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INDIGENOUS WATER VALUES AND WATER PLANNING IN THE UPPER ROPER RIVER, NORTHERN TERRITORY

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November 2011

Report to the National Water Commission and the Department of Sustainability, Environment, Water, Population and Communities

Australian Government
Department of Sustainability, Environment, Water, Population and Communities
National Water Commission

Water for a Healthy Country Flagship Report

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Cover Photograph: Mulurark, Elsey National Park, Northern Territory.

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The project is funded as part of the Northern Australia Water Futures Assessment (NAWFA). NAWFA is a multidisciplinary program being delivered jointly by the Department of Sustainability, Water, Population and Communities and the National Water Commission, in close collaboration with the Office of Northern Australia and State and Territory government agencies. This project was developed in collaboration with research partners from TRaCK (Tropical Rivers and Coastal Knowledge www.track.gov.au) - a research hub which has drawn together more than 70 of Australia's leading social, cultural, environmental and economic researchers.

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LIST OF ABBREVIATIONS

ANU – Australian National University

GDE - Groundwater Dependent Ecosystem

MWAC – Mataranka Water Advisory Committee

MTOWARG – Mataranka Traditional Owner Water Allocation Reference Group

NAILSMA – North Australian Indigenous Land and Sea Management Alliance

NAWFA – North Australian Water Futures

NLC – Northern Land Council

NRETAS – Department of Natural Resources, Environment, the Arts, and Sport

NTPWS – Northern Territory Parks and Wildlife Service

SIR – Strategic Indigenous Reserve

EXECUTIVE SUMMARY

This report contains the preliminary results from archival and field research on Indigenous water values and water planning in the upper Roper River, Northern Territory. The research for this report was conducted during 2010 and 2011, but is ongoing. This report details results from research conducted up until July 2011, and emphasises material related to Indigenous water values, the significance of water to traditional owners, and some contemporary issues that relate to that material. Following additional research, community consultation, further legal and hydrological advice, and additional analysis, a second report focused on traditional water management will be completed to complement this report. The timing of this will depend on further community consultation and fieldwork developments, but it is envisaged that it will be released within three months of this first report.

The research was conducted alongside a water planning process undertaken by the Northern Territory Government in the upper Roper, and this report provides preliminary results to aid further public deliberations about that process. The research is being conducted under a research agreement with the Northern Land Council (NLC), with the fieldwork phase commencing in February 2011 following the completion of that agreement. The research process involved searches of relevant literature and archives, as well as fieldwork interviews with a range of Indigenous people resident in the catchment. Recommendations about important people to approach for interview were received from a range of sources, including a list of senior owners provided by the NLC and individual recommendations from initial interviewees. In total, 15 Indigenous people from the wider planning area were interviewed, with a further 15-20 relevant people approached and given the opportunity to participate. A range of non-Indigenous people relevant to the research topic were also informally or formally interviewed, including Northern Territory Government staff with responsibilities for water planning and/or conservation, Landcare/NGO workers, researchers familiar with the area, and NLC staff.

The research was focused on general values, comments, and perspectives relevant to contemporary water planning and management. Based on the comments from fieldwork interviews and the archival research, we find that the values and interests in water expressed by Indigenous people in the upper Roper are consistent with the values and interests expressed by Indigenous people reported elsewhere in published literature. The archival material demonstrates that the upper Roper region, and in particular the area of Elsey Station and Elsey National Park which was the focus of the research, contains a significant number of water sources and water places, as well as a rich set of stories, Dreamings, and historical associations important to local Indigenous people. Participants in the fieldwork interviews consistently underlined the importance of what might be called ‘water for the country’, with that phrase encompassing water in the springs, rivers, creeks and waterholes, water at important Dreaming places, water for plants and animals, and water sufficient to maintain ongoing fishing and hunting by Indigenous people. One source in the anthropological literature suggests that mature trees along the Roper have particular significance, and the literature also contains evidence of a range of practices and protocols with respect to water and the country as a whole. Increased rainfall in recent years is reflected in interviewees’ comments about changes in the landscape, particularly the prevalence of water and changes in watercourses. The report contains a brief section on traditional water management as a preview to the subsequent report on that topic. The main

focus of that section is the archival evidence relating to local Indigenous people constructing temporary weirs and water diversions in the braided section of the upper Roper, and of a legal case between pastoralists about the practice in the 1940s. In terms of contemporary developments, the recent establishment of the Mangarrayi Rangers is an important new element of the Natural Resource Management landscape in the focal area of Elsey Station, complementing the established presence of the Jawoyn rangers in Katherine and the areas in the northern part of the water planning area. The impacts of new and existing commercial developments were also raised by some interviewees, including the damage caused by the local quarry and the water usage of the recently established mango farm.

The research coincided with the last phase of the water planning process undertaken by the Northern Territory Government's water agency, the Department of Natural Resources, Environment, the Arts and Sport (NRETAS), and in particular with the establishment by the NLC and the North Australian Indigenous Land and Sea Management Alliance (NAILSMA) of a separate reference group of traditional owners from the area to provide further input on water planning and allocation (see http://www.nailsma.org.au/forum/mataranka-indigenous-water-forum.html). The main focus of this group, known as the Mataranka Traditional Owner Water Allocation Reference Group, has been the amount of the allocation from the consumptive pool for a Strategic Indigenous Reserve (SIR), and the report contains a series of comments about that issue made during the first half of 2011. Investigating the nature and extent of the SIR was not an objective of this research, as it is the subject of a complementary research process being undertaken by NAILSMA, but the comments are included here as they demonstrate aspects of Indigenous attitudes to ownership and obligation with respect to water and the country.

The report concludes by identifying ongoing and future research priorities, including the completion of the second report focused on traditional weir construction and water management, further fieldwork in the area, and archival investigation of photographic images of the focal research area.

1. INTRODUCTION

1.1. Background

This report documents the preliminary findings of field and archival research on Indigenous connections to water and Indigenous water values in the upper Roper River. It will be followed by a second report which will concentrate on evidence relating to traditional water management on the upper Roper. This second report will be completed once further legal and hydrological advice, further community consultation, and additional analysis of the issues it raises has been undertaken.

North Australia has the continent's largest expanse of intact river systems and catchments (Pusey 2011). Pressure on tropical river systems worldwide and the water crisis in southern Australia has stimulated interest in Australia's northern water resources and river health. The lack of information about tropical river systems is immediately apparent to policy makers, scientists, industries and community groups with an interest in water resource development. Since 2004, in an effort to provide knowledge to guide current and future policy and decision-making, research bodies such as Land and Water Australia and government agencies and departments such as the National Water Commission and the Department of Sustainability, Water, Population and Communities have initiated studies and stimulated the consideration of research and development priorities and requirements. Under the auspices of the TRaCK research program, research organisations undertook a number of studies relevant to Indigenous water values and management (Jackson and O'Leary 2006; Toussaint 2010; TRaCK 2011).

Despite being major landowners and representing a large proportion of regional communities, Indigenous people have historically been marginalised from water resource decisions. Large scale water resource developments have overlooked the social and economic impacts on Indigenous communities (Barber and Rumley 2003) and few contemporary management processes adequately involve Indigenous people (Jackson and Morrison 2007). Steps have recently been taken by water resource agencies to consider Indigenous interests in water allocation planning and catchment management, for example, in the La Grange and Ord River regions of Western Australia and the Daly River and Katherine regions of the Northern Territory.

Water resource agencies are now obliged to consider Indigenous perspectives, values and interests under national water policy, yet for a range of reasons, Australian planning practice is at the early stages of doing so (Rural Solutions 2008; Jackson, Tan et al. 2009; National Water Commission 2009). Other water reforms, particularly the separation of land and water titles and the creation of, and trade in, new property rights are key issues for Indigenous people (Altman and Cochrane 2003). In response, there is an evident policy shift towards advancing the economic interests of Indigenous land owners as water institutions change with national commitments to pricing and trading (Jackson and Altman 2009; O'Donnell 2011).

Notwithstanding the growing policy interest, there remains a need for effective Indigenous participation in the newer land and water management activities such as water planning and environmental flow assessment. Planners, resource managers and water advisory committees require sound information and assistance in engaging with Indigenous groups.

The Indigenous social landscape can be complex, with many different language and kinship groups as well as diversity of interest and opinion amongst community members, and in some cases significant language barriers. Many associations, traditions and practices relating to water can escape the attention of scientists and resource managers, who rely solely on measurable physical evidence. So too can Indigenous knowledge of the ecological properties and functions of water when environmental assessments are undertaken. Yet this knowledge can be valuable in understanding environmental change and adapting to environmental pressures. The initiatives emerging in north Australia (water allocation plans, specific Indigenous allocations and cultural flows) need to be evaluated to ensure they adequately address the needs of Indigenous people to pursue their own water use plans, to participate equitably in multi-stakeholder processes and derive benefits from changes to the water sector.

The research reported here was funded by the Northern Australia Water Futures Assessment (NAWFA) Cultural and Social Program which aims to improve the understanding of the social and cultural values associated with water in northern Australia. The research was undertaken by CSIRO researchers from the Division of Ecosystem Sciences working under a research agreement with the Northern Land Council, representing traditional owners of the Upper Roper River area.

