenous Estate. A Land & Water Australia, CRC-TSM and NAILSMA Project Initiative

Published by	Land & Water Australia
Product Code	PN30198
Postal address	GPO Box 2182, Canberra ACT 2601
Office location	Level 1, The Phoenix 86 Northbourne Avenue, Braddon ACT 2612
Telephone	02 6263 6000
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Kantri is for Laif

(Country is for Life)

Na-ja narnu-yuwa narnu-walkurra
barra, wirrimalaru, barni-wardimantha,
Barni-ngalngandaya, nakari wabarrangu
li-wankala,
li-ngambalanga kuku,
li-ngambalanga murimuri,
li-ngambalanga ngabuji,
li-ngambalanga kardirdi
kalu-kanthaninya na-ja narnu-yuwa,
jiwini awarala, anthaa yurrngumantha barra.
Nyirra-nyngkarriya! Nyirru-linginmaya!
Yurrngumantha. Barni-ndaya winarrku!

This Law is important, it is powerful, don't break it, don't be ignorant of it, it is from the past, from the old people, our mothers' mothers' brothers, our fathers' fathers, our fathers' mothers and our mothers' brothers, they carried this Law, this Law is in the country and the sea for all time. Listen to it! Remember it! It is for all time. Do not leave it behind as some kind of rubbish.

(Dinah Norman Marrngawi and Annie Karrakayn in Bradley et al 2005:43).

Report Prepared by NAILSMA

for

Land and Water Australia

31 March 2007

Acknowledgements and Citation Information

Indigenous people living in northern Australia have identified a need to educate government and non-government agencies as to the value of Indigenous Knowledge and the many threats to that knowledge base they confront on an everyday basis. Their concerns have informed this research from start to finish and they have clearly indicated that while it is important to identify issues it is more important to offer solutions.

Many organisations have also contributed to this process. Land and Water Australia (LWA) has provided substantial project funding for research, publication and promotion, while the Cooperative Research Centre for Tropical Savannas Management (CRC-TSM) has supplied administrative and other logistical support. The Christensen Fund (TCF) has also assisted financially toward the conduct of On Country Forums.

The North Australian Indigenous Land and Sea Management Alliance (NAILSMA) has undertaken research and consultation as well as the authorship of this and other related documents. Without the support and access to networks provided by each of the alliance partners (see Logos below) this undertaking would not have been possible. Just as significantly, while any errors or misrepresentations in this text remain the responsibility of the author, any successful outcomes must be attributed to the advice and guidance of Traditional Owners too numerous to mention individually here. Thanks must also go to NAILSMA staff for their support and feedback.

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Graphic Design and Artwork

Special thanks to Leigh Harris at Ingeous Studios who has laboured under difficult circumstances to produce an outstanding 'look' and has also provided invaluable advice in regards to the structure and content of the Report and accompanying Strategy.

Artwork by Leigh Brothers, Darwin, N.T.

Citation

Johnson, S. (2007) *Kantri is for Laif: a Strategy for the Promotion of Indigenous Knowledge and the Development of Indigenous Livelihoods on the Remote north Australian Indigenous Estate.* A LWA, CRC-TSM and NAILSMA Project Initiative

Referencing

References cited throughout this document, unless otherwise identified in the text, may be found in Appendix A – *Literature Review* and *Annotated Bibliography* – of this Report.

Project Terms of Reference

Support and funding for this project has come primarily from Land and Water Australia (LWA) and the Cooperative Research Centre for Tropical Savannas Management (CRC-TSM). Research, consultation and authorship of the Strategy and other related documents were undertaken by the North Australian Indigenous Land and Sea Management Alliance (NAILSMA). The overall project objective was to devise and document 'a strategy for the conservation and application of Indigenous Knowledge across northern Australia'. However, while this investment represents an acknowledgement of the valuable contribution IK makes to natural resource management (NRM), the character of that contribution is still poorly understood. For this and many other reasons, Aboriginal involvement and input into decision-making processes has been sadly lacking to date. The current project grew out of these concerns with contributing factors broken down as follows:

- Minimal Indigenous inclusion in NRM planning and decision making processes;
- Limited or ineffectual consultation with interested Indigenous groups;
- Limited understanding of IK and Indigenous terms of reference (ITR);
- The undervaluation of IK contributions to effective land and sea management;
- A lack of coordinated effort to provide long term and appropriate investment in IK;
- A failure to meet documented commitments to IK support;
- The rapid loss of language and knowledge across northern Australia;
- A lack of appropriate data storage models and adequate IP protection measures;

In summary this research project seeks strategic solutions to these issues through:

- Documenting the priority needs and aspirations of traditional owners for IK;
- Enquiring into general support needs for IK informed on country activities;
- Identifying impediments to engagement of IK in wider NRM planning and process;
- A review and assessment of other Australian and International models;
- A review of data base technology and IP protection;
- Developing a strategy for the conservation and application of IK;
- Disseminating research findings across a wide range of sectoral groups;
- The design of an effective communication strategy for IK promotion and investment;

The Indigenous Knowledge project is innovative in many respects. In the first instance, it represents a substantial investment in IK on the part of Land and Water Australia (LWA. In the second, project terms of reference clearly identify the need for an Indigenous designed and driven enquiry with a specific IK focus. These innovations demonstrate a concerted effort on behalf of LWA to understand Indigenous Knowledge in Indigenous terms and thus engage effectively with traditional owners and the knowledge they possess. This approach is, in itself, a validation of Aboriginal land and sea management principles and practices as they are applied across northern Australia. Such investment is timely given immediate threats to the integrity and continuity of IK in contemporary contexts. This initiative represents the first time that a coordinated and strategic attempt to provide appropriate support for IK has been undertaken.

However, in line with the project objectives outlined above, the Strategy does not seek to define or document Indigenous Knowledge itself. Instead, the intention is to articulate the interests and aspirations of traditional owners, as they express them, with those of the wider NRM community. Accordingly, the issues identified and solutions provided in this document have come from Aboriginal people themselves, although on numerous occasions this process has been undertaken in close consultation and negotiation with other interested parties.

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1 INTRODUCTION

1.1 What is Indigenous Knowledge?

Prevailing nineteenth and early twentieth century 'wisdom' cast Indigenous Australians as the 'original primitives'. These 'Aborigines' (largely a figment of the European imagination) were seen to have lived and died at the whim of environmental circumstance and cause. They were perceived to have led simple lives, exerted little control over their natural surrounds and deployed only rudimentary technology in the pursuit of a uniform, hunter-gatherer lifestyle. In spite of a wealth of first hand experience to the contrary, this view persisted well into the twentieth century, and is still prevalent in certain quarters today.

Any rational assessment would dismiss this 'wisdom' for what it was and is – historical fiction borne of ignorance and expedience. Every other day, evidence emerges (past and present) of the sophisticated and successful way in which Indigenous natural and cultural concerns coalesce to produce sustainable environmental interactions and outcomes. Consequently, most non-Indigenous commentators now concede that Aboriginal people did not dwell in a wilderness but lived in a carefully cultivated cultural landscape. Far from being at the whim of natural circumstance and cause, they had consciously carved out a sustainable ecological niche that, in terms of success over time, eclipses that of an industrial or even agrarian social order. Not surprisingly, the knowledge accumulated over this period is vast and still plays an indispensable role in the management of cultural and natural resources (CNRM) across the Indigenous estate, particularly, although not exclusively, in northern Australia.

This vital function is increasingly acknowledged. However, Indigenous Knowledge (IK) itself is still poorly understood and frequently subject to the prevailing logic of mainstream NRM. In these instances, IK often appears as little more than an afterthought or convenient accompaniment to more widely accepted land and sea management principles and practices. Indigenous interests are considered peripheral – with Indigenous participants providing little more than labour and access to country – and thus project successes are limited. The contrast in values that gives rise to this process – which Rose terms the '…monologue of NRM…' – is captured in the following quote:

> *In contemporary natural resource management the concept of the 'ecological footprint' is an 'accounting tool for ecological resources'. It is a way of measuring the amount of resources that a nation or other unit is consuming (Wackernagel and Rees). In Daly's world* [Traditional Owner] *the footprints or tracks of the ancestors are visible as quiet country. His ancestral footprint is a signature of ecological coherence, human care, and mutual life giving, whereas NRM's ecological footprint is a quantifiable measure of impact* [and] *in many co-management contexts the monologue of NRM tends to dominate both practice and epistemology, framing the questions as well as the answers.*
>
> (Rose 2005: 177).

From one perspective, this 'monologue' describes historical continuity. While the weight of evidence may have overthrown notions of primitivism, the value of Indigenous environmental contributions is still subject to assessment according to an imposed and arbitrary set of values which more often than not, assume superordinate status. These values, which colour the complexion of mainstream NRM thinking, place a singular emphasis on the biophysical aspects of sustainable resource use. Consequently, 'tangible' outcomes are judged with sole reference to a material measurement, in much the same way that Indigenous people were adjudged primitive due to their apparent lack of technological, that is material, accomplishment. The end result of this quantitative analysis is often little more than an inventory of what has been lost, in terms of

species, habitat and overall ecosystems viability. Far less is revealed about what this might mean for future human habitation and environmental interaction. In many instances, it is this reductive tendency more than any other that forms the main impediment to appropriate support provision for IK conservation and application. As the following quote reveals, Traditional Owners seldom subscribe to such narrow definitions:

> *Our songs, our law, our sacred art, our stories are embedded in the land, which is the foundation of our knowledge* (Excerpt from *Dhimurru* Vision Statement).

These comments make it clear that for many Aboriginal people, knowledge is inextricably linked to land and sea and woven into the fabric of everyday social, environmental and economic life. It follows then, that without a qualitative understanding of this connection with country, it is impossible to adequately articulate the interests and aspirations of Traditional Owners, or to effectively evaluate the contributions and benefits of IK. If the tendencies highlighted above are to be overcome, and IK is not to be reduced to singular conformity with mainstream NRM, this minimal level of understanding is essential. Indeed, the recognition and validation of IK in these terms, often determines the level of community interest and participation in IK support projects and programmes.

For these reasons, Section 3 of this document is given over to an examination of the more 'hidden' dimensions to IK. This enquiry reveals that IK contributes positively to every facet of Indigenous life as well as delivering benefits and services to the wider public and in the national interest. These arguments in turn, highlight innovative, strategic pathways towards enhancing existing and future investments in IK support. However, a number of impediments remain and these are discussed in some detail in Section 4. The evidence and argument presented in both Sections 3 and 4, provides a necessary background to the solutions recommended in Section 5.

For Land and Water Australia (LWA), the current research approach is considered critical if the aspirational targets highlighted in the Project Terms of Reference, are to be met. Similarly, if the corporation is to achieve stated objectives to convert 'knowledge into practice' and deploy that knowledge toward 'sustainable natural resource management' (LWA *Knowledge and Adoption* 2005:2-4) ongoing Aboriginal interest and participation is crucial to success, at least in respect to the Indigenous estate. In these terms, and in line with the documented aspirations of traditional owners across northern Australia, the current strategy has been written with a view to an innovative post research phase, where long-term investment in IK is secured in balance with demonstrated benefits across a wide sectoral range.

In these and many other respects, it seems that history has come full circle. Interest in IK is now growing in direct correlation with increasing environmental concern. In a little over two hundred years, European settlement has left an indelible 'ecological footprint' on the Australian landscape, the impact of which has led many commentators to speak of an impending crisis. Whether this is overstating the case or not, the evidence of widespread environmental degradation is irrefutable, with the consequences now keenly felt in urban, rural and remote settings around the continent. In contrast, Indigenous environmental interactions have enjoyed longer-term success. In addition, and unlike the majority of their non Indigenous contemporaries, many Aboriginal people still live on their land, as they have always done, and continue to provide environmental services that they alone are equipped to provide. From this perspective, appropriate recognition and reward for these IK informed activities appears not only timely but also immanently practical if local, national and even global environmental concerns are to be addressed.

1.2 Methods and Methodology

The overall project objective was to devise and document 'a strategy for the conservation and application of Indigenous Knowledge across northern Australia'. Research in this regard commenced in August 2004, with a series of meetings and consultations held across the region, and are ongoing. Prior to this date, the CRC-TSM part funded three *Ethnoecology* projects – in the Kimberley (W.A.) *Kabulwarnamyo* (N.T.) and *Kaanju/Buru* (QLD) (Figure 1). These three projects have provided considerable insight into the interests and aspirations of Traditional Owners across the northern Indigenous estate, and formed a starting point for further research.

The current Report is written as an accompaniment to a wider Strategy and provides more detailed evidence in support of arguments and recommendations made in the latter document. It is important to note that project authors did not to attempt to document or define IK. Instead, the focus remained on the clear identification of Indigenous aspirations and interests. These serve as a consummate expression of the principles underpinning that knowledge base.

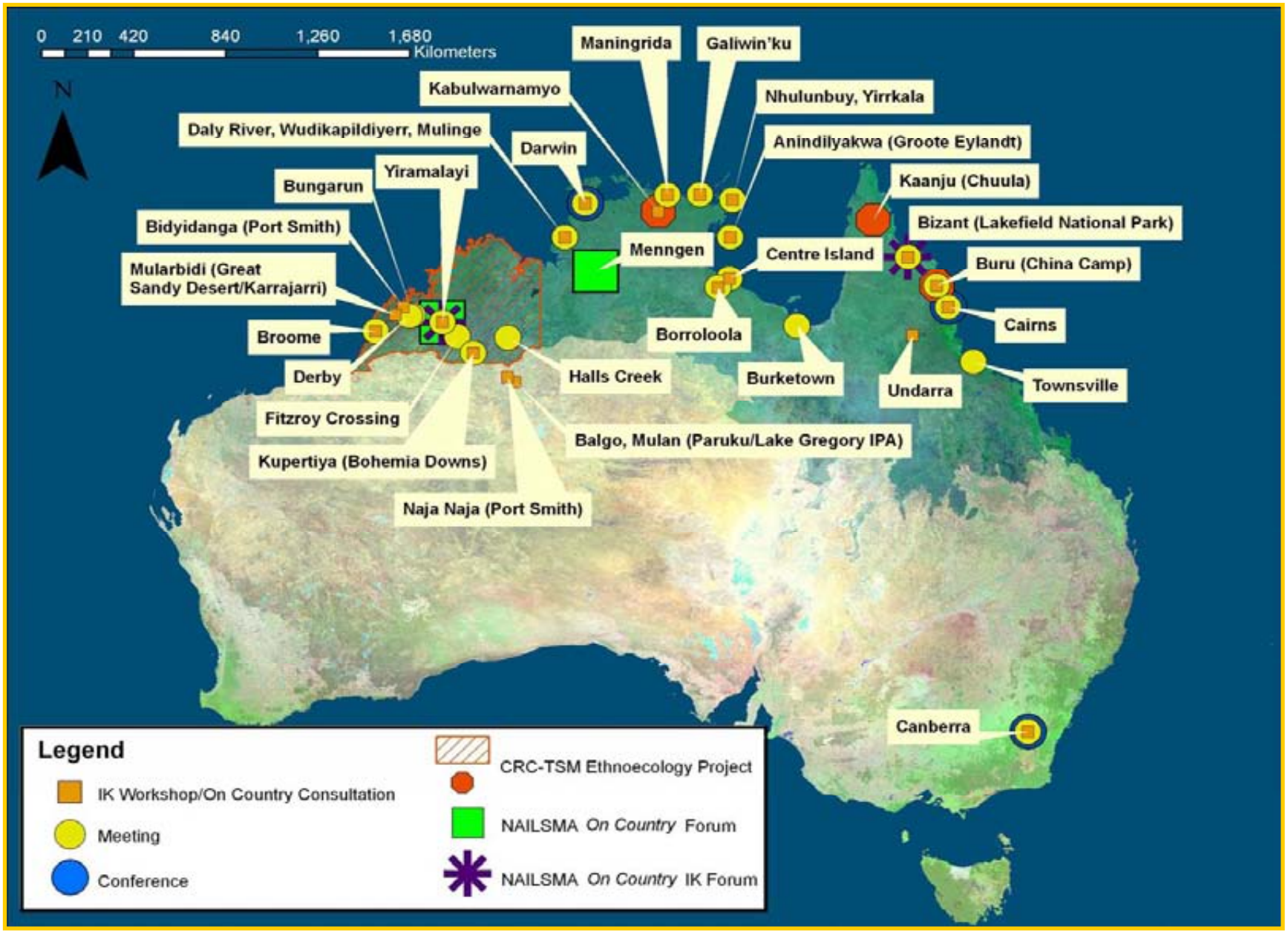
Over the course of two years, research a wide range of data has been collected and compiled in the form of field notes and audiovisual recordings compiled, in context, on country. This data consists primarily of extensive oral testimonies provided by Traditional Owners and forms the basis for arguments presented throughout this document and the accompanying Strategy. Desktop research has supplemented this testimony and focussed primarily on enterprise development, recording and data base management and issues arising around Intellectual Property protection. In these cases, considerable attention was also devoted to various international models. A comprehensive Literature Review is included as Appendix A to the current document.

Over progressive research, it became increasingly clear that IK, and the wide range of benefits it delivers, is seriously undervalued. As a consequence, Indigenous involvement in NRM planning and decision-making processes is minimal and existing investment returns are limited. It was this exclusion that gave rise to this undertaking in the first instance and an enquiry into the reasons for it, remained of principal concern over the life of the project. Once these impediments to funding and other support arrangements were better understood it was possible to devise practical solutions in close collaboration with Traditional Owners and various other interested parties.

> *I'm saying that's good…but government strategy plans…management plans, vision statements, people don't really look at it, if it's a document like that…if its just plain text…it's not gonna help people…it's not something that the TOs would follow as a guideline, they already know how to manage country…*(NAILSMA Transcript 3, 2006:33).

The above comments reveal that many Traditional Owners see little value in yet another strategy. However, there is almost universal endorsement for the promotion of Indigenous aspirations and concerns for IK and for the implementation of complementary IK support solutions. For these reasons, project authors were advised to target research at those individuals and organisations most likely to implement findings and where necessary affect change. In this sense, the Report and accompanying Strategy constitute an educative tool, alerting policy makers and others to the practical benefits to be derived from a coordinated and consistent investment in IK support. These two documents will be widely disseminated to appropriate government and non-government agencies as well as Indigenous representative bodies. In addition, a plain English summary will be made available to Traditional Owners while the Report itself contains a number of practical tools for their use.

Figure 1: *Tropical Savannas,* The Study Area and Consultation Process.



Graphic Design and Map Rendition: Belinda Oliver 2007

Due to time, capacity and other constraints, aspects of this research are incomplete but demand further investigation and investment. These extend beyond the current Project Terms of Reference but must be pursued if the Strategy is to be successfully implemented. In general terms, some of these limitations may be attributed to a lack of capacity, in and of itself, as well as in combination with the high transaction costs encountered in remote localities. This situation applies right across the tropical savannas and has been addressed within the Strategy.

In some respects, similar issues have also influenced what may be perceived as a Northern Territory centric view of the subject matter. This concern is acknowledged however, the widespread use of these case studies and models is due more to the increasingly prominent role of IK in Territory NRM planning contexts and the greater availability of data, than any research bias. In many respects, the N.T. is at the forefront of IK support planning and such initiatives provide positive insights and potential solutions to issues that are common right across northern Australia.

However, these observations do highlight a specific need to clearly identify local and cultural priorities for IK support. Work in this regard has commenced with an audit of language and knowledge status but is incomplete and requires further research (see Strategy 1, Actions a) and b) and Report Appendix E). It is also significant to note, that while this project has focussed on the Wet/Dry Tropics, delineation as such is somewhat arbitrary and many of the issues identified in this region also apply elsewhere. Therefore, where circumstances are so similar as to warrant comparison, some reference has been made to examples found outside of the immediate Study Area. Similarly, a substantial amount of the research and argument presented in this Report was drawn, where appropriate, from a recent IK Scoping Study and Support Plan commissioned by the Northern Territory NRM Board. This information has been adapted and used with the full consent of contributors to that study (see Johnson, S. 2006 for list of contributors).

From inception, Indigenous individuals and organisations have driven this process. As such the research is innovative and represents a valuable step toward facilitating the effective engagement of IK in wider NRM planning and process. However, this project represents a first step only. To effectively overcome years of neglect, misinformation and misrepresentation, this form of enquiry must be ongoing. So too, the recommendations made in this document must be considered flexible enough to adapt to inevitable changes in both physical and political landscapes.

2 BACKGROUND

2.1 History

The widespread dispossession of Aboriginal populations across northern Australia, as elsewhere on the continent, was commonplace and is well documented (Powell 1982, Reynolds 1989). Reasons for these incursions varied according to geographical context and historical circumstance. Consequently, some Indigenous groups (for example those on country better suited to pastoral enterprise) felt the impact of European settlement more keenly than others. However, no-one group escaped the effects of land loss and subsequent social disruption. In all cases, the imposition of the 'new order' seriously undermined existing Indigenous values and responsibilities with respect to both kin and country.

Arguably, this impact can be measured against the level of access to country Aboriginal populations have maintained. Where this access remains high, language, culture, knowledge and land/sea management systems and regimes have been retained to a higher degree than elsewhere. Ironically, it is often the case that in the least arable and attractive geographical regions (at least from a European perspective) language, culture and knowledge retention is at its highest. It is also important to note, that many of these areas are designated 'marginal' in NRM parlance, and it is the customary environmental services provided by Aboriginal Australians, more than any other group, that has contributed to the upkeep and management of these fragile eco zones.

No matter what the degree of dispossession, a variety of historical, social and environmental factors has restricted Indigenous access to country and has led to settlement in outstations and communities across the NT. These and numerous other factors and circumstances have contributed to the steady decline, and sometimes loss, of language and knowledge.

> *Our Story is in the land. It is written in those sacred places. My children will look after those places. That's the law*
>
> (Neidjie in Burgess 2004:9).

Against the backdrop of historical encounter, this connection with country assumes heightened significance: cultural continuity and overall social well-being are wound up in 'hands on' relationships with land and sea. The nature of these relationships must be understood, at least to some degree, if appropriate support for Indigenous Knowledge in Indigenous terms is to be provided. Only then is it possible to discern the vital role IK plays in every facet of Aboriginal existence and thus to accurately evaluate the benefits it delivers. When viewed in the context of the following statistics, which pertain primarily to remote Indigenous communities, the importance of Indigenous environmental interactions is reinforced and elevated to the level of national, even international, consequence.

2.2 Demography

Indigenous people own and occupy almost half of the north Australian landmass and, in certain areas, upwards of 85 % of the coastline. In addition, the Aboriginal population across the region is rapidly growing and increasingly young. Some estimates suggest that by 2020 almost half the population in the north will identify as Indigenous with a significant proportion of this number living in remote communities. These young people will inherit caring for country responsibilities across a vast estate. At the same time the number of Indigenous teachers is in serious decline due to high morbidity and reduced life expectancy rates. These statistics alone define an indispensable role for Aboriginal people in the management of the region's natural resources, both in the present

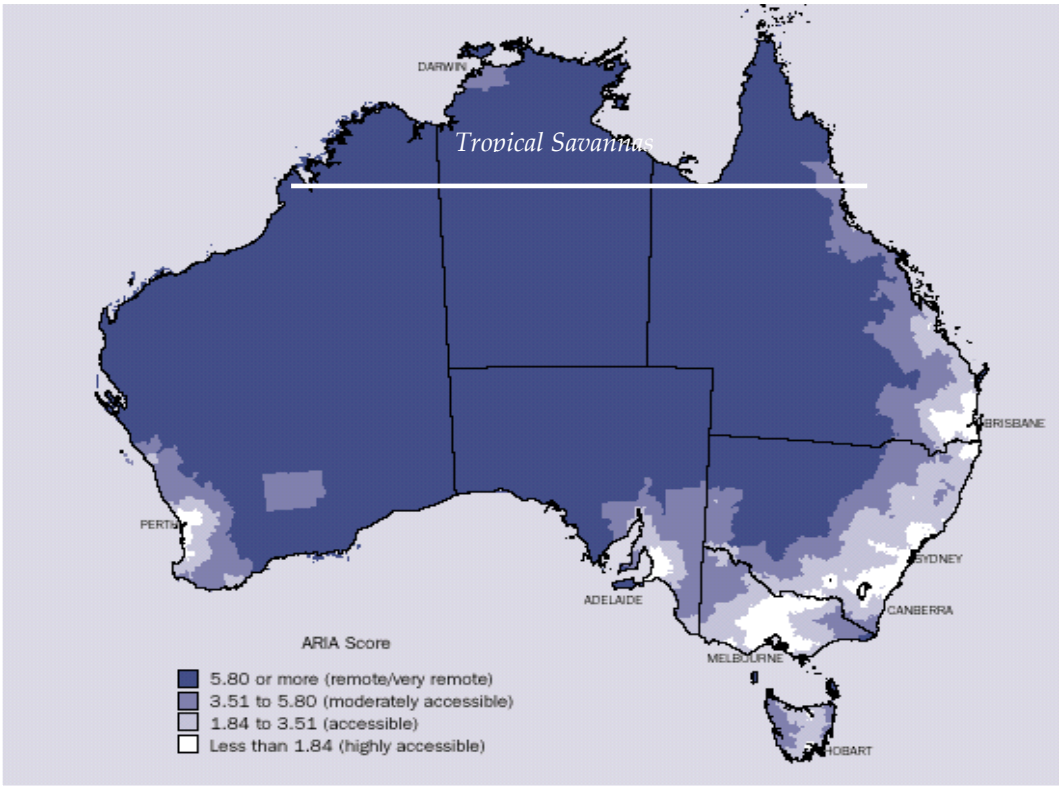
and into the future. They also identify a clear and immediate threat to the intergenerational transfer of IK and thus to the maintenance of cultural and natural values in the region.

> *Indigenous Knowledge is integral to Natural Resource Management*
> (NHT 2004:1)

These and other figures are repeatedly cited in arguing a critical case for IK support. In addition, and as the above quote suggests, most commentators concede that traditional owners play an indispensable role in the sustainable management of natural resources across the wet/dry tropics. Indeed, governments at local and federal levels, are signatory to a number of documents that acknowledge the value of IK and Indigenous contributions, and pledge support to ensure that this knowledge is conserved and these customary activities continue. Unfortunately, while commitments have been made, action has not matched rhetoric, and it has proved difficult to secure ongoing and appropriate support.

This lack of consistent support is difficult to understand when viewed in light of the above and following demographic detail. The Australian Bureau of Statistics (2003) identifies 1,139 remote Indigenous communities around Australia. Of these remote communities, 55% are located in the Northern Territory, 24% in Western Australia and 12% in Queensland. In total these figures demonstrate that 91% of all Aboriginal communities in Australia are located in Western Australia, Queensland or the Northern Territory, with the vast majority of these found in the wet/dry tropics or tropical savannas, that is the study area. This region encompasses all parts of Australia north of an approximate line extending from Broome (17.58 Lat. S) in the west to Tully (17.55 Lat. S) in the east. Moreover, with reference to the Accessibility/Remoteness Index of Australia (ARIA see Figure 2) it soon becomes evident that the bulk of these communities are located in remote to very remote parts of northern Australia.

Figure 2: Accessible and Remote Areas of Australia
Source: Australian Social Trends, 2000 (4102.0)



Note: Index Grouped into Four Categories based on Distance from Service Centres (ABS Year Book 2003).

A significant proportion of the Indigenous population is resident in these areas. In the Northern Territory alone, 28.8% of the population is Indigenous, while 81.2% of that population lives 'in remote and very remote areas' (SCRGSP 2005:A3.4). While exact percentages vary, similar statistical trends apply across State and Territory borders. From this perspective, Indigenous people make up the single most important land holding group in the region and it is important to emphasise that they are not mere stakeholders but legitimate owners and active managers. Moreover, IK still informs all manner of land and sea management practice across this vast estate and in view of the extent of this responsibility, demands appropriate recognition and reward.

In the meantime, as noted above, senior knowledge holders are dying at an alarming rate. Given that the knowledge they take with them underpins all aspects of Indigenous land and sea management, and in view of a burgeoning and young population, the prospect for maintaining cultural and natural values in the region, appears bleak. In the contemporary context of widespread environmental degradation and impending climate change, this potential loss extends beyond local concerns.

3 BENEFITS OF IK

3.1 Summary of IK Benefits

Indigenous Knowledge (perhaps more appropriately termed Indigenous Law) forms the foundation for Aboriginal social organisation and environmental interaction. Contained within this body of law and encoded in oral tradition, is the philosophy and principle that governs human behaviour and determines how people relate to places and to each other. In contemporary contexts, the impact of the widespread dispossession that accompanied European colonisation is still keenly felt and can only be fully understood from this perspective.

Notwithstanding these enforced changes, a relationship with country continues to provide a conceptual anchor point for many Aboriginal people. Where people live on their land, or enjoy regular access to it, they are able to fulfil their cultural obligations to care for country and kin. These obligations are discharged through ceremony, ritual, hunting, harvest and a host of other associated activities. Overall environmental well-being provides the measure of success and thus reaffirms the integrity of the social order. In this manner, cultural and natural concerns are inextricably linked. Thus, where this connection with country is severed, cultural confidence is eroded and social capital is reduced.

In these culturally specific terms, IK support represents an essential capacity building exercise. And, if based around a healthy country, healthy people nexus appropriate support promises a wide range of beneficial outcomes which encompass but extend beyond, sustainable resource use and overall environmental well-being. Therefore, any successful strategy for the conservation and application of IK must take account of these often unheralded or 'hidden dimensions' to IK. Just as importantly, traditional owners must be allowed an element of choice in the activities they pursue in this regard. While these activities may appear unconventional from a mainstream NRM standpoint, they are often essential to the ongoing and successful prosecution of Aboriginal land and sea management practices across the north Australian Indigenous estate. It is this understanding that informs current research and subsequent strategic planning.

Thus the following section of the Report is devoted to an exploration of IK and the wide ranging benefits it delivers. Firstly, an overview of the nature of current Indigenous participation in IK specific projects and programmes is developed. This is not an exhaustive analysis due to a paucity of data, but it does give some indication of Indigenous interest and participation levels. Discussion is then divided into five specific interest areas. These are summarised before each is considered on individual merit. The subsequent evaluation of IK and the benefits it delivers, suggests a number of pathways that promise increased returns on existing and future IK investment. The discussion provides a backdrop to later recommendations regarding *Whole of Government/All of Agency* approaches to IK support (See Section 5) and also sets the scene for an enquiry into the potential commercial application of IK around a Provision of Environmental Services (PES) concept.

Senior Aboriginal people across northern Australia are eager to pass on their knowledge. However, there has been no systematic survey of the demand for IK conservation and transfer in the region, or of the degree of willingness to participate in this work. Aboriginal interest in IK however, has been documented in various other forms, as part of dictionary work, the collection of oral texts, the compilation of books in Aboriginal schools and other evidence emerging over the course of numerous workshops and from Aboriginal participation in a variety of everyday and institutional caring for country activities. The range of these activities is briefly summarised below and provides a necessary backdrop to later arguments regarding the specific benefits of IK.

IK in dictionary and other language work

There is a long-standing demand from Aboriginal language speakers to record what they know about the biophysical and ecological world. So consistent are these demands that standard templates have been developed for use in picture dictionaries which detail country, place, landscape, sky, water, animals, plants, bush medicines and other IK elements. These materials are for use in Aboriginal language programs across northern Australia. The ecological domains they describe complement and are integral to the wider dimensions of IK which revolve around particular aspects of human and environmental relatedness – from family, skin and clan group affiliation to numerous other areas of both secular and sacred significance (see Green et al. 2003).

Unfortunately, there is a much greater demand for Aboriginal language materials than linguists and Aboriginal language workers have been able to meet. Given the proliferation of languages across northern Australia, some of which are still spoken on a regular basis, this paucity of materials is of critical concern. Moreover, the existing level of IK reporting in these and other publications is relatively unsophisticated and in a sense represents 'the tip of the iceberg' in terms of the depth and detail of IK. For instance, the dictionary databases consist of recordings made through the use of specialised vocabulary and example sentences. These have been recorded merely to illustrate the meanings of words and not with a view to systematic knowledge collection. Therefore, as a record of IK, these collections are incomplete and *ad hoc.* Resources to meet these demands and to overcome these inadequacies are critical to those who work in the Aboriginal land and sea management, land care or NRM sectors.

Importance given to IK by Aboriginal people at CLC, NLC and NAILSMA workshops

Across northern Australia and elsewhere, the demand for IK support is of principal concern for Traditional Owners. The Northern Land Council (NLC) Caring for Country Unit (CFCU 2005) clearly identifies the intergenerational transfer of knowledge, on country, as a top priority for Indigenous land and sea managers across the top end. The Kimberley Land Council (KLC) Balkanu Cape York Development Association (Balkanu) Carpentaria Land Council Aboriginal Corporation (CLCAC) and Torres Strait Regional Authority (TSRA) all identify similar concerns amongst their Indigenous constituents. In addition, the North Australian Indigenous Land and Sea Management Alliance (NAILSMA) has conducted a series of workshops and two forums, over the period 2004 to 2006, which confirm that the transfer of knowledge to succeeding generations of land and sea managers is a major priority for Traditional Owners (NAILSMA Bizant Report 2005:18,19). However, while there is an increasing interest in the recording and storing of IK, many people see this as adjunct to the teaching of children, on country, in applied land and sea management contexts. It is also worth noting, that these concerns are not peculiar to Traditional Owners in the tropical savannas, as the following example demonstrates.

A report contracted for the National Land and Water Resources Audit (Walsh 2000) reported intergenerational knowledge transfer to be a top priority for Aboriginal people in Central Australia. This report is the most systematic analysis of land use and management needs available in the region and resonates with the sentiments of Aboriginal people across the north. Issues raised by approximately 200 Aboriginal people in fourteen Central Land Council land management workshops, conducted between 1996 and 1999, were collated. These issues arise in pastoral, national park, tourism and other land use planning contexts (see Walsh and Mitchell 2002). The desire to teach young people about country was the second most pressing issue raised in these workshops and as is the case in northern Australia, the principal concern expressed revolved around the teaching of children on country in applied land use contexts. Moreover, the experience of most people, with the formal recording and storage of information by outsiders had been limited or unsatisfactory.

Importance given to IK at National Indigenous Land and Sea Management conference 2005

Traditional knowledge was also accorded a high priority at the National Indigenous Land and Sea Management conference held near Alice Springs in 2005. This national conference was attended by about 400 people from around Australia. Conference workshops and final resolutions set Traditional Knowledge as one of three top priority topics, the others being governance and caring for country. In particular, the Traditional Knowledge resolutions passed were:

- That a national program be developed to ensure the protection, revitalisation and continued use of traditional knowledge;
- That traditional knowledge and traditional land management be acknowledged, incorporated and utilised in Natural Resource Management planning and on ground works;
- That groups and communities are supported to record and maintain knowledge so that it is kept strong and can be passed on to children;
- That a universal regime providing for the ownership and protection of intellectual property be developed and applied;
- That a community education campaign be implemented to ensure communities and people understand issues relating to the protection of intellectual property. (Indigenous Land and Sea Management conference 2005).

Participation in land management work and IK

Significantly, Aboriginal people, who take part in a diverse range of land and sea management work, with support from various key institutions, demonstrate a strong interest in IK as well as scientific knowledge systems. The work people do in projects supported by the CLC, NLC, NAILSMA, Threatened Species Network, Greening Australia, National Oceans Office, mining companies, Aboriginal schools, philanthropic and numerous other organisations and research institutions is wide ranging. It includes participation in meetings and forums as well as other on ground activities such as sacred site clearance, field trip work, back to country and culture trips, jobs as community and national park rangers and other professional employment in various organisations.

Importance given to IK in customary activities

By way of contrast to institutional support, there are many Aboriginal people who, in different ways, manage IK within their own cultural domains with little or no crossover to Western institutions. Right across northern Australia Indigenous family groups either live on or travel to their country and participate in a wide range of IK related and informed activities, on a regular or everyday basis. In the course of these activities IK is used, learnt, developed and refined (see discussion below). It remains the case that the state of IK used in these non-institutional contexts is largely under reported and undocumented.

In spite of this lack of hard data regarding 'informal' participation levels, the following discussion provides ample evidence of the wide range of benefits that accrue through this and other involvement in IK informed activities. Key areas of interest are summarised as below before more detailed consideration:

IK, Environment and NRM (appropriate recognition and reward)
Water quality
Fire
Feral control
Weed management
Biodiversity
Habitat conservation
Climate Change
Government Obligation and Commitment

IK and Economy (small scale enterprise development)
Art
Wild Harvest
Tourism
Fire Management
Provision of Environmental Services

IK and Education (learning for the future)
IK Relevance
Intergenerational Transfer of IK
Appropriate Learning Environment/s
Two Way Learning Models and Capacity Building

IK, Health and Social Well-Being (natural, human and social capital)
Cultural Continuity
Intergenerational Transfer
Diet, Exercise and Lifestyle Choice
Social, Physical and Psychological Well Being

IK, Innovation and the National Interest (recognition, reward and obligation)
Bio security
Border protection
Carbon Abatement
Provision of Environmental Services
National/International Environmental Goals

3.2 IK, Environment and Natural Resource Management

It is no accident that across the Indigenous estate, overall environmental values (ecosystem integrity, biodiversity, habitat health and water quality) remain significantly higher than elsewhere in Australia. Although population density in the north is low and industrial development relatively limited, these outcomes cannot be attributed solely to historical settlement patterns. Instead, success is due primarily to a combination of astute Indigenous resource husbandry and sustainable use. A sophisticated understanding of human ecology gives rise to these management principles and practices and is encoded in a body of law referred to here as Indigenous Knowledge.

'knowledge is…nothing if it is not applied to a living relationship with country'
(Cooke and Nadjamerrek 2002)

The nexus binding people and knowledge to land and sea is eloquently expressed in the words above. However, the pragmatic element contained within this statement frequently conflicts with

the prevailing logic of mainstream NRM. In the first instance, these sentiments are based on people living on country and actively utilising natural resources, that is, enjoying *a living relationship* with the land. Conversely, a dominant conservation ethic is often based on the exclusion of people from places in order to achieve the same conservation end. At another level, the idea that knowledge does not exist, or have value, outside of a relationship with country, contradicts scientific notions of knowledge as constituting an independent body of facts, which is portable and can be applied in any circumstance.

In this context, it is timely to note, that the conservation reserve is widely applauded. The extent of this reserve is approximately half the size of the Indigenous estate. Nevertheless, frequent bids for increased government funding are heard from numerous conservationists describing themselves as 'the unsung heroes of biodiversity conservation'. In contrast, traditional owners are responsible for an area twice the size, receive considerably less support and enjoy far less recognition. In spite of this, the conservation of natural values across the estate, including biodiversity, is on par with the reserve and in many instances significantly exceeds it. There is little doubt that this success is due in no small degree to the philosophy underlying IK and encapsulated in the above commentary.

These enhanced natural values are acknowledged at local, national and international levels in a number of formal statements and binding agreements. In several key areas and at all levels, IK informs the activities that give rise to them. However, as noted previously, this acknowledgement does not always translate into the provision of adequate, practical support for IK related activities, a shortfall which suggests that the character and extent of these contributions is still not fully appreciated. For this reason, the following examples demonstrate the benefits IK delivers in environmental, economic, educational and health areas, as well as in the national interest. These contributions are considered both as a function of customary activity alone as well as in articulation with wider NRM practices.

Water Places

Water is of primary concern to Indigenous people across northern Australia. Traditional owners have a vested interest in rivers, riparian systems and wetlands for a variety of reasons that encompass customary land and water tenure, cosmological significance, subsistence needs and IK in general. However, IK input into NRM planning has been neglected over past years, with some recent but notable exceptions. In 2005, Land and Water Australia (LWA) in collaboration with NAILSMA, commissioned a scoping study into Indigenous water interests in northern Australia as part of an overall tropical rivers project. The study (see Jackson and O'Leary 2007) considered IK input into the protection, maintenance and restoration of several highly valued water resources in the region. Amongst other things, it highlighted the positive role that Indigenous people and IK play in monitoring various commercial and recreational interests in the region. With increasing interest in northern water systems, the presence of Aboriginal land and sea managers on country – the knowledge they hold and the work they do – was considered vital to any effective NRM planning in these areas (Jackson and O'Leary 2005). This and other evidence has led to the development of an Indigenous Water Policy Group (once again funded by LWA working in collaboration with NAILSMA) and established to represent Indigenous water interests particularly with the advent of the National Water Initiative (NWI).

However, freshwater ecosystems are not the only areas of concern for traditional owners in northern Australia. Indigenous people own and occupy vast tracts of the northern coastline with many tracing the origins of their culture and cultural identity to the sea (Commentary Appendix C). These interests are increasingly recognised in mainstream NRM circles and have given rise to a series of collaborative research projects and joint management projects (Kennett et al 2004; Ecos 2005). Indigenous Sea Ranger groups (such as *Bardi-Jawi, Djelk, Dhimmurru* and *li-Anthawirriyarra*)

have played a prominent role in these projects and proposals. These activities were further enhanced in early 2005, with NAILSMA signing an agreement with the Commonwealth Government (DEH/NHT) to provide support for proactive Indigenous participation in the management of turtle and dugong populations across northern Australia. In addition, NAILSMA is currently negotiating with the Tropical Rivers and Coastal Knowledge (TRACK) consortium – consisting of over 50 of Australia's leading tropical river and coastal researchers – to ensure adequate Indigenous engagement, capacity building and representation is a prominent feature of proposed research – see Appendix D of this report.

In summary, IK relating to water places, inland and coastal, can and does contribute to NRM outcomes in the following ways:

Water Quality

Inventory and Survey: tropical rivers, wetlands, coastal, estuarine and other water places

- Traditional Owners retain detailed knowledge of the location and values (including cultural as well as biophysical) of water places on their country. Identifying priority wetlands for management across northern Australia needs to include consideration of both the cultural and biological significance of these sites.

- 'Salt water' country is of profound significance for many Indigenous people in northern Australia. Long term monitor and use has provided Indigenous managers with detailed knowledge of habitat, species behaviour and overall ecosystem health. In recent years the contributions of Aboriginal people living in the remoter parts of the region have ranged from coastal surveillance to the hands on management and monitor of various species. These efforts have received increasing recognition if not reward.

Research: *tropical rivers, wetlands, coastal, estuarine and other water places*

- Traditional Owners possess detailed environmental histories of the decline or disappearance of plants and animals, changes in water flow rates, watercourses and water quality over time, impacts of weeds and feral animals, and past and current human and animal uses. This kind of information is critical to developing environmental restoration activities and management plans for inland and coastal sites. In many cases, IK adds considerably to the sum of what is currently known to mainstream NRM advocates and practitioners.

Management: *tropical rivers, wetlands, coastal, estuarine and other water places*

- Aboriginal people have pre-existing systems of governance for wetland and coastal sites that need to be respected and valued in developing management plans. Traditional methods of maintaining and caring for water places are also an integral component of IK and include burning to protect sites from wildfire damage or to remove rank and weedy vegetation as well as the digging out of soaks and general clearing of debris and animal carcasses. According to Rose (1995:14) the strong desire to care for water places is founded on people's responsibility for ensuring a reliable supply of water for animals and for travellers, as well as maintaining the spiritual well-being of these sites. Similar concerns apply to the care of 'salt water' country, which provides an abundant supply of food and materials as well as a conceptual anchor point for family and culture. There has been little attempt to adequately document these practices in the interests of improved management and the intergenerational transfer of knowledge and skills.

For an expression of Indigenous Cultural and Natural Values, see TKRP "Water We Know" DVD (Balkanu 2006).

In spite of these positive contributions, the role of IK in water resources inventory and survey work has not been fully realised in northern Australia or elsewhere on the continent. With some exceptions, recent inventories of water resources have included very little on-ground assessment – either cultural or natural – of sites on Aboriginal land. Such omissions are recognised as a major limitation of current work and consequently systematic wetland inventory on the Indigenous estate has been identified as a research priority. As noted, work has commenced in this respect in some areas, however, a good deal remains to be done and given existing pressures on Australia's resources and the significant contributions of Indigenous managers to their health and upkeep, further and ongoing support for this work is essential. Importantly, provision is made for the nomination of wetlands of cultural significance in the Directory of Important Wetlands in Australia (Environment Australia).

It is inarguable that the pressure on northern inland and coastal waterways and water places is increasing. The depletion of species, habitat and overall ecosystem vitality around the continent – coastal and inland – has precipitated a water crisis and eyes are now turning north, where environmental degradation is far less extensive and water sources are abundant and relatively pristine. With the increasing scarcity of water elsewhere on the continent, Traditional Owners across the north face many of the same obstacles in their endeavours to conserve these invaluable water resources. Jackson and O'Leary (2005) note that changes in land tenure, transport needs and an overall lack of consistent support have made it difficult for many people to continue their customary management practices. Significantly though, Aboriginal people have adapted their knowledge in the face of new challenges and are increasingly recognising a need to combine traditional practices with other more 'conventional' NRM techniques. Where it has occurred, the combination of Indigenous and western management practices has led to better NRM outcomes for the upkeep of water places.

Fire

Indigenous land managers are currently underrepresented on regional Bush Fire Councils and other statutory bodies across northern Australia. Consequently there is a lack of IK input into fire planning, decision-making and resource allocation. In many areas conflict exists between Aboriginal landowners, pastoral managers and conservationists around the varying uses for fire. Nonetheless, in some cases these differences have been overcome and there have been dramatic improvements in overall fire management. In the Northern Territory for example, the Arnhem Land Bushfires Council Region has been established, consisting of an Aboriginal Committee and Indigenous Regional Fire Control Officer. The Indigenous Chairman of the Arnhem Land Committee and another independent member with extensive experience in Indigenous fire management, now sit on the board of the Bushfire Council. In Queensland, the Traditional Knowledge Recording Project has been used with some success to educate non Indigenous stakeholders as to the value of traditional fire regimes, while in Western Australia the Kimberley Regional Fire Management Project may be due to receive a new lease of life after initial resistance from various non Indigenous lobby groups. Many of these initiatives foster a complementary blend of Indigenous and non-Indigenous burning practices.

In addition, various other fire management projects are currently being conducted under the auspices of NAILSMA and partners. NAILSMA for one has appointed an Indigenous fire project officer in an attempt to articulate Indigenous fire management with mainstream approaches and overcome conflicts between Indigenous owners/managers and other stakeholders. This effort, undertaken in collaboration with the CRC-TSM, Bushfire Council and various other Indigenous and regional authorities, consists of a blend of Aboriginal and other techniques and technologies – from mosaic pattern burns to GIS - and places a particular emphasis on enterprise development for Aboriginal youth. It is hoped that these and other programs will result in increased collaboration and better incorporation of IK in fire management across northern Australia.

The few instances where indigenous fire knowledge and skills have been incorporated into NRM programs have resulted in vast improvements in the effectiveness and efficiency of fire management. Examples of this process are found in the increasing involvement of Traditional Owners in joint fire management projects proposed or underway in various National Parks – Kakadu, Uluru Kata Tjuta for example – a number of established Indigenous Protected Areas and in western Arnhem Land.

Case Study: Two way education in IEK Management

Michael Christie

Western scientists and Aboriginal knowledge holders do not often get to work together in mutually respectful and productive collaborations. In two way educatio, we are dealing not only 'with different conceptual systems, but also with different ways of using conceptual systems' (Watson & Chambers 1989, p5). So each group needs to be prepared to learn in new ways. In a Fire ecology workshop, *Yolngu* 'scientists', respected as knowledgeable within *Yolngu* culture, worked with western ecologists investigating traditional technologies of environmental management using fire (Verran 2002). *Yolngu* and non*Yolngu* scientists travelled out to country, and performed a burn, and talked about it together. In the discussions, the *Yolngu* sometimes told stories or made links which seemed irrelevant to some of the western ecologists, using principles derived from kinship to integrate their firing technologies into the rest of their lives. The inclusion of environmental management in the practices of everyday *Yolngu* life was as invisible to the western scientists as was the possibility of abstracting and transporting ecological knowledge to new contexts invisible to the *Yolngu*. In two way learning, the value of *Yolngu* firestick farming practices to the wider work of government biodiversity policy development inevitably involves developing appropriate practices, not appropriate data sets: people on country (Aboriginal landowners and white pastoralists alike) getting to know the lie of the land, its geology and biology, its fire history, the history of firing, how it worked, how it didn't work, when it worked, why it worked (and all the narratives that go along with that) - at specific sites. The two-way learning here can be summed up as 'You learn to do fire ecology in your place, in the same way as we have learnt to do it in our place. We can't show you how to do yours, but we can show you how we do ours.' Western technologies such as remote sensing satellite images, may become useful in traditional burning practices. In this sense IEK is not transferable, but new ways of knowing may be learnt. Two way education produces different results for different parties, but according to the *Yolngu* metaphor of *garma* (Yunupingu 1991), it produces knowledge which is unique in its collaboration, different from what either of the two parties originally contributed. That is the strength of two-way learning.

In an outstanding example from the Northern Territory, NHT 2 has invested approximately $1.35m in fire management projects in western Arnhem Land between 1998 and 2005. With requirements for matching funding, Indigenous partners have contributed a further $1m in that period. Under various names, what is now known as the Western Arnhem Land Fire Abatement (WALFA) project, has been a distinctively collaborative project, drawing on both indigenous ecological knowledge (and indigenous knowledge more generally) and scientific expertise. The project has built capacity to reverse the catastrophic effects of wildfires associated with the depopulation of a large area of country over a century and the associated loss of traditional management from that area. The stakes have been high, particularly from a biodiversity point of view. Indeed work by Woinarski and others (see Commentary page 26) have demonstrated that the Arnhem Plateau is the Northern Territory's most intense biodiversity hot spot.

Case Study: Western Arnhem Land Fire Abatement Project

Peter Cooke

An estimated $350,000 went towards supporting science aspects of the project over time while the remaining grant funds went into on-ground fire work through indigenous partners. Although details remain commercial in confidence, it is expected that in 2006 private funding will provide for a greatly expanded program of fire management in western Arnhem Land, on the basis that this IK informed and improved fire management regime will deliver abatement in greenhouse gas emissions. This is a ground-breaking arrangement that will deliver NRM/biodiversity outcomes as well as creating jobs for Indigenous people in areas where there have never been full time employment options. There is an excellent prospect that this funding arrangement will operate for at least 20 years.

The fire management approaches being used draw on, and to a large degree emulate, traditional burning practise. Thus the sharing of knowledge between senior Indigenous people and science colleagues as well as the intergenerational transfer of this knowledge has been crucial to success.

Bardayal Nadjamerrek (AO) and others have detailed the seasonal and habitat-specific approaches to traditional fire management that are now being put into practice by vehicle, helicopter and on foot. They have provided information on the plateau regarding Indigenous estates and smaller areas of responsibility that has enabled landowners and managers to talk, plan and act effectively about plateau fire management and other issues.

In aggregate all of these things have created sufficient social capital to arrive at agreements and to facilitate collaborations between different Aboriginal groups and between Aboriginal groups and scientific experts, at low transaction costs.

Without the blessing, enthusiasm and Indigenous knowledge of the handful of elderly Indigenous leaders and experts remaining on the plateau, there would be no dialogue, no collaboration and thus no successful outcome in any terms. Mutual respect, trust and a sense of common purpose have carried a dream to impending reality and in so doing have dramatically reduced the need for continued Government funding. Indigenous knowledge has carried the day in fixing a critical NRM problem in Western Arnhem Land. If as expected the private funding arrangements persist for 20 years, the return will be more than 15 times the initial NHT investment over seven years.

In addition, Aboriginal people continue to carry out customary based fire management practices on a daily basis right across the tropical savannas. These activities are frequently associated with caring for sites, the conduct of ceremonies, cleaning up of country, and hunting and gathering. Increasing evidence suggests that populations of threatened species are healthier in areas where such traditional fire management is still undertaken. There are also vast areas of country in northern Australia that remain inaccessible by vehicle but where Indigenous land managers continue to ply their trade and secure positive NRM outcomes. In light of this evidence, effective regional fire management is dependant on the complementary integration of traditional and Western burning practices right across the Indigenous estate, while existing 'informal' burning practices and patterns need to be better understood and evaluated (See Section 5, Strategy 2, Action g).

In summary then, the contribution of IK to fire management across northern Australia includes detailed knowledge of:

- Fire behaviour in relation to fuel loads, vegetation types and weather conditions;
- Cultural and natural landscape needs, especially in terms of protection;
- Species responses to fire;
- Species habitat requirements and their relationship with fire;
- The need for understorey reduction in order to prevent wildfire;
- The necessity for small scale, mosaic pattern burning regimes;
- The organisation and governance structures necessary to implement fire regimes;
- An insight into seasonal variation due climatic cycles and thus, when to burn;
- The value of early season burning.

Feral Animal Control

Many feral animal species occurring in the NT have been present on country for decades. Aboriginal people's lengthy association with these animals has meant that in many cases they have taken on special resource and/or religious significance (Rose 1995). These connections mean that Aboriginal people have often been offended by a lack of consultation and the methods employed in controlling feral animals (Rose 1995; CLC 2005). Aboriginal involvement in developing and implementing feral animal management strategies around the country has been remiss. There is a real need for proper engagement of Aboriginal people in feral animal management planning processes to facilitate more effective management outcomes in the long term. This would allow for better consideration of people's values with respect to feral animals and their aspirations in relation to these animals.

Older Aboriginal people remember details of the arrival of feral animals on their country and their interactions with species that are now rare or regionally extinct (see Gillen et al 2000). This kind of information has been, and continues to be, critical to species reintroduction programs in various National Parks and other reserve areas, providing invaluable information on the impact of introduced species on habitat and native populations. Many Aboriginal people also hold valuable knowledge of the distribution, behaviour and ecology of feral animals on their country. This information is also of enormous value to research programs and the development of feral animal management programs.

In northern parts of the Territory, one of the most pressing issues around feral animal control concerns buffalo. The impact of this species on biodiversity has been severe. And while a number of Aboriginal landowners have been ambivalent about the status of buffalo– the species may be a pest but is also an important source of protein – in many cases these attitudes are changing. For example, various Indigenous Knowledge projects in western Arnhem Land have enabled Indigenous landowners to return to areas (unoccupied for several years) where they have been able to fully appreciate the negative environmental impact of large buffalo herds. A similar, situation exists in southwest Arnhem Land, where Indigenous landowners seeking to resettle on their country, have given approval for an extensive program of buffalo control, which is NHT funded and run through the *Jawoyn* Aboriginal association.

Case Study: IK, Science and Feral Animal Control at Kabulwarnamyo Arnhem Land

Peter Cooke

This excerpt from a report to the CRC-TSM concerning the Western Arnhem Land Indigenous Knowledge project they fund provides an example of how a back to country initiative has influenced the views of a landowning group from the West Arnhem Plateau in respect to feral animal control.

It is (pre-eminent indigenous expert) *Bardayal Nadjamerrek's* dream to see plateau people back on country permanently. The CRC's support has been critical in contacting and co-ordinating visits back to country by people who have been unable to ever set foot on their ancestral lands.

One man from *Manyallaluk* has now come back two years running and will be back again this year, to learn more about his country from *Bardayal*, to look at problems on country and to make decisions about what needs to be done. He is one of the first people to recognise that on his country feral buffalo can never be worth money in any commercial sense, and left alone are simply trashing the country. "Kill them and let them rot", he says bitterly, on a DVD record of his visit, made on site at *Kabulwarnamyo* to share with other family who could not make it.

His hard-nosed decision, informed by his visits and by stories from Bardayal about what his country used to be like, will result in an NHT funded shoot-out over a large estate where buffalo impacts are amongst the most severe. He takes this message back to others in his family and to other families and by his support for aerial control, has begun to shift landowner opinion towards more widespread radical control.

But for the lack of facilities in the remote bush to look after a disabled child, he would be living back here now. There are a number of cases like his which in aggregate begin to account for a lot of the high plateau coming back under active management, informed by indigenous knowledge and by science and led by landowners.

Weed Management

Knowledge held by many Aboriginal people is also of value to weed management programs in the region. Many Traditional Owners possess detailed knowledge of:

- The ecology, location and lifecycle of weeds;
- The interaction of native and introduced species;
- Subsequent changes in the behaviour, distribution and numbers of natives;
- The implications of change in terms of human/environmental interaction and use.

Arguably Indigenous land and sea managers, particularly those in Community Ranger groups, make the single most significant contribution to the eradication of weeds across northern Australia. These activities often form the basis for obtaining funding via Envirofunds and other NHT initiatives. At all stages, IK informs where these weeds are most likely to occur, what conditions will contribute to their proliferation and how they will impact on native species. This and other IK of weeds is integral to the successful development and implementation of environmental restoration activities and forms a major component in joint management planning contexts.

Threatened Species and Biodiversity Conservation

Due to the particular and on-going relationship to the land and its biodiversity that many Indigenous people enjoy, any loss or decline of species will often result in significant social and

cultural impacts for individuals and the community (Rose 1995). These deep-felt connections coupled with an intimate knowledge of country and wildlife mean that the full participation of Aboriginal people in threatened species research and recovery processes is critical. Recent legislative changes, outlined in the federal *Environment Protection and Biodiversity Conservation Act 1999*, reflect a long-overdue recognition of the rights and responsibilities of Indigenous Australians in relation to threatened species recovery planning.

In making a recovery plan regard must be given to the role and interests of indigenous people in the conservation of Australia's biodiversity [EPBCA S270 (3) (e)]. While there has been a move to incorporate information pertaining to the cultural significance and resource value of certain species to Aboriginal people in planning in some areas, as yet there has been little or no direct involvement of Aboriginal people in the preparation of these plans. Most recent plans also identify a role that indigenous people can play in implementing recovery actions (eg. bilby, great desert skink, marsupial mole, threatened acacias, quoll, olive python) but again these have largely been developed without direct consultation with Aboriginal people.

Indigenous involvement and IK have already contributed enormously to threatened species research, monitoring and management programs in the NT. Many threatened species initiatives rely entirely on people's tracking skills and knowledge of these animals. The detailed IK of species such as the bilby is nothing less than extraordinary. For example, a senior *Wanman* man involved in surveys for this species in the Great Sandy Desert in WA knew from tail drag marks that a female was carrying pouch-young at the time. Other senior people involved in this work could concur on the number and individual age and sex of bilbies using a particular area based on track size and gait pattern (Nano *et al* 2001).

Further north, a number of species, either thought to be extinct or unknown to science, have been positively identified through IK. Notably, traditional owners were familiar with the existence and habits of the Leichardt Grasshopper '...long before western scientists made their "startling discovery"...' (http://www.cdu.edu.au/cdss2003/news_s2_4.html). Joe Morrison (NAILSMA Executive Officer) recalls how an old man at *Ngukurr* (who has since passed on) had a complex story and song built around the grasshopper which went undocumented and unacknowledged until a non-Indigenous botanist stumbled across the species in the course of a survey in the region and made his "discovery".

Similarly, work with IK custodians at *Kabulwarnamyo*, on the high plateau in Arnhem Land, has considerably enhanced scientific understandings of *Nawaran* (Oenpelli python) and *Barrk* (black wallaroo) the latter of which is endemic to the plateau and remnant areas of Kakadu National Park (Cooke 2006). *Nawaran* is notable as the largest of Top End snakes (known only to science since 1975) and the least studied in mainstream research and NRM circles. Knowledge recorded from two senior Indigenous men, *Bardayal Nadjamerrek* and Jimmy *Kalarriya*, is of fundamental importance to understanding these and other animals and the degree to which they may be threatened by cane toads and other emerging changes to plateau ecology (Cooke 2006).

These and many more examples demonstrate the extent and range of IK contributions to producing 'practical' NRM/NHT outcomes and the urgent need for effective mainstream engagement with Indigenous groups. With specific reference to issues around biodiversity, the following commentary, from Dr. John Woinarski, provides a neat summary of the issues discussed above as well as identifying further instances where the scientific and wider research and NRM communities have depended almost entirely on Indigenous knowledge of species habitat, behaviour and distribution, in order to effectively survey and manage those species and areas. Moreover, when viewed in the context of existing government commitments to IK (see *Commentary* page 30) Woinarski's examples indicate pathways to better meet those obligations and secure positive NRM and other outcomes.

Commentary: Dr. John Woinarski

John Woinarski is a Principal Scientist with the NT Department of Natural Resources Environment and the Arts, and a project leader within the Tropical Savannas Cooperative Research Centre. He has worked on a broad range of biodiversity issues in northern Australia for 20 years, including on many projects involving close collaboration with Indigenous landowners and ranger groups. He has published very widely on this work, including more than 120 scientific papers and book chapters. He was awarded the Eureka Prize for Biodiversity Research in 2001.

1. Northern Australia in general remains a frontier for biodiversity research and management. Very extensive areas remain largely unknown and uninventoried by scientists; "new" species are being "discovered" at a rate far greater than anywhere else in Australia; there is only a very small minority of species for which detailed ecological studies have been undertaken; and this limited scientific knowledge means that management prescriptions can be developed with confidence for very few species. This greatly limits assessment of possible impacts of development proposals; the ability to scope and monitor sustainable use of wildlife projects; planning for conservation of threatened and other species; regional planning generally; derivation of conservation priorities; and assessment and development of cost-effective management options.

2. At current resource levels, these deficiencies are unlikely to be redressed substantially through conventional approaches, at least within the next two to three decades.

3. Incorporation of IEK offers the opportunity to greatly bolster scientific knowledge of biodiversity, and provides a particularly useful complement to scientific approaches. This complement is partly because:

(i) IEK may be best retained in remote areas, where the amount of scientific information is generally least;
(ii) IEK offers accumulation of information spanning many generations and based on continual observations by long-term residents, whereas scientific knowledge (at least in the NT) typically results from relatively brief one-off surveys or studies in which the information gained may be largely superficial (this brevity may be a particular impediment in northern Australia, where biodiversity pattern may vary substantially across time and space in response to changing climatic conditions);
(iii) IEK is based on very different methodologies and from very different perspectives to scientific inquiry, and hence may provide novel insights and contexts for knowledge about biodiversity;
(iv) Incorporation of, and respect for, IEK may greatly aid in developing biodiversity conservation management priorities and engendering support for management actions amongst Indigenous landholders. Such landholders may find management priorities derived from only scientific approaches esoteric and arcane; and hence regard such priorities as foreign and unsupportable.

4. There have been some notable case studies that have incorporated IEK in biodiversity research and conservation management in the NT. These include, but are by no means limited to:

(i) The most substantial and geographically extensive survey of the distribution, conservation status and ecology of arid and semi-arid zone mammals in Australia (Burbidge *et al*. 1988) was entirely dependent upon use of IEK. In this study, collation of IEK across very many communities in the deserts of central Australia demonstrated for the first time the unexpectedly [to scientists] large range of many now extinct species, the unexpectedly recent extinction of many species, the temporal patterning of decline (and hence the likely causal

factors), and revealed locations where critically endangered species persisted. A comparable approach to this study is now being undertaken in the Top End, with funding from the Australian Research Council.

(ii) More locally, IEK has been important in the conservation management of a range of threatened species in the NT. The golden bandicoot is now restricted in the Northern Territory to one island (in the Wessel group off north-eastern Arnhem Land). Survey of, and conservation management for, this species has been a collaborative exercise with scientists and TOs. IEK has brought to this exercise considerable knowledge of the diet and ecology of this species; understanding of the way the landscape has been managed and the response of bandicoots to this management; and has greatly aided in distributional survey and assessment of abundance. Similar examples include for the threatened marsupial mole, bilby and mala (in central Australia), and rock-wallabies and partridge pigeons (in the Top End).

(iii) IEK offers a necessary perspective for the description and understanding of traditional fire regimes (and their environmental effects), how current regimes (and their impacts) differ from historic ones; and how more preferable regimes to those currently deployed may be re-imposed.

(iv) IEK offers a necessary perspective about how landscapes have changed over the last 1-2 generations. Broad-scale landscape change (including vegetation thickening, probably in response to pervasive pastoralism, changed fire regimes and/or climate change) is now recognised across much of the NT, and hence is an important consideration in the management of biodiversity. Scientific approaches can provide some insight into the extent and process of change, but IEK may provide a more profound and continuous assessment of the extent, direction and cause of such change.

(v) IEK has been applied to the conservation management of marine turtles and dugongs, and has helped understand movement patterns, the distribution of food resources (such as sea-grass beds), and other aspects of the ecology of these groups (e.g. Kennett *et al*. 2004).

(vi) IEK offers an important perspective for identification of sites in the landscape that may be ecological pivots - that is, that play particularly important roles in maintaining the functioning of the broader landscape as a whole. Such sites may include areas where food resources (such as yams or bush fruits) may be particularly abundant at times when the rest of the landscape is largely barren; or important breeding sites for fish, birds and other species.

Climate, Season and Weather

Many traditional owners retain an in depth understanding and knowledge of weather patterns and seasonal variations. This knowledge is often manifest in elaborate seasonal calendars. These calendars invariably contain far more detail than those of the mainstream, which seldom extend beyond delineation into 'wet' and 'dry' seasons. They inform fire, hunting and harvest regimes and often include detailed information on species distribution, habitat, reproduction and behaviour in relation to season, at any given time of year. In addition, some of these calendars have recently evolved to reflect perceived changes in climate after long-term observation.

At this juncture, it is significant to note that a good deal of all of the work described above is currently undertaken by community Ranger groups operating from the Kimberley right across to Cape York. These groups are CDEP funded and perform a variety of tasks from weed management to feral animal control, ghost net collection to border protection. In conjunction with Indigenous Protected Areas, these initiatives provide an invaluable mechanism for the delivery of practical IK support and appropriate reward systems. As such, they are considered in further detail in the Solutions Section of this Report and in the same section of the accompanying Strategy. Both will play an integral role in realising the recommendations made.

There are obvious points of complementarity, linking Indigenous environmental principles with those of mainstream NRM. However, there may be just as many points of difference and divergence. One thing that becomes increasingly evident as research progresses, is the number of 'tangible' outcomes emerging out of what we have termed a hidden dimension to IK. And it is worth reiterating here, that an accurate evaluation of these outcomes is not possible where environmental interactions and aspirations are delineated from other seemingly unrelated cultural and social activities. Nor can any meaningful assessment of the benefits that accrue from these activities be made independently of this wider context. It may be at this point, where IK is most seriously misunderstood, misrepresented and undervalued. For many non-Indigenous commentators, NRM is a technology, which exists independently of social context. Conversely, for many Indigenous people NRM is a matter of fact, immersed in everyday social life and requiring no particular definition outside of this setting.

3.3 Indigenous Knowledge and Economy

> *The strength and resilience of Indigenous knowledge and cultural practice is an immense asset...and informs all areas of economic life...*
>
> (NT Indigenous Economic Development Strategy 2005:23)

As acknowledged in the above quote, IK informed activities make substantial economic contributions. However, as in many instances describe thus far, these contributions are often unconventional and thus remain underreported and/or undervalued. Such omissions are often attributed to the two-sector model – market (private sector) and state (public sector) – that dominates mainstream economic thinking. But there is another dimension to Indigenous economies, which is equally important. This third sector, the customary or non-market sector, delivers benefits directly and indirectly to both local and mainstream economies, and applies over a wide range of activities, in areas as diverse as wild harvest, fire, tourism, art, the management of marginal lands, bio prospecting, bio security and border protection. The range and nature of some of these economic benefits is summarised below against the background of the following commentary from Professor Jon Altman which serves to elaborate on the 'hybrid economy' theme:

Commentary: Professor Jon Altman

Jon Altman is the Director of the Centre for Aboriginal Economic Policy Research (CAEPR). He was appointed the foundation director of CAEPR in 1990 and adjunct professor at the Key Centre for Tropical Wildlife Management at Charles Darwin University in 2001. Professor Altman has worked extensively in Arnhem Land and other parts of the Northern Territory and has published widely on matters of Indigenous economic and social policy.

To understand the economic value of IK it is necessary to utilise a different model of the economy that incorporates three sectors, the customary, market and state, rather than the more usual mainstream two-sector model incorporating the market (or private sector) and the state (or public sector). The three-sector model has been called the 'hybrid economy framework', although in the literature it is also referred to as the diverse or community economy model.

A feature of Indigenous economies that utilise a high level of IK is that much of this is of value in the customary, Indigenous or non-market sector of the economy. In other words, it is not monetised because goods and services are produced for use rather than market exchange. Key examples of such customary activities include the harvesting of wildlife for domestic consumption or the management of landscape with fire in accord with customary practice often associated with wildlife harvesting or residence at seasonal camps.

A crucial feature of such customary activity is that it generates both direct and indirect economic

benefits. Direct benefit occurs because harvesting of wildlife, for example, has dietary benefit for consumers as well as market replacement value, food harvested reduces the need to purchase food from stores. Equally important though are the indirect benefits that are generated: e.g. the harvesting of wildlife ensures the maintenance of biodiversity, the harvesting of feral animals like buffalo and pig reduces environmental costs associated with these species and customary fire regimes reduce hot wildfires and associated environmental damage and generation of additional greenhouse gases. These indirect benefits are often difficult to quantify and generate wider regional and national benefit, they are what economists refer to as 'public goods' with positive externalities. Clearly such activities are highly dependent on robust IK 'human capital', be it in knowledge about the relationship between species, the environment and the seasonal cycle or in the utilisation of IK to ensure appropriate seasonal burning regimes.

An important element of the hybrid economy is the points of articulation with the market sector. For example, knowledge about the manufacture of a wide range of Indigenous arts and crafts is based on IK and customary activity. However, in the case of the arts, this IK is readily traded so that goods with a dollar value are produced. In 2003 in developing the Indigenous Arts Strategy, it was estimated that the Indigenous art sector was worth between $10 million and $50 million to the NT, with the wide range indicating the lack of precise information about this sector. There is no doubt that several thousand Indigenous artists in the NT utilise their IK of links to country and natural resources to produce art that has direct economic value to them, but also has secondary value to the NT and Australian economy in commercial sales and as an attraction to inbound and domestic tourists interested in Indigenous cultural products (see Case Study below).

In recent years, there have been moves to formally recognise IK in natural and cultural resource management (NCRM) projects and programs on the Indigenous terrestrial and coastal zone. This has been most visible in the emerging formal institutions of Caring for Country and Caring for Sea Country administered by local community-based organisations and coordinated by Aboriginal land councils. These NCRM projects utilise a two-way approach to NCRM that is as dependent on IK as it is on western science and is very evident in work on managing feral animals and exotic weeds, monitoring and managing iconic species like sea turtles and dugong, and in coastal surveillance to manage sea country and report illegal fishers to authorities.

Most of these activities are underwritten by the mutual obligation work-for-the-dole CDEP scheme, hence they articulate with the state sector of the economy. However, they are also underwritten by both IK and Aboriginal commitment to reside and maintain a presence in some of the remotest parts of Australia. These activities generate national economic benefit that is frequently unrecognised, undervalued and consequently not appropriately remunerated. An example is the coastal surveillance undertaken by Sea Rangers operating under the umbrella of the Bawinanga Aboriginal Corporation. Utilising IK of the Arnhem Land coast, these rangers have proven on a number of occasions that they have the ability to locate illegal Indonesian fishers that high tech western technology has failed to detect. Yet much of this activity is funded by BAC and to date the Australian state has been reluctant to underwrite a local community-based approach utilising IK that has proven its effectiveness: an Indigenous organisation is underwriting activity that is of national benefit.

A problem with IK is that its value often sits outside the mainstream economics paradigm that only values goods and services that are marketed. Consequently, official statistics are incapable of quantifying the economic significance of IK when delivering services that have unrecorded market value or when operating in missing or non-existent markets. An exception is the 2002 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) that has collected some information on the Indigenous customary sector. For example, the 2002 NATSISS showed that 87% of Indigenous adults in community areas [discrete Indigenous communities] are estimated

to have fished or hunted in a group. The policy ramifications of these statistics are that the utilisation of IK in the customary sector provides economic opportunity and that major programs like the CDEP scheme and land and native title rights might be useful instruments to enhance customary activities with positive livelihood outcomes for Indigenous people. The 2002 NATSISS similarly shows a strong link between the production of cultural products (art) for sale and residence on Aboriginal land.

Such statistics though are rare and there is an urgent need to quantify the economic significance of IK so that the value of activities that are dependent on IK can be accurately documented at a landscape or regional scale. Most of the information available to date is based on case study material, at one location at one point in time. On rare occasions when long-term data sets are available (as in western Arnhem Land) the ecological sustainability of IK based customary activity has been clearly demonstrated. Alternatively, economic activity, like the arts that is highly dependent on IK, has a wide range of estimated value. It is imperative that rigorous research is undertaken to quantify the value of IK; it is only in this way that evidence-based policy arguments to garner appropriate support for its utilisation and reproduction will be assured.

Wild Harvest and Economy

Wild harvesting supplements dietary requirements and reduces reliance on store bought goods. In addition to providing healthier dietary alternatives, there is also increasing evidence to argue that associated activities have other flow on benefits in terms of overall health and psychological well being (see Health below). Harvesting also provides a range of economic possibilities around bio prospecting, forestry, bush tucker and other cultural products. Moreover, traditional owners frequently hunt feral animals and thus contribute to the maintenance of biodiversity. This limits the need for expensive control and eradication programmes and represents a considerable cost saving for governments. As noted above, IK informs all aspects of these customary environmental services, which also demonstrate a largely untapped potential for small-scale enterprise development.

In the past, the undertaking of these activities in isolation has not always proved economically viable. However, in combination, and in the context of environmental services provision, these ventures may provide a realistic economic future for many remote communities. From this perspective, such enterprises promise to deliver positive economic, social and NRM outcomes. It is at these points of articulation that the value of IK may be most appropriately assessed and current support arrangements enhanced. This evaluation relies on a view of IK and the benefits it delivers, that extends beyond mere environmental health to encompass overall social, cultural and economic well being. Almost in mirror image, astute investment must thus depend on a cross sectoral commitment and a *whole of government* come *all of agency* approach. Once appropriate recognition and reward for services is provided, returns on investment will increase markedly.

Case Study: Aquaculture, Crabs and Redclaw Arnhem N.T.
(Excerpts from NAILSMA Transcript 2 2006)

'I'm going to bring them [family] *back on country by creating that small business'*

For many traditional owners in northeast Arnhem Land, economic development is not about accumulating wealth, but about re-establishing or maintaining a presence on country. Therefore, they suggest developing a number of smaller scale enterprises aimed at localised markets – 'I want to start up with a local store' (NAILSMA Transcript 2, 2006:14). The aim is to

provide raw product without too much investment in packaging and marketing – Indigenous skills are lacking in this area and substantial financial outlays are involved.

These products will be provided using customary harvest and hunting techniques. For example, freshwater prawns and red claw are found in significant numbers in various inland water systems across Arnhem Land. IK provides traditional owners with all the information they need to secure sustainable harvests in these areas. This knowledge covers, location, breeding cycles, seasonal variations in water temperature and how to find and fashion the materials needed to produce hollow log traps and other necessary harvesting implements.

This IK driven form of aquaculture, is already underway in some areas. Success comes when individual clan groups generate a small surplus and enjoy direct access to local markets. In the words of one traditional owner, the idea is to '...take the middle man out and do direct business with [an] Indigenous economy' (NAILSMA Transcript 2, 2006:3). This economy is based around seasonal harvest regimes and kinship sharing arrangements, all of which are vital elements of IK.

In many ways these ventures emulate customary environmental interaction and use – '...they...cultural mob...used to take a little bit from here, little bit from there, [that is] sustainable use' (De identified NAILSMA Transcript 2, 2006:10). In addition to these small business enterprises, traditional owners also note that while people are out on country they are '...doing land management stuff at the same time'. These activities include, burning, feral animal control and long term observation of species behaviour, habitat and overall ecosystem health and are not seen as distinct from what might be considered more conventional economic pursuits.

The combination of small-scale enterprise and the provision of environmental services (PES) demonstrates actual economic potential. These innovative solutions are not limited to inland waterways: the examples presented represent the tip of the iceberg. Other innovations range from crabbing to ecotourism, to the marketing of 'dreamtime spring water'. With appropriate evaluation and reward, the future of IK may be assured – in articulation with a market economy – while cultural and natural values are conserved, even enhanced.

Fire and Economy

Seasonal burning limits the impact of wildfire and the costs associated with subsequent environmental degradation/restoration. Intelligent use of fire also fosters biodiversity, enhances habitat and may reduce green house gas emissions (See Section 5).

> *Fire has brought my country back in a lot of ways…using right time season burning…I'm looking after cattle, I'm not doing it big scale, I'm burning as a little mosaic…not 40,000 hectares or something like that, burn a little so you can manage your country…and you can see the difference from the other* [adjoining pastoral] *property to my property…that change happened from fire*
>
> (NAILSMA Transcript 3 2006).

Fire is also essential to the development of pastoral enterprises across the north. *Walmajarri* pastoralist Alan Lawford, cited above, attributes the success of his operation at *Kupertiya* west of Halls Creek, to seasonal mosaic pattern burning. He and others note that with the reintroduction of fire, native species have begun to return to country and now coexist with cattle. On the basis of this and other substantial evidence, traditional owners have invested in fire teams with a view to enterprise development. However, there has been some resistance from other stakeholders to these novel initiatives (See also WALFA in Innovations Section below).

It is significant to note that in the case above, as in many others, Indigenous pastoralists see no essential conflict arising out of the pursuit of pastoral enterprise and a demand for cultural continuity. Indeed the long history of Aboriginal involvement in pastoralism reveals that in the main, Indigenous people found the seasonal adjustments of pastoral work easily accommodated within an already existing round of social and environmental engagements and responsibilities. Thus, Alan Lawford, to name just one such pastoralist, is able to speak of *blue tongue dreaming* and *buffel grass* in the same sentence, without hesitation and without apparent contradiction. Similarly, the same individual will then expound on the need for Certificate Training whilst also outlining the vital role of initiation into law. These sentiments are heard right across northern Australia and are important to note. They demonstrate conclusively that IK is not some artefact from a 'cultural museum' – a relic of the past – but instead describes a dynamic process, which while evolving out of deep tradition is also closely articulated with changing circumstances and conditions.

Ecotourism and Economy

> *[I] It's good for us if we keep that knowledge really strong…then we can use it for ecosystem tourist, we can make them do it our way, like I've seen other countrymen, it's already happening… (De identified)*
>
> NAILSMA Transcript 3 2006).

Eco tourism also provides a range of economic opportunities for traditional owners. Many existing ventures contain a strong IK cultural component, upon which a good deal of marketing is based. These operations also provide an opportunity to promote the value of IK in terms of sustainable resource use, through in situ demonstrations. In these cases, IK is directly articulated with the market economy and delivers economic benefits at all levels. In northern Australia in particular, Indigenous culture is seen as one of the most marketable of all tourism possibilities. As a means for delivering economic opportunities on the ground, whilst simultaneously educating the mainstream, Indigenous driven and carefully managed eco tourism ventures possess considerable potential for future economic development with a built in NRM component.

It is also possible to add value to these and other existing enterprises through market 'branding'. In the context of widespread environmental concerns and challenges, sustainable resource use (in terms of both product and activity) has become a marketable commodity in its own right. Yet to be fully appreciated and/or exploited, the branding concept would entail the promotion of various activities – from recreational fishing to 4WD club weekend – on the basis of responsible and sustainable environmental enjoyment and use. For a fee, Traditional Owners would endorse organisations and clubs that met these criteria. This endorsement would provide the latter with a promotional tool, enabling them to promote their activities as both enjoyable and environmentally sound.

Art and Economy

> *'...art and ceremony are generally the markers of a society's spiritual and cultural strength in a western context, and they are no less important in an Indigenous context'*
>
> (SCRGSP 2005:2.12)

Conservative estimates suggest that Indigenous art brings upwards of $50 million into the Northern Territory economy alone. While exact figures are hard to come by, a conservative estimate would suggest that with Queensland and Western Australian markets factored in, this figure must at least double. As the following case study reveals, IK plays an integral role in the production of Indigenous art, which delivers real time economic benefits at local, state and national levels.

Case Study : Maningrida Art and Culture Centre

Steve Johnson

The Maningrida Art and Culture Centre was established over thirty years ago in 1973. The centre now has an international reputation and in 2004 turned over approximately $1,400,000. Over $900,000 was returned to the community through payments to artists. The inherent flexibility provided by CDEP, in terms of employment, is vital to Centre operations: freight and packing, digital photography, visual display and basic administrative tasks are all handled by CDEP participants. However, none of the Maningrida Arts and Culture Centre artists are on the CDEP program.

The flexibility CDEP provides is more in keeping with Indigenous resistance to a circumscribed forty hour, five-day working week. For the mainstream, this working week is abstracted out of social context whereas Traditional Owners attach as much significance to other activities, which revolve around cultural responsibilities such as caring for kin, country and ceremony. All of these activities are IEK informed and their active pursuit is essential to the maintenance of kinship based land management regimes, healthy country and the building of social capacity and capital through cultural reaffirmation and the cross generational transfer of knowledge. Articulating these demands with those of a mainstream work ethic remains challenging, although the Centre's success suggests these difficulties are not insurmountable: two-way education models represent a step in the right direction.

Traditional Owners are pragmatic about their need to attain basic English literacy and numeracy skills. However, the breakdown in two-way learning models across the Northern Territory and elsewhere is well documented and has sometimes resulted in both the loss of culture and a failure to achieve basic levels of literacy and numeracy. This breakdown is attributable to inappropriate consultation and teaching methods, a lack of ongoing funding as well as 'politically correct' imperatives to provide certification without first ensuring that students attain the necessary skills. While well meaning these imperatives often result in individuals taking positions for which (although certified) they do not have the prerequisite skills. The end result is the erosion of self-esteem and, in the case of operations like the Maningrida Art and Culture Centre, further complications for local employment.

Purchasing Strategies

In spite of these challenges, the strength and success of the Centre is due to an insightful and empathetic appraisal of these and other cross-cultural complications. For example, centre management is obliged to pay traditional owners for whatever they produce. Value is assessed according to market demand and this determines payment. If the quality of the product is poor, so too is the financial reward. According to management, this approach provides an incentive for Traditional Owners to produce high quality product whilst at the same time satisfying cultural demands for an immediate return on labour. It is this capacity to articulate local and wider market sensibilities and demands that will continue to ensure the success of the enterprise.

IEK Contributions to Economic Outcomes

IEK plays an integral role in this success. In simple terms, the raw materials used in the production process (from particular kinds of bark to coloured ochre) are found with recourse to the rich repository of environmental knowledge we have termed IEK. At another level, IEK also informs the painting, weaving and other techniques individual artists employ. These materials and techniques are often particular to various localities and artists, which adds to their rarity and thus marketability. This marketability is further enhanced by the complex network of kinship alliance and cultural protocol that monitors and controls the use of various materials, the public disclosure of knowledge, individual rights to paint country and events and ultimately the entire production process from collection of material to point of sale. It is this aspect of 'cultural authenticity' as much as any other that has had immeasurable appeal to national and international audiences and has driven market demand.

3.4 Indigenous Knowledge and Education

> *The underlying philosophy for Indigenous education…is to restore at a community level the involvement and ownership by Indigenous people of the education for life of their children, and in partnership with the providers, to progressively improve attendance, teaching, and outcomes across all…schools*
>
> (Northern Territory Department of Education 1999:19)

The above quote emphasises potential links between investment in IK and the specific policy goals of government with respect to education. As noted throughout this document, many Indigenous individuals and communities across northern Australia, actively support appropriate two way education models and the success of these models frequently determines the success of subsequent collaborative IK/NRM research ventures and activities. The statement above, clearly articulates Northern Territory policy in respect to Indigenous education. However, school attendance, retention and success rates are just as poor in the Territory as they are in other parts of northern Australia. For example, while 32% of secondary school students in 2002 were Indigenous, the number who successfully completed a Northern Territory Certificate of Education represented only 6% of the total student body (NTDE 1999:19). This lack of attendance and achievement is attributed primarily to '...the absence of culturally appropriate curriculum' (SCRGSP 2005:2.12) and similar concerns apply right across tropical savannas. And yet, in the following quote education officials again clearly state their intention to provide that curriculum:

> *Education should not just be about literacy and numeracy, it should be education for life, and for Indigenous people this means education for their* ***traditional roles*** [author's emphasis] *as well as education for the broader Australian society*
>
> (Report of the Implementation Phase of Learning Lessons 2006)

These sentiments echo those of many Aboriginal people (see subsection 2.1) who are staunch advocates of two way learning models. However, as already demonstrated there has sometimes been a failure on the part of governments to match rhetoric with practical, appropriate and ongoing funding and other support for such models (SGCE 2006). The implications of the current situation, with respect to ongoing and effective land and sea management are captured in the following statement and accompanying table. Once again while the example comes from the Northern Territory, it describes a situation, which is commonplace, right across the tropical savannas:

> *This demographically young and rapidly expanding Indigenous population has responsibility, through the Land Rights Act, for custodianship of 85% of the Territory coastline and half of the Territory land mass. This clearly has implications for Territory education, because as they fulfil responsibilities for "caring for country" and progress towards economic independence and self-reliance, Indigenous people will find it increasingly necessary to access and engage with Western knowledge systems"*
>
> (Ramsey et al 2003: 17).

Table 1: Demographic comparisons between the NT and national data, 2002

	NT (%)	National (%)
Population under 15 yrs	25.7	20.3
Proportion of population Indigenous	28.7	2.3
Annual Interstate mobility/yrs	9.1	2.0
Proportion of population in remote areas	50	3.0

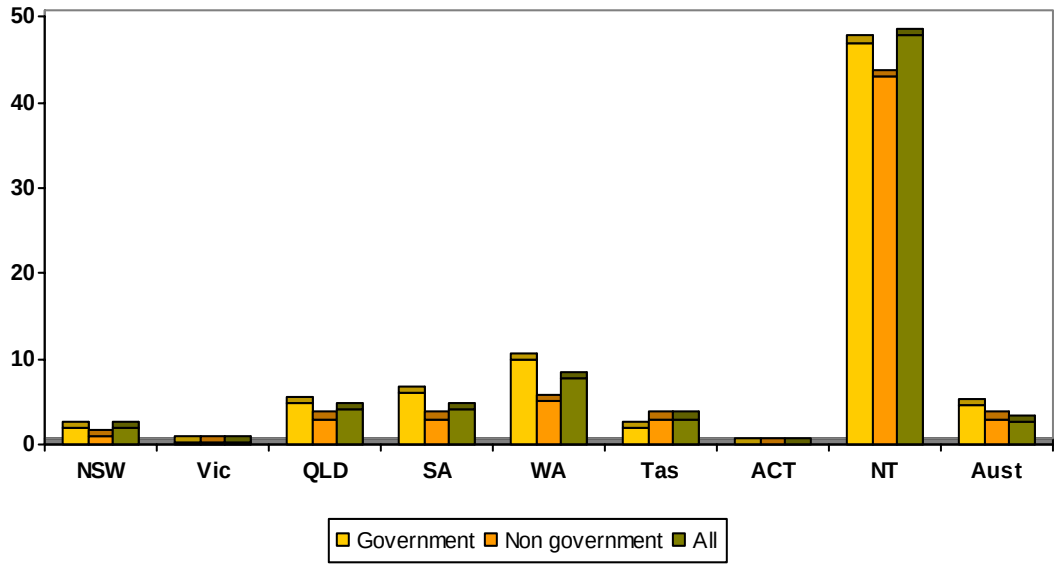
Source: Report on Future Directions for Secondary Education in the Northern Territory (2003:16)

As case studies throughout this document have demonstrated, IK has a definitive role to play in reversing these trends. Senior Aboriginal people have clearly stated a desire to pass on their knowledge to succeeding generations whilst still recognising the need for their children to attain a wider range of skills. Likewise, younger people have stated in many cases that their primary concern is to learn from their elders and maintain their culture, which is inextricably linked with IK. A sense of obligation for the caring of country, also IK informed, underpins these desires.

The testimony of senior Aboriginal people and the various models presented in this study have shown how success in this area can be achieved. One of the most important points to emerge, concerns the need for learning to take place in context, on country. However, the NTDE has been reluctant to support remote area schools (NTDE 1999:19). This reluctance combined with the absence of appropriate curricula is identified as one of the main causal factors for the lack of motivation evident among young Indigenous people to either attend or remain in the existing school system. When viewed in light of Table 2, the negative implications for the inter-generational transfer of knowledge and thus for community and environmental well-being cannot be overstated and applies equally across State and Territory border.

Such figures are alarming and do not augur well for the future management of Indigenous estates or the overall viability of remote area communities. The combination of high fertility, low life expectancy (ABS 2003) and the subsequent loss of IK highlight an urgent need to support community initiatives in remote areas: as the youth population grows, the pool of Indigenous teachers is in serious decline. Therefore, if governments are to meet stated Indigenous policy goals, further and ongoing support for remote area schooling and appropriate two way educational models, is essential.

Table 2: Students attending schools in remote areas as a proportion of all students, 2001.



Source: Adapted from DEST data, unpublished in DEET Annual Report 2004-2005.

This form of educational support is vital to enhance existing and proposed economic enterprises on Aboriginal lands. But such support must be matched with a realistic evaluation of, and appropriate remuneration for, Indigenous contributions to the local, regional and national economies. The benefits of IK transmission and application are well documented and have, in many cases, already led to marked improvements in overall social and environmental well-being. Further investment in these areas is imperative if government is to realise broader policy aims as stated below:

> [To] *effect a practical balance between the recognised need to preserve and enhance Aboriginal cultural tradition in relation to certain land…and the aspirations of … Aboriginal and all other peoples… for their economic, cultural and social advancement...*
>
> (Aboriginal Areas Protection Authority 2006)

IK is the cornerstone of this 'cultural tradition' based around a caring for country ethos that returns positive outcomes for both Indigenous and non Indigenous Australians. A cooperative approach to the provision of two way education models, in both urban and remote areas, will enhance these efforts and bring about both environmental and social well being as well as ensuring future Indigenous land and sea managers are adequately schooled and skilled in customary management practices as well as those of mainstream NRM. The success of future and ongoing collaborative ventures may rest on the realisation of this goal.

Many of the points identified thus far, emphasise the need to integrate IK learning programmes with mainstream educational curricula. As noted, in communities across northern Australia, traditional owners stress the need for their children to learn English literacy and numeracy skills: 'English is the language of power in Australia...' (Report of the Implementation Phase of Learning Lessons 2006) and Aboriginal people are calling for this need to be filled. They recognise that this education will provide their children with the skills necessary to meet a variety of new challenges in an ever-changing world, both in caring for country and in wider social contexts.

The data presented above shows that the demand for and value of, appropriate two-way education models is well established at least in terms of public policy. However, support for such models is typically adhoc and inconsistent – thus policy seldom translates into practice in any meaningful sense. Yet appropriate support along these lines is critical, not only to reverse the downward trend in Indigenous education outcomes, but also to ensure IK transfer and retention along with all the positive social and environmental benefits it delivers. From this perspective, support for these models provides governments – Territory, State and Federal – with an opportunity to lift attendance, retention and achievement rates through providing relevant educational materials and methods for remote Indigenous youth. At the same time, such support will go some way toward promoting the value of IK and thus securing the future of existing Indigenous land and sea management principles and practices across the remote estate.

These possibilities are discussed in further detail in Section 5, Strategy 1, Action x. In the course of this discussion various existing resources are identified; although scarce these are also under-utilised. Additionally, there are a number of practical mechanisms already in place across northern Australia which, with appropriate support and coordination, would enable the effective delivery of such resources to remote areas (See Appendix D). In many respects, education must be of primary consideration in any successful strategic planning for the conservation and application of IK.

3.5 Indigenous Knowledge, Health and Social Well-being

As noted previously, wild harvests deliver a range of health benefits for a variety of reasons. And while research in the past has focused primarily on commercial application, the focus has now shifted towards an examination of the reasons for these positive health outcomes. These findings extend beyond simple improvements in diet and exercise.

Indeed, even the mainstream press, has reported favourably on what Indigenous people have been arguing for years: where people are on country, have access to traditional food sources and the capacity to pursue customary activities, people, country and culture remain strong. Against this backdrop, there is mounting evidence that where this is the case the combination of diet,

exercise, lifestyle choice and prevalence of 'business' gives rise to remarkable improvements in physical health and social well-being. These studies also confirm the efficacy of various bush medicines and remedies.

Ironically, the most positive results are often returned where people live on remote outstations. In these settings, housing standards and lifestyle options (if not lower than the mainstream) are certainly alternative. While such outstations are often scattered over wide areas, they make up functioning communities, in which mortality rates are often lower and the incidence of chronic Indigenous ailments such as diabetes, heart, kidney and eye disease are significantly reduced (O'Dea 1984, 2001; Altman and Whitehead 2005; Burgess and Morrison 2006).

The social benefits of improvements to physical and psychological health are self-evident. In many of the instances cited above, the social problems that plague other remote communities are either reduced or entirely absent. Additionally, increasing outside interest in the knowledge Aboriginal people hold, promotes the intergenerational transfer of that knowledge. For young people, this interest serves to demonstrate the value and relevance of IK in contemporary contexts. Significantly, none of these positive outcomes is possible without direct reference to IK and all of them play out around a healthy country, healthy people nexus.

3.6 Indigenous Knowledge, Innovation and the National Interest

In a sense, Australian governments (and thus Australian taxpayers) currently outsource for the provision of environmental services which traditional owners, living on country, already provide at very little or no cost. These services – ranging from fire management to biodiversity maintenance – are indispensable and clearly outlined above. In the context of increasing environmental concern and impending climate change, their value is poised to grow exponentially in the immediate future.

This innovative, but evidence based, line of thinking has led to the concept of a *culture based economy*. In short, this concept rests on the well-supported and vital premise that where Indigenous people remain on country, cultural and natural values are maintained, even enhanced, while the services traditional owners provide serve both local and national interests. Additionally and as already demonstrated above, customary environmental services already make a significant contribution to both local and mainstream economies. These contributions have a demonstrable market value.

Given the growing global emphasis on sustainable resource use, this unheralded contribution, provides a real possibility for future employment and economic development on the Indigenous estate. Appropriate recognition and remuneration for the essential services traditional owners already provide represents the logical first step toward this end. From the perspective of government, this approach could prove remarkably cost effective, reducing the need for expensive outside intervention, in terms of the provision of both environmental and social services.

With bio security and border protection issues increasingly topical, the argument is strengthened. The following case study further highlights the value of IK through demonstrating how this knowledge is already deployed in the national interest.

Case Study: Biosecurity and Border Protection

Steve Johnson

From One Arm Point to *Ngukurr* and beyond, various Aboriginal Ranger groups provide invaluable services in terms of bio security and border protection. Some estimates suggest that over 1300 foreign fishing vessels were sighted in northern waters over 2005. Many of these slipped under the radar and evaded expensive coastal surveillance systems. Each of them compromised national security and was a potential disease carrier and thus a threat to national interests. However, in numerous instances these fishing boats were detected by Aboriginal Rangers, using their detailed IK of locality, and subsequently apprehended. The organisations that run these programmes are invariably cash strapped, while the rangers themselves are on CDEP or 'work for the dole' schemes. These contributions are sometimes recognised but seldom rewarded.

In some cases, payment for these services is under negotiation or already underway. For example, in the context of current debate around carbon abatement and climate change, innovative possibilities exist for traditional owners. These possibilities are increasingly marketable to both private and public sectors. For example, it is well established that early season Indigenous burning limits the possibility of wild fires. Such wildfires contribute significantly to the level of green house gas emissions. In a landmark decision, an agreement providing payment for Indigenous burning to secure carbon offsets, has been reached (see Case Study below).

Case Study: Western Arnhem Land Fire Abatement Project

Peter Cooke

An estimated $350,000 went towards supporting science aspects of the project over time while the remaining grant funds went into on-ground fire work through indigenous partners. Although details remain commercial in confidence, it is expected that in 2006 private funding will provide for a greatly expanded program of fire management in western Arnhem Land, on the basis that this IK informed and improved fire management regime will deliver abatement in greenhouse gas emissions. This is a ground-breaking arrangement that will deliver NRM/biodiversity outcomes as well as creating jobs for Indigenous people in areas where there have never been full time employment options. There is an excellent prospect that this funding arrangement will operate for at least 20 years.

The fire management approaches being used draw on, and to a large degree emulate, traditional burning practise. Thus the sharing of knowledge between senior Indigenous people and science colleagues as well as the intergenerational transfer of this knowledge has been crucial to success. Bardayal Nadjamerrek (AO) and others have detailed the seasonal and habitat-specific approaches to traditional fire management that are now being put into practice by vehicle, helicopter and on foot. They have provided information on the plateau regarding Indigenous estates and smaller areas of responsibility that has enabled landowners and managers to talk, plan and act effectively about plateau fire management and other issues.

In aggregate all of these things have created sufficient social capital to arrive at agreements and to facilitate collaborations between different Aboriginal groups and between Aboriginal groups and scientific experts, at low transaction costs.

Without the blessing, enthusiasm and Indigenous knowledge of the handful of elderly Indigenous leaders and experts remaining on the plateau, there would be no dialogue, no collaboration and thus no successful outcome in any terms. Mutual respect, trust and a sense of common purpose have carried a dream to impending reality and in so doing have dramatically reduced the need for continued Government funding. Indigenous knowledge has carried the day in fixing a critical NRM problem in Western Arnhem Land. If as expected the private funding arrangements persist for 20 years, the return will be more than 15 times the initial NHT investment over seven years.

Each of these activities is dependent on Indigenous knowledge. In view of current global security concerns and environmental challenges, they further highlight the value of IK in contemporary contexts. Moreover, *actual* employment and economic opportunities do arise out of the ecosystem services Traditional Owners continue to provide. From this perspective, rather than 'cultural museums', remote Indigenous communities appear more as national assets. Nevertheless, as the following discussion reveals, the positive potential for economic, social and environmental growth and well being right across the remote Indigenous estate, is yet to be fully appreciated, let alone realised.

4 IMPEDIMENTS TO IK

4.1 Immediate Threats

> *Language not gonna stay longa…all them people dying everywhere, all the language mob, country mob…some people finishing up*
>
> (NAILSMA Transcript 3, de identified 2006).

Many impediments to appropriate IK support are already evident in the examples presented above. Typically, these emerge out of misunderstandings over the nature of IK and often result in the undervaluation of IK contributions, the subsequent imposition of inappropriate 'solutions' and the provision of adhoc and cyclical funding support. At the same time, the integrity of this invaluable resource is critically threatened.

These threats are summarised immediately below. This summary is then elaborated on from an Indigenous perspective, before the principal challenges to the provision of timely and appropriate support are outlined in more detail. The main objective of the strategy is to focus on solutions and therefore, these impediments are clearly but only briefly defined. Substantive supporting evidence is presented throughout this Report and the accompanying Strategy.

It should also be noted that while the threats identified in the following summary apply across northern Australia, support needs will vary according to historical background as well as cultural and regional context (see Section 5 *Local and Cultural Context* below). With these qualifiers in mind, immediate threats to IK include:

- The passing on of senior people;
- The loss of language and associated cultural knowledge;
- The subsequent cessation of cultural activities;
- A lack of understanding and subsequent undervaluation of IK;
- Limited resources for the teaching of language and knowledge;
- A lack of appropriate cross over with mainstream educational curricula;
- A lack of recorded information and difficulties with access;
- Ill health, social stresses and other factors which prevent learning in context, on country;
- Competing demands on the time and interests of younger generations;
- Urban drift due lack of jobs, services and opportunities in remote areas;
- Widespread environmental degradation and subsequent threats to IK integrity and learning environments;
- Reduced access to ancestral domains now occupied by others;
- High transaction costs associated with remote living and cross-cultural engagement.

While language and culture remain strong in many parts of northern Australia the stresses summarised above have an undeniably corrosive effect. Consequently, many senior Aboriginal people perceive a loss of subtlety in the knowledge younger generations possess, and despair that their kids are not learning enough about country and law. They emphasise that IK is about practice as much as content and it is country that provides the essential learning environment. From this perspective, IK cannot be taught or learned solely from a book, in many ways it is more experiential than merely theoretical.

However, sometimes access to country is no longer possible. An even where it is, it is often hard for people to get out on country for a variety of reasons that extend beyond but also include a

simple lack of transport. Sometimes, when people do travel to their homelands the level of environmental degradation through neglect or misuse is cause for despair in itself. In addition, senior people often bear the brunt of the social stresses that stem from alcohol abuse, petrol sniffing and domestic violence. Increasingly, they are taking on the responsibility of childcare – raising grandchildren and even great grandchildren. Older people are tired, in the face of a daily struggle against a wide range of social and financial hardships.

This combination of factors means that sometimes there are only a few senior, knowledgeable people left to whom others can look for guidance, advice, knowledge and support. However, these people too will pass away and rich bodies of Law, knowledge and experience (where that knowledge and experience has not been passed on) will be lost with them. In this context, the principal threat to IK consists of two overlapping elements: a reduced capacity for the intergenerational transfer of IK and the rapid demise of senior people.

> *The knowledge is very powerful. If that knowledge is gone, we are gone too*
>
> (NAILSMA 2006:13).

What this loss signals for many Aboriginal people is evident in the comment above. For many people IK is an everyday cultural and environmental event, a matter of fact, which underpins individual identity and is embodied in culture and enacted on country. For these reasons, even the choice to participate or not is nowhere near as clear-cut as it might first seem. Such decisions are informed by matters that extend beyond conventional employment and mainstream NRM concerns to encompass the systems of relatedness (to kin and country) that many Aboriginal people invoke to make sense of their identity and place in the world. These are not abstract or academic concepts but are instead, integral elements of what may be termed Indigenous Knowledge. IK itself is firmly grounded in social context and not near as 'portable' as some researchers would have it. Moreover, the loss of that knowledge has ramifications for Aboriginal people that extend beyond the loss of a simple, albeit extensive, catalogue of facts.

4.2 Undervaluation

> *Our story is in the land. It is written in those sacred places. My children will look after those places. That's the Law*
>
> (Neidjie in Burgess 2004:9).

Primary reasons for the undervaluation of IK bear direct relationship with these immediate threats and are summarised as follows:

- A failure to understand what IK is;
- A failure to understand ITR (eg: kinship and governance);
- Ineffectual or inappropriate consultation;
- Inappropriate instruments for measuring IK contributions;
- A lack of appropriate rewards for services rendered;
- The 'cultural museums' tag;
- A lack of focused and exclusive IK support programmes;
- A lack of consistent cross over with mainstream institutions;
- A lack of consolidated and consistent approaches to appropriate support;
- Institutional territoriality;
- Inadequate, inappropriate and/or one-way IP protection measures.

Arguably, the most significant element in this tendency to undervalue IK is the failure to understand what it actually is. As noted above, IK is learned and applied on country but land and

sea management activities also constitute an essential part of meeting individual and group obligations to culture and family. These activities and obligations represent core elements in the maintenance of a cultural identity. However, because they are so deeply embedded in social context, they are sometimes difficult to evaluate using 'standard measures' and therefore their contribution to 'practical' NRM and other outcomes is subsequently undervalued (see Subsection 3.1).

This close articulation of social and natural worlds has led many researchers, when discussing Indigenous contexts, to coin the term cultural and natural resource management (CNRM) in preference to NRM. Michael Christie (2006) for one has referred to this dimension of IK as evidence of a 'knowledge culture' – *how* people know, rather than just *what* people know. It is culture that provides the means for the intergenerational transfer of knowledge and thus the maintenance of sustainable management practices. At the risk of labouring the point, when viewed in light of the statistics presented in Section 3, which suggest a burgeoning young Indigenous population with an ever increasing responsibility for land and sea management, it is critical that this aspect of IK be better understood, documented and actively supported.

The following case study, demonstrates just how knowledge is passed from generation to generation through practical activities on country and in accordance with these cultural guidelines and protocols. It is through back to country activities and general land management work that the 'knowledge culture' is reaffirmed and revitalised. Without appropriate support for such activities IK may be reduced to a simple catalogue of facts and figures whilst the attitudinal and philosophical underpinnings that inform it and have produced sustainable environmental interactions over the millennia, are lost from view. The implications of such loss extend beyond mere NRM concerns to encompass the loss of culture, a growing divide between younger and older generations and a subsequent escalation of the social ailments afflicting many contemporary Indigenous communities. Community initiatives such as the *Mimal* Rangers go some way toward addressing many of these issues.

Case Study: *Mimal* Rangers
Pascale Taplin

The *Mimal* [fire] Rangers have been working on land management in *Dalabon* and *Rembarrgna* country in the *Bulman* region for about six years. The *Mimal* Rangers are a multi-skilled land management team that works to mitigate emerging land management issues, while maintaining the land management practices from *buhkorrehkun* - a long time ago - that their people have always practiced . The *Mimal* Rangers focus on fire and weed control, and have also undertaken more diverse work on issues like sacred site protection, feral animal control, water quality monitoring, and erosion control.

The logic of land management
The Rangers and their 'board of directors' – Traditional Owners, *junggai* [boss for country also spelt *jungkayi*] and old people – do not think of their land management work as distinct from their culture or "Indigenous Ecological Knowledge" (IEK). The Rangers host community meetings to plan work and sign people up for the program. Senior people in the community make a case for who should join and what work should be done:
"So-and-so has to work to look after his mother's country around *Gropulyu*"
"Now you have all *Duwa* [name of patrimoiety] and no *Yirridjdja* [name of patrimoiety] Rangers with you, you need both. So-and-so better join" "So-and-so is *junggai* for *Bamdibu* so when you work there he has to go with you to tell you what to do"

The Rangers can't just go out anywhere around Bulman and start burning off or poisoning weeds. This work is immersed in a context of cultural obligations and protocols. Before we go to spray weeds or do a control burn we have to ask the Traditional Owners. If we go

somewhere to work, we have to take *junggai* with us. This is the only way to get on-ground land management work done in the Bulman region.

Sustaining land management

Last year, George *Jungawanga*, an old man and senior knowledge holder in the region, raised his concerns with the Rangers. He was worried that the young people weren't learning enough about country. The Rangers know some things, but there are more complicated layers and intricate details that only old people remember. He said that there is a lot of country where most people have forgotten its moiety [clan affiliation] that in some remote areas there are sites that are being forgotten, and that people are failing to learn important elements of *dulu-no* [rule, law, song, dreaming passage] and *walu-no* [strength, power, custom, law]. George wondered if his grandchildren would lose their land rights if they didn't learn. He asked how they would survive if they didn't know how to burn country to bring bush tucker. How could people manage country if they don't know its moiety or who is jungkayi? George argues that there is no future for Aboriginal people to live on and manage country unless they learn more from their old people.

Senior community members were asking for a more formal means of addressing IEK in the Ranger program, envisaging benefits and applications for the broader community. They are concerned that the current level of understanding held by young people isn't sufficient. The Rangers work to manage country in response to cultural obligations and protocols, but there remain more complex layers of knowledge that give this context real depth of meaning; the "how and why" of young people's current perspectives.

In response to these concerns the *Mimal* Rangers developed a specific IEK project. Senior people identified a learning gap that suggests that we need to take more active steps to facilitate intergenerational learning. The best way to do this is on country. The *Mimal* Rangers' "Back to Country, Back to Culture" project is currently funded by the Indigenous Heritage Program for one year, at a cost of $24 300. The project is about bringing old and young people together to talk about the sites, stories, and ethno-biological knowledge that old people consider important. The project has only been going for 3 months; some things that the group has focused on so far are:

- Teaching young people which country is *Duwa* and *Yirridjdja*
- Teaching, mapping and recording in detail the First Human Beings and *Wurlala* (creation ancestors) stories
- Teaching young people how to burn at the right time to promote significant species, including emu, echidna, bustard, and bush tucker plant species

The project facilitates intergenerational learning by;

- Funding cross-country walks, where under the direction of senior people young people walk for several days, visit and burn areas without road access, in recollection of pre-mission times
- Providing resources to make getting to country possible (car, swags) and to record information (video camera, mapping capabilities)
- Paying the old people as expert IEK consultants

This last point is most important because paying IEK experts for their time and expertise demonstrates to young people that IEK is valued in a modern economic context. It also demonstrates to IEK experts that we value their expertise and their time, and makes involvement in the project economically viable for IEK experts.

Project management is undertaken by the Rangers' current coordinator (NHT-funded Northern Roper Indigenous Land Management Facilitator). This project takes up about 10% of a full time position. Among the challenges ahead for our project is finding a means to store recorded information in the community, in a format accessible to community members. Due to constraints on purchasing capital items in applicable grant programs, we don't currently have funding for a computer. At times it would be ideal to have computing capabilities on bush trips, so we believe a laptop with easy to use software like Text Audio, Movies and Images (TAMI) or MILO would be ideal for our project.

It soon becomes evident yet again, reading the above case study, that for Aboriginal teachers, the classroom is country. Projects such as the one described, bring older and younger generations together to teach and learn by doing. This practical dimension, or *praxis* – the discovery of knowledge through first hand experience – is an essential element in the intergenerational transfer of IK both distinguishing it from other knowledge traditions and, in combination with the connection to country, defining its unique value. Consequently, external support for these sorts of projects delivers real benefits on many fronts: participation levels are high, the knowledge culture is reaffirmed, IK is validated and the blend of IK with mainstream management practices produces real time NRM outcomes in what are, in many cases, new issues to be faced in caring for country. The costs of not providing adequate support are expressed in the following quote from a senior *Yanyuwa* woman, distressed and angry at not being able to visit country and thus not being able to provide appropriate learning opportunities for children in her care:

> *Them kids muru* [shut up, closed, silly]. *They not living on country. They' bin talk whitefella brain. They don't know Aboriginal way*
>
> (Johnson Field Diary Entry 2002:4).

The more qualitative depths to these connections to country are explored further at various points later in this document and also in the Strategy. In the interim, with reference back to the case study, it is important to note the importance of kinship relationships in the application of IK. Although Indigenous kinship is often disparaged in various circles as the main impediment to Aboriginal 'progress' it is in truth one of the most abiding elements of Aboriginality and of IK itself: kinship informs every aspect of IK. It is a social and environmental principle for land and sea management, providing mechanisms for sustainable use which are articulated with seasonal variation and individual and collective rights to particular tracts of country. It is kinship as much as any other element of IK that informs mosaic pattern burning, determining who should burn when and where according to season and responsibility. However, as George *Jungawanga*, points out in the previous case study the finer grained details of kinship and consequently IK are in danger of being lost to younger generations.

Apart from widespread dispossession, this loss can be attributed to a number of historical factors. In the first instance, as noted above, kinship is often dismissed as a relic from a bygone era, a particularly topical point given current arguments on the national stage regarding individual property ownership. Secondly, the complexity of these relationships often eludes non-Indigenous observers, from anthropologists to advocates, and is simply glossed over. The second point is particularly significant because it emphasises the importance of informed consultative methods as well as highlighting the complex cultural protocols that often govern the disclosure of IK. For example, in many cases around Australia, owners for country, who commonly inherit from their father's father, are unable to act in relation to that country without the consent of custodians (often referred to as policemen or bosses) whose inheritance frequently comes from their father's mother. When the fine grained detail of such kinship relationships is ignored, cultural protocols are compromised and consequently interest and participation levels, particularly in external NRM focused projects, are lessened.

These examples are generalised and do not define a 'one size fits all' view of Indigenous kinship. However, having considered the close relationship between IK, kinship and effective land and sea management, they establish a strong case for appropriate consultative methods, which are sensitive to the finer nuances of Aboriginal sociality, environmental interaction and thus, IK. Attention to these details will only heighten existing participation levels and enhance the intergenerational transfer of knowledge (see Appendix C for Community Mapping model).

All of these factors contribute to waning community interest, resentment and duplication at all levels and across all sectors. They also inform the imposition of inappropriate support solutions and project regimes, which are often so NRM heavy that any IK component appears as mere afterthought or expedient tool. As the following discussion reveals, such approaches are counter productive and often preclude the possibility of achieving any management objective, whether mainstream NRM or IK informed.

4.3 Imposed Solutions

At one level these misunderstandings and misrepresentations are inadvertent and due to cross-cultural dissonance and other translation difficulties. At another, they are a matter of expedience, allowing access to the Indigenous estate and an Indigenous labour reserve. In the latter case, this form of engagement is often career oriented or profit motivated, providing the individual or agency with marketable 'cross cultural' credentials.

> *They got whitefella brain, they don't know Aboriginal way*
> (Johnson Transcript 2001).

In both cases, IK is reduced into alignment with prevailing NRM or other agendas. Hence, experts in the field will talk at length about IK contributions to biodiversity but will condemn Indigenous hunting; conveniently ignoring the fact that for many traditional owners, biodiversity and hunting are not mutually exclusive but inextricably linked. These same experts will go on to discuss the need for appropriate Indigenous governance structures, but will then dismiss kinship as an *impediment to progress*. In the context of this debate, the term capacity building is often heard. But capacity entails choice, and the reduction of IK to suit other agendas, limits those choices and diminishes Aboriginal interests. Often such agendas are informed and enacted through:

- Selective engagement – expedient, ineffectual or opportunistic consultation;
- Territoriality – competition for jobs, career advancement and relevance;
- Overriding mainstream agendas;
- The superordinate status afforded mainstream science based NRM solutions;
- An incapacity to look beyond those solutions;
- Assumptions regarding a universal accumulation ethic and Aboriginal aspirations;

> *They* [balanda] *call him junior ranger programme…I call him taking children back to country*
> (Campion in Johnson 2005:13).

The above comments provide an insight into this process. Frequently, traditional owners are forced to resort to the language and logic of mainstream NRM in order to get support for IK activities. Thus an initiative aimed at getting young and old people together on country must be put in terms of a Junior Ranger programme. Yet the benefits of conducting such activities, in Indigenous terms, have been clearly highlighted throughout this document and elsewhere. They contribute directly to meeting the commitments and objectives outlined in various government documents and agreements (See *Political Contexts* below). When, however, these activities are

subject to overriding mainstream agendas, NRM and otherwise, community interest dissipates and participation levels drop off.

> *Indigenous Knowledge is integral to Natural Resource Management*
> (NHT 2004:1).

The broad spread of Natural Heritage Trust (NHT) Literature (see various pamphlets in the *Working with Indigenous Knowledge in Natural Resource Management* series DEH 2004) suggests that the Commonwealth is aware of these concerns. Although these pamphlets carry a disclaimer they do acknowledge similar issues to those raised throughout this Report and specifically identify ways to improve community engagement through overcoming the:

- 'poor understanding of Indigenous knowledge';
- 'devaluation of Indigenous knowledge by Western science';
- 'lack of mechanisms to protect Indigenous knowledge';
- 'lack of resources and frameworks for Indigenous knowledge'.

(NHT Working with Indigenous Knowledge in Natural Resource Management: Ways to Improve Community Engagement)

In spite of this acknowledgement however, NHT funding guidelines and applications are often still written in a form that is virtually inaccessible to most Aboriginal Australians, and almost exclusively targeted at mainstream NRM activities such as weed management, tree planting and feral animal control, although this situation is gradually changing. In view of published NHT literature and acceptance of the critical role IK and Indigenous people must play in meeting NHT/NRM outcomes, the observation still suggests a gap between published declarations of support for IK and the provision of practical mechanisms for delivery of that support in timely fashion and appropriate forms. Effective and ongoing consultation with peak Indigenous representative organisations at Federal, State and Territory levels, would remedy this anomaly to some degree.

Not surprisingly these concerns have been tackled more effectively on the ground at State and Territory Government levels, where NRM planning and implementation is all but impossible without Indigenous involvement. Direct quotes from the Integrated Natural Resource Management Plan N.T. demonstrate this clear concession to Indigenous management and IK in general.

> *Effective NRM requires long-term commitment to support communities to have well-understood and valued roles as resource managers. This means recognising, valuing and bringing together local, scientific, cultural and Indigenous knowledge*
> (INRM2005:72).

This objective is vital but open to misinterpretation and may prove difficult to realise. As noted repeatedly throughout this document, the substantial contributions Indigenous management activities make to meeting mainstream economic and environmental objectives are often hidden from view and consequently undervalued. Similarly, IK itself is often evaluated solely on the basis of its portability or use value, as measured by science centred management appraisals. These value measurements sometimes divert attention from critical support needs around the application and conservation of IK in particular contexts. That is, IK is critical to NHT/NRM outcomes but the IK knowledge base is locally based and threatened. Therefore, there must be a commitment to in situ IK conservation and application on country, as well as use in wider NRM contexts.

Local Aboriginal communities play a vital role in managing sea country, with a number of community sea ranger groups having started in recent times. These groups are involved in population monitoring, coastal feral animal eradication programs...[and]...also play an important role in the early detection of new populations of invasive species

(INRM 2005:64).

With reference back to earlier discussion, this statement once again exposes a gap between published declarations of support for and understanding of IK and the provision of practical mechanisms for the delivery of that support in appropriate forms. All of the tasks identified above are high on the list of mainstream NRM priorities. However, the only Indigenous contribution acknowledged, is in terms of the labour required to meet these objectives. Other IK contributions and interests do not rate a mention at all. Appropriate consultation methods, at organisational and community levels and within realistic time frames, would help to remedy some of these oversights.

In fairness, the NRM N.T. Board is at the forefront of appropriate support provision for IK. However, they too are subject to the prevailing logic of mainstream NRM and often have little choice but to address funding submissions and other requirements in these terms, much in the same way as a traditional owner will apply for support for a junior ranger programme when what is needed is a back to country trip. These constraints, and the imposed solutions they give rise to, make no allowance for the myriad 'extra curricular' activities that maintain the integrity of IK and ensure its ongoing application across northern Australia. The observation suggests that either there is still a singular failure amongst policy makers to understand IK and adequately assess its value, or that statements of support are merely expedient, providing access to the Indigenous estate and to Indigenous labour at cut price rates. It is ironic to note that this inflexibility may well be contributing to the demise of IK while at the same time governments and other agencies of all complexions seek to cash in on its more visible and saleable aspects particularly in relation to art, tourism, environmental values and indeed the Indigenous estate itself.

It is the level of external control over the deployment and implementation of such *solutions* that is of overriding concern in these instances. Even where Indigenous people own and occupy their country, control over funding for its management and upkeep often resides with government and other agents and agencies. In these cases, agendas are already defined and management plans devised before negotiations commence. It is then, and only then, that Indigenous interests and aspirations are accounted for. Thus consultation takes place after the fact, and is geared almost exclusively toward soliciting Indigenous support to realise predetermined non-Indigenous objectives. Somewhat disingenuously, this form of consultation is often represented as a best practice model and applauded as an example of how to *Walk the Talk*. The top down nature of such approaches is nowhere more evident than in the realm of funding.

4.4 Funding

In many respects, current approaches to all forms of IK support reflect a prevailing mainstream mindset. Funding is provided to discrete sectors – environment here, economy there, health and education elsewhere - each of which operates independently of the other and guards its territory jealously. Often, benefits that accrue in one sector from investment in another cannot be adequately assessed or even acknowledged across these boundaries for fear of the loss of specialist status and thus ultimately, funding support. This form of departmental and cross-sectoral territoriality severely impairs the delivery of appropriate support and diminishes returns on overall investments: even private and public sectors are in competition while interdepartmental rivalry precludes cooperative and coordinated approaches either at organisational or even individual levels.

Increasingly government/s recognises the negative aspect to this competitive rivalry and call for *Whole of Government* solutions. In the context of current recommendations, the call is taken up with arguments for *All of Agency*, *Whole of Government* and multilateral support mechanisms based around IK as an organising principle for appropriate investment across the Indigenous estate (See Strategy 5, Action a) A3 Insert).

Toward this end, it was argued in *Section* 3 that the Indigenous provision of environmental services often delivers more *bang for the buck* than many existing and better financed alternatives. This argument was reinforced with reference to issues around bio security, border protection and climate change. As noted in these instances, the biggest stumbling block to securing this support is often the lack of an appropriate measurement scale for IK evaluation. This lack is also evident in the unrealistic expectations attached to many current-funding arrangements.

> *A lot of the disappointment we have been having through the NHT grant and through AQIS, is that it is short term and you have to do it really quickly, and you think, hang on, its gonna take you years to get there*
>
> (NAILSMA Transcript 2, 2006:15).

As the above comments indicate, these arrangements are often ad hoc and short term and take little account of the difficulties and transaction costs associated with remote living. In addition, monitoring and evaluation mechanisms and targets are often inappropriate and unrealistic. These demands in terms of reporting expectations and requirements are often counter productive. In summary, key impediments to existing funding arrangements include:

- The absence of appropriate instruments to accurately measure IK contributions;
- Adhoc, short term funding where IK is by product rather than guiding principle;
- Dependence on NHT funding avenues – often *the only game in town*;
- Short term political, research and funding cycles;
- Unrealistic and inappropriate M&E representing overriding mainstream NRM objectives often at the expense of community aspirations;
- Territorial imperatives – competing claims to expertise in face of limited and very competitive funding opportunities;
- The absence of appropriate instruments to monitor and measure delivery on government commitments and successful investment outcomes.

Aspirational targets identified in government and other sector documents indicate a clear understanding of these challenges. However, as noted in the previous section of the Report, the possibility of achieving these targets is often impaired by the methods employed. These arguments are elaborated on below through reference to a Northern Territory example, which, although particular, resonates and has relevance right across northern Australia. Specific solutions are then presented in Section 5, with a particular emphasis placed on Indigenous Protected Areas. Against the backdrop of inadequate funding for conservation and related activities across the board, these recommendations stress the cost effectiveness of eliminating the 'middleman' and dealing directly with Traditional Owners and Indigenous representative bodies.

4.5 Political Context: IK and Shared Responsibilities

There have been major shifts in Indigenous policy – at both Federal, State and Territory government levels – in recent times. At the Commonwealth level, ATSIC has been disbanded and replaced with an Office of Indigenous Policy Coordination (OIPC) while various changes to the Land Rights Act are currently under review. These and other developments signal a concerted

effort on the part of government to address Indigenous disadvantage Australia wide, with a particular focus placed on the remoter parts of the continent. This effort has been accompanied by a change in the language of policy debate.

Terms such as 'mutual obligation' have become commonplace while Shared Responsibility Agreements (SRAs) based on this principle, have been implemented or are under negotiation in Aboriginal communities across the country. Accompanying these developments has been vigorous, if not rigorous, argument over the pros and cons of current policy direction both within politics and in the mainstream press. In the public arena, considerable controversy has arisen around issues of Indigenous education, private ownership and the overall viability of remote communities. Many of the solutions put forward over the course of this debate appear antithetical to the aspirations and priorities of Traditional Owners and have caused a good deal of unease within their communities.

Arguably these developments have wider implications for northern Australia than elsewhere in the country. Issues around Indigenous health, education, law and order and environment are at the forefront of Territory, State and Federal government concerns. However, in many ways these issues are merely symptomatic of wider causes. In the following discussion it is argued that investment in IK for NRM shows a real potential to treat these underlying causes and thus alleviate a range of symptoms, from social and domestic distress to unemployment, health and antisocial behaviour. Investment of this kind, promises to meet government objectives over a wide range of social and environmental concerns.

At the federal level, this potential suggests that these remote Aboriginal outposts – from outstation to community – represent much more than mere 'cultural museums'. As argued, existing activities in these areas are not only producing tangible NRM outcomes, but are also contributing to the mainstream economy and to national security: these are services provided in the national interest. It stands to reason that appropriate recognition and reward for these contributions, both politically and in real dollar terms, will go some way toward addressing current Indigenous social, educational and health disadvantages. Such recognition suggests positive spin offs in terms of building Indigenous social capacity and reaffirming Indigenous governance structures. From this perspective, the under valuation of existing activities and initiatives is as much a causal factor in the failure to deliver practical outcomes in these areas, as any other. In a wider context and in the spirit of *mutual obligation* such developments depend as much on governments delivering on their own commitments as they do on Aboriginal people honouring theirs. Appropriate remuneration for existing activities and ongoing support for future developments may change the complexion of current debate, to suggest that prudent investment at local and regional levels will increase the viability of remote Indigenous communities and simultaneously address many of government's current concerns around various social, economic and environmental issues.

At time of writing, the Commonwealth is signatory, and has been for some years, to a number of documents that acknowledge the value of IK and pledge support for its conservation and application. These agreements have been drafted in international forums where similar issues to those raised in an Australian context have been identified and a global threat to IK and traditional environmental management systems has been clearly defined. This international perspective is outlined below, before various other relevant international instruments and mechanisms for IK conservation and protection are considered. The discussion provides a necessary background to a detailed examination of Australia's obligations and commitments to IK especially via the Convention on Biological Diversity (CBD). The National Strategy for the Conservation of Australia's Biological Diversity provides the principal mechanism for delivery on these obligations and is assessed on this basis.

The Territory and States are also signatories to this agreement and the implications of this are considered through reference to /performance in this regard is assessed through reference to a few select examples. The overall intention is to demonstrate that many of the mechanisms for the provision of appropriate IK support are already in place and simply require an exercise of political will to ensure implementation. At another level, these arguments suggest that delivery on those commitments and obligations would be remarkably cost effective while investment returns would extend beyond the mere maintenance of biodiversity, valuable though that may be.

International Perspectives

It is estimated that there are currently 600 million people world–wide, in some 70 countries, who identify as Indigenous, and who make up much of the planet's cultural diversity. Using language as an indicator of cultural diversity, it is estimated that about three quarters of the world's 6,000 languages are spoken by Indigenous peoples. It is also stated in the *Declaration of Belem*, that "native peoples have been stewards of 99% of the world's genetic resources" for a very long time.

Collectively speaking, Indigenous people reside in some of the most diverse ecosystems on the planet. They are the principal custodians and users of the world's biodiversity – particularly those used for food and medicine. The importance of the knowledge Indigenous Australians hold is extremely significant in a global context, but more importantly is seriously under threat at a local level due to a wide range of factors.

To deal with the issue of biodiversity loss, the Australian Government has been signatory to a number of commitments at both an international and national level with respect to Indigenous Ecological Knowledge (IEK), or as it is known in the international arena, Traditional Ecological Knowledge (TEK) or just Traditional Knowledge (TK). Importantly, being a signatory to these agreements raises awareness of the need to conserve biological diversity. One such agreement, the Convention on Biological Diversity (CBD) has been instrumental in developing sustainable solutions at a global scale for the future management of the planet. A brief description of the CBD follows:

Convention on Biological Diversity

At the 1992 Earth Summit in Rio de Janeiro, 150 world leaders agreed on a comprehensive strategy for "sustainable development" - meeting our needs while ensuring that we leave a healthy and viable world for future generations. One of the key agreements adopted at Rio was the Convention on Biological Diversity. This pact binding the vast majority of the world's governments sets out commitments for maintaining the world's ecological underpinnings as we go about the business of economic development. The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. The Convention recognises that biological diversity is also about more than plants, animals and micro organisms and their ecosystems – it is about people and our need for food, security, medicines, fresh air, water, shelter, and a clean and healthy environment in which to live.

Several articles of this convention are particularly relevant to the use and conservation of IK in Australia generally and northern Australia in particular (See Figure 3). They are:

Article 8 (j) – s*ubject to ….national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices;*

Article 10 (c) - *Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements;*

Article 17 (2) - *Exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialised knowledge, indigenous and traditional knowledge as such and in combination with (other) technologies referred to in Article 16, paragraph 1. It shall also, where feasible, include repatriation of information;*

Article 18 (4) - *The Contracting Parties shall, in accordance with national legislation and policies, encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies, in pursuance of the objectives of this Convention. For this purpose, the Contracting Parties shall also promote cooperation in the training of personnel and exchange of experts.*

In addition to the CBD, a number of other international instruments and initiatives are of particular relevance to IEK. They include:

1992 Earth Summit, Rio de Janeiro:

Agenda 21, in particular Principle 22, of the main document to come out of the 1992 Earth Summit, recognises that Indigenous peoples have a vital role to play in environmental management and development because of their traditional knowledge and practices;

The International Labour Organisations Convention 169 on Indigenous and Tribal Peoples:

This Convention calls for action to protect the rights of Indigenous peoples;

United Nations Draft Declaration on the Rights of Indigenous Peoples:

The Commission on Human Rights of the United Nations has established an open-ended, inter-sessional working group to elaborate a draft United Nations Declaration on the Rights of Indigenous Peoples – this work is in process;

The Inter-American Draft Declaration on the Rights of Indigenous Peoples:

An Indigenous Peoples and Community Development Unit has been established under this declaration and is currently drafting a strategy on Indigenous peoples;

The European Bank for Reconstruction and Development, the Asian Development Bank and the African Development Bank: These Banks are committed to ensuring that the development process promotes the participation of Indigenous people;

The United Nations Development Programme (UNDP) and the World Bank:

Both organisations have launched programs to promote Indigenous people's development and to ensure that the development process fosters the full respect for the dignity, human rights and uniqueness of Indigenous peoples;

Global Research Alliance (GRA):

In conjunction with the World Bank the GRA held an Indigenous Knowledge forum in South Africa in 2005. Amongst their state objectives was the development of a means:

…for the enhancement of the capacity of local communities to develop, share and apply their IK, for the development of innovative protocols for the validation of protection of IK, for the development of a results framework for monitoring and measuring its impact…for the establishment of an innovation fund to promote successful IK practices…(GRA 2005 [accessed online 14 Mar. 07] http://research-alliance.net/focusareas/HIIP'Indigenous.doc)

United Nations Conference on Trade and Development (UNCTAD):

Protecting and Promoting Traditional Knowledge: Systems, National Experiences and International Dimensions;

World Intellectual Property Organisation (WIPO):

The convention establishing the World Intellectual property Organisation and related treaties and agreements;

National Perspectives and Instruments:

Environment Protection and Biodiversity Conservation Act (EPBCA 1999)

The EPBCA (1999) is Australia's overarching instrument for delivery on the CBD and came into force on the 17 July 2000 and has as its core function:

[The EPBC Act] protects the environment, particularly in matters of National Environmental Significance. It streamlines national environmental assessment and approvals processes, protects Australian biodiversity and integrates management of important natural and cultural places.

The EPBCA refers directly to the 'convention' meaning the 'Convention on Biological Diversity' (EPBCA pp 381). Importantly the EPBCA has a number of objects that relate specifically to the issue of IEK including section 3(1) (f);

"….to recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity"

and section 3 (1) (g);

"….to promote the use of indigenous people's knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge".

Other statements of objects establish some of the ways in which these overarching targets will be addressed, namely by promoting:

"….a cooperative approach to the protection and management of the environment involving governments, the community, land-holders and Indigenous peoples' [Section 3(1)(d)] and by adopting a partnership approach to environmental protection and biodiversity conservation through:

(i) bilateral agreements with States and Territories; and

(ii) conservation agreements with land-holders; and

(iii) recognising and promoting indigenous peoples' role in, and knowledge of, the conservation and ecologically sustainable use of biodiversity; and

(iv) the involvement of the community in management planning.

It is clear therefore that, through the EPBCA the Australian Parliament has explicitly acknowledged and signalled the intent to honour its obligations to engage Indigenous Australians so that targets for biodiversity conservation and use can be achieved. The implications for resource management and biodiversity conservation are explored in detail elsewhere in this report. However, it is worth noting here that cooperation and partnership will be impossible under any management arrangements that disregard, discount or otherwise show disrespect for the skills, knowledge and beliefs of those with whom productive relationships are sought. Arguments presented thus far, suggest that in some instances at least, this is currently the case.

National Perspectives and Instruments

National Strategy for the Conservation of Australia's Biological Diversity (NSCABD) and the

National Objectives and Targets for Biodiversity Conservation 2001-2005

The national policy instrument for implementing the CBD is the NSCABD and the National Objectives and Targets for Biodiversity Conservation 2001-2005. All States and Territories are also signatories to the NSCABD. The strategy clearly identifies the importance of IEK in the management of biodiversity as a key activity. The relevant objective that relates to IEK in the NSCABD is:

Objective 1.8 – Biological Diversity and Aboriginal and Torres Strait Islander Peoples

This objective acknowledges that in order for the nation to meet biodiversity conservation targets, there is a need to:

Recognise and ensure the continuity of the contribution of the ethnobiological knowledge of Australia's Indigenous peoples to the conservation of Australia's biological diversity.

And further details under objective 1.8 stipulate that:

As a consequence of their long history in Australia, Aboriginal and Torres Strait Islander people have developed a special knowledge of biological diversity and have a particular interest in the conservation status of Indigenous species and environments.

Traditional Aboriginal and Torres Strait Islander law and cosmology establishes intimate connection between people, land and other species, with ritual, custodial and management responsibilities for the land and other species being passed down through generations.

These traditional approaches and outlooks persist in many parts of Australia; in other areas, despite the historical undermining of indigenous structures, contemporary Aboriginal and Torres Strait Islander cultures maintain a lively interest in, practical knowledge of, and concern for the wellbeing of the land and natural systems.

Although Aboriginal and Torres Strait Islander people may be willing to share some of their cultural knowledge, aspects of that knowledge may be privileged and may not be available to the public domain.

Traditional Aboriginal and Torres Strait Islander management practices have proved important for the maintenance of biological diversity and their integration into current management programs should be pursued where appropriate.

The maintenance of biological diversity on lands and waters over which Aboriginal and Torres Strait Islander people have title or in which they have an interest is a cornerstone of the wellbeing, identity, cultural heritage and economy of Aboriginal and Torres Strait Islander communities.

The "National Objectives and Targets for Biodiversity Conservation" has identified ten priority actions, of which action eight refers to IEK - "maintain and record Indigenous peoples ethnobiological knowledge" – as a key action with the respective objective to "Ensure Indigenous communities have access to resources to enable them to preserve their ethnobiological knowledge about biodiversity conservation".

The targets and performance measures for Key Action 8 are:

8.1.1 By 2002, all jurisdictions have in cooperation with Indigenous peoples:	
• Established mechanisms to facilitate the intergenerational transfer of ethnobiological knowledge; and	Number of jurisdictions that have negotiated mechanisms with Indigenous people to facilitate the inter-generational transfer of ethnobiological knowledge.
• Identified high priority regions for ethnobiological research	Number and percentage of high priority regions, by jurisdiction, in which ethnobiological research has commenced.
8.1.2 By 2005, in cooperation with Indigenous peoples, ethnobiological research has commenced in all high priority regions	Number of jurisdictions with programs to facilitate the intergenerational transfer of ethnobiological knowledge
8.1.3 By 2003, all jurisdictions have developed mechanisms to ensure Indigenous communities can protect their interests in 'Indigenous peoples' knowledge and information.	Number of jurisdictions that have negotiated mechanisms with Indigenous people to protect their ethnobiological knowledge and information.

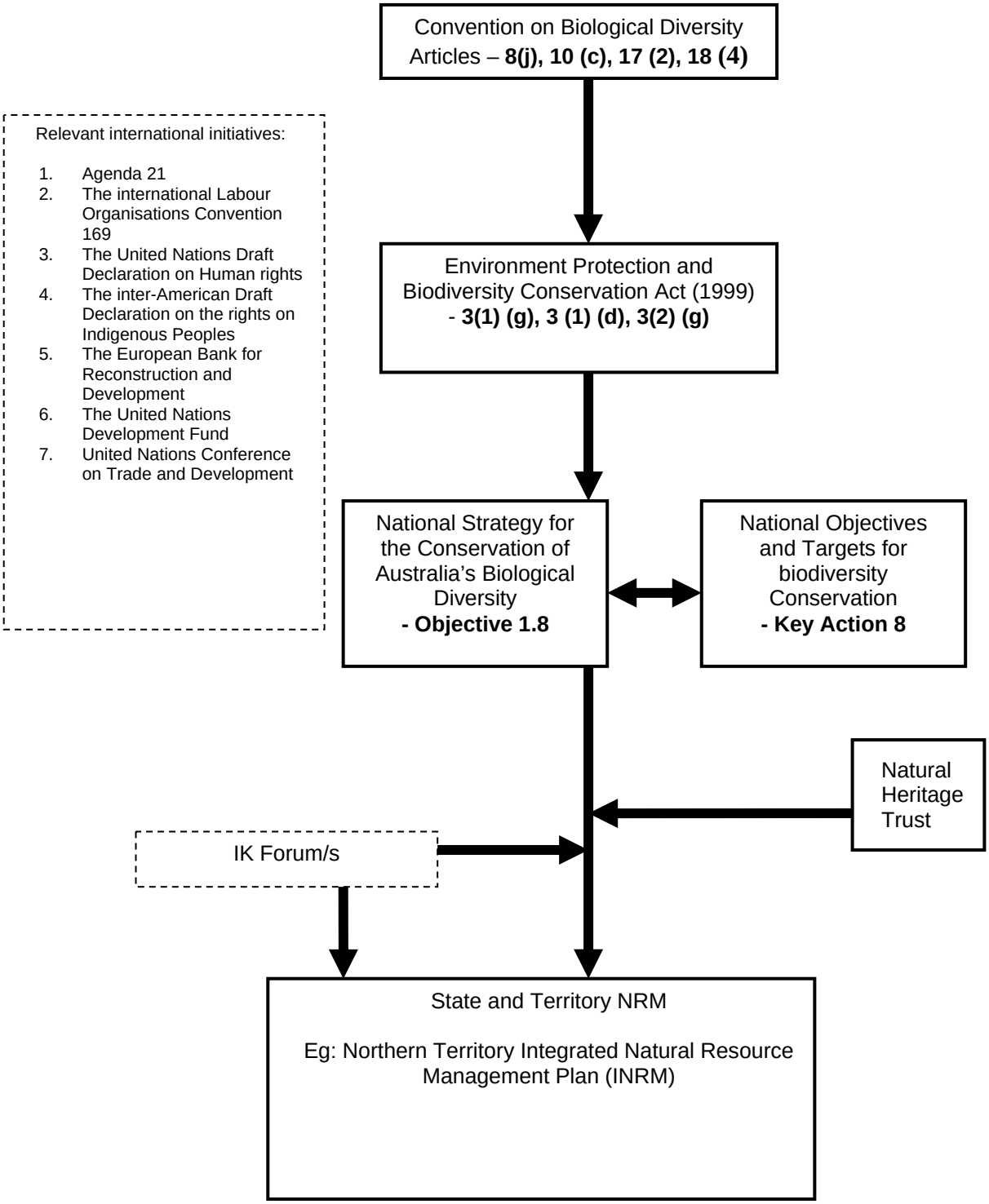
This document, also goes on to state that these:

...priority outcomes, objectives and targets complement the Prime Minister's National Action Plan for Salinity and Water Quality initiatives adopted by COAG in November 2000; the National Framework for Management and Monitoring of Australia's Native Vegetation; the National Greenhouse Strategy; the Ramsar Convention Strategic Plan 1997-2002; the Asia-Pacific Migratory Waterbird Conservation Strategy and Shorebird Action Plan 2000-2005; and COAG water reforms.

As noted above, the degree to which these commitments have been met and goals toward the conservation and application of IK achieved, is questionable. However, it is noted here that a 2001 review of the Strategy acknowledged that much remained to be done in improving knowledge of Australian biodiversity, including recording, conserving and applying IK. It is significant to note, that Key Action 8, at least identifies some attempt to monitor and evaluate progress in this regard.

A visual summary of the relationship between all of these agreements and instruments appears in Figure 3, immediately below. Some attention is then given to the Natural Heritage Trust, which in many respects is the biggest single player in the environmental management game.

Figure 3: Map to International and National IK Obligations and Instruments for Support Provision



(Source: IEK Scoping Study NAILSMA 2006)

The Natural Heritage Trust

The Natural Heritage Trust of Australia Act (1997) acknowledges that:

"There is a national crisis in land and water degradation and in the loss of biodiversity".

and:

"Australia's natural environment is central to Australia's and Australians' health and non-material well-being and to Australia's present and future economic prosperity. Accordingly, present and future generations of Australians will benefit from the ecologically sustainable management of the natural environment."

and:

"A comprehensive, integrated response to these matters is necessary."

Further, one of the listed purposes of the NHT (**Section 8 (f)**) is 'environmental protection' defined (Section 15) as encompassing: 'conserving or restoring Australia's biodiversity'. As the quantitatively largest funding program for environmental management in Australia, the NHT is well placed to make a major contribution to Australia's discharge of its obligations under the Convention on Biological Diversity, the National Strategy for Conservation of Biological Diversity, and for effective implementation of related provisions of the EPBCA. A comprehensive, integrated response as sought under the NHT Act will clearly be impossible unless it effectively engages Indigenous people and consequently management of the large areas of land that they own and/or accept obligations to protect and use sustainably. It follows that the approaches to land and resource management reflected in IK are critical areas for strategic investment of NHT funds to optimise Indigenous contributions to national goals.

Indigenous Projects under Envirofund

The Envirofund program under the NHT already sets a precedent by investing into IK. As stated the Envirofund program supports IK by "maintaining or recovering traditional processes, Indigenous people are also facing similar challenges to those of other land managers, such as the invasion of their lands by weeds and feral animals, and of achieving economic sustainability", and further adds:

To help Indigenous Australians address their land management needs, the Australian Government encourages both Indigenous and non-Indigenous organisations and groups to apply to the Envirofund for funding for projects that will:

- *enable Indigenous Australians to participate in sustainable land management and nature conservation; and*
- *build upon the knowledge that Indigenous Australians have about the environment.*

Importantly, the guidelines for Envirofund state that "Indigenous projects that pass on caring for country techniques and traditional knowledge focused on natural resource management, but do not have on-ground works, are now eligible for funding", therefore setting a precedent for the Australian Government to invest in IK related initiatives regardless of whether there are so-called practical NRM outcomes to be had or not.

State and Territory Perspectives

These developments are important and positive in terms of IK support provision. For example, the Northern Territory Integrated NRM Plan (2003) places a specific focus on support for IK in explicit

recognition of the essential regional role Indigenous people play in land and sea management. This plan led to the commission of a Scoping Study and Support Plan in 2006, both of which sought to identify the priority interests of Traditional Owners and how best these might be facilitated. This initiative has led to a number of innovative solutions to existing issues around inappropriate reporting and evaluation as well as constraints on what constitutes *practical NRM outcomes*. Through consistent lobbying and affective representation, the NT NRM Board has managed to secure a substantial amount of funding – somewhere in the vicinity of $2 million – for IK specific projects and activities across the Northern Territory. The plan states conclusively that:

Support for IEK is necessary to satisfy the requirements of the National Strategy on Conservation of Australia's Biodiversity and legislation seeking to implement it.

Developments at Federal, State and Territory levels are timely. Clearly, the CBD promotes the value of IK and *Caring for* Country activities, the exercise of choice, the active participation of traditional owners in decision-making processes (which affect their land and livelihoods) and the provision of appropriate support to ensure the continuation of existing '…practices…[and]…traditional lifestyles'. And while policy implementation has been remiss to date, various agencies such as Envirofund and NRM NT have met with some success in their attempts to promote the value of investment in Indigenous Knowledge in Indigenous terms.

The maintenance of biological diversity on lands and waters over which Aboriginal and Torres Strait Islander people have title or in which they have an interest is a cornerstone of the wellbeing, identity, cultural heritage and economy of Aboriginal and Torres Strait Islander communities.

Significantly, the last paragraph of Objective 1.8 of the NSCABD, cited above, clearly supports arguments presented throughout this document. This paragraph, establishes a link between IK, *Caring for Country* activities and overall Indigenous social and economic wellbeing. In so doing, terms of reference extend beyond the maintenance of biodiversity to encompass a wider range of issues. At this point, a pathway exists for governments – Territory, State and Federal – to not only fulfil their commitments to the CBD, but in so doing to also meet some of their service provision responsibilities to remote communities.

Attention is now given to the recent Bilateral Agreement binding Commonwealth and Northern Territory Governments. While Territory specific, this agreement clearly identifies many of the issues highlighted thus far, as well as proposing a number of strategic solutions which align closely with many of the recommendations made in this document. The purpose here is to present a brief outline of the Bilateral before identifying perceived shortcomings in the agreement as it stands. This analysis and the above discussion, forms a background to solutions presented in Section 5 and forms the foundation for arguments recommending a multilateral, north Australia focussed, approach to IK support. With some reservation, the Bilateral represents a positive model for adoption and application right across northern Australia.

The detailed arguments presented throughout this strategy are encapsulated in the following excerpt from *Schedule 2.5 to the Overarching Agreement on Indigenous Affairs* (2006). This statement forms an integral part of the Bilateral Agreement. The concession to the value of IK and *Caring for Country* activities across a wide range of issues and interests validates all of the evidence presented thus far in this Strategy.

> *The Australian and Northern Territory Governments…acknowledge the range of environmental, socio-cultural and economic benefits provided by the engagement of Indigenous people in land and sea management. These benefits provide a clear case for on-going government support and investment in this area. There is growing evidence that activities in the area enhance the self esteem and confidence of*

participants; reduce social alienation; and act to promote and preserve health, particularly in remote communities

(Health Country, Healthy People July 2006:2).

Both parties recognise the importance of natural and cultural resource management as a key remote area industry which has significant employment potential, particularly when linked to other established and emerging resource-base industries in the Northern Territory including mining, pastoralism, tourism, fisheries, aquaculture, forestry, horticulture and the application of Indigenous knowledge and culture to the ***commercial provision of environmental services***

(Healthy Country, Healthy People [Accessed Online 30 January 2007:4] author's emphasis)

Against this backdrop, the Bilateral provides for the release of $10 million dollars from the Aboriginal Benefits Account (ABA) for the support of Indigenous community based land and sea ranger groups operating around the Northern Territory. Agreement objectives are adequately summarised in the above quote. In the context of current discussion, key mechanisms for achieving these objectives are highlighted below. They include an intention to:

- establish a steering committee drawn solely from government agencies;
- allocate resources and nominate Government liaison officers;
- coordinate whole of government investment;
- simplify ' funding delivery mechanisms';
- consider a 'virtual pool' of Australian Government funding;
- coordinate programs and projects with private sector investors;
- target government investment to '…deliver environmental, socio-cultural and economic benefits in a cost effective fashion';
- take full account of '…Indigenous aspirations, priorities and preferences';
- ensure full and ongoing Indigenous consultation, participation and partnership;

Indigenous people need to participate in joint management as equal partners

(Altman ND:4)

With some exception, these aspirational targets mirror those articulated in the current Report and Strategy. However, in the context of wider arguments presented throughout this document, some of the proposed mechanisms for achieving those targets, appear counter intuitive. For example, the appointment of yet another Government Steering Committee, consisting solely of Government agencies and at best only *informed by* Indigenous representatives, exhibits the same flaws and seems destined to meet the same fate as the *Imposed Solutions* discussed previously (Subsection 4.3). Control and ownership remains firmly in the hands of Governments who will interpret 'Indigenous aspirations' and determine the character of 'Indigenous…participation' accordingly. At no stage in this process, is there an allowance for Indigenous ownership of, and design input into, incipient planning processes. The consequences and limitations of this form of top down 'service delivery' have already been discussed at length and are readily apparent in the literature around IK for NRM. No amount of consultation, after the fact, will diminish their impact. This trend is also evident in the appointment of Government liaison officers rather than the election of Indigenous representatives. On both scores, the proposed Bilateral Agreement may be fatally flawed and as such may promise little more than a trickle of funding and a tick in a box. It must also be noted, that the vast proportion of proposed funding for this initiative comes from money already scheduled for Indigenous development. With the advent of a non-Indigenous steering committee to control these funds, it could be legitimately argued that the bilateral will accomplish little more than to introduce a further mechanism for government intervention and yet another tier of government control over funds already allocated to the Indigenous budget.

Nevertheless, in the following section, the authors suggest that with minor amendments and expanded terms of reference, such initiatives may succeed. Through recourse to a multilateral agreement, this success may extend across State, Territory and Commonwealth borders delivering positive outcomes through out northern Australia. These outcomes are 'cost effective' but need not come at the expense of either Indigenous or non-Indigenous aspirations and priorities.

Significantly, these recommendations are entirely compatible with Australia's international obligations and related national laws and policies. Indeed, in the absence of such arrangements, it is difficult to see how the Federal Government could deliver on its undisputed, legislated obligations, especially in jurisdictions across northern Australia, where collaboration with Aboriginal people has long been acknowledged as essential for good environmental management.

5 SOLUTIONS FOR IK SUPPORT

5.1 Strategic Summary

Many documents have clearly identified *what needs to be done* in order to effectively support the conservation and application of Indigenous Knowledge. Fewer have outlined *how*. In the following section, both questions have been carefully considered and organised into five key theme areas (see Table 3, below). Each of these themes has given rise to a specific Strategy and a number of associated practical actions and potential/existing cross-sectoral linkages. The list of linkages is not exhaustive but does indicate how these Strategies and actions might be implemented. In some cases, the practical mechanisms necessary are already in place or currently under negotiation. Many of these have been explicitly identified in the Strategic Summary, ensuing discussion and at Appendix D of this Report.

This particular section of the Report begins with an overview of those practical resources that are essential if IK is to be adequately supported. Apart from this small departure from the wider Strategy, and the presentation of more detailed evidence throughout, arguments made in this section of both documents are essentially the same.

The first of 5 Strategies appearing in the table that follows has been conceived in direct response to the concerns and aspirations of traditional owners. These concerns and aspirations are commonplace throughout northern Australia. In this respect, the first Strategy has been written in answer to the *what needs to be done* question, and is considered in the light of variations in local and cultural context and priority. Community Based Ranger Programmes and Indigenous Protected Areas are considered ideal practical mechanisms for facilitating these three essential actions, which revolve around:

1. language and knowledge recording projects;
2. on country visits; and
3. on country livelihoods;

Against this background, Strategies 2 to 5 are specifically written to address the *how to* questions. In view of the evidence presented thus far in this document, and through a logical process of analysis, it is possible to condense existing obstacles to IK support down to a few causal factors. Each of the Strategies and associated actions is specifically targeted at overcoming these hurdles and in so doing is intended to alleviate immediate threats to IK as well as ensuring enhanced returns on NRM and other investments. To this end, the relationship between Strategy, Action and Issue is demonstrated in a series of tables, which precede more in depth discussion and immediately follow the Summary below. Case studies, derived from existing models, are also used throughout to illustrate points made. The Statement of Principles outlined on Page 7 of the accompanying Strategy, provides an overarching framework for all recommendations made.

The intention here is not to over simplify a complex situation but to clearly identify impediments at a more strategic level. Once these are overcome it is then possible to address issues on a local or regional scale, in more detailed fashion. That being said, with the implementation of the strategic recommendations made in this section, many of these issues may not arise in the first instance. To ensure this is the case however, traditional owners must continue to be involved at every stage in both planning and implementation phases and this is assumed in the table and throughout ensuing discussion.

Table 3: A Summary of Strategies, Actions and Potential Linkages

Theme	Strategy	Action/s	Potential/Existing Linkages and Practical Support Delivery Mechanisms (*See Appendix D*)
Maintaining Indigenous Knowledge Systems (Pages 43 to 55)	1. Identify Key Activities and Priorities for IK Conservation and Application	a) Identify local/cultural priorities for IK – language knowledge audit	FATSIL, DCITA, AIATSIS, OIPC/ICC, ARC, Language/Knowledge Centres, Parks and Wildlife, VW Foundation and other interested government and non-government agencies.
		b) Support language and knowledge recording projects	FATSIL, NAILSMA, LWA, DEET, DEWR, ILC, TSM-CRC, DEH, NT Libraries and Knowledge Centres, CSIRO, ARC, TKRP, Memory Place, Our Story, *Bidwern* ANU, CDU, Volkswagen Foundation and other interested universities, research institutions and public/private sector parties.
		c) Implement and coordinate appropriate two way education models	NAILSMA, LWA, DCITA, DEET, ILC, TSM-CRC, DEH, NT Libraries and Knowledge Centres, REACT, CSIRO, ARC, TKRP, Memory Place, Our Story, *Bidwern* ANU, CDU, Volkswagen Foundation and other interested universities, research institutions and public/private sector parties.
		d) Promote and support On Country visits	DEH (IPA) *Yiriman*, Community Based Ranger Groups, Language, Knowledge and Culture Centres, NITV, Territory, State and Federal governments.
		e) Develop On Country livelihoods	DEH (IPAs) Territory, State and Federal governments, land councils, resource associations, clubs and other interested parties from research, philanthropic and corporate sectors.

Re- evaluating IK (Pages 56 to 61)	2. Develop effective means for evaluating the wide range of benefits derived from IK and associated activities	a) Convene *Whole of Government/All of Agency* round table conference b) Endorse/negotiate current strategy c) Determine M&E mechanisms/ timelines for implementation d) Work toward achieving international standards e) Seek global investment for IK support and promotion	*Government* OIPC/ICC, DEWR, DEET, ILC, IBA, DEH, Parks and Wildlife and LWA; *Private Sector* Philanthropic, Corporate, University and Research Institutions *Indigenous Representatives* Traditional Owners, Land Councils, Language/Culture Centres, Resource Centres/Associations, NAILSMA; *International* World Bank/Global Research Alliance, United Nations University, VW Foundation (Iwaidja), UNESCO
		f) Introduce prerequisite cross-cultural training programmes	NAILSMA, TSM-CRC, SAIKS, AIATSIS, DEWR and other government and non government agencies
		g) Redefine research protocols and working guidelines	NAILSMA, AIATSIS, DEET and other government and non government agencies
		h) Refine existing contractual clauses and other legal instruments	NAILSMA, AIATSIS, WIPO and other interested public and private sector parties
		i) Define and implement appropriate recognition/reward system for IK activities	NAILSMA, CAEPR, OIPC/ICC, DEH and other public and private sector parties
		j) Design and coordinate incentive/training schemes for Indigenous and non Indigenous researchers and employees	DEET, DEWR, Batchelor College, SAIKS, NAILSMA, UNU, universities, research institutions and other government and non government agencies

Negotiating Solutions (Page 61 to 64)	3. Ensure effective representation and articulation of Aboriginal and mainstream aspirations across northern Australia	a) Establish independent Indigenous Representative Body	Land Councils, Resource Associations, NAILSMA, OIPC/ICC, DEH, ILC, UNU
		b) Establish designated IK *Keeping Place*	DCITA, FATSIL, AIATSIS, *Bidwern*-ANU, TKRP, NAILSMA, Language/Knowledge Centres, DEET, NT Libraries and Knowledge Centres, ARC, VW Foundation, universities, research institutions and other interested government and non government agencies
		c) Elect Indigenous representatives to promote IK Strategy	DEH, LWA, NAILSMA, Myer Foundation, TCF, NITV and other interested government and non government agencies
		d) Implement communication strategy	NAILSMA, LWA, TSM-CRC, Myer Foundation *See Report Appendix D Communication Strategy*
Funding (Page 64 to 67)	4. Secure appropriate, adequate and longer term funding commitments to IK support across northern Australia	a) Secure private/public sector investment in IK	NAILSMA, OIPC, Territory, State and Federal Governments, United Nations University, Global Research Alliance, UNESCO, Volkswagen Foundations, research, philanthropic and corporate sectors.
		b) Implement appropriate IK support provision mechanisms	NAILSMA, land councils, resource associations, language and knowledge centres, government and non government agencies
		c) Secure annual income stream for IK support and promotion	NAILSMA, OIPC/ICC, Territory, State and Federal Governments, land councils, resource associations, research, philanthropic and other non government agencies
		d) Link IK investments with enterprise/economic outcomes	NAILSMA, OIPC/ICC, Territory, State and Federal Governments, EcoTrust, land councils, resource associations, research, philanthropic and corporate sectors
Political Contexts (Page 68 to 69)	5. Negotiate and coordinate *Whole of Government/All of Agency* approaches to IK support	a) Adopt multilateral (QLD, NT, WA, Commonwealth) approach to IK support across northern Australia	QLD, NT, WA and Commonwealth Governments, OIPC/ICC (See Bilateral)
		b) Develop M&E instruments to enable government/s to meet IK commitments	Territory, State and Federal Governments, CAEPR, AIATSIS, CBD, NAILSMA, ILC, land councils, resource associations, research institutions
		c) Develop innovative branding and marketing tools	EcoTrust, Global Research Alliance, World Bank, United Nations, NAILSMA, National Indigenous Television, CAEPR and other research, philanthropic and corporate bodies

5.2 Essential Resources for IK Support

People and country are essential elements for successful IK transmission and application, while the modern storage and retrieval of IK requires additional resources. The primary human, material and electronic resources required to conserve, record and apply Indigenous Knowledge may be summarised thus:

- Aboriginal people who want to share their IK expertise;
- Co-custodians for access to specific recording locations;
- Younger Aboriginal people with IK interest;
- Cross-cultural specialists (Aboriginal and/or non-Aboriginal) with expertise in IK systems;
- Sufficient time to plan, record, collate and return IK;
- Payment or other agreed forms of reimbursement;
- Land access;
- Transport;
- Standard field work equipment;
- Retrieval and review of existing IK information;
- Recording and production media (including digital still cameras, digital video cameras, GPS);
- Data processing, storage and management facilities (including edit software, computer hardware and training in use of these by young Aboriginal people);
- Products that collate and present IK suited to public or non-public layered access (including DVD videos, photo books, audio, artworks, published books, data bases);
- Forums that allow for senior people, young people and experts to exchange and refine IK content, processes and management strategies (e.g. workshops and conferences).

Of course, these resource requirements will vary according to the type of application intended. IK may be used for tourist or visitor management, cultural site management, burning projects or other land use and NRM applications. Notably, IK recording is most effective in applied, localised contexts where the detail of IK required, for example, to burn land areas is most apparent and best articulated in the course of planning and conducting burns.

As noted earlier, some Aboriginal groups, organisations and government agencies already possess some of the resources identified. Future support should be used to build on these resources in order to further develop group capacity – for example, in respect to community and park ranger groups, land councils and certain government specialists. This support should be conditional on explicit and strategic commitments to IK management, which will, in most cases, require IK being allocated a higher priority relative to other functions than it is currently afforded.

Aboriginal people who want to share and exchange their IEK

IK is embedded within a cultural complex, consisting of individuals and the knowledge they hold. The major IK holders are often, but not exclusively, older people who, through utilising resources over long periods on country, have observed and can recall eco-cultural landscapes and their elements in remarkable detail. As is the case in any cultural setting, there will also be specific individuals with particular skills and interests across a variety of subjects. These areas of expertise are often locally known. Engagement of these people in processes to plan, record and manage IK is essential. The permission and often the presence of appropriate custodians for a given locality is also essential before trips and excursions are planned or undertaken. As noted in Subsection 3.1, interest and participation remains high when cultural protocol is observed and appropriate support is available.

Younger Aboriginal people who want to work with, be trained in or learn about IK are vital. Teaching young people on country is the most important means for ensuring IK transmission. In a relatively short space of time, many young Aboriginal people will have primary responsibility for vast tracts of land. Some will speak Aboriginal languages or Kriol and others English as a first language. All will make recourse to IK, conventional Western land management information or a synthesis of both, and therefore ready access to these resources will prove essential. Capacity building through practical experience, training and mentoring is a most important requirement.

Cross-cultural specialists

Aboriginal and/or non-Aboriginal specialists in IK and Western administrative and political systems are needed. These people may act in roles as interpreters, linguists, anthropologists, ethnoecologists or the like. They must also be familiar with project management and Western systems of information recording. Competent interpreters are crucial to plumbing the depths and ensuring the accuracy of language and knowledge recording. Ethnoecology is internationally recognised as a specialist interdisciplinary area. Formal training opportunities in IK are scarce in Australia. Collaboration between ecological specialists and social science specialists and IK holders is often fruitful.

Key individuals are crucial to effective IK recording. These are often highly individualistic, energetic people with strong cross-cultural relationships, broad interdisciplinary skills, deep ethical commitments, environmental or natural history interests and the capacity to travel and work in demanding conditions. Across northern Australia, the critical mass of IK specialists is limited and under increasing threat. As a consequence, a small number of people often have high, even excessive, demands placed upon them.

Time

Sufficient time to plan, undertake, collate and return IK is crucial. This time must be suited to Aboriginal processes within a cross-cultural context. Aboriginal people live and work in the face of many challenges and often in unsettled and unsettling circumstances. They are also responsible for a variety of cultural and customary activities which may or may not apply outside of any given project objective. Thus, projects and programs may require extended timelines although these do not necessarily entail intensive work over these periods. For example, intermittent work over five years may be more effective than full time work in the space of one year.

Training needs must also be factored into project or program times. The cross-cultural training involved in establishing *Malpa*-type (Aboriginal and non-Aboriginal) co-worker arrangements can take up a substantial amount of available time.

Right across the remote Indigenous estate, seasonal conditions strongly influence the timing of projects. In desert regions, fieldwork is difficult to impossible from November to February. Further north, wet season conditions coincide with ceremony time and consequently access and extra cultural activity over these periods is severely limited. Project schedules must be designed around these limitations and conditions.

Payment

Payment or other agreed forms of remuneration commensurate with time and level of expertise, must be made available for Aboriginal and non-Aboriginal experts and support people. Payment is often a fraught area in cross-cultural work. Typically, non-Aboriginal experts have relatively high and regular incomes while IK experts have little or no income. Competition for money is intense.

Commonly, not all people who go on country visits are directly paid. Instead, transport, food and other goods or forms of in kind payment, may sometimes be provided. However, the capacity for

Aboriginal groups to provide in-kind contributions is limited by a lack of regular income. Notions that Aboriginal people who provide their expertise for IK recording should be unpaid because they contribute for the collective benefit of Aboriginal people are debateable. All of these issues highlight the need for flexibility in determining pay scales and other in kind benefits when working in a cross-cultural context.

Land access

IK is situated knowledge in that it is localised and best elicited in situ. Thus, at the risk of labouring the point, access to country and its natural resources is crucial. Access requires permissions through custodial agreements, traditional owner consultations, permits, lessee permission or other forms.

Transport and field equipment

Transport needs include vehicles, boats and/or aircraft. These resources are required to provide access to lands and ecosystems that are often relatively remote from towns and settlements. Fuel and running costs are twice to three times that of Australian cities. Standard fieldwork equipment is needed for parties involved and may include a range of items from camping gear to materials for specimen collection.

Existing IK information

Existing IK documentation is scattered – much is unpublished or in 'grey' literature. This material includes dictionaries, plant lists, reference texts and prior data base products. Substantial amounts initially, have not been repatriated or made available to Aboriginal groups, or in some cases, have been misplaced. There are no meta data systems in place, and there has been little coordinated and systematic storage of IK by organisations in northern Australia or elsewhere around the country. Even in those isolated cases where such collation and storage has taken place, access to these resources, particularly by Aboriginal people themselves, is limited.

Recording and production media

Media appropriate to the particular context is required and may include digital still cameras, digital video cameras and GPS. In these respects, a critical shift in IK recording processes has occurred in the recent past. There has been an expansion from oral transmission to paper based transmission to digital media for transmission. To varying degrees one media has displaced another. In the past decade, IK records have predominately been compiled in photo books ('big books'), technical reports, dictionaries and other hard copy media. The need for these products continues but is increasingly supplemented with new and emerging forms of electronic media.

Significantly, in the past three years, the accessibility of digital media and user-friendly data management systems offers new opportunities (and limits) for IK recording. In particular, these newer technologies appear to be attractive to younger Aboriginal people and, with adequate training, provide one role for younger Aboriginal people in IK management. Notably, certain older Aboriginal people are also comfortable with these technologies (See TKRP Below). Greater engagement of young people in IK management may parallel this shift in recording media. However, there is no general agreement on preferred media for IK transmission. These choices should remain with relevant Aboriginal IK custodians and their young people.

Case Study: Indigenous Knowledge and Resource Management in Northern Australia

Michael Christie

Indigenous Knowledge and Resource Management in Northern Australia is an ARC research project focussing specifically on the role of digital technologies in the intergenerational transmission of IEK.

The research team has been particularly concerned to support Aboriginal IEK owners who are already at work on the land producing digital collective memory resources for their work with young people. This is happening largely outside of the work of government agencies and NGOs.

Three important principles emerged from our work with Aboriginal digital memory makers:

1. Aboriginal knowledge is always local, it is integrated in lands and peoples and the lives they lead.

2. The visions and agendas of different groups of people always arise from their histories and their contexts.

3. Each context gives rise to a different set of aims, problems and projects.

We were concerned that some of the less tangible aspects of Aboriginal knowledge, to do with its located practices, its governance, and its collaborative production were rendered invisible by a conventional databasing or 'inventory' approach.

Some key research findings which inform the development of software solutions relevant to Aboriginal traditional knowledge practices are:

- Aboriginal knowledge is produced and reproduced in the context of collective negotiations over resources. Objects (such as databases) do not contain knowledge; they are in fact artefacts of prior knowledge production episodes which, like all artefacts, require new negotiation in each new context to be meaningful and useful.
- Metadata in conventional data structures inhibit the creative connectivity which is fundamental to Aboriginal knowledge production. Databases for Aboriginal use need to be as ontologically flat as possible, so as not to pre-empt the ways in which knowledge resources can be configured to make knowledge new and relevant to changing contexts.
- Knowledge, law and identity are closely linked. Processes of inclusion and exclusion are fundamental to the health of IEK. There is always a politics of scale at work in negotiations over knowledge. Aboriginal knowledge practices need first to be viable at the smallest scales – the individual, the family, the kin network – before the wider scales can become viable, through careful negotiation.
- new robust software solutions are required which enable the small, local, flexible, and multimedia resources (text, audio, movies, images) to be configured for everyday knowledge work, and to enable Aboriginal knowledge owners to maintain control over their digital resources, and to deploy them to make representations to governments and researchers on their own terms, in their own ways.

The project is developing and documenting local digital solutions in a range of Northern Australian contexts to address some of these problems. An audit of existing digitised data in Indigenous Knowledge collections in Northern Australia, and details of the processes and findings of the project can be found at www.cdu.edu.au/ik

Audio-visual technologies, such as digital video cameras and digital still cameras, are increasingly being used to document IK (See TKRP website for more detailed information). People can demonstrate and record their IK directly and in their local language. Recorded material can (with basic training) be easily prepared into useful media texts, such as slideshows of digital photos, CD's of audio taken in the field or DVD movies. DVD players are now very common across remote indigenous communities. Information presented in this way is open to a broad audience and engages younger generations in the knowledge of their elders. Such media is useful as a visual aid to oral 'story telling' both on and off country. Multimedia productions (ideally produced by Aboriginal people) can be easily accessed and understood by those with various levels of literacy. An outstanding example of this form of knowledge transmission can be seen in the recent Traditional Knowledge Recording Project (TKRP) DVD Release *Water We Know*. These sorts of resources also play a fundamental role in the ongoing promotion and subsequent marketability of IK.

Data processing, Storage and Management Facilities
Requirements in this respect include editing software and computer hardware as well as training in the use of these by young Aboriginal people. An example of a strategic approach to Aboriginal knowledge management in the southern NT is found at *Uluru - Kata Tjuta* National Park. Over the past seven years the Park, in coordination with *Anangu* elders and staff, has developed a *Cultural Heritage Database*, initially to document rock art sites which has over time expanded into a multimedia database incorporating ecological and cultural knowledge in conjunction with a GIS interface. *The Cultural Heritage Database* and the *Ara Irititja* database of cultural and historical materials (developed by the *Pitjantjatjara* Council, SA) are regularly utilised by *Anangu* and non-Indigenous Rangers in the Park. Similar initiatives are underway in parts of northern Australia, with ground breaking work underway toward the design of database sets which are user friendly and provide appropriate access protocols and data protection for both Indigenous and non Indigenous researchers.

Products that collate and present IK suited to public or non-public layered access
Resources required include DVD, videos, photo books, audio, artworks, published books and databases with different levels of access. For IK digital solutions and database storage issues, the *Making Collective Memories with Computers* project has compiled an extensive list of available resources and programmes in use across Australia. The overall research into this project is ground breaking and specifically targeted at *Indigenous Knowledge and Resource Management in northern Australia*. Systems and solutions have been designed from the ground up with Indigenous people and have been welcomed by them in many instances.
See http://www.cdu.edu.au/centres/ik/IKaudit.html

IK forums and training
Country visits, field days, workshops and conferences that allow for senior people, young people and other specialists to exchange and refine IK management strategies are crucial in all aspects of IK management. Aboriginal capacity is built through exchanges amongst Aboriginal experts and their families and other country folk.

This broad outline provides some context for the following more detailed argument in support of recommended Strategies. Of course, there will be variations in support needs for a variety of reasons and these are also discussed below

5.3 Local and Cultural Context

Strategy	Action	Issue Targeted
1. Identify Key Activities and Priorities for IK Conservation and Application	a) Identify local/cultural priorities for IK – language/knowledge audit	• One size fits all approaches to IK • Imposed Solutions • Failure to understand IK • Inappropriate consultation

> *Yeah, all of us here are different. I mean, we're Indigenous people* [but] *we have our different ways, different laws and… different needs.*
>
> (Croft, NAILSMA Transcript 3 2006:30)

Traditional owners have identified all of the following actions as essential. However, as the above comment suggests, the priority attached to each varies according to context – cultural geographical and historical. For example, in many parts of northern Australia language and knowledge are critically threatened. In these areas, people will often attach priority to recording activities. In other cases and for various reasons, many people find it hard to gain access to their homelands. In these instances, on country visits are more likely to be a priority. However, where access is not an issue, the focus is often on the development of sustainable *On Country* livelihoods. This last priority is shared across northern Australia, although for many traditional owners it represents a longer-term aspiration, with other activities taking precedence as a means towards eventually realising this goal.

These variations must be clearly identified and carefully considered if appropriate support is to be provided. Research in this regard has commenced as part of the current project (see Appendix E). However, due to time and other constraints, this work is incomplete. Therefore, a more in depth audit in the immediate future must be considered a priority. As noted repeatedly, where local and regional differences are ignored and general solutions are imposed, success is often limited. It should also be noted that a number of valuable management plans (See *Wet Tropics Aboriginal CNRM Plan*) particular to States and Territory have already been drawn up but are seldom consulted. These clearly outline regional and subregional priorities and concerns and must be actively promoted within external agencies.

At the national level one-size fits all assumptions are also made. Frequently, these concern Indigenous aspirations – in terms of private property, wealth accumulation and numerous other 'givens' – and *minimum standards* are subsequently imposed in respect to all forms of service provision and economic development. These aspirations and standards may be relevant in urban settings but often impede the objectives of traditional owners living in remote localities under quite different circumstances.

5.4 Language, Knowledge and Recording

Strategy	Action	Issue/s Targeted
1. Identify Key Activities and Priorities for IK Conservation and Application	b) Support Language and Knowledge recording projects c) Implement/coordinate two way education models	• Lack of IK specific support • Lack of recognition and reward • Undervaluation of IK • Lack of Indigenous project input/ownership

Language recording represents a starting point for knowledge conservation. In the absence of other support alternatives, and faced with the immediate threat of loss, such recordings often represent cost effective options. The conviction held by many traditional owners, that the finer grained detail of knowledge resides in language, fuels the urgency driving these projects. However, some *language recovery* programmes consist of little more than simple list making. For many people, this information is of little value – *knowledge is nothing if it is not applied to a living relationship with country*.