Assistance was also provided by water planners working for NRETAS. NRETAS has been developing a Water Allocation Plan for groundwater in the upper Roper River catchment, following on from a similar process undertaken for the Katherine region (Department of Natural Resources 2009a). The research undertaken here is designed to complement and support that planning process in the Roper River. It does this by informing government and the wider community about the nature and extent of Indigenous values and interests in water in the area, and by helping Indigenous people understand and participate in the water planning process.

1.2. Report structure

This report has four main sections. This introductory section describes the background, aims, study area context, information sources and methods applied in the case study. This section also briefly introduces the central concept of culture, discussing its role in Indigenous societies and the way it is defined in natural resource management and water planning. Section 2 reports on the results relating to water values and selected planning issues obtained from interviews and from published literature on the Roper River area. Section 3 describes some further conclusions based on the broader data described in the report, and suggests future research avenues. Section 4 is the appendices and contains samples of recent Indigenous water rights declarations and some further information sheets and consent forms about the current project.

1.3. Aims and methods

1.3.1. Aims

The broad goals of the research reported on here were to:

1) document Indigenous people's water values and seasonal and hydrological knowledge in the upper Roper area;

2) document Indigenous people's views about and understanding of water planning processes and their objectives;
3) suggest implications for water planning processes of those values and knowledge;
4) make recommendations for future water plans in the general northern Australia context.

1.3.2. Research methods

Preliminary archival scoping research for this project first commenced in July 2010. The commencement of fieldwork was delayed by several months from the original start date by the need for the NLC to complete consultations about research approvals with the relevant Indigenous groups with interests in the planning area. Fieldwork began in February 2011 and was undertaken over several shorter periods between February and May. It was constrained by a very heavy 2010-2011 wet season, making access to key sites impossible and by a number of funerals which took place during that period in which key research participants and/or communities were involved. Fieldwork results are therefore preliminary, but the longer period of archival research combined with the strong archival record for the focal area makes reporting on the current activity worthwhile. The preliminary findings also suggest important avenues for further research and water planning activity in the upper Roper. Research in the area is ongoing, and this report documents activities undertaken up until June 2011, when a preliminary draft was submitted to NAWFA. It was then submitted to the Northern Land Council for further legal comment. Subsequently, the main report was separated into two parts. This was to expedite the release of material relevant for planning purposes found in this report on water values. When released, a second report on traditional water management will present existing material from the original research, as well as updates and additions from ongoing research processes.

The primary research techniques adopted for this project were archival searches and field interviews with Indigenous and some non-Indigenous research participants. The archival searches involved both physical searches of locally available Northern Territory archives and electronic searches of databases located elsewhere. Some key sources are described in 1.5 below. Field interviews were conducted either one on one or with the researcher talking to small groups of interested people. Guidance about whom to interview was provided by the NLC and also by Indigenous research participants once the field research commenced. The principles used to identify potential interviewees to the researchers included seniority, group identity, knowledge of the country, place and duration of residence, recent profile in speaking about water issues, and expected availability for interview. It was not possible to successfully follow up all of the recommendations received, but in total 15 Indigenous people were formally interviewed. The majority of these people were from or strongly related to the Mangarrayi, Yangman, and Wubulawun language groups as well as people with connections to the Beswick Land Trust area, and a significant number were members of the Mataranka Traditional Owner Water Allocation Reference Group. However because of the broad scope of the consultations and the focus on local knowledge of the area, some senior Aboriginal people were interviewed who did not have strong genealogical connections to the area. They were either long term residents, or had some capacity to comment on changing conditions based on repeated visits over several decades. In the report which follows, people's comments are identified by initials. This retains a level of anonymity, but also enables the comments to be locally identifiable should that be useful or appropriate. All research participants were informed at the start of the research process that their comments may be used in a public report such as this. The research participants' comments are interspersed with archival material where it is relevant and useful to do so.

The research was conducted in accordance with CSIRO's Human Ethics Research Guidelines and all interviewees participated following a process of free prior informed consent. The reasons for the research, the nature of their involvement in it, and their options for being identified in the research reporting were clearly explained to participants prior to commencing the interviews. Copies of the information sheet used to inform potential respondents and the interview consent form are can be found at 4.2 below. In the course of the field research, an additional 25-30 Indigenous people identified as having interests in the country and the process were contacted. They were given information about the existence of the water planning process and about the research, and given the option to participate. The research process itself therefore played an important role in raising awareness amongst Indigenous people of water planning in the upper Roper River.

1.4. Study area: geography and history

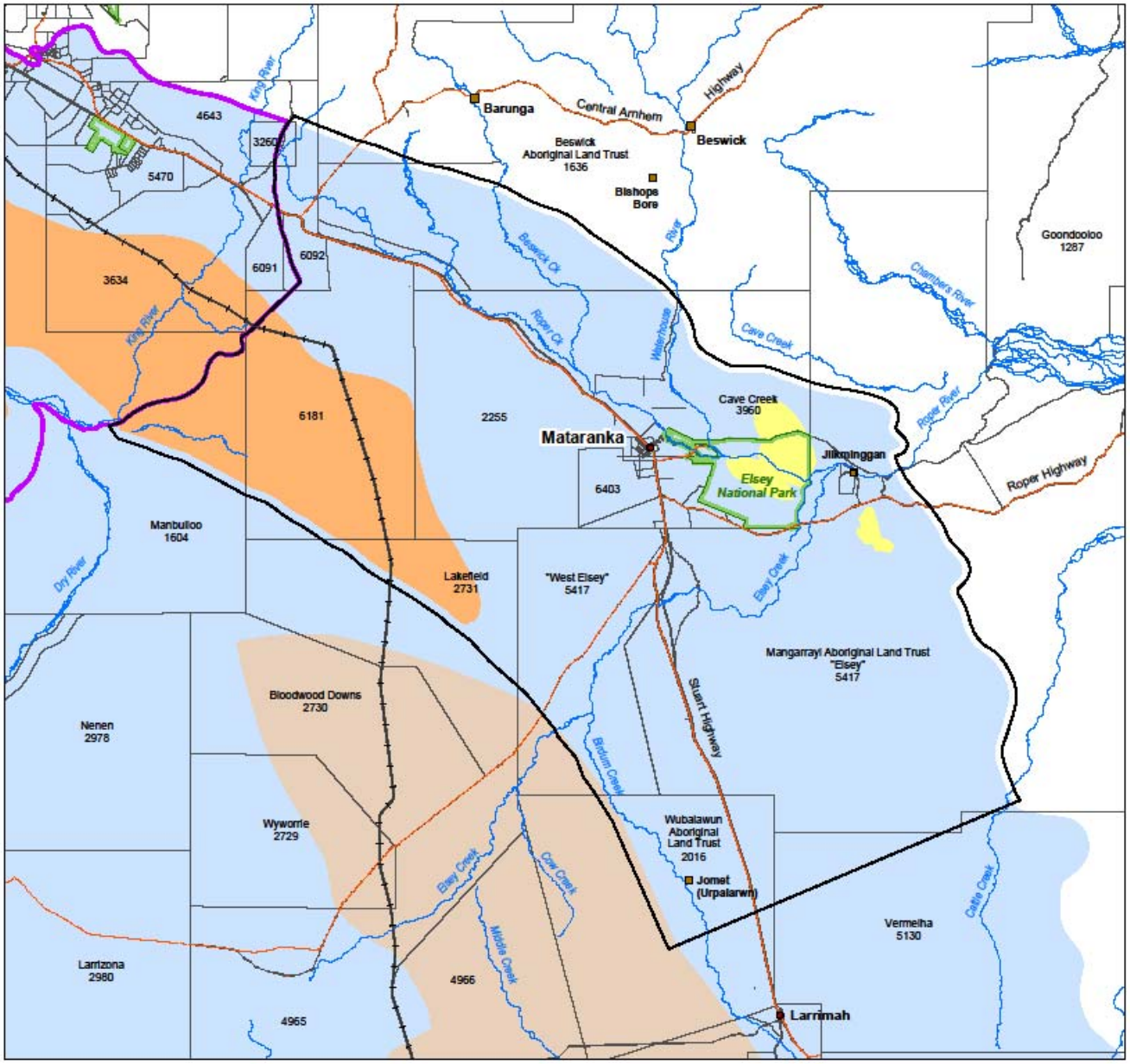
1.4.1. The Roper River

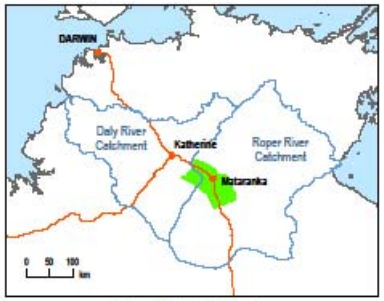
The Roper River is located within the wet-dry tropics of north Australia and the majority of land is pastoral leasehold (about 70%) and/or held under Aboriginal title (about 30%) on which customary and other land use activity is undertaken (Woinarski, Mackey et al. 2007). The predominant regional industries include pastoralism, mining, Indigenous enterprises, fishing and tourism – all of which use and rely on the region's water resources. Future economic development of northern Australia is highly likely to involve the exploitation of its water resources, with irrigated agriculture and other water-based industries likely to expand (Douglas, Jackson et al. 2011).