> *'…it's the methodology of it…the principle is mentoring, blackfellas helping blackfellas, nothing in there between…that's why TKRP is so successful…'*
>
> (NAILSMA Transcript 3, 2006:30/00:35:14)

Several innovative recording projects currently underway seek to address these limitations. The Traditional Knowledge Recording Project (TKRP cited above) for one, employs an action research principle and is focused on mentoring, community ownership, learning in context on country, and the application of IK to practical land and sea management *(See TKRP Case Study Below).* Other initiatives are geared more toward data base storage and the provision of appropriate two-way education and communication models. In most of these cases, emphasis is placed on language and knowledge in cultural context, that is, with reference to *how* people know things rather than simply *what* people know.

Case Study: TKRP, Far North Queensland

The TKRP started in Laura, far north Queensland, in 2000 on CDEP, with Kuku Thaypan and Kuku Yalanji traditional owners. There are now 20 projects running from Buru to Aurukun, with another 18 proposed and increasing interest coming from interstate, particularly the Northern Territory and Western Australia. Victor Steffensen, Project Coordinator, envisages the TKRP as a means for emulating traditional kinship relationships right across northern Australia and sees this interest as supporting evidence of that potential.

The following quote sums up the overall TKRP philosophy.

> *Throw away the blackboard and get on country…elders are their own researchers* [and] *the knowledge of the elders is the baseline on which historical and then scientific knowledge is built…TKRP is the best* [land/sea] *management plan you will ever see* (Steffensen 2006).

This philosophy is evident in TKRP methodology, which endeavours to:

1. Transfer…Traditional Knowledge from the Elders to their young people based on traditional methods as determined by the Elders;
2. Digitally record Traditional Knowledge before it is lost forever;
3. Store knowledge onto multi-versions of a digital knowledge base;
4. Incorporate traditional knowledge in cooperative land management strategies; and
5. Build this into "Best practice principles" for all land management;

i) Build and improve the profile of Indigenous Knowledge and its appreciation with other land managers and users both nationally and internationally;

ii) Create practical action, research-driven, projects as live case studies to foster better collaborative land and community management.

*www.tkrp.com.au

In summary, the focus of language and knowledge recording projects, across northern Australia, falls into three key areas:

1. Archival – collation and storage of data already recorded: See Appendix D - *Our Story, Memory Place, Bidwern*;
2. Insitu recording and/or action research for land and sea management: *TKRP, Kabulwarnamyo*;
3. Development of data and various media for education and communication: *Collective Memories, TAMI,IKRMNA* ;

These activities overlap at various points, while the emphasis placed on each varies according to context. One concern though is common in all of these cases. The design and implementation of software – a digital space – where data may be safely stored and secured against the test of time, is still in incipient phase, while the need is urgent.

Currently, a collaborative project between Traditional Owners, project researchers and ANU technical staff is seeking solutions to this very real problem. The *Bidwern* Project is innovative and at the leading edge of research into and development of safe, long term data storage and retrieval systems. Currently hosted at ANU, it is recommended below that this or a similar model be adopted for the provision of a *Keeping Place* in a northern Australian locale.

Table 4: Benefit Analysis
IK Recording/Action Research and Data Base Models

Activity	*IK Threat Addressed*	*S of P*	*IK Wider Contributions & Investment Potential*
Recording	Loss of language and knowledge Teaching resource Lack of recorded information Passing on of senior people Undervaluation of IK Competing demands on young Employment opportunity Learning environment Access to country	Capacity Building Interest , ownership and control Identify 'hidden' IK benefits IK Promotional Tool	Socio-cultural confidence IK conservation & application Indigenous participation Re-evaluate IK contributions IK for NRM • CBD Article 8(j) • EPCBA Section 3(1)(d,f,g) • NSCABD Objective 1.8 IK for Economy • Commercial application IK for Education • Two way models • Intergenerational transfer of IK
Action Research and Data Base Storage	Loss of language and knowledge Undervaluation of IK Employment opportunity Competing demands on young Teaching resource Lack of recorded information Learning environment Access to country	Capacity Building Interest , ownership and control Identify 'hidden' IK benefits IK promotional tool Foster coop funding Secure long term investment IK applied	Indigenous participation IK conservation & application Economy/PES Education • Intergenerational transfer of IK • Two way models IK for NRM • CBD Article 8(j) • EPCBA Section 3(1)(d,f,g) • NSCABD Objective 1.8 IK for applied management

As noted above, a good deal of knowledge is encoded in language. This observation does not discount the detailed IK that many Aboriginal people possess, even where only English is spoken. Instead, it emphasises a correlation with language loss and a critical threat to IK. From this perspective, the language audit (see Appendix E) mentioned in Subsection 5.3 above, represents the first step in a wider analysis of IK status, which in turn will allow some insight into local and cultural support priorities. This study is incomplete and requires further research investment *(See Strategy 1, Action a)* above*).*

Language and knowledge recording projects also raise questions around Cultural and Intellectual Property. Solutions to these issues are presented below – *see Re-evaluating IK* – while various instruments, national and international, are identified at Appendix F. In the meantime, it is worth noting that where such projects are owned and driven by traditional owners, as is the case with the TKRP, these issues do not assume the same import and are often resolved in situ, within communities. Of course, further complications arise where there is collaboration with outside agencies (*See Keeping Places in Re-evaluating IK).*

These projects also represent an invaluable resource for the development and delivery of two-way education models. Where integrated with a mainstream curriculum, as discussed at Subsection 3.4, they lend relevance to existing educational methods and thus will reverse the downward

trend in Indigenous school attendance and achievement. However, the success of such initiatives will require a concerted and coordinated effort on the part of educators and governments. This effort must transcend State and Territory borders and will entail the design and implementation of uniform Information Technology solutions and delivery systems. These need not transplant local initiatives but instead will provide consistent and particular teaching methods and modes of delivery, which are flexible enough to integrate local resources with other educational materials. The process may be as simple as providing software and hardware that is robust, user friendly and entirely compatible across the northern Indigenous estate and perhaps elsewhere. This form of *education for life*, will educate succeeding generations of Indigenous children into their traditional roles as well as providing them with the literacy, numeracy and other skills they will need at the cross cultural interface.

For these programmes to succeed appropriate learning environments must also be provided. In the first instance, many Indigenous children live on outstations or in outlying areas, where conventional classrooms are not only inappropriate but also inaccessible. In these cases, education must go to them rather than the other way around, which is not an insurmountable problem as the appropriate technology is currently available and relatively cheap (See Appendix D). In addition, IK in many cases must be taught in context, on country. Therefore, while teaching in a western style classroom may have its place in such programmes depending on the circumstances, the value of on country visits must also be acknowledged and supported as part of the overall curriculum.

In this regard, Community Ranger programmes may facilitate these approaches, while Indigenous Protected Areas provide the appropriate cultural and natural learning environments. In sum, this Strategy will require the design of an Indigenous specific syllabus, that takes account of cultural context and appropriate teaching methods and learning environments as well as the difficulties encountered when living in remote areas. All of these arguments have been posited before and all of the necessary resources are in place but an unqualified and coordinated approach to support provision in these terms has never been forthcoming.

(See Appendix D)

5.5 On Country Visits

Strategy	Action	Issue/s Targeted
1. Identify Key Activities and Priorities for IK Conservation and Application	d) Promote and support On Country visits	• Undervaluation of IK • Inappropriate M and E • Government/s commitments to IK • Discontinued land/sea management regimes • Educational relevance

'...we might be poor but our land is rich and it provides us with what we need, it's our supermarket, our belief, our spirit, our dreaming, our future, our history, our identity and with out it we're nothing
(Excerpt from Croft 2006 Unpublished)

On Country visits are important to traditional owners for a variety of reasons. They allow people to fulfil their responsibilities to the land, provide appropriate context for the teaching and learning of IK and reaffirm culture and cultural identity. For all generations, revisiting country promotes confidence and self esteem. For younger generations in particular, this is often a major concern

and in some instances back to country visits are used to actively stimulate a sense of identity and self, particularly with respect to youth at risk (See *Yiriman* Case Study immediately below).

> *I don't know how you guys run your programmes but there's a lot of talk around the communities… the boys are talking amongst each other…about these opportunities coming up, we can go to the country, do training…getting a ranger programme set up…them young fellas are keen, and if we get them on country doing the practical work then they can make a decision whether this is the way they want to go*
> (NAILSMA Transcript 3, 2006:32).

Aboriginal Community Ranger Programmes provide a further opportunity to balance these and other IK and NRM concerns. As the commentary above indicates, these programmes are increasingly popular. They stimulate interest amongst younger generations, can provide a platform for on country visits and thus promote the intergenerational transfer of knowledge and, as noted in Section 3, provide actual employment possibilities and economic opportunities. However, it must be noted that in many instances IK and related activities are either ignored or run a poor second to overarching mainstream NRM agendas.

Case Study Fourteen: 'Going Back to Country with Bosses'
Yiriman Youth Project Kimberley W.A.

The Yiriman story takes us to the Kimberley region in Australia, specifically Karajarri, Nyikina, Mangala and Walmajarri country. The project represents a concerted effort on the part of Indigenous leaders and non-Indigenous organisers, to return to country and thus bring together younger and older generations in appropriate kinship and learning environments.

The Yiriman project has undertaken a number of "back to country" trips over recent years. These trips promote the intergenerational transfer of Indigenous Knowledge through providing an opportunity for young people to participate more fully in cultural and community life. In this context, younger generations are taught aspects of culture and law and the effective application of these principles to hands on land management practice. These activities are often undertaken in combination with mainstream NRM techniques.

This combined Indigenous and non Indigenous education process provides valuable skills for future generations seeking to articulate caring for country objectives with those of wider NRM. Not only do these activities provide economic opportunities, in areas such as fire management for example, but they also promote psychological, physical and social well being *(Edited excerpt from Wallace Smith 2006 Unpublished).*

Case Study Fifteen: *Bininj Manbolh*
Walking Back to Country, West Arnhem Land N.T.

In year 2000 12 Aboriginal people and two non-Aboriginal people walked about 120km east-west across the plateau following an ancient trade route along which stone spear points were carried to exchange for bamboo spear shafts in *Kakadu*. *Bardayal* (senior traditional owner) walked this many times in his youth and was the only person able to plot this *bininj manbolh* or "blackfella road". Having marked the route by helicopter he visited walkers along the way and talked them through the country. A simple video of the walk, with a soundtrack by a local Aboriginal band became a cult movie in west Arnhem Land for a while and stimulated interest amongst younger people in their ancestral country on a plateau they had never seen.

(Edited excerpt from Cooke 2006 Unpublished).

Photos: NAILSMA

L to R: Nigel Gellar (Arnhem NT) Bizant Open Forum and Workshops

In most cases these ranger groups operate with small budgets provided through CDEP. Additional training needs are met through various institutions, such as Bachelor College and through Government sponsored training schemes such as the Structured Training Employment Programme (STEP) and the Top End Aboriginal Land Management and Employment Strategy (TEALMES). Many of these programmes are provided under the auspices of the Department of Employment and Workplace Relations (DEWR). Other support, in varying degrees, comes through the NHT, Indigenous Land Council (ILC) Aboriginal Business Association (ABA) and other government and non-government organisations. Smaller grants for 'issues based' projects such as weed and fire control are sometimes available through Envirofund and Community Benefit Funds. The explicit purpose of many of these groups (see Dhimurru Vision Statement) is to articulate IK and Aboriginal caring for country aspirations with wider NRM objectives.

Photos: NAILSMA

The younger people who predominate in these ranger groups want to use their cultural knowledge and develop it further. There is increasing interest in these initiatives from right across northern Australia.

In the Northern Territory such groups have been established for a number of years. They actively apply IK in combination with mainstream NRM approaches, to a number of pressing land and sea management issues. Ranger groups operate from Arnhem Land to the Victoria River District and across to the southwest Gulf of Carpentaria. In all, there are 33 ranger groups across the top end with an estimated 400 people participating formally in either CDEP funded employment and/or training schemes. These groups have an increasingly prominent public profile due to their recent contributions to the detection of illegal fishing boats and other issues around border protection.

Factors affecting the success of the longest established groups, (adapted from Davies et al 1999) are set out in Table 5 below. The links to IEK are particularly evident in the cultural authority contained within each group's structure. Good and appropriate governance of the ranger groups is critical to their success, and research by Altman and Cochrane draws attention to some innovative features of one of the longest established such groups, Bawinanga Aboriginal Corporation (Altman and Cochrane 2003, Cochrane 2005).

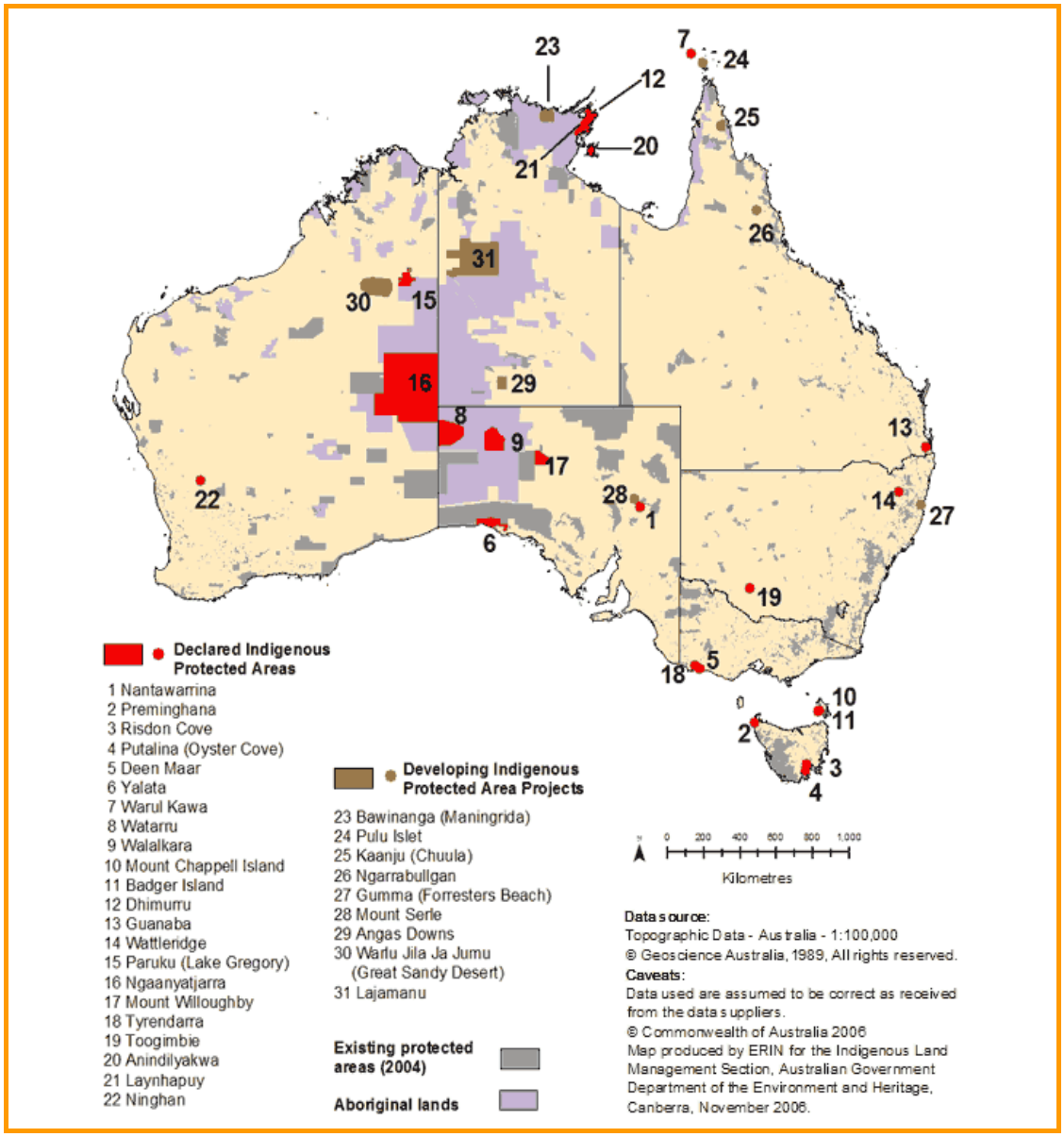
As noted, the development and operation of community ranger groups is well established in the Northern Territory while it is less so in other parts of northern Australia. Establishing a better understanding of the factors that influence the effectiveness and sustainability of such initiatives will further strengthen the role of these groups and thus provide a valuable conduit for the application of IK to management of natural resources by the broader NRM community. Current research by Bev Sithole (CSIRO) in the Top End, and research under development by Desert Knowledge CRC will contribute to this understanding, and warrants support.

Table 5: Community Based Ranger Groups – factors important to effectiveness

Relationship to country	The ranger group members have traditional cultural relationships to the country
Tenure	Community has secure tenure over country
Initiative	The ranger group and the work it is doing started at the community's initiative.
Vision	A vision for sustainable development and self determination is strongly articulated
Cultural authority	Culturally appropriate people (clan group representatives, elders) exercise direction over activities. This is critical to the authoritative incorporation of IK into activities.
Strengthening culture	Activities include support for people getting out on country, including outstation services; young people are involved through schools programs and training/employment schemes, including CDEP.
Knowledge	IK and scientific technologies and knowledge systems are both being used in management.
Networks	Strong, diverse and expanding networks with other indigenous groups; non-government stakeholders (eg neighbouring landowners, researchers, industry groups); and government agencies.
Functions	Functions focus on management of country; other (associated) organisations in the community have main responsibilities for community services.
Income	Limited reliance on a single source of funding; some earned income (eg from recreation management permits, contract work); links to CDEP schemes and investment from other community owned/managed resources.
Activities	Diverse range of planning, training and management activities, including management of wildlife, habitat, fisheries, low volume tourism, outstations.
Enforcement	Enforcement capacity is developing for community activities and those of outsiders; authority for enforcement involves rangers, elders and government regulation.
Regional support	Regional organisational (notably Land Councils) support is available (eg for professional advice and strategic issues).
Evaluation	There is, at least, an informal internal evaluation process in place (eg via feedback from elders and community members)
Continuity	There has been continuity in leadership and professional support over an extended period (several years).
Reward	Appropriate salary scales and fees for services are negotiated to ensure economic potential beyond CDEP funding.

Indigenous Protected Areas (IPAs) provide a positive means for mediating these and other issues. There are currently 22 declared IPAs, which constitute approximately 20 percent of the National Reserve System (NRS) cover 14.9 million hectares of land and account for 66 percent of land added to the NRS in the past decade. Of these, *Dhimurru*, *Anindilyakwa*, *Warul Kawa* and *Paruku* (on the extreme southern periphery of the study area) fall within the designated wet/dry tropics or tropical savannas area. In addition, a number of other IPAs in northern Australia are currently under development; in *Wanu Jila Ja Jumu* (Great Sandy Desert) *Bawinanga* (Maningrida) *Lajamanu, Ngarrabullgan, Pulu* Islet and *Kaanju* (Chuula).

Figure 4: Indigenous Protected Areas in Australia



Source: Department of the Environment and Heritage www.deh.gov.au/indigenous/ipa/map.html Accessed 5/2/07.

Funding for this programme is provided by DEH, through the National Investment Strategy (NIS). Widely heralded as Australia's '…most successful innovation in Indigenous conservation…' IPAs have received resounding endorsement from a variety of interested stakeholders and agencies, as evidenced in the following quote from the World Wildlife Fund:

> *"If we were to consider this issue in purely economic terms, the cost of dedicating long-term funding to an Indigenous people's cultural and natural resource management employment program on country would be substantially cheaper than having to buy in external expertise and fly them in to (often) remote areas to undertake the necessary fire, feral and weed management activities needed to reduce the ongoing threats to biodiversity across the Indigenous estate"*
>
> (WWF Submission to the IPA Review cited in
> *The Indigenous Protected Areas Programme* [IPAP] 2007:3).

The above summary is imbued with the language of mainstream NRM. Nevertheless, it clearly establishes the cost effectiveness of IPAs and supports earlier comments regarding outsourcing

for PES. Just as significantly, these areas have been established in recognition of the value of Indigenous land and sea management practices, where cultural and natural values often form an interdependent and seamless whole. They also clearly identify the wider benefits of caring for country activities in terms of overall Indigenous welfare. These social outcomes and the overall endorsement of Traditional Owners is summed up neatly in the following statistics, provided to DEH through IPA internal reporting mechanisms:

- 95% of IPA communities report economic participation and development benefits from involvement with the Programme;
- 85% report that IPA activities improve early school engagement;
- 74% report that their IPA management activities make a positive contribution to the reduction of substance abuse;
- 74% of IPA communities report that their participation in IPA work contributes to more functional families by restoring relationships and reinforcing family and community structures; and
- 60% of communities report positive outcomes for early childhood development from their IPA activities.

Source: (IPAP 2007:4 [Accessed On Line] February 2007)

'…research shows that the provision of land and resource management services of a nationally significant scale and quantity by Indigenous people in northern Australia is largely unrecognised by government, and as such is chronically underfunded.'

(Altman 2007:1)

Research conducted over the course of this project, substantiates these successful outcomes. Yet in spite of this proven success, there is 'a lack of assured funding for ongoing management of IPAs' (2007:3) and severe limitations to the existing budget. Moreover, the cost effectiveness of the current programme may be attributed in some degree, to the provision of environmental services, by individuals and ranger groups, on the cheap; that is, working for CDEP. Nevertheless, IPAs are an invaluable development for IK support and enjoy almost universal endorsement from Traditional Owners.

In addition, DEH literature has identified a number of key actions necessary to enhance the existing programme. These actions target many of the issues raised by Traditional Owners and cited throughout this document and, as with the Bilateral discussed above, dovetail neatly with strategic recommendations made. In summary, the Department identifies a need for:

1. improving collaboration to reduce administrative complexity;
2. improving funding arrangements;
3. improving links to other government Programmes.

Each of these suggested improvements is recommended in some form in the following section. In the interim, it is worth noting that the value of IPAs (and their subsequent success) for traditional owners is founded in the exercise of choice and a cultural claim to ownership over preferred management practices: IPAs do not preclude customary activities, but actively promote them as vital if successful and ongoing environmental, social, and economic outcomes are to be ensured.

In the context of current argument, IPAs provide an important mechanism for supporting the key priorities and associated activities identified at the outset of this discussion. Depending on regional/subregional concerns, IPAs possess the potential to facilitate and provide context for recording projects, on country visits, Ranger Programmes and the development of on country livelihoods. Whether pursued separately or in combination, traditional owners consider each of these activities essential if IK is to be conserved and applied across the northern Indigenous estate.

IPAs provide public recognition of the natural and cultural values of Aboriginal land, and of the capacity of Aboriginal peoples to protect and nurture those values…
(World Parks Congress http://www.iucn.org/themes/ceesp/Wkg_grp/TILCEPA/CCA%20Briefing%20Note.pdf
[Accessed on line: 14 March 2007]

In addition, IPAs have recently received international endorsement from the CBD and World Parks Congress (WPC). They have been recognised as a legitimate and valuable addition to what these bodies have termed Community Conserved Areas (CCAs). These areas have been established in recognition of the roles Indigenous people and Indigenous Knowledge play in the conservation of cultural and natural values across vast tracts of land and sea around the globe. They provide an attractive conservation incentive to government agencies because in many instances they provide the means for conserving natural resources without incurring the costs associated with land acquisition and the establishment of infrastructure. However, unless approached in the spirit intended this cost effectiveness may prove to be a double edged sword, allowing governments to discharge their international obligations to the CBD and elsewhere at the expense of Indigenous people themselves. Nevertheless, CCAs do provide another valuable means for ensuring international standards and obligations to IK and conservation support provision are met, as well as establishing pathways toward securing global investment in both (See Strategy 2, Action d).

Table 6: Benefit Analysis
IK On Country Visits, Ranger Programmes and IPAs

Activity	*IK Threat Addressed*	*S of P*	*IK Wider Contributions & Investment Potential*
On Country Visits	Passing on of senior people Loss of language and knowledge Cessation of cultural activities Undervaluation of IK Teaching resource Ill health and social stress Competing demands on young Learning environment Access to country	Capacity Building Interest, ownership and control IK/NRM Local/Cultural context Identify 'hidden' IK Benefits Evaluate IK contributions Promote IK value IK applied	Socio-cultural confidence Physical Health IK conservation/application Indigenous participation IK for Education • Two way models • Intergenerational transfer of IK IK for NRM • CBD Article 8(j) • EPCBA Section 3(1)(d,f,g) • NSCABD Objective 1.8 • Bio security IK for applied management Economy/PES
Ranger Programmes	Loss of language and knowledge Undervaluation of IK Teaching resource Learning environment Urban drift Competing demands on young Employment opportunity Access to country	Capacity Building Interest, ownership and control IK/NRM Local/Cultural context Identify hidden IK Benefits Evaluate IK Contributions Promote IK value Foster coop funding IK applied	Socio-cultural confidence Physical health IK for NRM • CBD Article 8(j) • EPCBA Section 3(1)(d,f,g) • NSCABD Objective 1.8 • Bio security Education • two way models • Intergenerational transfer of IK Economy/PES • Bio security/border protection • IK Marketing/Branding IK for applied management

IPA	Loss of language and knowledge Undervaluation of IK Teaching resource Competing demands on young Employment opportunity Learning environment Access to country	Capacity Building Interest, ownership and control IK/NRM Local/cultural context Identify hidden IK Benefits IK applied Evaluate IK Contributions Promote IK value Foster coop funding	Socio-cultural confidence Physical Health IK for NRM • CBD Article 8(j) • EPCBA Section 3(1)(d,f,g) • NSCABD Objective 1.8 • Bio security IK for applied management Education • Intergenerational transfer of IK • Two way models Economy/PES • Bio security/border protection • IK Marketing/Branding

5.6 On Country Livelihoods

Strategy	Action	Issue/s Targeted
1. Identify Key Activities and Priorities for IK Conservation and Application	e) Develop On Country livelihoods	• Undervaluation of IK • Government/s commitments to IK • Discontinued land/sea management regimes • Appropriate recognition and reward

> *…they* [linguists] *want to put language, in that thing, what that thing, what's that business…puttin' 'im in paper for you* [but] *puttin' him* [language and culture] *in paper that's only a reminder…paper can't put that in your mind…people die off and nothing, they still got language in a paper, but nothing…well now, people have to think about it…people should just get out on country…people want to start waking up and do something about him country, back to him like 'em old times…*
>
> (NAILSMA Transcript 3, 2006/00:01:58)

The above quote, from a senior *Kija* woman (Beau River, W.A.) articulates the close relationship between land, language and knowledge. These sentiments also make it clear that gathering data, whether in electronic or print formats, is not a complete solution or in this case, any solution at all. This quote was recorded in the context of a discussion where it was made clear that language, culture and knowledge are embodied in country: these are not necessarily portable items or objects to be stored. Nor could they be learnt in any other context. Indeed it was suggested that the recording of language and knowledge outside of this context, turned it into something it was not. Nonetheless, a qualified concession to the value of such projects was made on the proviso that they take place while people are living and working on country.

Similar sentiments echo right across northern Australia. Many traditional owners will endorse recording projects as *one* important component in a wider suite of solutions to imminent language and knowledge loss. This variance once again stresses the importance of clearly identifying regional and subregional priorities and needs in order to move away from one-size fits all approach to IK support.

In the meantime, the following Case Study provides just one example of *On Country Livelihoods* in the process of development. This particular initiative may represent a preliminary step towards establishing a longer term, sustainable presence on country. The example also demonstrates the

close articulation of cultural, economic and environmental factors and how, in combination, these bring about beneficial outcomes across all three sectors. It is also apparent that the expenses involved in setting up this project were minimal while the returns are substantial and increasing.

Case Study: Garmbemirri Camp
Tom Vigilante KLC 2007

Garmbemirri camp in far North Kimberley region of Western Australia is a success story of Traditional Owners developing a sustainable livelihood from which they are able to undertake natural and cultural resource management. The remote bush camp was established by *Wunambal-Gaambera* Aboriginal Corporation (WGAC) on Aboriginal Reserve in 2004 in order to begin running historical and cultural tours of the WWII Mungalalu-Truscott Airbase on the Anjo Peninsula, 30km NW of *Kalumburu* Community in the far North Kimberley region of Western Australia. The airstrip, originally built during WWII, has now been leased out by WGAC to a logistic company who upgraded the strip to service the offshore gas industry, pearl farms, Coastwatch and other industries. The lease arrangement contributes to WGAC financial resources needed to establish their enterprise.

Garmbemirri camp now provides a base for Traditional Owners to move back to country and undertake enterprise based employment. The opportunity has been taken up by a number of middle-aged and young people on a seasonal (dry season) and 'fly in-fly out' basis. The enterprise involves taking visitors on a tour of the war-time sites associated with Truscott Airbase as well as nearby rock art shelters. Initially tourists arrived on charter flights from Kununurra, Broome and *Kalumburu*, however, now marketing is focusing on high-end Kimberley cruise tourism. Workers wages are still subsidised by the CDEP Program until the enterprise becomes self sustaining with sufficient business.

As well as working towards sustainable enterprise-based employment, the *Garmbemirri* camp also provides a focus for 'ranger-style' natural and cultural resource management activities. In 2005 a team of indigenous men from across the region undertook a cross-country fire walk from *Kalumburu* to *Garmbemirri* to install strategic fire control lines. In 2006 a similar group undertook a wildlife survey of the Anjo Peninsula in collaboration with scientists from the Department of Environment and Conservation and the WA Museum. Further works are planned for 2007, including fencing cattle out of some significant rock art sites and monsoon vine thickets.

Most *Gaambera* people have lived all their lives in *Kalumburu*, a large community established as a Catholic mission in 1908. *Garmbemirri* camp offers the opportunity for elders and families to visit country for extended periods. The bush camp provides a suitable environment, free from the distractions of *Kalumburu*, for elders to pass on essential knowledge about country and culture to young people.

WGAC has also developed a strategic tourism and conservation plan. Using *Garmbemirri* as a model, it aims to establish tourism enterprise bases across the wider *Wunambal* and *Gaambera* country to enable Traditional Owners to return to country with a sustainable economic foundation. These bases then provide a hub for land and sea management activities to be undertaken.

Table 7: Benefit Analysis
IK and On Country Livelihoods

Activity	*IK Threat Addressed*	*S of P*	*IK Wider Contributions & Investment Potential*
On Country Livelihoods	Loss of senior people Loss of language and knowledge Cessation of cultural activities Undervaluation of IK Ill health and social stress Access to country High transaction costs Competing demands on young Urban drift Teaching resource Learning environments Lack of recorded information	Capacity Building Interest, ownership and control IK/NRM Highlight hidden IK Evaluate IK contributions Promote IK value Monitor IK commitments Foster coop funding Practical support mechanism IK applied Local/cultural context	Socio-cultural confidence Physical health Indigenous participation IK for NRM • CBD Article 8(j) • EPCBA Section 3(1)(d,f,g) • NSCABD Objective 1.8 • Bio security IK for applied management Economy/PES • Bio security/border protection • IK marketing Education • Two way models • Intergenerational transfer of IK

> '*…the recording of language and knowledge is adjunct to a more pressing need for younger generations to learn back on country. It is this need that constitutes one of the most critical support requirements for the intergenerational transfer of knowledge, and also promises one of the highest returns in terms of social benefits, positive NRM outcomes and the meeting of various government policy objectives*
>
> (Johnson et al, 2006:41).

Traditional owners consider support for all of these activities – *Language and Knowledge Recording, On Country Visits* and *On Country Livelihoods* – as essential, if IK is to be maintained and applied. As noted, the degree of priority assigned to each (with the possible exception of *On Country Livelihoods* which represent common aspirations) varies according to context. For example, the TKRP enjoys widespread endorsement across far north Queensland. Yet, while there is considerable interest in projects of this kind across northern Australia, many traditional owners in other areas see recording as adjunct to a more pressing need to maintain or re-establish a sustainable presence on country. They do not see recording projects alone, as a priority or a viable means for achieving this goal.

In combination however, these activities deliver substantial benefits. Once the aspirations of traditional owners, as they express them, are factored in, they also provide actual employment opportunities and real-time economic possibilities. This complete picture, allows for a realistic evaluation of IK, which takes into account those 'hidden' contributions and associated benefits, discussed throughout this document.

5.7 Re-evaluating Indigenous Knowledge

Strategy	Action	Issue Targeted
2. Develop effective means for evaluating the wide range of benefits derived from IK and associated activities	a) Convene *Whole of Government/All of Agency* round table conference b) Endorse/negotiate current strategy c) Determine M&E mechanisms/timelines for implementation d) Match international standards e) Seek global investment for IK support and promotion	• Duplication and lack of coordination • Lack of uniform standards and long term IK specific support • Undervaluation of IK

Substantial investments have been made in numerous IK related projects currently underway across northern Australia. More often than not, these operate independently of one another and consequently their successes are short term or otherwise limited.

However, a number of potential cooperative linkages – some already formed and in place – already exist (See Appendix D). These promise to maximise current and proposed investments in IK and IK related activities. A round table conference would provide an opportunity to explore this potential as well as to seek further endorsement of the Strategy and if/where necessary make adjustments and amendments. Over the course of these negotiations appropriate methods and timelines for monitoring and evaluating progress over the implementation phases, would also be determined.

Chosen conference participants must be drawn from all sectors (national and international) with a demonstrated interest in IK and IK support. They must include representatives from Indigenous communities and Indigenous representative bodies across northern Australia, as well as from government, corporate, research, philanthropic and other stakeholder groups.

Many workshops, seminars and conferences around IK have been held in the past. However, none of these has been undertaken on this scale – across community, public and private sectors – or with a definitive north Australian agenda. This lack of focus has often resulted in a seemingly endless round of meetings, where the same issues arise, the same solutions are put forward and nothing changes.

With this in mind the proposed round table conference should adopt a singular focus on the implementation of practical solutions. The current strategy would inform the overall agenda and provide a means for maintaining this pragmatic focus. Traditional Owners have made it abundantly clear in this regard, that they are tired of identifying issues and are seeking ways forward. Such a coordinated and inclusive approach – with the design and implementation of practical mechanisms and instruments for IK support as a focal point – marks the first step in this direction.

As an overriding principle, the concept of CNRM must underpin all conference discussions and negotiations. In this respect, Community Conserved Areas establish a positive International standard, where both cultural and natural values are validated, while Indigenous Protected Areas provide a practical model for the provision of support in these terms. Subscription to the term CNRM demands more than lip service and will entail a real understanding of the concept and what it means for Traditional Owners.

Strategy	Action	Issue/s Targeted
2. Develop effective means for evaluating the wide range of benefits derived from IK and associated activities	f) Introduce prerequisite cross-cultural training programmes	• Limited understanding and undervaluation of IK • Imposed solutions

Various institutions across northern Australia offer courses of this nature. They provide prospective researchers and others with some insight into Indigenous values and expectations as well as a limited means for navigating cross-cultural landscapes. They have the added advantage of focusing attention back on the researcher or agent through highlighting his/her need to learn rather than simply presume to teach.

Unfortunately, such programmes are not always a research or working prerequisite. Content is also inconsistent and sometimes inappropriate. For example, numerous existing programmes do not employ Indigenous teachers or mentors and their value must be qualified on this basis. In these cases, the few employment placements for Indigenous people that may be generated are taken up by non-Indigenous experts.

For the most part, these deficiencies can be overcome through:

- Establishing *cross cultural* training as prerequisite to Indigenous engagement;
- Establishing coordinated and consistent models for all researchers/agents;
- Appointing an elected and independent Indigenous authority to oversee training.

Some models meeting these criteria are identified at Appendix C of this Report.

Strategy	Action	Issue/s Targeted
2. Develop effective means for evaluating the wide range of benefits derived from IK and associated activities	g) Redefine research protocols and working guidelines	• Lack of Indigenous project input/ownership • Limited understanding of IK

Existing protocols and guidelines appear designed to facilitate research and other external agendas without questioning the validity and value of those activities for Indigenous participants. They are institutionally focused, that is research or work oriented, rather than relationship centred. Consequently, current forms are general and depersonalised and often serve the applicant's interests over and above those of any prospective subject. For many traditional owners however, work, research and indeed knowledge itself is undertaken or constructed in the context of personal, human relationships. Value assessments are often made on this basis.

In addition, there is currently no defined process, accompanying protocols and guidelines, for researchers and others to engage with before undertaking chosen or allotted tasks. As a consequence, applicants are able to sign off on a form, or forms, without due consideration or lear indication of personal, disciplinary and/or organisational motive and intent. Nor do they have to demonstrate their capacity to work effectively with Indigenous people in anything other than general terms. Perhaps more significantly, in the majority of cases traditional owners seldom have a direct say over who is employed and who is not. Moreover, the course of research and work proposals is invariably one way, that is, individuals and organisations applying to work in communities with their own predetermined interests and agendas at the forefront, rather than traditional owners having an opportunity to request certain skills and services in line with their own aspirations and in order to meet their own priorities.

Implementation of the following Strategy would alleviate some of these concerns. It lends a personal dimension to research and work and in so doing emulates Indigenous approaches. As adjunct to *cross cultural* training, these initiatives alone will go some way towards redressing current misunderstandings and undervaluations of IK. The recommended process consists of four phases each of which is outlined below:

1. *Primer;*

The *Primer* consists of a simple set of questions and statements that applicants must consider before submitting their research/work proposals (See Appendix C). These would identify community priorities and be intended to encourage motivational reflection - epistemological, ontological, disciplinary and personal – on the part of the researcher, prior to submitting a formal proposal. In so doing they would highlight the human dimension to research. This phase would also encourage researchers to think practically about how their research will benefit those individuals and/or communities they will be working with, how they will ensure those benefits arrive and how and to whom they will be accountable?

2. *Preliminary Discussions;*

The ensuing phase would consist of face to face discussions. Over the course of these meetings, the onus would fall on applicants to demonstrate to individuals, communities and/or representative bodies, what thought they have given to these questions and what answers they have come up with. These discussions would take place in an informal and more personal setting and would provide traditional owners and representatives with an opportunity to assess the researcher and his or her claims as well as providing a forum for researchers to demonstrate a capacity to communicate ideas cross-culturally. Once satisfied, traditional owners may then choose to sign Informed Consent forms while applicants would be expected to submit a formal proposal on the basis of these discussions.

3. *Commitment to protocol;*

At this juncture successful applicants would be expected to sign off on existing protocols and guidelines – see *AIATSIS, NAILSMA* and *NHMRC* for examples.

4. *Formal agreement/s.*

The process undertaken and the documents signed over the course of the previous three phases would form the grounding for formal agreements. However, as noted above, existing contractual clauses are heavily weighted in favour of contractor rather than contracted. There is still little provision made in existing Intellectual Property law, for elements of tradition or cultural expression. Moreover, definition and discretionary disclosure often remains the preserve of the contractor.

Strategy	Action	Issue Addressed
2. Develop effective means for evaluating the wide range of benefits derived from IK and associated activities	h) Reassess existing contractual clauses and other legal instruments	• Inadequate and inappropriate IP protection and benefits sharing • Repatriation of IK/Material Culture

'…but it wasn't important to them [funding agencies] *that all the information that was collected over two years, got back to people, I think that the return of knowledge…and making sure people know what happened to it…should be a milestone…'*

(NAILSMA Transcript 3, 2006:33/01:13:47)

In addition, these agreements seldom include a commitment to demonstrate how research will be used and to what end, or what benefits participants may expect from that research or other activity. Substantial investments have already been made to find a resolution to these issues. However, more often than not, this research has been conducted by legal experts working at arms length from the people their findings will most affect. Consequently, these findings are mostly academic and have given rise to a self perpetuating industry which delivers little of worth on the ground but keeps a bevy of researchers in gainful employment. To break this stranglehold, the revision of existing legal documents and agreements must be conducted in close and ongoing consultation with traditional owners and other stakeholders.

A first step in this direction would include the design and provision of legally accredited document templates. This legal kit would consist of standardised Research Accountability, Memorandum of Understanding and Informed Consent forms as well as Access Benefits Sharing Agreements and uniform Contractual Clauses. Each of these legal instruments would need to be adaptable to local/cultural contexts and at the very least would provide Traditional Owners with guidelines and practical tools with which to ensure their interests are protected and benefits from research and other work are shared equitably. The initiative would go some way towards bringing the subject of Intellectual Property down from the academic stratosphere and into the realm of practical and everyday utility.

At first glance, the recommended four-phase process presented above might appear to significantly increase current transaction costs. However, any increase in these costs is more than offset by quantifiable gains elsewhere. These will come, as demonstrated, through the promotion of community ownership, interest and involvement, the avoidance of duplication, increased clarity and a number of other positive outcomes all of which contribute to truly collaborative research and working partnerships and thus to positive NRM outcomes and high investment returns.

Alternatively, in the absence of appropriate guidelines and processes, current research and working collaborations sometimes foster distrust and internal dissent within communities. Researchers and others are often ignorant of the complex networks of kinship affiliation and relationship to country that are characteristic in an Indigenous social context (See Appendix C). As a consequence, they sometimes (and often inadvertently) approach the wrong people, at the wrong time and in the wrong places. Unfortunately, existing representative bodies do not always have the capacity to effectively advise people in this regard or to consistently monitor their activities (see *Negotiated Solutions* below).

Further solutions to this issue are presented in the following section. A number of tools for appropriate negotiation in these contexts is also presented at Appendix C, of this Report while a revision of existing IP and other legal instruments appears at Appendix F.

Strategy	Action	Issue Targeted
2. *Develop effective means for evaluating the wide range of benefits derived from IK and associated activities*	i) Implement appropriate IK recognition/reward system	• Undervaluation of IK • Uneven partnerships

The undervaluation of IK has been a recurring theme throughout this research project and represents one of the greatest impediments to effective IK support. One of the keys to reversing this trend revolves around the concept of a customary economy and the provision of environmental services, particularly in the context of debate around climate change.

IK contributions in this area and to a wider range of environmental, social and health outcomes are already acknowledged in a number of key government documents; notably the CBD, NT/Commonwealth Bilateral and various State and Territory economic strategies. In these cases, recognition has been forthcoming but commensurate rewards have not.

In the short term, these issues may be overcome relatively simply. Solutions would entail increased investment to provide appropriate salary packages for Ranger groups and to place Indigenous Protected Areas on a par with the rest of the NRS – in terms of pay scales, funding, infrastructure and other incentives – and thus provide appropriate rewards for services rendered. In the longer term, the ecosystem services Traditional Owners provide on a day-to-day basis must be evaluated and rewarded in the context of an impending water crisis, climate change, the advent of carbon trading schemes, overall environmental degradation and other concerns around bio and border security. The contribution of IK to the resolution of these issues is clearly identified in numerous government commitments and public statements.

Strategy	Action	Issue Targeted
2. Develop effective means for evaluating the wide range of benefits derived from IK and associated activities	j) Design and coordinate incentive/training schemes for Indigenous and non Indigenous researchers and employees	• Undervaluation of IK • Lack of economic opportunity • Short term commitments to IK support • Duplication and lack of coordination

> *Where do we start? Young people lose interest in all these meetings, meetings…we need people to come out and stay with the community to start recording knowledge and teach young people how to do it. Kids don't want to leave home so they need training at home. How do we get funding? Where do we start?*

Traditional owners often point out how difficult it is to get the right people to live and work in their communities. They consider this of paramount importance if their children are to receive the education and training necessary to ensure their economic future. This education and training must be provided in situ, in communities, as many children are reluctant to leave kin and country. Often however, even when the right people are found, they move on after relatively short periods of time, due to a lack of financial and other incentives. The trust and understanding established over this time is lost as is any continuity in training that may have been attained. Thus teaching and learning regimes are suspended until someone else is appointed and the cycle begins anew.

Solutions to this dilemma are often as simple as providing appropriate salary packages, decent housing and adequate teaching and learning resources. Cross cultural training courses and appropriate two-way education models, will go some way toward meeting the latter. However, adequate remuneration will require increased investment via a dedicated *Whole of Government* approach.

5.8 Negotiating Solutions

Strategy	Action	Issue Targeted
3. Ensure effective representation and articulation of Aboriginal and mainstream aspirations across northern Australia	a) Establish independent Indigenous Representative Body	• Duplication and lack of coordination • Lack of Indigenous project input/ownership • Double handling • Imposed solutions • Territoriality

In many respects, the successful implementation of this strategy revolves around support for an established Indigenous Representative body. To be effective, this body would adopt a cross regional focus, enjoy the full endorsement of traditional owners and be dedicated to the provision of specific support for IK and related activities. The advantages of this initiative are manifold.

An organisation operating in a dedicated support role would be in a position to effectively implement and administer all of the strategic recommendations made above. These recommendations are considered essential if appropriate and ongoing support for IK is to be found. Securing such support would enhance and complement the present and future activities of traditional owners and their existing representative bodies.

Adopting a wider north Australian focus would deliver advantages in several key areas. For example, a number of projects designed to address issues around current research and work practices have been initiated at local levels. However, the representative bodies involved do not always have the capacity or jurisdictional scope to effectively articulate the interests of their clients with wider cross regional concerns. As a consequence, problems have sometimes arisen amongst traditional owners themselves – around such issues as access benefits sharing for example – as well as with other stakeholders. An Indigenous organisation with wider scope and extended networks would be ideally positioned to negotiate agreements where local interests and competing cross regional claims are successfully mediated.

Similar advantages apply in terms of funding (see below). In adopting a strategic, north Australian focus, shortfalls in current funding arrangements may be overcome. In many cases local concerns are at a distinct competitive disadvantage due to their limited jurisdiction and operational scale. Frequently, they only qualify for short-term project based funding. The IRB would not compete for existing funding sources, but instead would provide access to otherwise unavailable funding options.

Through working partnerships with other representative bodies, an organisation of this type, would also be able to more accurately assess the aspirations of traditional owners and thus represent their interests more effectively. These interests frequently revolve around collective rather than individual rights. As an independent and autonomous body, with direct lines of communication at local, regional and national levels, those interests would be protected against external attempts to impose constraints or to preserve or promote outside interests at the expense of those of traditional owners.

These arguments link directly to those made earlier in respect to the NT/Commonwealth Bilateral. Rather than an *Imposed Solution*, the endorsement of an IRB would allow for a truly representative Indigenous voice. The IRB would promote Indigenous input into and ownership over projects, coordinate these with mainstream NRM initiatives and thus secure successful outcomes. In this manner the laudable aspirational targets identified in the Bilateral for example, appear much more achievable and applicable in a wider north Australian context.

Similar arguments apply in respect to Intellectual Property protection. Existing contractual arrangements are inadequate on many levels. Currently, little provision is made for cross-cultural issues arising outside of mainstream, property based concerns. Those concerns revolve around notions of knowledge as property and firmly focus on individual and organisational ownership rights. Often, such concepts are antithetical to those of traditional owners (See also Appendix F).

The lack of a coordinated and consistent approach to these issues compounds existing problems. For the same reasons noted above full resolution is not always possible at the local level or at arms length. On the one hand, a top down, *one size fits all* legal framework, characterises contractor approaches but often comes at the expense of local and cultural particularities. On the other, local attempts at redress are, through definition, context specific and often inapplicable in other circumstances and localities. A fully endorsed, Indigenous authority, with the capacity to effectively represent local interests in full view of wider cross regional considerations and in correspondence and articulation with external agencies, would be equipped to provide meaningful and practical solutions.

Strategy	Action	Issue Targeted
3. Ensure effective representation and articulation of Aboriginal and mainstream aspirations across northern Australia	b) Establish designated IK *Keeping Place*	• Duplication and lack of coordination • Inconsistent approaches to safe data recording, storage, access and retrieval • Inadequate/inappropriate IP protection and benefits sharing • Lack of Indigenous project input/ownership • Repatriation of IK/Material Culture

> *'...when they* [children of traditional owners] *go to university...stories that have come down to them by their grandfather...have to be referenced to a whitefella...they're being told they have to reference someone who they don't know for stories they grew up with...'*
>
> (NAILSMA Transcript 3, 2006:31)

An independent authority would also provide solutions to issues arising around data storage, ownership and repatriation. To this end, many traditional owners have expressed interest in establishing a central database or *keeping place*, to be administered by an appropriate and in situ, that is northern based, Indigenous agency. Appropriate security, permissions and access measures would be put in place for Indigenous use while non-Indigenous use would be negotiated with traditional owners on a complementary case-by-case basis.

As noted previously however, issues still remain around uniform media use and safe storage methods. Given the pace of technological innovation and change, current data storage devices such as Compact Discs, magnetic audiotapes, video recordings, proprietary databases and other audiovisual media are destined to become redundant, in much the same fashion as floppy drives and the like, before them. In addition, much of this material is scattered in various repositories and forms right across northern Australia. In many cases, it remains inaccessible to both Indigenous and non-Indigenous authors and researchers alike. The development of a centralised *open source* Digital Space, similar to the model discussed in Subsection 5.4, but housed in northern Australia, is considered essential if such data is to be preserved and utilised for cultural/natural resource management and other applications across the Indigenous estate both in the present and into the future.

Strategy	Action	Issue Targeted
3. Ensure effective representation and articulation of Aboriginal and mainstream aspirations across northern Australia	c) Elect Indigenous representatives to promote IK Strategy	• Duplication and lack of coordination • Lack of understanding and IK undervaluation • Lack of Indigenous project input/ownership • Double handling • Imposed solutions

The advantages of electing Indigenous representatives as opposed to appointing government agents are manifold and have been discussed at some length previously in this document. Not only does this course of action promote Indigenous ownership and therefore interest and participation, it is also far more cost effective. In the current context, government appointees serve as middlemen, who invariably must make recourse to Indigenous representative bodies in order to access Indigenous networks. Dealing direct with Indigenous representatives will effectively abolish the need for such double handling and thus reduce costs substantially.

Strategy	Action	Issue Targeted
3. Ensure effective representation and articulation of Aboriginal and mainstream aspirations across northern Australia	d) Implement communication strategy upon project completion	• Undervaluation of IK • Promotion, knowledge and adoption • Lack of uniform standards and long term IK specific support

The need for a communication strategy is identified in the Project Terms of Reference and would need to be implemented soon after project completion. It is imperative that a commitment be made to the promotion of this Strategy, with a view to adoption, long after the cessation of research. Steps have already been taken toward this end. These include:

- Dissemination of the current document to traditional owners and NAILSMA partners;
- Dissemination of the current document to government and non government agencies;
- Ongoing negotiations with various private and public sector organisations and agencies, local, national and international;
- The development of an Info Kit for promotional purposes, comprising the Strategy, Report, Plain English Summary and DVD.

See Appendix D Communications Strategy.

5.9 Appropriate Funding Arrangements

Strategy	Action	Issue Targeted
4. Secure appropriate, adequate and longer term funding commitments to IK support across northern Australia	a) Secure private/public sector IK investment	• Adhoc, cyclical funding rounds

Why does all this money go to NRM agencies and not direct to Aboriginal people or Aboriginal organisations?

(NAILSMA Pers. Comm 2006).

To date, with one notable exception (see NTNRM Board 2006) no single structured approach to IK support has been adopted in Australia. Current funding and investment is periodic and comes from a variety of sources both private and public. This investment is shorter term and seldom IK specific. As a consequence, many local level organisations find themselves in an ongoing struggle just to maintain existing projects let alone implement new programmes. In many cases, these projects and programmes receive just enough support to become established before funding runs out. The chase for support then begins anew. This cycle consumes the resources of traditional owners, representative bodies and funding agencies alike and results in endless duplication and disillusioned participants.

Nonetheless, there is obviously enough interest in IK to warrant effective and ongoing funding support. What is absent is a consistent and coordinated approach. As noted in the previous section, regional representative bodies often do not have the capacity to access funding at national and international levels. This level of support is often restricted to strategic cross-regional type initiatives.

Strategy	Action	Issue Targeted
4. Secure appropriate, adequate and longer term funding commitments to IK support across northern Australia	a) Implement appropriate IK support provision mechanisms b) Secure annual income stream for IK support and promotion c) Link IK investments with enterprise/economic outcomes	• Imposed Solutions • Adhoc, cyclical funding rounds • Lack of understanding and IK undervaluation

As noted above, these issues can be resolved through an independent and fully endorsed Indigenous Representative Body with a singular focus on IK support. The maintenance of such a body would require an ongoing commitment to investment from the public sector (see Figure 5 below). In return, this unit would ensure the ongoing input and interest of traditional owners, effectively articulate Indigenous interests with those of the mainstream NRM community, coordinate cooperative funding agreements across both public and private sectors and thus secure adequate returns on investment. In many respects, this form of investment and support is already underway although coordination and consistency is still lacking (See Appendix D, Cross Sectoral Linkages).

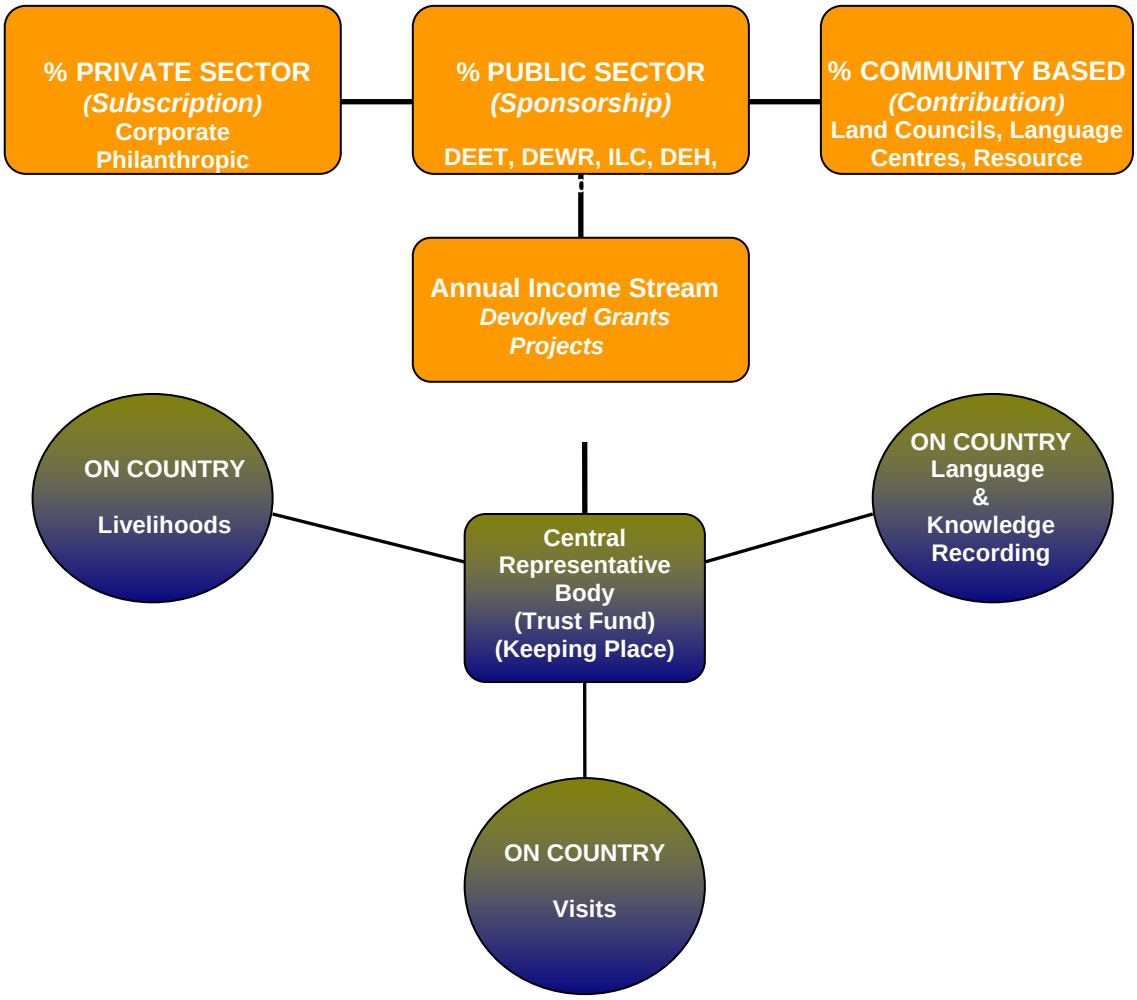
In arguing this case, reference is again made to the NT/Commonwealth Bilateral. In the context of this strategy, this agreement has been considered a positive model for IK support in many respects. However, as already noted the proposed mechanisms for delivering this support may ultimately undermine the aspirational targets identified. Nevertheless, one of the most valuable points made in the document concerns consideration of a *virtual pool* of funding for IK support. From a multilateral perspective, that is one that bridges State, Territory and Commonwealth borders and boundaries, this *virtual pool*, conceived of here as a *trust fund*, would provide an annual income stream for ongoing and consistent IK promotion and support.

As per Figure 5, this annual funding would flow from government/s to an Indigenous Representative Body. Such a scheme would enable the initiation, implementation and maintenance of those essential recommendations and services highlighted above, on an ongoing basis. Although IK and caring for country activities would remain core business for the agency, investment returns would be measured across a wide range of environmental, social, economic and health indicators. A percentage of annual income would be set aside specifically to facilitate further IK research and future innovation.

Smaller scale community level contributions would also be sought. This pooling of resources would enable the IRB to effectively promote IK and thus seek further funding from both public

and private sectors in the form of larger scale devolved grants. These grants (normally unavailable at local levels) would be administered through the IRB and made available to communities, upon application, to provide support for both existing and entry level projects.

Figure 5: All of Agency/Whole of Government Investment



The prospect of a coordinating body with a cross regional charter and government support would encourage further private sector investment. As demonstrated above IK investment already promises substantial investment returns and hence has attracted increasing corporate interest. Similarly, many philanthropic organisations and research institutions already perceive the advantages with such a system and elect for larger scale, strategic type investments in anticipation of enhanced and consistent returns (See Appendix D). The IRB would be able to coordinate these investments and negotiate institutional expectations in collaboration with both prospective investors and traditional owners.

An elected advisory council would oversee these initiatives and activities. The council would meet regularly and consist of a mix of traditional owners from across northern Australia, as well as appointees from various Indigenous representative bodies. This makeup would ensure that local level and cross regional interests are balanced. It would also provide traditional owners with direct input into the initial composition and ongoing conduct of the IRB. In summary IRB initiatives and responsibilities would include:

1. Promoting and marketing IK;
2. The appointment/coordination of an advisory committee;
3. Administering a keeping place/central database;
4. Maintaining a trust fund and administering devolved grants;
5. Assessing project applications;
6. Enforcing research/working protocols and guidelines;
7. Implementing appropriate contractual arrangements;
8. Fostering cooperative funding arrangements;
9. Facilitating cross sectoral linkages;
10. Negotiating enterprise development agreements and funding arrangements.

The devolution of powers to an autonomous and fully endorsed representative body will prove remarkably cost effective. As things currently stand, funding passes through many hands before it arrives on the ground. For example, outside consultants are frequently employed to work with Indigenous communities. Invariably these consultants have no choice but to approach Indigenous representative bodies, seeking access to country and to networks. This is tantamount to double handling and of no advantage to anyone other than perhaps, the consultant. With the advent of an IRB, direct access and liaison with traditional owners and representative bodies would be possible.

The advantages of investment in this respect are clearly evident. When initial set-up costs are factored in this strategy appears even more attractive: costs are minimal when measured against potential cross-sectoral gains. As noted above, there is increasing commitment from both public and private sectors to a central coordinating body with a charter to provide appropriate IK support and ongoing research across northern Australia. Indeed, many of the necessary processes and practical mechanisms required are currently in negotiation or already in place. Future prospects extend beyond local, regional or even national concerns to embrace the possibility of international interest and investment in the face of global challenges.

5.10 Political Contexts: promotion, innovation and marketability

Strategy	Action	Issue/s Targeted
5. Negotiate and coordinate Whole of Government/All of Agency approaches to IK support	a) Adopt multilateral approach to IK support across northern Australia	• Duplication and lack of coordination • Cross regional inconsistency and state/territory jurisdictional limitations • Adhoc and cyclical funding rounds • Imposed Solutions
	b) Develop affective M & E instruments	• Failure to meet documented IK support commitments • Unrealistic reporting mechanisms
	c) Develop IK promotional tools	• Lack of recognition and reward for IK activities • Limited returns on current IK investment • Private sector investment • Enterprise development for remote communities

In many ways, this Strategy is innovative and its implementation will demand the exercise of considerable political will. However, the recommendations made are both appropriate and cost effective in a number of ways and at various levels. In the first instance, they provide a means for honouring existing government commitments to IK support, in order to secure positive NRM and wider outcomes. In the second instance, these solutions offer real time economic possibilities for remote communities. These opportunities will increase in the immediate to short term future due to growing national and international concerns around wholesale environmental degradation and possible climate change. Given current debate around *shared responsibility* and *mutual obligation* the first pathway seems timely. Faced with the prospect of an impending environmental crisis, the second appears long overdue.

The concept of a culture based, customary economy is key to success on both fronts. Built on a potential for economic development, through the provision of environmental services, this line of thinking echoes the aspirations and priorities of many Traditional Owners, whilst at the same time providing a mechanism for addressing wider environmental concerns. Right across the north Australian Indigenous estate, natural values in terms of biodiversity, water quality, habitat health and overall ecosystem integrity have been maintained at far higher levels than elsewhere on the continent. In the majority of cases, this success is attributable to the everyday activities of Aboriginal people living and working on country. In contemporary contexts, the significance of these contributions is highlighted and their market value is heightened.

> *It will be unfortunate if opportunities to contribute to the achievement of important national goals addressing biodiversity conservation and Indigenous marginalisation are not grasped*
> (Altman 2007: 2 Unpublished)

In this sense, Traditional Owners already occupy an enviable market niche. However, unless IK and the ecosystem services and products it provides, is duly recognised and rewarded, an opportunity will be lost. Alternatively, with adequate promotion and appropriate support IK provides an attractive investment proposition for both public and private sectors. The cost saving for governments in terms of enterprise development and subsequent economic independence for remote communities, in combination with a coordinated approach to service provision, has been demonstrated throughout this document and is in many ways self-evident. For the private sector, investment in carbon abatement schemes, the provision of environmental services and the very concept – in a strict market sense – of sustainable resource use itself, will deliver substantial returns especially given the current climate.

However, while this Strategy may be considered innovative it is not especially radical. Many international models (see *Eco trust* for example) have evolved out of similar concerns and adopted similar approaches. These initiatives, for the most part, have successfully articulated Indigenous cultural, environmental and economic interests with those of the wider market place. Their success has been due primarily to the close alignment of Indigenous aspirations and Indigenous development demands.

In some respects, these approaches echo current calls in Australia to implement *Whole of Government* solutions to whatever issue. Unfortunately in these cases, the missing ingredient is often the people these solutions will impact on most. This Strategy represents an attempt to redress this anomaly through firstly ensuring Indigenous input into and ownership of planning and implementation processes, and secondly through actively promoting the commercial possibilities of Indigenous Knowledge. In this sense, the combination of *Whole of Government* and *All of Agency* investment is vital. Such investments will deliver substantial returns for Traditional Owners and public and private sector investors alike. The possibilities are real, but must be built on the understanding that with appropriate support, remote Indigenous communities represent a national asset and not a national liability.

Appendix A

Bibliography and Literature Review

LITERATURE REVIEW
TOPIC: Indigenous Ecological Knowledge

Working Definition of IK/IEK

***Indigenous Ecological Knowledge: A Northern Territory Scoping Study*. Prepared by NAILSMA for the Natural Resource Management Board, Northern Territory (April 2006)**

> "IEK is one term amongst a number of similar and related terms that are in current use. For many Aboriginal people IEK encompasses all aspects of human and environmental relatedness, from kinship relationship to customary law. It is culturally embedded in a relationship with country and consists of detailed knowledge of species – habitat and behaviour – and natural resources, as well as a wide ranging set of land and sea management principles geared toward sustainable use" (NAILSMA 2006:ii).

The NAILSMA Indigenous Knowledge Scoping Study (2006) document also provides the following definitions of IK, as set by Indigenous people of northern Australia. In the first instance, Veronica Dobson, Arrernte elder, defines IK as constituting:

> "…water from plants, fire, clouds, rain, sun, moon, stars, stories and sites, songs, paintings, dancing…looking after country involves all of these things together – you can't have one without the other. Maintaining language and culture is a tool for relating to country and looking after everything that is on it". (NAILSMA 2006:3)

For the Yolgnu founders of Dhimurru it is:

> "Our songs, our law, our sacred art, our stories are embedded in the land, which is the foundation of our knowledge. That's how we see the land". (NAILSMA 2006:3)

Indigenous Testimony

Moore, G. with J, Davies. 2001. "Culture and communication in Aboriginal land management in New South Wales: A Koori perspective," in *Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.* Edited by R, Baker, J, Davies and E, Young, pp.108-122. Oxford: Oxford University Press.

In this chapter, Graham Moore, a Gurrungutti-nunji man from the south coast of New South Wales, discusses the Indigenous ecological knowledge of Koori people in New South Wales. He establishes that "Aboriginal ecological knowledge is embedded in cultural and spiritual explanations and symbols" (p.112), noting that for Koori people in NSW, knowledge of seasonal variation in resources is a very part of their body of IEK, as it is crucial for the management of wildlife and the seasonal effects of natural forces. For Moore, Koori people maintain a close spiritual tie to their land in spite of the impact that colonisation had on people and country.

Williams, N, M. 1999. "The nature of permission," in *Land Rights at Risk? Evaluations of the Reeves Report*. Edited by J.C, Altman, F, Morphy and T, Rowse, pp.53-64. Canberra: Australian National University.

Yanyuwa elder Annie Karrakayn, embeds IK within its cultural context, and affirms that this knowledge belongs to Yanyuwa people. She states;

> "We own the fish, the birds, animals, everything, we have feelings for them, they are Law, they all have Law; if we do not "own" them, why would we bother to get upset when things go wrong?" (p. 58).

Indigenous expressions of IK reflect a shared comprehension of the all-encompassing nature of IK in relation to an entire cultural identity and most often stress the fundamental relationship between people, land, sea, Law and knowledge. International definitions, as sourced from range of literature and diverse cultural groups (mainly in North America and Canada, New Zealand), are consistent with Australian Indigenous views of IK. A selected review of these follows:

Brascoupe, S, and H, Mann 2001. ***A Community Guide to Protecting Indigenous Knowledge.*** **Department of Indian Affairs and Northern Development, Research Affairs Directorate, Ottawa, Canada.**

> "Some say the emphasis should be on wisdom rather than on knowledge. Others say that IK must be understood within a spiritual realm, because knowledge cannot be separated from the spiritual. Most Aboriginal peoples agree that IK is unique to each tradition and is closely associated with a given territory. Thousands of knowledge systems probably exist, which are as many and varied as there are Indigenous peoples and territories. IK includes such major areas as:
> · Agriculture and horticulture
> · Astronomy
> · Forestry
> · Human health, traditional medicines and healing
> · Knowledge of animals, fish and ecological systems
> · Sustainable use of natural resources and the environment
> · Traditional classification systems for living and other resources
> · Learning systems and oral traditions
> · Spirituality
> · Symbols
> · Artwork, designs, symbols, scientific and ecological methods, crafts, music, dance, songs, stories, foods, medicines and wellness (or disease-prevention) products – all draw on IK" (p. 3).

Longley Cochran, P. n.d. ***Ethical Guidelines for the Use of Traditional Knowledge in Research and Science.*** **Adapted from the Traditional Knowledge Research Guidelines of the Council of Yukon First Nations. Available at:**
http://www.ed.psu.edu/icik/2004Proceedings/section8-cochran.pdf
In this document, Longley Cochran, an Inupiat Eskimo born and raised in Alaska, defines IK as:

> • It is practical common sense based on teachings and experiences passed on from generation to generation.
> • It is knowing the country. It covers knowledge of the environment—snow, ice, weather, resources—and the relationships between things.
> • It is holistic. It cannot be compartmentalised and cannot be separated from the people who hold it. It is rooted in the spiritual health, culture, and language of the people. It is a way of life.
> • Traditional knowledge is an authority system. It sets out the rules governing the use of resources—respects an obligation to share. It is dynamic, cumulative, and stable. It is truth.
> • Traditional knowledge is a way of life—wisdom is using traditional knowledge in good ways. It is using the heart and the head together. It comes from the spirit in order to survive.
> • It gives credibility to the people.

Peat, D, F. 1996. *Blackfoot Physics: A journey into the Native American universe.* London: Fourth Estate.
Peat's discussion of the "Native American universe", turns to "Indigenous metaphysics and philosophy" as IK. He views IK as infinitely different to non-Indigenous knowledge and derived from an altogether different world of consciousness. He acknowledges that Indigenous knowledge "could no more deal with matter in isolation than the theory of relativity could fragment time from space" (p. 8). Beyond this, he determines that the differences between IK and non-Indigenous knowledge systems, do not prohibit a dialogue between the two forms, and do not preclude the two entering into of a relationship of respect and recognition (pp.8-9).

Harmsworth G.R. 2005. *Maori values and native forest (ngahere) fact sheets.* Produced for Manaaki Whenua Landcare Research.
In this work, Garth Harmsworth, whose tribal affiliations include Te Arawa, Ngati Tuwharetoa, Ngati Raukawa, in New Zealand, defines Maori knowledge as:

> "*Matauranga Maori*, is the 'knowledge, comprehension, understanding of everything visible and invisible existing in the universe', it includes both 'Maori knowledge and knowledge systems'. *Matauranga* which involves observing, experiencing, studying and understanding the world from an Indigenous cultural perspective, is often equated with wisdom".

Other Terms

Other terms that are encountered in the literature, but which encapsulate the range of meanings contained by IK and IEK, include:

> traditional Indigenous knowledge, Indigenous intellectual property, Indigenous resource utilisation, traditional ecological knowledge, folk management, folk ecology, local knowledge, ethnoecology, ethnobiology.

Background to Literature on Indigenous Knowledge

This section, including Parts 1 and 2 provide a background to IK/IEK (hereafter IK) as it has been documented and published by non-Indigenous authors. Much of the early literature consists of inventories of IK. These published inventories mark some of the earliest efforts at documenting IK systems for Western/non-Indigenous readers. The interest in IK, as can be tracked in the literature, has emerged from a desire to document and note other forms of knowledge for non-Indigenous audiences, and anthropological/historical or colonial motivations. Much of this literature has been heavily critiqued since its publication. The literature has shifted, in more recent times, to the documentation IK for its inclusion in discussions of new ecological ethics, in efforts of natural resource management (NRM) or cultural heritage management (CHM), or in response to increased Indigenous resistance to the ongoing colonisation of land/sea/management and demands on non-Indigenous interests to engage with IK.

The nature of IK literature and the increasingly vast body of work being published has been addressed in the following documents:

APFT (The Future of Tropical Rainforest Peoples). 1997. *Concepts of Indigenous Environmental Knowledge in Scientific and Development Studies Literature: A critical assessment.* Working Paper #2, October, 1997. Available at: http://lucy.ukc.ac.uk/Rainforest/workingg.html

On the topic of emerging and renewed interest in IK, the APFT Working Paper makes several important observations about non-Indigenous engagements with IK. The authors observe, that;

> "Since about the mid nineteen-sixties the process of marginalising IK … has been put into reverse, and is indeed accelerating to a remarkable (some would say, alarming) degree. This is due to both romantic and practical reasons".

Under a romantic understanding IK is associated with ideas that position Indigenous people in a harmonious relationship with the world around. This is a kind of selective remodeling of Indigenous identity to suit current Western environmentalist ideals drawn from academic circles. This is a kind of "ecosolidarity". Moving away from these 'romantic ideas', more recent literature takes a practical approach to engaging with IK. The APFT document claims that this has been encouraged by anthropologists and other professionals (p.17). The practical approach to IK sees it increasingly incorporated into negotiated/partnership contexts, where organisations or research units seek to incorporate IK into their non-Indigenous informed practices and programs. APFT identify a significant downside to this practical engagement, namely that the categorisation of IK "becomes a direct consequence of the limited parameters of western development/scientific theories which rely upon an ordered conceptual framework from which and in which to work" (p.18)

In line with these trends in the appreciation and application of IK, the bulk of literature published in the 1970s, 80s and early 90s is by non-Indigenous writers. It is only in more recent years that Indigenous authored works have become part of the body of literature on IK. Sole Indigenous authored works, or collaborative works involving both Indigenous and non-Indigenous contributors, remain much more localised in their focus, as community groups independently or in association with government and other organisations document IK in published and electronic formats.

Scott, G. 2004. ***Audit of Indigenous Knowledge Databases in Northern Australia.*** **Unpublished report, ARC Linkage Project, School of Australian Indigenous Knowledge Systems. Darwin: Charles Darwin University.**

Scott comments further on the localised nature of IK reporting. In conducting an audit of all databases holding Indigenous knowledge in northern Australia, he determines that it is the place-based nature of IK and social organisation that restricts most databases to holding culturally specific and localised data. A clear example of localised knowledge and recording, via database storage, is the Yanyuwa Diwurruwurru Website (in association with Deakin University), the Wadeye Knowledge Centre, and the Tiwi Land Council website. Scott notes that it is only Territory bodies or Commonwealth Government bodies that hold national-scale data (such as AIATSIS, and NT Parks and Wildlife). From a review of Scott's audit, it would seem that the more localised the reporting effort, the more likely that Aboriginal people have been and continue to be closely involved with the recording, cataloguing, and reporting of IK. National scale databases and websites appear to be aimed at non-Indigenous audiences and have a lesser feel of partnership and Indigenous autonomy in their construction and maintenance.

Further to the point of Indigenous authorship in IK literature, the NAILSMA IK Scoping Study (2006:67), attempts to quantify the extent to which IK is being made accessible to inform broader NRM communities. This study cites Zeppell (2003b) to establish the nature of publications in this area and the rate of Indigenous authorship.

Zeppell, H. 2003b. ***Indigenous Wildlife Management in Australia: A research bibliography.*** **James Cook University, School of Tourism. Unpublished.**

Zeppell inventories 2368 such publications nationally (including magazines, newspaper and other popular articles as well as scientific papers and monographs). She notes (2003a) that 24.5% of

publications on wildlife knowledge and wildlife species are authored by Indigenous people or people affiliated with an Indigenous organisation. The proportion of all authors and co-authors who are Indigenous people is 55% in the Northern Territory and 24% nationally.

The formats in which IK is expressed and exclusively authored by Indigenous people, increasingly includes digital and electronic formats, including the internet, CDROMS and databases. The following literature sheds a more general light on this format for documenting and sharing IK.

Smith, C and G, K. Ward (eds). 2000. *Indigenous Cultures in an Interconnected World.* St Leonards, NSW: Allen and Unwin.
Several contributions in this volume consider the use of new technologies by Indigenous people. A range of cultural contexts are considered and many case studies are presented that outline Indigenous people's use of new technologies and new forms of expression to house and document a range of IK forms. These technologies range from CD-ROMs, the World Wide Web, the art market, public performance and tourism. The chapters are united by the understanding that global Indigenous networks are now possible by way of communication technologies. This has both positive and negative outcomes for Indigenous people. Case studies from Australia, North America, and Latin America are provided.

Zimmerman, L, K, Zimmerman and L, Bruguier. 2000. "Cyberspace Smoke Signals: New technologies and Native American ethnicity", in *Indigenous Cultures in an Interconnected World.* St Leonards, NSW: Allen and Unwin.
This chapter focuses on the use of CDROMS and the World Wide Web by Indigenous people in North America. In both formats the level of control over intellectual property by Traditional Owners is high and the authors draw parallels between the medium of the internet and oral tradition (p.79). Electronic formats are considered particularly strong for the transmission of language, cultural values, and oral histories; however they argue that Indigenous community involvement is crucial to the success of education initiatives (p.81).

Iseke-Barnes, J, M. 2002. Aboriginal and Indigenous people's resistance, the internet and education. *Race, Ethnicity and Education* Vol. 5(2):171-198.
In this paper the author looks at the often problematic role of cyberspace in representing and 'containing' Indigenous people. This paper raises and important question for the digital/online recording of IK, Where does cyberspace fit in ongoing public and academic discourse surrounding key issues of Aboriginal identity, ownership and cultural appropriation? Comments by two First Nations People of North America (Kurihato and RedWoman), are shared with the reader, to give different perspectives on the use of the internet to transmit and share IK.

Kurihato states;

> "I agree that our People, individually, or by National or Tribal decision should consider 'teaching' our Ways. However, I, too, am concerned with trying to teach them without teaching the culture and history behind them. To take the practice without the meaning seems sacrilege"

RedWoman wrote;

> "I have to disagree. The Elders taught me that it is Our culture to keep. Our whole belief system is based on love, respect, and sharing and here you are saying 'they' have no right to it…The only way to get rid of hatred of our people and all people is through education. How do you expect that to happen if you will not share the knowledge?" (p.189).

PART 1: Western/Non-Indigenous recording and description of IK

Early documentations and publications concerning IK have been generated within the disciplines of anthropology, history and parts of the 'natural sciences' that drew on forms of 'ethnoecology' and 'traditional ecological knowledge' (see Frake 1962, Hunn 1989, Knudtson and Suzuki 1993, Nazarea-Sandoval 1995).

An increased interest in forms of knowledge and ways of knowing, among these disciplines, generated a number of key texts containing 'lists' or inventories of what is now called IK, in which a systematic approach to Indigenous cultures was taken. These most often recorded a range of information about Indigenous life ways, ranging from economy, social networks, principles and worldviews, physical environments, spatial organisation, land tenure, ecological patterns and conservation practices, spirituality and ceremony. An interest in 'whole culture' approaches matched onto an intellectual landscape in which 'structural' (or compartmentalised) approaches to human culture and life ways were increasingly abandoned in preference of holistic approaches to human systems and multiple ways of knowing and being among human groups. IK as it is now termed was documented widely through such approaches to the writing down of human cultures.

The late 1970s – 1980s saw many publications dealing with the specifics of Indigenous cultures and knowledge internationally, usually documented in efforts of ethnographic recording. The bulk of this literature concerns First Nations people in North America, Canada and Indigenous people from parts of South America. This body of literature is considerable and ranges from a type of 'salvage' or colonial anthropology of negotiated and Indigenous informed documentation of IK. The following annotations are a brief sample from this body of literature, and should help to indicate the early nature of non-Indigenous/Western documentation of IK.

Craig, B and D, Hyndman. 1990. *Children of Afek: Tradition and Change among the Mountain Ok People of Central New Guinea*. Oceania Monographs No.40, Sydney: Oceania Publications.
This book, focused on the Mountain-Ok or Min people of New Guinea, deals with Mountain-Ok society and culture on a regional basis. It considers cultural variation throughout this part of New Guinea, detailing aspects of kinship, marriage practices, and ritual. This volume illustrates how difficult regional representations and analyses are. Some chapters are heavily ethnographic and provide details of Mountain-Ok material culture, while others focus on cosmology and myth in the region. The role of mining in shaping the Indigenous people's lives and engagements with the land are also discussed. The Ok Tedi mine is presented as a pivotal historical fact that has shaped the communities of this region for many years.

Descola, P. 1994. *In the Society of Nature: A Native Ecology in Amazonia*. Cambridge University Press. (First published in 1986, English translation 1994)
This book documents the culture and life ways of the Achuar people, a Jivaroan group of lowland Equador. It is a fairly standard ethnographic text which generally focuses on how the Achuar organise their 'livelihood' – economically and socially. He approaches Achuar culture as an anthropologist but also engages significantly with the Achuar people's own ideas, values and motivations concerning their culture and life ways. The text outlines the physical environment in which the Achuar live and details the cultural values attached to this environment and how people conceptualise their place within it. Descola's work is considered to be an important text for ethno-economics and ethno-ecology.

Harner, M. 1972 *The Jivaro, People of the Sacred Waterfalls*. New York: Natural History Press.
Harner presents ethnography of the socio-cultural system of the Jivaro people of south-eastern Equador. The author adopts a narrative style, rather than the academic tones often found in ethnographic texts. He discusses the horticultural economy of the Jivaro in reference to their

'religion' and cultural changes post contact. He provides background to practices of culturally sanctioned 'drug use' and describes aspects of the region's history, geography, demography, material culture, social organisation and economy. There are some strong 'salvage' anthropology and colonial tones to this work that may relate to Harner's field research being carried out during the mid 1950s.

Hunn, E, S with James Selam and Family. 1990. *Nch'i-Wána, "The Big River": Mid-Columbia Indians and Their Land*. University of Washington Press, Seattle.
This book focuses on the relationships between the Mid-Colombian River Indians and their environment. Co-authored by Hunn and Sahaptin speaking people, this book provides an Indigenous informed view of the landscape. The work has been called an ethno-biological ethnography for Sahaptin speaking people – it documents much detail about Sahaptin Indigenous knowledge. It focuses on the ecology of the Mid-Colombia River Sahaptin speakers over a period of 200 years. Many visuals, including maps, and line drawings are used in the book and these help in the explanation of Sahaptin physical homelands, kinship system, Sahaptin language, history, resources, economy and social system. This book does a good job of documenting the relationship between people and their environment.

Hunn, E, S. 1996. Columbia Plateau Indian Place Names: What Can They Teach Us? *Journal of Linguistic Anthropology* 6(1):3-26.
In this article Hunn provides a detailed discussion of place names in the Sahaptin Indian language of northwestern North America. He employs a linguistic analysis of these place names, recognising that the place names frequently are descriptive of biological and topographical features of sites. He notes that many Sahaptin place names describe features of the land and water as if in motion and that they are sacred in origin.

Nelson, R, K. 1983. *Make Prayers to the Raven: A Koyukon view of the Northern Forest*. Chicago and London: The University of Chicago Press.
In this book Nelson states that he is attempting a detailed exploration of Koyukon natural history as revealed in Koyukon tradition. The Koyuon Indians inhabit an expanse of country in northwestern interior Alaska. Nelson offers up a body of information that is not clouded by theoretical and academic principles and jargon. He approves this information in such a way as to create a sensitive account of a cultural groups life way and to show "how real and tangible the Koyukon belief in nature is", much of which he contents "lies beyond our [non-Indigenous] emotional grasp" (p.xv). He also asserts that the most important function of the book "is to serve the Koyukon people themselves" (xv) by educating people about the substance and value of their life way.

Nietschmann, B. 1973. *Between Land and Water: The Subsistence Ecology of the Miskito Indians, Eastern Nicaragua*. New York and London: Seminar Press.
This book details the environmental consequences when Indigenous communities get drawn into or choose to participate in market relations. Nietschmann wrote this at a time when one of the main threats to the Miskito Indians of Eastern Nicaragua, was the commercial exploitation of the green sea turtle, upon which the Miskito and other Indian groups relied. He examines Indigenous subsistence systems and their adaptability and resilience in the face of factors such as population increase, and the demands of foreign markets. The Miskito value system and the cultural and historical contexts of their society are explored in terms of their relationship to the environment. This work represents a significant and early contribution to the merging of Indigenous knowledge, cultural geography and conservation.

Sanders, D.E. 1973. ***Native Peoples in Areas of Internal National Expansion: Indians and Inuit in Canada.*** **I.W.G.I. A: Copenhagen.**
In the last few years there have been an increasing number of major development projects which have raised issues of native rights. The list includes the Bennett Dam, the Bighorn Dam, the James Bay project, the flooding of Southern Indian Lake, exploration and resource development in the Arctic and the Mackenzie valley pipeline. All these projects involve isolated areas with predominantly native populations. All involve projects designed to deliver energy resources to urban and industrial areas of North America. This book attempts a general analysis within which these geographically separated events can be understood. Focus is on the legal issues raised by the presence of native people in the areas where the projects are being undertaken. The work deals with three propositions: (1) In North America the non-native community is in a period of internal national expansion into native areas; (2) It is characteristic of secondary periods of expansion in the United States and Canada that earlier patterns of native policy will have been incompletely realised in the areas affected by the expansion; and (3) As regards native people, the contemporary non-native expansion has clear parallels with the earlier periods of non-native expansion. (available at: http://eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&_pageLabel=RecordDetails&ERICExtSearch_SearchValue_0=ED131960&ERICExtSearch_SearchType_0=eric_accno&objectId=0900000b800eb62b)

Tanner, A. 1979. ***Bringing Home Animals.*** **Social and Economic Studies No.23. London and Canada: Institute of Social and Economic Research, Memorial University of Newfoundland.**
In this study of the Mistassini Cree people of Quebec, of the North American Subarctic, Tanner strives to achieve two purposes: to see how the material/physical conditions within which winter hunting groups operate are understood by that group, and how ideas and symbols are incorporated into the acts of hunting and trapping. He presents extensive ethnographic 'data' and documents how the Mistassini hunters go about hunting and processing of resources, how this is tied into the organisation of social space, and the ritualisation of space. Tanner draws an important link between acts of hunting and trapping and the social world, including rights to hunt, religion and ceremony associated with hunting, ritual relationships between the hunters and game animals, respect for the animals killed and most importantly the land tenure arrangements among the Mistassini. Tanner is quite enlightened in his approach in documenting Mistassini culture and life ways and makes the vital connections between the social world and the world of hunting and economy. This is an insightful book that looks closely at the ideology and knowledge systems of the Mistassini Cree of interior Quebec, Canada. There is a strong sense in Tanner's book that he worked closely and was informed strongly by the Mistassini people.

Smole, W. 1976. ***The Yanoama Indians: A Cultural Geography.*** **Austin: University of Texas Press.**
Smole's work documents the cultural geography of the Yanoama (Yanomama) people's homelands in the Parima Highlands of northern South America, offering up some discussion of demography and settlement patterns in relation to the land and subsistence. He draws links between the people to land relationship, but seems to be more interested in the geographical and environmental concerns that affect the economy of the Yanoama. A major criticism of this work has been that it is not clear how Smole attained his information, as there is little reference to Yanoama people themselves. This work is quite classical ethnography in this regard and tends to understate the connections between people and their physical homelands beyond the extraction of resources. He draws more from early publications than the Yanoama people themselves.

Urton, G (ed.) 1985. ***Animal Myths and Metaphors in South America.*** **Salt Lake City: Univ. of Utah Press.**
This book provides an ethnographic/ethno-historical account on the Indigenous knowledge (or "native folklore") of several groups of South American Indigenous people. It is considered an important text for those with an interest in "metaphor, the human life course, symbolism and

ethnozoology" (Fabian 1987:60). This volume attempts to bring the relationship between animals and humans into focus by documenting the complexities of Indigenous perceptions and knowledge. Some of the themes addressed throughout the volume, include, kinship between humans and animals, totemism, animal avoidance, animals as symbols, and shifting relationships between humans and animals over the lifetime. This work successfully expresses an appreciation and respect for Indigenous knowledge and cultural systems. It does however lack in direct use of Indigenous people's testimony to express their own viewpoints. As Fabian (1987:62) notes, Indigenous texts are generally presented in paraphrased terms" rather than direct translations or transcriptions.

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Some of this literature was set within a frame of concern for the manner in which Indigenous and other cultural groups were documented and represented in published formats. Ethnographic methods and the 'collection' of Indigenous knowledge by ethnographic means was heavily critiqued by the mid 1980s, on the grounds that Indigenous people should have greater control in the act of recording cultural information and that Indigenous cultures must be represented as consisting of many parts that make up a complex whole of Indigenous knowledge. Pivotal in this critique was the edited volume by Clifford and Marcus (1986).

Clifford, J and G, E. Marcus (eds). 1986. *Writing Culture: The Poetics and Politics of Ethnography.* University of California Press: California.
Clifford and Marcus tackled the issue of 'writing down culture' and ethnographic recording of Indigenous knowledge and culture in their work, titled, *Writing Culture*. In this they argue that ethnography no longer has the right to portray Indigenous people and their cultures with unchallenged authority. The process of cultural representation became inescapably contingent, historical, and contestable. They raised important points about non-Indigenous people recording and publishing Indigenous knowledge. The push came for collaborative fieldwork and recording, negotiated research objectives amidst increasing land rights and Indigenous resistance movements, which necessitated a more holistic approach to the documentation of human culture.

Similar themes have been expressed by Indigenous researcher, Linda Tuhiwai Smith in her book:

Smith, L, T. 1999. *Decolonising Methodologies: Research and Indigenous Peoples.* New York: Zed.
In this book, Smith, an Indigenous researcher calls for a decolonisation of research methods. The author critically examines the historical and philosophical base of Western research. She explores the intersections of imperialism, knowledge and research. Smith writes of a need for people who are carrying out their own research projects within academic traditions and methodologies to critically examine their role in the positioning of Indigenous people as the 'Other'.

There is a mark difference in the amount of literature generated from North America, Canada and South America and Australia. Significantly less was published on IK or Indigenous cultures in Australia during the 1970s-1980s. From this time there is a lack of texts on Indigenous cultures and knowledge, a trend that persisted until the early 1990s. There are some exceptions to this, although the integrity of some of these sources has been scrutinised by Indigenous people and subsequent generations of practitioners. These early works include:

Thomson, D. 1949. ***Arnhem Land: Explorations among an unknown people.***
Thomson, D. 1989. ***Children of the Dreamtime: Traditional life in Aboriginal Australia.*** **Ringwood, Victoria: Viking O'Neil.**
Thomson, D. 2004. ***Donald Thomson in Arnhem Land.*** **Compiled and introduced by N, Peterson. Carlton, Victoria: Melbourne University Publishing.**
Although a non-Indigenous author, Thomson's work is considered to be an important record of IK in Arnhem Land. His experiences working with Indigenous people were recorded in the form of diaries and reports. Thomson was an anthropologist and photographer who often worked for the government. He travelled throughout northern Australia, particularly Arnhem Land, photographing Indigenous people and aspects of their daily and ceremonial lives. He wrote down many aspects of Indigenous life as he saw them and reflected on the details of people's lives and culture. Thomson also recorded his experiences in newspaper and academic articles, private papers and in government reports. This meant that Indigenous culture and knowledge was published in formats that made it available to a wider, non-Indigenous audience in Australia. Because his work recorded (through photographs and writing) many different aspects of Indigenous people's lives in northern Australia, it represents a body of IK from the time period of the early 1930s through to the 1950s.

Elkin, A. P. 1977. ***Aboriginal Men of High Degree.*** **St Lucia: University of Queensland Press.**
In this book Elkin writes about medicine men in Aboriginal communities. His work is very much a product of its time, and does not use Indigenous voices to tell the story. It is an outsider's perspective of IK in relation to healing and sorcery among men.

Meggitt, M, J. 1962. ***Desert People: A study of the Walbiri people of Central Australia.*** **Angus and Robertson: Sydney.**
Meggitt's work is a descriptive account of the Walbiri (Walpiri) people and their culture. His work is one of the earliest published texts that actually acknowledge the pervasiveness of Indigenous knowledge and Law as governing principles in the world for Indigenous people. Meggitt writes,

> "The [Walbiri] totemic philosophy asserts that man, society and nature are interdependent components of one system, whose source is the dreamtime; all are, therefore, amenable to the law, which is co-eval with the system. The law not only embraces ritual, economic, residential and kinships rules and conventions but also what we would call natural laws and technological rules. The care of sacred objects by the men of one parti-moiety, the sexual division of labor, the avoidance of the mother-in-law, the mating of bandicoots, the rising of the sun, the use of fire-ploughs are all forms of behaviour that is lawful and proper – they are all *djugaruru*" (pp. 251-52).

Meggitt aims to present Walbiri culture in terms of how the Walbiri people conceptualise of it themselves, but also injects his own description and analysis – based on ethnographic fieldwork during the mid 1950s. He acknowledges Walbiri viewpoints, and relates discussions of economy and food gathering to seasonal variation of resources, and individual/group kinship. Overall this work is actually quite insightful given the date of publication, however does not include Indigenous testimony.

Stanner, W.E.H. 1966. ***On Aboriginal Religion.*** **Sydney, NSW: University of Sydney.**
Stanner, W.E.H. 1979. ***White Man Got No Dreaming: Essays 1938-1973.*** **Canberra: ANU Press.**
Stanner's work is set within the frame of early contact Australia, when Indigenous people were 'studied' by outsiders with little regard for the authority and autonomy of IK. He documents some aspects of Indigenous life ways and culture, but struggles to represent Indigenous culture on its own terms, and constantly compares Indigenous and non-Indigenous cultures. Topics such as the Dreaming, religion and symbolism, history, culture change and wider Australian society feature in his work, but overall the writer does not detail IK, on its own terms, and there is little discussion

of how IK relates to all aspects of life. There is no direct use of Indigenous people's own language or words to talk about country and knowledge.

Berndt, R. (ed.) 1970. ***Australian Aboriginal Anthropology: Modern studies in the social anthropology of the Australian Aborigines*****. University of Western Australia Press for the Australian Institute of Aboriginal Studies: Nedlands.**
This work is a mixed bag of contributions by several key names in Australian anthropology, including Berndt, Elkin, Shapiro, Yengoan, Strehlow, Munn and Maddock, Reay, Peterson and Gale. They discuss the practice of Australian Aboriginal anthropology, with reference to the recording of Indigenous kinship systems, marriage practices, demography, decision making and conflict, 'religion' and ideology, prehistory, subsistence, linguistics, and ecology. This work is very much in the tradition of an encyclopaedic approach to Indigenous cultures in Australia, generally lacking in substantial recognition of the links between these 'categories' of Indigenous culture and life ways.

Hiatt, L. R. 1978. ***Australian Aboriginal Concepts*****. New Jersey: Humanities Press.**
Hiatt's description of Australian Aboriginal culture is divided up into three parts; Indigenous classification of 'ordinary things', issues in 'totemism', and conceptualisations of the land, secular and 'mystical'. The chapters present discussion on a range of topics, from Indigenous languages, ethnozoology, ethnobotany, Indigenous Dreaming narratives, and conception. The work offers both specific case studies and unfortunately broad generalisations about Aboriginal cultures in Australia. This text reflects an overall tradition in early Australian anthropology, in which Indigenous cultures were discussed in terms of the broad categories of 'social organisation', 'economy', 'settlement patterns' and 'ceremony and ritual'. Rarely were they discussed and represented holistically as an expression of a governing body of Indigenous knowledge.

Crawford, I, M. 1982. ***Traditional Aboriginal Plant Resources in the Kalumburu area: Aspects of ethno-economics.*** **Perth, WA: Records of the Western Australian Museum, Supplement No. 15.**
This work describes the natural resources available to the Aboriginal people of the North Kimberley with the aim of reconstructing the economic basis for traditional society, and, considers the seasonal cycle of abundance and deficiency.

Levitt, D. 1981. ***Plants and People: Aboriginal use of plants on Groote Eylandt.*** **Canberra: Australian Institute of Aboriginal Studies.**
In this work, Levitt presents a detailed inventory of plant use and material culture among the Indigenous people of Groote Eylandt (speakers of the 'Anindiliyakwa' language). A brief discussion of the geophysical environment is presented, followed by an overview of the Enindilyakwa language. Chapters are divided into categories of 'Everyday activities and use of plants', material culture, subsistence, poisonous plants, food collection and processing and sickness. The work has an encyclopedia/dictionary feel to it and has many diagrams accompanying the material culture and plant descriptions. There is little discussion of the cultural contexts in which the information was recorded, and not direct Indigenous testimony acknowledged in the text. The work is a descriptive record, but one that is disembodied and disassociates the information from the social, political and cultural worlds in which it is embedded. This is symptomatic of many earlier efforts in Australia to document IK.

Meehan, B. 1982. ***Shell Bed to Shell Midden.*** **Australian Institute of Aboriginal Studies: Canberra.**
This monograph synthesises more than one year of field observation (1972-1973) of the role of shellfish in the lives of the Gidjingali people of Arnhem Land in northern Australia. Meehan places the shellfish into cultural and environmental context but uses little Indigenous testimony throughout the work.

Reid, J. (ed.) 1982. ***Body, Land and Spirit: Health and healing in Aboriginal Society.*** **University of Queensland Press: St Lucia.**
This text deals with Aboriginal health, healing, ecology and Indigenous knowledge. It addresses contemporary health issues among Aboriginal groups, traditional systems of healing and changing medical strategies. Some of the essays turn to IK in their discussion of health in Aboriginal society. The discussions document specifics on the health situations among a number of Indigenous groups, including Pitjantjatjara people, the Yolngu, Anbarra and Kaititj people. IK is indirectly discussed in terms of gendered knowledge of healing, 'traditional resources', bush foods, response to social change, kinship and country. The text is made up of contributions by Reid, Berndt, Betty Meehan, Waterford, and Bell.

Williams, N, M and E, S. Hunn (eds). 1982. ***Resource Managers: North American and Australian Hunter-Gatherers*****. Boulder, CO: Westview Press.**
This edited volume includes a range of chapters dealing with Indigenous cultures in North America and Australia. The chapters dealing with specific cultural groups and bodies of IK serve to highlight differences in resource management strategies among these various groups, although some similarities are drawn between Aboriginal management strategies. In discussing IK the focus in this work is on social processes, rather than environmental processes. The authors (esp. Myers) stress the importance of life histories and cultural character as contributing to the way in which people negotiate their environment. This work highlights the important link that must be made between management and how people perceive their 'environment'. Themes of resource management are discussed in relation to environment ethics and animal rights.

Waddy, J, A. 1988. ***Classification of Plants and Animals from Groote Eylandt Aboriginal Point of View, Volumes 1 and 2.*** **Darwin: Australian National University North Australian Research Unit Monograph.**
This is an encyclopaedic style documentation of systems of classification of plants and animals on Groote Eylandt, northern Australia. A detailed account of these systems is grounded in a theoretical discussion of the nature of IK. Waddy argues that there are a number of distinct systems of classification on Groote Eylandt, rather than a single system. These systems include hierarchical classifications, binary classifications (such as edible versus inedible), totemic classifications and linguistic classifications. There is no discussion of cultural meaning and cultural mechanisms that govern this knowledge. The author discusses several practical implications that may come from this work, and one (which was implemented subsequently) was the incorporation of the Groote Eylandt material into the science curriculum of Northern Territory primary schools. According to one review this book "will be primarily useful for specialists, including those with theoretical interests in folk classification and ethno-taxonomy and those with interests in Aborigines' understanding of their environment". *(R.J. Fisher Indigenous Knowledge and Development Monitor 3(2) -* http://www.nuffic.nl/ciran/ikdm/3-2/communications/publications.html*).* This work represents one of the earlier efforts to systematically record and present IK for a non-Indigenous specialist audience, with the intent of including such knowledge in NRM strategies.

In terms of the motivation to 'write down IK', Stevenson (1998) raises some important points, which relate to the earlier stages in non-Indigenous documentation of IK in Australia.

Stevenson, M. 1998. ***Traditional Knowledge and Environmental Management: From Commodity to Process.*** **Prepared for the National Aboriginal Forestry Association Conference 'Celebrating Partnerships', Prince Albers, SK, September 14-18.**
The author reflects on non-Indigenous interest in Indigenous cultures and knowledge was prefaced by a view of IK as potentially dying out. This viewpoint was also prevalent in post-contact Australia and can still be seen to permeate popular understandings of Aboriginal cultures and knowledge. It was this view of IK being lost, that prompted many professionals and

academics to "record the TEK of elders before they pass on". Stevenson notes that this "well-intentioned concern to record" most often saw TEK relegated to an archive shelf where it would "collect dust". The author responds to this misplaced desire to 'record' and 'write down' as best being abandoned in preference of an approach that encourages governments and Indigenous groups to "channel their efforts into restoring those contexts that gibe efficacy to this knowledge. This may mean, among other things, contributing much more support and resources to the traditional economy (p. 3, note, 9). Traditional economy in this sense includes land rights and land management.

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By the mid 1990s Indigenous knowledge as an explicit worldview increasingly received attention among non-Indigenous interest groups, including anthropologists, archaeologists, historians, natural resource managers and cultural heritage practitioners (See APFT 1997 – annotation). This shift is associated with emerging revisions of Australia's colonial history, increased Indigenous resistance to an ongoing colonisation of their lands, sea, culture and knowledge and concern over the national and global 'environmental crisis' that now receive much attention (see Rose, 2001) as well as a global Indigenous Ecology Movement. Myer discusses the core of this Indigenous Ecological Movement and the conceptual imperialism/colonial structures that have hindered NRM and governments in their engagement with IK on its own terms.

Myer, L. 1998. Biodiversity conservation and Indigenous knowledge: rethinking the role of anthropology. *IK Monitor* 6(1). [Online source] Available at: http://www.nuffic.nl/ciran/ikdm/6-1/myer.html

He writes, "According to the Indigenous ecology movement, the problems underlying bio-imperialism are beyond the control of economic resources. Western science tends to see high technology, specialisation, and homogeneity as key aspects in any conservation scheme. Traditional cultures, by contrast, are characterised by low technology and heterogeneity, while sustainable interactions within ecosystems are based on necessity. Behind these differences are mutually exclusive ways of thinking about nature. Western science, based on empirical research rooted in positivistic and causal views of the world, runs counter to traditional ecological interactions guided by ways of knowing based on an intimate co-existence with nature. In the view of the Indigenous ecology movement, the resulting body of Indigenous knowledge provides a much better understanding of ecology than the 'removed perspectives' of Western science could ever afford".

Rose, D, B. 2001. *Connecting with Ecological Futures*. Position paper prepared for The National Humanities and Social Sciences Summit, July 26-27, Canberra. Available at: http://cres.anu.edu.au/publications/cef.pdf

In this paper, Rose looks in detail at the global environmental crisis, and how it has destabilised notions of Western scientific authority. She deconstructs the concept of 'crisis' and examines the means by which the global environmental crisis is being addressed. She envisions this in terms of a shift away from concepts of science – namely objectivity, and deterministic prediction, towards an increased contribution from the humanities and social sciences. Rose believes that the humanities is offering up new ways to understand humanity, how we may intervene in the environmental crisis and secure a more stable and sustainable future. One of the key ways to get a better understanding of all this is through Indigenous knowledge systems. It is in the context of a global environmental crisis that the sharing of ecological knowledge has become more important and more common.

The literature tracks an emerging trend towards new ecological ethics in the management of physical environments in Australia, and the institutionalising of NRM in recent decades. The development of discussions in IK and the consultation and implementation of IK in non-

Indigenous sectors in Australia is therefore fairly recent, and is marked by a unique history and character today – which sets it apart from neighbouring regions of New Zealand, South-east Asia and other global settings. Part 2 reviews this literature under the frame of IK and new ecological ethics, as more recent non-Indigenous/Western engagements with IK in NRM and global economy.

PART 2: IK and new ecological ethics – Western engagements with IK in NRM and global economy

Over the last two decades (mid 1990s-mid 2000s), IK has received greater attention in the Australian literature (for reasons identified by Rose 2001, see also Robin 1998). More recent documentation and discussion of IK indicates a two fold shift in recording efforts and motivations. This includes an increase in the role of Indigenous people in recording and documenting IK for their own interests and motivations (in varied formats-text, websites, electronic sources) as well as an emphasis on negotiated knowledge/bi-cultural approaches in which Indigenous knowledge is brought into relationship with Western models of natural and cultural resource management. The literature (including online sources) identifies and documents a dilemma encountered with the latter, which often sees IK devalued as an 'alternative' form of knowledge that is subject to less scientific rigour and therefore given less weight than scientific knowledge (see Langton 1998, Council for Yukon First Nations 2000:2)

Langton, M. 1998. ***Burning Questions: Emerging environmental issues for Indigenous peoples in northern Australia.*** **Darwin: Centre for Indigenous Natural and Cultural Resource Management, Northern Territory University.**
In this book Langton, argues for the inclusion of Aboriginal people in the management of northern Australian landscapes. Langton exposes the preference for scientific knowledge that has placed IK in a secondary position to western scientific thinking and led to misunderstandings about the significance of cultural and spiritual affiliations to landscapes, flora and fauna in the Aboriginal domain. She demonstrates that Indigenous people have successfully managed the landscape for millennia and are responding to the challenge of sustainable environmental management in innovative ways which combine traditional environmental practices and western scientific insights (see http://www.ntu.edu.au/cincrm/publications/burnques.html)

Langton states:

> "I suggest that Aboriginal people and their land management traditions have also been rendered invisible in Australian landscapes, not only by legal but also by 'science fictions' that arise from the assumption of superiority of Western knowledge over Indigenous knowledge systems, the result of which is, often, a failure to recognise the critical relevance of these latter to sustainable environmental management" (p. 9).

Berkes, F. 1999b. ***Sacred Ecology: Traditional Ecological Knowledge and Resource Management.*** **Philadelphia: Taylor & Francis.**
This book presents a discussion of IK or traditional knowledge in relation to resource management and scientific knowledge. The book is divided into three sections; the first part introduces concepts and reviews the increasingly vast literature on IK. The author suggests that the increased interest in IK can be traced to both Indigenous and scientific communities. This section presents a clear overview to the tensions and mediations between IK and scientific knowledge, how the knowledge forms differ and what they offer one another. The second section outlines how IK systems work, drawing on a number of case studies – in particular the IK of the Cree people of

North America. Berkes details how the Cree understand the world, both cosmologically and ecologically. IK is firmly embedded within the cultural and natural worlds. In the last part of this book there is a discussion of issues related to the preservation and incorporation of IK, with conclusions that the incorporation of IK into scientific knowledge and management strategies will make for a more holistic, ethical and sustainable way of understanding the natural world.

Natural Heritage Trust. 2003. *Indigenous Knowledge Forum, Workshop Outcomes*. Alice Springs, 28-29 May. Available at: http://www.deh.gov.au/Indigenous/publications/workshop/
As documented in the Indigenous Knowledge Forum Workshop Outcomes, this hierarchy of knowledge raises many issues in the recognition and support of IK in the delivery of natural resource management. Amongst the issues associated with the ongoing lack of support for IK in Australia and in NRM, are firstly, "poor understanding of IK", followed by the "devaluation of IK by Western science". The document examines in greater detail the nature of this devaluation, raising the following additional points about Western scientific knowledge:

> "Valuing of Indigenous skills and knowledge, not just used as 'labourers'
> Little flexibility in programs to recognise Indigenous Elder's skills and knowledge
> Western science paradigm:
> - Not recognising other knowledge
> - Not able to measure other knowledge
> - Diminishing the status of Indigenous knowledge
>
> Elders:
> - Need for role of men to be brought forward
> - Men and women together" (Natural Heritage Trust 2003).

Cajete, G. and L, Little Bear. 2000. *Native Science: Natural laws of interdependence*. New Mexico: Clear Light Publishers.
This is an excellent book that goes into great detail in a discussion of IK or as the author's call it – Native Science. The Indigenous author stresses the point that science can be defined in many ways depending on who is defining it. The book offers up a new definition of science that is dependant on the culture, worldview and reality of Indigenous people – in this case Native American people. The book gives many examples of IK from parts of North America, and looks at important parts of that knowledge, including, story telling, the body and knowledge, art and ceremony as a way of sharing knowledge, Indigenous philosophy, ecology, relationships to the world, plants, food, medicine and gardening, animals and myth, a sense of place, and creating new ways of interacting with the world.

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There is an increasing body of literature that is concerned with the origins and ideology of the dilemma that sees IK as second to scientific knowledge in a Western/non-Indigenous sense. Some make the argument that while both knowledge systems must be given the same weight – they are derived from inherently different frameworks, and IK cannot just be arbitrarily inserted into any other framework (see Council for Yukon First Nations 2000:2).

The literature marks a shift towards engaging IK as a new approach to management of the environment and ecology. Most importantly IK has moved beyond the concerns of anthropology and non-Indigenous authorship and into a world of contemporary NRM, CHM, politics, cultural maintenance, ecological and human ethics and enterprise (see Berkes 1999b). As a result, the literature reflects a different authorship and focus in IK, with an increase in the number and frequency of Indigenous community publications and collaborative research. In this body of literature IK is treated as a 'whole system' of understanding, that is embedded within a cultural context and which belongs to a particular cultural group. It is in line with the following statement by the Council for Yukon First Nations:

Council for Yukon First Nations (CYFN). 2000. ***Traditional Knowledge Research Guidelines: A guide for researchers in the Yukon*****. Available at:**
http://www.contaminants.ca/done/guidelines/tkGuidelines/TK%20Guidelines.pdf

> "Traditional knowledge (TK) is undefined by those who have lived it and experienced it throughout their lives. It is all that engulfs the cultural, linguistic, spiritual, and subsistence ways of Yukon First Nation people. TK is the understanding that begins its process of transmission at birth and continues throughout one's lifetime". It is in this context and a manifestation of recognising the fundamentality of IK to Indigenous cultures that Indigenous authorship is increasingly the practice, and that 'research guidelines, community guides, codes of ethics, agreements, conventions, regulations and declarations have been established (p. 2).

IK and Indigenous Language Dictionaries

One of the most comprehensive formats for documenting IK in Australia has been in Indigenous language dictionaries. These dictionaries serve to document Indigenous languages and IK in both pictorial and written forms, most commonly detailing country, place names, land and sea, water, animals, plants, bush medicine, kinship classification and many other IK elements (NAILSMA 2006:9). Some of these dictionaries have been published in hard copy, but the majority exist in electronic formats (CDROM and online databases). As noted in the NAILSMA Scoping Study (2006) these materials have been developed for language groups throughout northern Australia and the ecological domains they describe complement and are integral to the wider dimensions of IK which revolve around particular aspects of human and environmental relatedness. Some have been produced by community groups with the education of their young people in mind, while others are designed to be shared with outsiders and a non-Indigenous audience. Indigenous language dictionaries and databases are one of the key formats in which IK has been recorded by Indigenous people.

A selected bibliography of published Indigenous Language Dictionaries:

For an overview of Aboriginal languages and online sources, see:
Nathan, D. 2005. Aboriginal Languages of Australia: Aboriginal and Torres Strait Islander Languages. [Online source] available at: http://www.dnathan.com/VL/austLang.htm.

Gupapuyngu Dictionary
Available at: http://www.ards.com.au/langdict.htm
This dictionary includes a wide range of words and concepts from the Yolngu group of languages, of which Gupapuyngu is a dialect. The dictionary provides translation of English terms to Gupapuyngu. The dictionary is considered a necessary communication tool that will enable Yolngu people to access basic information about contemporary Australian society and provide Yolngu people with the educational opportunity to self-learn.

Uw Oykangand and Uw Olkola Multimedia Dictionary
Available at: http://www.geocities.com/Athens/Delphi/2970/index.html
Uw Oykangand and Uw Olkola are Australian Aboriginal languages spoken in central Cape York Peninsula in far north Queensland. This dictionary is a community-based initiative of the Kowanyama Aboriginal Community Council. Philip Hamilton worked with the Uw Oykangand and Uw Olkola elders to write down the language and collect the other materials for this dictionary.

Wagiman Online Dictionary
Available at: http://www1.aiatsis.gov.au/exhibitions/e_access/digital/a339234/home.html
This website features an online dictionary of Wagiman, the language group throughout Pine Creek, Daly River area. The dictionary also includes some general information about the language and its speakers, three texts, and some links and references to more material on Wagiman and other Australian Aboriginal languages.

Yanyuwa Wuka, Language from Yanyuwa country – A Yanyuwa Dictionary and Cultural Resource
Bradley, J with J, Kirton and the Yanyuwa Community. 1992b. *Yanyuwa Wuka: Language from Yanyuwa country, a Yanyuwa dictionary and cultural resource.* Available at: (PDF) http://eprint.uq.edu/archive/00000072/01/yanyuwatotal.pdf
This dictionary and cultural resource is a joint effort of recording, involving the Yanyuwa community, Bradley and Kirton. It includes detailed IK and narratives, alongside Yanyuwa-English English-Yanyuwa translations, text, maps, illustrations and a bibliography. The authors urge care and respect in the use of the materials.

Central and Eastern Arrernte Encyclopaedic Dictionary
Henderson, J and V, Dobson. 1994. *Eastern and Central Arrernte to English Dictionary*. Alice Springs: IAD Press.
This picture dictionary contains approximately 580 Anmatyerr keywords each of which is used in an example language sentence and illustrated using a relevant picture. A map of communities who speak the language translations of language sentences to English and comprehensive word lists in language and English are also included. Picture Dictionaries of this kind have been produced for a number of language groups in northern Australia.

Alyawarr (2nd Edition) Dictionary (in prep)
Green, J. 1992. *Alyawarr to English Dictionary*. Alice Springs: IAD Press
It contains over 4,500 entries and sub-entries, English to Alyawarr finder list, as well as example sentences, cultural information and tables of pronouns and grammatical endings. It is aimed at assisting Alyawarr people who want to become more literate in their own language, learners of the Alyawarr language, educators and translators.

Other formats for recording IK

IK in Land Rights/Native Title Claim Books and 'expert' reports

Native Title and Land Rights Claimant books or 'expert' reports catalogue some details of IK pertaining to specific claimant groups across Australia. The demand to provide evidence of 'traditional associations' with land under the *Native Title Act*, and the *Land Rights Act Northern Territory 1976*, are met by the compilation of 'expert' reports and claim books, often compiled on behalf of the Traditional Owners in association with anthropologists, archaeologists, lawyers and other professionals associated with Indigenous land councils. Typically, these reports contain the details of a group's social organisation, genealogies, inter-clan relationships and local descent groupings, principal Dreamings, notions of country, 'traditional' subsistence practices, and the physical character of the land under claim. One important role of the 'expert' report is the documentation of genealogies and the making of connections between kinship and Indigenous knowledge – a vital connection for Indigenous people and their knowledge. 'Expert' reports, as produced by anthropologists are notoriously forensic in their approach to Indigenous cultures - that is they study the details of Indigenous cultures and record genealogies but often overlook the big picture of knowledge. These documents, while considered public information, are unpublished, and are produced in association with the Traditional Owners/claimants and the anthropologist. 'Expert' reports are presented to the judge, who examines them in reaching a

decision about land rights. These reports are then summarised in the Judge's (Aboriginal Land Commissioner's) Land Claim book that is a published record of the claim. The Land Claim book is often a poor example of the IK of the claimants because it has been cut down so much that there are few details left of how IK relates to everyday and ceremonial life.

The 'expert' reports tend to be rather brief in their detailing of IK and they tend to understate the pervasiveness of IK within its cultural context and the validity of this knowledge in contemporary relationships to land, sea and resources. Reports produced in the 1980s (under the *Land Rights Act 1976*) indicate that in the past, attention to detailed evidence was more commonplace than is found in reports produced today. One of the greatest limitations to these reports is that they must comply (to a degree) with the *Evidence Act 1995*. This requirement has been reviewed (in particular Section 59(1,2,3), the Hearsay rule) and amendments to the Native Title Act stipulate that: "Section 82(2) (http://www.austlii.edu.au/au/legis/cth/consol_act/nta1993147/s82.html) of the Native Title Act provides that in conducting its proceedings, the Court may take account of the cultural and customary concerns of Aboriginal and Torres Strait Islander peoples but not so as to prejudice unduly any other party to the proceedings". However, it remains the case that the 'expert' reports must adhere to the following Section of the *Evidence Act 1995*:

Section 56(1): which states that, "except as otherwise provided, evidence that is relevant in a proceeding is admissible in a proceeding. Evidence that is not relevant is inadmissible (s 56(2)). The test of relevance is whether the evidence, if accepted, could rationally affect the assessment of the probability of the existence of a fact in issue in the proceedings (s 55(1))"
From: **http://ntru.aiatsis.gov.au/research/expert_evidence/expert_evidence.html** (access date 22nd Nov, 06)

The *Commonwealth of Australian Evidence Act 1995* – is available in a PDF format at the following URL address:
http://www.comlaw.gov.au/comlaw/Legislation/ActCompilation1.nsf/0/FCB7948AC7DA6A5BCA2571990080ECF3?OpenDocument

What is deemed admissible within legal frames greatly affects the extent to which IK is documented in detail and on terms that reflect Indigenous epistemology and worldview. In addition, the public nature of these reports can affect the extent to which sensitive information is recorded.

Examples of 'expert' reports, include: (in chronological order, so as to track any change in the nature of IK documentation over time)

Bern, J., J, Larbalestier and D, McLaughlin. 1980. *Limmen Bight Land Claim.* Prepared at the instruction of the Northern Land Council on behalf of the claimants. Darwin: Northern Land Council.
Key themes:

- The physical area under claim (4 pages)
- The contact situation (13 pages)
- Traditional patterns of land ownership (semi-moieties and patrilineal clans, patrilineal clan membership, the Djunggaiyi (11 pages)
- Patterns of land use (2 pages)
- Estates and owners (sites, stationary beings (Dreamings), traveling beings, family land owning groups [minor genealogical details]) (18 pages)
- Strength of attachment (3 pages)
- Plans for the area (1 page)

Merlan, F and A, Rumsey. 1982. *The Jawoyn (Katherine area) land claim: Claim Book*. Prepared on behalf of the Aboriginal people who are making a claim to unalienated Crown land in the vicinity of Katherine, Northern Territory. Darwin: Northern Land Council.
Key themes:

- The physical area under claim (access and geographical features) (5 pages)
- Historical background to the claim area (early European exploration and settlement, mining, agricultural development, army, specific European settlements) (22 pages)
- The local descent group (social group identity, endogamy, descent and land, patrilineal clans (10 pages)
- Spiritual responsibility (site specific responsibility, custodial responsibility (11 pages)
- Right to forage (2 pages)
- Strength of attachment (place names, physical aspects of place, foraging (Jawoyn language terms with English translations for plants and animals), ceremonial life (21 pages)
- List of claimants

Trigger, D, S. 1983. *Nicholson River (Waanyi/Garawa) Land Claim.* Prepared on behalf of Aboriginal people who are making a claim to unalienated Crown land in the vicinity of the Nicholson River, Northern Territory, Australia. Darwin: Northern Land Council.
Key themes:

- The physical area under claim (access and geographical features) (2 pages)
- The local descent group (subsection and semi-moiety system, the patrlileage, the local descent group (2 pages)
- Linguistic groups and territories (9 pages)
- Common spiritual affiliations (sites, estates and totemic significance, spiritual affiliation to other extra-human features of the landscape, primary spiritual responsibility (15 pages)
- Right to forage (1 page)
- Estates and claimants (summary of major sites, lists of claimants – names, bushnames, family connections (55 pages)
- Relevant aspects of the history of the region (historical episodes of the pre, and early contact, station and mission times) (19 pages)
- Strength of attachment to land (6 pages)

Bradley, J. 1992. *Warnarrwarnarr-Barranyi (Borroloola 2 Land Claim).* A submission by the Northern Land Council on behalf of the traditional owners. Darwin: Northern Land Council.
Key themes:

- The land and its people (10 pages)
- Historical background (contact history until WWII, significant events since the war, the first Borroloola land claim, collapse of Aboriginal local government, tourism, (12 pages)
- Social organisation (kinship system, semi-moiety system, subsections) (3 pages)
- Estates and land ownership (jungkayi and ngimirringki, spirit conception, estates and countries, particlan, descent, company and succession, relationship to mother's father's and mother's country, responsibility of jungkayi, site visitation, ceremony and mediation, educational roles, jungkayi as claimants, relationships to father's mother's country, relationships to mother's country) (20 pages)
- Criteria of the Act (common spiritual affiliations, primary spiritual responsibility, sites on land, traditional attachment, rights to forage (4 pages)
- Local descent groups (local descent membership, Dreamings [several discussed in detail]) (35 pages)
- Summary of major Dreaming paths (3 pages)
- Song cycles associated with claim area (in Yanyuwa language and English translation) (7 pages)
- Rock art associated with claim area (21 pages)
- Photographs of country and Yanyuwa owners (8 pages)

This report is an outstanding example of documenting IK on terms that allow the knowledge to retain its integrity and autonomy. One gets the sense that this is document was a strong collaborative effort between Bradley and the Yanyuwa claimants. It is incredibly dense in terms of establishing links between people, kinship, country and responsibilities of management.

Kumarage, J. and J, Stead. 1997. *Balbirini-Carpentaria Downs Land Claim.* Anthropologist's report, prepared on behalf of the claimants. Darwin: Northern Land Council.
Key themes:

- The land and its people (location, geography and climate, current use, people) (6 pages)
- Historical background (pre-contact – archaeology, exploration area, early days – pastoral industry, Borroloola township, recent – land rights, mining) (10 pages)
- Social organisation (kinship, marriage, subsections, semi-moiety system (9 pages)
- Land tenure system (spiritual connections, countries and estates, land holding groups, ngimirringki and jungkayi as relationships to country, other means of recruitment, succession) (13 pages)
- Land holding groups and their countries (genealogies and kinship connections, Country and Dreamings, families) (25 pages)

Bradley, J. 2000. *Lhukannguwarra – the 'saltwater country': A claim to the intertidal zone from the Robinson Mouth to the Bing Bong Creek Mouth, including the beds and banks of the McArthur River to King Ash Bay.* Anthropologist's report, prepared on behalf of the claimants. Darwin: Northern Land Council.
Key themes:

- Location (geography and climate, current use, people) (5 pages)
- Historical background (contact history, post war events, Borroloola land claims, tourism) (8 pages)
- Social organisation (kinship, semi-moiety system, subsections) (4 pages)
- Land/Sea tenure system (spiritual associations, songs and names, spirit conception, countries, names for sea and rivers, people and the sea, sea grass beds and intertidal zone, land holding groups, Ngimarringki and the particlan, Jungkayi) (17 pages)
- Land/Sea owning groups, Countries and Yijan (Dreamings), (associated local descent groups, country and Yijan) (29 pages)

Kumarage, J. 2002. *Land Claim to the Robinson River beds and banks (partial), Calvert River beds and banks and the Intertidal Zone between the Robinson River and the Queensland Border.* Anthropologist's report, prepared on behalf of the claimants. Darwin: Northern Land Council.
Key themes:

- Location and description of lands claimed (6 pages)
- Historical background (archaeological record, Macassan commerce, early contact, pastoral, station life, missions, land claims, community living areas, sacred site protection) (20 pages)
- Social organisation (kinship, semi-moiety system, subsections. Marriage, spiritual basis to land and sea tenure [overview to major Dreaming ancestors], significance of the sea, sea grass beds and intertidal zone, rights and interests in land, Nimarringki, Jungkayi, Stolen Generation) (31 pages)
- Aboriginal Countries or estates (family groups and clan groups, associated Country and Dreamings (43 pages)

Moving beyond the documentation of IK as evidence in Land Rights or Native Title claims, there is an increasing amount of Indigenous authored or collaborative literature that documents IK and IK related issues. This literature can be described as fitting into the following categories:

IK Publications involving Indigenous authors or collaborative research

Collaborative research and co-authored publications are increasingly the dominant publication format for IK in Australia. Collaborative work involving Traditional Owners is most common in NRM circles, with anthropologists, archaeologist, human ecologist, cultural geographers and cultural heritage practitioners. In this section the focus is on NRM research and contributions/inclusions of IK in NRM circles. This is aimed at focusing the literature review and at consolidating an increasingly vast body of literature. Those publications that are included for annotation are not presented uncritically and where necessary select sources are problematic for their lack of inclusion of IK, their misrepresentation or partial recognition of IK. In NRM originated publications it remains the case that IK is often misrepresented or only opportunistically considered in relation to what NRM deems appropriate for sustainability and conservation. There are some cases in which IK is treated as a pervasive knowledge system that, in order to retain its integrity, must be viewed as a whole culture body of knowledge. It equally involves kinship, social organisation, ecological knowledge, ancestors and ancestral narrative. It is governed by rights of access and exclusion, it is owned by the Traditional Owners and therefore must be represented on terms that appeal to and adequately transmit the cultural principle of these owners.

A number of trends can be identified in the NRM literature, in terms of how IK is incorporated and engaged through research, data collection, investigation, and recommendation.

- Publications that involve equal contributions by scientists/NRM and IK holders are few in number,
- Publications in which IK is given priority over NRM goals and principles are few in number,
- Those publications that do involve a direct Indigenous voice and which give priority to Indigenous readings of country tend to express in formats that go beyond scholarly texts and journal articles, and include websites, databases, CD ROMs, newsletters, pamphlets, working documents, conference papers and reports,
- NRM practitioners continue the practice of authoring work that involves IK.
- A greater number of publications reflect scientific research that has drawn on IK to the exclusion of Traditional Owner involvement
- This raises significant issues in terms of intellectual property rights and Indigenous cultural autonomy
- In NRM publications IK is most often treated as knowledge concerning plant and animal knowledge, and firing practices.
- Inventories or lists of IK often feature in NRM reporting
- The inclusion of IK and Indigenous management practices and strategies reflects a trend among non-government organisations, and some government organisations towards a preference for new-moral ecology approaches to the environmental crisis.

This literature is synthesised below, and arranged alphabetically.

Aboriginal Communities of the Northern Territory of Australia. 1988. *Traditional Bush Medicines: An Aboriginal Pharmacopoeia*. Conservation Commission of the Northern Territory, Richmond, Victoria: Greenhouse Publications.
This book includes details of bush medicines, with illustrated plant identification information. IK concerning plants and bush medicine is catalogued for Indigenous and non-Indigenous readers.

Adams, M and A, English. 2005. "'Biodiversity Is a Whitefella Word': Changing Relationships between Aborigines and the New South Wales National Parks and Wildlife Service", in *The Power of Knowledge, the Resonance of Tradition*. Edited by L. Taylor, G. K. Ward, G. Henderson, R. Davis & L. A. Wallis, pp. 86-97. Canberra: Aboriginal Studies Press.

Altman, J. 2003. People on country, healthy landscapes and sustainable Indigenous economic futures: The Arnhem Land case. *The Drawing Board: An Australian Review of Public Affairs*. Vol 4(2):65-82.
Focussing on the 'outstations movement' that occurred in northern Australia in the 1970s, Altman raises a number of questions, and attempts to respond to them in this paper. First he asks, when, how and why were these outstations established and what was the policy response to this re-occupation of land? Second, are outstations economically, socially and ecologically sustainable? And third, turning to the future, how sustainable and replicable might these outstations prove to be? Altman argues that "an emerging match between continuing Indigenous aspirations to manage their country and public policy concerns about Indigenous well-being, on the one hand, and healthy landscapes on the other, should ensure sustainable Indigenous futures on country in north Australia – with appropriate institutional support and adequate resources" (p.65).

Altman, J. 2005. *Economic futures on Aboriginal land in remote and very remote Australia. Hybrid economies and joint ventures*. Draft paper prepared in October 2004 for pre-circulation for the ASSA Workshop 'Aborigines, Culture and Economy: The past, present and future of remote Indigenous lives'. University of Sydney.
This paper raises issues of kin-based and market based societies, and raises caution about economists not treating the cultural as something beyond the economic in Indigenous policy discourse. Altman builds a discussion of what he terms 'hybrid economy' – as having three sectors: customary, market and state. This hybrid economy is intercultural and involves Indigenous domains and State interest – through joint ventures.

Anindilyakwa Land Council. 2006. *Anindilyakwa Indigenous Protected Area Groote Eylandt Archipelago*. Technical information document.

Anindilyakwa Land Council. 2006. *Anindilyakwa Indigenous Protected Area Groote Eylandt Archipelago*. Management Action Plan.

Asafu-Adjaye, John. 1996. Traditional Production Activities and Resource Sustainability: The Case of Indigenous Societies in Cape York Peninsula, Australia. *International Journal of Social Economics* 23:125-135.

Aslin, H and D, Bennett 2005. Two Tool Boxes for Wildlife Management? *Human Dimensions of Wildlife* 10:95-107.

Australian National Periodic UNESCO Report. 2002. *Report on the State of Conservation of Uluṟu – Kata Tjuṯa National Park*.
This document outlines the terms of which Uluru-Kata Tjuta National Park was established as a place of natural World Heritage value. These terms include the natural and cultural values associated with the area, and the report presents some discussion of the IK attached to the area by the traditional owners. Indigenous values are highlighted and the means to maintain and protect those values is overviewed. The Uluru National Park Plan of Management is also outlined. This represents the coming together of Traditional owners, NRM groups (Australian Nature Conservation Group) and UNESCO, and the use of international legislation to protect places associated with IK.

Baker, L, M. and Mutijulu Community. 1992. Comparing two views of the landscape: Aboriginal traditional ecological knowledge and modern scientific knowledge. *Rangelands Journal* 14:174-189.
In this paper the authors discuss the potential for combining Aboriginal ecological knowledge and scientific knowledge to enhance understandings of the environment. Results of a fauna survey jointly undertaken at Ulug National Park by Australian National Parks and Wildlife Service, CSIRO and Aboriginal members of Mutitjulu Community provide the basis for discussion. Examination of comparative habitat classifications, recognition of faunal habitat preferences and knowledge of the effects of drought and fire suggest that information from Aboriginal people can enhance, and in some instances provide an alternative perspective to, the knowledge currently held by scientists. The scientific community will benefit by accepting Aboriginal ecological knowledge on an equal basis to scientific research. The importance of involving Aboriginal people through all aspects of the research and ensuring that they maintain control over the usage of their traditional knowledge is stressed.
Abstract available at: http://www.publish.csiro.au/nid/202/paper/RJ9920174.htm

Baker, L. S, Woenne-Green and the Mutijulu Community. 1992. "The role of Aboriginal ecological knowledge in ecosystem management", in *Aboriginal Involvement in Parks and Protected Areas*. Edited by J, Birkhead, T, DeLacy and L, Smith, pp.65-73. Canberra: Australian Institute of Aboriginal and Torres Strait Islander Studies.

Baker, L. S, Woenne-Green and the Mutijulu Community. 1993. "Anangu knowledge of vertebrates and the environment", in *Uluru Fauna: The distribution and abundance of vertebrate fauna of Uluru (Ayers Rock – Mount Olga) National Park*. Edited by J, Reid, S, Kerle and S, Morton. Canberra: Australian National Parks and Wildlife Service.
This document places a strong emphasis on the role of IK in understanding the landscape and fauna within. IK is treated as something much bigger than simply what it offers to scientists of NRM practitioners and is outlined in sensitive detail by the authors. There is direct testimony from Anangu people and this assists in the IK retaining its connections to people, language and ancestors.

Baker, R. 1998. Yanyuwa Traditional Environmental Knowledge. [Online source] Available at: http://sres-people.anu.edu.au/richard_baker/research/yanyuwa/index.html
This website is dedicated to sharing some of the details of Yanyuwa people's TEK in the southwest Gulf of Carpentaria, Northern Territory. Baker, who has worked for many years with Yanyuwa families, presents information about Yanyuwa country and knowledge in the following categories: *Tropical climate, Yanyuwa Concepts of Land Units, Environmental Change, Land Use, TEK and Religious Life,* and *TEK and Contact History.* The website successfully links IK to many aspects of the physical and social worlds that define Yanyuwa homelands. Baker acknowledges the Yanyuwa people's willingness to share this knowledge with others.

Baker, R, J, Davies, and E, Young. (eds) 2001. *Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions*. Oxford: Oxford University Press.
This volume provides an account of Indigenous land, water and resource management in Australia, with an emphasis on the practical outcomes to manage the country for a sustainable future. Addressing the issue of contemporary Indigenous land management, this volume presents a wide range of case studies that illustrate diversity arising from geographical, historical, political and socio-economic differences. The authors raise many issues that confront people in efforts to draw on bi-cultural (Indigenous and scientific) strategies of land and resource management. Contributors emphasise that there are a range of approaches to working on country, that knowledge must be shared and communicated cross-culturally, and that negotiation is the most effective means for developing successful working-on-country initiatives.

Barr, A., T, Knight, M, Andrews and V, Alexander. 1993. Traditional Aboriginal medicines in the Northern Territory of Australia, Conservation Commission of the Northern Territory, Darwin, NT.

Blakeney, Michael. 1997. Bioprospecting and the Protection of Traditional Medical Knowledge of Indigenous Peoples: An Australian Perspective. ***European Intellectual Property Review*** **19:**

Bomford, M and J, Caughley. 1996. ***Sustainable Use of Wildlife by Aboriginal People and Torres Strait Islanders.*** **Canberra, Bureau of Resource Science.**
This work looks at ways to ensure wildlife harvesting can meet Indigenous needs whilst being sustainable. Case studies of dugongs in north Queensland, marine and terrestrial hunting in north Queensland, and crocodiles in the Northern Territory are presented.

Bradley, J. 1997. ***LI-ANTHAWIRRIYARRA,*** **People of the Sea: Yanyuwa relations with their maritime environment. PhD Dissertation. Northern Territory University, Darwin.**
Bradley, who has worked solidly with Yanyuwa people for over two decades, examines the relationship between the Yanyuwa community and their traditional homelands. He documents many aspects of Yanyuwa IK associated with their sea Country and their identity as saltwater people. His work includes the details of how Yanyuwa people understand and classify their environment, also looking at language, kinship, song, ceremony, subsistence – especially dugong and sea turtle hunting, and ancestral narrative. His research documents IK as part of a big picture, a whole culture system that is exclusively held by the Yanyuwa.

Bradley, J. 2001. "Landscapes of the Mind, Landscapes of the Spirit: Negotiating a sentient landscape", in ***Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.*** **Edited by R, Baker, J, Davies and E, Young, pp. 2295-307. Oxford: Oxford University Press.**
Bradley explores Indigenous perceptions of land management among the Yanyuwa people of the Borroloola area in the Gulf of Carpentaria. The chapter demonstrates the Yanyuwa belief in the consciousness of the environment and discusses the ways in which people maintain their identity towards the landscape.

Bradley, J 2005. ***Barni-wardimantha Awara (Don't Spoil the Country) Saltwater country: Belief, Understandings, Issues, Planning and Perceptions amongst the Yanyuwa people of the Sir Edward Pellew Islands and adjacent coast lands.*** **Northern Territory, National Oceans Office Hobart.**
This document represents a study of Yanyuwa attitudes and perceptions of their sea and island country. It involves direct Yanyuwa testimony and a culturally informed account of Yanyuwa lifeways, Law and culture. Bradley makes clear the extent to which Yanyuwa attitudes and perceptions differ from those of mainstream natural resource managers, biologists, ecologists, tourists and fisherpeople who use the sea. By establishing Yanyuwa IK as unique and culturally embedded this document is an important and powerful document to argue for the rights of Indigenous people to determine and implement management strategies that engage with IK and the social character of sea and island country. Bradley documents complex and intimate IK in relation to Yanyuwa homelands, and categorises this knowledge into – a general discussion of country, the Dreaming, clans and owners, descent rights, sites on the islands and sea, marine animals, marine environments, concern over protection and conservation of animals and environment, tourism and extractive industries in sea country. The document is representative of Yanyuwa views and in its conclusion recognises that Yanyuwa management aspirations need not be in opposition to Western scientific management strategies.

Bradley, J., Harvey, R. and Norman, D. 1997. "Burning for the ancestors, burning for us. A case study from the south west Gulf of Carpentaria," in ***Bushfire '97 proceedings*****. Edited by B. McKaige, R. Williams and W. Waggit. Darwin: Tropical Ecosystems Research Systems.**

Bryce, S. 1997. *Women's Gathering and Hunting in the Pitjantajara Homelands.* Alice Springs: IAD Press.

Burbidge, A, A., K, A, Johnson, P, J., Fuller and R, I., Southgate. 1988. Aboriginal Knowledge of the Mammals of the Central Desert of Australia. *Australian Wildlife Researc*h 15(1):9-39.
In this paper, the authors discuss the rate at which terrestrial mammal species of the central deserts of Australia have vanished in the past 50 years. They note that few of these have been the subject of even preliminary scientific study, and data as basic as geographic range and preferred habitat are lacking for many species. They acknowledge that the Indigenous people who have lived traditionally in the central deserts until recently, still retain a profound knowledge of the mammals, but this knowledge, they claim is fast disappearing. Aboriginal people living in communities scattered through and around the edges of the 1645 000 km^2 of the study area, comprising the Great Sandy, Little Sandy, Tanami, Gibson and Great Victoria Deserts and the Central Ranges district, were shown museum skins and asked to provide information about local names, current and past status, and aspects of biology and ecology. Most species, including some thought to have become extinct early this century, persisted in the deserts until 30–50 years ago. New data are presented on former distribution and on the biology and ecology of many species. The mammal fauna of the central deserts was richer and more widespread than generally believed, but the area has suffered a massive and sudden loss of species, probably unparalleled in extent elsewhere in Australia.
Abstract available at: http://www.publish.csiro.au/nid/144/paper/WR9880009.htm

CENTRAL LAND COUNCIL
http://www.clc.org.au/
The CLC website gives access to press releases, publications, speeches and newsletters covering topics of concern to the Indigenous people of the Central Desert regions of Australia. A number of reports and publications co-authored with Indigenous people have been produced by the CLC. Many of these are directly concerned with the management of Indigenous homelands and the implementation of Indigenous strategies for such management. These include the Land Rights News newspaper, and the Rose Report, an online document that outlines, Aboriginal management issues in Central Australia, land management issues, attitudes and perceptions amongst Aboriginal people of Central Australia. These provide some fascinating insights into Aboriginal land management issues in the CLC region. IK is recognised as belonging to discreet cultural groups and is championed as a necessary body of knowledge that must be included and governing in strategies aimed at the management of country.

Central Land Council Assessment and Planning Unit and Warlmanpa traditional owners. 1997. Warlmanpa people talk about what they want to do on their country: Land use planning on Eastern Karlantijpa North Aboriginal Land Trust, Community document. 2.6, 27 page report. Alice Springs :Central Land Council.

Central Land Council Assessment Unit. 1997. *Kulikatira wangkakatira plan tijungju palyantjaku: Anangu thinking and talking about the old plan of management to make way for a new plan of joint management together.* Community document 4.1, 40pp, Alice Springs: Central Land Council.

Central Land Council, Tangentyere Council and Parks and Wildlife Commission, NT. 1999. Central Australian Land Management Issues Forum, Alice Springs. Tangentyere Landcare.

Central Land Council. 2005. *Indigenous Knowledge and History Devil Marbles* (Karlu Karlu) *Conservation Reserve.* Central Land Council Land Management Unit, Alice Springs.

This paper documents *Kaytete, Warumungu, Warlpiri,* and *Alyawarra* traditional knowledge of plants and animals occurring in this area. Stories about country and family are also recorded. Information from this report will be incorporated into the new plan of management for this reserve.

Central Land Council. nd. *Rose Report #1 and* 2. Online source [Central Land Council Website], Available at: http://www.clc.org.au/media/publications/rose_reports/intro.asp
"This report is based on a review of land management issues on Aboriginal land in Central Australia. The review forms part of a Cross Cultural Land Management Project being undertaken by the Central Land Council (CLC) and funded through the National Landcare Program (NLP) under the Public Participation, Education and Training sub-program. The report identifies the major land management issues on Aboriginal land as perceived by non-Aboriginals, and examines the range of influences on these issues. The report also focuses on the availability of information and resources for Aboriginal people to deal with environmental issues on their land and on land in which they have an interest. The information contained in this report is derived from published and unpublished material from the Land Council and other Aboriginal organisations, government and non-government bodies and community groups involved in Aboriginal land management. As such this report does not represent the views of Aboriginal people and is intended primarily to provide an overview of environmental issues and the institutional framework within which land management decisions on Aboriginal land are made. This report represents the first stage of the project, the overall aim of which is to identify Aboriginal perceptions of land management issues in order to formulate programs which facilitate the spread of land management extension information and resources to Aboriginal people".

Commonwealth of Australia. 2004. Sea Forum Case Study: Working with Indigenous Knowledge in Natural Resource Management. Department of Environment and Heritage. [Online document] Available at:
http://www.deh.gov.au/Indigenous/publications/nrm-sea-forum.html

CSIRO and Northern Land Council. *Land and Water Planning in the Daly/Katherine Region.* An information book for Aboriginal people living in the Daly, Katherine and Pine Creek areas.

Davies, J. 2003. "Contemporary Geographies of Indigenous Rights and Interests in Rural Australia." *Australian Geographer* 34: 19-46.

Davies, J. 1998. *Who Owns the Animals? Sustainable Commercial Use of Wildlife and Indigenous Rights in Australia*. Presented at Crossing Boundaries, the seventh annual conference of the International Association for the Study of Common Property, Vancouver, British Columbia, Canada, June 10-14, 1998.

Davis, M. 1998. *Biological diversity and Indigenous knowledge*. Discussion paper, Science, Technology, Environment and Resources Group. June 1998. Parliament of Australia, Parliamentary Library [online source]: Available at
http://www.aph.gov.au/Library/pubs/RP/1997-98/98rp17.htm
This paper surveys a range of international developments in IK as a context for discussing some possible measures for the protection of this knowledge. The author argues that successful measures could include a combination of creative legislative and policy responses to the Convention on Biological Diversity, and the use of a range of other laws, policies and instruments. The integration of Indigenous knowledge and practices with other conventional approaches to land and environment is also a useful way of achieving recognition and protection for Indigenous knowledge systems.

Davis, S. 1981. ***Dictionary by Domains Natural Species: Gupapuynu Language.*** **Darwin: Northern Territory University Planning Authority.**

Davis, S. 1989. ***Man of All Seasons: An Aboriginal perspective of the natural environment.*** **North Ryde, NSW: Angus and Robertson Publishers.**

De Graf, M.1984. ***Nintirringu: The role of knowledge in traditional Aboriginal Australia.*** **Darwin: Northern Territory University.**
This work outlines desert Aboriginal (specifically Pintupi) approaches to 'knowledge', its acquisition, protection and exchange.

Devereaux, K. 1984. "Looking at country from the heart", in ***Tracking Knowledge in North Australian Landscapes: Studies in Indigenous and settler ecological knowledge systems.*** **Edited by D, B. Rose and A, Clarke, pp.68-81. Canberra and Darwin: North Australian Research Unit, Australian National University.**
The author, a representative of the Rak Mak Mak Marranunggu clan from Gurrindju, part of the Wagait homelands, outlines her traditional knowledge system and how it originated in the Dreamtime. She also explains how knowledge is acquired and passed on.

Dhimurru Land Management Aboriginal Corporation. Dhimurru Land Management Aboriginal Corporation: online - http://www.octa4.net.au/dhimurru/default.htm.
This website is dedicated to the resource management organisation of the Yolngu people of northeast Arnhem Land. Details cultural information on the flora and vegetation types found in the Manydjarranga-Nanydjaka region, including the Yolngu Matha name, moiety, and traditional use of the resource.

Dobson, V and T, Nano. 2005. ***Apmere Apwerte Urrtharenye-kenhe – The Country of the Limestone People. Traditional Knowledge and History of the East Macdonnell Ranges.*** **Central Land Council Alice Springs. Illustrated report, Central Land Council Land Management Unit, Alice Springs.**
Documents traditional plant use and values of plants occurring in the National Parks of the East MacDonnell Ranges to Eastern and Central Arrernte people. Information from this report will be incorporated into the new plan of management for these parks.

Fox, A. M. 1982/1983. Kakadu: Man and landscape. ***Heritage Australia*****, Summer Vol 1(2):12-17. Also Winter 1983 2(1):22-27.**
This two-part article describes the Aboriginal concept of land and landscape and contrasts it with the European perception as exemplified in the explorer Leichhardt. The first part describes the seasons of the Kakadu year and traditional management techniques. The impact of pastoralism, missions and settlement, and the movement towards Aboriginal land rights are discussed in the second part (From AHB Database Sep 2002 (Australia's Heritage))

George, M, I, James and H, Ross. 2004. ***Managing Sea Country Together: Key Issues for Developing Co-Operative Management for the Great Barrier Reef World Heritage Area.*** **CRC Reef Research Centre Technical Report, no. 50. Townsville: Cooperative Research Centres' Reef Research Centre.**

George, M and Smyth and Bahrdt Consultants for the Natural Heritage Trust. 2004. ***Indigenous Engagement in Natural Resource Management Cast Study 5: Traditional Owner Engagement in Cultural and Natural Resource Management Planning, Burdekin Dry Tropics Region,*** **Queensland. Unpublished report.**

Gibbs, M. 2001. Toward a strategy for undertaking cross-cultural collaborative research. *Society and Natural Resources* 14:673-687.
This paper raises a discussion of culturally appropriate models of social science research. The author uses examples from her own experience working with Indigenous people to develop a strategy for cross-cultural research that is appropriate, and committed to collaborative partnerships. She discusses some of the methodological and conceptual concerns that arise in cross-cultural research, including the role of the researcher, participation in the research process, and rights of traditional Indigenous knowledge. The examples that are discussed in the paper relate to working with Maori people in New Zealand.

Goddard, C and A, Kalotas (eds). 1988. *Puni: Yankunytjatjara plant methods of preparing foods, medicines, utensils and weapons from native plants.* Designed and illustrated by J, Jones with additional illustrations by J, Hodson, M, Flynn and H, Carey. North Ryde, NSW: Angus and Roberston.
This text is one of many in a body of literature that has been published about Indigenous plant use on a regional basis from different parts of Australia.

Greening Australia NT, Aboriginal Landcare Education Program. *Green Cadets' Handbook.*
Greening Australia NT has hosted the Aboriginal Landcare Education Program (ALEP) for over 11 years. ALEP works with Aboriginal communities and people to build their capacity by working with other organisations to undertake natural and cultural resource management through: two way education and training; development of sustainable vegetation related businesses; and assisting access to resources. The Green Cadets' program has been developed to address the need for increased employment and healthy lifestyle options for young Aboriginal people in remote localities in NT. This handbook is designed to highlight the contexts in which the Green Cadets' program is delivered. It outlines activities, workshops, and games that can be used in education and training.

Henshall, T., Jambijinpa, D., Kelly, F., Bartlett, P., Granites, L., Price, J., Coulshed, E. & Robertson, G. 1980. *Ngurrju Maninja Kurlangu. Yapa Nyurnu Kurlangu. Bush Medicine.* Warlpiri Literature Production Centre, Yuendumu NT

Horstman, M and G, Wightman. 2001. *Karparti* ecology: Recognition of Aboriginal ecological knowledge and its application to management in north-western Australia. *Ecological Management and Restoration.* Vol2(2):99-109.
The author's present the argument that "The application of Aboriginal knowledge, the result of millennia of experience, is essential to improve ecological management and inform environmental understanding". This viewpoint implies that the onus is on Indigenous people to 'share' their knowledge with NRM in the quest for ecological management in Australia. This indicates a power struggle in that NRM can employ IK where deemed appropriate and disregard the many other manifestations of IK in daily life for Indigenous people. Issues of cultural autonomy and Indigenous ownership are not clearly discussed by the authors and the act of sharing IK is deemed problematic only where the management responsibilities of Indigenous people are not respected. Indigenous knowledge is presented as "Aboriginal science and knowledge systems that have developed through many millennia of observation, experimentation and teaching to evolve sustainable relationships with the land". IK is more than the body of information that informs relationships with physical environments. This fact seems to be overlooked here. A case study from the Kimberley in north-western Australia is presented in a discussion of how Aboriginal knowledge is to be shared in ways that are beneficial for people, their country, and the interests of the broader Australian community".

Jackson, S. 1997. "Land use planning and cultural difference," in *Tracking Knowledge in Northern Australian Landscapes: Studies in Indigenous and settler ecological knowledge systems*. Edited by D.B, Rose and A, Clarke, pp.87-104. Darwin, North Australian Research Unit, ANU.
This article looks at the land use planning process for Broome Shire and outlines attempts to incorporate the aspirations of native title claimants. It questions the ability of Aboriginal negotiators to influence the normative values underlying planning.

Jackson, S. *A Plan for the Daly River Region: Aboriginal people's ideas.* A summary of the report by CSIRO's Sue Jackson to the Northern Land Council.

Jackson, S. 2005. Indigenous Values and Water Resource Management: A Case Study from the Northern Territory. *Australasian Journal of Environmental Management* 12(3):136-146.
In this paper, Jackson presents the argument that Indigenous people have a significant stake in water resource management arising from customary socio-ecological relationships, in which water is highly valued element or property, and also from customary and contemporary management practice. "In many regions of Australia, Indigenous people are also significant land-owners, with rights to aquatic, living resources. Whilst rivers and wetlands are now being recognised as legitimate 'users' of water, Indigenous interests in water allocation processes, including their ecological knowledge, have tended to be neglected. In a small number of Australian catchments, incipient water allocation processes are now endeavouring to acknowledge and protect Indigenous 'cultural values' of water and water dependent ecosystems. Where north Australian Indigenous values have been considered, there has been a tendency to assume that a surrogate environmental flow will address cultural requirements. This paper describes the nature of Indigenous values in a specific region of the Northern Territory undergoing intensive natural resource management planning. She argues that the subjective, intangible and highly distinct values underpinning Indigenous people's relationships to water do not easily translate into Western environmental management frameworks, which have a utilitarian focus, and are highly reliant on objectification, quantification (e.g. environmental flows) and monetary valuations as a basis for resource allocation, regulation and management". [Publication abstract – available at: http://proquest.umi.com/pqdlink?index=2&did=1080513681&SrchMode=3&sid=2&Fmt=2&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1164595777&clientId=16397&aid=2].

Jackson, S. 2006. Compartmentalising Culture: The Articulation and Consideration of Indigenous Values in Water Resource Management. *Australian Geographer* 37:19-31.
Abstract: "Social values are receiving increased attention in natural resource management policy and practice, and the notion of cultural values has recently emerged, particularly in relation to water resources. Philosophers, environmental policy analysts and others with an interest in environmental valuation have critically analysed value concepts and theories. A popular focus is the commonly 'bipolar' character of value construed as either an intrinsic or utilitarian concept. This paper focuses on the treatment of Indigenous values in contemporary water resource management. The Daly River region of the Northern Territory is undergoing increased agricultural intensification. A 12 month planning exercise sought to integrate social, economic, environmental and cultural values into decisions about land use and water extraction. Separate treatment of Indigenous and non-Indigenous social values compounded the reification of Aboriginal 'cultural values' which were perceived largely within the confines of a cultural heritage paradigm. The heritage paradigm and other common influential theories of value focus on objects, entities and places at the expense of recognition and valuation of relationships, processes and connections between social groups, people and place, and people and non-human entities". [Publication abstract available at:
http://journalsonline.tandf.co.uk/(esrpit55zgw1s0551l2ir245)/app/home/contribution.asp?referrer=parent&backto=issue,3,11;journal,3,24;linkingpublicationresults,1:102202,1].

Jackson, S. (ed). 2006. ***Recognising and Protecting Indigenous Values in Water Resource Management.*** **A report from a workshop held at CSIRO in Darwin, NT, 5-6 April. CSIRO, Northern Land Council and Land and Water Australia.**

Jackson, S. and P, O'Leary (eds). 2006. ***Indigenous Interests in Tropical Rivers: Research and Management Issues.*** **A scoping study for Land and Water Australia's Tropical Rivers Program. Prepared for the NAILSMA. CSIRO, NAILSMA and Tropical Savannas CRC.**

Jackson, S. M, Storrs and J, Morrison. 2005. Recognition of Aboriginal rights, interests and values in river research and management: Perspectives from northern Australia. ***Ecological Management and Restoration*** **6:105-110.**
Abstract: "Aboriginal people perceive land and water as equal components of country, and hold distinct perspectives on water relating to identity and attachment to place, environmental knowledge, resource security, and the exercise of custodial responsibilities to manage interrelated parts of customary estates. This paper documents Aboriginal perspectives from certain areas in northern Australia, defined as the region of tropical savannas stretching from Townsville to Broome, and offers a number of suggestions for improving current knowledge of Aboriginal values and Aboriginal participation rates in water and catchment management. The paper highlights the cultural significance of rivers and water in selected northern regions, and provides a preliminary outline of research and management priorities as determined by key north Australian Aboriginal land management organisations. Priorities include developing the capacity for collaborative aquatic resource management, conservation of traditional ecological knowledge, riparian resource inventories and threat assessment, as well as improved Aboriginal participation in catchment management and water policy. Although there is a strong north Australian focus to this paper, the issues raised are relevant to water and natural resource management policy throughout Australia". [Publication abstract available at: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1442-8903.2005.00226.x].

Kakadu National Park Board of Management. 2006. ***Kakadu National Park: Draft management plan 2006.*** **Canberra: Commonwealth of Australia.**
The plan of management aims to provide the general public and park users and visitors with information about how it is proposed the park will be managed for the next seven years. The first part of the document provides a `Description of Kakadu National Park'. This provides background to the establishment of the park and the joint management arrangement with Aboriginal traditional owners, the role of the Plan of Management and information on the importance of Kakadu to different people. This section also outlines the guiding principles that are used in making decisions about the park. The second and main part is `A Plan of Management in respect of Kakadu National Park'. This is the formal part of the Plan that sets out how the park will be managed. In this part there are a number of sections that relate to particular park management issues. Each section includes:

- some background information;
- a description of the management issues that have to be considered;
- a statement of the management aims; and,
- the actions that will form the basis for management.

The interests of the Traditional owners are outlined and some priority is given to IK in the management plan.

Karam, J.M., A, D. Griffiths and T, Shultz. nd. ***Mangrove clam harvest in a remote Indigenous community: Indigenous and scientific knowledge in wildlife harvest management.*** **Key Centre for Tropical Wildlife Management, Charles Darwin University.**

Kearney, A. 2005. An ethno-archaeology of engagement: Yanyuwa Country and the lived cultural domain in archaeology. Unpublished PhD thesis. The University of Melbourne.

Working with Yanyuwa people, the traditional owners of the southwest Gulf of Carpentaria, Kearney documents the details of people's relationships to powerful places over time. This is a very localised study, but stands to inform Australian archaeologists who wish to understand the relationship between Aboriginal people and their homelands. Priority is given to IK in relation to place, resources, past and present. This work represents Yanyuwa people through direct quotes and highlights the all encompassing manner of IK across Aboriginal homelands, and highlights the role of IK in cultural heritage management and conservation.

Kennet, R., C, Robinson, I, Kiessling, Djawa Yunupingu, Mr Munungurritj and Djalalingba Yunupingu. 2004. Indigenous Initiatives for Co-management of Miyapunu/Sea Turtle. ***Ecological Management and Restoration*** **Vol. 5(3):159-166.**
Abstract: "A key challenge facing Indigenous groups around Australia is the management of conservation projects that reflect their rights and responsibilities to care for their traditional land and sea estates. Many Indigenous people now have legal rights for country that has undergone significant environmental change since European colonisation. Some plant and animal species that once existed in these areas are now threatened with extinction or are extinct, new threats and impacts on wildlife and habitat have emerged, and there are limited resources available to implement strategies to combat and reduce further species decline or habitat loss. Indigenous ecological knowledge and management regimes have had to adapt to these environmental challenges within a framework that supports and reflects contemporary community aspirations and Indigenous Law.

This paper examines how the Aboriginal (Yolngu) Traditional Owners of north-east Arnhem Land in Australia's Northern Territory have responded to some of these challenges. A specific focus is given to Yolngu concerns over Marine Turtle (Miyapunu) populations and habitats. We show how Yolngu strategies seek to balance and adapt Indigenous and western knowledge and practices and facilitate cooperation amongst stakeholders who share the waters across the turtles' migratory range".

KIMBERLEY LAND COUNCIL
http://www.klc.org.au/
The KLC website provides access to the KLC Land and Sea Management Unit who are involved in several management projects, documents outlining roundtable discussions in regards to management are also accessible on the website, these include keynote addresses, discussions concerning management, and sharing power in NRM. Via the media and documents link, there is access to press releases, publications, speeches and newsletters covering topics of concern to the Indigenous people of the Kimberley region of north Western Australia. The media releases and newsletters are updated regularly and offer an up-to-date account of projects and Indigenous concerns in the Kimberley Region. The KLC Strategic plan is also available on the website.

Kwan, D., G, Dews, M, Bishop and H, Garnier. 2001. "Towards Community-based Management of Natural Marine Resources in Torres Strait", in ***Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.*** **Edited by R, Baker, J, Davies and E, Young, pp. 214-230. Oxford: Oxford University Press.**
This chapter explores the management status of marine resources in the Torres Strait Islands. The socio-cultural significance of dugongs and turtles to the local people is explained and it is argued that management strategies are likely to be most effective if they operate at consensus-based local level.

Lajamanu and Mirirrinyungu Traditional Owners. 2000. ***Planning for Land Management – Lajamanu and Mirirrinyungu land management meeting.*** **Community document 8.1, Alice Springs: Central Land Council. February 2000.**

Langton, M. 1997. Estate of mind: the growing cooperation between Indigenous and mainstream managers of North Australian landscapes and the challenge for educators and researchers. ***Northern Analyst*****, February/March 1997.**
Langton surveys governance and land tenure options available to Aboriginal people in northern Australia which enable them, in part, to maintain and manage land of importance to them; there is a growing desire for negotiated rather than litigated outcomes on land issues; a high research priority for Aboriginal people in the north is for diversity and sustainability in a range of industries; curriculum development, course delivery and research should incorporate Indigenous knowledge and there should be a transfer of Western knowledge to Indigenous people involved in land management issues (from AIATSIS Aug 2002)

Langton, M. 1998. ***Burning Questions: Emerging environmental issues for Indigenous peoples in northern Australia.*** **Darwin: Centre for Indigenous Natural and Cultural Resource Management. Northern Territory University. Unpublished.**
This work examines the environmental issues facing Aboriginal peoples in northern Australia; and argues for the effective role of Aboriginal agency in land management; changes in Aboriginal land use in northern Australia; use of fire – debates about its past and present impacts; case studies of contemporary Aboriginal land management – Dhimurru Land Management Aboriginal Corporation (Yolngu lands), Bawinanga Aboriginal Corporation (Blyth and Liverpool River) and Arafura Wetlands. Langton argues for models of shared responsibility between Indigenous and other systems of lands management (From AIATSIS Aug 2002).

Langton, M. 1999. ""The fire at the centre of each family": Aboriginal traditional fire regimes and the challenges for reproducing ancient fire management in the protected areas of northern Australia", in ***Fire! The Australian Experience*****, Proceedings of the 1999 Seminar held at the University of Adelaide, Australia. 30 September – 1 October. National Academies Forum, pp. 3-33.**

In this paper Langton discusses Aboriginal fire regimes and burning practices. She begins by noting the significant role that fire had in shaping the Australian landmass and its biota. Fire is presented as a key tool for the reproduction of landscapes, particularly in northern Australia. Langton provides an overview to the history of government positions on Aboriginal rights to burn country. The paper also surveys the fire management plans in the available Plans of Management and Draft Plans of Management of national parks where there is an Indigenous presence. The survey of fire management in national parks shows that marked relevance of Aboriginal knowledge of ecological systems and the use of fire to the challenge of managing vast regions of the National Park estate and Aboriginal land in northern and arid Australia.

Langton, M. 2003. "The 'wild', the market and the native. Indigenous people face new forms of global colonisation," in ***Decolonising Nature: strategies for conservation in a post-colonial era*****. Edited by W, Adams and M, Mulligan, pp.79-107. London: Earthscan Publications.**
In this book Langton, argues for the re-implication of Aboriginal people in the management of northern Australian landscapes. Langton exposes the preference for scientific knowledge that has placed IK in a secondary position to western scientific thinking and led to misunderstandings about the significance of cultural and spiritual affiliations to landscapes, flora and fauna in the Aboriginal domain. She demonstrates that Indigenous people have successfully managed the landscape for millennia and are responding to the challenge of sustainable environmental management in innovative ways which combine traditional environmental practices and western scientific insights (see http://www.ntu.edu.au/cincrm/publications/burnques.html).

Langton, M., D, Epworth and V, Sinnamon. nd. ***Indigenous Social, Economic and Cultural Issues in Land, Water and Biodiversity Conservation.*** **A scoping study for WWF Australia. Centre for**

Indigenous Cultural and Natural Resource Management, Northern Territory University, Vol 1 and 2.

Langton, M and Z, Ma Rhea with M, Ayre and J, Pope. 2003. ***Composite Report on the Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities Relevant to the Conservation and Sustainable Use of Biodiversity.*** **Prepared for the Secretariat of the Convention on Biological Diversity.**
This is a lengthy and detailed document that presents a discussion of IK, conservation, biodiversity and local practices. It considers the direct and indirect threats to the existence of biodiversity-related Indigenous knowledge worldwide. Several definitions of 'Indigenous peoples', 'local communities', 'IK' are offered up in this document and a commentary on the growing literature on traditional knowledge is provided. They note that the literature is diverse and highly accessible as a result of digital libraries, biodiversity registers, inventories and web portals. The author's also note that experts and researchers from a wide range of sciences, including agricultural science, ethnobiology, ethnobotany and ethnoecology, the social sciences, and other fields have also contributed to the recording of traditional biodiversity related knowledge. Examples from Australia and abroad are presented, giving the reader a sense of how the Australian context of IK, conservation and biodiversity relate to international settings such as China, and Israel. The authors discuss IK in relation to language, retention, religious beliefs, land and sea tenure, cultural absorption, knowledge loss. The second part of the report focuses on ways to protect, promote and facilitate use of traditional knowledge, again using international case studies. Focus discussion is given to IK and protected areas, participation in land management, benefit sharing schemes, collaborative research partnerships, capacity building, establishing ownership of IK, libraries, databases and registers. In the final section of the report regional recommendations and targets are outlined. This section is particularly helpful as a reference to Traditional owners who may be looking to establish formal programs or relationships involving IK. The recommendations concern Indigenous people as well as government agencies.

Latz, P, K. 1996. ***Bushfires and Bushtucker: Aboriginal plant use in Central Australia.*** **Alice Springs: IAD Press.**
Latz is a key resource for the broader NRM community to learn about plants of central Australia, their uses, habitats and potential. The book is based on lifetime research by the author of IK and related knowledge". This book presents an overview to Aboriginal plant use, fire management, and ethnobotany in Central Australia. This book gives a description of the central Australian environment and the role of fire, and includes a comprehensive description of individual plant species and their response to fire. The book 'Flammable Australia' discusses fire issues across all of Australia, and includes chapters on fire in spinifex landscapes and other vegetation communities relevant to central Australia.

Lewis, H, T. 1989. Ecological and Technological Knowledge of Fire: Aborigines Versus Park Rangers in Northern Australia. ***American Anthropologist*** **91:940-961.**

Liddle, L. 2001. "Bridging the Communication Gap: Transferring information between scientists and Aboriginal land managers", in ***Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.*** **Edited by R, Baker, J, Davies and E, Young, pp.147-155. Oxford: Oxford University Press.**
This chapter pivots around a discussion of how to facilitate better transfer of information between scientists and Aboriginal land managers. The author addresses issues of communication, the need for better and alternate methods of communication, through such efforts as 'research partnerships'. These partnerships are about establishing workable links between Aboriginal people and scientists/others whose interests are intertwined. According to Liddle partnerships of this kind will only work if scientists make a fundamental shift in how they think, and how they conceptualise 'knowledge' and 'authority'.

Mahney, T., N, Gambold, F, Walsh and D, Winstanley. 1996. Looking at Country Two Ways – Land Resource Assessment on Aboriginal Lands in Central Australia. ***ACLEP Australian Collaborative Land Evaluation Program*** **5(1):2-5.**

Mangglamarra, G., A. A, Burrage and P, J. Fuller. 1991. "Wunambal words for rainforest and other Kimberley plants and animals", in ***Kimberley Rainforests*****. Edited by N, L. McKenzie, R, B. Johnston and P, G. Kendrick, pp.413-421. Surrey Beatty and Sons Pty Ltd, Chipping Norton.**
This is a classic inventory style approach to IK. It documents language terms and some brief background to plant and animal resources in the Kimberley rainforests. The IK is not attached to its wider context.

Marsh, H., A. N. M. Harris, and I. R. Lawler 1997. The Sustainability of the Indigenous Dugong Fishery in Torres Strait, Australia/Papua New Guinea. ***Conservation Biology*** **11:1375-.**
This is a heavily scientific paper that discusses the sustainability dugong fishery among Indigenous people in the Torres Strait. The study is based on aerial survey estimates of the size of the regional dugong population in 1987 and 1991 and a survey of catches of dugongs taken by local communities between 1991 and 1993. The author's note that dugongs are a major component of the traditional fishery in Torres Strait, and from their study conclude that co-management arrangements must be developed between the government agencies responsible for the dugong fishery and the Torres Strait Islanders in order to develop management strategies that will provide for the Islander's traditional hunting expectations and maintain dugong numbers. There is little to no recognition of the IK that is associated with the dugong and the hunting practices. This is purely a scientific approach to animal population studies that puts the onus on Indigenous people to work with introduced NRM conservation strategies.

Moller, H., F, Berkes, P, O'Brian Lyver and M, Kislalioglu. 2004. Combining science and traditional ecological knowledge: Monitoring populations for co-management. ***Ecology and Society*** **9. Online source.**
The authors argue that "using a combination of traditional ecological knowledge and science to monitor populations can greatly assist co-management for sustainable customary wildlife harvests by Indigenous peoples". They present case studies form Canada and New Zealand, in an effort to emphasise that, although there is a marked difference between traditional monitoring methods and scientific methods, they remain valuable "because they are based on observations over long time periods, incorporate large sample sizes, are inexpensive, invite the participation of harvesters as researchers, and sometimes incorporate subtle multivariate cross checks for environmental change". They argue that "a few simple rules suggested by traditional knowledge may produce good management outcomes". "Science can sometimes offer better tests of potential causes of population change by research on larger spatial scales, precise quantification, and evaluation of population change where no harvest occurs. However, science is expensive and may not always be trusted or welcomed by customary users of wildlife. Short scientific studies in which traditional monitoring methods are calibrated against population abundance could make it possible to mesh traditional ecological knowledge with scientific inferences of prey population dynamics". [Publication abstract available at:
http://www.ecologyandsociety.org/articles/675.html].

Moore, G. with J, Davies. 2001. "Culture and communication in Aboriginal land management in New South Wales: A Koori perspective," in ***Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.*** **Edited by R, Baker, J, Davies and E, Young, pp.108-122. Oxford: Oxford University Press.**
In this chapter, Graham Moore, a Gurrungutti-nunji man from the south coast of New South Wales, stresses the fact that "Aboriginal ecological knowledge is embedded in cultural and spiritual explanations and symbols" (p.112). He notes that for Koori people in NSW, knowledge of

seasonal variation in resources was crucial in terms of managing wildlife and the seasonal effects of natural forces. For Moore, Koori people maintain a close spiritual tie to their land in spite of the impact that colonisation had on people and country.

Muru-warinyi Ankkul and Kalinjarri Rangers. 2005. *Phillip Creek Mission Block Fauna Survey*. Alice Springs: Central Land Council Land Management Unit.

National Academies Forum. 1999. *Fire! The Australian Experience*, Proceedings of the 1999 Seminar held at the University of Adelaide, Australia. 30 September – 1 October.
The proceedings from this seminar are dedicated to the discussion of Indigenous fire regimes and practices in northern Australia. The contributors have diverse disciplinary backgrounds, including NRM, social sciences, environmental science and tourism. Each presents a discussion of fire and IK, with the focus shifting from traditional fire practices, the cultural value of fire, the history of government incorporation of Indigenous firing practices nationally, debates over fire management, fire in performing arts, public awareness of fire and NRM. The role of IK in shaping Indigenous firing regimes is made apparent throughout the proceedings.

NAILSMA. 2006. *Indigenous Knowledge: A Northern Territory scoping study*. Prepared by NAILSMA for the Natural Resource Management Board NT.
This document outlines the range of IK in northern Australia, with an emphasis on the place of IK in contemporary land and sea management strategies and conservation in Australia. The document is aimed at NRM and acts to stress the importance and value of IK and Traditional Owners as more than mere stakeholders in the management process. Indigenous viewpoints and testimony are a large part of the work presented here, as it is committed to and designed to express Indigenous views from northern Australia.

Natural Heritage Trust. 2003. Indigenous Knowledge Forum, Workshop Outcomes. Alice Springs, 28-29 May. Available at: http://www.deh.gov.au/Indigenous/publications/workshop/
This document highlights the workshop outcomes of an IK forum held in Alice Springs in 2003. The document details a range of issues/themes associated with IK in the Northern Territory. The text very much acts as an overview to the regional delivery of NRM, the role of Aboriginal communities in NRM, the challenges and issues arising from the bridging of two knowledge forms. It documents the issues involved in supporting IK and its inclusion in NRM. Finally the workshop outcomes present a framework for working with IK and processes and protocols for implementing IK.

National Oceans Office. 2002. *Key Species: A description of key species groups in the Northern Planning Area.* The South-east Regional Marine Plan. Canberra: National Oceans Office.

National Oceans Office and D, Smyth. 2002. *Living on Saltwater Country: Review of literature about Aboriginal rights, use, management and interests in northern Australian marine environments.* The South-east Regional Marine Plan. Canberra: National Oceans Office.

National Oceans Office. 2002. *Sea County: An Indigenous perspective assessment report*. The South-east Regional Marine Plan. Canberra: National Oceans Office.
Six volumes make up this report. Three of these include 'Key Species – a description of key species groups in the Northern Planning Area', 'Living on Saltwater Country – a review of literature about Aboriginal rights, use, management and interests in northern Australian marine environments', and 'Sea Country – An Indigenous perspective'. The first 'Key Species' is classic NRM in which an inventory of species found in the area is made, this provides backgrounds to the species, literature links and outlines any key or current research. The second, 'Living on Saltwater Country' provides an overview to Indigenous people's interests in marine environments across northern Australia. The document is characteristic of government reporting in that it provides

maps, visuals, charts and graphs. The discussion is focused on the Northern Territory and Southern Gulf of Carpentaria, as well as Cape York. This document seems biased towards an NRM view of the coastal margins of northern Australia, a view which is reflected in the minor discussion that is given to the specific bodies of IK that exist across language groups, the complex social organisation and principles of ownership that underpin Indigenous engagements with this part of Australia and the emphasis on recommendations that appeal to the Australian Government, rather than Traditional Owners. The third document 'Sea Country – An Indigenous perspective' offers some discussion of Indigenous relationships to sea country, there is a strong emphasis on commercial interests, aspirations and future directions. Chapter one outlines relationships and rights to sea country over five pages, and the remainder of the document turns to the commercial value of sea country.

Neidjie, Big Bill, S, Davis and A, Fox. 1985. *Kakadu Man: Bill Neidjie*. Sydney, NSW: Allan Fox and Associates.

Nesbitt, B, L, Baker, P, Copley, F, Young and Anangu Pitjantjatjara Land Management. 2001. Cooperative Cross-cultural Biological Surveys in Resource Management: Experience in the Anangu Pitjantatjara Lands", in *Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions*. Edited by R, Baker, J, Davies and E, Young, pp. 187-198. Oxford: Oxford University Press.
The authors (both Indigenous and non-Indigenous) give a general background to the Anangu Pitjantjatjara Lands in far northwest South Australia, describing the need for comprehensive biological resource assessments and surveys. Survey outcomes are presented and discussed in relation to a number of themes, including, the use of IK to inform survey methodology, people's perception of the survey, the extension of knowledge for the Anangu Pitjantjatjara people around issues of conservation, and broader ecosystem features, education by way of IK, employment, and intellectual property. The difficulties of surveying are also discussed in relation to resources time, mobility, communication, and financial support. Overall the author's view the cross-cultural surveys to have been successful and important for the conservation of the Anangu Pitjantjatjara homelands.