The region's monsoonal climate has pronounced wet and dry seasons and warm temperatures throughout the year. The result is a highly variable river flow pattern. Water may be abundant during the wet season, but scarce during the dry season when most of the rivers shrink to non-flowing pools. Aquifer-fed rivers such as the Daly in the NT and the Gregory in Queensland's Gulf, have flows that are sustained throughout the dry. These are especially important for many terrestrial and aquatic species (Woinarski, Mackey et al. 2007), and of particular significance to resident communities (Jackson, Stoeckl et al. 2008).

The Roper River is fed during the dry season by groundwater discharge from a large limestone aquifer covering a much larger area. Between Mataranka and the Red Lily Lagoon, the river gains flow from springs such as Bitter Springs and by seepage through the river bed and banks. At Red Lily Lagoon the flow is spread to wetlands north and south of the main channel and it was recently estimated that one metre per second of the river's flow at this point is used up by evaporation and vegetation (Northern Territory Government 2010). Downstream from the wetlands, the river begins to lose flow in drier periods, with minor tributaries only feeding in additional water during the wetter months (Zaar 2009). The location of the tidal section of the Roper River is heavily affected by the amount of river flow, and during the dry periods in the 1950s and 1960s the salt wedge pushed up all the way to Roper Bar, necessitating the relocation of people living at the Roper River mission (Northern Territory Government 2010). The nature of the Roper River flow emphasises the need for groundwater planning and allocation in the upper catchment, as this groundwater forms the basis of the crucial low season flow.

Fig 1 (following page): Roper River and the Mataranka planning area (Northern Territory Government 2009).





Surface Water Catchments
Mataranka WAP area

LEGEND

- Mataranka WAP Boundary
- Katherine WAP Boundary
- National Park or Reserve
- 1287 Cadastre (Parcel Boundaries) Name and Parcel number

Daly Basin Aquifers (displayed by formation type)

- Tindall Limestone
- Jinduckin Formation
- Antrim Plateau Volcanics
- Bukalorkmi Sandstone

Data Source
Water Allocation Plan Boundary:
Water Management Branch, NRETA
Aquifers: Land and Water Division, NRETA
Parks: Parks and Wildlife, NRETA
Cadastre, Roads: Land Information, DPI
Rivers: 250,000 topography Geoscience Australia
Catchment: 250,000 ASWMA Geoscience Australia

Map compiled by Water Management Branch, Katherine
Dept Natural Resources, Environment and The Arts
18th August, 2008

For more information about this project, contact;
NRETA, Katherine office: (08) 8973 8104
Web: www.nt.gov.au/water/mwac

0 10 20 30
KILOMETRES

MATARANKA
WATER ALLOCATION PLAN

AREA LOCATION

Northern Territory Government

The Roper River is experiencing water use pressure as a result of an expanding horticulture industry, as well as cement manufacturing, pastoralism, and water for towns and green spaces like parks and schools (Department of Natural Resources 2009b). The groundwater dependent ecosystems (GDEs) are a crucial environmental, cultural, and economic resource for the region and protecting those assets provides an important impetus for the generation of a water plan. The plan is intended to provide security for water users and appropriate guidelines for the assessment of GDEs in the area (Department of Natural Resources 2009b).

1.4.2. Water and Indigenous people: history and colonisation

Colonisation impacts, particularly associated with the cattle industry, have been occurring in the area for well over 100 years, and the early history was quite violent (Merlan 1978). The effect of the expansion of the 'hydrological frontier' on Indigenous societies of north Australia is examined briefly by Langton (2002), who has also published on the significance of water to Indigenous societies (Langton 2006). In what has been termed 'the battle for the waterholes', introduced animals: buffalo, cattle, and horses, all had a widespread negative effect on Indigenous traditional life-ways (McGrath 1987). Enormous ecological pressure was created as waterholes became watering points and the resulting social impact included severe anxiety from disturbance to sacred sites, and conflict over hunting of introduced animals which had often displaced native game. McGrath writes:

> The waterhole was a prime focus of land-use in the Aboriginal economy. Besides the resource of water itself for drinking and bathing, waterholes were the centres of many forms of edible life… They served as settings for big ceremonies. The waterhole was a focus, representing for respective individuals a birthplace, a symbol of creation and reproduction, of plants, and animals and people. Its religious and economic symbolism and social significance as camp and meeting place made loss or damage hurtful to the traditional owners.
> McGrath 1987: 5.

Defending the waterholes from non-Indigenous intruders was, according to McGrath, one of the shorter-lived phases of the conflict which lasted many years. Violence was employed over a number of decades to ensure that Indigenous people did not impede the colonising endeavour, including stocking the pastures and struggling with agricultural schemes along various river systems such as the Adelaide, Daly, Ord and Fitzroy.

However the people of the Roper River region, particularly the Mangarrayi associated with the Elsey area, have been able to continuously occupy at least of a proportion of their traditional lands throughout that period. This contrasts with many other Indigenous people who were removed to missions and other settlements sometimes far away. This ongoing presence has encouraged a strong and ongoing attachment to that country as well as considerable knowledge of its local features. Merlan noted (1978:74) that hunting activity had declined with both the ongoing presence of European foods and restrictions on transport and access, but subsistence hunting remains a feature of life for Indigenous people in the area, particularly as a source of support when store food and cash supplies are low.

The geographic focus of both the archival and field research was the area incorporating Mataranka, Elsey National Park, the community of Jilkmingan, and Elsey Station. This is a smaller area than the overall planning area covered by the government groundwater

planning process (Figure 1), but it contains the origin springs for the Roper River and many key water places for both past and present Indigenous people. It also incorporates much activity associated with non-Indigenous colonisation and development. To provide appropriate comparison and ensure that Indigenous people across the catchment area had the chance to contribute to the research, the first author made field visits to a range of communities inside and adjacent to the planning area, including Barunga, Beswick and Katherine. However the focal area remained the central zone incorporating Elsey National Park, Jilkmingan, and Mataranka.

1.5. Archival sources for the focal area

Compared to many other regions of the Northern Territory, the archival record for the focal area within the overall groundwater planning zone is strong, and in some important respects this archival strength counterbalances some of the restrictions placed upon the field work timetable. Before presenting the research results, it is useful to outline the broad scope of archival resources available.

The primary reason for the comparative strength of the archive in historical terms is because of the high profile enjoyed by Elsey Station since the publication of the popular book 'We of the Never Never' in the early 20th century (Gunn 1977 [1908]). Many visitors and residents at Elsey since that time have documented their experiences in some way, resulting in personal archives, films, newspaper articles, and books. The station and its environs also appear in wider accounts of Northern Territory history, and some of this copious material is relevant to Indigenous water interests.

In anthropological terms, the senior anthropologist and linguist Francesca Merlan has worked in the Elsey area and with the associated community of Jilkmingan since the mid-1970s. She has produced a range of important articles and books, as well as a language dictionary and documents for court proceedings. Court records and other documents associated with indigenous land claims are also publicly available, providing detailed information about local sites, knowledge, and practices (Commonwealth of Australia 1990; Commonwealth of Australia 1997). The first recorded visit by an anthropological researcher was that undertaken by Baldwin Spencer in 1911. Spencer took photographs of Red Lily Lagoon and Salt Creek, and these were republished in the 1980s (Vanderwal 1982). The region has also benefitted from high quality ethnobotanical and ethnozoological research, as during the 1980s and 1990s the Mangarrayi people worked with Glenn Wightman from the NT Parks Service to produce an ethnobotany for Mangarrayi areas (Wightman, Garalnganjak Roberts et al. 1992). The original work is being updated to incorporate information on animals and seasons.

Finally, in the late 1940s the local Indigenous practice of building temporary seasonal weirs in the braided channels of the upper Roper for subsistence became the subject of a Supreme court case between the managers of Elsey and Roper stations (1946). The practice was encouraged, and potentially amplified by the owners and managers of Elsey station to improve cattle watering during dry periods, and was challenged by the manager of the Roper Station downstream from the dams. A major result of the archival research undertaken for this project was to discover the specific date and title of this case from general field and archival references to it. This enabled the relocation and analysis of the original transcript, as well as the examination of associated records about the damming practice held by the

Northern Territory Archives and National Archives of Australia. Significant information derived from that archival work, and consideration of the potential legal and planning implications of it, will be the subject of the second report regarding traditional water management. The primary archival material used for this report comes from the other elements of the archive, particularly the land claim records, the documented work of Merlan, and previous work for water planning in the adjacent Katherine area conducted by Cooper and Jackson (2008). These archival sources complement the comments from research participants obtained during fieldwork interviews, providing further context and detail for those comments and the issues raised in the report.