NORTHERN LAND COUNCIL
http://www.nlc.org.au/
The NLC website provides access to the NLC Caring for Country and Land and Sea Rights programs. The website also has links to a number of media releases, Land Rights News newspaper, publications and videos.

Northern Land Council. nd. *Caring for Country Strategy Northern Land Council Region 2003-2006*. Healthy Country - Healthy Families.

Northern Land Council. nd. *Northern Land Council Small-Scale Enterprise Development Strategy 2003*. Enterprise Development Unit, Northern Land Council.

Northern Land Council. 2004. *Environmental Management Status Reports for Aboriginal Lands in the Northern Land Council Region*. A supporting document to the Caring for Country Strategy 2003-2006.

Northern Territory Government Landcare. 2005. *Northern Territory Regional Investment Strategy*.
This report outlines some of the priority needs in natural resource management in the Northern Territory. It targets areas of specific value and environmental significance to the Northern Territory offering up some discussion of the Indigenous Land Corporation's capacity to co-invest in NRM activities on Indigenous lands.

Northern Territory University. 1995. *Ecopolitics IX*, Conference papers and resolutions. Darwin: Northern Land Council.
These conference proceedings cover a range of topics related to Indigenous knowledge, intellectual property rights, social justice – land and environmental rights in Australia, the administration and management of Indigenous homelands, development and conservation, mining, pastoralism and management. This is an excellent book that raises all of the big issues concerning IK and its place in NRM in Australia. Many of the contributors are Indigenous.

Palmer, L. 2006. 'Nature', place and the recognition of Aboriginal polities. *Australian Geographer* 37(1):33-43.
Abstract: "In the postcolonial context of Australia there has been a belated legal recognition of *sui generis* Indigenous rights and interests over much of the continent. However, the pervasive environmental discourse guiding resource management practices remains firmly based on 'commonsense' settler understandings of 'nature' as an external domain to be managed and/or preserved. In order to understand how this could be otherwise, this paper examines ideas about political landscape formation and the implications of the changing role of the nation-state and civil society in relation to the recognition of Indigenous political subjectivities. Taking the situation faced by Indigenous peoples in two settler societies as our vantage point, I argue here that we need to move away from assimilative environmental governance arrangements and politicise the concept of 'nature'. This will open up spaces for the recognition and active participation of Indigenous polities in the realm of natural resource management. The paper concludes by contrasting the situation faced by Indigenous landowners in Australia's Kakadu National Park with the overtly political negotiations occurring in two northern regions of Canada. In the latter, in a process similar to what Tully calls 'daily subconstitutional politics', it is through the recognition of Indigenous polities in environmental governance issues that Indigenous peoples are starting to refashion their stake in the governing ideas and institutions of the broader regional, provincial and national polity". [Publication abstract available at:
http://journalsonline.tandf.co.uk/(esrpit55zgw1s0551l2ir245)/app/home/contribution.asp?referrer=parent&backto=issue,4,11;journal,3,24;linkingpublicationresults,1:102202,1;].

Paltridge, R and Tangentyere Council. 2002. *Conservation of Threatened Species around Nyirripi Community*. Progress and Final reports to WWF for TSN.
This report corresponds with the project funded by the Australian Government Department of Environment and Heritage in 2001/2. The project, titled: Conservation of Threatened Species Around Nyirripi Community, involved examining the use of Aboriginal predator and fire management to protect threatened fauna in the Tanami Desert, including the Bilby, the Great Desert Skink and the Mulgara. Indigenous involvement was pivotal to the project that involved recording the population levels of threatened fauna. According to the Department of Environment and Heritage website, "This project combines research with on-ground outcomes, and has the potential to play an important role in developing an effective low-cost model for predator control around threatened species populations".

Pannell, S. 2005. *"Getting the Mob In": Indigenous Initiatives in a New Era of NRM in Australia*. Scientific paper from 'From Knowledge to Management: Balancing resource extraction, protection and experiences'. 11th International Symposium on Society and Resource Management Ostersund, Sweden, June 2005.
The author notes that a new approach to natural resource management is sweeping across Australia. This is linked into an extension of the Commonwealth Governments Natural Heritage Trust (NHT) program, regional bodies and plans to increase the management of rivers, coastlines, biodiversity and vegetation. This is a multi-billion dollar, nation wide experiment in environmental management and social change. Pannell identifies many of the 'issues' involved in achieving this and in the engagement with IK that this 'experiment' necessitates. She outlines the

unsuitable structures, processes and practices in place and tracks the shift from Indigenous people being "invisible subject to Indigenous Stakeholders to Traditional Owners" – a transition that marks a major shift in conceptions of Indigenous knowledge, Law, ownership and cultural authority. This is a short, but very comprehensive document that locates the discussion of IK and NRM in a historical and contemporary context.

Raymond, E., J, Blutja, L, Gin.gina, M, Raymond, O, Raymond, L, Raymond, J, Brown, Q, Morgan, D, Jackson, N, Smith and G, Wightman. 1999. ***Wardaman Ethnobiology: Aboriginal plant and animal knowledge from the Flora Region and south-west Katherine region, north Australia.*** **Centre for Indigenous Natural and Cultural Resource Management, Occasional Paper No.2. Darwin: Northern Territory University.**
This document is a classic example of NRM's engagement with IK in Australia. It consists of a series of lists and inventories and visual documentation of plant and animals names. The knowledge of plants and animals is treated in isolation and is not linked into discussions of language, kinships, social organisation, ancestors, Dreaming narratives or other elements of IK. This is the classic approach of IK in inventory formats, a practice which still pervades NRM/IK documentation. As a training aid, it is unclear how the simple documenting of names and diagrams is an educational tool likely to see the transmission of IK across generations. The pervasive nature of IK has been overlooked in preference of a compartmentalised approach. The role of traditional owners in directing the nature of information recorded and the motivation for recording is not made clear by the non-Indigenous compilers of this document.

Reid, J. (ed.) 1982. ***Body, Land and Spirit: Health and healing in Aboriginal Society.*** **University of Queensland Press: St Lucia.**
This text deals with Aboriginal health, healing, ecology and Indigenous knowledge. It addresses contemporary health issues among Aboriginal groups, traditional systems of healing and changing medical strategies. Some of the essays turn to IK in their discussion of health in Aboriginal society. The discussions document specifics on the health situations among a number of Indigenous groups, including Pitjantjatjara people, the Yolgnu, Anbarra and Kaititj people. Indigenous knowledge is indirectly discussed in terms of gendered knowledge of healing, 'traditional resources', bush foods, response to social change, kinship and country. The text is made up of contributions by Reid, Berndt, Betty Meehan, Waterford, and Bell.

Reid, J.R.W., S, R. Morton, L, Baker and Mutitjulu Community. 1992. Traditional knowledge plus ecological survey equals better land management. ***Search*** **Sept, vol.23 (8):249-251.**

Robinson, C. and N, Munungguritji. 2001. "Sustainable balance: A Yolngu framework for cross-cultural collaborative management", in ***Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.*** **Edited by R, Baker, J, Davies and E, Young, pp. 92-107. Oxford: Oxford University Press.**
Robinson and Mununngguritji present a discussion of Yolngu calls for collaborative management across their homelands. They present an overview to the contested history of the area, and cite examples of non-Indigenous land use practices across country, in an effort to highlight the social character of country and the law that accompanies it. An overview to the work of Dhimurru Land Management Aboriginal Corporation is given and the nature of collaborative management strategies is reviewed. Overall the paper provides a good example of negotiated and collaborative management strategies in place across Aboriginal homelands.

Robinson, C., D, Smyth and P, Whitehead. 2005. Bush tucker, bush pets and bush threats: Cooperative management of feral animals in Australia's Kakadu National Park. ***Conservation Biology*** **Vol 19(5):1385-1391.**
Indigenous people are identified as 'stakeholder' in the management of feral animals across parts of the Northern Territory, in this case, Kakadu National Park. Working with the Jawoyn people

the authors examine Indigenous understandings and perceptions of 'feral animals' including water buffalo, horses, and pigs. This paper is written with a view to informing co-management strategies and is quite important in that it highlights the fundamental and very important differences in IK and NRM understandings and perceptions of country, wildlife, feral animals and management.

SAMLISA (Natural Heritage Trust, Indigenous Land Corporation, Aboriginal Lands Trust, Anangu Pitjanjatjara and Maralinga Tjarutja. 1999. ***Sustainable Resource Management: Strategy for Aboriginal Managed Lands in South Australia.*** **Draft Report. Part 1: Principles, priorities and strategic directions.**
This is a regional report concerning land management issues in South Australia.

Seton, K. and J, Bradley. 'When You Have No Law You Are Nothing': Cane Toads, Social Consequences and Management Issues. ***The Asia Pacific Journal of Anthropology*****. Vol.5(3):205-225.**

Smyth, D. and C, Beeron. 2001. ***Development of Cultural Indicators for the Management of the Wet Tropics World Heritage Area.*** **Paper read at The Power of Knowledge, The Resonance of Tradition – Indigenous Studies Conference, Canberra.**
This paper was presented at The Power of Knowledge, The Resonance of Tradition Conference, organised by AIATSIS.

Taylor, L., G, Ward, G, Henderson, R, Davis and L, Wallis (eds), 2005. ***The Power of Knowledge, The Resonance of Tradition.*** **Canberra: AIATSIS Aboriginal Studies Press.**
This book offers a critique of the concept of 'tradition' as it has been applied to Aboriginal and Torres Strait Island people and their life ways. They authors argue for a deeper appreciation of the complexity in Indigenous social life, and the way that knowledge is constructed and deployed in complex intercultural contexts in contemporary Australia. Some chapters deal specifically with land and sea management concerns, while others look at land and sea ownership, service delivery arrangements for health and outstation management and representation in art, song and broadcasting.

Torres Strait NRM Reference Group, with the assistance of M, Isherwood, M, Pollock, K, Eden and S, Jackson. 2005. ***Land and Sea Management Strategy for Torres Strait.*** **Funded under the Natural Heritage Trust program of the Australian Government.**
This document outlines the management strategies to be implemented in the Torres Strait. It makes reference to both NRM and IK features of the Torres Strait environment. Priority is given to the physical aspects of the area, but these are brought into relation with the social, cultural and heritage features of the sea and islands. Traditional knowledge, community, capacity, governance and education are discussed, with a view to shaping NRM focused management in ways that accommodate IK in the region.

Uluṟu-Kata Tjuṯa Board of Management and Parks Australia. 2000. ***Uluṟu-Kata Tjuṯa National Park Plan of Management.*** **Canberra: Commonwealth of Australia.**
The plan of management outlines the status of Uluru-Kata Tjuta National Park, providing background to the park's World Heritage Listing. In an introduction to the report, the following statement is made:

> The Aboriginal traditional owners of Uluṟu - Kata Tjuṯa National Park have looked after, and in turn been looked after by, the land for over one thousand generations. Aboriginal use of the land over that time is reflected throughout the Uluṟu - Kata Tjuṯa landscape, which is recognised as a World Heritage area of outstanding universal value. Many places in the Park are of enormous spiritual and cultural

> importance to the traditional owners. The Park also contains features such as Uluṟu and Kata Tjuṯa which have become major symbols of Australia. Acknowledgment of Uluṟu - Kata Tjuṯa as a cultural landscape is fundamental to the success of the joint management arrangement. The Park is managed in such a way that the rights, interests, skills and knowledge of the traditional owners are respected and integrated in all of the Park's management programs. (http://www.deh.gov.au/parks/publications/uluru-pom.html)

This Plan of Management was prepared by the Uluṟu - Kata Tjuṯa Board of Management and the Director of National Parks, in accordance with the provisions of the *National Parks and Wildlife Conservation Act 1975* under which the Park was established. Maintenance of the park's values is discussed in association with traditional fire practices and the cultural authority of the Anangu people who are the Traditional owners of the area. This cultural authority determines boundaries and buffer zones in the National Park. In regards to management of the area, international obligations and commitments are outlined along with national legislation and controls. The management plan also presents an overview to Indigenous sites within the park, as well as traditional knowledge and ecological management. Joint management of the park has been in place since 1985, an arrangement that is underpinned by principles of working together to incorporate both Indigenous and non-Indigenous and scientific knowledge. There is no discussion of how successful the practice of working together has been and Indigenous testimony is not included in the Plan of Management. A pdf copy of the Plan is available at: http://www.deh.gov.au/parks/publications/pubs/uluru_plan_2000.pdf.

V and C Semeniuk Research Group. 2004. Spring deposits in the northern Great Sandy Desert: description, maintenance of water areas, history and global significance. Report to Walangkarr Jirrkaliy Healthy Country Project, funded by the Kimberly Land Council, Tropical Savanna CRC and Environment Australia.
This document sets out to "scientifically document a number of springs that form mound deposits along the north western part of the Northern Great Sandy Desert", whilst also working with TOs to obtain a history of the springs, their understanding of the hydrological processes operating there, and exchange stories on the origin of the site. The focus of this seems to be on physical formations and scientific information to which Indigenous knowledge, where deemed applicable is incorporated into study, rather than IK being a dominant framework from which understandings of spring deposits are developed. This is a classic NRM focus engagement with IK.

V and C Semeniuk Research Group. 2004. Geegully Creek valley tract: Landforms, maintenance of water areas, vegetation, history and global significance. Report to Walangkarr Jirrkaiy Healthy Country Project, funded by the Kimberly Land Council, Tropical Savanna CRC and Environment Australia.
This project, assessment is in line with the objectives of the Spring deposits report by the same author. Again, it is dominated by a scientific knowledge frame, to which IK is only supplanted where deemed 'appropriate'.

Walsh, F. and P, Mitchell (eds) 2002. ***Planning for Country: Cross-cultural approaches to decision making on Aboriginal lands.*** **Alice Springs: Jukurrpa Books/Central Land Council, foreward by Marcia Langton.**
The book was produced with the support of Land & Water Australia, the Indigenous Land Corporation and the World Wildlife Fund Australia records the experience, and knowledge of people working in landcare, land management and community development in Central Australia. It looks at the many issues confronting Central Australian Aboriginal people wanting to take control of their economic destiny: it is about ways of supporting local people to plan work together and put their ideas into practice. Includes practical planning methods outlined in point

form and essays offering insights into Indigenous cultural contexts and showing problem-solving in action.

White, N. 2002. ***Theories, practicalities and Politics in Indigenous Land Management: Learning from the Southern Arafura wetlands and surrounds.*** **Draft discussion paper. Canberra: Yolngu Ranger Program.**

Having worked closely with the Yolngu people of the southern-Arafura Swamp and its catchments, over a number of decades, the author presents a discussion of current issues in Indigenous and non-Indigenous theories of managing 'natural/cultural' resources and the extent to which these theories are matched by contemporary politics and the practical realities of management. He discusses local attitudes and behaviour toward environmental change and introduced species. In concluding White notes that many Yolngu people have found much research and management actions of non-Indigenous people to be an assault on traditional cultural values and ways of life. In order to bridge the very different ways of managing and interacting with country, White suggests that a management framework that is consistent with traditional domains of Yolngu life will be an important, although challenging step. One part of this includes a community ranger program, embedded in Yolngu life and drawing on Yolngu knowledge traditions. He argues that only with such provisions is it at all possible for Yolngu to establish working co-operative relationships with other institutions that meet their aspirations for self-determination.

Whitehead, P.J. Inquiry on Capacity Building in Indigenous Communities. A submission to the House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs.

The terms of reference for this work are directed at improving the delivery of basic services to Aboriginal communities. The underlying premise being that Aboriginal people are themselves best placed to deliver services within their communities. This particular submission relates this premise to the critical role of Aboriginal people as managers of natural resources in northern Australia. The author outlines the EPBCA 1999 – noting, that despite this being in place at a Federal level, few coherent steps have been taken to achieve these objectives in northern Australia. In light of this he makes a number of recommendations for how customary practice in land and wildlife management that contributes to achievement of national resource management goals can be achieved. He notes living on country, continued high levels of hunting and gathering activity, use of fire, moving regularly through country, utilising customary economy as a significant part of the community income for families and groups and conducting ceremony in association with all of this. The author's recommendations, promote an engagement with IK that is holistic, culturally aware and understanding of the pervasiveness of IK for Traditional Owners.

Whitehead, P.J. J, Gorman, A.D. Griffiths, G. Wightman, H. Massarella and J, Altman. 2002. ***Small scale commercial plant harvests by Indigenous Communities.*** **A report for the RIRDC/Land and Water Australia, FWPRDC Joint Venture Agroforestry Program.**

> A very minor discussion of community involvement is presented in this report. The focus of discussions is on the commercial sustainability for NRM. The document provides a comprehensive discussion of NRM underpinned approaches to plant harvesting in/on Aboriginal homelands. Two pages of discussion are concerned with intellectual property and cultural sustainability with the bulk of the discussion concerned overlooking the cultural authority that is embodied in IK.

Wightman, G. 2005. ***Traditional Biological Knowledge Audit of Aboriginal Languages in the Katherine Region.*** **Ethnobiology Project, Parks and Wildlife, Darwin, Northern Territory.**

This document presents an assessment of Indigenous languages and the degree of threat to biological knowledge for each language. The status of several languages is classified in an effort to

identify the conservation status of traditional plant and animal knowledge associated with Aboriginal languages in the Katherine Region. The aim of Wightman's work is to determine those languages whose biological knowledge is most threatened. There is little discussion of how Indigenous speakers of these languages feel about the status of language, nor is there any discussion of whether documenting language is seem to be a means to 'conserve' ecological knowledge of terms deemed important by the Aboriginal owners of this knowledge. The very use of the term conservation prompts the reader to ask, conservation for whom? Given the oral tradition of these languages, do the Traditional Owners consider writing down words associated with plants and animals a way of conserving language and transmitting knowledge across generations.

Wiynjorrotj, P., S, Flora, N, Daybilama Brown, P, Jatbula, J, Galmur, M, Kathering, F, Merlan and G, Wightman. 2005. ***Jawoyn Plant and Animals: Aboriginal flora and fauna knowledge from Nitmuluk National Park and the Katherine area, northern Australia.*** **Northern Territory Botanical Bulletin No,29, Ethnobiology Project and Jawoyn Association. Darwin: Northern Territory Government.**
This document is a glossy handbook of Jawoyn plant names, and photographs. It seems to be aimed at tourists, and includes a range of plant and animal names, with associated pictures. The extent of IK that is presented includes the language name of the plant/animal and its use. There is no discussion of clan groupings or ancestral links to plants and animals and very little consideration of the wider system of knowledge in which these language terms are located. The compilers of the work have continued the tradition of 'listing' IK in inventory formats, which renders the knowledge disconnected from its original and wider context.

Young, E. 1994. "Land Management Practices: The incorporation of traditional systems", in ***Proof and Management of Native Title: Summary of proceedings of a workshop.*** **The Native Title Research Unit, Australian Institute of Aboriginal and Torres Strait Islander Studies, pp.92-97. Canberra: Australian Institute of Aboriginal and Torres Strait Islander Studies.**
The link between country, people and IK is made throughout the chapter to strengthen the argument that "alternative systems, rather than conventional management of pastoralism and agriculture, parks and conservation, should be regarded as the norm for native land title"; measures to be taken – 1. Providing the right form of support for aboriginal land management; 2. Ensuring effective provision of land management support; 3. Investigating the introduction of innovations such as co-management arrangements (from AIATSIS Aug 2002 (Indigenous Studies)).

Yu, P. 2000. ***Conservation and cultural survival through coexistence*****:** ***The democratisation of national parks in Western Australia.*** **Keynote address to public forum 'The Reform of CALM: Are the proposed new conservation laws adequate?**
This is a strong call for the coming together of natural and cultural resource management, and the need to see Indigenous people as not simply part of the scenery but part of the landscape.

Yu, S. Yuko Pty Ltd. 2004. Walangkarr Jirrkaliy Healthy Country Project Final Report. Report to Land and Sea Management, Kimberley Land Council Cooperative Research Centre for Tropical Savannas Management, Environment Australia.
This project is part of a national strategy to conserve Australia's biological diversity by ensuring the continuity of ethno-biological knowledge of Australia's Indigenous peoples.

In line with the North Australia Ethno-ecology program, the key aims – record and co serve local and Aboriginal knowledge of species and ecological processes, develop indicators of landscape health and sustainability in Traditional Owner's terms, investigate and apply techniques and management practices, apply Aboriginal ecological knowledge to inform co-management of land

and water resources, improve and facilitate Traditional Owner participation through statutory processes and identity Aboriginal agendas and priorities for collaborative research.

Yumbulul, T and K, Djiniyini. 1997. "My Island Home: A marine protection strategy for Manbuynga ga Rulyapa (Arafura Sea)," in *Our Land is Our Life*. Edited by G, Yunupingu, pp.181-187. St Lucia, Queensland: University of Queensland Press.
The author's discuss the meaning of the sea to Yolngu people. They note that many of their totems come from the sea and that the sea contains many sacred sites. The connection is made between food and economy and the songs, dances, ceremonies and emotions that people carry out and feel for sea country. There are many land care units that are interested in the land and sea of Yolngu homelands, including the Northern Land Council. In this paper, the role of these groups in protecting the environment is recognised, but the authors note that as most of what is in the sea is hidden, it is subject to greater destruction than the land. The Manbuyngu ga Rulyapa Steering Committee hopes to change this and through this chapter raise the issues and recommendations that the Traditional owners feel are important for the protection of the sea country. The issue of joint management is raised, and the Indigenous author's feel that customary Law or IK must be part of sea management. They note that Yolngu management principles must be a part of the program and give examples of such principles, including Law for the catching and eating of lobsters. They use examples from Maori homelands in New Zealand to argue for IK in management.

Zeppell, H. 2003. *Indigenous Wildlife Management. Wildlife Enterprises and Wildlife Research Involving Indigenous People and Indigenous Knowledge of Wildlife.* Paper presented at the 3rd International Wildlife Management Congress, Christchurch, New Zealand, 1-5 December, 2003. Unpublished.

International IK Conventions, Acts, Legislation, Policy and Declarations

Over recent years there has been a series of statements and declarations developed by, or on behalf of Indigenous peoples which provide specifically for their rights of cultural and intellectual property, knowledge, innovations and practices. These developments generally provide an important emerging 'soft law' of principles for Indigenous rights which ultimately must serve to guide, and hopefully influence, 'hard law' and policy. Key organisations involved in the drafting of these statements, declarations, conventions and recommendations or conducting large scale research into IK include:

- WIPO – World Intellectual Property Organisation
- United Nations
- UNESCO – United Nations Economic, Social and Cultural Organisation
- World Bank
- ICSU – International Council for Science

WIPO – World Intellectual Property Organisation

The *World Intellectual Property Organisation* (WIPO) is the specialised United Nations agency responsible for the world-wide promotion of the intellectual property rights of innovators and creators. In an attempt to identify the concerns of traditional knowledge holders, WIPO's *Global Intellectual Property Issues Division* has organised, since its creation in 1998, several regional roundtables, meetings and consultations and has conducted fact-finding missions to twenty-eight countries. To further this initial work, WIPO established in June 2000 an *Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*. The

Committee has explored, among other things, issues surrounding the application of intellectual property rights to protect "traditional Indigenous knowledge" and "folklore". Certain interested non-governmental organisations are allowed to participate in WIPO explanatory sessions as observers.

The WIPO website, outlining IK and IP program activities, features the following statement:
"WIPO provides a forum for international policy debate and development of legal mechanisms and practical tools concerning the protection of traditional knowledge (TK) and traditional cultural expressions (folklore) against misappropriation and misuse, and the intellectual property (IP) aspects of access to and benefit sharing in genetic resources. *WIPO consult a number of 'stakeholders' – including Indigenous people, and local communities, NGOs, governmental representatives, academics and the private sector to identity the IP needs and expectations of the holders of IK and cultural expressions*".

The WIPO report is available online:
World Intellectual Property Organisations (WIPO). 2001. *Report on Fact-finding Missions on Intellectual Property and Traditional Knowledge (1998-1999).* [Online source] Available at: http://www.wipo.int/tk/en/tk/ffm/report/index.html.

WIPO and other organisations tend to approach and conceive of IK as 'being of interest to many stakeholders'. There is a dilemma in this approach, in that it disenfranchises Indigenous people of their ownership of IK. By referring to Indigenous people as stakeholders in IK, alongside any number of other interested parties – including State governments and private sector, is to remove authority and ownership. This is a dangerous approach to IK, as it causes a separation between the holders of IK and their knowledge, as well as the cultural and social contexts from which that knowledge derives and is given meaning.

TRIPS Council is the World Trade Organisation (WTO)

This body is responsible for administering and monitoring the operation of the *TRIPS Agreement* – which introduced intellectual property rules into the multilateral trading system for the first time. The Council has on several occasions over the years considered the intellectual property issues involved in the protection of traditional knowledge. More recently the WTO instructed the TRIPS Council to examine the relationship between the TRIPS Agreement, the Convention on Biological Diversity and the protection of traditional knowledge and folklore. The WTO is an international, multilateral organisation, which sets the rules for the global trading system and resolves disputes between its member states. According to the WTO, the Trips Agreement:

> … is [an] attempt to narrow the gaps in the way these [IP] rights are protected around the world, and to bring them under common international rules. It establishes minimum levels of protection that each government has to give to the intellectual property of fellow WTO members. In doing so, it strikes a balance between the long term benefits and possible short term costs to society.

The Convention on Biological Diversity (CBD)

This convention has the objective of promoting the conservation and sustainable use of biological diversity and ensuring the fair and equitable sharing of the benefits arising out of the use of genetic resources. One component of the implementation of this Convention involves the respect, preservation and maintenance of the knowledge, innovations and practices of Indigenous and local communities concerning the conservation and sustainable use of biological diversity. In pursuit of this goal, the governing body of the CBD established a Working Group on *Article 8j* of the Convention which deals with traditional knowledge. The Working Group is considering, among other issues, various non-intellectual property rights approaches to preserving traditional

and Indigenous knowledge and is collaborating with WIPO on the exploration of approaches that use intellectual property rights to achieve this objective. The report and recommendations of the Working Group's meetings are regularly presented and discussed at meetings of the Conference of the Parties of the CBD. Non-governmental organisations, including Canadian Aboriginal groups, are invited to attend most of the meetings related to the CBD.

Article 8(j) of this Convention encourages countries, 'subject to national legislation' to:

> ...respect, preserve and maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices (Davis 1998).

The effective implementation of the *Convention on Biological Diversity* requires the development of a clear framework for clarifying rights and responsibilities in biodiversity. It is argued that one factor in the loss of biodiversity is the 'lack of clear property rights governing ownership and access to biodiversity'. To address this, "in many cases better specification of property rights can encourage the holders of such rights to be responsible and accountable for the sustainable management of the resources in their control" (Davis 1998). Property rights that determine the management of biodiversity 'need to be well specified, context-specific and enforceable' (Davis 1998).

While the *Convention on Biological Diversity* provides a potentially useful opportunity for countries to introduce new measures to recognise and protect Indigenous knowledge and innovations, it also imposes some constraints. The requirement that implementation of Article 8(j) should be subject to national legislation may be problematic for Indigenous peoples, especially if existing national laws take precedence, and where these might conflict, or place limitations on any measures that may be introduced under 8(j). Conversely, the Convention may encourage countries to introduce special national laws beneficial for the protection and conservation of Indigenous knowledge, traditions, innovations and practices (Davis 1998).

The use of the term 'traditional lifestyles' in the wording of Article 8(j) may also be interpreted to imply the exclusion of many Indigenous communities who have not retained their direct connections with lands and resources, but who wish to protect and preserve their knowledge and innovations (Davis 1998).

A range of other developments in international standard setting relating to environment and conservation have particular relevance to the consideration of measures for protecting Indigenous biodiversity related knowledge. These instruments and statements represent a body of principles relevant to the recognition and protection of Indigenous peoples' knowledge systems, and may ultimately influence law and policy development – although many of them are problematic in that they assume that IK is for all, both Indigenous Nations and the State.

Rio Declaration, Agenda 21, and the *Statement of Forest Principles*

Agenda 21 provides a charter and program for action for sustainable conservation and development into the next century. Chapter 26 of *Agenda 21* on *Recognising and strengthening the role of Indigenous Peoples and their Communities* contains some important provisions directly relevant to Indigenous knowledge and management of biodiversity. For example Section 26.3(iii) states that Governments should, "in full partnership with Indigenous people and their

communities', recognise Indigenous peoples' 'values, traditional knowledge and resource management practices with a view to promoting environmentally sound and sustainable development" (Davis 1998)

.

The *Rio Declaration* states at *Principle 22* that:

Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognise and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

United Nations and UNESCO

UNESCO has in place a number of Recommendations and Conventions that concern aspects of IK. These include:

- *Recommendation on the Safeguarding of Traditional Culture and Folklore*
  - Not ratified by Australia
- *Convention on the Protection and Promotion of the Diversity of Cultural Expressions*
  - Not ratified by Australia
- *Convention concerning the Protection of the World Cultural and Natural Heritage*
  - Ratified by Australia
- *Convention for the Safeguarding of the Intangible Cultural Heritage*
  - Not ratified by Australia

Australia is signatory to very few of UNESCO's legal instruments, and consistently shows a reluctance to sign any recommendations or conventions that concern the cultural practices, knowledge systems, life ways or rights of Indigenous people.

The UNESCO Cultural Sector encourages wider understandings and engagements with many forms of IK, within the categories of cultural heritage, IK, intangible heritage, folklore, cultural industries, intercultural dialogue, arts and craft. The website features the following statement:

> UNESCO advocates for educational programmes and projects that are culturally appropriate, gender and age sensitive, and grounded in human rights. UNESCO supports such socio-cultural approaches through research, capacity-building and the development of a wide range of resources.

Of particular relevance for IK are UNESCO's practices concerning Intangible heritage. Intangible heritage is taken to include:

> … the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

UNESCO, 'Principles, Definitions and Organs of the Convention - Article 2, Paragraph 1', in *Convention for the Safeguarding of the Intangible Cultural Heritage Information Kit*. Paris, 17 October, 2003. Available at http://www.portal.unesco.org/culture, accessed 17 March, 2006.

UNESCO's working definition of intangible heritage captures many aspects of IK, including language, oral history, music and knowledge concerning all aspects of cultural lifeways.

Within UNESCO's Cultural Sector there is a program for Indigenous Knowledge. As an introduction to this program, the following statement features on the UNESCO website:

Indigenous Peoples: Custodians of the viability of the planet
The cultural resources of Indigenous peoples are a fragile treasure that is now under threat from globalisation. UNESCO is endeavoring to protect and revitalise this renewable form of wealth that is a promise of the development of Indigenous peoples and of humanity as a whole.

The programme considers the capacity of Indigenous peoples to project a holistic vision of the world over time, for this is based not only on the interplay of cultural diversity, dialogue and development, but also on the moral commitment of these peoples.

The latter accordingly become incomparable custodians of the viability of the planet, embedded as it is in complex cosmologies that give the interdependence of humankind and nature all the merit of an essential value, and set the accruing balance and harmony above strictly short-term benefits. Available at
http://portal.unesco.org/culture/en/ev.php-URL_ID=12408&URL_DO=DO_TOPIC&URL_SECTOPM=201/html.

Featured on the UNESCO Cultural Sector IK webpage is a link to a CD-Rom developed with the Lajamanu Elders and artist of the Warnayaka Art Centre, northern Australia. This project is titled: *Dream Trackers - Yapa Art and Knowledge of the Australian Desert* and is published by UNESCO Publishing.

Lajamanu Elders, Warnayaka art Centre, Barbara Glowczewski and Virtuel Bazaar. 2001. *Dream Trackers – Yapa Art and Knowledge of the Australian Desert.* Memory of Peoples Series, UNESCO Publishing.

The United Nations produce an online Chronicle which features a range of articles relating to UN activities. One article that deals with IK is,

Gilmore, K. *Indigenous Knowledge and Development*. Online article, United Nations Chronicle. Available at:http://www.un.org/Pubs/chronicle/2003/webArticles/081303_Indigenous.asp
This article outlines, in brief, the United Nations working definition of IK.

Other United Nations and UNESCO documents that relate to IK include:

Draft United Nations Declaration on the Rights of Indigenous Peoples
http://www.unhchr.ch/huridocda/huridoca.nsf/(Symbol)/E.CN.4.SUB.2.RES.1994.45.En?OpenDocument

UN International Workshop on Traditional Knowledge
http://72.14.235.104/search?q=cache:X0rY8QWePNMJ:www.un.org/esa/socdev/unpfii/documents/TK_Paper_VSimIFAD_English.pdf+Indigenous+knowledge+%2B+united+nations&hl=en&gl=au&ct=clnk&cd=2

Convention on the Protection and Promotion of the Diversity of Cultural Expressions
http://portal.unesco.org/culture/en/ev.php-URL_ID=11281&URL_DO=DO_TOPIC&URL_SECTION=201.html

UNESCO Local and Indigenous Knowledge Systems Links
http://portal.unesco.org/sc_nat/ev.php?URL_ID=1945&URL_DO=DO_TOPIC&URL_SECTION=201

Intangible Culture Heritage – Convention and Publications:
http://portal.unesco.org/culture/en/ev.php-URL_ID=2225&URL_DO=DO_TOPIC&URL_SECTION=201.html

UNESCO – Database of best practice in IK.
http://www.unesco.org/most/bpindi.htm

World Bank

The World Bank (WB) describes itself as a source of financial and technical assistance to developing countries around the world. It consist of two institutions owned by 184 member countries – the International Bank for Reconstruction and Development and the International Development Association. The mission statement outlines that the WB aims to reduce global poverty and improve living standards. These organisations provide loans and grants to countries for education, health, infrastructure, communications and other purposes. The World Bank currently has in place an IK Program.

The WB considers IK to be of importance, for the following reasons:

- Investing in the exchange of IK and its integration into the assistance programs of the World Bank and its development partners can help to reduce poverty.
- IK provides problem solving strategies for local communities, especially for the poor
- IK represents an important contribution to global development knowledge
- IK systems are at risk of becoming extinct
- IK is relevant for the development process
- IK is an underutilised resource in the development process
- Learning from IK, by investigating first what local communities know and have, can improve understanding of local conditions and provide a productive context for activities designed to help the communities
- Recognition of IK and its application in the development process is a source of empowerment for local communities

Available at:
http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTINDKNOWLEDGE/0,,contentMDK:20663799~menuPK:1692621~pagePK:64168445~piPK:64168309~theSitePK:825547,00.html)

The WB has published a number of documents dealing specifically with IK. These include:

Oettle, N and B, Koelle. 2004. World Bank Arica Region. ***Capitalising on Local Knowledge: Community knowledge exchange. A toolkit for the preparation, implementation and evaluation of community-to-community knowledge and learning exchanges.*** **Toolkit 1, Methodological Overview and Case Studies.**

Oettle, N and B, Koelle. 2004. World Bank Africa Region. ***Capitalising on Local Knowledge: Community knowledge exchange. A toolkit for the preparation, implementation and evaluation of community-to-community knowledge and learning exchanges.*** **Toolkit 2, Guidelines for Implementation.**

World Bank. nd. ***Indigenous Knowledge: Local Pathways to Global Development.*** **Marking Five Years of the World Bank Indigenous Knowledge for Development Program.**

World Bank. 1998. ***Indigenous Knowledge for Development: A framework for action.*** **Knowledge and Learning Center, Africa Region. November, 1998.**

http://www.worldbank.org/afr/ik/datab.htm
Database of Indigenous Knowledge and Practices - World Bank, Sub Saharan Africa region

Other Organisations

Centre for Indigenous Knowledge Systems – Ghana, Africa.
http://www.cfiks.org/

Global Knowledge Partnerships
http://www.globalknowledge.org/
Global Knowledge Partnership is a network promoting innovation and advancement in Knowledge for Development and Information and Communication Technologies for Development. GKP brings together Public Sector, Private Sector and Civil Society organisations. GKP activities and programmes concern the application of knowledge and technology to address and solve development issues in four strategic themes - Access to Knowledge, Education, Poverty Reduction and Resource Mobilisation. GKP operates globally as well as in 7 regions: Africa, Central and Eastern Europe; East Asia; Latin America and the Caribbean; Middle East and North Africa; Oceania and South Asia. There has been some discussion of IK and publications produced by this organisation.

PICTA – Partnership for Information and Communication Technologies in Africa
Work Programs: Local Knowledge
The Local Knowledge Work Program was established to identify and capture, synthesise and disseminate knowledge embodied in traditional practices, good practices and lessons learned. The programs activities include; identifying the types of local knowledge and developing strategies and mechanisms for disseminating local sources of information.

Indigenous Environmental Network (IEN)
http://www.ienearth.org/iensub.html
Established in 1990 within the United States, IEN was formed by grassroots Indigenous peoples and individuals to address environmental and economic justice issues. IEN's activities include building the capacity of Indigenous communities and tribal governments to develop mechanisms to protect sacred sites, land, water, air, natural resources, health of people and all living things, and to build economically sustainable communities. IEN accomplishes this by maintaining an informational clearinghouse, organising campaigns, direct actions and public awareness, building the capacity of community and tribes to address issues, development of initiatives to impact policy, and building alliances among Indigenous communities, tribes, inter-tribal and Indigenous organisations, people-of-color/ethnic organisations, faith-based and women groups, youth, labor, environmental organisations and others. The focus programs of the Indigenous Knowledge Network include; Youth Program and Youth Leadership Training Project, Toxics and Environmental Health Campaign, Indigenous Mining (and Oil) Campaign Project, Native Energy Campaign, Globalisation, Trade and Environment, Water is Life, Biodiversity, Bio-Ethics and Bio-Piracy, Food Security, Indigenous Sustainable Communities Initiative, Traditional Knowledge.

The organisations goals are to educate and empower Indigenous people to address and develop strategies for the protection of environment, our health, and all life forms, re-affirm traditional

knowledge and respect of natural laws, recognise, support, and promote environmentally sound lifestyles, economic livelihoods, and to build healthy sustaining Indigenous communities, include youth and elders in all levels of our work and protect human rights to practice cultural and spiritual beliefs

INDKNOW – Indigenous Knowledge Systems [online forum]
INDKNOW@u.washington.edu is a forum for discussing issues associated with IK. INDKNOW carries notices about publications, projects, ideas and questions of individuals and groups working to understand, validate and apply IK; to promote the use of IK as complementary to the scientific tradition; to expedite the obligations of States to support IK under provisions contained in Agenda 21, the Biodiversity Convention, and other international agreements and conventions applying to Indigenous peoples; to work for protection of IK and just compensation to communities for their knowledge; to support the international Indigenous Knowledge and Development (IK&D) network consisting of more than 2500 participants in 106 countries worldwide; and to facilitate the growing number of formally established Indigenous knowledge resource centers. Discussions on INDKNOW include the scope of intellectual property rights or other property rights regimes concerning the protection of traditional knowledge, methods for compensating peoples for sharing their knowledge and for protecting them against unfair exploitation, the relation of IK to the preservation of cultural and biological diversity, failures of traditional practices to maintain ecosystem health and meet human needs, methods and ethics for investigating Indigenous knowledge, the role of community involvement in using Indigenous knowledge for sustainable development, the relationships between traditional knowledge and the Western scientific tradition (e.g. ethnomedicine, ethnobiology, ethnobotany; ethnozoology, ethnoecology, agroecology, natural forest management etc.) and their complementary use for planning and decision-making, the use of Indigenous knowledge in sustainable development, the close involvement of local communities with development planning, the development of formal and non-formal education systems for the transmission of traditional knowledge, and strategies for empowering local communities and Indigenous peoples to strengthen and incorporate their own belief systems into their self-determined development.

International Council of Museums
http://nic.icom.org/ICOM/diversity.html

The European Bank for Reconstruction and Development, the Asian Development Bank and the African Development Bank
http://www.ebrd.com/
http://www.adb.org/
http://www.adb.org/
These banks are committed to ensuring that the development process promotes Indigenous people's participation.

Other International Conventions, Declarations, and Acts closely related to and concerning IK

Convention on Stolen or Illegally Exported Cultural Objects **(Rome, 24 June 1995)**
http://www.unidroit.org/english/implement/i-95.htm

Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property
http://www.tufts.edu/departments/fletcher/multi/www/bh572.html

Draft United Nations Declaration on the Rights of Indigenous Peoples
http://hookele.com/netwarriors/96/draftdec-text.html
The *Draft Declaration on the Rights of Indigenous Peoples* being developed by a working group of the

United Nations Commission on Human Rights provides, at *Article 24*, for Indigenous peoples' rights to 'their traditional medicines and health practices, including the right to the protection of vital medicinal plants, animals and minerals'. *Article 29* provides that Indigenous peoples are 'entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property'. These peoples, this Article says:

> ...have the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts (Davis 1998)

The *Draft Declaration on the Rights of Indigenous Peoples* referred to above was developed mostly by Indigenous peoples and their representatives during many years of meetings of the UN Working Group on Indigenous Peoples.

ICOM Code of Professional Ethics
http://palimpsest.stanford.edu/icom/ethics.html

Julayinbul Statement on Indigenous Intellectual Property Rights, Australia, 1993.
http://icip.lawnet.com.au/info6.htm

Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples
http://www.ankn.uaf.edu/IKS/mataatua.html

Declaration of Indigenous Peoples of the Western Hemisphere Regarding the Human Genome Diversity Project.
http://www.ankn.uaf.edu/IKS/declaration.html

International Labor Organisations Convention 169 on Indigenous and Tribal Peoples
http://www.unhchr.ch/html/menu3/b/62.htm
This United Nations convention calls for action to protect the rights of Indigenous peoples.

The Inter-American Draft Declaration on the Rights of Indigenous Peoples
http://www.cidh.org/Indigenous.htm
An Indigenous Peoples and Community Development Unit has been established under this declaration and is currently drafting a strategy on Indigenous people.

Costa Rica Biodiversity Law 1998
http://www.grain.org/brl_files/costarica-biodiversitylaw-1998-en.pdf

Databank on Indigenous Legislation in South America
InterAmerican Development Bank
http://www.iadb.org/SDS/ind/ley/leyn/datamap.cfm?lang=EN
This database classifies legislation according to country, theme and subtheme concerning all legal rules on Indigenous peoples' rights contained in constitutions, laws as well as secondary legislation (decrees, agreements and regulations) and case law. The themes correspond with: cultural diversity, territories, autonomy, participation, health, economic rights, visit registration, cultural patrimony, Indigenous women, Indigenous people in border areas, identity, Indigenous jurisdiction, environment, language, education, military, consumption, religious and spiritual freedom, family, Indigenous policy bodies. There is also a link to International Legislation, which includes international conventions and case law.

IK and Intellectual Property Legislation

While the most important forum for the discussion of Intellectual Property and IK has been the World Intellectual Property Organisation, aspects of this issue are also being addressed by the Council for the Agreement on Trade-Related Aspects of Intellectual Property (TRIPS), and in work related to the implementation of the Convention on Biological Diversity and by the United Nations Conference on Trade and Development. WIPO is the specialised United Nations agency responsible for the world-wide promotion of the intellectual property rights of innovators and creators. The international Indigenous Peoples Council on Biopiracy has also raised the issue of bio-rights and debate about "Traditional Botanical Knowledge (TBK), Traditional Zoological Knowledge (TZK) and Traditional Ecological Knowledge (TEK)". International and national governing bodies are addressing issues of IP and there is a wealth of literature concerned with IP in relation to IK. The following is a select bibliography to highlight the range of discussion points:

Blakeney, M. 1997. "Bioprospecting and the Protection of Traditional Medical Knowledge of Indigenous Peoples: An Australian Perspective." ***European Intellectual Property Review*** **19:**

Blakeney, M. 1998. ***Access to Biological Resources: Domestic & International Developments & Issues.*** **E LAW | Murdoch University Electronic Journal of Law Vol.5(3). [Online source] Available at: http://www.murdoch.edu.au/elaw/issues/v5n3/blakeney53.html**

Blakeney, M. 1999. ***Intellectual Property Aspects of Ethnobiology.*** **London: Sweet & Maxwell.**

Blakeney, M and P, Drahos. 1999. Intellectual Property in the Dreamtime – Protecting the Cultural Creativity of Indigenous Peoples, papers in Intellectual Property in Biodiversity & Agriculture. London: Sweet & Maxwell. Oxford Intellectual Property Research Centre. ***Electronic Journal of Intellectual Property Rights.*** **[Online source] Available at: http://www.oiprc.ox.ac.uk/EJWP1199.html.**

Boyle, J. 1996. ***Shamans, Software & Spleen: Law & the Construction of the Information Society.*** **Cambridge: Harvard Uni Press.**
This is an important study that critiques Western notions of authorship. The author presents the view that prevailing intellectual property systems reflect a conception and practice that is colonialist, racist and usurpatory. Patents and other intellectual property rights to forms of life are unacceptable to Indigenous peoples.

Britz, J. J., and T. A. Lipinski 2001. "Indigenous Knowledge: A Moral Reflection on Current Legal Concepts of Intellectual Property." ***Libri*** **51:564-579.**

Brush, S, and D, Stabinsky 1995. ***Valuing Local Knowledge: Indigenous People and Intellectual Property Rights.*** **Washington, DC: Island Press.**

Coombe, R. 1998. ***The Cultural Life of Intellectual Properties: Authorship, Appropriation & the Law.*** **Durham: Duke University Press.**

Coombe, R. 1998. ***Intellectual Property, Human Rights & Sovereignty: New Dilemmas in International Law Posed by the Recognition of Indigenous Knowledge and the Conservation of Biodiversity.***

Finger, M. J & P, Schuler ***Poor People's Knowledge: Promoting Intellectual Property in Developing Countries.*** **Washington: World Bank.**

This paper argues that "the international community should help poor people use modern methods to benefit from the commercial value of traditional knowledge" and aims to chart "the Indigenous knowledge that poor people can commercialise".

Githaiga, J. *Intellectual Property Law & the Protection of Indigenous Folklore & Knowledge*. E LAW | Murdoch University Electronic Journal of Law Vol.5(2). [Online source] Available at: http://www.murdoch.edu.au/elaw/issues/v5n2/githaiga52.html

Greaves, T. 1994. *Intellectual Property Rights for Indigenous Peoples: A Sourcebook*. Oklahoma City, OK: Society for Applied Anthropology.

Huntington, D. 2003. "Indigenous Rights: The Interface between IP and Indigenous Rights Has Been a Constant Source of Controversy in the World of Intellectual Property." *Patent World* 154:22.

Mann, H. 1997. *Indigenous Peoples & the Use of Intellectual Property Rights in Canada: Case Studies Relating to IP Rights and the Protection of Biodiversity*.

Norchi, C, H. 2000. "Indigenous Knowledge as Intellectual Property." *Policy Sciences* 33:387-398.

Posey, D, A. 1996. "Indigenous peoples and traditional resource rights: A basis for equitable relationships?" in *Ecopolitics IX Conference: Perspectives on Indigenous Peoples Management of the Environment Resources, Darwin 1995.* Edited by R, Sultan et al, pp.43-60. Darwin: Northern Land Council.
This paper presents a general discussion of IP and Indigenous rights. The author introduces the discussion by stating that existing legal and non-legal mechanisms are inadequate to insure the equity of partnerships in NRM and other engagements with IK. It is proposed that a new dialogue is necessary to establish equitable relationships between Indigenous, traditional and local communities and the scientific research institutions that increasingly provide the intellectual and informational underpinnings for international trade and development.

Swanson, T. 1998. *Intellectual Property Rights & Biodiversity Conservation* Cambridge: Cambridge Uni Press.

Williams, N, M. 1998. *Intellectual Property and Aboriginal Environmental Knowledge*. Darwin: Northern Territory University: Centre for Indigenous Natural and Cultural Resource Management.

Indigenous Ecological Movements – IK and Global Resistance

> The "Indigenous ecology movement' involves dissenting voices, which challenge the dominant discourse on biodiversity conservation. One of the most vociferous of these is the 'Indigenous ecology movement'

From: Myer, L. 1998. Biodiversity conservation and Indigenous knowledge: rethinking the role of anthropology. IK Monitor 6 (1). [Online source] Available at: http://www.nuffic.nl/ciran/ikdm/6-1/myer.html
As employed here, the concept of the 'Indigenous Ecology Movement' is not a single, well-defined entity, but rather a broad concept used to group a variety of voices, notably environmentalists or Indigenous groups. Although from varying backgrounds, these groups can share views on the conservation of biodiversity and sustainable land/sea interactions that stand in contrast to non-Indigenous and scientific views.

The roots of the Indigenous Ecology Movement can be traced back to concern about the welfare of Indigenous peoples voiced during the 1970s and 80s. By 1993, when the United Nations proclaimed the International Year of the World's Indigenous People, this movement had clearly entered the mainstream. Its emergence was closely linked to the perceived relationship between Indigenous groups and the ecosystems in which they live. Many of the principles behind the Indigenous Ecology Movement are being employed in a 'new ecology ethic' that promotes sustainable engagements with environments, biodiversity conservation and incorporation of IK in the management of land and seascapes. Some parts of the NRM sector are aligned with these principles; however this is not the vast majority.

Repatriation and IK

Discussions concerning repatriation maintain a very narrow focus, in which material remains are considered the primary concern in negotiated return efforts. Repatriation is commonly thought to involve cultural artefacts, human remains, movable cultural property and cultural heritage. There is currently little to no discussion (internationally or in Australia) in regards to the repatriation of IK or intangible cultural property, whether in documented and recorded formats or in photographic/visual form. This is of great concern to Indigenous owners of this knowledge and heritage, particularly in those cases where Indigenous testimony has resulted in the writing down and documenting of IK that is now no longer a part of mainstream culture for Indigenous groups. The repatriation of documented knowledge may represent an important step in the regaining or maintenance of knowledge and therefore the transmission of IK across generations. There exist a number of 'guidelines' and principles for best practice in repatriation efforts, but these do not discuss issues concerning IK and intangible cultural heritage.

Smithsonian National Museum of Natural History
http://www.nmnh.si.edu/anthro/repatriation/

University of Alaska Museum, Policy and Procedures for Access to Anthropological Collections Subject to Repatriation
http://zorba.uafadm.alaska.edu/museum/archeo/repat.html

UBC Museum of Anthropology guidelines on Repatriation of Canadian First Peoples' Cultural Materials housed in MOA
http://www.moa.ubc.ca/FirstNations/FNResources/repatriation.html

List of intended repatriations, repatriation database, NAGPRA; USA
http://www.cast.uark.edu/other/nps/nagpra/nir.html

Guidelines and procedures for Repatriation, National Museum of Natural History – Smithsonian Institution
http://www.nmnh.si.edu/anthro/repatriation/pdf/guidelines_and_procedures.pdf

Australian Government – Office of Indigenous Policy Coordination
The Australian Government, Office of Indigenous Policy Coordination has a 'Repatriation Program', to facilitate the return of Indigenous human remains held in overseas collections to their communities of origin. The program only covers human remains and no other aspects of Indigenous cultural property, be it tangible or intangible heritage. This is a significant failing of existing repatriation programs in Australia. The program is governed by a ministerially-approved Policy and Strategy:

Australian Government Policy on the Management of Overseas Repatriation of Indigenous Human Remains
http://www.oipc.gov.au/programs/documents/Policy_April06.pdf

Australian Government Strategy and Procedures on the Management of Overseas Repatriation of Indigenous Human Remains
http://www.oipc.gov.au/programs/documents/Strategy_April06.pdf

Typical activities that may be funded by this program include:

- research to establish the origins (provenance) of human remains and the preparation of relevant documentation
- research to establish inventories of overseas collections of Indigenous human remains
- consultations with traditional custodians on their wishes in relation to repatriation
- the return of human remains to communities of origin
- 'extension services' - reburials, caskets, memorial plaques, ceremonies, etc.
- 'solution brokerage' - assisting communities in gaining access to land for reburial, and/or for the establishment of a regional keeping place
- short-term care and management of human remains
- consultations with communities regarding the long-term care and management of unprovenanced human remains.

Note: This program is not involved in the return of Indigenous cultural material from institutions within Australia. The Return of Indigenous Cultural Property Program (an initiative of the Cultural Ministers Council) funds domestic repatriations through the Department of Communications, Information Technology and the Arts.
Website URL: http://www.oipc.gov.au/programs/Repatriation.asp

Ormond-Parker, L. 1997. A Commonwealth Repatriation Odyssey. ***Aboriginal Law Bulletin*** **90(3):9.**
This paper gives an overview to some of the repatriation legislation in Australia. It gives an historical account to some of the significant repatriations that have taken place across several states while also engaging with some Indigenous testimony to highlight Indigenous people's views of these repatriation efforts and the associated legislation. It seems clear that there is considerable frustration among Indigenous people as to the way repatriation of cultural material is dealt with in Australia.

International Examples involving IK, NRM and Legislation

Canada & IK

Brascoupe, S, and H, Mann 2001. ***A Community Guide to Protecting Indigenous Knowledge.*** **Department of Indian Affairs and Northern Development, Research Affairs Directorate, Ottawa, Canada.**

"In Canada today, IK is being applied in such complex areas as scientific, genetic and medical research, resource management and monitoring development impacts. In some areas, it is playing an important role in managing forests, coastlines, waters and Arctic ecosystems. Traditional ecological knowledge is relied … [upon] when making decisions about development, ecosystems and traditional culture". (p.3)

The Canadian government participates actively in a number of international legislative and governing body arrangements, in an effort to develop a better understanding of the issues surrounding the preservation, promotion and protection of the traditional knowledge of

Indigenous peoples in Canada and around the world. Recognising the cross-cutting nature of these issues, several departments of the Canadian government share responsibility for participation in these international discussions, including the departments of Foreign Affairs and International Trade, Industry Canada, Indian and Northern Affairs, Environment Canada, Canadian Heritage, and Justice.

The Canadian Government and First Nation peoples have reached a number of litigated and negotiated treaties and agreements that address wide ranging topics that include land rights, land governance, resource rights, and self governance. These are catalogued by Indian and Northern Affairs Canada – and are available online, see: http://www.ainc-inac.gc.ca/pr/agr/index_e.html. For further details of treaties and agreements, also see the ATNS (Agreements, Treaties and Negotiated Settlements with Indigenous Peoples in Settler States) website, available at: http://www.atns.net.au/overview.php.

The *James Bay and Northern Quebec Agreement*, and *Northeastern Quebec Agreement* are Canada's first modern land claim settlements.
Agreements available at:
http://www.gcc.ca/pdf/LEG000000006.pdf
http://www.ainc-inac.gc.ca/pr/agr/que/neqa_e.html

Signed in 1975 and 1978 respectively, these agreements fulfill a commitment to deal with land issues dating back to the late 1800s. Agreements of this kind often include regimes for the management of environment and heritage, provisions for local government, education, hunting, fishing and trapping, economic development and health and social services. The comprehensive claims process underway in Canada is often touted as the solution to issues of Indigenous land management, self-determination, management of public sector programs and services, and native title in Australia (Davis 1998).

There are also many Indigenous Boards and Committees that manage IK in relation to heritage, resources, land, sustainability and biodiversity in Canada. Several of these have been established under regional agreements and land claims. For an overview of some such boards and committees among the Yukon First Nations People, see the following website: Council for Yukon First Nations,
http://www.theyukon.ca/dbs/cyfn/dyncat.cfm?catid=340

Wenzel, George. W. 1999. Traditional ecological knowledge and Inuit: Reflections on TEK research and ethics. ***Arctic*** **Vol.52(2):113-124.**
This paper presents a detailed discussion of Inuit IK and how it has figured prominently in North American Arctic research since the mid 1960s. Wenzel presents an overview to the history of this engagement with IK, noting that it has most commonly been incorporated into all ecologically framed research, but only as one of several information sources. It has not been granted authority in such studies. Recently, however, Inuit and agencies and individuals concerned with the conduct of research in the North have expressed concern about the appropriation of this culturally specific knowledge. Wenzel notes that in a contemporary research environment of Nunavut, TEK is now a political (as well as scientific and cultural) concern. The discussion goes further to consider the abuse of IK by scientists through intellectual property rights initiatives – the bulk of which are unlikely to serve the long-term interests of either Inuit or researchers in Canada. This is a very good overview and insight into IK and NRM practices in Canada.

Schwab, R.G. 2006. ***Kids, Skidoos and Caribou: The junior Canadian ranger program as a model for re-engaging Indigenous Australian youth in remote areas.*** **Discussion paper, No.281/2006, Centre for Aboriginal Economic Policy Research.**

This paper is an exploration of a youth program in Canada that addresses the crisis in education and training for young Indigenous people. The Canadian program has been deemed successful in areas of community stability and capacity development, border security, marine management and in search and rescue services. This paper suggests there is value in adapting some of the components of the Canadian program in Australia. There is no Indigenous commentary or testimony in this document, so it is difficult to know just successful the program has been on Indigenous terms and in terms of transmitting IK across generations of Indigenous people in Canada.

Snowchange.Org - Northern Indigenous Views on Climate Change and Ecology
http://www.snowchange.org/snowchange/
This website belongs to a collective group of Northern Indigenous people in Canada. It presents an overview to Indigenous views of climate and ecology, providing news and links to current discussions and publications by Indigenous groups. It offers discussions of IK and the cultural contexts in which this knowledge belongs, providing an overview to a number of current projects, such as Reflections on Retraditionalisation of Traditional Knowledge In the Face of Rapid Ecological Changes'' and 'Snowscapes:Dreamscapes' and Nutendli Nomadic School''. It is an Indigenous owned and controlled website, which recognises the cultural authority of the holders of IK.

Indigenous Peoples at the Arctic Council
http://www.arcticpeoples.org/KeyIssues/Knowledge/Documents/ProgramsAndProjects.html
This organisation, made up of a number of Canadian Indigenous Peoples, has produced a comprehensive list of projects involving IK and NRM, CHM and other research.
Animals:

- Documentation of Traditional Sami Knowledge about large carnivores in the Scandinavian mountain area (wolf, bear, wolverine and lynx)
- Local Knowledge of the distribution, biology and hunting of beluga and narwhal; a survey among Inuit hunters in West and North Greenland
- The Collection of Local Knowledge Regarding Polar Bear Habitat use in Alaska
- Bristol Bay Native Association Sea Otter Study (Alaska)
- Inuit Zoological Knowledge, Beliefs and Vocabulary (NRI-Nunavut Research Institute) (Canada)

Education

- Use of Tradition Based Knowledge in School - Sámi Allaskuvla (Sami region)
- Alaska Native/Rural Education Consortium for Systematic Integration of Indigenous and Western Scientific Knowledge (Alaska)
- The Kitikmeot Oral History Project (NRI-Nunavut Research Institute) (Canada)

Environmental Knowledge

- Environmental Knowledge, Cultural Strategies and Development in the Circumpolar North (Greenland)
- Exxon Valdez Oil Spill Traditional Ecological Database (Alaska)

Land Use

- The Nunavik Inuit Land Use and Ecological Knowledge Database (Canada)
- The Nunavut and Inuvialuit Land Use and Occupancy Database (Canada)
- Nunavut Atlas - Inuit Land Use for the Nunavut Settlement Area (Canada)

Management of Resources

- Traditional Knowledge on natural resources use in the mountain region (Sweden)
- Project Proposal for Sámi Livelihoods and Resource Management Course (Sami region)

- Traditional Knowledge of subsistence practices, in relation to management plans
- Indigenous Peoples and Ecosystem Management (ANSC - Alaska)
- The Use of Traditional and Local Ecological Knowledge in Resource Management in Alaska

Social/health issues

- Community-Based Assessment of Traditional Values
- Traditional Knowledge Study on Community Health (Canada)
- Dene Medicine Project, Wha Ti (formerly Lac la Martre) (Canada)
- Traditional Inuit Naming Practices and Shamanic System (NRI-Nunvaut Research Institute) (Canada)
- Linguistic and Cultural Immersion in Inuit Country: Collecting of Mythological Inuit Tales, Diary and Ethnical Photographs (NRI-Nunavut Research Institute)

Other studies/projects

- The Habitat of Dogrib Traditional Territory: Place names as Indicators of Bio-geographical Knowledge (Canada)
- Tsiigehnjik Ethnoarchaeology Project (Canada)
- Gwich'in Cultural Atlas (Canada)
- Sakka - perceptions of landscape (NRI-Nunavut Research Institute) (Canada)

New Zealand and IK

There are a number of government Acts which, both directly and indirectly, concern IK in New Zealand. A number of these make direct reference to Maori knowledge and culture and include clauses for engaging with Regional bodies. Much of this is linked to New Zealand's 'bicultural frame', which represents more than a social awakening to have occurred in light of Indigenous self-determination movements. The fourth Labour Government adopted an official policy of 'bi-culturalism' after its election in July 1984. The policy involved the incorporation of Maori personnel, Maori models of organisation and Maori social practices and cultural symbolism within the institutions of the state, giving the "illusion of a 'partnership" [between Maori and *Pakeha*], as espoused under the Treaty of Waitangi (Kelsey 1993:234[1]). Bi-culturalism and the politics of Maori cultural nationalism created the stage for the revisiting or rediscovery of history, and the place of Maori people as 'fighters' rather than 'victims' in that history.

Some of the existing NZ legislation concerning IK and Maori rights includes:

1. *Resource Management Act 1991*

The purpose of this Act is to "promote the sustainable management of natural and physical resources".

6.1.2 Section 6 of the Act also requires that all those functions and powers in relation to managing the use, development, and protection of natural and physical resources are to recognise and provide for the following matters of national importance (*inter alia*):

- the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development;
- the protection of areas of significant Indigenous vegetation and significant habitats of Indigenous fauna;
- *the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.*

[1] Kelsey 1993:234 cited in Te Ahu http://aotearoa.wellington.net.nz/back/tumoana/index.htm Accessed 17th March 2004.

There is opportunity for Regional Councils to play an important role in restoring the viability of biological community types in their areas of jurisdiction, as well as managing development/sustainability.

6.1.7 In achieving the purposes of the RMA, all persons exercising functions or powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi. This is entirely consistent with Section 4 of the Conservation Act 1987 which requires that Act to be interpreted and administered so "as to give effect to the principles of the Treaty of Waitangi".

2. ***Conservation Act 1987 and its amendments***
An Act to promote the conservation of New Zealand's natural and historic resources, and for that purpose to establish a DoC.

3. ***Conservation Law Reform Act 1990***
An Act to amend the law relating to conservation organisations, freshwater fish and game, conservation management planning, and marginal strips.

4. ***Biosecurity Act 1993***
The Biosecurity Act is concerned with the exclusion, eradication and effective management of pests and associated organisms through import controls and implementation of pest management strategies.

5. ***Fisheries Act 1983***

6. ***Forests Amendment Act 1993***
The Forests Act 1949, amended by the Forests Amendment Act 1993, *applies to most private and Maori owned Indigenous forests*. The purpose of the Act is to promote the long term sustainability of Indigenous forests by regulating their management.

7. ***National Parks Act 1980***
The Act's purpose is to "preserve in perpetuity as national parks, for their intrinsic worth and for the benefit, use, and enjoyment of the public, areas of New Zealand that contain scenery of such distinctive quality, ecological systems, or natural features so beautiful, unique, or scientifically important that their preservation is in the national interest".

8. ***Marine Reserves Act 1971***
An Act to provide for the "setting up and management of areas of the sea and foreshore as marine reserves for the purpose of preserving them in their natural state as the habitat of marine life for scientific study".

9. ***Queen Elizabeth II National Trust Act 1977***
The Act provides for "open space covenants" for any type of landscape which is seen as having aesthetic, cultural, recreational, scenic, scientific or social value.

10. ***Native Plants Protection Act 1934***
Under this legislation protected native plants cannot be taken from Crown land, state forests, public reserves, any road, street or private land, without the consent of the landowner. There are exceptions for the taking of "reasonable quantities of plants" for medicinal purposes, scientific research, nature study, or propagation for private or school gardens - but only if the taking does not deplete the species of plant in any one habitat.

11. Treaty of Waitangi and Claims to the Waitangi Tribunal

Much of the relevant legislation referred to above, acknowledges the Government's obligations under the Treaty of Waitangi, and the various commitments made within the legislation (and the International Conventions covered in Section 5) to preserve our natural heritage.

A significant number of claims have been made against the Crown to the Waitangi Tribunal in respect of the use and degradation of natural resources, and their impacts on biodiversity within New Zealand.

The most significant of these is the WAI 262 "Indigenous Flora and Fauna Claim". WAI 262 is a claim that is specific to the:

- protection, control, conservation, management, treatment, propagation, sale, dispersal, utilisation, and restriction on the use and transmission of the knowledge of New Zealand's Indigenous flora and fauna and the genetic resource contained therein (Statement of Claim).

It is further claimed that:

- *te tino rangatiratanga o te iwi Maori was and is an absolute authority which incorporated and incorporates the right to determine intellectual property rights in the knowledge and use of Indigenous flora and fauna, in the preservation of biodiversity, and in the ongoing development of a philosophy of eco-ethnic ethics.*

This claim is significant because it gives the Tribunal an opportunity to rule and make recommendations in the area of biodiversity and traditional knowledge.

Jones, M, E and J, Hunter 2003. ***Enshrining Indigenous Knowledge in the National Science Curriculum: Issues Arising from the Maori Case*****. Presented at** ***Politics of the Commons: Articulating Development and Strengthening Local Practices*****, Chiang Mai, Thailand, July 11-14, 2003.**

In these conference proceedings, Jones and Hunter explore issues surrounding definitions of Maori identity and Indigenous knowledge. They discuss much of this in relation to current United Nations legislation and conventions. Special consideration is given to the UN Convention on Biological Diversity relative to Maori identity and knowledge. Education is a key point of discussion in this paper, and the authors detail some of the conflicts/difficulties involved in schooling for Indigenous people. The focus is on Maori values and ways of shaping the education system and science instruction to fit with these values and catalogues of knowledge. They outline a number of implementation goals and recommend frameworks and policy changes to "assist governments in developing a sense of national unity and fostering the development of an official autonomous Indigenous Nation. The intent is not to create two separate nations, but rather, to create two structures that work collaboratively to construct a unified whole" (pp.18).

Manaaki Whenua Landcare Research

Manaaki Whenua - Landcare Research is New Zealand's foremost environmental research organisation specialising in sustainable management of land resources optimising primary production, enhancing biodiversity, increasing the resource efficiency of businesses, and conserving and restoring the natural assets of our communities. Landcare Research is one of nine independent Crown Research Institutes (CRIs) founded in 1992 from a reorganisation of Government funded research in New Zealand. The organisation has strong collaborative links with other CRIs and universities. They offer a detailed and comprehensive website overview to all of their research, databases, services, publications, news and education programs. There are a number of publications available online – including newsletters, pamphlets, and reports.

This organisation takes a fairly standard NRM approach to forest biodiversity and management. In recognition of Maori perspectives and Treaty responsibilities, they write:

> Historically, physical survival and spiritual well-being for Mäori depended on the land. Traditional protocols developed and practiced over the centuries were a form of resource management.

> Contemporary scientific process has largely ignored Mäori cultural values and the rationale from which these developed. We have a responsibility to set this right and accept the validity of traditional perspectives and approaches. Among Mäori, there is a desire for increased involvement in science and resource management. The Treaty claims process also makes collaboration a priority between Mäori, local authorities, conservationists and researchers.

(http://www.landcareresearch.co.nz/about/maori.asp)

The *Indigenous Knowledge and Values* page provides links to a number of online articles and publications dealing specifically with Maori IK. These include:

All articles are available online at http://www.landcareresearch.co.nz/sal/Indigenous_index.asp

Harmsworth, G. 2005. *Report on the incorporation of traditional values/tikanga into contemporary Māori business organisation and process*. Landcare Research Report, LC/0405/058, prepared for Mana Taiao Ltd.

Harmsworth, G. 2005. *Good practice guidelines for working with tangata whenua and Maori organisations: Consolidating our learning*. Report for Landcare Research, LC0405/091.

Harmsworth, G, M, Park and D, Walker. 2005. *Report on the development and use of GIS for Iwi and hapu: Motueka case study, Aotearoa-New Zealand*.

Harmsworth, G. 2004. Collaborative research with Maori groups as part of the Motueka integrated catchment management (ICM) programme.

Harmsworth, G. 2003. *Maori perspectives on Kyoto Policy: Interim Results. Reducing Greenhouse Gas Emissions from the Terrestrial Biosphere*. Landcare Research Report LC0203/084. Discussion report for policy agencies (Climate Change Office, MfE, MAF, TPK). 30p. *Updated GIS tables and statistics.*

Harmsworth, G and T, A. Warmenhoven. 2002. *The Waiapu project: Maori community goals for enhancing ecosystem health*.

Harmsworth, G. 2002. Indigenous concepts, values and knowledge for sustainable development: New Zealand case studies. Presentation at the 7th Joint Conference: "Preservation of Ancient Cultures and the Globalisation Scenario".

Harmsworth, G, K, Barclay Kerr and T, Reedy. 2002: Mäori sustainable development in the 21st Century: The importance of Mäori values, strategic planning, and information systems. *He Puna Korero, Journal of Mäori and Pacific Development*. Hamilton, University of Waikato, School of Mäori and Pacific Development. Vol 3, No 2.

This document deals with 'sustainable development', as a notion that implies economic and social development, economic growth, and environmental responsibility in order to sustain improved standards of living based on economic growth, to achieve some form of social equity, and to manage the environment sustainably. They outline the manner in which the concept has been debated and criticised by many as being ambiguous, untenable, and difficult to achieve, and frequently labeled part of global capitalism. They note that attempts by Indigenous peoples internationally to achieve sustainable development have been based on holistic approaches and frameworks that seek to balance economic, social, cultural and environmental objectives, and these provide effective models for viable sustainable development approaches. Mäori Sustainable Development in Aotearoa-New Zealand is a term often used to describe a pathway to Mäori autonomy, self-determination, the building of human and social capacity, as part of a strategic

direction to capitalise on opportunities in the 21st century. This paper outlines research undertaken between 1998 and 2002 and funded by the Foundation for Research, Science, and Technology (FRST) in the programme "Mäori Sustainable Development in Te Puku o Te Ika". It focuses on the importance of determining Mäori values, a vision, strategic planning and development of information systems as a holistic framework and process method to achieve Mäori sustainable development.

Harmsworth, G. 2002. *Mäori and biodiversity: Future information and research*. A Landcare Research powerpoint presentation.

Harmsworth, G. 2001. *A collaborative research model for working with iwi: discussion paper.* Landcare Research report. Landcare Research, New Zealand.

Harmsworth, G. 1998. Indigenous values and GIS: a method and a framework. *Netherlands organisation for international cooperation in higher education (Nuffic)*, 6(3).

Australia and IK

Australian IK conventions, acts, legislation, policy and declarations

NAILSMA Scoping Study (2006):

> "There have been major shifts in government Indigenous policy – at both Federal and Territory levels – in recent times. At the Commonwealth level, ATSIC has been disbanded and replaced with an Office Of Indigenous Policy Coordination (OIPC) while various changes to the Land Rights Act have recently been made. These and other developments signal a concerted effort on the part of government to address Indigenous disadvantage Australia wide, with a particular focus placed on the remoter parts of the continent. This effort has been accompanied by a change in the language of policy debate".
>
> "'Terms such as 'mutual obligation' have become commonplace while Shared Responsibility Agreements (SRAs) based on this principle, have been implemented or are under negotiation in Aboriginal communities across the country. Accompanying these developments has been vigorous, if not rigorous, argument over the pros and cons of current policy direction both within politics and in the mainstream press….Many of the solutions put forward over the course of this debate appear antithetical to the aspirations and priorities of Traditional Owners and have caused a good deal of unease within their communities".

Environmental Protection and Biodiversity Conservation Act 1999
http://www.deh.gov.au/epbc/index.html

In 1996 the Commonwealth, state and territory governments endorsed a *National Strategy for the Conservation of Australia's Biological Diversity*. Action 1.8.2 of this Strategy is to:
Ensure that the use of traditional biological knowledge in the scientific, commercial and public domains proceeds only with the cooperation and control of the traditional owners of that knowledge and ensure that the use and collection of such knowledge results in social and economic benefits to the traditional owners. This will include:

a. encouraging and supporting the development and use of collaborative agreements safeguarding the use of traditional knowledge of biological diversity, taking into account existing intellectual property rights; and,

b. establishing a royalty payments system from commercial development of products resulting, at least in part, from the use of traditional knowledge.

Biodiscovery Act 2004 (Qld)

The *Biodiscovery Act 2004* (Qld) established a regulatory framework for the exploration and exploitation of the State's biological resources. On an environmental level, the Act promotes the sustainable exploration of Queensland's biological resources. From a commercial point of view, the Act provides research organisations with more streamlined procedures for biodiscovery activities and guarantees Queensland a share in the rewards of any successful biodiscovery research using the State's biological resources. There is little discussion of Indigenous people's rights to control and manage biological resources, nor rights to control access to resources on Aboriginal land in this Act. According to the Australian government, the Act "aims to establish a clear, comprehensive and efficient permitting regime for the use of the State's native biological resources, returning a fair an equitable benefit to the community". To what extent this incorporates Indigenous communities is not made clear.

Great Barrier Reef Marine Park Act 1975

Australian Government Department of Environment and Heritage

The *Great Barrier Reef Marine Park Act 1975* established the Great Barrier Reef Marine Park some 30 years ago, and has been during this time an exemplar for marine management and conservation. An important part of this has been - and continues to be - collaboration with the Queensland Government in managing and protecting the Marine Park.

In commissioning a review of the Act, the Australian Government has recognised the evolving needs and challenges of safeguarding the Marine Park for the future. Meeting these requires up-to-date, relevant legislation and an approach that provides for continued protection for marine life and biodiversity, as well as for ongoing sustainable economic and recreational activity and engagement with business and local communities.

Environment Protection and Biodiversity Conservation Act 1999

Australian Government Department of Environment and Heritage

This Act is a piece of Commonwealth legislation that provides a national framework for environment protection through a focus on protecting matters of national environmental and heritage significance and on the conservation of Australia's biodiversity. For detailed information about the Act, visit the website of the Commonwealth Department of the Environment and Heritage or go to the DEH web page About the EPBC Act.

The objectives of this Act are:

- to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;
- to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;
- to promote the conservation of biodiversity;
- to provide for the protection and conservation of heritage;
- to promote a cooperative approach to the protection and management of the environment involving governments, the community, land-holders and Indigenous peoples;
- to assist in the cooperative implementation of Australia's international environmental responsibilities;
- to recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity;
- to promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge; and,
- to protect the environment, particularly matters of National Environmental Significance.

It streamlines national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and cultural places.
http://www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/

Aboriginal and Torres Strait Islander Heritage Protection Act 1984
Australian Government Department of Environment and Heritage
The purposes of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* are the preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters that are of particular significance to Indigenous people in accordance with Indigenous tradition.

Protection of Movable Cultural Heritage Act 1986
Australian Government Department of Environment and Heritage
In 1970 the United Nations Educational, Scientific and Cultural Organisation (UNESCO) adopted the UNESCO Convention on the Means of Prohibiting the Illicit Import, Export and Transfer of Ownership of Cultural Property. Australia ratified the convention by passing the *Protection of Movable Cultural Heritage Act 1986* (the Act), giving the 1970 Convention force in Australian law.

The Act is administered by the Minister for the Environment and Heritage and regulates the export of cultural heritage objects. It is not intended to restrict normal and legitimate trade in cultural property and does not affect an individual's right to own or sell within Australia. It implements a system of export permits for certain heritage objects defined by the Act as 'Australian protected objects'. Australian protected objects are objects which form part of the movable cultural heritage of Australia and which meet the criteria established under the National Cultural Heritage Control List.

Code of Ethical Practice for Biotechnology in Queensland
The Code defines the ethical boundaries for organisations undertaking biotechnology activities in Queensland. The Code covers all areas of biotechnology activity including health care, agriculture, food and the environment. It also compels organisations to pursue those biotechnology activities with the potential to improve health, enhance quality of life, support the environment and promote sustainable agriculture and industry.

It is a requirement that any biotechnology company receiving Queensland Government funding abide by the Code, and are required to sign a deed committing to comply with the Code. As part of compliance and ongoing commitment to the Code, an annual report is due within three months of the end of the financial year.

Environment Protection and Biodiversity Conservation Act 1999: Environment Protection and Biodiversity Conservation Amendment Regulations 2005 (no.2)
The Regulations promote the conservation of biological resources in Commonwealth areas, including the ecologically sustainable use of biological resources; ensuring the equitable sharing of the benefits arising from the use of biological resources in those Commonwealth areas; recognising the special knowledge held by Indigenous persons about biological resources, and establishing an access regime designed to provide certainty, and minimise administrative costs, for people seeking access to biological resources.

Memorandum of Understanding between the Indigenous Land Corporation and the Department of Environment and Heritage
The main objective of the MOU is to enhance communication and understanding between parties and agree to coordinate and capitalise on opportunities regarding the use of resources to maximise benefits for Aboriginal and Torres Strait Islander Peoples.

Indigenous Art Centres Strategy and Action Plan
Australian Government Department of Communications, Information Technology and the Arts (DCITA)
This is a plan for building a strong and sustainable Indigenous visual arts sector that is stable, profitable and produces works of artistic excellence.

National Aboriginal and Torres Strait Islander Education Policy
Australian Government Department of Education, Science and Training (DEST)
This policy forms the foundation of all Indigenous education programs. The policy has been endorsed by the Australian Government, as well as all State and Territory governments. The policy spells out 21 long-term, national goals, which are subsets of four major goals. One of these goals is:

- To increase the number of Aboriginal and Torres Strait Islander people employed as educational administrators, teachers, curriculum advisers, teachers assistants, home-school liaison officers and other education workers, including community people engaged in teaching Aboriginal and Torres Strait Islander culture, history and con-temporary society, and Aboriginal and Torres Strait Islander languages.

Indigenous Education (Targeted Assistance) Amendment Act 2004
Australian Government Department of Employment and Workplace Relations (DEWR)

Indigenous Business Development Programme (IBDP)
Australian Government Department of Employment and Workplace Relations (DEWR)
The Indigenous Business Development Programme (IBDP) aims to facilitate the establishment of commercially viable enterprises among Aboriginal and Torres Strait Islander people.

Australian Heritage Council Act 2003
Australian Government Department of Environment and Heritage
This heritage legislation identifies, conserves and protects places of national heritage significance, provides for the identification and management of Commonwealth heritage places, and establishes an independent expert body to advise the Minister on the listing and protection of heritage places.

This Act sets out the steps for entering places on the National Heritage List and the Commonwealth Heritage List, management of National and Commonwealth heritage places, requirements for impacts of proposals involving National Heritage places and requirements for Commonwealth agencies in relation to Commonwealth Heritage Places.

Native Title Act 1993
Commonwealth Native Title Act Amendment Act 1998
Commonwealth of Australia
On 1 January 1994 the Commonwealth *Native Title Act 1993* commenced operation. The Act was part of the Federal Government's response to the High Court's decision in *Mabo v Queensland No. 2*, which found that Australian common law can recognise the rights and interests over land and water possessed by Indigenous people in Australia under their traditional laws and customs – 'native title'. The Act was extensively amended in 1998 following another High Court decision about native title, in *Wik v Queensland* (1996), which confirmed that native title rights and interests may exist over land which is or has been subject to a pastoral lease, and possibly some other forms of leasehold tenure. The Act establishes the National Native Title Tribunal and governs how native title is dealt with across Australia.

Aboriginal Land Rights (Northern Territory) Act 1976

The *Aboriginal Land Rights (Northern Territory) Act 1976* (*ALRA*) is a Commonwealth Act with application to the Northern Territory of Australia. The *ALRA* provided for the granting of a fee simple interest in certain lands (set out in Schedule 1 to the *ALRA*) to Aboriginal Land Trusts and for the claiming of unalienated crown land by those groups of Aboriginal people who could prove (through a claims process before an Aboriginal Land Commissioner) that they were the traditional owners of such land.

The *ALRA* provides for the creation of at least two Aboriginal Land Councils to administer certain areas of land in the Northern Territory and for the creation of Aboriginal Land Trusts to hold freehold title to both Schedule 1 land and to land granted by way of a successful land claim.
See: http://www.austlii.edu.au/au/legis/cth/consol_act/alrta1976444/

Queensland Aboriginal Land Act 1991
Torres Strait Islander Land Act 1991

The *Aboriginal Land Act 1991* (Qld) (the Act) was passed along with the *Torres Strait Islander Land Act 1991* (Qld) in order to provide mechanisms for land to be granted to groups of Indigenous people in Queensland. The Act acknowledges the dispossession of Indigenous people and the effects of past injustices. It expresses Parliament's recognition of the spiritual, social, historical, cultural and economic importance of land to Indigenous people and that these interests have not been adequately recognised by the law. The Act expresses Parliament's agreement that special measures need to be enacted to ensure the advancement of the interests of Indigenous people and to rectify the effects of past injustices. The object of the Act therefore, is to make provision for the appropriate recognition of interests and responsibilities of Indigenous people in relation to land, and to thereby encourage the 'capacity for self-development, and the self-reliance and cultural integrity, of the Aboriginal people of Queensland.' Two principal mechanisms are established under the Act: transfers of transferable land and grants of claimable land.
See: http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/A/AborLandA91.pdf

1983 New South Wales Aboriginal Land Rights Act

The *Aboriginal Land Rights Act 1983* (NSW) is an 'Act to repeal the *Aborigines Act 1969* and to make provisions with respect to the land rights of Aborigines, including provisions for or with respect to the constitution of Aboriginal Land Councils, the vesting of land in those Councils, the acquisition of land by or for those Councils and the allocations of funds to and by those Councils; to amend certain other Acts; and to make provisions for certain other purposes' (long title).

The Burra Charter (The Australia ICOMOS charter for places of cultural significance)

The Charter can be applied to all types of places of cultural significance including natural, Indigenous and historic places with cultural values. It provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australia ICOMOS (International Council on Monuments and Sites) members. The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

Indigenous Tourism – Business Ready Program

Australian Government Department of Industry, Tourism and Resources (DITR)
The Business Ready Program for Indigenous Tourism is designed to assist existing and start-up Indigenous tourism businesses to develop the business skills and knowledge required to establish and run a commercially viable tourism operation. The program will fund business mentors to work directly with a portfolio of such businesses to transfer skills to individuals in the businesses on all aspects of small business and the tourism industry.

See: http://www.ausindustry.gov.au/content/level3index.cfm?ObjectID=AAC495C7-0289-4F27-903A46D88EF303E4&L2Parent=AEB901E5-7CB8-4143-A3BF33B2423F9DA6

State By State Overview to Legislation - Western Australia, Northern Territory and Queensland

Northern Territory Govt Legislation
Aboriginal Land Act
Flora River Local Management Committee Regulations
Heritage Conservation Act
Keep River National Park Local Management Committee Regulations
Marine Act
National Environmental Protection Council (NT) Act
Northern Territory Aboriginal Sacred Sites Act

Queensland Legislation
Nature Conservation Amendment Act 2006
Wild Rivers and Other Legislation Amendment Act 2006
Natural Resources and Other Legislation Amendment Act 2000
Aboriginal Cultural Heritage Act 2003
Torres Strait Islander Cultural Heritage Act 2003
Queensland Heritage Act
Wet Tropics World Heritage Protection and Management Act 1993

Western Australia
Aboriginal Affairs Planning Authority Act 1972
Aboriginal Heritage Act 1972
Aboriginal Heritage (Marandoo) Act 1992
Environmental Protection Act 1986

Smyth, D. 1994. "State and Territory Laws Affecting Coastal and Marine Areas", in *Proof and Management of Native Title: Summary of proceedings of a workshop.* The Native Title Research Unit, Australian Institute of Aboriginal and Torres Strait Islander Studies, pp.78-81. Canberra: Australian Institute of Aboriginal and Torres Strait Islander Studies.
This short paper provides an overview to Indigenous ownership of coastal and marine areas, considering legislative arrangements across states and territories.

Craig, D. 1995. Aboriginal *and Torres Strait Islander Involvement in Bioregional Planning Requirements and opportunities under international and national law and policy*. Consultancy report prepared for the the Biodiversity Unit, Department of the Environment, Sport and Territories.
This document sets out to review the international and national legal and policy frameworks applicable to Aboriginal and Torres Strait Islander involvement in bioregional planning for biodiversity conservation and ecologically sustainable land use. It provides an overview and critique of opportunities for Indigenous peoples' involvement in Australian bioregional planning.

A general discussion of Australian legislative arrangements and their shortcomings in regards to IK, NRM and biological resources is outlined by Davis in the following extract.

From: Davis, M. 1998. *Biological diversity and Indigenous knowledge*. Discussion paper, Science, Technology, Environment and Resources Group. June 1998. Parliament of Australia, Parliamentary Library [online source]: Available at http://www.aph.gov.au/Library/pubs/RP/1997-98/98rp17.htm

A discussion paper released in October 1996 by the Commonwealth State Working Group on access to Australia's Biological Resources proposed a nationally consistent approach to managing access, and advocates a preferred 'multi-purpose contract system'. This system is based on the development of contracts between those wishing to collect biological resources, and the relevant owners of these resources. According to the report, these types of contracts would have the flexibility to be designed to suit specific circumstances and conditions, as well as the requirements of laws and policies in the particular jurisdictions in which they apply. Among the purported benefits of this system is that it would 'ensure an equitable return to the jurisdiction of any financial benefits arising from exploitation of the resource, and to share benefits and other information about the resource which may assist its further conservation and management'.