1.6. Indigenous country, culture and law

Indigenous Australians are passionately attached to a sense of identity that comes from particular places and from the wider land and waterscapes within which those places lie (Williams 1986; Myers 1991; Baker 1999; Rose 2000; Bradley 2010). When speaking English, Indigenous people often use the term ‘country’ to collectively describe those places and landscapes as an inseparable whole. Sites are not just isolated places of significance, but rather form key points in a wider regional matrix, often known as ‘country’ (Williams 1986; Myers 1991; Rose 1996; Strang 1997). ‘Country’ also suggests that these areas are owned by people whose origins lie within them, and that those people in turn have responsibilities towards that area. This has some similarities with the way citizens of Australia perceive, sometimes in quite emotional terms, that their nation is a ‘country’ which they both collectively own and have obligations towards, including to protect it.

Indigenous people actively connect themselves to their country in a range of important ways (Williams 1986; Myers 1991). Firstly, places are part of the network of kinship relationships understood to exist between human beings, plants and animals and other features in the landscape (Rose 2005). Alongside this kin relationship, people connect themselves to country through knowledge of its physical characteristics, through practices and activities related to it such as hunting, singing, and dancing, and through the relationships with other people that are formed through the country they share (Keen 1994; Bradley 2010). The English term ‘culture’ has been adopted by many Indigenous Australians to collectively describe these knowledge, practices, and relationships that bind people to country and to one another.

‘Culture’ is a widely used term that even in technical academic analysis has a range of meanings. But an important Indigenous usage of the term is the sense in which, through jointly held knowledge and collectively undertaken activity, it can bind people together in meaningful groups. A second important aspect of Indigenous conceptualisations is demonstrated by the use of the English word ‘law’ to describe these activities, and ‘culture’ and ‘law’ are often used interchangeably by Indigenous people (Williams 1986). This demonstrates that ‘culture’ in the Indigenous sense has legal, political, and moral force - it refers to the guiding principles and commitments that should govern peoples’ lives, not to the rapidly changing fashions and ephemeral imagery that the term ‘popular culture’ can imply in wider English usage. Many Indigenous people talk about the unchanging nature of this law and culture, and how this is different from non-Indigenous laws, which seem to constantly change. However, in the same ways that change in non-Indigenous law should be and is governed by underlying principles that are far more stable, so unchanging Indigenous law is a dynamic tradition that has been obliged, and sometimes forced, to adapt to new

circumstances in order to sustain itself. That adaptation process has been more or less successful depending on the circumstances, but it has always relied on stable and enduring principles. The crucial sustaining role of culture and country, and of the laws and practices that are associated with them, also place a heavy obligation on its current custodians to protect and pass on as much as they can to subsequent generations. In relation to the country (both land and waters) people consider themselves simultaneously owners, guardians, custodians, advocates, beneficiaries, relatives and dependants (Williams 1986; Myers 1991; Rose 2000; Rose 2005).

It is also worthwhile considering the way in which natural resource management defines 'culture' and seeks to protect 'cultural values', because these commonplace conceptualisations of culture can affect Indigenous people's efforts to participate in environmental programs and to fulfil their wider aspirations (Jackson 2006a). The determination of a community's preferred values and uses is an essential step in developing an environmental management program and in water allocation plans for example. There is a tendency in Australian environmental discourse to establish separate categories of value that embrace evaluations described as economic, social, environmental and sometimes, cultural. This categorisation reflects the consideration given to the 'triple-bottom line' in ecological sustainability. Social values have received increased attention in natural resource management policy and practice, and more recently the notion of *cultural* values has emerged, particularly in water resource management policy. Social and cultural values tend to be considered to be non-use or non-consumptive values[1], and were given relatively little emphasis in the early period of Australian water reform (Syme and Hatfield-Dodds 2007). This is despite the fact that water values are diverse across the population as a whole, and that the Australian community is strongly affiliated with water resources and their management, as explained by Syme and Hatfield-Dodds:

> …a single body of water will often provide for survival, livelihoods, wealth, identity and status. Water frequently plays a central role in our appreciation and understanding of our landscapes, providing a basis for cultural stories, shared identity and fundamental aspects of the human psyche and spirituality.
> Syme and Hatfield-Dodds 2007: 11.

In recent Australian water resource policy, the main emphasis has been on delivering the desired economic and environmental changes within 'social constraints', which were not explicitly defined, although there was to be an emphasis on consultation and public education (ibid). More recently, social issues have been granted greater systematic attention in Australian water reform (Syme and Hattfield-Dodds 2007). For instance, the responsibility of governments to achieve socially beneficial outcomes is affirmed in national water policy, and fairness and responsiveness in dealing with change are given as explicit objectives of the National Water Initiative (NWI).

Syme and Hatfield-Dodd note that in Australian water reforms, 'culture as an input to water resource policy has been given little or no substantive attention' (2007:18). The term 'cultural values' is rarely defined in water management and there are no nationally endorsed guidelines for how best to account for 'cultural values' to provide consistency in water planning, indeed any NRM activity. The NWI does not define the range of terms used to

[1] Referred to as amenity values in the preamble to the NWI.

encompass Indigenous interests in water, including 'social, spiritual, and customary objectives' and water for 'traditional cultural purposes' (Jackson and Morrison 2007). It is common for the notion of 'cultural values' to be associated with spiritual significance, and particularly with Indigenous heritage values, where values are objectified as places, products and performances (Jackson 2006a). For instance, the National Water Quality Management Strategy's guidelines for protecting 'environmental values' reveal a spiritual and exclusively Indigenous focus to its interpretation of a subsidiary concept called 'cultural value'.

It is doubtful whether the distinction made between cultural and social values has been particularly helpful in NRM processes (Jackson 2006a). It appears to be based on a number of assumptions that some scholars wish to challenge (Head, Trigger et al. 2005). The first is the widespread view that culture refers purely to the 'mythical and irrational parts of human life that are not amenable to rigorous research and scholarship' (ibid: 256). The second is the idea that culture occupies a separate sphere; that it does not pervade all our lives and institutions, including scientific ones. Lastly, it is the assumption that culture is usually associated with a high level of difference manifested by Indigenous or ethnic minorities (ibid). All social groups exhibit some form of territoriality that influences cultural traits such as identity, and there is a body of psychological research that shows how one's physical surroundings contribute to one's sense of identity (Chase and Panagopoulos 1995). Thus all human groups 'have culture', or create cultural forms and processes, and are socialised to think about land, water and nature in particular ways (Head, Trigger et al. 2005). Strang (1997) describes values and how they are formed:

> Beliefs and values are received, inculcated and passed on through a process of socialisation that creates a culturally specific relationship with the environment. This process consists of several elements: the creation of categories, the learning of language, and the acquisition and dissemination of cultural knowledge. Each involves an interaction with the physical, social and cultural environment and contributes to the formation of individual and cultural identity.
> Strang 1997: 178.

It is likely that attention to 'cultural values' has arisen in contexts where Indigenous interests are significant, in an attempt to ensure that the values held by this group receives due attention. Indeed, in a case study of the Daly River, a catchment adjacent to the Roper, land and water planning processes attempted to give explicit attention to Indigenous 'cultural values' (Jackson 2006a). Cultural values were very narrowly defined and many assumptions about Indigenous societies affected how the term was interpreted by resource managers and stakeholders. Separate treatment of Indigenous and non-Indigenous social values compounded the reification of 'cultural values', which were perceived largely within the confines of a cultural heritage paradigm. The heritage paradigm, and other common influential theories of value, focuses on objects, entities and places at the expense of recognition and valuation of relationships, processes and connections. Such processes and connections exist between social groups, people and places, and between people and non-human entities. The value construct in the heritage paradigm, which had originally sought to recognise the prominence of Indigenous people's attachment to country, had the perverse impact of starkly isolating Indigenous interests, values and perspectives from the other value categories. This resulted in them being marginalised and de-emphasised in the research effort undertaken to ascertain those other values, and in a subsequent planning report to government.

2. RESEARCH RESULTS

The research results cover a range of issues important to water resource management and planning. The following section is organised thematically, combining material from archival sources with material derived from fieldwork interviews. As was indicated in the methods section above, field trips to particular sites were not possible due to the constrained fieldwork timeframe and the local conditions. However as has already been indicated, this limitation was counterbalanced by good participation in interviews with Indigenous research participants and the relatively rich archival record for the focal area within the overall planning zone.

2.1. Water in Indigenous Australia

The amount of research and literature describing how Indigenous Australians relate to water is growing. The published research shows how Indigenous Australian societies give meaning to water and examines the place of water in their formalised systems of knowledge and social institutions (Strang 2001; Langton 2002; Barber and Rumley 2003; Rose 2004; Barber 2005; Toussaint, Sullivan et al. 2005; Langton 2006; Jackson 2006a; Maclean and Bana Yaralji Bubu Inc. 2011; Maclean and Robinson). Much of this literature is drawn from ethnographic studies carried out in northern Australia in regions such as the Kimberley and the Northern Territory, and includes regions with similar characteristics to the Roper (Yu 2000; Jackson 2004; Toussaint, Sullivan et al. 2005; Cooper and Jackson 2008). Nevertheless important work has also been completed elsewhere, such as in the Murray-Darling Basin (Weir 2009). Much of the research on Indigenous people comes from university-based researchers, but there have also been important contributions derived from state and local water agencies (Barber and Rumley 2003). In some cases, material relating to Indigenous people has been included as part of reports about wider water resource assessments, including work on the Roper itself (Zaar 2009).

In this work, water is shown to be an important feature of the Indigenous cultural landscape, with symbolic dimensions that attach individuals and groups to water bodies. Indigenous people and groups conceptualise water sources and rivers, as with the land, as having derived from the actions of mythic beings during the Dreaming, when the world attained its present shape and the socio-cultural institutions governing water use were formed (Toussaint, Sullivan et al. 2001; Langton 2002; Barber and Rumley 2003). There are stories relating to water represented in myth, painting, film, and dance, as well as the local customary practices, beliefs and ideas associated with water (Toussaint, Sullivan et al. 2005). This has been called the ‘intellectual use’ of water (Trigger 1985).

However, many of these same studies also reveal the material and economic use of water according to Indigenous custom. Water is of economic significance to Indigenous people. It provides the foundations for the Indigenous harvest and distribution of wildlife in general and of aquatic life in particular (Altman 2004; Altman and Branchut 2008; Jackson, Finn et al. 2011; Finn and Jackson in press). Indigenous people sometimes changed the local land and waterscapes to improve their harvest, as river flows were manipulated with the construction of fish traps, weirs and small dams in numerous Australian river systems (Tan 1997). As has already been mentioned, this kind of activity also took place in the upper Roper in the past

and Indigenous aspirations with respect to that activity have some important implications for contemporary water allocation and planning.

In keeping with the consideration of how traditional Indigenous water practice articulate with contemporary water planning processes, some research has pointed to the connections between Indigenous landscape constructions and valuations and those held by non-Indigenous groups and individuals (Strang 2001; Goodall 2002; Langton 2002; Windle and Rolfe 2002). Such studies highlight the importance of understanding how cultural meanings and environmental perspectives are formed. It can provide the opportunity to develop shared ideas about human-water interdependence, as well as more collaborative approaches to practical water management (Delli Priscoli 1998).

Indigenous understandings of the significance of water incorporate its value as a resource in its own right as well as for the resources for physical sustenance it provides. These are the values that are most familiar to non-Indigenous people. But the significance of water for Indigenous Australians also encompasses mythology, identity, and social connection, and the interrelationships between these different valuations. It is these aspects which will be described first.

2.2. Dreaming and water

2.2.1. Dreaming as ‘everywhen’

Like Indigenous peoples across Australia, many of the Indigenous inhabitants of the upper Roper understand the surrounding landscape and waterscape as having been created in a past period of activity by powerful beings. The English term ‘Dreamtime’ was used to describe this creation period in Indigenous cosmology and has its origins in accounts from the early 20th century. The anthropologist William Stanner (Stanner 2009 [1953]) suggested that ‘Dreaming’ was a more appropriate English translation. This was because whilst the main period of creative action is understood to lie at a time before the present, the creative powers and beings associated with that time are still present in the landscape, affected by events which occur there, and are active in the lives of the people whose origins lie there. Stanner characterised this ongoing presence as existing in a kind of ‘everywhen’, where the location of these beings and their activities was given far greater weight in Indigenous cosmologies than the time at which such events were meant to have occurred.

This sense of time as ‘everywhen’ means that people understand negative impacts on the surrounding country not just in terms of the degradation of a pre-created landscape and waterscape, but as a direct effect on the beings which created (and continue to create and sustain) that landscape. The direct connections between these beings, the country, and the people who belong to that country mean that ‘environmental’ changes can have ‘social’ effects, and vice versa. These more general characteristics are important to understand when interpreting what is being said about a particular mythological event, being, or landscape. The Dreaming is an ongoing reality as well as a time in the distant past, and the beings that inhabit the Dreaming are also inhabitants of the contemporary world. The stories of these creatures form the substance of the landscape and so survival of the land and waters, of the Dreaming beings, and of the stories are all tied to one another, as well as the human owners of that land having possession of it. A comment from a local elder indicates this point:

> That Dreaming track, give it back, that land! It’s Whirlwind Dreaming. The spring has been damaged around Mataranka. The story could end up drying up when the spring dries up. S.C.[2]

2.2.2. Concentration on water places

One characteristic of Aboriginal Dreaming narratives is their strong association with water places. As noted in the final judgement of the Elsey land claim:

> There is a heavy concentration of sites along the Roper River, where permanent water is available. Other sites tend to be associated with permanent waterholes in the ephemeral waterways. There is no neat pattern of Dreaming tracks associated with sites. Rather, Dreaming tracks intertwine.
> Commonwealth of Australia 1997:113

The reference to permanent water is important, for the Dreaming narratives are tied to and interrelated with traditional residence patterns. Many of the most important Dreaming sites are also places where people used to live and hunt. This is important for present day management, for it indicates that from an Indigenous perspective, regular human presence at those places is an important aspect of their ongoing viability. But it is not just any human presence, rather the presence of those who know the stories, who are known by that place, and who have been trained in how to behave properly (see section 2.4 water protocols below). For the owners of such country, the Dreaming narratives and their water features are an important source of pride and identity:

> Much of this country is well watered and well provided with trees. The Mangarrayi pride themselves on their association with the riverine country along the Roper and other bodies of water within their country.
> Merlan 1982:146

The book of Indigenous narratives from Elsey station which Merlan subsequently edited (Merlan 1996) was called ‘Big River Country’, reflecting the strong riverine orientation of a key Indigenous group in the planning area.

[2] As indicated in the introduction, in the sections which follow, comments which are followed by initials represent comments made to the researcher during fieldwork and recorded in the researchers’ field notes. Initials rather than full names have been used to retain a level of anonymity.

2.2.3. Water serpents

The time-independent quality of Indigenous Dreamings and their strong associations with water features are both reflected in arguably the most prominent of the ancestral beings that populate Dreaming landscapes. In a substantial number of locations around Australia, water is associated with an ancestral serpent or snake, and this is popularly known as the Rainbow Serpent. Emphasising information provided by the Wardaman elder and lawman Bill Harney, Cooper and Jackson (2008) discuss the serpent from the Katherine region:

> Wardaman creation stories envisage a primeval epoch when there was only the ocean (saltwater) and a landscape of sand. From the actions of the Rainbow Serpent that lived in the saltwater, and other creation beings, the present landscape took shape in a series of events - a flood that covered the world and from which only a few survived in the highest places; the actions of the Black-headed Python, Walujapi, and Water Python, Kunitjarri, in creating the rivers and creeks which drained the land and established the division between land and ocean; and in actions which established the hydrological cycle of clouds and rain and, ultimately, the present physical forms of landscape, rocks, trees, animals and people.
> Cooper and Jackson 2008:26.

Local people know that groundwater inflow supports the dry season flow of major rivers, but for local people this is a consequence of the serpents:

> The spring him fill up with water from the ground, so now him dry [dry season]… that river still runnin' from that spring. Him bin that spring all the time. Important because that Rainbow Serpent they sit down there longa spring every time … When him dry you know that the spring gotta have him water because that Rainbol[3] there.
> Bill Harney, in Cooper and Jackson 2008:27.

Crucially, such traditional knowledge can explain subterranean water flows and connections. Indigenous conceptions of the Tindall limestone formation suggest that there are tunnels through which the serpent journeys and which carry the water (Cooper and Jackson 2008). Cooper and Jackson (2008) refer to Bill Harney's explanation of a serpent which followed an underground river, emerging at sinkhole at the Katherine golf course, again at hole near the Stuart and Victoria highways, then at a third time at the Cutta Cutta Caves between Katherine and Mataranka, before going underground again and heading south towards Elsey Station and beyond. Such traditional knowledge of groundwater flows also implicate Elsey and the Mataranka area in the flows associated with the King river, which is fed by the underlying Tindall aquifer:

> that's the water comin' now from Elsey, he go past la [named waterhole on King River] 'nother side, underground longa [named waterholes on King River], straight past limestone, you know, la [site name], go underneath that Scott Creek, come out right there longa that fig tree, [named spring at the Flora River]. Because that sing [song-cycle] follow that line now that we know that water there now underneath see. That's why how come we know that water [is] there… that's what the song say.
> Bill Harney, in Cooper and Jackson 2008:32.

[3] 'Rainbol' is the regional Aboriginal Kriol term for Rainbow Serpents

It is clear from the above that the water serpent plays an in important role in establishing regional connectivity both of waters and of people in the area between Katherine and Mataranka. However as demonstrated in the Yanyuwa atlas produced from the Gulf country (Yanyuwa families, Bradley et al. 2003), the serpent also connects peoples and country to the south and east with those who are the focus of this study:

> The story of the Walalu, Stranger Rainbow Serpent is very important and very sacred…The Walalu is sometimes called Yankarra, which is Yanyuwa [language] for "the Stranger", he is called this because he came from such a long way away and, once he moves through Garrwa and Yanyuwa country he keeps moving all the way into Marra country, he moves through Alawa and Mangarrayi country, and finishes his journey at the Mataranka hot springs which is far to the west.
> Yanyuwa families et al. 2003.