This report does not deal adequately with questions of ownership and control, preferring instead to limit its consideration to matters of access only. ***It also gives inadequate consideration of the rights and interests of Aboriginal and Torres Strait Islander peoples in biological resources.*** Systems that provide return of benefits to jurisdictions will not necessarily include provisions for benefit sharing by Indigenous peoples within those jurisdictions.

Another discussion paper released recently entitled *Reform of Commonwealth Environment Legislation* discusses proposals to 'comprehensively reform the Commonwealth's environmental law regime', with the objective to 'deliver better environmental outcomes in a manner that promotes certainty for all stakeholders and minimises the potential for delay and intergovernmental duplication'. Among the measures proposed is a Biodiversity Conservation Act, which will replace a number of separate conservation acts, and 'result in an improved, integrated framework for the conservation and sustainable use of Australia's biodiversity' (p.50). There have been some concerns expressed that the proposed new Biodiversity Conservation Act will not incorporate any 'last resort' provisions for environmental protection by the Commonwealth, as are presently available under the existing *World Heritage Properties Conservation Act 1983*, which is among those Acts the proposed Biodiversity Conservation Act would replace (p.51).

A further problem with the proposals, as detailed in the discussion paper, is the absence of any references to those components of either the Convention on Biological Diversity, or the National Strategy for the Conservation of Australia's Biological Diversity that deal with the preservation of Indigenous knowledge and practices. The only reference that has implications for Indigenous knowledge relates to controls over access to biological resources.

The discussion paper states that the proposed Biodiversity Conservation Act will empower the Commonwealth Government to control access to biological resources by 'allowing regulations to be made in relation to the management of access to biological resources on Commonwealth lands and in marine environments under Commonwealth control' (p.52). ***The concern with this is that there is not an adequate discussion, or framework proposed-either in this discussion paper, or in the discussion paper on access to biological resources -for the protection of Indigenous knowledge, and the recognition and protection of Indigenous rights in regard to access, control and ownership of biological resources, whether on Commonwealth lands or elsewhere.***

Recommendations for greater control by and participation of, Aboriginal and Torres Strait Islander people in the management of environment and conservation, including national parks and protected areas have been made by many reports over the decades. Some noteworthy examples of these reports include the comprehensive and significant 1991 national report of the *Royal Commission Into Aboriginal Deaths in Custody* (especially Recommendation 315) (p.53).

Despite this proliferation of reports and recommendations, there has been relatively little in the way of implementing environment and biodiversity related recommendations. Another area in which recommendations and reports abound in large proportion relative to their implementation is that of intellectual property rights-which are also relevant to the protection of Indigenous knowledge.

Williams, N, M. 1998. ***Intellectual Property and Aboriginal Environmental Knowledge*****. Darwin: Northern Territory University: Centre for Indigenous Natural and Cultural Resource Management.**

William's introduces this document by stating the following:

> It will be seen that in general, Indigenous environmental knowledge has been recognised but ignored by mainstream conservationists and resource managers. On the other hand, industries such as pharmaceutical manufacturers and marketers of native food plants and animals, who rely on natural resources, often acknowledge the existence of Indigenous knowledge but nevertheless exploit the resources without providing compensation to the owners for its use.

Williams outlines the moral basis of the ethical and political questions involved in the use/abuse of IK. She discusses some of the paths that have been followed, some instrumentalities that have been established and some forums that have been used to develop the means for equitable solutions to issues of exploiting Indigenous flora and fauna and knowledge about them. This is a clear and comprehensive overview to IK and IP in Australia.

Williams makes the point that IK cannot be separated out from its conceptual underpinnings (p.16).

Christie, J. 1996. "Biodiversity and intellectual property rights: Implications for Indigenous peoples", in ***Ecopolitics IX Conference: Perspectives on Indigenous Peoples Management of the Environment Resources, Darwin 1995.*** **Edited by R, Sultan et al, pp.61-77. Darwin: Northern Land Council.**

This paper offers an analysis of intellectual property rights in Australia, within the frame of international IP rights. It takes an international approach to examine whether IP legislation offers real rights or is a ripoff to Indigenous people. She 'makes a distinction between the North and South political economy, noting that although Australia is usually categorised in line with 'Northern' political-economic models, it is a country of rich biodiversity, not unlike the 'South'. This places Australia in a unique position. Christie notes that Aboriginal people and Torres Strait Islander peoples have valuable knowledge about Australia's biodiversity, but like Indigenous peoples of the political-economic South, their knowledge is appropriated and exploited by Northern industrial interest.

Davis, M. 1999. Indigenous Rights in Traditional Knowledge and Biological Diversity Approaches to Protection. ***Australian Indigenous Law Reporter*** **4(1) [Online source] Available at: http://www.austlii.edu.au/au/journals/AILR/1999/.**

This paper examines enters the debate on intellectual property rights by exploring the relationships between IK in biological resources, and IPR systems. In particular the paper considers the role of the patent system in terms of its capacity to provide protection for Indigenous rights in traditional knowledge related to the conservation and management of biological diversity.

Dodson, M. 1996. "Indigenous peoples, social justice and rights to the environment," in ***Ecopolitics IX Conference: Perspectives on Indigenous Peoples Management of the Environment Resources, Darwin 1995.*** **Edited by R, Sultan et al, pp.25-29. Darwin: Northern Land Council.**

Fourmile, H. 1996. "Protecting Indigenous intellectual property rights in biodiversity," in ***Ecopolitics IX Conference: Perspectives on Indigenous Peoples Management of the Environment Resources, Darwin 1995.*** **Edited by R, Sultan et al, pp.37-42. Darwin: Northern Land Council.**

This is a general discussion piece that focuses on Australian Aboriginal IK. The author presents an overview to Australia's biodiversity numbers and a brief discussion of IK and Aboriginal customary Law. Discussion centres on legislative arrangements, including *The Draft Declaration on the Rights of Indigenous Peoples*, the *Native Title Act 1993*, the *Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples*, the UN *Declaration on Environment and Development* (the Rio Declaration *Convention on Biological Diversity*. In concluding the author makes recommendations that concern legislation such as the *National Parks and Wildlife Conservation Act 1975* (Cth) and the *Native Title Act 1994* (Cth) – noting that their state and territory counterparts should be amended to provide legislative recognition of Aboriginal and Torres Strait Islander peoples as the native title owners of all the biological resources of the flora and fauna that are Indigenous to the continent.

Gibson, J. 2004. Traditional knowledge and the international context for protection. *SCRIPT-ed* 58 Vol.1:1/ [Online source] Available at: http://www.law.ed.ac.uk/ahrb/script-ed/docs/TK.asp
This paper traces the relationship between IK and biodiversity and examines discussions of protection through the international intellectual property system. It draws on cultural and legal problems associated with the protection of Indigenous intellectual property, specifically in terms of medicinal and agricultural knowledge and the impact of the Trade Related Aspects of Intellectual Property Rights Agreement and the Convention on Biological Diversity. In reviewing attempts to acknowledge the role of Indigenous and traditional communities in the management and sustainable development of biological resources, this paper argues for authority and capacity with respect to resources to vest in the community. This is maintained in recognition of the significance of this relationship of community to its resources, to the facilitation of community development through appropriate assurance of traditional resource relationships, within an international legal system of obligations towards biological and cultural diversity. Australian case studies are presented throughout the discussion.

Hardie, M. 1997. Current litigation in native title and intellectual property: Bulun Bulun and Milpurrurru v. R & T Textiles. Case notes. *Aboriginal Law Bulletin* 90(3):18.
[Online source] Available at: http://www.austlii.edu.au/au/journals/AboriginalLB/1997/
This paper outlines a case for litigated outcomes concerning Aboriginal arts and IP law. Two issues were brought before the court that had never been heard before, these include:

1. Whether the other traditional Aboriginal owners of the corpus of ritual knowledge from which the artistic work is derived are the equitable owners of the copyright subsisting in the artistic work;
2. Whether an infringement of either the legal or equitable title to copyright in a case such as this constitutes a nuisance which has interfered with the applicants' traditional Aboriginal ownership or native title rights in Ganalbingu country.

Ford, L. 1997. An Indigenous perspective on intellectual property. *Indigenous Law Bulletin* 90(3):13. [Online source] Available at: http://www.austlii.edu.au/au/journals/AboriginalLB/1997/
This paper presents a direct commentary on IK and IP by Indigenous people. As primary custodians of knowledge, sites, objets, paintings, ceremonies, and stories, it is Indigenous people who are best positioned to discuss the rights that need protecting under IP law. The author presents her story as that of the Rak Mak Mak Marranunggus-Marra Walgut language group of the Finniss and Reynolds River country, southwest of Darwin in the Northern Territory. The author concludes that what is needed is a set of "guiding principles" and an awareness of these principles among non-Indigenous people. Negotiation and agreement making are suggested ways to develop IP law.

McMahon, M. 1997. Indigenous cultures, copyright and the digital age. *Indigenous Law Bulletin* 90(3):13. [Online source] Available at: http://www.austlii.edu.au/au/journals/AboriginalLB/1997/

This paper looks specifically at Indigenous people's views on IP legislation. The author discusses digital technology and how this relates to IP and the protection of IK and Indigenous rights. The author writes: "The need for action to recognise and protect Indigenous knowledge has become ever more urgent as the pressures to commercialise information, knowledge and cultures builds and accelerates in what is popularly called the Digital Age". Examples are given from the Yirrkala community in East Arnhem Land and the Indigenous organisation, Tanami Network.

Davis, M. 1998. *Biological diversity and Indigenous knowledge*. Discussion paper, Science, Technology, Environment and Resources Group. June 1998. Parliament of Australia, Parliamentary Library [online source]: Available at http://www.aph.gov.au/Library/pubs/RP/1997-98/98rp17.htm

This paper surveys a range of international developments in IK as a context for discussing some possible measures for the protection of this knowledge. The author argues that successful measures could include a combination of creative legislative and policy responses to the *Convention on Biological Diversity*, and the use of a range of other laws, policies and instruments. The integration of Indigenous knowledge and practices with other conventional approaches to land and environment is also flagged as a useful way of achieving recognition and protection for Indigenous knowledge systems.

Davis writes:

There has been some recent discussion regarding the issue of Indigenous intellectual property rights. This has largely been prompted by the release by the former Keating Government in 1994 of an issues paper called *Stopping the Rip-Offs: Intellectual Property Protection for Aboriginal and Torres Strait Islander Peoples*. To formulate its response to this paper, the Commonwealth Government established an interdepartmental committee chaired initially by the Attorney-Generals Department, and subsequently by the Department of Communications and the Arts. As a part of this process, the Aboriginal and Torres Strait Islander Commission (ATSIC) has sought Indigenous views regarding the recognition and protection of intellectual property rights.

The *Stopping the Rip-Offs* paper stated that its aim was to consider only the protection of what was termed 'arts and cultural expressions', and these only insofar as they related to the *Copyright Act 1968*. The principal focus was on finding suitable remedies to the appropriation of Aboriginal art that had been occurring for decades. The effectiveness of the Copyright Act in preventing these appropriations was a central consideration. The government view therefore expressly excluded the protection of Indigenous knowledge in biodiversity from this process.

Notwithstanding these limitations, ATSIC advocated that since Indigenous peoples considered that their intellectual property rights did extend to knowledge in biodiversity, then any reforms to protect Aboriginal and Torres Strait Islander intellectual property must necessarily also include consideration of knowledge and biodiversity. ATSIC's involvement in the formulation of a response to the *Stopping the Rip-Offs* paper therefore adopted a broader view, consistent with Indigenous peoples' aspirations.

ATSIC established an Indigenous Reference Group comprising Aboriginal and Torres Strait Islander people with expertise and experience in cultural heritage, the arts, and law, to provide advice and to manage the consultations with Indigenous peoples. ATSIC also funded the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) to further develop an Indigenous perspective. In 1997, AIATSIS released a discussion paper entitled *Our Culture, Our Future: Proposals for the Recognition and Protection of Indigenous Cultural and Intellectual Property*. This paper includes consideration of possible reforms, legislative, policy and administrative to protect Indigenous rights in knowledge and biodiversity.

The final report of *Our Culture, Our Future*, released in mid-1998, makes some 115 recommendations covering a very wide range of law, policy, program and administrative subject areas. These recommendations include suggesting amendments to legislation dealing with cultural and intellectual property rights, land, environment and heritage. They also advocate a range of administrative and common law measures. Arguably the most far reaching recommendation calls for the introduction of *sui generis* legislation that specifically provides for recognition and protection of Aboriginal and Torres Strait Islander peoples' cultural and intellectual property rights-including rights in biodiversity and traditional knowledge.

Reforms to existing intellectual property rights laws can extend the capacity of these laws to recognise and protect intangible cultural expressions such as knowledge, and to shift the balance in these laws from fostering commercial innovation, towards protecting cultural rights. The introduction of moral rights provisions to the Copyright Act is a step towards these types of reforms. Similar moral rights provisions could also be considered for patent laws.

Janke, T. 1998. *Our Culture, Our Future. Report on Australian Indigenous cultural and intellectual property rights.* Prepared for Australian Institute of Aboriginal and Torres Strait Islander Studies and the Aboriginal and Torres Strait Islander Commission.
This report is part of a process to develop practical reform proposals for the improved recognition and protection of Indigenous cultural and intellectual property. It is considered both a wide-ranging and contentious report on Indigenous intellectual property issues in Australia. It followed the 1996 report *Review of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. Other reports suggested that legislation was needed to address issues such as i) community ownership of works and management of rights according to tradition, ii) community interests in the reproduction or public disclosure of sacred objects, as some works may only be viewed by men or those who have reached a designated level of initiation iii) protection of works such as rock art that are outside copyright protection because of their age but have special significance for a specific clan or group iv) protection of oral traditions to protect transient forms of art such as body painting and stories and dances that have never been written or recorded.

The document looks directly at Indigenous cultural and intellectual property rights, by reference to living traditions and communal ownership, consent to use Indigenous cultural property, heritage, various industries that reflect IK (including arts and craft, tourism, biotechnology, film, and music). Indigenous people's concerns are outlined along with a very detailed account of the legalities involved in IP law. Policies, protocols, short term strategies and model laws are also proposed by the author.

Anderson, J, E. 2003. The production of Indigenous knowledge in intellectual property law. PhD Dissertation, University of New South Wales.
The thesis is an exploration of how Indigenous knowledge has emerged as a subject within Australian intellectual property law. It uses the context of copyright law to illustrate this development. The work presents an analysis of the political, social and cultural intersections that influence legal possibilities and effect practical expectations of the law in this area. The dilemma of protecting Indigenous knowledge resonates with tensions that characterise intellectual property as a whole. The metaphysical dimensions of intellectual property have always been insecure but these difficulties come to the fore with the identification of boundaries and markers that establish property in Indigenous subject matter. While intellectual property law is always managing difference, the politics of law are more transparent when managing Indigenous concerns. Rather than assume the naturalness of the category of Indigenous knowledge within law, this work interrogates the politics of its construction precisely as a 'special' category. Employing a multidisciplinary methodology, engaging theories of governmental rationality that draws upon the scholarship of Michel Foucault to appreciate strategies of managing and directing knowledge, the thesis considers how the politics of law is infused by cultural, political, bureaucratic and

individual factors. Key elements in Australia that have pushed the law to consider expressions of Indigenous knowledge in intellectual property can be located in changing political environments, governmental intervention through strategic reports, cultural sensitivity articulated in case law and innovative instances of individual agency. The intersection of these elements reveals a dynamic that exerts influence in the shape the law takes.

Mansell, M. 1997. "Barricading our last frontier – Aboriginal cultural and intellectual property rights," in *Our Land is Our Life: Land rights – past, present, future*. Edited by G, Yunupingu, pp.195-209.

As an Indigenous author, Mansell presents a discussion of IK and intellectual property rights. In this paper IK is treated as art, ceremony, language, performance, and song, knowledge, heritage, culture, medicines, and group histories. He notes that many of the IP laws have been drafted by non-Indigenous people and are based on white cultural values, they emphasise the individual and individual activity, something that does not necessarily communicate Indigenous notions of knowledge, property, ownership, value etc.

IK and Australian Common law

An excellent source of information on IK and Common Law is:

ATNS – Agreements, Treaties and Negotiated Settlements with Indigenous Australians Database.

The Agreements, Treaties and Negotiated Settlements (ATNS) database is part of a wider project examining treaty and agreement-making with Indigenous Australians and the nature of the cultural, social and legal rights encompassed by past, present and potential agreements and treaties. The project also examines the process of implementation and the wider factors that promote long term sustainability of agreement outcomes. The following fields can be searched with the ATNS database: agreements, organisations, person, peoples (groups), legislation, places, events, concepts.

The database can be accessed via: http://www.atns.net.au/

Blakeney, M. 1995. Milpurrurru and Ors vs. Indofurn Pty Ltd and Ors: Protecting Expressions Of Aboriginal Folklore Under Copyright Law. *Murdoch University Electronic Journal of Law* Vol. 2(1) April. [Online source] Available at:
http://www.murdoch.edu.au/elaw/issues/v2n1/blakeney21.html

As early as 1976, the Supreme Court of the Northern Territory had in *Foster v Mountford and Rigby Limited* suppressed the publication of an anthropology text which related matters of deep religious and cultural significance to the Pitjantjara people. In that case the judge called in aid the equitable jurisdiction in confidence to prevent the dissemination of tribal secrets through this text in the Northern Territory where uninitiated members of the Pitjantjara might have been exposed to it. This equitable jurisdiction could not, however, be called in aid to prevent the unauthorised dissemination of Aboriginal designs already in the public domain.

Hennessey, P. 1985. Common Law protections of private or secret matters. *Aboriginal Law Bulletin* 86(1):1 [Online source] Available at:
http://www.austlii.edu.au/au/journals/AboriginalLB/1985/86.html

Hennessey reflects on the use of Australian Common law to protect Indigenous rights, knowledge, intellectual and cultural property. In terms of the effectiveness of the law, he writes,

> It is rare for Aboriginal people to use the general law to protect private or secret matters relating to their ceremonies, designs and other significant items of their culture. Material regarded as highly secret, according to Aboriginal customary laws, is generally only known to certain specified persons and maintaining secrecy has in the past not been difficult. There have been customary sanctions to deal with such disclosures which in certain circumstances could threaten the fabric of

> Aboriginal societies. There have been a number of notable cases in which Aboriginal people have used the common law in order to prevent the publication of matters of a secret or private nature. The publication of this secret or sacred information was by non-Aborigines and was thus beyond Aboriginal control. For this reason using the general legal system was seen as the only way to gain protection.

He notes further that there have been a few legal cases in which Indigenous people have sought exclusive rights to access and control their IK and IP. Two such cases involved the publication of information and material gathered by anthropologist Dr Charles Mountford during his work in Central Australia during the 1940s. In the first case *Foster v Mountford and Rigby Limited*, the Aboriginal plaintiff sought an injunction to prohibit a Northern Territory publication and release of Mountford's book *Nomads of the Australian Desert*. The presiding judge, Justice Muirhead found:

> *the plaintiff's concern probably goes basically to the fact that the revelation of the secrets to their women, children and uninitiated men may undermine the social and religious stability of their hard-pressed community. Despite Dr Mountford's prognosis that their life and beliefs 'are so quickly vanishing', there is still an urgent desire in these people to preserve those things, their land and their identity...*

He granted an injunction restraining further publication in the Northern Territory on the basis of a possible breach of confidence if the material in the book was published.

This is a distinct example of Australian Common Law being employed by Traditional owners to protect their IK and to assert their exclusive rights to control and manage IK. In terms of Indigenous customary Law, informed by IK, Hennessey notes that: "the scope of the common law in this regard is limited". Few cases have been brought to court on such matters and the author argues that if further protections are sought by Aboriginal people then legislation may be the only answer.

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In terms of Australian Common Law there are two cases that offer examples of the potential for recognition and protection of Indigenous knowledge, practices and innovations relating to biodiversity. These are *Milirrpum v Nabalco Pty. Ltd*. (1971), and *Milpurrurru v Indofurn Pty. Ltd.* (1995). (See M, Davis 1998)

***Milirrpum v Nabalco Pty. Ltd.* (1971),**
In the Milirrpum case the Yolngu people brought an action against the Nabalco Corporation which had secured a twelve year mining lease from the Federal Government. The Plaintiffs claimed they enjoyed sovereign rights over their land and sought declarations to occupy the land free from interference pursuant to their native title rights. Blackburn J categorically held that native title was not part of the law of Australia and went on to add that even had it existed any native title rights were extinguished. Additionally if extinguishment had not occurred the Plaintiffs were unable to prove the elements required to establish native title. However, *the Judge did acknowledge the claimants' ritual and economic use of the land and that they had an established system of law.* Until overturned by *Mabo* two decades later, the law on native title remained as enunciated by Blackburn J.
From: ATNS Database - http://www.atns.net.au/biogs/A001155b.htm

***Milpurrurru and Ors v Indofurn Pty Ltd and Ors* (1995)**
This was the first post-Mabo, Federal Court, consideration of the availability of copyright law to assimilate Aboriginal concerns about the unauthorised reproduction of Aboriginal designs. This case concerned the importation into Australia of a number of carpets woven in Vietnam which incorporated Aboriginal designs. The applicants were three Aboriginal artists and the Public

Trustee claiming on behalf of the estates of five deceased Aboriginal artists. Each of the artists in question had works which were either reproduced in portfolios of Aboriginal art which were produced for the Australian National Gallery (ANG) or in portfolios published by the Australian Government Printer for the Australian Information Service (AIS).

It was common ground that amongst the carpets which were the subject of the action seven of the eight artworks were reproduced in virtually identical form and colour. Evidence was tendered that reproductions of their works were permitted by Aboriginal artists in prestigious publications like the ANG portfolio and the AIS publication, which were designed for the education of members of the white community about Aboriginal culture. It was additionally submitted that painting techniques and the use of totemic and other images and symbols were in many instances and invariably in the case of important creation stories, *strictly controlled by Aboriginal law and custom. Since artworks are an important means of recording these stories, it was pointed out that errors in reproduction could cause deep offence. In the event of unauthorised reproduction of a story or design it was pointed out that under Aboriginal law it was the responsibility of the traditional owners to take action to preserve the dreaming and to punish those responsible for the breach.* These punishments had included death, but in more recent times included preclusion from the right to participate in ceremonies and removal of the right to reproduce the stories of the clan, as well as in some cases spearing or ostracism. The Milpurrurru case establishes the principle that where the unauthorised reproduction of such works involves a breach of copyright, customary Aboriginal laws on the subject may be taken into account in quantifying the damage which has been suffered.

From: Blakeney, M. 1995. Milpurrurru and Ors v Indofurn Pty Ld and Ors – Protecting expressions of Aboriginal folklore under copyright law. ***Murdoch University Electronic Journal of Law*** **Vol. 2(1). [Online source] Available at:**
http://www.austlii.edu.au//cgi-bin/disp.pl/au/journals/MurUEJL/1995/4.html?query=Milpurrurru

Craig, D. 1995. Aboriginal ***and Torres Strait Islander Involvement in Bioregional Planning Requirements and opportunities under international and national law and policy.*** **Consultancy report prepared for the the Biodiversity Unit, Department of the Environment, Sport and Territories.**
This document sets out to review the international and national legal and policy frameworks applicable to Aboriginal and Torres Strait Islander involvement in bioregional planning for biodiversity conservation and ecologically sustainable land use. It provides an overview and critique of opportunities for Indigenous peoples' involvement in Australian bioregional planning.

Craig, D. 1999. Indigenous Joint Management of National Parks. ***Australian Indigenous Law Reporter*** **Vol.4(4). [Online source] Available at:**
http://www.austlii.edu.au/au/journals/AILR/1999/46.html.
In this paper, Craig, notes that joint management of Australian national parks represents an evolving cross-cultural approach to land use and management in protected areas. She writes,
Aborigines have rarely been given equal or determinative power in decisions about land use and resource allocation which affect them. Even the best studies and inquiries often hold out promises to Aborigines which then disappear, leaving few legacies in terms of laws, institutions and processes which might benefit Aborigines. A notable exception to this pattern is the operation of the *Aboriginal Land Rights Act (Northern Territory) 1976* (Cth).

Abstract: The grant of secure title to Aboriginal land is obviously a precondition for other Aboriginal aspirations relating to economic and political self-determination, and to control over the use and management of their land. The provisions of the *National Parks and Wildlife Conservation Act 1975* (Cth) and relevant Lease Agreements (between the Aboriginal owners and a Commonwealth or State/Territory National Parks Service) are particularly important in

negotiating the terms of management. The Lease is crucial for working out the details of the relationship between the joint managers and for acknowledging changed circumstances when the terms are re-negotiated.

Joint management can help create ongoing institutions which play a positive role in educating non-Aborigines, and it can also provide an opportunity for Aborigines to remain on their land and to exercise political and cultural power over decisions affecting their lives and land. Aboriginal people have demonstrated that they can manage both the political and environmental implications of the joint management process effectively. It is clear that they can and ought to be increasingly involved in regional, State and national decisions about environmental and resource management in a far more significant way.

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For a more general discussion of IK and Australian Law, there are a number of publications that deal with such topics as Indigenous legal issues, ranging from land rights, customary Law, racial discrimination, social justice, cultural heritage, resolution, agreement making, self-government and international law. A select bibliography includes:

Behrendt, L. 1995. *Aboriginal Dispute Resolution*. Annandale, NSW: Federation Press.

Behrendt, L. 2001. "Indigenous Self-Determination: Rethinking the Relationship between Rights and Economic Development." *University of New South Wales Law Journal* 24:850-861.

Behrendt, L. 2004. "Cultural Conflict in Colonial Legal Systems: An Australian Perspective", in *Intercultural Dispute Resolution in Aboriginal Contexts*. Edited by C, Bell and D, Kahane, pp. 116-127. Vancouver: UBC Press.

Behrendt, L. 2004. "Challenging the status quo: Indigenous activism and the rule of law in Australia", in *Litigation: Past and Present*. Edited by W, Prest & S, Roach Anleu, pp.171-185. Sydney: UNSW Press

Chanock, M. and C, Simpson (eds) 1996. *Law and Cultural Heritage*. Special issue of Law in Context Vol.14(2). Melbourne: LaTrobe University Press.

McRae, H., G, Nettheim and L, Beacroft. 1997. *Indigenous Legal Issues: Commentary and materials*. Second edition. North Ryde, NSW: LBC Information Services.

Regional agreements and Benefit Sharing in Australia

From: Agreements, Treaties and Negotiated Settlements (ATNS) website

Agreement making with Indigenous peoples in Australia is becoming increasingly important in areas relating to land, resources, health, education and research. 'The emerging culture of agreement making is not homogenous', but is 'evident in a range of fields and jurisdictions, under a range of regimes, and in a variety of contexts and circumstances'. Agreements are made between 'Australian Indigenous people and resource extraction companies, railway, pipeline and other major infrastructure project proponents, local governments, state governments, farming and grazing representative bodies, universities, publishers, arts organisations and many other institutions and agencies. Some of these agreements have statutory status, such as those concluded under the *Aboriginal Land Rights (Northern Territory) Act* 1976, some have resulted in determinations of the Federal Court of Australia; some are registered under the terms of the *Native Title Act* 1993. Others are simple contractual agreements that set out the terms of 'licenses to

operate' and future developments. Yet others are memoranda of understanding or statements of 'commitment' or intent' (Langton and Palmer 2003: 1-2).

Agreement making with Indigenous people in relation to land has been particularly influenced by various Statutory Land Rights Acts, Heritage Legislation and the *Native Title Act* 1993 and its amendments. The *Aboriginal Land Rights (Northern Territory) Act* 1976 (ALRA) was the first major land rights legislation in Australia, and provided for statutory titles granted on the basis of Aboriginal customary land tenure systems and procedures relating to use and access of Aboriginal land. The Act sets out the processes for negotiation of exploration and mining agreements as well as other activities that might occur on Aboriginal land by governments or developers. State land rights legislation in South Australia (*Pitjantjatjara Land Rights Act* 1981 (SA), *Maralinga Tjarutja Land Rights Act* 1984 (SA)), New South Wales (*Aboriginal Land Rights Act* 1983 (NSW)), Queensland (*Aboriginal Land Act* 1991 (Qld), *Torres Strait Islander Land Act* 1991 (Qld)), and Tasmania (*Aboriginal Lands Act* 1995 (Tas)) similarly provided for grants of land and procedures relating to access to and use of land.

References: Langton, M, and L, Palmer. 2003. Modern Agreement Making and Indigenous People in Australia: Issues and Trends. *Australian Indigenous Law Reporter* Vol.8(1). [Online source] Available at:
http://www.austlii.edu.au/au/journals/AILR/2003/1.html

Davis, M (1998) provides the following description of benefit sharing arrangements in Australia:

> Benefit sharing arrangements that have been developed include various forms of contracts, agreements, and other mechanisms aimed at developing partnerships between different interest groups, and providing compensation and benefits to knowledge holders. The advantages of contractual arrangements include their capacity to 'be designed to fit any conceivable relationship between collaborators', to 'define the types and amounts of benefits', and to be able to 'target recipient populations and conservation objectives'. The benefits offered by contractual arrangements also include the provision of royalties and advance payments.

In Australia, the development of regional agreements is currently focused on processes, rather than on the likely content of such agreements. Indigenous Land Use Agreements (ILUAs) are increasingly common in Australia, and encompass agreements which may provide for recognition or transfer of the ownership of country which may or may not be coupled with the authorisation of mining, pastoral or other developmental activities by Indigenous and non-Indigenous interests acting jointly or separately.

ILUAs often provide for joint management of parks and reserves and agreements for the co-existence of Aboriginal and non-Aboriginal interests or activities in forests and offshore and internal waters. ILUAs are, at times, closely aligned with NRM protocols and strategies as they allow for multiple interests in the sustainability, conservation and management of biodiversity, land and resources.

Indigenous peoples have argued that such land use agreements are the most appropriate way to develop shared approaches to managing access and other rights and responsibilities over pastoral leaseholds. The main concerns in current negotiations regarding agreements are with the regulation of resource extraction and commercial use of the land. Conservation values are a latecomer to the equation, but of increasing influence and importance, since efficient exploitation and management of resources is one of the principal factors that has led to the need for comprehensive negotiated settlements whether native title is recognised or not.

Given the diversity of possible arrangements that may be relevant to the potential inclusion of Indigenous knowledge and practices, it is feasible to cite many examples of such arrangements. The *Cape York Heads of Agreement*, and the agreement between Quandamooka Land Council and Redland Shire in Queensland, are just two examples of agreements that have specific references to Indigenous knowledge, Indigenous cultural and intellectual property, or environmental management.

From: Davis, M 1998.

The ATNS database categorises the range of agreements into a number of subject matters. These include:

Access	Environmental Heritage	Law–policy & justice
Agriculture	Exploration	Leadership
Aquaculture	Fishing	Local Governance
Collaboration/Partnership	Forestry	Management
Compensation	Future Act	Marine
Construction and Infrastructure	Health and Community Services	Mining and minerals
Consultation	Horticulture	Native Title
Cultural heritage	Implementation	Pastoral activities
Defence	Intellectual Property	Petroleum
Economic development	Land Management	Reconciliation
Education	Land Planning and Settlement	Research
Employment and Training	Land Transaction and Use	Self Govt
Sports and Rec	Tourism	Water

The complex range of agreement subject matters indicates the extent of negotiated agreement making in Australia. Many agreements have been reached that directly engage with IK and NRM. A select list of these for northern Australia (taken from the Agreements, Treaties and Negotiated Settlements database) includes:

Saltwater People Indigenous Land Use Agreement (ILUA) (12 December 2005)

Summary Information: The Saltwater People Indigenous Land Use Agreement (ILUA) was agreed between Anthony Bernard Kelly MLC (Minister for Lands for the State of New South Wales) Patricia Davis Hurst, Robert John Debus (Minister for the Environment for the State of New South Wales), Director General of Department of the Environment and Conservation, Saltwater Tribal Council (Aboriginal Corporation) and the Greater Taree City Council on 12 December 2005.

The purpose of the ILUA is to provide consent for a range of future acts to allow for access and fishing in the Saltwater National Park and the Khappinghat Nature Reserve, as well as:

- Protection of significant sites;
- Cultural activities; and
- Conducting and maintaining cultural, spiritual and religious practices with ceremony.

Before the signing of the ILUA, Aboriginal people had been prevented from camping in this area - a prohibition issued by the then Taree Municipal Council 40 years previously. The successful fight against this prohibition was one of ten years duration.

http://www.atns.net.au/biogs/A002755b.htm

Aboriginal Landcare Education Program (26 February 2003)

Summary Information: The Northern Land Council (NLC) has given formal backing to a partnership with Greening Australia on the Aboriginal Landcare Education Program (ALEP). The Program aims to give Aboriginal communities and people the skills and training needed to undertake natural and cultural resource management, with a particular focus on vegetation management.

The program directly supports six staff members, five of whom are Aboriginal, and is primarily funded by the Commonwealth's Natural Heritage Trust.
ALEP's role is to build Aboriginal peoples' capacity to undertake natural and cultural resource management through education and training; by facilitating access to resources; and developing sustainable vegetation-related business. ALEP projects include fixing up dusty areas and creating shade with trees; growing bush tucker and bush medicine plants; looking after natural bush areas; getting rid of weeds and replacing with native plants; and fixing up eroded areas.
http://www.atns.net.au/biogs/A001122b.htm

Agreement between the Northern Land Council and the Director of National Parks and Wildlife (3 November 1978)

Land Use Agreement and Joint Management Agreement
Summary Information: The Agreement between the Northern Land Council (NLC) and the Director of National Parks and Wildlife (the Director) was made on 3 November 1978, the same day that the leases were executed between the Kakadu Aboriginal Land Trust and the Director of National Parks for land in stage one, Kakadu National Park.
The agreement broadly lays down the principles and conditions under which the park would be managed, and includes provisions for protecting the rights of the traditional owners, employing traditional owners and training aboriginal people in managing the park.
http://www.atns.net.au/biogs/A001402b.htm

Bawinanga Aboriginal Corporation and Jurlique International Joint Venture Agreement

Joint Venture Agreement
Summary Information: The joint venture agreement is between Bawinanga Aboriginal Corporation and Jurlique International. It 'involves the research, supply, manufacture and marketing of native medicinal products' (Hall). The first product to be harvested under the agreement is the fruit *Morinda citriflora* which comes from a tree native to the Maningrida region.
http://www.atns.net.au/biogs/A003023b.htm

Broome Pearls Native Title Pearling Agreement (18 November 2003)

Traditional owners in the Croker Island/Coburg Peninsula region of the Top End signed the Northern Territory's first seas-only native title pearling agreement with Broome Pearls Pty Ltd. The four-year agreement clears the way for Broome Pearls to establish pearl farming operations free of native title concerns on three Crown leases over seabed near Valencia Island, in Mountnorris Bay and in Malay Bay. In return, native title holders will have extra rights to ensure environmental and sacred sites rules are upheld, and will also benefit from the payment of royalties as well as training and employment opportunities. The agreement flows from the High Court's decision in the Croker Island Case of 2001 (*Commonwealth v Yarmirr*) which upheld the existence of non-exclusive native title rights over the sea and seabed in the Croker Island claim area. The agreement marks the first time a pearling company has recognised native title rights over sea country in the Top End.
http://www.atns.net.au/biogs/A001466b.htm

Wet Tropics Regional Agreement (29 April 2005)

Joint Management Agreement
The signing of the Wet Tropics Regional Agreement between 18 Rainforest Aboriginal peoples and the Queensland and Australian Governments was 'an historic event' that marked the conclusion of four years of negotiations and the beginning of 'a new era in cooperative management of the Wet Tropics World Heritage Area' (WTWHA) (Wet Tropics Management Authority Media Release 29/04/2005). The Agreement is the first of its kind in terms of the breadth of negotiations and number of parties, and provides the foundation for cooperation between Rainforest peoples and various government bodies in management of the area.
http://www.atns.net.au/biogs/A002934b.htm
Wet Tropics Aboriginal Cultural and Natural Resource

Management Plan, which is positive but rarely used it seems. Try www.rainforest-crc.jcu.edu.au

Breakaways Reserve Management Plan and Joint Management Agreement

Joint Management Agreement

The District Council of Coober Pedy and the Antakirinja Land Council have entered into an agreement to jointly manage the Breakaways Reserve. The Agreement provides for the protection of the Breakaways Reserve and for new employment opportunities for local Aboriginal people in eco-tourism ventures.

The Breakaways Reserve is home to the Muntuntjara and Antakirinja people. It is a popular tourist destination with an estimated 150,000 to 200,000 tourist visitors each year. This has led to concern about protection of the scenic beauty, Aboriginal heritage and other interesting natural features of the Reserve, and the development of a Management Plan between the District Council of Coober Pedy and the Antakirinja Land Council. Development of the plan followed consultation with local communities and business and tourism interests and it has the support of the Northern Regional Development Board.

The Management Plan and Joint Management Agreement will ensure the ecologically sustainable management of the Reserve and protect sites of significance. Aboriginal rangers are involved in the running of the Reserve.

http://www.atns.net.au/biogs/A000409b.htm

Cooperation Agreement between Chuulangun Aboriginal Corporation and The Wilderness Society (22 June 2005)

Indigenous Partnership

The Cooperation Agreement between Chuulangun Aboriginal Corporation and The Wilderness Society (The Agreement) contains five sections as follows:

Recognition:

Recognises the Kaanju people's traditional ownership of their homelands, Kaanju Ngachi (Kaanju Country), located around the Wenlock and Pascoe Rivers of Cape York Peninsula. The agreement recognises the significance of these homelands to the Kaanju people and the parties affirm their shared responsibility to 'preserve, protect and manage the environment for the benefit of future generations.' Chuulangun Aboriginal Corporation (CAC) is acknowledged as being 'at the forefront of the return of Kaanju to Country and the development of a Kaanju land and resource framework.'

Aims:

CAC and The Wilderness Society (TWS) aim to 'work together voluntarily in support of the protection of the natural and cultural values of Kaanju Ngaachi.'

Mutual Commitments:

The parties agree to work cooperatively to advance several agendas including:

- the Indigenous rights of Kaanju as Traditional Owners and their right to speak for Country;
- A 'properly supported Traditional Owners governance structure for Kaanju Ngaachi, with Kaanju as primary land managers';
- A 'properly supported conservation strategy for the management of the environments of Cape York Peninsula, including Kaanju lands and waters';
- 'Sharing of ecological knowledge of Kaanju Ngaachi' and 'respect for cultural and intellectual property rights'

http://www.atns.net.au/biogs/A003350b.htm

Wild Rivers Act 2005

The Queensland Parliament passed the *Wild Rivers Act 2005* in October 2005. The purpose of the Act is to preserve the natural values of wild rivers. It does this by regulating most future development activities within the declared wild river and its catchment area. It is the first Act of its type in Australia. Under the Act, the Minister for Natural Resources and Mines can propose a river for declaration. The Act does not automatically declare or list any river as wild. Rather, it outlines a process to declare a river 'wild'.

The greatest failing of this Act has been the sidelining the interests of Traditional Owners and their rights to country. It has locked traditional owners out of country by restricting activities and development in association with declared wild river areas, thus limiting traditional owners opportunities to live, hunt and carry out daily life on their country. Indigenous people are treated as one of many stakeholders, rather than as the traditional owners and managers of the area.

Wild Rivers and Other Legislation Amendment Bill

This was introduced into the Queensland Parliament on the 31 October 2006. During the formal consultation period for the initial six wild river declaration proposals, stakeholders and communities raised a number of concerns on how the legislation may cause unintended consequences and limit low-impact economic development. To overcome these concerns, while retaining the original intent of the wild rivers policy, a number of amendments have been proposed. The amendments will provide for better specification of management areas, and will allow low impact development to occur for mining, transport, agricultural, and other industries. The amendments will remove many wild river requirements for urban areas. The main focus of the wild rivers remains to preserve these river systems by having a buffer, called a high preservation area, between future development and the river and any significant off-stream features such as floodplain wetlands.
http://www.nrw.qld.gov.au/wildrivers/#about

Yu, P. 1997. "Multilateral Agreements: A new accountability in Aboriginal affairs," in O*ur Land is Our Life: Land rights, past, present and future*. Edited by G, Yunupingu, pp.168-180. St Lucia: University of Queensland Press.

Sutherland, J. and K, Muir. 2001. "Managing Country: A legal overview," in *Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.* Edited by R, Baker, J, Davies and E, Young, pp. 24-46 Oxford: Oxford University Press.
This chapter considers various developments in law and policy that have led to a growing recognition of Aboriginal and Torres Strait Islander people's past, current and potential contribution to the management of Australia's cultural and biological diversity. This chapter considers heritage and land rights legislation, evolving norms in international law, domestic factors underpinning legislative change, native title, pastoral lease and human rights concerns. They identify negotiated agreements, ILUAS and some federal legislation on environment protection as positive developments in Australia's engagements with IK and Indigenous management of cultural and biological resources. The author's conclude that biological and cultural diversity are indivisible and that Indigenous resource management practices must be fully recognised as legitimate in order to ensure Australian laws and politics comply with fundamental human rights obligations and redress the injustices of previous assimilation policies.

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The following is an excellent paper that discusses the drafting of agreements between Traditional owners and other interest groups:

Ross, H. 1999. New Ethos – New solutions: Indigenous negotiation of co-operative environmental management agreements in Washington State. *Australian Indigenous Law Reporter* 4(2) [Online source] Available at: http://www.austlii.edu.au/au/journals/AILR/1999/.

Ross directs her study at North America, but makes frequent reference to Australian contexts throughout her discussion of Indigenous negotiation in co-operative environmental management agreements. Indigenous North Americans in Washington State in the US have established a new co-operative ethos in environmental management. According to Ross, the reason for this practice is that Indigenous North Americans were winning most of their court cases, but this was not meeting their main goal of saving the salmon numbers and habitats. Indigenous North American's have identified key causes of the decline of salmon and negotiated, or attempted to negotiate, a series of innovative agreements with other stakeholders involved in these issues. These include the *Timber-Fish-Wildlife Agreement* over timber harvesting practices on privately owned forest lands throughout the State, the *Chelan Agreement* over water allocation and its subsidiary processes, and the *Sustainable Forestry Roundtable*, an attempt to improve wildlife management under the Timber-Fish-Wildlife Agreement. In Ross's words:

> These negotiations hold lessons for Australia in terms of sustainable environmental management regimes, reconciliation between Indigenous and non-Indigenous Australians, and the handling of complex negotiation processes. They offer possibilities - complementary to regional agreements - for environmental management processes which incorporate the rights inherent in native title and the High Court's *Wik* decision.

IK and Australian Government and Other Agencies

The Australian Government has made some legislative commitments with respect to IK, or as it is known in the international arena, TEK. Importantly, being a signatory to these agreements raises the awareness of the need to conserve biological diversity.

Commonwealth Government

The Australian Government has produced a series of guidelines for councils, regional bodies, Commonwealth agencies and others when working with Indigenous knowledge in natural resource management. These guidelines outline useful principles and approaches for working with Aboriginal communities. These publications include:

- *Guidelines for Regional Bodies: Working with Indigenous Knowledge in Natural Resource Management*
- *Sea Forum Case Study: Working with Indigenous Knowledge in Natural Resource Management*
- *Ways to Improve Community Engagement: Working with Indigenous Knowledge in Natural Resource Management*
- *Guidelines for Indigenous Participation in Natural Resource Management*

Several government departments and agencies deal with issues relating to IK and incorporate some degree of research, policy or legislation that engages with Indigenous people's interests and their IK.

Department of Agriculture, Fisheries and Forestry (DAFF)

http://www.daff.gov.au/

Sections – Biosecurity in Australia, NRM, Industry Development, Rural Policy and Innovation

Department of Communications, Information Technology and the Arts (DCITA)

http://www.dcita.gov.au/

Indigenous Program – funding support, policy and legislation

Department of Education, Science and Training (DEST)

http://www.dest.gov.au/
Indigenous Education

Department of Employment and Workplace Relations (DEWR)
http://www.dewr.gov.au/
Indigenous workplace plan and Indigenous Business Program

Department of Families, Community Services and Indigenous Affairs(FaCSIA)
http://www.facs.gov.au/
Indigenous Sector – general legislation, Indigenous policy branch and specific publications

Department of Health and Ageing
http://www.health.gov.au/
Indigenous health projects

Department of Industry, Tourism and Resources (DITR)
http://www.industry.gov.au/
Indigenous tourism, Sustainable and Indigenous tourism, Tourism and conservation

Department of the Environment and Heritage (DEH)
http://www.deh.gov.au/
Indigenous heritage, The Australian Heritage Council, Land management, Parks and Reserves, Indigenous land management, Natural Heritage Trust and Natural Resource Management.

Parts of the DEH are committed to assisting Indigenous Australians address their land management needs, contribute to national objectives and to gain access to Natural Heritage Trust funding. The Australian Government has established a national network of 13 Indigenous Land Management Facilitators. The Facilitators provide assistance to Indigenous people involved in land management. They are funded by the NHT and are employed through regionally based host agencies in each state and territory.

The role of the Indigenous Land Management Facilitators is to

- Ensure Indigenous communities are aware of the opportunities either as individuals or as a group to get involved in NRM activities.
- Encourage and promote Indigenous representation on NRM Regional Bodies.
- Work with and support the operations of NRM Regional Bodies.
- Foster and support existing Indigenous and non-Indigenous NRM facilitator networks in their regions.
- Promote commitment to and participation in sustainable land management and nature conservation by managers of Indigenous land.
- Foster the involvement of Indigenous people in national, regional and local activities for achieving ecologically sustainable development.
- Encourage and promote Indigenous representation on Regional or Catchment Indigenous Reference / Advisory Groups.
- Assist Indigenous communities to engage in regional planning and the implementation of initiatives supported by the NHT/NAP and other Australian Government NRM Programs.
- Recognise and support the cultural values and traditional knowledge that Indigenous communities contribute towards NRM.
- Assist Indigenous communities in building their capacity to manage land and engage with other NRM stakeholders

- Provide links to other Indigenous land management organisations in their regions (eg. Indigenous Land Corporation)
- Act as a broker between Indigenous and non-Indigenous land managers in relation to developing better working relationships.
- Provide advice to the Department of the Environment and Heritage (DEH) and the Department of Agriculture, Fisheries and Forestry (DAFF) on how to engage more effectively with Indigenous stakeholders.
- Assist in the delivery of better-coordinated Australian and State/Territory Government services to improve the social and economic well being of Indigenous communities.
- Act as a practical two-way link between Indigenous land managers, other individuals and organisations involved in promoting sustainable land management and nature conservation.

The DEH Website features a note on 'Indigenous Management of Natural Resources'
It reads:

> The complex sets of knowledge, responsibilities and rights encapsulated within the concept of 'Caring for Country' have provided the basis for the social sustainability of Australia's Indigenous people and for the ecological sustainability of the land for 40,000 years or more.
>
> As well as maintaining or recovering these traditional processes, Indigenous people are also facing similar challenges to those of other land managers, such as the invasion of their lands by weeds and feral animals, and of achieving economic sustainability.
>
> Indigenous communities across the nation are working in partnership with national and state governments and with the regional community to address these issues. They have engaged in the regional delivery process in a variety of ways that have been documented as case studies. Lessons learnt from the different approaches to involving Indigenous people in regional delivery have been distilled as guidelines for Indigenous participation in natural resource management.
> Indigenous land management links:
>
> - Northern Land Council Caring for Country
> - Central Land Council Land Management
> - Balkanu - Cape York Development Corporation Projects
> - Indigenous Land Corporation
> - Strategy for Aboriginal Managed Land in Victoria

The Australian Government DEH also provides a number of resources as part of the Natural Heritage Trust (NHT) program.
There is also an Indigenous Land Management Facilitator (ILMF) network under the Natural Resource Management (NRM) program to encourage Indigenous communities to participate in Natural Heritage Trust (NHT) projects on land under their care, or in which they have an interest.

The facilitators provide information to Indigenous communities about the types of support and technical advice which is available to assist them with management issues on their lands. The facilitators also provide feedback to Australian Government policy-makers on land management issues that are of concern to Indigenous communities. They help to raise awareness within government agencies and the non-Indigenous communities of Indigenous values, aspirations and capacity in land management.

There are many publications concerning NRM and IK available through the Australian Government DEH website. For example:
Department of the Environment and Heritage. 2004. *Working with Indigenous Knowledge in Natural Resource Management: Ways to improve community engagement*. Canberra: Commonwealth of Australia.

Department of the Environment and Heritage. 2004. *Working with Indigenous Knowledge in Natural Resource Management: Sea Forum Case Study*. Canberra: Commonwealth of Australia.

Whetnall, T. Consultancy and SCRIPT, for the Department of the Environment and Heritage and the Department of Agriculture, Fisheries and Forestry. 2005. *Natural Resource Management Cross-Cultural Awareness Training Framework*. Canberra: Commonwealth of Australia

These and many more can be accessed via the DEH URL:
http://www.deh.gov.au/about/publications/index.html

Land and Water Australia
Australian Government
The Land and Water mission is …***to invest in knowledge, partnerships innovation and adoption to underpin sustainable natural resource management.***

Land & Water Australia is a statutory research and development corporation within the Australian Government Agriculture, Fisheries and Forestry portfolio. It was established as the Land and Water Resources Research and Development Corporation in 1990 under the Primary Industries & Energy Research & Development (PIERD) Act 1989.
Through research LWA aim to:

- generate the uniquely Australian knowledge needed to improve Australian farming systems and consequent profitability
- improve the way natural resources are managed for sustainability
- inform large public investments in natural capital
- help governments balance competing demands on natural resources and rural landscapes

http://www.lwa.gov.au/About_Us/index.aspx

Part of achieving this goal is providing funding to various research programmes, such as the NAILSMA Indigenous Knowledge Scoping Study.

Many publications are available via the LWA website - including, reports, brochures and fact sheets on the results of LWA funded research. Corporate Publications include documents Land & Water Australia is required to publish to meet its corporate governance obligations as well as other publications released by the organisation. LWA produce Researcher Guidelines for researchers who already receive funding from Land & Water Australia and a range of education packages for teachers of primary and lower secondary school students. The URL for publications is:
http://www.lwa.gov.au/Publications_and_Tools/index.aspx

Natural Heritage Trust
The Natural Heritage Trust was set up by the Australian Government in 1997 to help restore and conserve Australia's environment and natural resources. There is an extensive range of NHT publications available at: http://www.nht.gov.au/publications/index.html

Cape York Development Corporation

Balkanu was established in 1996 and is owned by the Cape York Aboriginal Charitable Trust, on behalf of the Aboriginal people of Cape York. Balkanu is committed to supporting Aboriginal People of Cape York through initiatives which deliver positive outcomes for the economy, society and culture of Cape York people.

This is achieved through a number of programs/business units including:

- Caring for Country – Land and sea management through traditional knowledge recording
- Homelands Housing Project – Low cost housing on homelands
- Cape York Digital Network – IT infrastructure and services
- Business Unit – business facilitation, advisory and support services
- Property Planning and Land Tenure

Balkanu is one of a number of key regional organisations in Cape York which are working together to bring about sustainable long term outcomes to improve the lives of the Aboriginal People of Cape York Communities. These organisations include, Cape York Partnerships, Cape York Institute of Policy and Leadership, Cape York Land Council and Cape York Health Council. Balkanu is committed to supporting the Aboriginal people of Cape York to improve the economy, society and culture of the region. To maximise the opportunities and potentials available to the Aboriginal people of Cape York, Balkanu will work with governments, industry and non-government organisations. The Balkanu Cape York Development Corporation are involved in several land management projects

NAILSMA – North Australian Indigenous Land and Sea Management Alliance

The North Australian Indigenous Land & Sea Management Alliance (NAILSMA) is an unincorporated bioregional forum for Indigenous land and sea managers across North Australia. It aims to support practical Indigenous land and sea management using strategic approaches to care for country with an emphasis on practical management by Traditional Owners across the whole of the North. It is a partner agency of the Tropical Savannas CRC and represents the interests of Indigenous land and sea managers across northern Australia to the CRC's Board of Management.

In the first instance, NAILSMA is involved in supporting Indigenous land and sea management initiatives that are relevant across the whole of northern Australia. These currently include:

- Dugong and Marine Turtle Management Project
- North Australian Fire Project.
- Indigenous Knowledge Conservation Strategy Project.
- Leadership, Scholarship and Communication Project.
- Tropical Rivers Scoping Project.

Secondly, NAILSMA is a movement that is driven by a developing network or alliance of groups, organisations and communities who are involved in practical Indigenous land and sea management on their country. Through this alliance, there are opportunities to:

- Support capacity building amongst, and increase communications between, Indigenous land and sea managers;
- Advocate for the rights and interests of Indigenous land and sea managers across the north of Australia;
- Support economic development opportunities that are based on land and sea management; and
- Support the inter-generational transfer of customary knowledge and practices across generations.

To further these aims, it seeks to invite more Indigenous land and sea management agencies and relevant non-government agencies to participate as potential members of the alliance.

NAILSMA website: http://www.nailsma.org.au/about_nailsma/index.html

The Marine and Coastal Community Network

The Marine and Coastal Community Network (MCCN) is a non-government project that builds community, industry and government support for the conservation of marine biodiversity and ecological processes, and the ecologically sustainable use of marine and coastal environments.
The Network does this by:

- Providing information services to its participants - a broadly based network of marine and coastal interests around Australia.
- Facilitating and supporting strategic collaboration between organisations on key policy initiatives.
- Promoting Australia's marine and coastal ecosystems and associated biodiversity in the media, and raising awareness of significant research and peer reviewed commentary concerning the threats facing the marine environment.

The Network was established 1993 as an initiative of the Australian Marine Conservation Society (AMCS). The Australian Government's Natural Heritage Trust funds the project under contract with the AMCS. There are over 10,000 organisations, groups and individuals who use the services of the Network, covering government agencies, industry and the community sector. Participants include commercial and recreational fishing interests, scuba divers, the shipping industry, marine science community, conservation interests, tourism interests, political interests, and government agencies. *There is little mention of Indigenous communities and their involvement in the Network.*
http://www.mccn.org.au/index.php

Australian Government Great Barrier Reef Marine Park Authority

The Great Barrier Reef Marine Park Authority is located in Townsville, Queensland, Australia and is the principal adviser to the Commonwealth Government on the care and development of the Great Barrier Reef Marine Park.
http://www.gbrmpa.gov.au/

Conservation Heritage and Indigenous Partnerships
Australian Government – Great Barrier Reef Marine Park Authority

The Conservation, Heritage and Indigenous Partnerships Group develops initiatives and implements programs for the protection of threatened species and the Great Barrier Reef World Heritage Area, and fosters partnerships with Aboriginal and Torres Strait Islander groups. The Great Barrier Reef World Heritage Area is the world's largest, and is one of its most complex ecosystems. It is managed jointly by the GBRMPA and the Queensland Government, particularly the Environmental Protection Agency. The Species Conservation Unit monitors species conservation issues, with a focus on dugongs, marine turtles, whales and dolphins and provides expert advice to reduce risks from human impacts on Protected Species in the Great Barrier Reef Marine Park. The Indigenous Partnerships Liaison Unit coordinates the GBRMPA's relationships with Aboriginal and Torres Strait Islander groups. Current programs address issues such as sustainable traditional use of marine resources, Indigenous tourism, education and research, and culture and heritage.
http://www.gbrmpa.gov.au/corp_site/key_issues/conservation

Reconciliation Australia
http://www.reconciliation.org.au/i-cms.isp

Western Australian Government Department of Conservation and Land Management

The department has the lead responsibility for protecting and conserving the State's environment on behalf of the people of Western Australia. This includes managing the State's national parks, marine parks, conservation parks, State forests and timber reserves, nature reserves, marine nature

reserves and marine management areas. Its key responsibilities include broad roles in conserving biodiversity, and protecting, managing, regulating and assessing many aspects of the use of the State's natural resources. The department contributes to the development of environmental protection policies, managing the environmental impact assessment process and carrying out regulatory functions to achieve improved environmental outcomes. It is also responsible for management of contaminated sites and coordination of pollution incident responses. *There is no explicit mention of traditional ownership and IK on the WA Government website. There is an Indigenous Heritage Unit within the DECH, but this is directed at educational outcomes only, rather than engagement with IK as a legitimate form of knowledge to inform the conservation, protection and management of cultural and biological diversity in WA.*
http://www.naturebase.net/content/section/9/153/

Queensland Government Natural Resources and Mines
As an agency of the Queensland Government the Department of Resources and Mines engages with native title and cultural heritage and has produced a number of publications on these themes. Many of these are available online at:
http://www.nrw.qld.gov.au/publications/index.html

Northern Territory Department of Primary Industry, Fisheries and Mines
http://www.minerals.nt.gov.au/

National Landcare Program, Department of Agriculture, Fisheries and Forestry
The NLP is a longstanding programme within the Department of Agriculture, Fisheries and Forestry which supports the landcare movement and the sustainable use and management of natural resources. The NLP encourages landholders to undertake landcare and related conservation works by supporting collective action by communities to sustainably manage the environment and natural resources.
http://www.daffa.gov.au/natural-resources/landcare/national-landcare-programme

Australian Government Beurea of Meteorology
Indigenous Weather Portal
http://www.bom.gov.au/iwk/

The Australian Local Government Association
The Australian Local Government Association is the national voice of local government, representing 673 councils across the country. In structure, ALGA is a federation of state and territory local government associations.
http://www.alga.asn.au/about/

CSIRO
CSIRO, the Commonwealth Scientific and Industrial Research Organisation, is Australia's national science agency and one of the largest and most diverse research agencies in the world. CSIRO conduct research into biodiversity, conservation, ecology, environmental crises, bushfires, oceans, forests, management, sustainability and water. Invariably IK features in parts of this research. Western scientific principles remain the governing principle in all of CSIRO's research.
http://www.csiro.au/csiro/content/standard/ps25q.html

Australian Conservation Foundation
http://www.acfonline.org.au/Default.asp?c=144938

Wilderness Society
http://www.wilderness.org.au/

Indigenous Land Councils
One of the Indigenous Land Council's main functions is to assist Indigenous peoples in Australia to manage Indigenous-held land in a sustainable way to provide cultural, social, economic and environmental benefits for themselves and for future generations. Each of the land councils for northern Australia are engaged in projects, programs and strategies that directly involve IK and NRM. Each website outlines these initiatives.

Cape York Land Council
www.cylc.org.au/

Central Land Council
www.clc.org.au/

Kimberley Land Council
www.klc.org.au

Northern Land Council
www.nlc.org.au
Northern Land Council. 2004. ***Caring for Country: The Rapidly Developing Formalised Structure for Aboriginal Natural Resource Management in the Northern Land Council Region of the NT.***

Communicating IK

Liddle, L. 2001. "Bridging the Communication Gap: Transferring information between scientists and Aboriginal land managers", in ***Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.*** **Edited by R, Baker, J, Davies and E, Young, pp.147-155. Oxford: Oxford University Press.**
This chapter pivots around a discussion of how to facilitate better transfer of information between scientists and Aboriginal land managers. The author addresses issues of communication, the need for better and alternate methods of communication, through such efforts as 'research partnerships'. These partnerships are about establishing workable links between Aboriginal people and scientists/others whose interests are intertwined. According to Liddle partnerships of this kind will only work if scientists make a fundamental shift in how they think, and how they conceptualise 'knowledge' and 'authority'.

Moore, G. with J, Davies. 2001. "Culture and communication in Aboriginal land management in New South Wales: A Koori perspective," in ***Working on Country: Contemporary Indigenous management of Australia's lands and coastal regions.*** **Edited by R, Baker, J, Davies and E, Young, pp.108-122. Oxford: Oxford University Press.**
In this chapter, Graham Moore, a Gurrungutti-nunji man from the south coast of New South Wales, stresses the fact that "Aboriginal ecological knowledge is embedded in cultural and spiritual explanations and symbols" (p.112). He notes that for Koori people in NSW, knowledge of seasonal variation in resources was crucial in terms of managing wildlife and the seasonal effects of natural forces. For Moore, Koori people maintain a close spiritual tie to their land in spite of the impact that colonisation had on people and country.

Mundy, P. and L. Compton. 1991. Indigenous Communication and Indigenous Knowledge. ***Development Communication Report*** **74 (3): 1-3.**

Smith, C and G, K. Ward. (eds) 2000. ***Indigenous Cultures in an Interconnected World.*** **St Leonards, NSW: Allen and Unwin.**
Several contributions in this volume consider the use of new technologies by Indigenous people across the world. A range of cultural contexts are considered and many case studies are presented that outline Indigenous people's use of new technologies and new forms of expression to house and document a range of IK forms. These technologies range from CD-ROMs, the World Wide Web, the art market, public performance and tourism. The chapters are united by the understanding that global Indigenous networks are now possible by way of communication technologies. This has both positive and negative outcomes for Indigenous people. Case studies from Australia, North America, and Latin America are provided.

Storing IK – New Technologies and IK

Zimmerman, L, J., K, P Zimmerman and L, R. Bruguier. 2000. "Cyberspace smoke signals: New technologies and Native American ethnicity," in ***Indigenous Cultures in an Interconnected World.*** **Edited by C, Smith and G, K. Ward, pp.69-86. St Leonards, NSW: Allen and Unwin.**
This chapter focuses on the use of new technologies in the transmission of IK, cultural principles, and language. The authors draw on cross-cultural examples from North America. They discuss such technologies as CD-ROMs and the digital preservation of culture, the internet and its associated promises and problems. The involvement of community is crucial to the successful application of new technologies in the recording, preservation and transmission of IK. They conclude by noting that "there can be little doubt that new technologies play a part in the establishment and maintenance of American Indian ethnic boundaries, but their role is not entirely clear" (p.85).The question of new technologies speeding up the homogeneising of Indigenous identity is raised, in that global communities of 'Indigenous people' can dilute cultural authority and distinct cultural identities.

Hunter, J. nd. ***Software Tools for Indigenous Knowledge Management.*** **Unpublished document.**
This document outlines recommendations for the development of software aimed at managing, storing and sharing IK. The goal of any software initiative should be the development of IT tools that enable Indigenous communities to "preserve, protect, repatriate (exchange and share knowledge about IK) their IK. The software should also have the capacity to handle images and photographs, manuscripts and documents, oral histories, languages, songs, videos (of historic footage, documentaries, interviews, ceremonies and dance) and physical artifacts. Software tools must also be capable to facilitating the sharing and exchange of knowledge they must be defined by traditional owners rules of ownership, dissemination, access and copyright, whilst also supporting Indigenous customary laws and protocols. The onus is on the software and product being able to maintain the integrity of IK on the Indigenous owners terms, thus it must also have capacities for enforcement of access and usage constraints, protection against misappropriation and compensation.

Nathan, D. 2000. Plugging in Indigenous knowledge: connections and innovations. **Australian Aboriginal Studies** ***Vol. 2:39-47.***
Abstract: Indigenous participation in the early growth of the World Wide Web was vigorous and successful. This was mainly due to the emergence of the Web as a new medium where conventional media forces were not able to control participation at the same time as Indigenous people were willing and able to get involved. In addition, properties of the new medium - hypertext, multimedia, and collaboratively - were ones which tended to encourage Indigenous participation. While non-Indigenous people also created sites about Indigenous issues, their standard was generally good and the proportion of sites run by Indigenous bodies remained high. Some of Australia's earliest Web sites were Indigenous, expressing a diverse range of styles and purposes. Since then, the number of Indigenous sites has increased, predictions of appropriation

and misrepresentation have been unrealised, and Indigenous publishing has become an important part of the Web landscape.

Northern Territory Government. 2006. *Evaluation of the Northern Territory Library's Libraries and Knowledge Centres.* Darwin: Northern Territory Library.

This is a lengthy document that presents the results of an evaluation of the Northern Territory Library's (NTL) libraries and knowledge centres. The Northern Territory Library has a key role in the NT governments plans for "the development of the Northern Territory community by providing all Territorians with access to information, literature and their documentary heritage". Its task is to develop services and service delivery partnerships to ensure that the information needs of all individuals and institutions within the community can be met. The creation of Libraries and Knowledge Centres (LKC) is one such initiative. These Libraries and Knowledge Centres are geared towards four main goals, developing communities through libraries, connecting people to information, preserving NT documentary and cultural heritage, helping people learn. This evaluation is designed to gain some measure of the capacity of the Library and Knowledge Centres to achieve this. The current status of these Centres is reviewed in the evaluation, and discussion is generated on the locations, staffing, training, collection and perceptions of the LKCs. The evaluation raises the issues of intellectual property rights and IK, and a range of information technologies are discussed, including digitisation procedures, database software, security, and the specific requirements of IK. The pros and cons of digitised information are discussed as are future recommendations for IT sustainability. Literacy, information literacy and life-long learning issues are all outlined – all of which informs the recommendations. There are a total of 12 recommendations made, including:

Recommendation 1

That NTL takes primary responsibility for the LKCs' networking plans with organisations and agencies delivering services to Indigenous communities, develops overall community objectives and goals in conjunction with regional development boards/authorities and local government bodies.

Recommendation 2

That NTL promotes the development of multipurpose, zoned venues for LKCs that can accommodate the growing knowledge and information services and activities, including public access to the Internet, that are critical to developing broader community goals related to building capacity in Indigenous communities.

Recommendation 3

That NTL conducts an audit of the requisite skills for LKC management and services

Recommendation 4

That NTL establishes a collection development policy for LKCs which emphasises the development of the local knowledge collection, development of the general library collections of print, audio/visual materials, and the development of locally relevant lists of electronic resources.

Recommendation 5

That NTL investigates the development of an internal intellectual property management protocol to help govern decisions about accessing and reproducing copyright material and consider developing a policy specifically directed at intellectual property issues within the context of LKCs.

Recommendation 6

That NTL clarifies ownership rights of the content in the Our Story database and develop guidelines for LKCs regarding the future addition of material into the Our Story database.

Recommendation 7

That NTL considers the future development of guidelines for the addition of other already established databases to the Our Story database.

Recommendation 8

That NTL considers risk management strategies and protocols for intellectual property and Indigenous cultural material and the future use of LKCs.

Recommendation 9

That NTL considers the extent that LKCs can be incorporated under the exceptions that currently exist for Libraries and Archives for the purposes of the Copyright Act.

Recommendation 10

a. That NTL considers the establishment of LKC advisory committees in each community whose membership include Elders from clans, council representatives, members of other relevant community organisations and agencies.

Recommendation 11

That NTL seeks expert advice to develop consistent and clear literacy strategies for LKCs in three primary areas: local knowledge documentation, information literacy for external information sources, and early literacy development.

Recommendation 12

That NTL makes a concerted campaign to promote LKCs, at all levels of government, as an essential component to NT's overall regional development plans for capacity building initiatives in Indigenous communities.

UNESCO. 2001. *Indigenous Identities: Oral, written expressions and new technologies.* UNESCO Conference Abstracts. Part One. [Online source] Available at:
http://www.unesco.org/culture/Indigenous/html_eng/bookfair2.shtml

This report summarises the key issues raised and conclusions reached by participants in a symposium on oral/written cultural expressions and new technologies. The discussion brought out both Indigenous and non-Indigenous viewpoints. The symposium dealt with issues of safeguarding, transmission and mutation of Indigenous cultures by way of new technologies. Joint projects were discussed as were the potential of CD-ROMs, published books, digitised data on traditional heritage and development of bilingual learning programs.

UNESCO. 2002. *New Technologies, Anthropology, Museology and Indigenous Knowledge.* UNESCO Conference Abstracts. Part Two. [Online source] Available at:
http://www.unesco.org/culture/Indigenous/html_eng/bookfair2.shtml

In part 2 of the symposium the discussion focused on the impact of new technologies on research and teaching in anthropology and the museum world, examining current protocols for the reappropriation of the tangible and intangible heritage of Indigenous peoples throughout the world, and acknowledgement of their intellectual property rights.

Scott, G. 2004. *Audit of Indigenous Knowledge Databases in Northern Australia (draft).* Darwin: School of Australian Indigenous Knowledge Systems, Charles Darwin University.

This audit is part of a larger Australian Research Council Linkage project that aims to investigate the use of computers for the ongoing work of bringing up new generations of young Aboriginal people with traditional knowledge. This audit reviews digitised data in IK collections in northern Australia, including the ways in which they are stored, potential access and hardware/software configurations. Three questions underpin the rationale and objectives of the audit,

1. What is the full range of digital data representing Aboriginal knowledge in northern Australia?
2. How useful might the data be in the traditional education of young people?
3. What approaches are recommended to achieve this for specific contexts?

The databases that were successfully reviewed included ethnobotanical, ethnozoological, linguistic, genealogical, general environment an other (including local history/art) data. Scott reflects that given the place-focused nature of IK and social organisation, the majority of the IK databases were mostly restricted to localised data. This says a lot about the discreet nature of IK and its intimate links to people and place. Less than half of the databases reviewed were available to Indigenous communities in the Community Council Libraries, which says something of the control of information and its dissemination. This could potentially become a part of the debate surrounding repatriation of IK.

Iseke-Barnes, J. M. 2002. Aboriginal and Indigenous people's resistance, the internet and education. ***Race, Ethnicity and Education*** **Vol.5(2):171-198.**
This article examines changes in an Internet newsgroup which is focused on issues pertaining to Aboriginal peoples. The examination of these issues highlights cyberspace as sites where colonial misunderstandings are evident and resistance to these dominant discourses is possible. Issues of pedagogy and Aboriginal peoples on the Internet are explored. They argue that given the high use of the Internet in people's homes and schools, it is of growing importance for educators and academics to consider ways that cultural groups are represented in these contexts. This article provides examples of resistance to colonial discourses about Aboriginal peoples but cautions that there are risks with the increasing commercialisation of the Internet that dominant discourses might prevail.

Anderson, J. 2005. "Access and control of Indigenous knowledge in libraries and archives: Ownership and future use". ***Correcting Course: Rebalancing copyright for libraries in the National and International arena.*** **American Library Association and the MacArthur Foundation, New York: Colombia University. Available at:**
http://correctingcourse.columbia.edu/paper_anderson.pdf.
Anderson has written a discussion paper that looks closely and critically at the storage and gate-keeping of IK within library collections in Australia. She raises fundamental questions about access and control, ownership and authorship – all of which test rationalities of library and archival management. "In Australia, like in other places around the world, Indigenous people are seeking greater access to and, in certain cases, control over cultural material. This not only challenges rationalities of library and archival management but legal conceptions of authorship and ownership including, importantly, conceptions of 'public'. On one hand such struggles can be understood in the light of dynamic post-colonial politics. On the other hand, the reinterpretation of material from within libraries and archives by the historical subjects of colonial projects of documentation affects not only how the material itself is understood but the extent that libraries and archives respond to Indigenous needs in terms of access, control, ownership and future use". This paper explores the extent that Indigenous interests in material held in libraries and archives generate contest over ownership. Some of the critical issues raised by this tension between legal frameworks and Indigenous rights, include:

- the complex history of collecting and depositing cultural material;
- who speaks and/or owns the cultural material once creators are deceased;
- the changing relationships between the secret and sacred in Indigenous communities and the consequent effects of access;
- gender divisions in access to knowledge;
- the nature of negotiations between Indigenous people and researchers in knowledge creation and use.

Hunter, J., B, Koopman and J, Sledge. 2002. Software Tools for Indigenous Knowledge Management. [Online source] Available at:
http://www.itee.uq.edu.au/~eresearch/papers/2003/IKM_software.pdf
According to the authors, Indigenous communities are beginning to realise the potential benefits which digital technologies can offer with regard to the documentation and preservation of their histories and cultures (IK). However they are also coming to understand the opportunities for misuse and misappropriation of their knowledge which may accompany digitisation. This paper describes a set of open source software tools which have been designed to enable Indigenous communities to protect unique cultural knowledge and materials which have been preserved through digitisation. The software tools described here enable authorised members of communities to: define and control the rights, accessibility and reuse of their digital resources; uphold traditional laws pertaining to secret/sacred knowledge or objects; prevent the misuse of Indigenous heritage in culturally inappropriate or insensitive ways; ensure proper attribution to

the traditional owners; and enable Indigenous communities to describe their resources in their own words. Hopefully the deployment of such tools will contribute to the self-determination and empowerment of Indigenous communities through the revitalisation of their cultures and knowledge which have been eroded by colonisation, western laws, western cultures and globalisation.

Sembok, T, B, Zaman, H, Chen, S, Urs and S, H. Myaeng (eds). 2004. *Digital Libraries: Technology and Management of Indigenous Knowledge for Global Access: 6th International Conference on Asian Digital Libraries.* Germany: Springer Publishing.

Agrawal, A. 1995. Indigenous and scientific knowledge: some critical comments. Indigenous Knowledge and Development Monitor 3(3). [Online source] Available at: http://www.nuffic.nl/ciran/ikdm/3-3/contents.html
Agrawal makes an important comment regarding the IK documentation for conservation argument. He states,

> According to most theorists, the prime strategy for conserving IK is *ex situ* conservation, i.e., isolation, documentation and storage in international, regional and national archives. (Brokensha et al., 1980; Ulluwishewa, 1993; Warren, 1989; Warren et al., 1993) *This is technically the easiest and politically the most convenient strategy, but it is unconsciously yet fatally at odds with the desire to maintain distinctions between scientific and Indigenous knowledge.*
>
> First, if IK is inherently scattered and local in character, and gains its vitality from being deeply implicated in people's lives, then the attempt to essentialise, isolate, archive and transfer such knowledge can only seem contradictory. If Western science is to be condemned for being non-responsive to local demands, and divorced from people's lives, then centralised storage and management of Indigenous knowledge lays itself open to the same criticism.
>
> Second, because of the dynamic nature of Indigenous knowledge and its changing character against the background of the changing needs of peoples, the strategy of *ex situ* conservation seems particularly ill-suited to preserving Indigenous knowledge. Such strategies, advanced in another context to combat the erosion of biodiversity and save genetic germplasm, are increasingly being viewed as inadequate and unsatisfactory (Altieri, 1989; Falk, 1990; Hamilton, 1994; Wilson, 1992). When biologists recognise that *ex situ* conservation is a defective strategy to preserve physically distinguishable entities such as seeds and plants, it seems ironic that we are advocating the same problematic strategies to preserve knowledge which is integrally linked with the lives of people and is constantly changing. However, the ultimate irony in the attempt to valorise Indigenous knowledge may lie in the willingness to adopt the methods and instruments of Western science. Thus few theorists accept the utility of Indigenous knowledge in itself, and most writings first propose the validation of Indigenous knowledge by means of scientific criteria. (Massaquoi, 1993; Rajan and Sethuraman, 1993; Richards, 1980). If Western science is the ultimate arbiter of knowledge, then there seems little point in advocating the distinction between scientific and Indigenous knowledge.

Mathias, E. 1995. Framework for enhancing the use of Indigenous knowledge. *Indigenous Knowledge and Development Monitor* 3(2) [Online source] Available at: http://www.nuffic.nl/ciran/ikdm/3-2/contents.html
With the growing recognition of the value of Indigenous knowledge for sustainable development, both the number of projects and the amount of information on Indigenous knowledge have increased. Despite all these efforts, however, development projects still appear to make little use of this valuable resource. Donors' recognition of Indigenous knowledge often represents little more than lip service, seldom translating into action or funding. What more can be done by individuals

and organisations working in the field of IK to promote the use of Indigenous knowledge for development?

The framework presented in this paper reviews past efforts and suggests future action. It highlights trends and illustrates them with a few examples. It has intentionally been kept short and precise, which means that many important publications and ongoing projects are not mentioned. The framework presented is based on two objectives, which are seen as essential in promoting the use of Indigenous knowledge:

- to increase and improve the available information on Indigenous knowledge;
- to enhance the application of Indigenous knowledge in development activities.

Maundu, P. 1995. Methodology for collecting and sharing Indigenous knowledge: a case study. ***Indigenous Knowledge and Development Monitor*** **3(2) [Online source] Available at: http://www.nuffic.nl/ciran/ikdm/3-2/contents.html**
Maundu argues that rapid changes in the way of life of local communities and the consequent loss of Indigenous knowledge, coupled with the increasing awareness that Indigenous knowledge can play an important role in enhancing development, have led development workers in both governmental and non-governmental organisations to collect Indigenous knowledge. The success of such an undertaking lies in the manner in which the information is collected, the relations established during this process, and the way the collection process is tailored to fit in with the development priorities of the community in question. This article discusses a number of methods used to collect ethnobotanical information and ways of translating this information into development projects that benefit the communities who supplied the knowledge.

University of Queensland, School of Information Technology and Electrical Engineering Research project:
This research project is concerned with investigating how information technology tools and standards can be refined and extended to enable Indigenous communities to preserve and protect their unique Indigenous cultures, knowledge and artefacts whilst supporting traditional protocols and facilitating better cross-cultural communication and understanding.

Many museums, archives, libraries and cultural institutions throughout the world hold large collections of objects that are of cultural or historical significance to Indigenous communities. Because many of these objects were collected without the consent of the traditional owners, the custodial organisations are now facing the challenges of determining ownership, seeking direction from the traditional owners on the future of such objects and either repatriating them, storing them or exhibiting them appropriately as requested. This process is made more difficult because colonisation has caused many Indigenous communities to become dispossessed of their lands and widely dispersed geographically. New collaborative interactive software tools, high-speed networks and emerging Grid technologies that facilitate communication and the sharing of resources and knowledge between geographically dispersed groups, appear to offer an infrastructure that is ideally suited to the implementation of such digital and physical repatriation programs.

Hunter, J. 2005. "The Role of Information Technologies in Indigenous Knowledge Management," in ***Australian Indigenous Knowledge and Libraries*****. Edited by M, Nakata and M, Langton, Chapter 9. Canberra: Australian Academic and Research Libraries.**

Hunter, J, R, Schroeter, B, Koopman, and M, Henderson. 2004. "Using the Semantic Grid to Build Bridges between Museums and Indigenous Communities", in ***Global Grid Forum: Semantic Grid Applications Workshop,*** **pp 46 – 60, Honolulu, Hawaii.**

Hunter, J. B, Koopman, and J, Sledge. 2003. "Software Tools for Indigenous Knowledge Management" ***Museums and the Web 2003.***

IK and Education

Several universities and learning institutions have established centres and programs that deal specifically with subjects of IK, Indigenous cultures, law and governance as well as cross-cultural education. Focus areas range from Indigenous knowledge in resource management and conservation to health, language and community care. Most Australian universities offer some program of Indigenous or Aboriginal Studies, or anthropology. These more general programs do not always prioritise Indigenous knowledge, language and Indigenous protocol for knowledge sharing, but are based on non-Indigenous educational principles. Few institutions have a system by which IK is shared and engaged on its own terms.

The following is an overview to some of the literature discussing IK and education.

Davies, J. 2005. ***Changing People: Experiences from teaching and learning about Indigenous issues in environmental management.*** **The Power of Knowledge, The Resonance of Tradition. Electronic publication of papers from the AIATSIS Indigenous Studies conference, September 2001. Edited by G, Ward and A, Muckle. Canberra: AIATSIS.**
Davies argues that the big picture of reworking the culture/nature divide in environmental management is made up of thousands of small encounters which change people's perspectives. She argues that this divide is embedded in government and industry approaches to environmental management, but government and industry are made up of individuals whose personal attitudes and professional approaches are critical elements in facilitating change. Dismantling culture/nature divide is integral to the process of change towards multicultural perspectives on the management of the environment.

As coordinator of teaching about Indigenous issues in environmental management at The University of Adelaide from 1996 to 2002, Davies has facilitated personal attitudes and professional approaches which advance the reworking of the culture/nature divide. This paper reviews this teaching program. It has involved an average of 30 students a year studying an elective semester course called 'Indigenous Australians and Environmental Management' (IAEM). Mostly the students are of non-Indigenous heritage, in their final year of study for a degree in natural resource management or environmental science. The course has had between zero and five Aboriginal students each year. Davies notes that there is little literature that addresses how western scientists might develop an understanding of Indigenous world views. This paper is thus a contribution to a limited literature in a field that deserves much more attention.

Fien, J. 1993. ***Education for the Environment: Critical curriculum theorising and environmental education.*** **Geelong, Australia: Deakin University Press.**

Harris, S. 1990. ***Two Way Aboriginal schooling: Education and cultural survival.*** **Canberra: Aboriginal Studies Press.**
Since the late 1970s a number of Aboriginal communities have been moving towards control of their children's education. Different models of bicultural or "two-way" schooling are emerging, in which Aboriginal language and culture are taught as legitimate ends in themselves, not merely as a means to more effective learning of English.

Harris explores the theoretical concept of bicultural schooling and its practical implications in the classroom. He points out the limitations of current models of bilingual education in dealing with the fundamental dilemma of Aboriginal schooling - that academic success in the Western-school system could seriously undermine Aboriginal identity. The theme of the book is the role of schools

in the survival of numerically small cultures. This study is not intended to be a recipe for successful schools or a blueprint for curriculum development, but a catalyst for further discussion and debate among all those involved in Aboriginal education.

Langton, M. 1998. ***Burning Questions: Emerging environmental issues for Indigenous peoples in northern Australia*****. Darwin: Centre for Indigenous Natural and Cultural Resource Management, Northern Territory University.**

Linkson, M. 1999. Some issues in providing culturally appropriate science curriculum support for Indigenous students. ***Australian Science Teacher¹s Journal*****, 45(1), 41-48.**

Ma Rhea, Z. 2004. ***The Preservation and Maintenance of the Knowledge of Indigenous Peoples and Local Communities: The Role of Education*****. Paper presented at the Association for Active Education Researchers Conference, Melbourne, 2004.**
Abstract: Research by Langton and Ma Rhea (2003) found that education plays an important role in the preservation and maintenance of Indigenous peoples' and local communities' knowledge. This paper raises key issues regarding this role beginning with a discussion of the terms 'Indigenous' and 'local community'. It then reports on the evidence for the existence of Indigenous and traditional knowledge and the reliability of documentation of traditional knowledge in education curricula. Finally, the paper considers the role of adult and western-based education in the protection of Indigenous and traditional knowledge within the globalised market economy.

Maunsell, M. 1997. "Barricading our last frontier: Aboriginal cultural and intellectual property rights," in ***Our land is our life: Land rights past, present and future*****. Edited by G. Yunupingu. Brisbane: University of Queensland Press.**

McKinley, E. 1996. Towards an Indigenous science curriculum. ***Research in Science Education*****, 26(2), 155-167.**
The recent development of a national science curriculum in Māori opened up space to contest whose knowledge and whose ways of knowing are included. This paper outlines the background to the curriculum development work in Aotearoa New Zealand with respect to the Indigenous Māori people and science education. Concern is expressed about the fitting of one cultural framework into another and questions are raised about the approach used in the development of the science curriculum. Further research in the area of language, culture and science education is discussed along with how Māori might move forward in the endeavour of developing a curriculum that reflects Māori culture and language.

Michie, M. 1998. "Crossing borders: Understanding differing worldviews of science through the Northern Territory science curriculum," in ***Proceedings of the Australasian Joint Regional Conference of GASAT and IOSTE*****, Edited by J. Goodell, pp. 441-448.**
Abstract: Development of the Board Approved Course of Study for Science Transition-Year 10 in the Northern Territory has incorporated not just an Indigenous perspective but encourages consideration of the worldviews of both Western and Indigenous peoples, with the potential to include the worldviews of other cultural groups and subcultures. This is probably the first system-level science curriculum to recognise the value of the different worldviews of Indigenous peoples, and it goes beyond the national statement which calls for inclusion of the science of various cultural traditions to inform Western science. This is linked to the theoretical basis for incorporating worldviews.

Michie notes however that curriculum support materials are being developed to provide Indigenous people access to Western science and these incorporate Indigenous cultural considerations and construct knowledge based on these students' experiences at the same time.

Teachers in a western setting are also encouraged to incorporate Indigenous and other cultural perspectives into their teaching/learning programs.

Michie, M., Anlezark, J., & Uibo, D. 1998. *Beyond bush tucker: Implementing Indigenous perspectives through the science curriculum.* Science Teachers Association of the NT Journal, 18, 101-110.
The authors present a discussion of Indigenous knowledge concerning 'bush tucker and bush medicine'. They argue that the concept of bush has become a significant consideration in the search for identity of an Australian cuisine. It has also become a focus for many schools (particularly here in the Northern Territory), as they identify many of the native plants that are present in school grounds or neighbouring environments, and how they are used. They argue that despite the use of such knowledge seeming tokenistic; it can provide a first step in understanding how Indigenous people view the world. The links which can be made to bush tucker and bush medicine indicate very sophisticated understandings of the environment by Indigenous people. They highlight the differences in perception of people's place in the environment: with Indigenous people considering themselves as part of the environment and non-Indigenous people seeing themselves as discrete from it. They note that Western science and Indigenous science represent two separate worldviews. This paper presents a discussion of the two ontologies.

Michie, M. 1999. *Where are Indigenous peoples and their knowledge in the reforming of learning, curriculum and pedagogy?* Paper presented at the Fifth UNESCO-ACEID International Conference "Reforming Learning, Curriculum and Pedagogy: Innovative Visions for the New Century", Bangkok, Thailand, 13-16 December 1999. [Online source] Available at:
http://members.ozemail.com.au/~mmichie/aceid.html

Michie, M., & Linkson, M. 1999. *Interfacing Western science and Indigenous knowledge: A Northern Territory perspective.* Paper presented at the 30th Australasian Science Education Research Association Conference, held at Rotorua, Aotearoa New Zealand, July 1999.

Northern Territory Board of Studies. 1998. *Landforms: Implementing the Common Curriculum in Aboriginal Schools*. Darwin: Northern Territory Board of Studies.