Water serpents are not the most prominent element of the assemblage of Dreaming beings associated with focal area of this research around the Mataranka springs and Elsey National Park, but the serpent is still present, as the Yanyuwa reference above and the following conversation with a key local elder demonstrates:

> Marcus Barber: In some places where I have been before, when people talk about water, they sometimes talk about a snake, a Rainbow Serpent. Is that a part of the area here?
> SC: Yes. You maybe have been there. McCracken. That snake been come through, and go across that little creek, and go [to] McCracken, that's the snake. It come right up there to that big island, I know we've been past it [together], remember that sandy ground there? Right up there. And then coming up to one place on the Two Mile this side. A billabong. I call him Centre Lagoon. That snake, a yellow bellied snake.
> Marcus Barber: Is that snake living in the water?
> SC: Yes, him living in the water. That Dreamtime for my whole family, and all this mob now, living here.
> Marcus Barber: Is that snake travelling from other places?
> SC: He's there. I don't know where he come out from. I know he's been finished up there in that place. That snake been come to that place, Centre Lagoon, and he been finish up there, but I don't know, he might get up and go somewhere else.

SC describes the snake, its local journey through the area, and the way that journey connects local places together. SC does not speak of the same regional connectivity that Bill Harney speaks of, but acknowledges the capacity of the snake to move to other locations. The snake is just one of a range of water associated or orientated Dreaming beings in the cosmologies of the focal area around Elsey Station and Elsey National Park. The following section will explore these in more detail.

2.2.4. Water associations and water Dreamings

> The creator made this country; supernatural beings, symbolic animals. They made the water places, the rocks and trees. They are connected to us. It's our cultural thing. It makes me strong.
> M.R.

Detailed information about the Dreamings of the focal area is available from a range of sources, particularly the materials prepared for land claim processes (Commonwealth of Australia 1990; Commonwealth of Australia 1997). The regionalised and interconnected nature of Indigenous territories and identities means that even claims regarding relatively restricted areas need to engage with the position of those areas in a wider matrix of sites and tracks. The major Dreamings in the Elsey land claim were travelling Dreamings which moved over quite long distances, and in total 11 collections of sites and associated countries were identified as wholly or partly in that relatively restricted area (Commonwealth of Australia 1990: 11). The density of sites in this rich riverine area is likely to be the greatest in the overall water planning zone in the upper Roper, and a closer examination below of the information provided for the claim[4] shows the diversity of places and beings that are said to exist, as well as the strong overall association with water places:

> The Guyanggan group[5] is connected with a number of sites along the Roper River through the dreaming known as Wanggij, loosely translated as child or piccaninny. The Dreaming travelled from Gandirrgiyan (Wagon Wheel Lagoon) and BirliynBirliyn up the river. It went to a number of sites including Wangganggij garlg garlg wa-buni, where there is a limestone formation resembling and dam, said to have been made by and to bear the marks of the hands of the Dreaming children.
> Commonwealth of Australia 1990:106.

> The [Dirlirlin] group is also associated with the Nagarran Dreaming (‘devildevil in English). That Dreaming is found at Gulun, upstream on Elsey Creek from the two Dirlirlin sites, at a place known as Longreach point, and also at Munggug, a spring in the valley of the Strangways river. The name of gulun is a reference to the making of a well at that place by the Dreaming.
> Commonwealth of Australia 1990: 106.

> Barlyurra is a site complex rather than a specific site. It straddles the Roper River in the vicinity of Red Lily lagoon and upstream. It includes the sites Warrwarrag, Garawi Yirrij, Wa-gardjag, Ngalarrg, Na-Yumbunggan, and Lunjan. The members of the Barlyurra group are affiliated with these sites through the Wijwij, or possum, dreaming. Amy Dirngayg told a story of the possum making a hair belt. There is also a snake dreaming, the detail of which is secret to men and therefore the subject of restricted evidence. Na-Yumbunggan is a ceremony ground for men’s ceremony, although Jessie Roberts said that the presence of tourists using the river has caused the cessation of ceremonies on that site. The area is Bangariyn-Ngarrijbalan country, which meets with Gamarra-Burrala country somewhere to the west of Guwarlmbarlg.
> Commonwealth of Australia 1990: 107.

[4] The following information is from a reputable source, but was collected at a particular time and for a particular purpose in the recent history of the area. Indigenous accounts of Dreaming narratives and ancestral associations are dynamic and at times locally contested. The authors include this material to emphasise the general significance of water and the river to major cosmological events and figures, rather than for the specific detail of places and associations. Detailed documentation of places and their associations with living people was not an objective of the research reported here, and the accuracy of this 1990 material was not validated with contemporary research participants.

[5] The land claim documents refer to range of subgroups within the overall language demarcations, and these are the names that are used in this excerpt. The groups identified here are described as local descent groups, which are smaller and may contain people from both language groups.

> Nganawirdbird country.
> The principal Dreaming of the Nganawirdbird group is Garawi, or plains kangaroo. This is a major Dreaming of the claim area. Its track enters the claim area from the direction of Mataranka. The first site visited by the Dreaming on the claim area is Gorowan, on Salt Creek. The Dreaming then visited Na-Burl (Elsey Falls), Murrwale and Barlmarrag, all on the Roper River. Between Murrwale and Barlmarrag is a waterhole, into which the Garawi jumped and in which it submerged. It travelled underground to the north and re-emerged at Nganawirdbird. This is a place of great significance. It consists of a large sinkhole and limestone cave at the top of a hill. Inside, various limestone features have been painted; they represent the internal organs of the plains kangaroo. The site is on the register of the national estate, pursuant to the Australian Heritage Commission Act 1975. p108. The cave is a place which should only be visited by initiated males. When it was visited during the hearing, the women stayed outside. Jackeroo Lirrawi gave evidence that he had not been allowed to enter the cave when he visited it as a child. It is said to be a dangerous place. The story was recounted of Aeneas Gunn's death from a fever, which was said to be a result of his exploration of the cave. From Nganawirdbird, the Garawi crawled to Gurlurndurnyi, where it lay down and made a lagoon in the bed of Cave Creek. It then moved on to Ngabardangiyn, a little way down Cave Creek, where it interacted with the Ngorlomorro, or left-hand kangaroo dreaming. The Ngorlomorro made a stone knife or spearhead at that site. There is a song for the Ngorlomorro, part of which was sung by Jessie Roberts at that site. From there, the Garawi travelled to the Roper River, where it crossed at Garawi Yirrij wa-gardjag, which is within the Barlyirra site complex. At that place, the Garawi interacted with the Wijwij, or possum, Dreaming and with a cockatoo Dreaming. The Garawi then proceeded to Na-ni-nawung-gan at Little Red Lily Lagoon. From there, the Garawi travelled in a generally eastward direction, visiting Ngarrmirn.gan (on Little Red Lily Lagoon) and Gurndarlawun.gan (near Little Red Lily Lagoon) where there used to be a tree representing the kangaroo standing up and looking back; there is another tree representing the kangaroo nearby.
> Commonwealth of Australia 1990: 107-8.

In a later research paper (Merlan 1987), Merlan uses the richness of the material in this area to select two contrasting examples of Dreaming beings for further examination with respect to their associated songs. Again she demonstrates both the diversity of the Dreaming beings and their strong association with water:

> The two sample western Roper song-texts have been selected for certain contrasts they offer. One of them, catfish, relates to a fairly minor totem associated with a small number of regionally rather unimportant sites. Social relationships of people to these sites are quite simple. Correspondingly, the associated mythic narrative is not elaborate. The other song, alligator[6], relates to a regionally highly significant (but quite localized) totem, associated with important and known sites to which human relationships are more complex. The associated mythic narrative is much more elaborate than that of catfish.
> Merlan 1987: 144

The two focal beings are both aquatic species, and despite the greater elaboration of one (and its greater ceremonial significance), Merlan notes (1987: 144) that both songs illustrate the same modes of encoding connections between people and what she terms the totemic

[6] Alligator in Aboriginal Kriol is actually the term for saltwater crocodile

traditions. The beings and their narratives connect people as well as creating and sustaining places. The knowledge of these Dreamings is ongoing and is shared in appropriate contexts, for example in recent cultural mapping exercises documented in field notebooks held at Jilkmingan school. In them, the cultural mapper Simon Normand details a version of Picaninny Dreaming shared with him by Jilkmingan elder Nangu Daylight:

> From Mainoru down Maiwok creek the Picaninnies travelled south towards Mt St James. They travelled from old Moroak station area (Guyawarran) along the top side of the Roper, all the way West along the river to Jilkminggan. Travelling, they saw the Walulu had already been here so they circled around the creek surrounding Jilkminggan community and then back East past Elsey to where the water was bubbling at a spring. As the Picanninnies crossed McMinns Bar (Guyanggan) they blew water like a spray to make a rainbow, then the water bubbled in a big hole. The piccaninny footprint is found near the bend in the Roper River and was visited by the Manggarayi men including Daylight, Joey, Kevin, and others so that the site could be photographed.
> Normand 2010.

However forms of water may not be just associated with a particular Dreaming (for example being the medium in which it travels or being released during the creation of a site), it may also be the medium itself. An important Dreaming in this area is the ‘Rain Dreaming’. Identified in the Elsey claim (Commonwealth of Australia 1997: 109) as Lurdurdminyi country, the principal site is the Crescent Lagoon, but it also encompasses a range of sites in the area. A sacred tree is associated with rain Dreaming, and a plant which can cause sickness and death, emphasising both the creative and destructive aspects of the ancestral powers. Like other Dreamings, there are a range of sites with which Rain Dreaming is connected, and reflecting their potentially broad geographic spread, some of these lay outside the claim area.

These narratives and examples demonstrate the potential density of religious, cultural, and cosmological connections found in important parts of the land and waterscape. They also demonstrate the significance of the Roper River and other water features in the area to Indigenous cosmologies. The River is a focal zone for Dreaming connections, but as the comments from Bill Harney in a previous section indicate, Dreamings and the waters associated with them can connect and be connected across wide areas. Such narratives, connections, and associations are crucial aspects of the way Indigenous people value, relate to, and understand the land and waterscapes in which they live.

2.2.5. Warrwiyan and ancestors

The Dreaming beings are representations of ancestral power, and living humans are understood to be animated by and a manifestation of that ancestral power. They are the living embodiment of ancestral spirits, which are crucial in Indigenous understandings of procreation. In many Indigenous cosmologies, spirits that have expressed themselves in human form previously and then returned to the country after death and are waiting for the opportunity to be reborn in human form. Such spirits and their rebirth are often associated with fish and/or water bodies and this association between people, procreative powers, and water is common to Indigenous cosmologies across a wide area.

> Birth is important too. The couple bear a child and that child comes out from the spring. The kids come form the water. It's the same story, even when we die. The water is a way that adopted kids come into that country. They get born into there, and they are automatically part of that country. The spirits greet us.
>
> M.R and M.H.

In the Mangarrayi language, such procreative spirits are known as wanggij:

> The returning wanggij in some cases is described as incorporeal, but sometimes it may come in the form of an aquatic species, like a fish, since the Mangarrayi believe that children emerge from water. Although the wanggij is said to look for its father, it may first be recognized by someone else. (In the instances I was told of, this was always by a close patrilineal relative; one woman caught her brother's child as a barramundi, as is now evidenced by the fact that the hook, which tore its mouth, left a scar that the child bears to

> this day. The barramundi species is not a totem associated with the child's semimoiety.) Otherwise, people say that gurwaran (clever men) are able many times to divine the identity of the shade [wanggij] as it seeks its father.
> Merlan 1982: 152.

A local translation for Dreaming in the Mangarrayi language is Warrwiyan, and Warrwiyan as Dreaming beings and the association of ancestral spirits with water bodies are features of Indigenous cosmologies that recur in a range of contexts, including the Mangarrayi case. However in analysing the local circumstances and engagements between people and places along the upper Roper, Merlan noted a distinction in the use of the term Warrwiyan that she believed unusual in the reported literature. She identified its use to describe the Dreaming beings, but also a further use to describe particular features in the landscape (notably trees) as representing and embodying particular distinct individuals from current or recent previous generations. The land and waterscape was ‘personalised’ in a way not reported previously by identifying particular features with particular individuals. In order to make the distinction clear, it is useful to consider Cooper and Jackson’s version of the association between trees and Dreamings which they themselves indicate recurs regularly in different regions of Australia:

> All of the waterholes also have fringing vegetation which includes trees which are spiritually-significant features of the sites, having been left there by the Rainbow Serpent and other Dreamings. This includes dimalan (River Redgum) … and wularin (Freshwater Mangrove) trees which are said to “keep the water up” at the sites. Wularin was first used as a fish poison by ancestral beings who left the trees at the waterholes for the use of subsequent generations. Vegetation regarded as being spiritually-significant elements of sacred sites, either as transformations of ancestral beings or as resources used by them, are common features in the region, particularly along watercourses and at cultural water sites (Cooper 2000). Similar occurrences are found throughout central, northern and other parts of Australia.
> Cooper and Jackson 2008: 33.

In this account, the trees are left behind by Dreaming beings for the use of people, and/or are the physical manifestation of the transformation of those beings in the landscape. However, there has also been a detailed description (Merlan 1982) of how trees along the Roper are identified directly with living or relatively recently deceased people, who may belong to different patrilineal lineages but belong to the same kinship category (known as a semimoiety) as the country:

> One day, as I was sitting with several older women at a sand bank created by wanggij (child) Dreaming, one woman asked me if I had seen my gagag (MMB). Assuming that she was referring to a certain man who stands in that relationship to me, I replied that I had not, that he had left the camp early in the morning. With a significant look the woman turned and pointed to a large Melaleuca leucadendron, a tall paperbark species that grows in great numbers on the banks of the Roper, and said "That is your gagag," naming the man to whom I thought she was referring. Pausing to see if I understood, she turned and pointed to another paperbark on the opposite bank and said "there stands your MMB," naming a now-deceased man, full brother of the first as I knew from his genealogy. In quick succession she pointed to a number of other trees and named them. All the names corresponded with those of living or dead persons, and I recognized most of them from my genealogies. I understood that although not all those she named belonged to a

> single patriline, all belonged to one or another patriline falling within a particular semimoiety. Everyone looked rather sly as I realized that I was learning something very important about what these people see as they visit and walk through "country."
> The many questions that occurred to me were not all answered immediately, and some remain; but henceforth, as we visited barnam (localities), older people walked with me and showed me who was "standing up." Since mainly trees are used to represent people, the Mangarrayi generally speak of the warrwiyan as "standing up," using verb particle and inflectable auxiliary construction jirr-jaygi- (to stand). But it turned out that sometimes rocks, sandbanks, and other features are used to represent people, in which case the warrwiyan are said to ni (sit). In some instances my companions could not specify detailed genealogical relationships for all people represented but could only remember names and perhaps a few other details. In some localities Aborigines named up to 30 people, and there was remarkable agreement on the identity of particular natural objects, whether several people together showed me a locality or the same locality was visited more than once with different individuals. They were no longer restrained about talking to the people represented and explained to me directly and indirectly some of the meanings and functions of these signs, which to us are merely natural objects.
> Merlan 1982: 147.

Merlan makes the double reference of Warrwiyan clear by using upper case letters for the term when it refers to the Dreaming beings, and lower case letters when it is used to describe the representation of particular people:

> When the Mangarrayi speak of a tree that represents a person, they refer to it as warrwiyan, landi (warrwiyan, [in the form of a] tree), or they name the particular tree species. Hence, the objects are indeed signs of the presence and activities of the creative forces. Not all signs left by the creator figures represent people, however; at each locality there may be one or more prominent features (a tree, rock, bend in the river) explicitly said to have been fashioned by the creator figure but not associated with any individual. Such objects are also referred to as warrwiyan. But the particular class of objects with which this paper deals are those which represent people for the Mangarrayi.
> Merlan 1982: 149.

However, the fact that names are passed on through the generations means that a tree that represents a particular name also refers to others who hold that name:

> Hence, at localities a single name may evoke memories of the former bearer of the name and the present bearer, and, possibly, the grandchild who is to assume the name may be mentioned if consensus has been reached on this point; that is the extent of the actual generational depth with which most warrwiyan can be associated. That is, the warrwiyan constitute a continuous system of signs through which changing generations of referents are cycled.
> Merlan 1982:152.

It is only certain tree species[7] and certain trees and which represent people, and for logical reasons these are the more mature ones:

[7] Merlan notes some key species used in this way: These include murrinyja (E. microtheca), a coolibah; manyal (Barringtonia acutangula), freshwater mangrove; garlayarr (Melaleuca leucadendron), a paperbark; jalmbalmbuj (Cathormion umbellatum), "bean tree"; gulu

> …these are inevitably older ones that have not grown visibly during a single human lifetime. The use of only older trees to represent people is probably consistent with the aborigines' view that people represent a recycling of what has always been; representation by immature trees would be too much at variance with what is known of physical growth. There is thus an equation of maturity of the signs with absence of change in the sign system. The sight of trees that have fallen does not seem to make owners sad: the link that is the meaning of the sign is continuous. News of a fallen tree usually occasions discussion of indebtedness to the junggayi[8], and the interpretation of people's outward actions should possibly be that the junggayi are to be compensated for having lost something that partly functions to express dependence of mingirringgi upon the junggayi.
> Merlan 1982: 162.

The names by which trees (and other landscape features) are called are names held by more than one person, and those people possess clear kinship and social links to one another, which provide the basis for passing on that name. It is for this reason that Merlan describes this landscape as personalised rather than individualised, as the names potentially relate people in lines of descent. The sharing of the term ‘warrwiyan’ to generally describe these landscape features with personal names and also the Dreaming beings (WARRWIYAN in Merlan’s description) relates living people to both the lines of descent and to the totemic creatures who created the land:

> …we may speak of the landscape as "personalized" but not "individualized." The links that form the meaning of representation by natural objects are primarily those deriving from the corporate and unifying aspects of social personality: the relation of people to descent groups and of descent groups to land and totems.
> Merlan 1982: 162.