Northern Territory Board of Studies. 1999. *Intercultural Understandings in Teaching Science: A handbook for teachers*. Darwin: Northern Territory Board of Studies.

Williams, G. 1999. Science, resource management and Indigenous people: Potential signposts from education in northern Australia. Australian Biologist, 12(1), 23-27.

The following is a brief overview of state and territory universities/colleges/centres that offer courses and formal education in areas that involve some engagement with IK.

NORTHERN TERRITORY
Charles Darwin University
School of Australian Indigenous Knowledge Systems
The School of Australian Indigenous Knowledge Systems offers courses in Aboriginal and Torres Strait Islander studies, Indigenous governance and natural and cultural resource management.

- Bachelor of Indigenous Cultures And Natural Resource Management
- Bachelor of Indigenous Cultures And Natural Resource Management (Honours)
- Bachelor of Laws/Bachelor of Indigenous Cultures And Natural Resource Management
- Graduate Certificate in Yolngu Studies
- Graduate Diploma in Australian Indigenous Knowledges
- Certificate I in Tourism (Australian Indigenous Culture)
- Certificate III in Aboriginal Or Torres Strait Islander Cultural Arts

- Short Course: *Conservation and Business: Natural Resource-Based Enterprise Development and local Livelihoods.*

Bachelor Institute of Indigenous Tertiary Education
Bachelor Institute offers a number of subjects that focus on Indigenous Knowledge and cultural contexts. The institute is promoted as a place of "knowledge and skills, where Aboriginal and Torres Strait Islander Australians can undertake journeys of learning for empowerment and advancement while strengthening identity. Courses available to students include broad areas of Indigenous education, language, visual arts, cultural arts, Aboriginal health, community care, conservation and land management. The institute also offers a *Graduate Certificate of Indigenous Knowledges* and a *Masters of Indigenous Knowledges.*

QUEENSLAND
James Cook University
School of Indigenous Australian Studies
http://www.faess.jcu.edu.au/sias/
Centre for Aboriginal & Torres Strait Islander Participation Research and Development (CATSIPRD)
http://www.jcu.edu.au/dept/CATSIPRD/catsiprd.htm

University of Queensland
Aboriginal & Torres Strait Islander Studies Unit
http://www.atsis.uq.edu.au/

WESTERN AUSTRALIA
Edith Cowan University, Western Australia
The Australian Indigenous HealthInfoNet
The Australian Indigenous Health*InfoNet* is a web resource that makes knowledge and information on Indigenous health easily accessible to inform practice and policy.
http://www.healthinfonet.ecu.edu.au/html/html_home/home_aboutus.htm

University of Western Australia
School of Indigenous Studies
http://www.sis.uwa.edu.au/

SOUTH AUSTRALIA
University of South Australia
David Unaipon College of Indigenous Education and Research
http://www.unisa.edu.au/icer/

University of Adelaide
Centre for Australian Indigenous Research and Studies
http://www.adelaide.edu.au/wilto_yerlo/about/strategic.html

VICTORIA
Monash University
Centre for Australian Indigenous Studies (CAIS)
http://www.arts.monash.edu.au/cais/

CANBERRA
Australian National University
National Centre for Indigenous Studies (NCIS)
http://law.anu.edu.au/ncis/

Centre for Aboriginal Economic Policy Research (CAEPR)
http://www.anu.edu.au/caepr/

NEW SOUTH WALES
Sydney University
Koori Centre
http://www.koori.usyd.edu.au/

University of Sydney
Yooroang Garang - The Centre for Indigenous Health Studies
http://www3.fhs.usyd.edu.au/yg/intro.html

University of New South Wales
Aboriginal Research & Resource Centre
http://www.arts.unsw.edu.au/index.php

TASMANIA
University of Tasmania
Bachelor of Arts in Aboriginal Studies
http://fcms.its.utas.edu.au/arts/arts/degreesarea.asp?PA=40

IK and International Education Programs

There are tribal colleges, Indigenous universities and mainstream educational facilities worldwide that incorporate IK in their educational programs.

Alaska Native Knowledge Network (ANKN)
University of Alaska Fairbanks
http://www.ankn.uaf.edu/index.html

The ANKN is designed to serve as a resource for compiling and exchanging information related to Alaskan Indigenous knowledge systems. It has been established to assist Indigenous people, government agencies, educators and the general public in gaining access to the knowledge base that Alaska Natives have acquired through cumulative experience over millennia. The ANKN offers an overview to educational opportunities for people wishing to study Alaskan knowledge systems and cultural practices. These include:

- Alaska Native Education Association
- Association of Interior Native Educators
- Alaska First Nations Research Network
- Native Educators of the Alutiiq Region
- Native Hawaiian Education Council
- Southeast Alaska Tribal College
- Alaskool.org: This organisation brings together teams of teachers, elders, and community members in various parts of Alaska with university-based specialists to develop curricula on Alaska Native studies and language that is available to all schools through the internet or on CD.
- Harvard University Native American Program

Centre for World Indigenous Knowledge and Research
http://www.athabascau.ca/Indigenous/

The Centre for World Indigenous Knowledge and Research is part of Athabasca University, one of Canada's leading online and distance education facilities. The Centre aims to:

- Meet the academic needs of Indigenous students, scholars, nations, communities, institutions and organisations
- Improve the development and delivery of Indigenous Education at Athabasca University
- Strengthen the research undertaken for, by and about First Nation, Metis and Inuit people at Athabasca University
- Acknowledge and develop the role of traditional knowledge in academic settings; and
- Support, protect and preserve Indigenous Knowledge, Education and oral traditions

The Centre offers subjects such as:

- Introductory Cree Language
- Indigenous Studies
- Issues in Indigenous Education
- Contemporary Indigenous Issues
- Aboriginal Women In Contemporary Canadian Society
- History of Canada's First Nations to 1830
- History of Canada's First Nations From 1830
- Topics in Aboriginal Governments
- Indigenous Government and Law

The National Research Foundation
The South African National Research and Development Strategy
http://www.nrf.ac.za/
The National Research Foundation identifies IK as an area of enquiry where there is an obvious knowledge advantage in South Africa. The foundation promotes the need for to understand IK and its role in community life from an integrated perspective that includes both spiritual and material aspects of a society as well as the complex relation between them. Through research it aims to understand and to explore:

- the potential contribution that IK can make to local, social, political and economic development;
- the protection of IK and its utilisation for the benefit of its owners and the communities where it is practiced as well as South Africa as a whole.
- its place within the larger body of scientific and local knowledge systems.
- the cultural and moral values and systems of IK

The following Research Themes receive priority:

- The production, transmission and utilisation of Indigenous knowledge and technology
- The role of IK in nation building
- IK at the interface with other systems of knowledge.
- Introducing IKS into the mainstream of education

The NRF provides services and grants to support research and postgraduate research training, offering a number of student scholarships and fellowships.

Centre for Indigenous Knowledge Systems (CEFIKS) Inc.
Ghana, West Africa
http://www.cfiks.org/
The Centre for Indigenous Knowledge Systems (CEFIKS) was established to conduct research, monitoring, documentation, and coordination of IK systems in Ghana. The Centre is based in Ghana and has affiliates in the USA.

The primary focus of CEFIKS is to:

- Record, preserve and disseminate information about Indigenous knowledge systems.
- Serve as a clearinghouse of IK systems from various communities within and outside of Ghana.
- Support and advocate the use of IK systems in the socio-economic development process in Ghana and the region of West Africa.

The CEFIKS' activities and current programmes are based on:

1. *Collection, Documentation, and Dissemination*
2. *Education, Training, and Capacity Building*
3. *Research and Development*

Aikenhead, G.S. 1996. Science education: Border crossing into the subculture of science. Studies in Science Education, 27, 1-52.

Alaska Native Knowledge Network. 1998. *Alaska Standards for Culturally Responsive Schools*. Fairbanks. [Online source] Available at: http://www.ankn.uaf.edu/publications/standards.html, University of Alaska Fairbanks.

Beder, S. 1993. The nature of sustainable development. Newham, Australia: Scribe Publications.

Barnhardt, R. 1992. "Administration Across Cultures," in *Education and Development: Lessons from the Third World*. Edited by V. D'Oyley, A. Blunt and R. Barnhardt. Calgary: Temeron Press. Available at: http://www.ankn.uaf.edu/Curriculum/Articles/RayBarnhardt/AdminAcrossCultures.html.

Barnhardt, R and A. Oscar Kawagley. 2005. Indigenous Knowledge Systems and Alaska Native Ways of Knowing. *Anthropology and Education Quarterly* 36(1): 8-23. Available at: http://www.ankn.uaf.edu/Curriculum/Articles/BarnhardtKawagley/Indigenous_Knowledge.html.

Barnhardt, R and A. Oscar Kawagley. 2004. Culture, Chaos and Complexity: Catalysts for Change in Indigenous Education. *Cultural Survival Quarterly* 27(4): 59-64. [Online source] Avialable at: http://www.ankn.uaf.edu/Curriculum/Articles/BarnhardtKawagley/ccc.html.

Barnhardt, R and A. Oscar Kawagley. 1999. "Education Indigenous to Place: Western Science Meets Indigenous Reality," in *Ecological Education in Action*. Edited by G, Smith and D, Williams, pp. 117-140. New York: State University of New York Press.

Cobern, W.W. 1996. Worldview theory and conceptual change in science education. Science Education, 80(5), 579-610.

Dene Kede. 1999. Education: A Dene perspective. Teacher Resource manual. [Online source] Available at: http://siksik.learnnet.nt.ca/Denekede/3/INDEX.HTM

Eglash, R. 2002. "Computation, Complexity and Coding in Native American Knowledge Systems," in *Changing the Faces of Mathematics: Perspectives on Indigenous People of North America*. Edited by J, Hankes and G, R. Fast, pp. 251-262. Reston, VA: National Council of Teachers of Mathematics.

Inuuqatigiit. 1999. The curriculum from the Inuit perspective. [Online source] Available at: http://siksik.learnnet.nt.ca/Inuuqatigiit/1/index.htm

James, K. (ed.) 2001 ***Science and Native American Communities*****. Lincoln, NE: University of Nebraska Press.**

King, L, and S, Schiermann. 2004. ***The Challenges of Indigenous Education: Practice and Perspectives*****. Paris: UNESCO**

Stephens, S. 2000. ***Handbook for Culturally Responsive Science Curriculum*****. Fairbanks: Alaska Native Knowledge Network.**

IK and the Market Economy

The importance of natural and cultural resource management as a key remote area industry is now a point of discussion for State and Territory governments, Indigenous people and NRM/CRM agencies. NRM and CRM as attached to remote area industries such as conservation, ecotourism, resource extraction and other economic developments is deemed by government and largely non-Indigenous interests to have significant development, economic and employment potential, particularly when linked to other established and emerging resource-base industries in the Northern Territory, Western Australian and Queensland. These industries include mining, pastoralism, tourism, fisheries, aquaculture, forestry, horticulture and the application of IK and culture to the commercial provision of environmental services. Over the medium to long-term, Governments aim to elevate the importance of these industries. It is projected that such development will strengthen the employment and economic opportunities for Indigenous people living in regional and remote areas of the Territory. Government interest in these industries is not altogether in line with Indigenous views on such matters. This trend is happening globally and is a point of great discussion and concern as to the benefits and problems associated with the commercialisation and commodification of IK. This is seen to raise issues of intellectual property rights, cultural authority and autonomy and is not uniformly accepted as in the best interests of the traditional owners of IK.

Altman, J. 2003. People on country, healthy landscapes and sustainable Indigenous economic futures: The Arnhem Land case. ***The Drawing Board: An Australian Review of Public Affairs.*** **Vol 4(2):65-82.**
Focussing on the 'outstations movement' that occurred in northern Australia in the 1970s, Altman raises a number of questions, and attempts to respond to the in this paper. He asks, when how and why were these outstations established and what was the policy response to this re-occupation of land?, second, are outstations economically, socially and ecologically sustainable? and third turning to the future, how sustainable and replicable might these outstations prove to be? Altman argues that "an emerging match between continuing Indigenous aspirations to manage their country and public policy concerns about Indigenous well-being, on the one hand, and healthy landscapes on the other, should ensure sustainable Indigenous futures on country in north Australia – with appropriate institutional support and adequate resources" (p.65).

Altman, J. 2003. ***Economic Development and Participation for Remote Indigenous Communities; Best Practice, Evident Barriers, and Innovative Solutions in the Hybrid Economy.*** **Canberra: Centre for Aboriginal Economic Policy Research, ANU.**

Altman, J. 2005. ***Economic futures on Aboriginal land in remote and very remote Australia. Hybrid economies and joint ventures.*** **Draft paper prepared in October 2004 for pre-circulation**

for the ASSA Workshop 'Aborigines, Culture and Economy: The past, present and future of remote Indigenous lives', University of Sydney.
Raises issues of kin-based and market based societies, and raises caution about not economists treating the cultural as something beyond the economic in Indigenous policy discourse. He builds a discussion of what he terms 'hybrid economy' – as having three sectors: customary, market and state. This hybrid economy is intercultural and involves Indigenous domains and State interest – through joint ventures.

Altman J. 2005. "Development Options on Aboriginal Land: Sustainable Indigenous Hybrid Economies in the Twenty-first Century," in *The Power of Knowledge, the Resonance of Tradition*. Edited by L. Taylor, G. K. Ward, G. Henderson, R. Davis & L. A. Wallis, pp. 34-48. Canberra: Aboriginal Studies Press.

Byrnes, J. 1988. *Enterprises in Aboriginal Australia: Fifty case studies*. The Rural Development Centre. Armidale: University of New England.
Although now quite an older document, this work presents an overview to fifty case studies in which Indigenous people have established enterprises on their land and according to their own IK and cultural practices. These range from art centres, business training, land management, re-forestation and horticultural programs, construction, repairs and maintenance, accommodation and tourism. The case studies present an overview to each initiative, reflecting on the objectives, skills and resources needed, the skills developed, enterprise support, problems encountered and advice. A resounding theme in terms of problems encountered was a reluctance on behalf of funding bodies to invest in Indigenous controlled projects, and demands for Indigenous enterprise owners to relinquish partial or total decision making power to non-Indigenous managers.

Intellectual Property Research Institute of Australia. 2003. *Research Report: Traditional Knowledge, Genetic Resources, Folklore and Biodiversity*. [Online source] Available at: http://www.law.unimelb.edu.au/ipria/research/trad_know.html

Langton, M., Z, Ma Rhea and L, Palmer. 2005. Community-oriented protected areas for Indigenous peoples and local communities. *Journal of Political Ecology*. Vol.12:23-50.
In the introduction to this paper, the author's raise some important questions. They write:
Do Indigenous peoples engage with their environments only as small-scale consumers, in which the conservation of species or habitats is an incidental outcome? Furthermore, is it the case as some have argued that modern conservation is based on a global ethic of responsibility, whereas Indigenous peoples are concerned only with localised practices and contexts? In order to answer these questions, this paper is critical of these and other tropes (or stereotypes) of Indigenous peoples which, we argue, are appropriated by conservationists for their own ends, and which have a significant influence on the public perception of Indigenous engagement with biodiversity conservation. We argue that despite these stereotypes, it is not the case that Indigenes are merely pawns or bystanders in conservation processes. Rather, across the globe, Indigenous people are actively engaging in environmental planning processes at a variety of scales.

Abstract: Across the globe, community-oriented protected areas are increasingly recognised as an effective way to support the preservation and maintenance of the traditional biodiversity related knowledge of Indigenous peoples and local communities. We argue that guaranteed land security and the ability of Indigenous and local peoples to exercise their own governance structures are central to the success of community-oriented protected area programs. In particular, we examine the conservation and community development outcomes of the Indigenous Protected Area program in Australia, which is based on the premise that Indigenous landowners exercise effective control over environmental governance, including management plans, within their jurisdiction (whether customary or state-based or a combination of elements of both), and have effective control of access to their lands, waters and resources.

Northern Land Council. 2002. ***Inquiry into Capacity Building in Indigenous Communities.*** **A submission to the House of Representatives Standing Committee on Aboriginal and Torres Straight Islander Affairs.**

Northern Land Council. 2004. ***Capacity Building for Indigenous Economic Development: A Briefing for the Indigenous Economic Development Task Force.***

Stevenson, M, G. 1998. ***Traditional Knowledge in Environmental Management: From commodity to process*****. Working Paper 1998-14, Sustainable Forest Management Network.**
The author reflects on non-Indigenous interest in Indigenous cultures and knowledge was prefaced by a view of IK as potentially dying out. This viewpoint was also prevalent in post-contact Australia and can still be seen to permeate popular understandings of Aboriginal cultures and knowledge. It was this view of IK being lost, that prompted many professionals and academics to "record the TEK of elders before they pass on". Stevenson notes that this "well-intentioned concern to record" most often saw TEK relegated to an archive shelf where it would "collect dust". The author responds to this misplaced desire to 'record' and 'write down' as best being abandoned in preference of an approach that encourages governments and Indigenous groups to "channel their efforts into restoring those contexts that gibe efficacy to this knowledge. This may mean, among other things, contributing much more support and resources to the traditional economy (1998:3, note, 9). Traditional economy in this sense includes land rights and land management.

Whitehead, P. nd. ***Inquiry into Capacity Building in Indigenous Communities.*** **A Submission to the House of Representatives Standing Committee on Aboriginal and Torres Straight Islander Affairs. Darwin: Centre for Tropical Wildlife Management Northern Territory University.**

World Bank. 1998. ***Indigenous Knowledge for Development: A framework for action.*** **Produced by the Knowledge and Learning Centre (Africa Region).**

Munyanziza, E. and K. F. Wiersum. 1999. Indigenous knowledge of miombo trees in Morogoro, Tanzania. ***Indigenous Knowledge and Development Monitor*****, Vol. 7(2). [Online source] Available at: http://www.nuffic.nl/ciran/ikdm/7-2/munyanzi.html.**
Abstract: In forestry policy and theory there is increasing interest in altering the orientation of forest management from state-controlled and professional to community forestry management, making use of Indigenous knowledge and skills. This article stresses the need to re-examine the knowledge of forestry and agriculture among the people. This will highlight the dynamics and limitations of what local people know, and help us to decide when and how to make use of Indigenous knowledge in forest management.

Reyes-García, V., R. Godoy, V. Vadez, et al. 2003. Ethnobotanical knowledge shared widely among Tsimane' Amerindians, Bolivia. ***Science*** **Vol. 299 no. 5613, p. 1707**

United Nations Department of Economic and Social Affairs and V, Suminguit. 2005. Indigenous Knowledge Systems and Intellectual Property Rights: An Enabling Tool for Development with Identity. Contribution at the International Workshop on Traditional Knowledge, Panama City,
This paper discusses ethnobotanical knowledge, as a subset of IK. It reports some creative ways in which documentation of ethnobotanical knowledge can be carried out without losing community ownership over intellectual property rights. It also presents the general findings of the documentation, current and future uses of the documented knowledge, and how this knowledge can become an enabling tool for development with a sense of community ownership and self-identity.

They argue that in the long term, and to ensure the sustainability of activities, Indigenous communities need assistance to produce idealistic young professionals with a solid education in areas such as genetic engineering, plant-breeding, botany, chemistry or pharmacology, food science, social science, law and financial management. Without committed professionals coming from their own ranks, they will be forever dependent on programme-based external technical and financial assistance.

IK and Commercialisation

Recent years have seen rising interest in the commercial exploitation of IK. This in turn has raised a wide set of issues about *who is entitled to use such knowledge and on what terms*, and *how individuals and groups who 'own' it can share in the financial benefits resulting from its commercial use*. These concerns are likely to become increasingly controversial in the years ahead because much of the discussion revolves around the potentially conflicting interests of the two primary players – Indigenous groups with IK, and state interests that want it. Australian literature dealing with these concerns is limited, and the debate seems to have been taken up most keenly by academics and Indigenous groups in Canada and North America.

Anju, S. 2004. Global legislation on Indigenous knowledge. ***Science and Development Network.*** **[Online source] Available at:**
http://www.scidev.net/Dossiers/index.cfm?fuseaction=policybrief&policy=50&dossier=7&language=1

Aparna Bhagirathy, K. 2005. ***Using Traditional Knowledge for Commercial Innovations: Incentives, Bargaining and Community Profits*****. SANDEE Working Paper No. 11-05, VII. Kathmandu, Nepal: South Asian Network for Development and Environmental Economics (SANDEE). [Online source] Available at:**
http://www.sandeeonline.org/publications/working_papers/wp11/report_wp11.pdf
The author generates discussion of the recent interest in traditional knowledge systems within health care and biodiversity sectors as directly related to the profitable innovations that traditional knowledge can generate. This paper seeks to examine the nature of economic incentives required for protecting and sustainably using traditional knowledge. The paper asks two key questions: (a) under what conditions do communities and pharmaceutical companies enter into contracts to develop traditional knowledge-based innovations? And, (b) what factors influence the benefit-shares of the two parties from commercial use of traditional knowledge? Adapting a bargaining model, this paper shows that the actual sharing of the revenues depends on a number of issues, most importantly, the relative bargaining strengths of the two parties. Factors that affect profits and relative bargaining strengths include the contributions of the parties in developing the innovation, the availability of alternative sources and options, differences in expectations over future revenues and costs, and the involvement of a third party in the negotiations. Such factors need to be taken into account in designing incentive schemes that can help communities benefit from the use of their traditional knowledge.

Bierer, B., T, Carlson, and S, R. King. nd. ***Shaman Pharmaceuticals: Integrating Indigenous Knowledge, Tropical Medicinal Plants, Medicine, Modern Science and Reciprocity into a Novel Drug Discovery Approach*****. [Online source] Available at:**
http://www.netsci.org/Science/Special/feature11.html#FIG1_RETURN

This online paper presents an overview to the activities of Shaman Pharmaceuticals, a South San Francisco-based pharmaceutical company that focuses on isolating bioactive compounds from tropical plants that have

a history of medicinal use. Shaman is working to promote the conservation of tropical forests and bridge the gap between the biomedical needs of both Indigenous cultures and the rest of the global population.

Brascoupe, S and H, Mann 2001. *A Community Guide to Protecting Indigenous Knowledge*. Department of Indian Affairs and Northern Development, Research Affairs Directorate, Ottawa, Canada, page.7

In this document, the author's reflect on some of the dilemmas involved in the commercialisation or commodification of IK. They note that the greatest threats come from:

- Unlicensed and unauthorised commercialisation of IK
- Taking images, such as photographs, film and video of Aboriginal people, their way of life, etc
- Using, reproducing or copying Aboriginal names, images and arts without permission
- Use and misuse of symbols without permission
- Disclosing secret knowledge and cultural property
- Publishing research without recognition or reward for the knowledge holders
- Entering into community research without fully explaining how the research will be used or who owns the results

They reflect further:

> Because of these types of abuses, protecting IK from unauthorised use by others is a growing concern for Aboriginal communities. Historically, Aboriginal peoples have willingly shared their knowledge, often joking that a typical Aboriginal family consisted of parents, children, kin and an anthropologist. However, interest in their knowledge by outsiders has often been based on relationships that have not always been fair, equitable or beneficial for the community. This is changing today. If Aboriginal peoples decide to share their knowledge, they should be able to share it in a way that is consistent with their traditions and social values as well as in a way that reflects its economic value. Protecting against the abuses and misuses of the present and past is essential to establishing a balanced, consent-based system for sharing IK.

Rodriguez Cervantes, S in collaboration with GRAIN. 2006. *Traditional knowledge is increasingly popping up in bilateral and regional free trade agreements. What's going on?* [Online discussion paper] Available at: http://www.grain.org/briefings/?id=196.

GRAIN is an international non-governmental organisation which promotes the sustainable management and use of agricultural biodiversity based on people's control over genetic resources and local knowledge.

The author presents a discussion of the rate at which IK is now incorporated into free trade agreements internationally. It is argued that in all cases, FTAs are framing traditional knowledge as intellectual property – a commodity to be bought and sold on the global market. The author considers FTAs internationally and reviews Australia's role in negotiating the protection of IK and the IP of IK holders. To quote:

> Australia has no policy to include traditional knowledge in its bilateral and regional free trade agreements. While this may seem normal, or even good, it has actually become a bone of contention at home. Senate hearings on the US-Australia FTA complained of negative implications for Indigenous cultures in Australia, with specific concern over the lack of any "protection" for Aboriginal and Torres Straits Islander communities' traditional knowledge and moral rights. Indigenous lawyers have filed submissions to Australia's Parliament on this matter. Even the Australian copyright industry has lodged a formal proposal with the Department of Foreign Affairs and Trade to include traditional knowledge in the upcoming Australia-ASEAN-New Zealand FTA. In all these cases, the complainants are

equating rights over traditional knowledge with intellectual property rights, for the specific purpose of generating financial returns from the commodification of Indigenous culture.

IK, Ethics and Research Protocols

In today's world there is the tendency to perceive all forms of knowledge as subject to the "free flow" of information. However, there are some ethical barriers to this free flow, such as concerns about privacy, secrecy, and intellectual property. There is a special concern about the free flow of information when that information is IK or the cultural property of particular human groups. Numerous ethical dilemmas arise when Indigenous cultural and environmental information is disseminated and used in ways that are neither cultural proscribed or culturally relative.

According to the Desert Knowledge CRC '*Traditional Knowledge, Operationalising Aboriginal Knowledge*' project:

> Many of the most contentious terms in the area surrounding intellectual property and categories of knowledge relate to operationalising the ideas of local and traditional knowledge, linking local and scientific knowledges, and defining appropriate and ethical benefit sharing arrangements for different types of knowledge products. The distinction between Aboriginal IP and Aboriginal Traditional Knowledge needs to be clarified by establishing:
>
> *An Aboriginal Traditional Knowledge protocol (which also deals with Local Aboriginal Knowledge) and Aboriginal Intellectual Protocol (which also deals with Commercialisation of Aboriginal Intellectual Protocol).*
>
> This will provide a clear guide as to when formal intellectual property law can operate as a useful knowledge management tool and when it is more important to fall back on ethical engagement practice.

Online source, available at: http://www.desertknowledgecrc.com.au/index.html

Local Government Association of the Northern Territory (LGANT). nd. ***Straight Talking. A Guide to Negotiating and Consulting with Remote Area Local Government Councils.***
This is a publication for people working or consulting with Indigenous communities.

Ethical Guidelines and Research Protocols in Australia

Australian Anthropological Society. Code of Ethics. [Online source] Available at: http://www.aas.asn.au/docs/AAS_Code_of_Ethics.pdf

Australian Archaeological Association Inc. 2004. Code of Ethics of the Australian Archaeological Association Inc. [Online source] Available at:
http://www.australianarchaeologicalassociation.com.au/codeofethics.php
Under the category of Principles Relating to Indigenous Archaeology, the AAA Code of Ethics states:
3.1 Members acknowledge the importance of cultural heritage to Indigenous communities.
3.2 Members acknowledge the special importance to Indigenous peoples of ancestral remains and objects and sites associated with such remains. Members will treat such remains with respect.

3.3 Members acknowledge *Indigenous approaches to the interpretation of cultural heritage and to its conservation.*
Principle 3.3 directly concerns IK and Indigenous worldviews concerning heritage.

Australian Film Commission. 2003. Issues Paper: Towards a Protocol for Filmmakers Working with Indigenous Content and Indigenous Communities. [Online source] Available at: http://acf.gov.au

Australian Institute of Aboriginal and Torres Strait Islander Studies. 2000. *Guidelines for Ethical Research in Indigenous Studies.* Canberra: AIATSIS.

Batchelor Institute of Aboriginal and Torres Strait Tertiary Education. 2005. *Batchelor Institute: Aboriginal and Torres Strait Islander Research.* Batchelor: Batchelor Institute. [Online source] Available at: http://www.batchelor.edu.au
Gower, G. 2004. *Ethical Research in Indigenous Contexts and the practical implementation of it: Guidelines for ethical research versus the practice of research.* Paper presented at the Association for Active Educational Researchers Symposium, Melbourne, 2004.
The author notes that Indigenous Australians have been widely researched by non–Indigenous Australians, a practice which has resulted in the use of inappropriate research methodologies and Indigenous people's exclusion from involvement, participation and ownership over the research. This paper reflects on the National Health and Medical Research Council (NHMRC) that have been developed for research in Indigenous communities. These guidelines have precipitated a change in Indigenous control and involvement over Indigenous research to a large extent, which is long overdue. This paper examines these guidelines and relates them to the practical experiences of researchers engaged in a school based research project in urban, rural and remote locations. The suitability of the guidelines will be analysed.

Jackson, S. and P, O'Leary. 2006. *Indigenous Interests in Tropical Rivers: Research and Management Issues; A scoping study for Land and Water Australia's Tropical Rivers Program.* Prepared for NAILSMA. Darwin: CSIRO Sustainable Ecosystems.

National Health and Medical Research Council. 2003. *Values and Ethics: Guidelines for ethical conduct in Aboriginal and Torres Strait Islander Health Research.* Canberra: NHMRC. [Online source] Available at: http://www.nhmrc.gov.au/ethics/human/index.htm

Natural Heritage Trust. 2004. *Working with Indigenous Knowledge in Natural Resource Management: Guidelines for regional bodies.* Canberra: Commonwealth of Australia.

Natural Heritage Trust. 2004. *Guidelines for Indigenous Participation in Natural Resource Management.* Canberra: Commonwealth of Australia.

World Wide Fund for Nature. 1996. Indigenous peoples and conservation: WWF statement of principles. *Australian Indigenous Law Reporter* 90(1):1-6.

Centre for Indigenous Natural and Cultural Resource Management (CINCRM). nd. *Research Ethics.* [Online source]: Available at: http://www.ntu.edu.au/cincrm/research/ethics.html
CINCRM is committed to research activities which advance the processes of empowerment and self-determination for Aboriginal and Torres Strait Islander people, and which promote reconciliation between Indigenous Australians and the wider community. The Board of Management has approved policies relating to:

- Research ethics
- Research protocols
- Intellectual and cultural property

- Recruitment and professional development
- Recognition of Indigenous scholars

These policies have been developed using existing policies and best practice adopted by a range of organisations including Australian Institute of Aboriginal and Torres Strait Islander Studies, Bachelor College, Northern Territory University and other Australian universities. CINCRM is now defunct, but these research and ethical guidelines are a good point of reference for ethical research in Australia.

International Research Protocols and Ethics

American Anthropological Association. 1998. *Code of Ethics*. [Online source] Available at: http://www.aaanet.org/committees/ethics/ethcode.htm
According to this code of ethics, Anthropologists are bound by the moral obligations of their profession. They also have obligations to the scholarly discipline, to the wider society and culture, and to the human species, other species, and the environment. Furthermore, fieldworkers may develop close relationships with persons or animals with whom they work, generating an additional level of ethical considerations. As anthropologists often work with Indigenous groups this code of conduct may govern and affect the collection, recording and dissemination of IK.

Battiste, M. and J, Youngblood Henderson. 2000. Protecting Indigenous Knowledge and Heritage: A global challenge. Saskatoon, Canada: Purich Publishing Ltd.
This book presents a comprehensive discussion of IK and the ethics of engaging IK. It is written by Indigenous authors and addresses topics such as, assumptions about the natural world, the ethnographic tradition, locating IK, the transmission of IK, IK as Intellectual Property, Indigenous legal systems, Eurocentric science, eliminating Eurocentric bias in research, ethical guidelines for research in Canada, Canadian Research Councils Policy Statement of Ethical Conduct on Research on Human Subjects and Community control of research. This is an excellent book which highlights some of the ethical codes of conduct required when engaging with IK and the research protocols currently being put forward by the Traditional owners of this IK.

***Brascoupe, S and H, Mann 2001. A* Community Guide to Protecting Indigenous Knowledge. Ottawa, Canada: Department of Indian Affairs and Northern Development, Research Affairs Directorate.**

Canadian International Development Agency. 1997. *Guidelines for Environmental Assessments and Traditional Knowledge*. Quebec: Canadian International Development Agency.

Council for Yukon First Nations (CYFN). 2000. *Traditional Knowledge Research Guidelines: A guide for researchers in the Yukon*. Council for Yukon First Nations (CYFN).
The Traditional Knowledge Research Guidelines were developed by the Council for Yukon First Nations (CYFN), First Nations, government and boards. The document acknowledges that the use of traditional knowledge along with western science is important for monitoring the health of people and the ecosystem. Aboriginal peoples in the North rely heavily on country foods for their dietary needs. The guidelines are designed to enhance the relationship between western scientists and First Nations to ensure proper protocols are followed when scientists research Aboriginal peoples.
http://www.nativescience.org/assets/Documents/Power%20Point/Ethical%20GuidelinesforUseof%20TK.pdf

Indigenous Peoples Council on Biocolonialism (IPCB). Indigenous Research Protection Act and Model Academic Research Agreement. [Online source] Available at:

http://www.ipcb.org/publications/policy/files/irpa.html
and http://www.ipcb.org/publications/policy/files/appndex1.html
The IPCB, a North American, organisation was established to assist Indigenous peoples in the protection of their genetic resources, IK, cultural and human rights from the negative effects of biotechnology. The IPCB provides educational and technical support to Indigenous peoples in the protection of their biological resources, cultural integrity, knowledge and collective rights. The organisation has in place an Indigenous Research Protection Act and a Model Academic Research Agreement. Both of these are designed to empower and vest control in the hands of the holders of IK, so as to render researchers and outside interest groups in a position of having to work in the interests of the IK holders and traditional owners.

SECTION 1. FINDINGS AND POLICY – Indigenous Research Protection Act
1.1 The natural and cultural landscapes, including wildlife, flora, fauna, waters, and biogenetics, among others, located on aboriginal and present day Tribal lands are owned by the Tribe and the disposition, development, and utilisation thereof are under the Tribe's full control and supervision.
1.2 The integrity and orientation of past, present, and future generations of the _____ people is founded upon a unique and invaluable cultural, historical and environmental ethic. This Tribal ethic defines and perpetuates a communal identity, language, history, and value system which involves an irrevocable cultural attachment to the native landscape ecology, and the human inseparability and interdependence with species and biological diversity.
1.3 The Tribe has the right of self-determination and in exercising that right must be recognised as the exclusive owner of Indigenous traditional knowledge.
1.4 Indigenous knowledge, cultural and biogenetic resources, and intellectual property rights have been, and continue to be, damaged, destroyed, stolen, misappropriated, both on and off the Reservation and Tribal members have been the subjects of research for decades, with virtually no benefits returning back to the community from the research.
1.5 The Tribe finds that it is in the best interest of the Tribal community to establish a research review mechanism to prevent the continued abuses, to protect the people's traditional knowledge and properties, and thereby to ensure our rights to continue to practice traditional lifeways and long term survival thereof.
1.6 The established research review process is developed as a mechanism to improve relations between the Tribe and scientists/researchers, and to promote collaboration within the framework of mutual respect, equity, and empowerment, and to identify benefits and risks to the Tribal community.

International Society of Ethnobiology. 2006. ***Indigenous Knowledge and Intellectual Property Rights.*** **[Online source] Available at: http://ise.arts.ubc.ca/links.html**

Longley Cochran, P. nd. ***Ethical Guidelines for the Use of Traditional Knowledge in Research and Science.*** **[Online source] Available at: http://www.nativescience.org/assets/Documents/Power%20Point/Ethical%20GuidelinesforUseof%20TK.pdf**

Wenzel, G. 1999. Traditional ecological knowledge and Inuit: Reflections on TEK research and ethics. ***Arctic*** **Vol.52(2):113-124.**

Adelaide Bank Charitable Foundation
www.adelaidebank.com.au/charitable
To provide support to disadvantaged people in the South Australian community via funding grants.

Alcohol Education & Rehabilitation Foundation Ltd
http://aerf.com.au
The Alcohol Education and Rehabilitation Foundation was established in 2001 to contribute towards the prevention of alcohol and other licit substance misuse, including petrol, paint and glue sniffing. We fund in four primary areas: Treatment and Rehabilitation; Prevention and Public Education; Scholarship and Workforce Development; and Research.

Australian Multicultural Foundation Ltd
www.amf.net.au
To cultivate in all Australians a strong commitment to Australia as one people drawn from many cultures, and by so doing to advance its social and economic well-being

Australian Sports Foundation
www.asf.org.au
To assist non-profit sporting and community organisations with self sufficiencies by enabling them to raise funds through tax deductible donations for the development of sport in Australia.

BHP Billiton Corporate Community Program+A2
http://bhpbilliton.com/bb/sustainableDevelopment/community/supportGuidelines.jsp
The BHP Billiton Corporate Community Program manages a key group of partnerships with Australian and International community and environment not-for-profit organisations and includes the administration of the BHP Billiton Community Trust.

In addition to the key partnerships, a small number of national projects from not-for-profit organisations in Australia are selected for support each year. These projects generally fall in the range of AUS$50,000 - AUS$100,000 although a longer-term project could receive this amount annually for up to three years

Breakwater Island Casino Community Benefit Fund
www.biccbf.com.au
Fund makes recommendations to the Minister as to the application of monies from the Fund for the benefit of the community.

CAF Australia (CAF Community Fund)
www.cafaustralia.org
Charities Aid Foundation encourages and links donors to community needs and not-for-profit organisations through Payroll programs, Matched giving programs, Foundation establishment and management, Community banking, Consultancy service on Corporate Community Involvement.

Channel 7 Children's Research Foundation of S.A. Inc.
www.crf.org.au
To support research into the health and wellbeing of children in South Australia and Northern Territory

Charitable and Social Welfare Fund (Community Benefit SA)
www.dhs.sa.gov.au/cbsa
One-off project funding up to $35,000 to assist incorporated, non-government, non-profit charitable and social welfare organisations to improve the well-being, quality of life, community participation and life management skills of disadvantaged individuals and communities; and to strengthen communities across the metropolitan, rural and remote regions of South Australia

Colonial Foundation Trust
www.colonialfoundation.org.au
To make a positive contribution to society by supporting organisations that work to find solutions for those in need or improve the quality of community life.

Commonwealth Bank Foundation
www.commbank.com.au/foundation
The Commonwealth Bank Foundation seeks to encourage developments in education, in particular the financial literacy skills of young Australians and aims to create awareness, skill and understanding of the benefits of a more financially literate community.
The Foundation builds on the Bank's community activities and contributions of more than 70 years in education and financial literacy. These include the Bank's Student Banking program introduced in 1931 to teach young people the basic skills of money management and encouraging them to save.

The Foundation believes education, in particular financial literacy, is a key requirement for a more secure and financially stable Australia and recognises and supports the role played by education in achieving financial security and stability.

Community Enterprise Foundation
www.communityenterprise.com.au
Mission statement:
Our mission is to inspire, support and enable individuals and communities who wish to create positive, lasting change. By working in partnership, we aim to strengthen visionary thinkers and organisations to improve the quality of life for all Australians.

Community Foundation Tumut Region
www.tumutfoundation.org.au
Community Foundation For Tumut Region will fund projects of community development and renewal to improve social, cultural, environmental and economic opportunities in the Tumut Shire.

Connellan Airways Trust
www.connellanairwaystrust.org.au
To promote and encourage the advancement of knowledge of people, especially younger people, living in remote parts of outback Australia. Assisting such people through facilitating air travel and the delivery of education needs, communication requisites and health related supplies. Foster the educational development of people in outback Australia, other than those living in its remote parts, and providing service or assistance to people living in those parts.

Ellen Violet Brown Trust
www.perpetual.com.au
Scholarship for an Australian Indigenous student applying him or herself to full time tertiary educational courses in Western Australia.

Estate Florence Mitten
Income paid in perpetuity in three equal shares to the Cancer Institute of Victoria for research, the National Heart Foundation of Australia for research and the Uniting Church in Australia for use in home and overseas missions and for Aboriginal welfare

F G Churnside Aboriginal Endowment Fund
www.perpetual.com.au
Provide educational assistance to Indigenous students anywhere in Australia who show an aptitude for study

Geelong Community Foundation
www.geelongfoundation.org
The Geelong Community Foundation enables the people of the Geelong region to contribute to the long term benefit of their communities.

GlaxoSmithKline Australia
www.gsk.com
GSK is committed to promising better health outcomes and knowledge in the communities in which we work. The development of partnerships with charities and community organisations is an important part of our total investment in society. We look to support initiatives that aim to improve health awareness and education, health outcomes and science education.

James N Kirby Foundation
The objectives of the James N. Kirby Foundation have been formulated on a broad charitable and community welfare basis. The Foundation's overall goal is to distribute grants to charitable, educational and technical bodies throughout Australia in the areas of health, education, technology and science, art, literature, the conservation, maintenance and development of Australia's natural resources, with particular attention given to technical education projects to assist young Australians acheive their highest standards.

John and Anna Woods Memorial Fund (formerly known as the Ethel May Woods Trust)
www.statetrustees.com.au
The John and Anna Woods Memorial Fund provide funding for the welfare of Aboriginal Children.

Jupiters Casino Community Benefit Fund
www.jccbf.org.au
The Jupiters Casino Community Benefit Fund (JCCBF) was established to administer the 1% community benefit levy paid to the State Government by the Jupiters and Conrad International Treasury Casinos. The grants assist non-profit community groups provide services and facilities which will be of benefit to the broader community.

Lotterywest
www.lotterywest.wa.gov.au/grants
To support not for profit and local government authorities with grants for charitable and benevolent purposes that responds to community priorities and will benefit the Western Australian community.

Lumbu Indigenous Community Foundation
www.lumbu.org
An Indigenous controlled and Indigenous managed non-government organisation dedicated to supporting the development of Australia's Aboriginal and Torres Strait Islander peoples and their communities.

Macquarie Bank Foundation
www.macquarie.com.au/au/about_macquarie/macquarie_in_the_community.htm

Macquarie Bank Ltd
macquarie.com.au/au/about_macquarie/macquarie_in_the_community.htm

Maple-Brown Family Charitable Trust
To enable the Robert Maple-Brown Family to support Australian charitable, educational and medical research institutions.

Melbourne Community Foundation
www.communityfoundation.org.au
Committed to finding new and innovative ways of build community. The Foundation manages a range of named sub-funds and community initiatives.

Mercy Foundation Ltd
www.mercyfoundation.com.au
The Mercy Foundation works to serve human dignity and to foster respect for our natural environments. Through advocacy, education and financial support, the Mercy Foundation is committed to promoting the process of authentic human development. This process includes: enabling people living in society's margins to achieve a life of dignity; changing social structures that are unjust; joining with people in their struggle to liberate themselves from what oppresses them; breaking down barriers and forming community; embracing practises to sustain our natural environments; and working to ensure equal access for all to the resources of society and church.

Milton Corporation Foundation
To provide financial assistance to charitable organisations

National Australia Bank
www.national.com.au/community
To ensure the organisation is meeting the needs and expectations of the communities in which we operate. To provide an inclusive workplace environment for our employees.

Norman Catts Trust
www.perpetual.com.au

Origin Energy
www.originenergy.com.au
Origin Energy's Community Connections programs support the communities in which we operate through immediate and practical assistance, as well as long-term investment. We support a number of projects that work towards environmental and social sustainability by protecting our environments; helping customers be energy efficient and manage their bills; empower people towards belonging and security; and supporting communities facing disasters through preparation and relief.

Poola Foundation
The Poola Foundation's aim is to support positive and practical projects in the fields of environment and social justice that lead to a more sustainable, just and peaceful world. We are proactive and strategic in issues of high priority.

Queensland Community Foundation
http://www.qcf.org.au

To build a community foundation providing the most efficient, effective and secure permanent trust fund.

RACV
www.racv.com.au
RACV has been supporting the Victorian community for over 100 years. Its community relations program reflects this commitment.

Reichstein Foundation
www.reichstein.org.au
The Reichstein Foundation supports projects which effect structural change to redress the disadvantage experienced by particular communities. We believe that progressive philanthropy is characterised by its insistence on addressing the structural causes of problems rather than the alleviation of their symptoms. Our grant making programs support community organisations in Victoria that empower people to challenge the policies, institutions and attitudes fostering inequality and inequity. Guided by the mission of 'change not charity', our grant programs work for long term social change - more equitable distribution of resources and the elimination of barriers that prevent people from participating more fully in society. Social change is not based on ideology but on the heart felt desire for all to be treated with dignity and respect. Social change philanthropy supports people to work towards environmental sustainability, peace, justice, equality and democratic participation. The Foundation directs resources to break down barriers based on race, class, age, disability, sexual orientation and culture. We work in partnership with community organisations to improve, maintain or restore human rights and social justice. The Foundation provides grants to community groups who: 1. Actively work towards the pursuit of human rights and social justice for disadvantaged members of the community; 2. Involve consumers in the management and decision making structures of the group; 3. Use community development processes to address issues. Structural change projects are our priority.

Rio Tinto Aboriginal Foundation
www.rtaf.riotinto.com
To increase capacity and wellbeing of Aboriginal people living in Australia.

Sandhurst Trustees Ltd ATF Community Enterprise Foundation
www.communityenterprise.com.au
Our mission is to inspire, support and enable individuals and communities who wish to create positive, lasting change. By working in partnership, we aim to strengthen visionary thinkers and organisations to improve the quality of life for all Australians.

Sisters of Charity Foundation Ltd
www.sistersofcharityfoundation.com.au
The mission of the Sisters of Charity Foundation is to provide support for and financial assistance to community initiatives that will benefit the poor and under-served.

Stand Like Stone Foundation
www.standlikestone.com.au
To stimulate and sponsor worthy community initiatives to progress the communities in our region towards self sustainability and create a culture of philanthropy.

Sydney Community Foundation
www.sydneycommunityfoundation.org.au
The Sydney Community Foundation (SCF) is an independent public foundation that attracts funds to build a permanent endowment. It allows people to set up a sub-fund that will allow them to give back to their community and see the results in their lifetime, whilst creating a legacy for the

future. It provides a permanent and growing source of funding, with the income from the endowment fund each year being distributed back to community as annual grants. The Sydney Community Foundation researches and identifies emerging community issues specific to the geographical area, and then identifies projects that meet those needs. The ultimate goal of a community foundation is to continue to support the community for the long term, and meet the needs of future generations.

The SCF helps people invest in Sydney's future, using its knowledge of community issues to be effective grant makers and providing community leadership. It provides donor and community engagement by offering donors the ability to identify and provide support for innovative community development projects.

Telstra Corporation Limited and Telstra Foundation
http://www.telstra.com.au/abouttelstra/csr/index.cfm
and www.telstrafoundation.com
Telstra has always recognised its significant social responsibilities and has a broad platform of social and community involvements. Areas include: philanthropic giving through the Telstra Foundation, which aims to make a positive and lasting difference to the lives of Australian children and young people; community-focussed sponsorships; the Telstra Friends staff volunteering program; Telstra's Corporate Environment Group; Disability Services; Access for Everyone program which provides services for people on low income; selective local support from Telstra CountryWide; and various awards programs including the National Aboriginal & Torres Strait Islander Art Awards, Telstra & Australian Governments' Small Business Awards, Telstra Business Women's Awards and sponsorship of the National Safety Council of Australia's National Safety Awards. The Telstra Foundation encompasses the Telstra Community Development Fund and the Telstra's Kids Fund.

The Adelaide Benevolent & Strangers' Friend Society Inc.
To receive gifts of cash and kind and to administer relief to the sick, poor and needy within the state of South Australia.

The Australian Federation of University Women - SA Inc. Trust Fund
www.afuw-sa-bursaries.mx.com.au
Promotion and encouragement of education, particularly at the postgraduate level. The Trust Fund provides twelve bursaries annually, on a competitive basis, to assist postgraduate students of academic excellence at Australian universities to complete their postgraduate degrees. The bursaries are intended to provide short term specific purpose assistance only, such as assistance with a research trip or the purchase of a piece of equipment necessary for the completion of the degree. The bursaries are not stipends. In addition, there is a bursary for Indigenous Australian women undergraduates at South Australian universities.

The Charles Stewart Mott Foundation
www.mott.org
To support efforts that promote a just, equitable and sustainable society.

The EastWeb Fund
www.eastweb.org.au
The EastWeb Fund is a sub-fund of the Melbourne Community Foundation, committed to developing partnerships which promote equality and understanding between Indigenous and non-Indigenous communities. We also promote the full participation of refugee and asylum seeker communities in the wider community. The group works to counter this disadvantage, promote community capacity and self-determination.

EastWeb is run by a group of young people who recognise that Indigenous, asylum seeker and refugee communities experience significant marginalisation and discrimination which hamper their ability to fully participate in community life. We are supported by a panel of distinguished patrons each of who share a passion for social justice and grassroots change.

The Flora & Frank Leith Charitable Trust
www.leithtrust.org.au
The support of organisations or funds which are public charities, with particular emphasis on youth.
The Foundation for Young Australians
www.youngaustralians.org
To support and empower young Australians aged 12 to 25. The Foundation creates positive opportunities and outcomes for Australia's young people, by leading the development of innovative strategies that enable them to reach their potential and participate fully in the community.'

The Jessie Street Trust
To commemorate Jessie Street and provide seed funding for activities she would have supported

The Mary Potter Trust Foundation
http://www.marypotterfoundation.org.au/
The Foundation seeks to bring about a more equitable and just society by supporting those groups who work to promote or establish structures which help to alleviate social injustices and benefit disadvantaged communities in Australia, regardless of colour, sex or creed.

The Wyatt Benevolent Institution Inc
www.wyatt.org.au
Focus - individual financial disadvantage and poverty. Wyatt provides financial assistance to eligible South Australians at times of need, in accordance with the will of Dr William Wyatt, a South Australian early citizen.

Tobin Brothers Foundation
www.tobinbrothersfunerals.com.au
The Tobin Brothers Foundation was formed in 1984 to mark the 50th anniversary of the foundation of Tobin Brothers Funerals. The Tobin Brothers Foundation seeks to assist a diverse range of worthy organisations that might otherwise have difficulty in raising the funds for a specific purpose.

Vincent Fairfax Family Foundation
www.vfff.org.au
The VFFF provides distributions to not-for-profit organisations in Australia, principally in New South Wales, for public charitable purposes.

In accordance with specific criteria, and subject to the availability of funds, applications are considered within the following categories: Arts and Culture; Christianity; Community (Aged, Youth and General); Crisis; Education; Environment; Medical (Research and Community Health).

In particular, the VFFF seeks to support programs which are preventative in focus, catalytic in nature, and serve to enhance the long-term viability of charitable organisations and the communities they serve.

Westpac Foundation
www.westpac.com.au/internet/publish.nsf/content/WIWCWF+Westpac+Foundation
The Westpac Foundation offers grants to not-for-profit organisations with DGR status throughout Australia. Current identified areas for funding are early intervention and education programs and projects that aim to address the causes of social problems in disadvantaged communities, particularly with a focus on literacy/numeracy and the advancement of social and community welfare.

Wilson Dilworth Foundation
To assist smaller community based groups who are in need of support for identifiable projects for specific purposes to assist the disadvantaged members of the community including the frail aged, the intellectually and physically disabled, vulnerable youth, and the Indigenous and new settlers.

Young Indigenous People in Victoria
www.anz.com/aus/fin/Trustees/
The program funds projects in Victoria with the following aims: advancement of young Indigenous people; assistance to young Indigenous people in accessing existing support services; and supporting young Indigenous people with complex needs to achieve their potential.

Overview to Australian IK projects

Horstman, M. and G, Wightman. 2001. *Karparti* ecology: Recognition of Aboriginal ecological knowledge and its application to management in north-western Australia. *Ecological Management & Restoration* Vol. 2(2): 99

NRM Projects

Sea Forum
Department of Environment and Heritage, Commonwealth of Australia
This case study is taken from the recently closed Sea Forum website as an example of an agreement between Indigenous communities and a Regional Natural Resource Management Body. The main issues for the Sea Forum are the sea rights and interests of the Southern Great Barrier Reef Traditional Owners, and the overall management of Indigenous sea country at the southern Great Barrier Reef Marine Park.

The Traditional Owners have certain resource management goals. Existing management of the Southern Great Barrier Reef (SGBR) offers them opportunities as well as limitations in the pursuit of these goals. Sea Forum has decided that to improve Traditional Owners chances of achieving these goals, they need to negotiate with the Government management agencies and industry to create a framework agreement for the whole region. It is hoped that this framework will help Traditional Owners negotiate at the local level and achieve their goals for their country. Each sea country estate area will have its own management structures, based on the local needs and rights of Traditional Owners.

The potential rights and goals of Sea Forum include:
1. *Respect for Aboriginal goals when planning and managing Resources*
2. *Sustainable resource use and management through cooperation*
3. *Education*
    - Education for the wider community about culture and sustainable resource use (e.g. through tourism).
    - Education about Aboriginal culture and management goals at the planning and policy stages by involving Aboriginal people in decision-making and management.

- Education for Aboriginal people (young and old) about how to manage resources and how to make policies.
- Use of resources to promote recognition of Aboriginal rights.

4. *Cultural practice and regeneration*

From: http://www.deh.gov.au/Indigenous/publications/nrm-sea-forum.html

Australian Indigenous Health InfoNet – Web resource

http://www.healthinfonet.ecu.edu.au/

The website reads:

"The Australian Indigenous Health*InfoNet* is an innovative web resource that makes knowledge and information on Indigenous health easily accessible to inform practice and policy. Our web resource is a 'one-stop info-shop' for people interested in improving the health of Indigenous Australians. We provide quality, up-to-date knowledge and information about many aspects of Indigenous health, and support 'yarning places' (electronic networks) that encourage information-sharing and collaboration among people working in health and related sectors".

One part of this is engaging IK and Indigenous worldviews to inform health policy and practice in Australia. Culturally informed approaches to Indigenous health require negotiations of Indigenous views of health, social and physical welfare.

Indigenous Ecological Knowledge for land Management

Northern Australia

Project members: Tom Vigilante, Kimberly Land Council Derby, Peter Cooke, Northern Land Council Darwin, Nick Smith, Balkanu Cape York Development Corporation Cairns.

Tropical Savannas CRC – Darwin.

Landcare Australia, Commonwealth of Australia

Northern Territory Projects

[Online details available at: http://www.maff.gov.au/releases/05/05133wt.html

Review of Farm Forestry Developments in the Top End of the Northern Territory: Where to from here?

This project will assess return on investments in farm forestry activities and projects in close consultation with landcare interests, key landholders and land managers and farm forestry investors. It will produce reports and products detailing experiences and learnings from farm forestry investments for the NT Landcare community.

Thamarrurr Natural and Cultural Resource Management: Building Contemporary Management and Development Capacity amongst Indigenous Land Managers

This project implements key aspects of the Thamarrurr Land and Sea Management Plan by Thamarrurr Rangers. It will investigate/research options for enterprise development and assist land owners to make more informed decisions and develop pastoral enterprises incorporating Best Management Practice.

Developing Businesses Based on Aboriginal Plant Knowledge

Project partners: Australian Government, Dept of Agriculture, Fisheries and Forestry – National Landcare Program.

This project assists Aboriginal groups in the Top End to develop small scale commercial enterprises based on Aboriginal plant knowledge, and develops information products on Aboriginal plant knowledge for a range of Indigenous communities. It also provides extension service and technical support to a number of Indigenous groups and land managers.

Sustainable Development of Natural Resources on Wagiman Country
This project will establish a sustainable business on Wagiman country based on the harvesting of native plants and a small-scale sustainable and economic cattle business with a formal business structure on Wagiman country that develops skills and economic activities. It will develop and implement Best Management Practices for the cattle industry that address pastoral land condition and enterprise viability, including grazing management, stocking rates, animal nutrition, animal breeding, marketing and business development.

Sustainable Indigenous and Rural Development study
Partner Organisations: Australian Conservation Foundation, conservationists, financiers, philanthropists and Indigenous leaders.
The study will examine a range of environmentally and culturally appropriate economic development models. It is based on a model used by Ecotrust Canada, an organisation that works with First Nations groups in British Columbia, the aim will be to provide commercial loans and information and networking services to Indigenous people wanting to establish businesses in their communities.

Economy Model for Indigenous Northern Australia
Partner Organisations: Australian Conservation Foundation
Investigation of a Conservation Economy Model for Indigenous Northern Australia

Wild Rivers
Partner Organisations: Commonwealth, State and Territory Governments, conservation agencies, local government, land owners, Indigenous people and NRM practitioners.
The **Wild Rivers Project** commenced in 1993. Its work has comprised three concurrent programs covering:

- systematic identification of Australia's wild rivers;
- development of Guidelines for the sustainable management of wild rivers; and
- communications and consultation.

The Conservation Management Guidelines for Wild River Values have been developed by the Wild Rivers Project, which the Australian Heritage Commission began in 1993. A Wild Rivers Committee has been responsible for the overall guidance of the Project. It includes representatives from the Commonwealth, State and Territory governments covering water resource management and nature conservation agencies, local government, landowners (the National Farmers Federation), conservation groups, Indigenous people and the scientific community.
http://www.heritage.gov.au/anlr/wild_riv/guide/home.html

Northern Territory Indigenous Marine Ranger Program
Partner Organisations: Northern Territory Government, Northern Land Council, Tiwi Land Council, Anindilyakwa Land Council and 14 Aboriginal communities.
Under this program, fourteen Indigenous marine and sea ranger groups participate in surveillance, monitoring, resource management and cultural activities that cover the entire Territory coastline. The Northern Land Council helped to set up the first of these programs in the early 1990s and 12 groups now operate under the council's Caring for Country unit. The other two groups have been established by the Tiwi and Anindilyakwa Land Councils. Ranger programs have been set up to better equip Traditional Owners to monitor their sea and land.

Sea County Regional Management Plan
National Oceans Office

Desert Knowledge Cooperative Research Centre

Central partners: Central land Council, Charles Darwin University, CSIRO, Curtin University, Department of Agriculture WA, Desert Peoples Centre, Griffith University, James Cook University, Murdoch University, Newmont Australia, Northern Territory Government, SingTel, Optus Pty Ltd, University of South Australia, WA Department of Conservation and Land Management.

Associate Partners: Adelaide University, Australian Inland Energy and Water, Australian National University, Bowerbird Enterprises Pty Ltd, Flinders University (Centre for Remote Health), Northern Land Council, NSW Agriculture, SA Department of Water, Land and Biodiversity Conservation, Southern Cross University, Tapatjatjaka Community Government Council, University of Queensland, University of Western Australia, University of Wollongong.

The Desert Knowledge Cooperative Research Centre was launched in September 2003. It is a venture to increase the social, economic and cultural capital of inland Australia by providing a research base to develop 'desert solutions for desert problems'. It links 28 partners in supporting the 500,000 Australians who live in the desert. Government, business, Indigenous organisations, researchers and local communities have joined together to collaboratively design better opportunities and services for desert people.

Natural Heritage Trust

Developing an Aboriginal Plan for the Wet Tropics NRM Region

Natural Heritage Trust

Traditional Owner Engagement in Cultural and Natural Resource Management Planning Burdekin Dry Tropics Region

Great Barrier Reef Marine Park RAP

Australian Government

The Great Barrier Reef Marine Park Authority is located in Townsville, Queensland, and is the principal adviser to the Commonwealth Government on the care and development of the Great Barrier Reef Marine Park.

The Authority undertakes a variety of activities including:

- developing and implementing zoning and management plans
- environmental impact assessment and permitting of use
- research, monitoring and interpreting data
- providing information, educational services and marine environmental management advice

Day-to-day management of the Great Barrier Reef Marine Park is carried out by Queensland agencies subject to the Authority's mandate. An Indigenous Partnerships Liaison Unit (IPLU) was established by the Authority in 1995 to more effectively identify the interests and needs of Indigenous peoples in relation to Native Title, governance, and the maintenance of the cultural and traditional values associated with the Great Barrier Reef.

Issues addressed by the Unit include the recognition of cultural heritage values, semi-subsistence resource use, information sharing, cooperative management, protocols, cultural advice, and liaison. One of the Unit's goals is to provide timely and accurate information in regard to Indigenous issues and achieve cooperative management of the Great Barrier Reef World Heritage Area. Empowering Indigenous peoples through involvement in all tiers of management is aimed at helping to develop effective and acceptable solutions for key Indigenous issues, and is crucial for effective management of the Marine Park. The starting point for this involvement is at the grassroots level. Community management gives recognition to communities, reinforces self-determination and provides benefits for all.

Through the Unit, the Authority supports, rather than instigates, Indigenous community initiatives through information sharing and resource support. Complex and broad-scope views inherent with multiple use of the Great Barrier Reef make cross-cultural communication an important management tool. The IPLU staff not only work with Indigenous groups, but work closely with other government authorities, the tourism industry, the fishing industry and conservation groups in order to build a greater understanding among all users.

Involving Indigenous groups in all user-group management issues (such as tourism, Coastcare programs and permitting) allows for foundation building. This then leads to the development of management structures or models that involve all concerned so that effective and mutually acceptable practices can be put in place.

The Unit has been instrumental in:

- highlighting Indigenous relationships with the marine environment to ensure cultural and heritage values are recognised;
- providing equity for Indigenous involvement in setting directions and management action;
- presenting Indigenous values of the World Heritage Area positively to stakeholders and the wider community;
- providing for the maintenance and protection of Indigenous subsistence activities within the bounds of ecological sustainability, with particular emphasis on ensuring the long-term viability of threatened species;
- ensuring fisheries management strategies meet the traditional, social, cultural and economic needs of Aboriginal and Torres Strait Islander communities; and
- Implementing mechanisms to resolve conflicts between stakeholder interests and cultural values.

[Online source] Available at:
http://www.gbrmpa.gov.au/corp_site/management/Indigenous_issues

Indigenous Protected Areas

Australian Government – Natural Heritage Trust

The Indigenous Protected Areas Programme is one of the ways in which Indigenous Australians are being supported to meet their cultural responsibility to care for their country and to pass on their knowledge about the land and its resources to future generations. The Indigenous Protected Areas Programme is part of the National Reserve System Programme which aims to establish a network of protected areas which includes a representative sample of all types of ecosystems across the country.

Through this program, Indigenous landowners are being supported to manage their lands for the protection of natural and cultural features in accordance with internationally recognised standards and guidelines for the benefit of all Australians. The Indigenous Protected Areas Programme and National Reserve System Programme are part of the Australian Government's Natural Heritage Trust.

Indigenous protected area projects across Australia are at different stages of development. A number of projects have resulted in IPA declaration while others are in the process of developing plans of management and consulting within their Indigenous communities and with other stakeholders. The declaration of an Indigenous protected area over Indigenous owned lands results in that land being considered as part of the National Reserve System. The IPA Program sets out to accommodate the cultural priorities of Indigenous people with the biodiversity conservation objectives of mainstream nature conservation agencies. IPAs can therefore contribute to the National Reserve System as well as meeting the land management aspirations of Indigenous landowners. Many IPAs and IPA projects are in high priority bioregions identified through the

Interim Biogeographic Regionalisation for Australia (IBRA) which describes the major bioregions of Australia and assesses their conservation status.

Declared Indigenous protected areas must have a management plan in place which describes how the area will be managed, including matters such as feral animal and weed control, the significant values of the area, cultural and natural heritage conservation and the establishment of infrastructure to regulate visitor access. Examples of IPAs in Northern Australia include:

- Dhimurru Indigenous Protected Area Northern Territory Declared: November 2000 Total Area: 100,993 hectares

Details available at: http://www.deh.gov.au/Indigenous/ipa/declared/urru.html

- Warul Kawa Island Indigenous Protected Area Queensland Declared: April 2001 Total Area: 3,500 hectares\

Details available at: http://www.deh.gov.au/Indigenous/ipa/declared/warulkawa.html

- Anindilyakwa Indigenous Protected Area Northern Territory Declared: June 2006 Total Area: 300,000 hectares

Details available at: http://www.deh.gov.au/Indigenous/ipa/declared/anindilyakwa.html

- Laynhapuy Indigenous Protected Area Northern Territory Declared: September 2006 Total Area: 690,000 hectares

Details available at: http://www.deh.gov.au/Indigenous/ipa/declared/laynhapuy.html

NAILSMA projects

Leadership, communication and scholarships

Program Coordinator: Lisa Binge

The Leadership, Communication and Scholarship program is undertaken to add value to existing NAILSMA activities across northern Australia.

Leadership

The Leadership part of the program is termed 'Future Leaders — The Land is in Our Hands'. This project seeks to support the next generation of leaders in natural and cultural resource management by creating more opportunities for youth to meet other youth from across the north, form networks and access training and personal development opportunities.

The project aims to provide an annual youth forum, support education and training activities, support individual leadership development, form youth networks and support, identify youth issues and support youth to link with elders through community based initiatives.

Scholarships

The Scholarships or NAILSMA Study Assistance Program supports Indigenous students who are planning to study or already studying, formal natural and cultural resource management related course across northern Australia.

Communication

Kantri Laif (count-ree life) is a bi-annual newsletter, featuring stories predominantly written by land and sea mangers across North Australia. The newsletter was developed as a NAILSMA communication tool and also a practical tool for traditional owners to communicate and share ideas across boarders, as well as to the wider public. The newsletter in currently in A4 format but once operational it will take on a standard newspaper format.

Indigenous fire project

Project leader: Jean Fenton

The Indigenous Fire Project is a two-year project funded under the Tropical Savannas CRC Northern Australia Fire Project, which is coordinated by Dr Jeremy Russell-Smith.

A core component of the Northern Australia project was to effectively engage Aboriginal people in fire management initiatives and projects across northern Australia. Key objectives are to:

- Provide support to Indigenous groups managing existing fire related issues in their regions, communities or outstations.
- Support the development of an annual north Australia fire forum.
- Assist Traditional Owners to examine opportunities for improving management of fire on their country.
- Support the development of materials for improving two-way communication flows.
- Inform Traditional Owners and their organisations of fire-related developments and initiatives.
- Develop ongoing avenues for information exchanges between Indigenous groups addressing fire related issues across northern Australia, such as, cultural exchanges.
- Develop strong relationships with key agency staff to ensure best practice and advice is getting to Traditional Owners.
- Support Indigenous representatives or, where applicable, represent Indigenous interests on regional and organisational at boards, committees and other forums dealing with fire-related issues.

Integrating research and Indigenous land management

Project Leader: Joe Morrison, Executive Officer, NAILSMA

This project aims to improve coordination, collaboration and engagement of Indigenous land and sea managers and owners into the TS–CRC its partners and its current and future project portfolio. The project will improve Indigenous people's engagement by hosting an annual land and sea management policy forum and regionally based Indigenous leadership forums targeting aspiring Indigenous land managers and owners.

The project draws on the North Australian Indigenous Land and Sea Management Alliance (NAILSMA), which was established by the peak Indigenous natural resource agencies across northern Australia taking in the Kimberley the Top End of the Northern Territory, and the Gulf of Carpentaria and Cape York in Queensland.

It exists as a Memorandum of Understanding between these groups, but is a partner in the TS–CRC and one that can provide a vehicle for improved research outcomes for Indigenous landowners across the tropical savannas.

Objectives

The project aims to give voice to Indigenous land managers and owners across the tropical savannas and provide leadership support focused on the research and resourcing needs of the Indigenous estate across northern Australia. The project will increase networking between Traditional Owners (TOs) of land and sea across northern Australia, and improve their communication and information exchange with outside agencies.

Indigenous Knowledge (IK) Strategy

Project leader: Steve Johnson, NAILSMA

Indigenous Australians own and occupy large tracts of land across northern Australia. They also make up a significant (and rapidly growing) proportion of the population. Consequently, land

and sea management issues are (as they have always been) of paramount concern for many Aboriginal people in these regions.
In the past and through to the present, Indigenous groups have drawn on a sophisticated understanding of human/environmental relationships in order to successfully manage their vast land and sea estates. Sometimes referred to as Indigenous Knowledge (IK) this understanding is now, in some cases, seriously threatened.

In the context of mainstream Natural Resource Management (NRM) this situation has come about for a number of reasons. In many cases, non Indigenous researchers and policy makers have undervalued, or simply failed to grasp, the contributions IK continues to make to the maintenance of healthy country. Consequently, Aboriginal people have often been excluded from decision making processes which directly impact on their lives and livelihoods while long term investment in IK support programmes has been hard to find.

The IK project was devised in order to overcome some of these obstacles. Accordingly, the key objective will be to develop A Strategy for the Conservation and Application of Indigenous Knowledge across North Australia. This will be achieved through:

- Documenting the needs and aspirations of Traditional Owners with respect to the conservation of IK across north Australia;
- Identifying the constraints that impede the use, articulation and engagement of IK into broader NRM Research and Design;
- Developing an overview of what has been undertaken in Australia and Internationally and why it has succeeded or failed;
- Developing an overview of other relevant issues. (These will include Intellectual Property Rights, Information Technology requirements, communication needs, resourcing needs for on country activities and collaborations between Indigenous landowners and researchers);
- Providing practical tools for Traditional Owners to enable them to develop equitable working relationships with research and other agencies;
- Communicating findings to ensure full exposure and investment in local and regional scale knowledge conservation in the immediate to short term.

Dugong and Marine Turtle Management
Project leader: Dr Rod Kennett
The project partners of the Dugong and Marine Turtle project are:
Kimberley Land Council
Northern Land Council
Carpentaria Land Council Aboriginal Corporation
Balkanu Cape York Development Corporation and
Torres Strait Regional Authority.

The partner organisations oversee the delivery of the project through Regional Activity Plans in selected 'pilot' communities. The Regional Activity Plans, developed through community consultation, identify Traditional Owners needs and aspirations, the issues and threats facing dugong and turtle management, and the management and research activities that communities wish to undertake.

NAILSMA works with the project partners, providing coordination and undertaking cross-regional activities such as:

- Facilitating communication amongst participating Indigenous communities;
- Standardised information recording and storage;

- Training and exchange visits between participating communities;
- Commissioning relevant reviews and analyses such as a socio-economic study of the value of dugongs and turtles to Indigenous livelihoods;
- Ensuring Indigenous representation in government initiatives, planning and committees; and
- Communication activities to improve public understanding of the rights, roles, responsibilities and achievements of Indigenous people in managing dugong and marine turtles.

Balkanu Cape York Development Corporation
www.balkanu.com.au
Balkanu has many programs to maintain and improve the economy, society and culture for the Aboriginal People of Cape York, including Caring for Country programs; homelands housing; developing a digital network; business development; property planning; and administering CDEP

Balkanu – Traditional Knowledge Recording Project
Avenues for the preservation of Traditional Knowledge are fading and are at risk of being lost altogether. Loss of Traditional knowledge will result in a decline of Indigenous Identity and a severe reduction in the recognition and understanding of an invaluable Sustainable Knowledge System. TKRP is endeavoring to rescue this knowledge, for the benefit of Community and Country, before it is too late.

A re-focus of Indigenous Knowledge is a multi-layered healing aspiration of TKRP, which steers the direction of the project towards traditional ways of dealings. The majority of Indigenous Elders in Communities understand the problems in Community and Country and bear the frustrations of not being able to re-apply traditional values. This project is based on:

1) Ensuring the survival of cultural knowledge; and
2) The opportunity to demonstrate practices that have the ability to 'innovate' contemporary management and community outcomes for the benefit of all generations to come.

TKRP seeks to support Indigenous Elders to mentor the process of Indigenous Knowledge Research and recording throughout the Cape York Peninsula region. TKRP is rapidly spreading its recording and mentoring methodology into other regions. The project has a demonstrated record of success, with a focused methodology, that has been built over time.

The Project is achieving the following:

1) Transfer of Traditional Knowledge from the Elders to their young people based on the traditional methods as determined by the Elders.
2) Digitally recording this Traditional Knowledge before it is lost forever.
3) Storing knowledge onto multi-versions of a digital knowledgebase.
4) Incorporating traditional knowledge in cooperative land management strategies and building this practice into "Best practice principles" in all land management.
5) Building and improving the profile of Indigenous Knowledge and its appreciation with other land managers and users both nationally and internationally. (eg,pastoralists, government and the general public).
6) Creating practical action, research-driven, projects as live case studies to better collaborative land and community management.

TKRP is continuing to develop by assisting the Elders to conduct their own research on their own terms. The Elders need vital assistance to pass on their knowledge and most importantly, to practically implement their inherited cultural responsibilities in a race against time to rehabilitate our communities and environment.

www.tkrp.com.au/tkrp/index.php?option=com_frontpage&Itemid=1
http://www.tkrp.com.au/tkrp/index.php?option=com_content&task=view&id=12&Itemid=33

Land Management - Central Land Council
Information on the Central Land Council collaborative land management programs and initiatives is available at: www.clc.org.au/ourland/landmanagement.asp

Kimberley Land Council
Looking after country program
Information about the Kimberley Land Council's land and sea management projects is available at: www.klc.org.au/projects.htm

Northern Land Council
www.nlc.org.au/index.html

Northern Land Council
Caring for Country Unit
www.nlc.org.au/html/care_menu.html

Northern Land Council's
Caring for Country Unit: Fire management
www.nlc.org.au/html/care_fire.html

Northern Land Council's
Caring for Country Unit: Weed Management
www.nlc.org.au/html/care_weed.html

Department of Environment and Heritage
Natural Heritage Trust
Range of Fact Sheets Dealing with *the Department of Environment and Heritage's Involvement with Indigenous Communities*:

- Working with Indigenous Coastal Communities 2000
  http://www.deh.gov.au/Indigenous/fact-sheets/coastal-communities.html

The Natural Heritage Trust supports Indigenous involvement in coastal and marine management through several *Coasts and Clean Seas* programs. *Coastcare* is another community-based program designed to conserve and protect Australia's coastal regions. Indigenous community projects are an important component of the *Coastcare* program. *Coastcare* grants support Indigenous communities to monitor, assess, rehabilitate, protect and manage in a sustainable way, important coastal and marine sites.

- Working with Indigenous Communities 2000
  http://www.deh.gov.au/Indigenous/fact-sheets/communities.html

The Department of the Environment and Heritage is responsible for implementing the Australian Government's environment program. This includes providing advice and support on Indigenous land management and cultural heritage matters.

Aboriginal and Torres Strait Islander people work for the Department of the Environment and Heritage in park management and in policy, program management, and support roles. The department has developed an Indigenous Career Development and Recruitment Strategy aimed at enabling Indigenous people to take advantage of job opportunities and to help existing staff realise their potential and career goals.

- Working with Indigenous Communities through Joint Management 2001
http://www.deh.gov.au/Indigenous/fact-sheets/joint.html

One model that has been pioneered by the Australian Government is joint management of national parks. This began in 1978 with Kakadu National Park in the Northern Territory. The Australian Government has since entered into joint management with the traditional owners of Uluru-Kata Tjuta and Booderee national parks.

These arrangements have been recognised internationally as providing the model for involving Indigenous people in managing protected areas. Uluru-Kata Tjuta National Park and its Board of Management won UNESCO's highest award, the Picasso Gold Medal, in 1995 for outstanding efforts to preserve the landscape and Aboriginal culture of the park and for setting new international standards for World Heritage management.

Academic Research Projects

Desert Knowledge Australia
Alice Springs, Northern Territory, Australia.
Subject: Economic development, environmental health, health and community services, research,
Website: http://www.desertknowledge.com.au
Summary: Desert Knowledge Australia is a network that connects people to provide knowledge about desert regions. Formed in 2002, Desert Knowledge Australia develops business networks and partnerships across inland Australia to encourage research, development and business concepts. Action is focussed on the areas of Natural Resource Management, Technical Solutions, Health Education and Social Policy, Solar development and Sustainable Communities.

Research Project: Indigenous ecological knowledge
Investigator: Deborah Rose, ANU
Rose writes, "Australia is home to a remarkable diversity of systems of knowledge about the ecology of this unique continent. Indigenous knowledge systems and systems based on western scientific tradition have often been seen as the most distant poles on a continuum that ranges from 'myth' to 'fact'. Recent analysis undermines this dichotomy, and research in Australia shows that Indigenous ecological knowledge on this continent is detailed, localised, and well grounded in empirical observations. In addition, Indigenous knowledge is embedded within a system of ethics that is oriented toward long-term balance and mutual care in relationships between people, other living things, and life support systems.

Indigenous knowledge about Australian ecosystems has been built up over long periods of time through fine grained observation and complex systems of ordering memory, place, event, and significance. In the form of relatively fragmented bits of information, Indigenous ecological knowledge has contributed to Australian field sciences, and is an important part of co-management schemes.
This research project aims to document and analyse Indigenous ecological knowledge, practice, and philosophy in two regions of north Australia: the floodplains and the savanna. In addition to numerous published articles, the first large-scale study is now published: Country of the Heart: An Indigenous Australian Homeland, with Sharon D'Amico, Nancy Daiyi, Kathy Deveraux, Margy Daiyi, Linda Ford and April Bright, Aboriginal Studies Press.

The significance of this research is founded in the fact that the sharing of ecological knowledge and philosophy is an important response to the environmental crises in which all our lives are entangled. The sharing can go both ways, for in contemporary Australia there are numerous knowledge systems that can help to recover the capacity of ecological systems to nourish human and other forms of life".

Available at: http://cres.anu.edu.au/people/userprofile.php?user=debbie

Indigenous Knowledge and Resource Management in Northern Australia, Making Collective Memory with Computers

Australian Research Council, Linkage Project: Digital Technology and the Intergenerational Transmission of Indigenous Knowledge

Dr Michael Christie,

http://www.cdu.edu.au/centres/ik/

IKRMNA is a three year 2003-2006 ARC Linkage Project to support and develop Indigenous databases that maintain and enhance the strength of local languages, cultures and environments in Northern Australia.

Intellectual Property and Indigenous Knowledge: Access, Ownership and Control of Cultural Materials

Dr Jane Anderson

http://www.aiatsis.gov.au/research_program/contacts/jane_anderson/jane_anderson_details

This project, administered by AIATSIS, addresses critical IP problems facing archives, libraries, cultural institutions and Indigenous run cultural and knowledge centres in Australia and explores contested ownership and control of historical and contemporarily recorded Indigenous cultural knowledge.

The project is focused on the significant amounts of copyright material (in particular ethnographic photographs, sound-recordings and films) that have been produced about Indigenous people in Australia over the period of colonisation. Simply, the problem manifests itself because Indigenous people and communities have no legal rights in much of the material, meaning that they must constantly negotiate with the copyright owner for future use, reproduction, and in some more extreme instances, access.

Factors such as distance and language as much as new legislative restrictions on reproduction and use of copyright material in the digital environment complicate matters considerably. This project developed in response to the immediate need for strategic negotiations within law for communities and cultural institutions alike. Importantly, it prioritises sustained and ongoing discussions with Indigenous people about questions of ownership of knowledge and the implications of knowledge as property. The result from this approach is the development of community specific strategies for the negotiation of ownership rights to material – increasing the capacity of Indigenous individuals and communities to utilise elements of copyright law in pragmatic ways as well as augmenting copyright with locally developed systems of control and knowledge management. This work in situ is being used to inform the development of policy advice and best-practice for cultural institutions, archives and libraries so that such institutions are better able to deal with Indigenous peoples needs, and importantly, begin the development of new relationships between users and owners of copyright material. Its practical focus takes these issues beyond mere theorising about what the problem is - to imagining new possibilities and how strategies might incorporate legal and non-legal dimensions of knowledge ownership, control and reproduction.

Appendix B

Guide to Funding Agencies

The following resources provide a fairly comprehensive guide to International (predominantly Philanthropic) and National government and non-government funding organisations and agencies. These documents are available online and provide information on project/grant objectives, annual disbursement levels, lodgement dates and contact details.

Private Sector

Non Government – Philanthropic/Corporate

The Australian Directory of Philanthropy

This directory is available for purchase/download at the website below. It provides details on over '…420 trusts, foundations and corporate giving programs' and also incorporates the Australian Directory of Corporate Community Investment which lists '…over 40 Australian corporations [with] community investment programs'. Many of the listings here are exclusively provided for the support of Indigenous individuals and organisations, while others are more general.

http://www.philanthropy.org.au/services/directory.htm

Public Sector
Government – Industry, Business, Employment, Heritage and Environment, Land, Community Development

National Native Title Tribunal: Guide to Australian Government Funding Sources, Research Unit June 2005

'The Guide to Australian Government Funding Sources provides information on funding and assistance available in all states and territories from Australian Government departments and their agencies, for initiatives which may be associated with native title and related agreements. Examples of such initiatives include indigenous economic and social development, land management, conservation and cultural heritage protection' (June 2005).

http://www.nntt.gov.au/publications/general_products.html

Public Sector
Government – Environment Specific

Department of the Environment and Heritage: Grants for Australia's Environment and Heritage – a Guide.

DEH provides a complete list of available grants in this guide – see URL below. These are all environmentally targeted and include Indigenous specific funds, such as those provided through the *Indigenous Heritage Programme* as well as more general grants.

http://www.environment.gov.au/programs/publications/guide/index.html

There are a number of other relevant funding organisations and agencies around Australia. These are too numerous to list here, however, in many cases the URLs above will provide links to most of these. Of course, in the context of this particular research project the Natural Heritage Trust is also an invaluable source of funding for Indigenous and other environment related projects – www.nht.gov.au

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Appendix C

Cross Cultural Engagement

***Cross Cultural Engagement**: Community Mapping, Commentary*
Strategy Theme: *Re-evaluating IK*, Strategy 2, Actions f) and g).

Following the commentary immediately below, are some tools and examples for facilitating appropriate, respectful and equitable research and working relationships in cross cultural context. These consist of a community mapping example, Indigenist research protocols, an Indigenous research application form and a Natural Cultural Resource Management course outline. All of these tools/examples should be viewed in the context of arguments and recommendations made in the Strategy under Theme: *Re-evaluating IK, Strategy 2, Actions f and g.* A list of Research Guidelines, Protocols and IP related contacts/publications is also included.

Commentary: Community Mapping an Example from Yanyuwa Way

Dr John Bradley

Dr. John Bradley has worked with the Yanyuwa people in the southwest Gulf of Carpentaria for over 28 years. He has a professional background in education and anthropology and has worked with various government agencies such as the Northern Land Council and Sacred Sites Protection Authority and has testified as expert witness on a number of land claims. Dr. Bradley has published widely (as co author with senior Yanyuwa people and independently) on subjects around the management of country, perceptions of landscape and various other topics of concern to the Yanyuwa and other Indigenous groups. His most recent collaborative projects include a kinship and country based taxonomy of Yanyuwa flora and fauna and an Atlas of Yanyuwa relationships with the land, as informed by Yanyuwa Law and told through Yanyuwa story and song. These latter two works represent an innovative departure from conventional research methodologies in this field and have been well received within the local and wider communities.

The Indigenous communities of the Northern Territory are too linguistically and culturally diverse to overstate generic understandings of how IK may work on a day-to-day basis in any given community. Yet historically IK has been and continues to be, generalised, misrepresented and reduced to suit the demands of environmental managers and other practitioners operating out of a western scientific tradition. These efforts to typecast IK typically involve translating those elements deemed useable, that is, 'rational', into a language and framework that can be appropriated and used for various purposes (such as GIS tracking) considered valuable in more 'conventional' NRM approaches. Invariably this hybrid mix effectively undermines the authority of the holders of IK and becomes the authoritative reference source on any given land or sea management issue. In the process the holders of IK are systematically excluded from decision making and lose control over the ownership and application of this knowledge.

As a result of this repetitive trend Indigenous people often lose interest in 'collaborative' projects as well as confidence in the saliency of their own knowledge systems. The answer to reversing this trend lies in first acknowledging that there is no single model for IK: there are as many forms of IK as there are Indigenous cultures. Therefore each group must be approached in full recognition that the form and content of their knowledge will be bound by particular rules of kinship and social protocol. These rules and protocols may be as unique as the country to which they belong. With reference back to John Woinarski's introduction, it is these context and site specific aspects of IK that distinguish Aboriginal land and sea management practices from those based on other knowledge systems and thus demonstrate the singular value of IK.

With this in mind, this section of the report details a case study of work conducted with the Yanyuwa people over a period of 26 years. This work is inspired by a desire on behalf of Yanyuwa people to learn about other knowledge systems (predominantly those of the west in light of contemporary challenges to management) but at the same time to preserve and integrate, where possible, their own. Such an understanding can only be achieved by first acknowledging that Yanyuwa management of country is embedded in the daily pragmatics of life. These mundane and everyday facts, speak of an environment inhabited by living and non-living things

– human and non-human – all of which are sentient and all of which have relationships with each other. In such a construction of the environment human beings do not stand separate, but are rather, elements in a complex web of connection in which no one aspect of country and no one individual can claim complete knowledge.

The latter observation suggests a point of articulation with Western science. For many Yanyuwa people science is valuable and can contribute to the sum of what is known. However, as noted above, researchers working in a scientific tradition often profess to know it all; they focus on the biophysical above all else, and abstract out of social and environmental context only those elements of IK they find useful. Other less material aspects of IK such as enchantment and sentience are often discarded as mere folklore or even superstition.

Yet it is these elements that form the fundamental principles for Yanyuwa land and sea management. Sentient beings (landscape features and flora and fauna) in Yanyuwa country give out information: their actions are messages, and other sentient beings are able to read such messages and take note. Thus the life of country is not seen as a series of random unconnected events, but rather a process in which patterns based upon long-term observation may be detected and filed away in deep repositories of knowledge built up over succeeding generations. This knowledge cannot be simply lifted out of context and deployed elsewhere. IK is reaffirmed through an attachment to country and sustained by a sense of enchantment. This enchantment is based on a complex system of reciprocity and mutual obligation to kin and country. Without reference to these elements of IK, mainstream land and sea management practices often result in dwindling stores of social capital and the disruption of those threads of connection that inform Yanyuwa management principles in the first instance. Thus, relegating the sacred to the realm of fiction and fantasy in the pursuit of reason and the rational, signals an attack on the very foundations of a social and environmental ethos that has produced long term and sustainable interactions with country. Similarly, an inability on the part of researchers to understand these qualitative dimensions to Indigenous social and environmental relatedness means that the very things science finds useful it often then renders useless.

It is this understanding that informed a plan of management for the Sir Edward Pellew Islands and adjacent coast line. Over 2004 and 2005 the Yanyuwa people, the *Li-Anthawirriyarra* Sea ranger Unit and Dr. John Bradley undertook the writing of this plan in response to a request from the National Oceans Office. The first issue they confronted arose out of the conceptual separation of mainland from sea from island in more 'conventional' NRM planning. The mainland, islands and sea have always been understood by the Yanyuwa, and indeed by western science, as a conjoined ecosystem and the bureaucratic demand for separation into discrete ecozones, did not make sense from either viewpoint. Of course, while there were also points of agreement between a prevailing scientific view and that of the Yanyuwa, differences were also highlighted due to the influence of Yanyuwa Law and family polity on eventual planning.

In addition, issues around gender also arose. No Indigenous community lives in stasis, and the Yanyuwa community at Borroloola, like others across Australia, has seen many senior men die over the last two decades. These alarming mortality rates now mean that in the Yanyuwa context at least, the senior knowledge holders of IK are senior women and their role and authority is acknowledged and respected by the men in the community. Therefore, determinations about what a plan of management would contain were always overviewed by these women. Such discussions were also filled with emotional concerns, expressed by individuals and families with a shared responsibility for country. This emotional dimension to responsibility for kin and country strongly influences perceptions and the application of IK to land and sea management planning. These emotional depths together with those aspects of sentience and enchantment noted above are eloquently summed up in the following words from a senior Yanyuwa woman made in respect to the knowledge associated with a high status animal such as the dugong.

This dugong truly I will tell you it is a proper man, it has big Law, white men should leave it alone, they stand in complete ignorance of such matters…these fishermen they kill the dugong, the smell of the dead dugong is all over our country, their bones are on the beaches and in the mabngroves of our country. Enough! I cannot say anymore my stomach burns with shame (Dinah Marrngawi 2001).

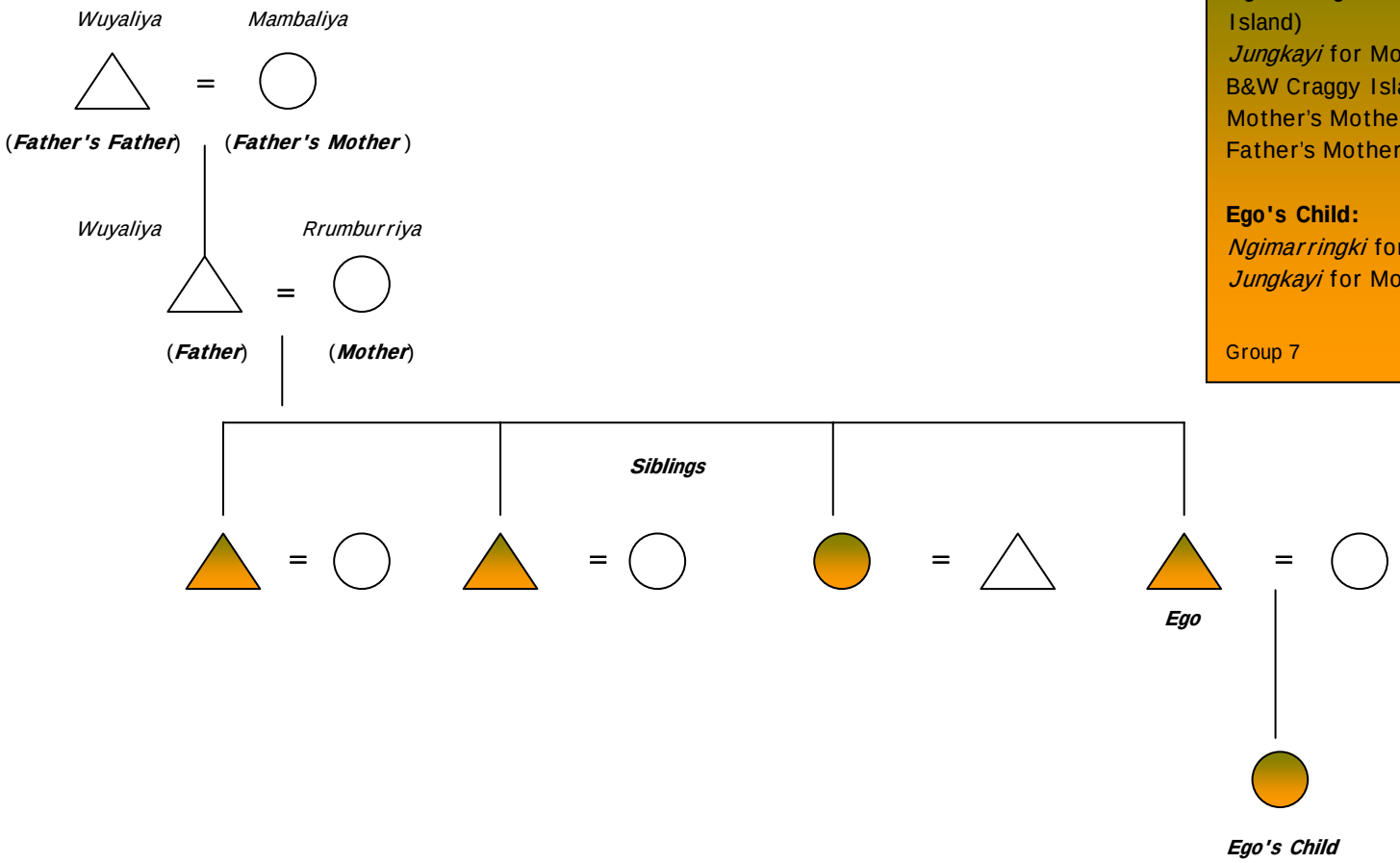
Part of the anger expressed here is in response to a history of people not being listened to in relation to the practical things they know about their land and animals, birds, fish and plants. The 26 years of research undertaken with Yanyuwa people and the production of the management document is a constant reminder of this deep, enduring and finely grained environmental knowledge base that people possess. Some knowledge is public, shared and constantly engaged with on a day-to-day basis, such as the movement of dugong and sea turtle, the status of sea grass beds after large wet season floods and cyclones and the more worrying issues of sick and dying sea turtles that have dominated much of the debate in the region over the late 1990's and early 2000's. Other knowledge is not so freely available and is subject to issues of status, ownership and family obligations to particular tracts of country.

Irrespective of these restrictions, while many younger people had little insight into the issues they were confronting, the older people educated them, drawing on what we may call more esoteric traditions, where detailed knowledge of such events was embedded and encoded within song cycles and stories. Some of this knowledge was freely available while some was not. However, these restrictions on use did not impede planning processes but instead have led to productive negotiations and the transfer of knowledge between young people and old people. These negotiations, in turn, have sponsored positive research relationships between the *li-Anthwirriyarra* sea ranger unit, the Yanyuwa community more generally and various organisations and university researchers associated with sea turtle and dugong biology as well as others with wider interests in the area's ecosystems. These are welcome events. They have allowed Yanyuwa and mainstream scientists, to demonstrate the complexity of their knowledge, without either perspective being devalued or discredited. As a result a synthesis of ideas for effective NRM planning has taken place, based on mutual understanding and respect and the celebration of the value of differing knowledge systems.

Cross Cultural Engagement: *Community Mapping Tools – Kinship/Country Relatedness – Example Only*

(Source: S. Johnson 2003)

Ego *[individual's name]*



Notes*:*

Ego:

Ngimarringki for Father's country – *Wuyaliya* (SW Island, Kangaroo Island)

Jungkayi for Mother's country – *Rrumburriya* (Centre, North, Skull, B&W Craggy Island, *Wulibirra*)

Mother's Mother's country (*Kukurdi*) – *Wurdaliya*

Father's Mother's country (*Ngabuji*) – *Mambaliya*

Ego's Child:

Ngimarringki for Father's country – *Wuyaliya* (SW Island)

Jungkayi for Mother's country – *Mambaliya*

Group 7

Key

△	Male
○	Female
△	Ego/Descent
⊘	Deceased
=	Marriage
.....	Adoption
-. -.-.-.-.	Putative
Wuyaliya	Clan Group

South West Island

- *Ngimarringki* ***(Ego)***
- *Ngimarringki*
- *Ngimarringki*
- *Ngimarringki*

- *Jungkayi*
- *Jungkayi*
- *Jungkayi*

Centre Island

- *Ngimarringki*
- *Ngimarringki*
- *Jungkayi* ***(Ego)***
- *Jungkayi*

Cross Cultural Engagement: *Research Protocols in an Indigenist Research Context*
(The following reproduced, with kind permission of Karen Martin and Kuku Yalanaji. Best Practice example only, not to be copied)

Protocols for research

(Karen Martin and Burungu Aboriginal Corporation 2002 *Draft Only*)
Yura. Intha Booran Yeeaban. Intha Noonuccal, Quandamooka. Intha Bidjara.

I greet you. I am Karen Martin. I am a Noonuccal of Quandamooka. I am of Bidjara country.
I see you as the Buru Bama of Kuku Yalanji People.

I am new to Buru and come to work in a research project about how different Bama work together.
I have spoken to some Buru Bama and read about your goals to care for and protect Buru and your people.

This can be seen in the following rules:

- *Respect your land;*
- *Respect your laws;*
- *Respect your Elders;*
- *Respect your culture;*
- *Respect your Community;*
- *Respect your families;*
- *Respect your futures.*

These rules are the same as my own people have. So as a visitor to your Buru I will follow these rules and behave in a way that does not bring shame, harm or fear to you or to my own people.

I will obey these rules by respecting the following protocols:

- Keep Buru as the main place for research, visits and meetings;
- Ask permission before making visits to Buru;
- Care for Buru lands, animals, plants and waterways at all times;
- Not move objects, nor take anything from Buru;
- Not go anywhere unless I am taken by Buru Bama;
- Give priority to the needs of Buru Bama and Community when doing this research;
- Bring no alcohol or drugs into Buru;
- Give full honour and recognition to the laws, customs and cultures of Buru Bama in this research and any work I do from it;
- Keep Buru Bama informed of what I am doing and how I am doing in this research;
- Answer any questions Buru Bama wan to know about this research;
- Keep my word.
- Share what I know and have in ways to help Buru Bama meet their visions for their future.

If it is believed that I am not behaving or respecting these rules and protocols there are three ways to restore this:

1. I agree to meet with your Elders or their representatives.

2. I will give you details for contacting:

- Quandamooka Elders;
- Chair of the Quandamooka Land Council;
- My family (my eldest brother and my mother's sister's daughter).

3. I also give you details of two staff members of James Cook University who know me and the research work I am doing:

- My supervisor and
- The Head of the School of Indigenous Australian Studies.

These protocols are to guide the research I am doing in your Bubu.

Note: These protocols were written in the context of Indigenist Research. However, they establish a number of valuable precedents for non-Indigenous researchers, in terms of relationship centred as opposed to institutionally focused working relationships. These protocols should be read in the context of *Strategy 2 Action g.*

Dhimurru Land Management Aboriginal Corporation

PO Box 1551 Nhulunbuy Northern Territory 0881
Phone: (08) 8987 3992 Fax: (08) 8987 3224
Web: www.dhimurru.com.au
E-mail: dhimurru@dhimurru.com.au
ABN: 95 520 121 809

July 14, 2009 Our Ref:

Dhimurru Research Partnerships
Information from Applicants

Thank you for expressing interest in working with Dhimurru to develop a research project.

Dhimurru is proud of the many successful working partnerships it has developed with researchers studying a diverse range of issues including:

- Marine turtle conservation and management
- Control of invasive ants
- Ethnozoology of frogs and toad
- Endangered Gove crow butterfly
- Heritage assessments
- Flora and fauna surveys…

Based on our experience working with researchers, Dhimurru believes that successful research projects should:

- Address issues of concern and interest to Yolngu
- Assist Dhimurru to address management issues
- Respect and incorporate traditional knowledge
- Provide for the employment or involvement of Yolngu
- Promote the goals, aims and values of Dhimurru
- Provide culturally appropriate feedback to Yolngu empowering them to utilise the research outcomes on country.

For more information on Dhimurru Land Management Aboriginal Corporation and our achievements please visit our web site on http://www.dhimurru.com.au.

To help us assess your proposed project we ask that you provide a 1-2 page response to the following questions. We will use the information you provide for our consultations with Yolngu community members and Dhimurru Committee members. We ask you to bear in mind the need for clear, plain language in your response.

Please provide your proposal in an electronic format and send to dhimurru@dhimurru.com.au.

[Note: These protocols establish a number of valuable precedents for non Indigenous researchers and should be read in the context of Strategy 2, Action g]

The following has been abstracted from a trial development package. The information may no longer be current but still provides valuable insights into appropriate cross-cultural training regimes and should be considered in the context of recommendations at Strategy 2, Action f. For updates and more detailed information visit:

http://learnline.cdu.edu.au/wip/cce/

About - Course Outline

Purpose

This staff development package is produced by the CRC Tropical Savannas (CRCTS) responding to the professional development needs of people employed in natural and cultural resource management who need to engage with Indigenous communities, landowners and resource managers.

The emphasis is on personal development and practical change. The course builds on and extends understandings, at times confirming, at times challenging, and at times critiquing the practices of natural and cultural resource management (NCRM). Put another way, using the simple but powerful idea that by seeing things differently and thinking differently about them we can act differently. In so doing we can reshape our practice in the complex and contested terrain of NCRM, and contribute to improving outcomes for Indigenous peoples and the NCRM agencies and organisations that represent and support them.

Rationale

Some of the most difficult and controversial challenges in the field of NCRM surround the relationships between NCRM and indigenous peoples. As acknowledgement and acceptance of Indigenous rights and interests and their knowledge, skills and understandings in NCRM gathers some traction in legal, bureaucratic, community and corporate circles, important challenges emerge for professionals in this field. Marcus Lane explains:

> *Tensions between indigenous peoples and modern nation-states take a number of forms, but few are as frequent or seemingly intractable as contests over control and access to land and resources. Indigenous claims to land and assertions of resource sovereignty contradict the presumption of state sovereignty and come into conflict with a range of other resource claimants (Howitt et al 1996). In recent decades, indigenous land claims and political strategies aimed at land justice, resource sovereignty, and community security have become a central feature of Australian natural resource policy debates and the politics of environmentalism more generally. For indigenous peoples, these claims reflect the centrality of land to their culture and religion, as well as to their aspirations for self-determination and economic sufficiency (Lane 2002, p 828).*

In the NCRM field there are many examples of productive, mutually respectful and beneficial relationships between NCRM agencies and organisations and indigenous communities, land owners and managers. Regrettably, despite considerable, often expensive cross-cultural training, many relationships exhibit frustration, confusion, misunderstanding and at times hostility. The results are well known – goodwill erodes, knowledge exchange is impaired, resources (human, cultural and financial) are wasted and Indigenous aspirations are thwarted. On a broader scale, the NCRM agenda of sustaining biologically diverse systems and healthy landscapes that promote social, economic and ecological sustainability and well-being is diminished.

This course adopts the rationale that: by critically examining the socio-cultural and political contexts; by reviewing and reflecting on previous and current experience; by careful consideration of the views of those who work in the field about what works and why; and by exploring Indigenous perspectives, the professional development of NCRM practitioners can be enhanced. This can be done in ways that recognise and understand that the field is often controversial and contested. Issues of ecological and economic sustainability intersect with those of social and cultural sustainability and are overlaid by concerns for justice and reconciliation for and with Indigenous Australians.

Who is the course designed for?

- Natural and cultural resource management agency staff
  - Government agencies
  (national parks, marine parks, fisheries etc.)
  - Indigenous
  (land and sea management agencies, Land Councils)
- Research organisations (CRCs, CSIRO, Universities)
- Conservation NGOs (ACF, Environment Centres etc.)
- Industry (mining, fishing, tourism, consulting)
- Undergraduate and masters students
  (CDU, other Australian and overseas unis)
- School teachers (NT and other)
- And other interested individuals

Course outcomes

Participants will:

- Develop an understanding of culture – its diversity, multiplicity and role in human societies – and its role in resource management
- Develop an understanding of the place of land, sea and natural and cultural resources in Indigenous societies
- Have an opportunity to interact with and learn from Indigenous people involved in environmental and resource management
- Identify and understand the range, style and context of programs and projects where Indigenous people are involved in NCRM
- Acquire and develop skills to communicate and interact with Indigenous communities in culturally respectful and appropriate ways
- Develop an understanding of historical, cultural, social, economic and political issues surrounding the use and management of natural and cultural resources
- Explore the dimensions of personal and institutional change that could contribute to rethinking the practice of NCRM and improving professional practice

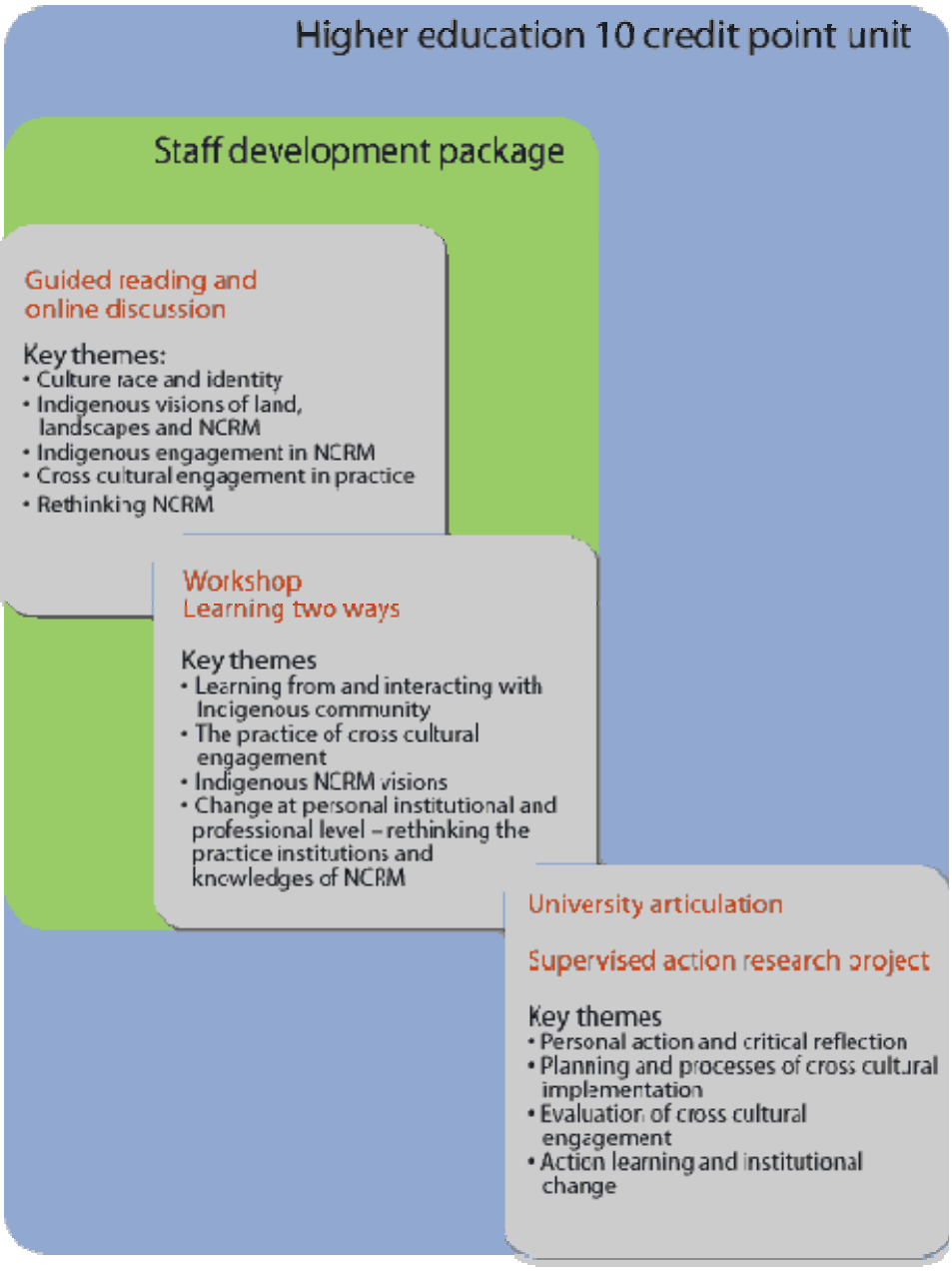
Structure

The staff development course is comprised of:
A self-directed exploration of selected texts, audiovisual and web-based resources
A workshop at Charles Darwin University in Darwin including interaction with the Larrakia people and their NCRM agenda

Articulation with Higher Education courses

Completion of the staff development package followed by a structured project will result in a 10 credit point unit at 3rd, 4th, or 5th year level.

The details of credit in Charles Darwin University courses are under development. The University unit comprises the above plus:
Part 3: A supervised action research project.



Learning approach

The course employs the following flexible learning strategies:

1. A web-based format
2. Guided self-directed study of text, audiovisual, and web-based resources
3. An ongoing web based discussion forum between participants

4. A workshop involving an interactive encounter with an Indigenous community and their NCRM agenda

The learning focus is on

- sharing experiences and knowledge (two-way learning process)
- open, honest, symmetrical communication
- valuing learner's experiences
- improving practice

The course commits to the following principles

- Emphasis on Indigenous voices (presentations, resources, visiting country)
- Demonstrable benefit to Indigenous communities and individuals (financial, learning experiences, access to information)
- Control and sanction of Indigenous knowledge by relevant Indigenous Authority
- Post-learning support
- Contribution to changes in institutional policies and practices
- Avoidance of supposedly 'right' or formulaic 'answers' for all contexts

Texts

Set text

Baker, R., Davies, J., & Young, E. (2001). Working on Country: Contemporary Indigenous Management of Australia's Lands and Coastal Regions. Melbourne: Oxford University Press.

This is an excellent collection of writings from Indigenous and non Indigenous people involved at the cutting edge of Indigenous natural and cultural resource management in Australia. It covers the diversity of approaches, explores the themes of partnership and two way learning while offering practical advice to achieve fair and sustainable outcomes. It is a valuable resource for those working in this field.

Recommended Text

Howitt, R. (2001). Rethinking Resource Management: Justice, Sustainability and Indigenous Peoples. London: Routledge.

From the point of view of professional practice, this is a thought-provoking and challenging text which offers a theoretical framework to see, think and act differently. Howitt argues resource management is currently 'utilitarian, reductionist, technocratic and market driven' and if it is to consider critical human values of social justice, ecological sustainability, economic equity and cultural diversity, it needs rethinking. The text uses case studies to argue for a reconstituted professional literacy. This is a set text for participants undertaking the course as part of a higher education unit.

***Cross Cultural Engagement**: Ethical Research and Intellectual Property Contacts/Publications*

Australian Context:

The Desert Knowledge Cooperative Research Centre (DK-CRC) Indigenous Intellectual Property Protocol

Under development, see below:
http://www.desertknowledge.com.au/index.cfm?attributes.fuseaction=showProjects#

AIATSIS/IPRIA see below:
http://www.aiatsis.gov.au/research_program/contacts/jane_anderson
http://www.ipria.org/

*See also AIATSIS *Guidelines for Ethical Research in Indigenous Studies.*

Batchelor Institute (Maree Klesch 89397352) developing protocols/protections with Terri Janke, see below:
http://www.batchelor.edu.au/

Central Land Council Research Protocol
http://www.clc.org.au/media/publications/protocols/protocols.asp

Centre for Indigenous Natural Cultural Resource Management, now defunct but available via archive, see below:
http://www.ntu.edu.au/cincrm/

Cooperative Research Centre for Tropical Savannas Management (CRC-TSM) Cross Cultural Engagement:
http://learnline.cdu.edu.au/wip/cce/

Davis, M. see Parliamentary Library below:
http://www.aph.gov.au/library/pubs/rp/1996-97/97rp20.htm

Department of Environment and Conservation (NSW)
2004 Mapping Attachment: a Spatial approach to aboriginal post-contact heritage.
www.bookshop.nsw.gov.au

Desert Knowledge Cooperative Research Centre (DK-CRC) Indigenous Intellectual Property Protocol
Under development, see below:
http://www.desertknowledge.com.au/index.cfm?attributes.fuseaction=showProjects#

Janke, Terri provides practical examples around cultural expression and IP:
http://www.wipo.int/tk/en/studies/cultural/minding-culture/studies/index.html
http://www.terrijanke.com.au/fs_contact.htm
tjc@terrijanke.com.au

Kimberley Language Resource Centre
Research recording protocols in draft.

National Health and Medical Research Council
http://www.nhmrc.gov.au/ethics/human/index.htm

North Australian Indigenous Land and Sea Management Alliance (NAILSMA) Under Development
www.nailsma.org.au
NAILSMA (2006) *NAILSMA Guidelines and Protocols for the Conduct of Research.* Draft for consideration by the NAILSMA Executive Officer, 13 November 2006. Darwin: North Australian Indigenous Land and Sea Management Alliance.

International Context:

Global Research Alliance (GRA)
http://research-alliance.net/focusareas/HIIP'Indigenous.doc)

Traditional Knowledge Research Guidelines – Council of Yukon First Nations
http://www.cyfn.ca/index.html

World Bank Indigenous Knowledge for Development Program
http://www.worldbank.org/afr/ik/index.html

World Intellectual Property Organisation (WIPO)
http://www.wipo.int/tk/en/studies/cultural/minding-culture/studies/index.html

Note: See extensive Literature Review and Annotated Bibliography at Appendix A and Intellectual Property Instruments Discussion (S. Smallacombe) at Appendix F.

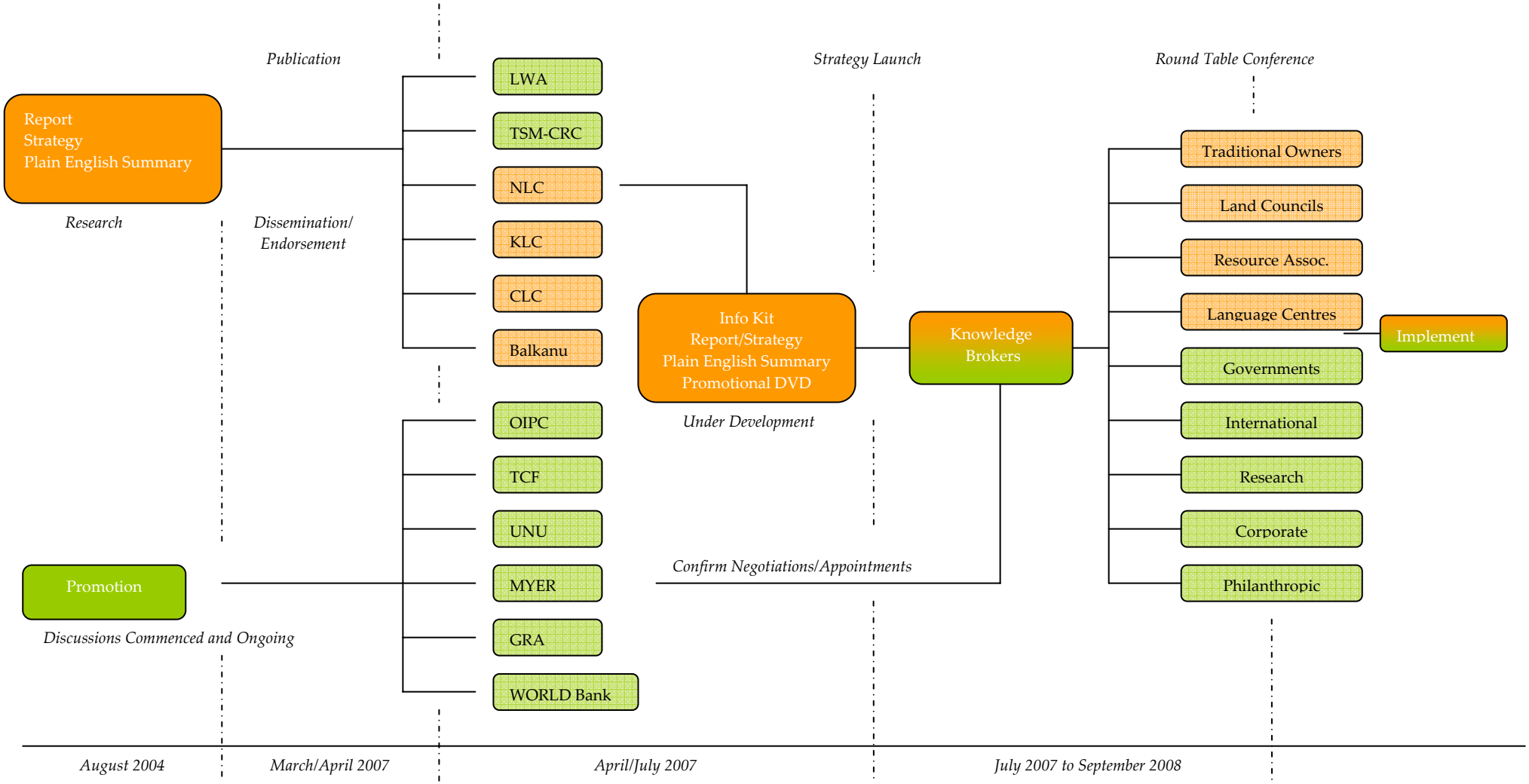
Appendix D

Communication Strategy, Working Models and Cross Sectoral Linkages

The first of the following charts pertains to the promotion and implementation of this Strategy. The remainder identify existing resources and practical models for IK support as well as highlighting actual and potential linkages for IK investment; many of the latter are already in place or currently under negotiation. Each chart is linked to a particular Strategy and associated actions and defines pathways toward enhanced IK support and increased returns on IK investment.

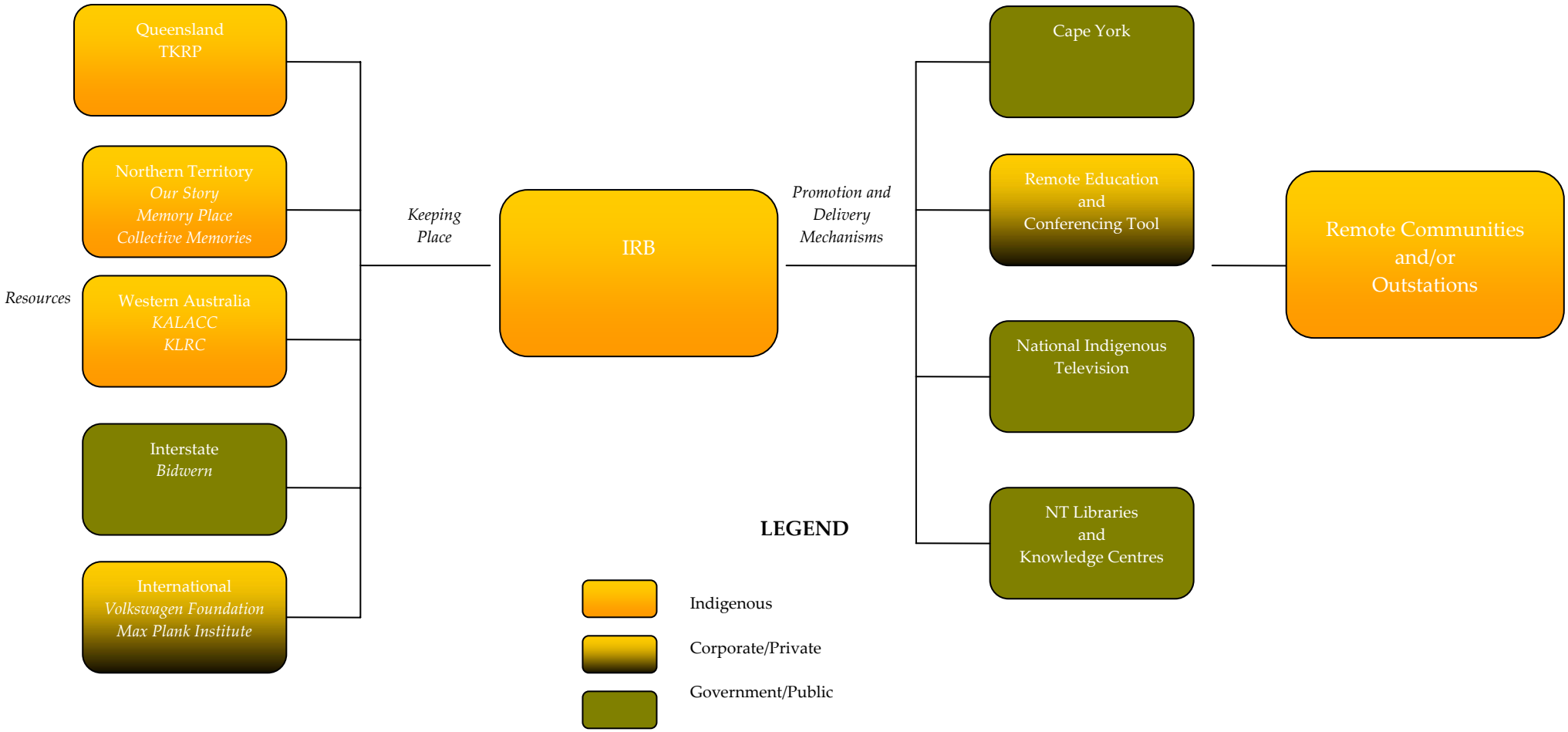
Communication Strategy and Timeline

Strategy 2, Actions a) to e) Strategy 3, Actions: c) and d)
Strategy Document Pages 41 and 42 (See A3 Insert)



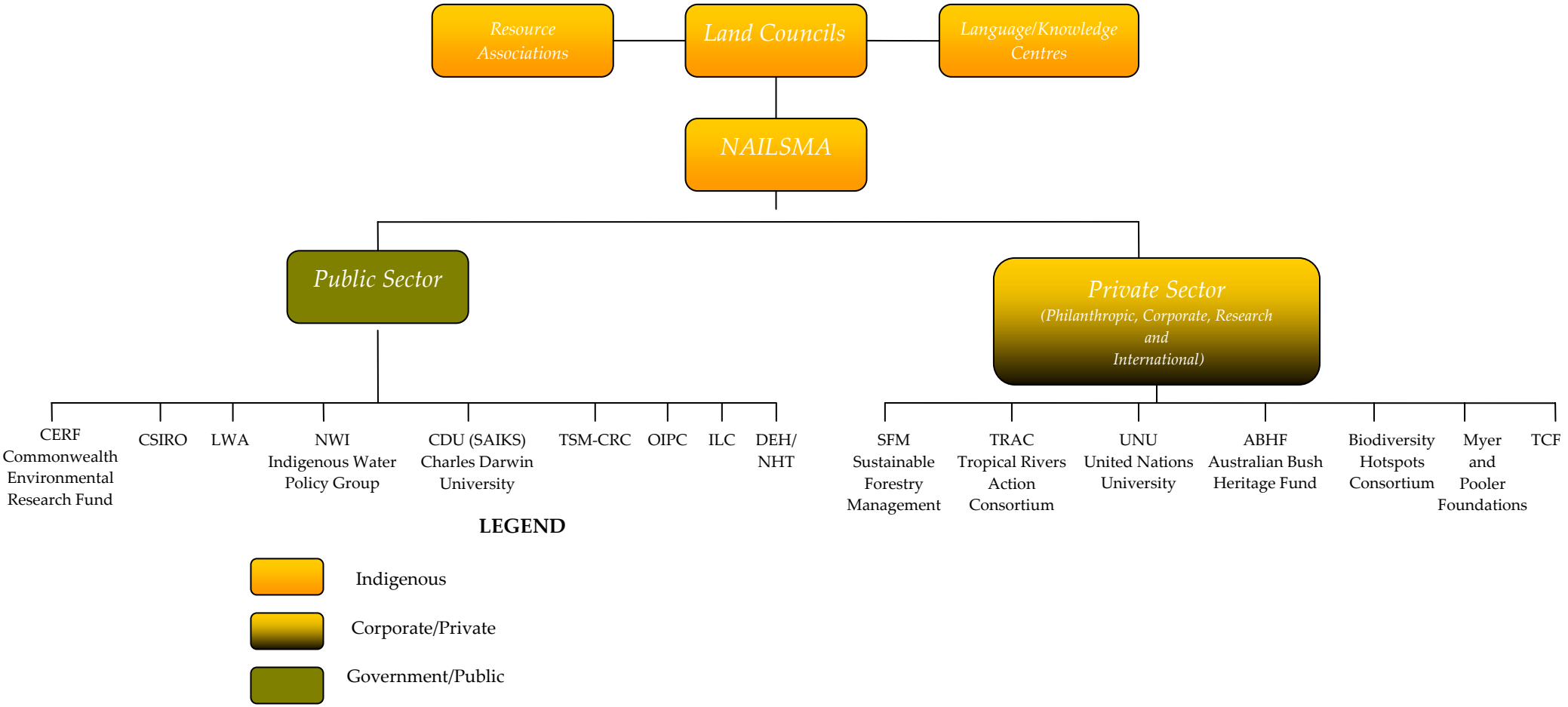
Working Models and Practical IK Support Delivery Mechanisms

Strategy 1: Actions b) c) and d) Strategy 3: Actions a) and b) Strategy Document Pages 40, 41 and 42



Cross Sectoral Linkages

Strategy 5: Action a) Strategy Document Page 42



Appendix E

Language Status and Local Contexts

Language Status and Local Contexts

Strategy Theme: *Maintaining Indigenous Knowledge Systems*, Strategy 1, Actions a) and b).

The following tables provide a detailed analysis of particular regional/subregional support needs across northern Australia, based on a number of factors which include language/IK status, land tenure, access difficulties and population distribution. As noted in Section 5 of the Report and Strategy, this language audit is incomplete and goes beyond the current Project Terms of Reference but has been commenced as part of that process. Future research in this regard is considered essential in order to clearly identify particular IK support needs and priorities in view of differences in local and cultural contexts.

For the purposes of this Project, the following tables refer to the 9 districts identified within Northern Land Council boundaries.

In as much as possible, these tables have been compiled in view of variance in population density and distribution, the proliferation of language groups, complications with land tenure and the paucity of consistently accurate information on language status. In the case of the latter, official data from the ABS and other Sources (see ABS 2005, DCITA 2005, AIATSIS AUSTLANG 2006, McConvell et al 2001, Muhlhausler et al n.d.) often differs markedly from the on ground evidence of traditional owners, linguists, anthropologists and other researchers. Indeed, there is often wide disagreement amongst these groups themselves. In the absence of firm and verifiable data, and in order to avoid misrepresentation the authors have erred on the side of caution.

Thus, information contained in the following tables is general except where official statistics and other reputable sources can be cross referenced and found to agree. This research has made reference to direct community consultation where possible as well as ABS and AIATIS data, personal experience and the evidence of linguists and anthropologists. For the reasons stated above and earlier in the text, these tables have been designed to provide a general overview and nothing more. As such, they are valuable but are neither comprehensive nor prescriptive. It should also be noted that, while the link between language and IK is clear, this link does not mean that the loss of the former necessarily entails the loss of the latter.

As noted, the table are incomplete although most but not all language groups in the top end of the Northern Territory have been included. Those that have been, are considered representative of the subregions. Both maps and tables may be further refined for use identifying particularly critical IK support needs. They should not be used in isolation to exclude or elevate the claims of any one individual, group or organisation.

* Where precise indications of language status are given the following indicators have been used (adapted from UNESCO Indicator One 2003:15).

Degree of endangerment	Grade	Speaker Population
Safe	5	The language is used by all age groups, including children.
Unsafe	4	The language is used by some children in all domains; it is used by all children in limited domains.
Definitely Endangered	3	The language is used mostly by the parental generation and upwards.
Severely Endangered	2	The language is used mostly by the grandparental generation and upwards.
Critically Endangered	1	The language is known to very few speakers, of great-grand-parental generation.
Extinct	0	There is no speaker left.

KATHERINE - Regional/subregional Factors Effecting IK Support Needs

KATHERINE	This subregion is comprised of many language groups and extends southwest down through the Victoria River District and northeast into the Daly (see Map). Historically, the arrival of pastoralists and miners in the area was invariably accompanied by the widespread dispossession and dispersal of Aboriginal people. The separation of people from country and subsequent organisation (sometimes enforced) into 'communities' has seen a sharp decline in language and IK retention and use right across the subregion. The township of Katherine itself is a meeting place for numerous language groups many of whose members lack the resources and capacity to access their country on a regular basis. Vehicle access to country north and east of Katherine is relatively easy. Vehicle access to areas in the southwest is more difficult with some roads becoming impassable for long periods over the wet season. This subregion also takes in parts of the Daly, where several communities, for example *Malak Malak*, *Wudikapildiyerr* and *Peppimenarti* are located. These communities, particularly those on the south side of the Daly River, experience substantial difficulties obtaining resources and maintaining their presence on country. Further consultation and research is required into language groups and status in this area which is located at the overlap between designated *Wadeye* and Katherine subregions. Cross refer *Wadeye.* Key Areas for IK Investment: A large number of critically endangered languages is found in this region. On country visits and recording projects, in conjunction with other mainstream classroom activities are of primary concern for many traditional owners. In some cases repatriation work is already underway and requires further support. There is growing interest in IK focused survey, assessment and land management projects with many already underway and requiring support. Possible organisations for IK Support in the Katherine sub-region: *Diwurru-jaru* Aboriginal Corporation (Katherine Regional Aboriginal Language Centre) NT Parks and Wildlife Ethnobiology Project. Northern Land Council. *Jawoyn* Association Aboriginal Corporation. *Papulu aparr-kari* (Barkly Region Aboriginal Language Centre) Batchelor Institute of Indigenous Tertiary Studies.
Jawoyn	Language Status: 1 Number of Speakers: One full time speaker and several partial speakers. Demography: Most *Jawoyn* people are resident in or around Katherine region. Current Tenure:

	Part Aboriginal freehold, pastoral and mining. Publications, Recordings and other IEK related materials: Plant and animal book published 2005 (Wightman 2005). Some linguistic work Francesca Merlan.
Dagoman	Language Status: 0 Demography: Population dispersed in and around Katherine and Pine Creek. Current Tenure: Uncertain. Dictionary and other IEK Recordings: Possible audio recordings see Francesca Merlan.

Wagiman (some cultural and linguistic affiliation with *Wardaman* – see below)	Language Status: 2 Number of Speakers: Several partial and full time speakers. Demography: Main population resident in and around Pine Creek. Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: Language, audio recordings 1995-2005. Plant and animal book to be published (Harvey and Wightman 2005).
Wardaman	Language Status: 3 Number of Speakers: Small number of full time speakers and some partial speakers. Demography: .Some *Wardaman* people living on country at Menngen (old Innisfail Station) southwest of Katherine and in the town itself. Current Tenure: Part Aboriginal freehold and pastoral. Publications, Recordings and other IEK related materials: Audio recordings. Plant and animal book published 2005 (Wightman 2005). Senior *Wardaman* man, Bill Harney, has also published on a variety of topics including *Wardaman* cosmology/IK.

Yangman	Language Status: Uncertain – 0 to 1. Number of Speakers: No fluent speakers known. Demography: Uncertain – Katherine, Mataranka, *Jilkminggan*. Current Tenure: NIL. Publications, Recordings and other IEK related materials: Audio recordings. Plant and animal book published 2005 (Wightman 2005). Senior *Wardaman* man, Bill Harney, has also published on a variety of topics including *Wardaman* cosmology.
Alawa	Language Status: 2. Number of Speakers: Approximately 5 full time speakers. Demography: Population predominantly in *Minyerri*, some people resident in *Ngukurr*. Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: *Alawa* Dictionary (Margaret Sharpe), audio recordings, published book on plants (Sharpe).
Mangarrayi	Language Status: 1. Number of Speakers: Two full time speakers, some partial speakers. Demography: Population resident in *Jilkminggan* and *Ngukurr*. Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: Dictionary. *Mangarrayi* Ethnobotany manual (Wightman). Plant knowledge recorded.
Ngalakgan	Language Status: 1. Number of Speakers: No full time speakers known. Some partial speakers.

	Demography: *Ngukurr* and *Urapunga.* Current Tenure: Uncertain. Area around *Ngukurr* is predominantly Aboriginal freehold. Publications, Recordings and other IEK related materials: Unknown.
Ngandi	Language Status: 1. Number of Speakers: One full time speaker known, some elderly partial speakers. Demography: Significant numbers of people in *Ngukurr* and *Numbulwar* areas. Current Tenure: Predominantly Aboriginal freehold. Publications, Recordings and other IEK related materials: *Ngandi* language and grammar dictionary (Heath 1978) audio recordings and text (see Joe Morrison, Cherry Daniels).
Nunggubuyu/Wubuy	Language Status: 4. Number of Speakers: Exact numbers uncertain but significant number of speakers. Demography: Most people resident in *Ngukurr* and *Numbulwar*. Current Tenure: Predominantly Aboriginal freehold. Dictionary and other IEK Recordings: *Nunggubuyu* language and grammar dictionary (Heath 1978?) audio recordings and text.
Kunwinjku	Language Status: 3. Number of Speakers: Exact numbers uncertain but significant. Demography: Most people resident in and around Pine Creek/Katherine – also Kybrook, *Jabiru*, *Gunbalanya*. Current Tenure: Limited access. Exact details uncertain. Publications, Recordings and other IEK related materials:

	Audio and text records, Plant Book published (Russell Smith 1985, Smyth and von Sturmer 1981).
Gajerrong	Language Status: 1. Number of Speakers: A few senior speakers. Demography: WA border area. Current Tenure: Limited access. Predominantly pastoral lease. Publications, Recordings and other IEK related materials: Refer Kununurra Language Centre.
Jaminjung	Language Status: 2. Number of Speakers: Small group of senior full time speakers. Demography: Population resident in Timber Creek, VRD, *Marralam* and Kununurra. Current Tenure: Perpetual pastoral lease. Publications, Recordings and other IEK related materials: *Jaminjung* Dictionary, Ethnobotany Manuscript unpublished? (Wightman and Hancock).
Karangapurru	Language Status: 0. Number of Speakers: None known. Demography: Descendants mostly resident in Victoria River District. Current Tenure: Uncertain, predominantly pastoral lease. Publications, Recordings and other IEK related materials: None known.
Mirriwoong	Language Status: 3.

	Number of Speakers: Exact numbers unknown but significant. Demography: WA border area, many people resident in Keep River and Kununurra areas. Current Tenure: Limited access. Exact details uncertain, perpetual pastoral lease. Publications, Recordings and other IEK related materials: AV Recording material held at Kununurra Language Centre.
Ngaliwurru	Language Status: 2. Number of Speakers: Some senior full time speakers and some partial speakers. Demography: Most people resident in and around Timber Creek, Bulla and *Yarralin*. Current Tenure: Predominantly Aboriginal freehold. Publications, Recordings and other IEK related materials: Dictionary? Some audio recordings (Hancock and Wightman).
Ngarinyman	Language Status: 3. Number of Speakers: Some senior full time speakers and some partial speakers. Demography: Most people resident in and around Timber Creek, Pigeon Hole, *Amanbidji* and *Yarralin*. Current Tenure: Predominantly Aboriginal freehold. Publications, Recordings and other IEK related materials: Unpublished Dictionary – refer Deborah Bird-Rose.
Nungali	Language Status: 0. Number of Speakers: None known. Demography: Timber Creek, VRD. Current Tenure:

	Perpetual pastoral, vacant crown. Publications, Recordings and other IEK related materials: None known.
Binbinka	Language Status: 0. Number of Speakers: No full time speakers, some partial speakers. Demography: Uncertain - some people resident in Borroloola and *Ngukurr* areas. Current Tenure: Perpetual pastoral and Aboriginal freehold. Publications, Recordings and other IEK related materials: Some audio language/IEK recording.
KATHERINE	The following four language groups appear within the wider Desert Region but due to organisational proximity and coverage have been considered under the Katherine subregion.
Malngin	Language Status: 1. Number of Speakers: Unknown. Demography: *Daguragu, Kalkarindji*? Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: None known.
Bilinarra	Language Status: 1. Number of Speakers: One senior full time speaker known and some partial speakers. Demography: Pigeon Hole and *Yarralin*. Current Tenure:

	Aboriginal freehold and perpetual pastoral lease. Publications, Recordings and other IEK related materials: None known.
Gurindji	Language Status: 3. Number of Speakers: Uncertain, possibly up to 500 speakers. Demography: *Kalkarindji, Daguragu*. Current Tenure: Predominantly perpetual pastoral. Publications, Recordings and other IEK related materials: *Gurindji* Dictionary.
Mudburra	Language Status: 3. Number of Speakers: Approximately 50 full-time speakers. Demography: Most of the population is found around Elliot and Newcastle Waters. Current Tenure: Aboriginal freehold and perpetual pastoral lease. Publications, Recordings and other IEK related materials: Draft Dictionary, Ethnobotanical work (G.Wightman).

WADEYE - Regional/subregional Factors Effecting IK Support Needs

WADEYE	The largest Aboriginal community in the N.T. Wadeye is 420 kilometres southwest of Darwin. The community is experiencing serious social disruption and upheaval and continues to be plagued by a lack of adequate services and resources although a number of innovative projects, including two way education models, are proposed or underway. In spite of these challenges, a strong core of senior IEK holders is still resident in and around *Wadeye*. In some areas, fire and other land and sea management regimes have been maintained and several people still retain an in depth understanding of the law that governs the sustainable maintenance and use of country. The area southwest of the Daly River (including Daly communities such as *Peppimenarti* and *Wudikapildiyerr*) is cut off for prolonged periods over the wet. Access to outstations, most surrounding country and the community itself is oftentimes difficult. These areas exist in the overlap between the designated Katherine and *Wadeye* subregions and further consultation to determine distribution of language groups and language status is required. Some people have left their homelands and are now resident in *Wadeye* and other centres. Cross refer Katherine. Further consultation is also required to determine language group distribution and support needs for areas (including *Belyuen*) just north of the Darwin subregional boundary. *Belyuen* and many Daly communities have linguistic and kinship ties. Key Areas for IK Investment: Further support to ramp up existing efforts with a view to the design of effective two way educational models is needed. Further research and consultation would clarify some of the issues raised with respect to language groups north and east of *Wadeye*. Cross refer Darwin. Possible organisations for IK Support in the Wadeye sub-region: *Wadeye* Aboriginal Languages Centre (WALC) Wadeye Knowledge Centre, *Thamarrur* Council, NT Government Libraries and Knowledge Centres, *Belyuen* Language Centre, Batchelor Institute of Indigenous Tertiary Education.

Marri Ammu, Marri Sjevin, Marri Ngar, Mati Ke	Language Status: 1 for all languages. Number of Speakers: a few elderly speakers. Demography:

	Most speakers resident in Wadeye or other regional centres. Current Tenure: Aboriginal Freehold. Publications, Recordings and other IEK related materials: Unknown. Projects proposed through WALC.
Murrinhpatha	Language Status: 4. Number of Speakers: Language described as strong but in decline. Number of speakers uncertain. Demography: Many speakers resident in Wadeye community. Some speakers resident in Belyuen community north of *Wadeye* (see Darwin subregion). Current Tenure: Aboriginal Freehold. Publications, Recordings and other IEK related materials: Unknown. Dictionary and recording projects proposed through WALC.

DARWIN - Regional/subregional Factors Effecting IK Support Needs

DARWIN	This table is incomplete and requires further consultation with *Larrakia*, *Belyuen* and other communities to determine other language groups in areas outside of Darwin/Darwin rural and their particular support needs especially with respect to Daly River. *Larrakia* country encompasses Darwin city (including the harbour) much of Darwin rural and Cox Peninsula, where *Belyuen* community is located. The latter community has considerable linguistic and family ties with Daly region language groups. *Larrakia* wore the brunt of European settlement in the N.T. which was and is concentrated in and around Darwin. They have successfully asserted their rights over country in a number of cases and have pursued a number of innovative and enterprising economic initiatives. In some areas IEK retention is strong and has informed several key land management issues in Darwin City itself. Key Areas for IK Investment: Further support for repatriation and storage of data would enhance existing programmes. Particular focus on those language groups outside of *Larrakia* country but in the Darwin subregion. Possible organisations for IK Support in the Darwin sub-region: *Larrakia* Nation Aboriginal Corporation, Greening Australia, CDU, SAIKS, Batchelor Institute.
Larrakia	Language Status: Uncertain. Number of Speakers: Unknown. Demography: Population concentrated in Darwin city and outlying rural areas. Current Tenure: Uncertain but includes limited free hold and some areas still subject to claim. Publications, Recordings and other IEK related materials: Various publications and recording projects through LNAC, CDU and SAIKS (refer Lorraine Williams).

TIWI - Regional/subregional Factors Effecting IK Support Needs

TIWI	The *Tiwi* people reside in outstations and communities on either Bathurst or Melville Islands, 60 kilometres north of Darwin. Occupation of their homelands has continued uninterrupted throughout European settlement. IEK informs all manner of land and sea management activities. Key Areas for IK Investment:: *Tiwi* people are actively involved with land and biodiversity survey and assessment work and have produced invaluable materials on the subject. Further support in this respect is needed and will contribute substantially to wider NRM outcomes. Possible organisations for IK Support in the TIW sub-region: TIWI Land Council.
Tiwi	Language Status: 5. Number of Speakers: Approximately 2,000. Demography: Most people resident on Bathurst or Melville Islands. Current Tenure: Aboriginal freehold. Publications, Recordings and other IEK related materials: Dictionary. TIWI Plants and Animals, Natural Resource Management Strategy, TIWI Land Information CD and other publications.

COBOURG - Regional/subregional Factors Effecting IK Support Needs

COBOURG	A number of land and sea management initiatives have been undertaken across and around the peninsula (see John Christopherson and Cobourg Protected Area and Marine Park Board). Further consultation is needed in order to develop a clearer picture regarding current developments around land tenure, IEK documentation and population/language demographics. In general terms, socioeconomic and other historical factors have made it difficult for people to maintain their connections with country and substantial support is needed in this and other areas. Croker Island is also included in this subregion. As part of assimilation policy, many individuals (from Barrow Creek to Darwin) were removed from their parents and country and sent to Croker Island. Fallout from this era is still being felt and relationships are still being negotiated. As a result, many people on Croker Island express strong affinity, for both family and country, with mainland Aboriginal groups. This history may also influence government policy, which sometimes appears ambivalent with respect to the status of Indigenous people on Croker Island and Cobourg in general. Key Areas for IK Investment: Language and IK loss is significant and while a few recording projects have been trailed these have been under resourced. Significant potential exists for securing cooperative funding arrangements in both corporate and government sectors (see below). Positive initiatives already underway which provide the opportunity for cooperative funding and a coordinated approach to support. Possible organisations for IK Support in the Cobourg sub-region: Northern Land Council, Volkswagen Foundation.
Iwaijan (Garig/Ilgar) (Cobourg Language Family)	Language Status: 1 (3 languages from this family already extinct. *Garig/Ilgar* critically endangered). Number of Speakers: 3 Full time speakers. Demography: Population resident on the peninsula or surrounding areas, including Darwin. Current Tenure: Cobourg Marine Park, Freehold. Publications, Recordings and other IEK related materials: Sea Management Plan. Other materials unknown.
Iwaidja	Language Status: 3.

	Number of Speakers: Approximately 50 speakers. Demography: Most people resident on Croker Island, *Minjilang*. Current Tenure: Aboriginal freehold. Publications, Recordings and other IEK related materials: Major documentation project currently underway – Volkswagen Foundation.

ARNHEM - Regional/subregional Factors Effecting IK Support Needs

ARNHEM	Arnhem is one of the better resourced subregions under consideration. However, as the table below reveals critical support needs vary markedly while available resources are, on the whole, inadequate and sometimes unevenly spread. As a consequence language and IEK has either been lost or is in steady decline throughout many parts of Arnhem Land while it remains strong in others. Population distribution across Arnhem Land consists of several large communities and a number (35?) of smaller outstations. Like many areas in the Top End, people are often cut off or their access to country is limited, for prolonged periods over the wet season. Even when physical access is possible a number of social and economic factors frequently inhibit the capacity of people to regularly visit or maintain a presence on country. Key Areas for IK Investment: (due to wide variance in degree of critical support needs, this subregion divided into two areas. These areas are not discrete – there is substantial overlap in terms of cultural and linguistic demographics). (west/southwest) Language and IEK loss in these areas of Arnhem Land is particularly pronounced. (central, northeast) A number of innovative IEK collection, collation and storage projects are currently proposed or underway but require further support. A good deal of invaluable IEK informed biodiversity research is already underway but requires ongoing support. Possible organisations for IEK Support in the Arnhem sub-region: Charles Darwin University, SAIKS (Indigenous Knowledge Resource Management North Australia Project) *Bawinanga* Aboriginal Corporation, *Dhimurru* Land Management Association, NT Government Libraries and Knowledge Centres, TSM-CRC.
ARNHEM (west, southwest)	Note: some of the following languages share similarities with or are part of the *Yolngu Matha* family – see ARNHEM central, north east below.
Limilngan	Language Status: 0. Number of Speakers: No known speakers, some people with knowledge of the language. Demography: Unknown.

	Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: Unpublished descriptive grammar text.
Umbugarla	Language Status: 0. Number of Speakers: None known. Demography: Unknown. Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: Unpublished Honours Thesis.
Ngaduk	Language Status: 0. Number of Speakers: None known. Demography: Uncertain – *Wularri*. Current Tenure: Unknown. Publications, Recordings and other IEK related materials: No record.
Bugunidja	Language Status: 0. Number of Speakers: None known. Demography: Unknown. Current Tenure: NIL. Publications, Recordings and other IEK related materials: No record.

Ngombur	Language Status: 0. Number of Speakers: None known. Demography: Unknown. Current Tenure: NIL. Publications, Recordings and other IEK related materials: No record.
Gagadju	Language Status: 0. Number of Speakers: None known. Demography: Iconic *Kakadu* language. Population uncertain. Current Tenure: *Kakadu* National Park. Publications, Recordings and other IEK related materials: PhD Thesis containing grammar and lexicon.
Erre	Language Status: 0. Number of Speakers: None known. Demography: Unknown. Current Tenure: Unknown. Publications, Recordings and other IEK related materials: Some audio recordings.
Amurdak	Language Status: 1. Number of Speakers: 3 known.

	Demography: Unknown. Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: Research – Honours Thesis.
Urningangk	Language Status: 0. Number of Speakers: None known. Demography: Unknown. Current Tenure: Unknown. Publications, Recordings and other IEK related materials: Some audio recordings.
Mengerr/Mengerrdji	Language Status: 0. Number of Speakers: None known. Demography: *Kunbarlanja* area. Current Tenure: Uncertain. Publications, Recordings and other IEK related materials: No record.

Mawng	Language Status: 3. Number of Speakers: 100 to 150. Demography: Goulburn Island. Current Tenure:

	Aboriginal Freehold. Publications, Recordings and other IEK related materials: PhD Linguistic research underway.
Dalabon	Language Status: 2. Number of Speakers: Uncertain, perhaps 20. Demography: People resident in *Barunga*, *Weemol*, Bulman, Beswick and surrounding areas. Current Tenure: Aboriginal Freehold. Publications, Recordings and other IEK related materials: Language and grammar dictionary.
Bininj Gunwok	Language Status: 5 (consists of 6 dialects, with three of these described as moribund – no children learning) Number of Speakers: Possibly 2500 or more. Demography: Throughout western and south western Arnhem Land. Current Tenure: Aboriginal Freehold. Publications, Recordings and other IEK related materials: Unknown.
ARNHEM (central, north east)	
Yolngu Matha (language family)	Language Status: 5 (consisting of approximately 100 mutually intelligible but distinctive languages and dialects, with varying status). Number of Speakers: Uncertain. Demography: Wide population distribution across Arnhem Land but predominantly in the north east – *Gunbalanya, Maningrida, Millingimbi, Galiwin'ku, Ramingining,*

	Yirrkala communities. Current Tenure: Aboriginal Freehold, *Dhimurru* Indigenous Protected Area. Publications, Recordings and other IEK related materials: Language and grammar dictionaries, numerous published works (see for example N. Williams) land and sea management plans, *Dhimurru* IPA, audio visual recordings, two way education models.

Ritharrngu/Wagilak	Language Status: 3. Number of Speakers: Approximately 40 full time speakers. Demography: Population mostly concentrated at *Ngukurr, Donydji* and *Bulman* but also strong in other areas. Current Tenure: Aboriginal Freehold. Publications, Recordings and other IEK related materials: *Ritharrngu* Dictionary (Heath 1980). Some audio recordings.
Rembarrnga	Language Status: 2. Number of Speakers: 10 full time speakers and several partial speakers. Demography: Population concentrated in Bulman, Beswick, Barunga and Maningrida. Current Tenure: Aboriginal Freehold. Publications, Recordings and other IEK related materials: *Rembarrnga* Dictionary and some IEK recording (Saulwick).
Warndarrang	Language Status: 0. Number of Speakers: None known. Demography: *Ngukurr* Current Tenure:

	Aboriginal Freehold. Publications, Recordings and other IEK related materials: Uncertain.

ANINDILYAKWA - Regional/subregional Factors Effecting IEK Support Needs

ANINDILYAKWA	*Anindilyakwa* people managed to avoid the full brunt of European settlement; most remain on their homelands and enjoy ready access to country. However, like all Indigenous communities they are confronted with the prospect of profound change and the numerous and complex social, environmental and economic challenges arising out of this. Their strength and resilience in the face of these changing circumstances is evident in a number of innovative responses. These include the declaration of an Indigenous Protected Area which is firmly based on cultural protocols and aspirations, and the use of new technologies (for example the Memory Place) which promise to enhance existing IEK conservation and application strategies. Many of these initiatives consist of a complementary blend – community designed and driven – of IK informed land and sea management and wider NRM practices. These developments are positive but as is the case across the Northern Territory the struggle for adequate resources is an ongoing one. Key Areas for IK Investment: Current initiatives around data collation and storage are a priority and require ongoing investment in promise of positive returns for ongoing and effective land and sea management. These initiatives also have the potential for developing cooperative and coordinated approaches to support across a number of governmental and non governmental sectors. This area may be of lower priority in the short term although community members have expressed a desire to promote on country visits (which are already an everyday occurrence) for teaching purposes and as part of ongoing and evolving IEK recording processes. All of these activities have been designed around a caring for country ethos with a clear view towards the use of contemporary technology in the face of new challenges and toward meeting stated IPA and other objectives. Biodiversity survey work is already underway with respect to GEMCO Mining rehabilitation proposals and NT Government Biodiversity teams. Possible organisations for IEK Support in the Anindilyakwa sub-region: *Anindilyakwa* Land Council (Memory Place) NT Government Libraries and Knowledge Centres, GEMCO Mining.	
Anindilyakwa	Language Status: 5. Number of Speakers: 1500 plus full time speakers. Demography: Population concentrated in outstations and communities on Groote Eylandt and Bickerton Island. Current Tenure: Aboriginal Freehold. Publications, Recordings and other IEK related materials: Bilingual Dictionary, extensive store of published and unpublished materials, Land Management Strategy, IPA (Declared 6 June 06).	

GULF - Regional/subregional Factors Effecting IK Support Needs

GULF	*Garrwa, Gudanji, Yanyuwa* and, to a lesser degree, *Mara* people wore the full brunt of initial European incursions into this area. The advent of cattle drives from Queensland side in particular, was accompanied by well documented shootings and widespread dispossession. As a consequence, population numbers were severely reduced, especially amongst the *Gudanji*. Many people dispersed to the relative safety of missions and other regional centres such as Borroloola, Robinson River, *Doomadgee*, Katherine, Limmen Bight and *Ngukurr* on the Roper River. Nevertheless many people still live in or around Borroloola, either on or in close proximity to their ancestral domains. Upwards of twenty outstations (with varying degrees of occupancy depending on access and other socioeconomic factors) may be found on mainland or island areas on *Yanyuwa* country alone. Borroloola itself can be accessed all year round. However, the outstations, both mainland and island, are cut off for prolonged periods over the wet season. Even in the dry, some communities (for example, Robinson River and *Manankurra*) and many outlying areas are difficult to access due to distance and a lack of roads and effective road maintenance. There is a perception amongst many people in the area, that the southwest Gulf is a forgotten zone when it comes to securing resources and services. A handful of older knowledge and law custodians remain, although a spate of recent deaths and other social upheaval has severely threatened this cultural base. A number of younger generations (particularly amongst the *Yanyuwa*) are well versed in aspects of law and caring for country but lack the resources to realise these aspirations. Some have sought training in mainstream NRM in anticipation of the hand back of South West and Centre Islands in 2006 (see below).On many occasions all four clans have come together to pool what resources are available to them and to support each other on a variety of issues both cultural and political. It should also be noted that many individuals and families from the four clan groups, maintain strong historical, cultural and kinship ties with other language groups in the Barkly subregion and across Queensland side to centres such as *Doomadgee* and Mount Isa. <u>Key Areas for IK Investment:</u> There is a small but strong core of senior law and knowledge custodians in the Gulf subregion. However, language is severely threatened and due to various socioeconomic and other factors, in combination with a paucity of resources and limited individual and community capacity, the intergenerational transfer of knowledge is in sharp decline. Many significant law and knowledge materials (artefact and text) are held in southern museums or other institutions. <u>Possible organisations for IEK Support in the Gulf sub-region:</u> *Mabunji* Aboriginal Resource Association, *Diwurruwurru-Jaru*, *Papulu Apparr-Kari*.

Yanyuwa	Language Status: 2. Number of Speakers: Possibly up to 10 full time speakers and some partial speakers. Demography: Population concentrated in and around Borroloola and the Sir Edward Pellew archipelago. Current Tenure: Combination of Aboriginal freehold, pastoral lease and National Park (*Barranyi* North Island). Hand back of South West and Centre Islands after 30 years on 28 June 06. Publications, Recordings and other IEK related materials: Bilingual Dictionary (Bradley and Kirton 1992), Yanyuwa Cultural Atlas (Bradley and Yanyuwa families n.d.) Sea Management Plan (Bradley and Yanyuwa community 2005) *Land is Life* (Baker 1999) *Yanyuwa Ethnobiological Classification* (Bradley, Holmes, Yanyuwa Families 2006) various other published and unpublished materials (including 3 theses) text and audio recordings.
Garrwa	Language Status: 3. Number of Speakers: Possibly 30 full time speakers and unknown number of partial speakers, many in Queensland. Demography: Population concentrated in and around Borroloola, Robinson River and Doomadgee (see also *Waanyi* Barkly subregion). Current Tenure: Aboriginal freehold and pastoral lease. Publications, Recordings and other IEK related materials: Unpublished *Garrwa* Dictionary. Numerous IEK relevant manuscripts and unpublished texts.
Gudanji	Language Status: 0. Number of Speakers: No full time speakers known. A few partial speakers including some from other language groups. Demography: Population concentrated around Cape Crawford, Bauhinia Downs areas. Current Tenure: Aboriginal freehold and pastoral lease. Publications, Recordings and other IEK related materials: Technical Language Descriptions.
Mara	Language Status:

	1. Number of Speakers: Uncertain. No fluent speakers known. Possibly 4 individuals with partial knowledge of language. Demography: Population concentrated in and around Borroloola and also *Ngukurr, Minyerri* and *Urapunga*. Current Tenure: Some Aboriginal Freehold, Perpetual Pastoral and Pastoral Lease. Publications, Recordings and other IEK related materials: Published Technical Dictionary (Heath 1981).

BARKLEY - Regional/subregional Factors Effecting IK Support Needs

BARKLEY	Early pastoral enterprise often focussed on the Barkley region. Many Aboriginal people from this and surrounding areas (including *Yanyuwa, Gudanji, Garrwa* and *Mara*) were employed on the tablelands and elsewhere. Partly as a result of this history, many Barkly and Gulf language groups and clans cemented their existing relationships and now share close kinship and cultural ties, for example *Garrwa* and *Waanyi*. As was the case in the Gulf, many Barkley clans also suffered the depredation wrought with the arrival of early cattle 'pioneers'. In many cases, the proliferation of pastoral leases in the area has made it impossible for some groups to visit or stay on their country with any regularity or for any length of time. Key Areas for IEK Investment: MA 7-13 With the possible exception of the Nicholson area (around *Doomadgee*) access to country is difficult due to issues with land tenure and lack of resources. In many areas around central Barkly language and IK retention and use are in sharp decline. Possible organisations for IEK Support in the Barkley sub-region: *Papulu Apparr-Kari*, *Nyinkka Nyunyu* Cultural Centre, NT Libraries and Knowledge Centres, Northern Land Council, Southern Barkly Resource Association.
Jingulu	Language Status: 1. Number of Speakers: Uncertain, possibly 8 to 10 full time speakers. Demography: Population concentrated around Elliott. Current Tenure: Perpetual pastoral. Publications, Recordings and other IK related materials: Unknown (see Barkly Region Aboriginal Language Centre).
Waanyi	Language Status: 2. Number of Speakers: Possibly 4 full time speakers and unknown number of partial speakers on QLD and NT sides combined. Demography: Population concentrated in QLD in Doomadgee, Mt Isa and across the border into *Garrwa* country, NT side.

	Current Tenure: Predominantly perpetual pastoral lease. Publications, Recordings and other IEK related materials: Unpublished ethnobiological texts (Mary Laughren, see also Barkly Region Aboriginal Language Centre).
Wambaya	Language Status: 1. Number of Speakers: Unknown. (see Barkly Region Aboriginal Language Centre). Demography: Population concentrated east of Elliott. Current Tenure: Predominantly perpetual pastoral lease. Publications, Recordings and other IEK related materials: Uncertain.
Gudanji/Garrwa	See Gulf.

Appendix F

Relevant Intellectual Property Instruments, Organisations and Considerations

Theme and Strategy: *Re-evaluating IK*, Strategy 2, Actions g) and h).

The following identifies a number of legal instruments, both Australian and International, for establishing and protecting Intellectual Property Rights especially with respect to Indigenous Knowledge. This discussion was written by Sonia Smallacombe (see Johnson 2006, page 181 for List of Contributors) and has been copied from a Scoping Study commissioned by the Natural Resource Management Board NT and compiled by NAILSMA. The Study was focused exclusively on the Northern Territory however, all of the instruments and arguments posited here are equally relevant to northern Australia and indeed the rest of the continent. See also Cross Cultural Engagement above, pp.117, 118.

It needs to be stated from the outset, that despite emerging international developments, there is no specific national legislation in Australia to protect IEK. In this regard the term 'cultural and intellectual property rights' can be misleading. Current Intellectual Property Rights (IPR) are based on individual ownership, and intended to enable owners to gain commercially through the exercise or sale of their property rights. Conversely, IEK is a form of cultural heritage that is collectively owned, held, managed and transmitted to future generations according to customary practices, protocols and obligations. Consequently, there are areas where IEK and IPR concerns intersect, especially in the process of commercialisation, for example, with respect to patents over IEK, a contentious area in the international arena.

Central Land Council uses the term "Aboriginal cultural and intellectual property" in the best practice protocols it recently developed and is implementing to provide guidance for proposals to conduct research or other activities on Aboriginal land. CLC defines the term as "the totality of cultural heritage of Aboriginal people, including, without limitation, their intangible heritage (such as songs, dances, stories, ecological and cultural knowledge), and cultural property, which includes Aboriginal human remains, artefacts, and any other tangible cultural objects" (CLC 2004).

Both the Janke report and the development of CLC protocols have been informed by consideration of international and national approaches to Indigenous cultural and intellectual property rights and related issues. Key documents and elements in NT, national and international approaches are summarised below.

Northern Territory Approaches

The Central Land Council Research Protocol

This protocol provides for Traditional Owners within the CLC region to regulate activities that occur on their lands and protect their Traditional knowledge rights and interests. It guides those wishing to visit or work in Aboriginal communities and areas in the CLC region in relation to their interactions with Indigenous cultural and intellectual property rights. The associated research permit application process for CLC lands allows CLC to establish what conditions should apply to the research to protect Aboriginal cultural and intellectual property and to promote local benefit from the research (see www.clc.org.au). Here CLC is levering from the permit requirements of the NT *Aboriginal Land Rights Act*, 1976 to make a contract with researchers about the protection of Aboriginal cultural and intellectual property and associated issues. The protocol and approval process is being applied by CLC to a broad range of projects involving engagements with IEK, potentially including externally initiated NRM projects.

The DK-CRC Indigenous Intellectual Property Protocol (draft July 2003)

This protocol sets out principles and guidelines governing the DK-CRC's research and other activities particularly as they relate to IEK.

Draft Policy for Access to Biological Resources for Bioprospecting in the Northern Territory
This policy makes the provision that "any use of Traditional knowledge [not in the public domain] is undertaken with the cooperation and approval of the holders of that knowledge. This must include the prior informed consent of the custodians of that knowledge, on mutually agreed terms;"

Strategy for the Conservation and Application of Indigenous Knowledge across northern Australia
This project is in its second year and is being run out of NAILSMA in receipt of funding and support from the LWA and the TSM-CRC. As part of the overall strategy a raft of legally accredited documents is being developed for traditional owner use. These include MOU documents, legally binding contracts, benefit sharing agreements, informed consent forms and IP schedules, all of which are designed for the use of traditional owners.

State Approaches

Biodiscovery Act 2004 (Qld).
The Act requires biodiscovery entities to prepare a Biodiscovery Plan for approval by the Department of State Development and Innovation. The draft Guidelines for Preparing a Biodiscovery Plan require disclosure of whether Traditional knowledge or indigenous intellectual property has been used or may be used, in relation to any of the biodiscovery activities (including determining what biological sample(s) can/cannot be collected);

Code of Ethical Practice for Biotechnology in Queensland
The code provides for compliance with the Native Title Act 1993 (Cth) "with respect to the collection of samples from areas where native title rights and interests exist" and for negotiation of reasonable benefit sharing arrangements with Indigenous persons or communities where in the course of biodiscovery and research the Queensland government obtains and uses traditional knowledge.(DIIEQ 2001:9).

National Approaches

Environment Protection and Biodiversity Conservation Act 1999: Environment Protection and Biodiversity Conservation Amendment Regulations 2005 (No. 2).

These Regulations promote the conservation of biological resources in Commonwealth areas, including the ecologically sustainable use of biological resources; ensuring the equitable sharing of the benefits arising from the use of biological resources in those Commonwealth areas; recognising the special knowledge held by indigenous persons about biological resources; and establishing an access regime designed to provide certainty, and minimise administrative costs, for people seeking access to biological resources.

Memorandum of Understanding between the Indigenous Land Corporation and the Department of Environment and Heritage

The main objective of this MOU is to enhance communication and understanding between parties and agree to coordinate and capitalise on opportunities regarding the use of resources to maximise benefits for Aboriginal and Torres Strait Islander Peoples.

International Approaches

Akwé: Kon guidelines

Adopted by the 7th Conference of Parties of the Convention on Biological Diversity (COP-7) the Akwé: Kon guidelines are voluntary guidelines for the conduct of cultural, environmental and social impact assessment regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous communities. The Guidelines takes into account IEK and suggests a ten-step process for impact assessment of proposed development.

The Andean Pact Decisions 391 and 486: Common System on Access to Genetic Resources (1996)

In 1996, the Andean Community Member Countries (Bolivia, Colombia, Ecuador, Peru and Venezuela) adopted Decision 391: Common System on Access to Genetic Resources which is the first sub-regional access and benefit sharing legislative measure in response to Article 15 of the CBD. The agreement was developed to ensure that national access regulations are uniform and consistent with the identified minimum standards.

Costa Rica Biodiversity Law (1998)

Recognises and protects 'sui generic community intellectual property rights'

Draft Pacific Regional Framework for the Protection of Traditional Knowledge and Expressions of Culture.

These two mechanisms seek to assist Pacific Island Countries and Territories to legally protect traditional knowledge. Although at different stages of development, both initiatives have taken an essentially similar approach in that they have both developed model legislation to give effect to a *sui generis* national system.

Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional knowledge and Folklore - Protection of Traditional knowledge - Summary of Draft Policy and Core Principles
This provides guidance on issues of misappropriation and other problems faced by traditional knowledge holders. A number of Indigenous groups have criticised the Draft Policy and Core Principles for having a commercial focus and not going far enough to protect and Traditional knowledge in accordance with customary law principles. It does however provide some strong guidance on issues of misappropriation and other problems faced by Traditional knowledge holders.

Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilisation (Bonn Guidelines)

The Guidelines are voluntary and identify the steps in the process of access and benefit sharing, and emphasise the need for the prior informed consent of the nation in which the resources are located.

Organisation of African Unity Model Law (2000)

The Organisation of African Unity passed the African Model Law for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources

International Labor Organisation (ILO) Convention on Indigenous and Tribal Peoples in Independent Countries 169/1989
This Convention refers to the principles of Free, Prior Informed Consent (FPIC) in the context of relocation of indigenous peoples. In Articles 6, 7 and 15, the Convention aims at ensuring every effort is made by the States to fully consult indigenous peoples in the context of development, land and resources.

Convention on Biological Diversity (CBD)
Article 8 (j) calls upon contracting states 'to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities…. And promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices' (see also subsection 3.2).

UN Draft Declaration on the Rights of Indigenous peoples
This emerging instrument on the rights of Indigenous people explicitly recognises the principle of Free, Prior and Informed Consent (FPIC) in Articles 1, 12, 20, 27 and 30. These Articles refer to the right of Indigenous peoples to determine and develop priorities and strategies for the development or use of their lands, territories and other resources. FPIC includes issues such as forced relocation (10), cultural and intellectual property (12), legislative and administrative measures taken by States that affect indigenous peoples (20), indigenous people's lands, territories and resources (27) and development planning (30).

[See Also United Nations University Institute of Advanced Studies Access and Benefit-Sharing Program. *Facilitating Global Dialgoue on ABS.* http://www.ias.unu.edu]

The Julayinbul Statement on Indigenous Intellectual Property Rights (1993)
This Statement was issued by delegates to the Julayinbul Conference held at Jingarra in north eastern coastal Australia. It outlines the relationship between Indigenous People and the environment. The Statement reaffirms the right to self determination.

The Mataatua Declaration on Cultural and Intellectual Property Rights Indigenous Peoples
This statement was developed at the first International Conference on the Cultural & Intellectual Property Rights of Indigenous Peoples was held in Whakatana, Aotearoa, New Zealand, 12 - 18 June 1993. Over 150 delegates from fourteen countries attended, including indigenous representatives from Japan, Australia, Cook Islands, Fiji, India, Panama, Peru, Philippines, Surinam, USA, and New Zealand. The Declaration reaffirms Indigenous Peoples' right to self determination and exclusive ownership of Indigenous cultural and intellectual property.

Discussion

Against this wide array of instruments and mechanisms for IEK and IPR, the following discussion is limited to how these guidelines might be applied specifically to issues around IEK and Indigenous cultural and intellectual property in NRM contexts.

A great deal has been written about the use and misuse of traditional (especially indigenous) intellectual property. However, the bulk of that material deals with cultural expressions through visual or performance arts and handicrafts (Jaenke 2003). Yet another emerging area of concern surrounds the protection of knowledge utilised in bioprospecting for new pharmaceuticals and related products (Sampath 2005). Whilst these foci differ in detail from those at issue in the application of IEK to management of biological diversity and other natural resources, they deal with the same general concerns. Arguably, the principal concerns are that that application of traditional knowledge (i) benefit the holders of traditional knowledge (ii) support the conservation

of traditional knowledge (iii) be used only with informed consent and (iv) recognise the unique characteristics of traditional knowledge, including collective custodianship.

Against this backdrop, the discussion to follow is not comprehensive, but concentrates on these core issues and the extent to which related initiatives internationally and within Australia appear likely to address them effectively.

International

The World Intellectual Property Organisation (WIPO) is a specialised agency among the UN system of organisations. Its mandate is principally to harmonise national intellectual property law and process. Australia is one of 183 member states.

For some years a WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore has been developing policy objectives and core principles for the protection of traditional knowledge for application by member states. An important outcome of that work, extending over many years and involving global consultations with indigenous people and parties to the Convention, is summarised in a report by the WIPO Secretariat (2005). That report explicitly goes beyond a focus on commercial use and arts to include reference to the application of traditional knowledge to the management of natural resources. It therefore provides a useful framework for considering the issues raised by proposals for improved access to and active application of IEK to natural resource management in any jurisdiction, including the Northern Territory.

The policy objectives are to:

- Recognise value
- Promote respect
- Meet the actual needs of holders of traditional knowledge
- Promote conservation and preservation of traditional knowledge
- Empower holders of traditional knowledge and acknowledge the distinctive nature of traditional knowledge systems
- Support traditional knowledge systems
- Contribute to safeguarding traditional knowledge
- Repress unfair and inequitable uses
- Respect for and cooperation with relevant international agreements and processes
- Promote innovation and creativity
- Ensure prior informed consent and exchanges based on mutually agreed terms

- Promote equitable benefit-sharing
- Promote community development and legitimate trading activities
- Preclude the grant of improper IP rights to unauthorised parties
- Enhance transparency and mutual confidence
- Complement protection of traditional cultural expressions.

The document distils these objectives into a somewhat smaller number of principles that should underpin delivery of these objectives, namely:

(a) Principle of responsiveness to the needs and expectations of traditional knowledge holders.
(b) Principle of recognition of rights
(c) Principle of effectiveness and accessibility of protection
(d) Principle of flexibility and comprehensiveness
(e) Principle of equity and benefit-sharing
(f) Principle of consistency with existing legal systems
(g) Principle of cooperation with other international and regional instruments and processes.

(h) Principle of respect for customary use and transmission of traditional knowledge
(i) Principle of recognition of the specific characteristics of traditional knowledge
(j) Principle of providing assistance to address the needs of traditional knowledge holders.

The authors of this study note that the application of these principles must be matched to the national or regional context and that uniform prescriptions would probably be unhelpful. But the principles and the accompanying discussion does provide a useful checklist against which to examine national arrangements.

Australia

The most direct effort to implement the provisions of the CBD in Australia is represented by regulations (*Environment Protection and Biodiversity Conservation Amendment Regulations 2005 (No. 2*, made by the Australian Government under the *Environment Protection and Biodiversity Conservation Act* (1999). The purpose of the regulations is to control access to biological resources (including genetic resources) in Commonwealth areas (sites owned or leased by the Australian Government). Important provisions include arrangements to ensure "equitable sharing of the benefits arising from use of biological resources" and "recognising the special knowledge held by indigenous persons".

Recognition of indigenous interests is addressed by assigning the role of "access provider" to traditional owners of indigenous land for which full formal title is held, or native title holders where native title rights have been recognised and the Commonwealth owns or leases land. Applicants for permits to access biological resources must enter into a benefit-sharing agreement with the access provider. Where applicable, the benefit-sharing agreement must include valuing any indigenous knowledge to be used, and entering into formal agreement with the knowledge holder(s) to make use of that knowledge. Details of benefits provided for use of indigenous knowledge must be provided to the Federal Minister prior to the issue of a permit. Specific provisions are made for "tests" of whether informed consent was given.

The regulations do not require that benefits be used to support conservation of traditional knowledge, nor are there guidelines for what would constitute an equitable share of benefits. Further, they apply only on Commonwealth lands, which is likely to severely constrain the extent to which they genuinely protect indigenous knowledge and its custodians. Consequently, the arrangements fail to satisfy all of the principles outlined in the WIPO Secretariat draft.

Nonetheless, the regulations represent an important step in formal legal recognition of indigenous rights in resources on their lands and of the obligation to value indigenous knowledge. Further, their development reflects principles put forward for a nationally consistent approach to these issues (Vounard 2002). So far as we are aware, no Australian jurisdiction has enacted similar laws to extend the area over which protection to traditional knowledge is given. For example, the Queensland *Biodiscovery Act* requires benefit sharing agreements, but makes no provisions for the protection of traditional knowledge and requires that all benefits go to the State.

Northern Territory

The Northern Territory Government has proposed the development of a policy for access to and use of biological resources in the Northern Territory. It is proposed that the policy ultimately be backed by legislation. Drafts mimic many provisions of the Commonwealth regulations in providing for benefit sharing agreements with the access provider, who may be a private landholder or leaseholder, and to indigenous holders of traditional ecological knowledge. It is noteworthy that proposals provide for protection of traditional knowledge only in those cases

where the knowledge is not already in the public domain. Proposals are silent on mechanisms to be used to ensure that indigenous knowledge holders obtain an equitable share of benefits.

The recently developed research protocols of the CLC are a useful template of 'best practice' at a local/regional level, for practical measures to protect Indigenous peoples' cultural and intellectual property rights. The principles they are built around have applicability beyond Aboriginal owned lands and research interactions with IEK holders, except that they have not given any specific consideration to issues associated with bioprospecting.

The models proposed for the regulation of bio discovery in the Northern Territory do not satisfy the principles proposed by the WIPO Secretariat. In particular they fail to give priority to aspirations and expectations of traditional knowledge holders, and to promote respect for indigenous and customary practices. Consequently, they fail to provide useful guidance for application of IEK to natural resource management.

No formalised Australian approach for access to and application of IK provides a suitable model for transfer to the Territory situation. However, recent international work provides a template of the key criteria that any successful model must satisfy. CLC research protocols have applied these criteria to procedures within their area of responsibility. We propose that the related principles and criteria be captured in a set of simple guidelines, linked to examples of good practice in community engagement in general and indigenous engagement in natural resource management in particular.