Some trees are jalala (green, young) and are mun landi (just trees), part of the environment. But there are trees which are far more than that in the landscape of the upper Roper. One final point made with respect to these ‘warrwiyan’ needs to be noted in a water management context:

> …the density of warrwiyan is greatest along the Roper, its tributaries, creeks, lagoons, billabongs, soakages, and rock-wells, though smaller and less imposing tree species at less well watered places, and rocks (where these are present), do represent people.
> Merlan 1982: 157.

In effect, Merlan’s analysis places another, personalised layer onto the generalised sense that ‘country’ is important to Indigenous people because it is created by Dreaming beings. It also suggests the potential value of a heightened degree of monitoring and management

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(E.camaldulensis); manarliny(Ficus racemosa), cluster fig; garrwag(E. papuana), ghost gum; gamulumulu (Lysiphyllum cunninghamii); mardabula (Terminalia platyphylla); gilirr (Excoecaria parvifolia); gurnia (Strychnos lucida), "poison tree"; jijwirrij (Nauclea coadunata), Leichhardt tree; and wangarr (Pandanus aquaticus), water pandanus, among others.

[8] Junggayi is the term for a particular classificatory kin relationship in the region, traced through either the father’s mother or mothers’ father. In this case, the term is extended to the country, so it refers to people who stand in that relationship to the country in question.

effort with respect to mature riparian vegetation in the planning area, and that the involvement of local Indigenous people in that monitoring effort will be important in generating confidence about its appropriateness. How the effort should be managed and its relationship to existing local Indigenous NRM management efforts (such as those undertaken by the Mangarrayi Rangers) would need further consultation with people in the area.

2.3. Values and connections

2.3.1. Value and importance of water

Reflecting both its significance for the Dreaming and its importance in everyday life, people interviewed for this research made a range of statements about the value and importance of water:

> Water is life, gives life to the land. It feeds the environment, keeps country cool and healthy. We don't like to damage country. Its good for fishing, swimming, camping. We use it for teaching too- cultural stories, bedtime stories, camping beside the river. Its our heritage. We need it to visit, enjoy life.
> M.H.

> If there was no water, all the life would be dead. The animals would be gone if the river dried out.
> R.S.

> Water is needed for the animals and the sacred areas. Water for the country and the people.
> D.D.

> We are dependent on that river.
> J.R.

> Water is for healing. The water runs out at the crossing. When we get sick, we go and drink the water.
> M.R

> There is a spring close to Beswick community. That water never dies, it will always be there. It gives us water to drink, and for the animals too.
> J.M.

Thinking about water, and about groundwater in particular, led one research participant to reflect on how human beings actually have water under their feet, that it directly supports human beings on the earth's surface:

> We live on top of the water. The roots and trees are holding that water. The freshwater is running on the top, and the lake is underground.
> J.C.

These general statements about the significance of water for life and about how the country and people depend upon it, inform people's attitudes to water issues and responses to water planning. The comments below demonstrate both this general attitude as well as a more specific orientation towards the current water planning context.

> Water for the country comes first. People need water too, for fishing and hunting. That's the most important one.
> M.M.

> We are fighting hard. When we talk about water we are all together, we are all for the water. It starts from there, and we still connect for the water. That's what we'll be talking about, from the top to the bottom, as far as the water goes down.
> R.S.

Indigenous attitudes to water planning and Indigenous water planning priorities will be explored later in the report, but the final comment above also shows the significance of water as a unifying force, as a way of conceptualising social connection. Within these expressions lie normative values and ethical concepts about how water should be shared amongst all life forms. The role of water in both defining boundaries and relating people across boundaries will be explored in the next section.

2.3.2. Water boundaries and water connections

Water is conceptualised and used by Indigenous people as a way of creating relationships, connections, and boundaries. Much like the movement of water, this is a dynamic and ongoing process, but also one that follows regular and predictable paths. Signs of connection in the landscape can be used to understand and re-interpret social relationships, as the two are understood to go together. The discussions of groundwater for the purposes of water planning have led people to learn more about and reflect upon the significance of the water flows in the area. The following comments demonstrate this ongoing process:

> We are upstream, we are the point of origin. We are guardians for the downstream people and they are the guardians for us. The Elsey mob are getting us involved because we are upstream. They've got the surface water for us, and we've got the underground water for them. The ownership of the two goes hand in hand.
> A.M.

> There is a big well underneath, that's what keeps the water staying there. Elsey water flows from here, and joins water down along the Roper. It takes you to Elsey, Moroak, Roper Valley, and down to Ngukurr.
> F.R.

> Its just flowing. We know its flowing underground. Going up from Roper Bar, it's lime water, in Jilkmingan it's proper lime water.
> M.R.

> We did not know about the groundwater coming from the Daly. We learned about that from the planning people. Our fathers knew where the important sites and areas were, but they did not talk to us so much about where that water comes from.
> R.S. and D.D.

> The water goes up and curls back down again, moving through the different countries. We are connected through that water.
> A.M.

As well as connections, water can also be used to create boundaries. Salt Creek is generally referred to as the marker of the boundary between Mangarrayi and Yangman territory (Commonwealth of Australia 1997). The nature of individual identities means that people may be strongly connected to adjoining groups or territories, but these boundaries are nevertheless respected and recognised as important in certain contexts:

> We are connected to each other through the water flow, we make those decisions together. But I would not speak for someone else's country, and they should not speak for mine. What is needed is agreement between the top and the bottom stream.
> A.M.

The rules about speaking for particular places are part of a wider set of protocols to follow and responsibilities to fulfil as part of people conducting themselves appropriately with respect to each other, the ancestral powers in the landscape, and the country itself.

2.4. Practices, protocols and prohibitions

In their study of the adjacent area in Katherine, Cooper and Jackson (2008) identify a range of important protocols and practices with respect to Indigenous engagement with sites and landscapes. These include talking to country, 'watering' strangers and others who had been away from the area for long periods, behavioural restrictions, and obligations to protect visitors and sites from harm. They note that these flow from the belief in ongoing spiritual presence in the landscape of both the original Dreaming beings and the more recent remembered and unremembered ancestors or 'old people'. Living people believe that such 'old people' are watching them when they are out on the country and will respond negatively to poor behaviour and inappropriate actions.

The research conducted here revealed a range of similar responsibilities and protocols with respect to country and the wider landscape. These reflect the ongoing relations between people and places, and the obligations that flow from those relations. Changes in lifestyles have altered some protocols over time, but such conditions on conduct are nevertheless known and followed by people in a range of situations. They are taken as important indications of the operation of a system of law and appropriate conduct. As was indicated above, they include the right to speak about the country, but are not limited to it:

> I can't speak for the Elsey mob or the Beswick mob, and someone from somewhere else can't speak for me and my country. I got nominated by my people 2 years ago to speak for that water
> A.M.

> We are worrying about that spring. Kangaroo Dreaming story around the mango farm. Mataranka families are responsible for that one. We need them to look after that place.
> S.C.

> I take my niece and nephews out there [to the Whirlwind place], for stories and swimming. The Whirlwind travelled from Providence down to Bitter Springs. I heard about that from my father. There is also an important ceremonial area for Yangman and Mangarrayi around the Two Mile. We go on weekends and holidays sometime. On Jawoyn country they have to put water over new arrivals, call out to the spirits and the ancestors so they don't get sick. That's my father's father's country. We don't do that with Yangman country, but we do call out to the old people to give us some fish. You have to do it the right way.
> S.R.

> It is important to take younger people out to show them the country, so that when they grow up they know which areas to go.
> R.S.

These comments drawn from fieldwork data are supported by references in the literature:

> [On the field trip], Wendy Daylight gave information at place near the Three Mile and the Jungle explained as Nyanbanbillan. Associated with rainbow Dreaming, Wendy recalled language restrictions, and that young Mangarrayi mothers should not take their babies near the water or clouds will appear. First a single cloud, then rain, then the water would become dangerous.
> Normand 2010.

> There are instances of restrictions on that right [to hunt] in the immediate vicinity of sites. At Gilagilagi, there was evidence that no-one is permitted to hunt or gather at the site. Commonwealth of Australia 1997: 113.

These more general protocols and restrictions are part of a more elaborated system of roles and responsibilities. In that system as it is manifested on Mangarrayi country, there are three primary roles, as Merlan (1987) explains:

> In the western Roper area, three categorical terms designate kinds of human role relationships to land. For any given area of land, each of these roles may, ideally at least, be defined in terms of descent from an ancestor at the grandparental level. Persons who are mingirringgi to areas of land - not tightly-bounded estates, but sets of sites considered to belong together - are those whose father's father was so related to the country. Persons who are junggayi to that set of sites are those whose relation to it is traced through mother's father or father's mother. (Note that junggayi relations are definable through two genealogical pathways rather than one). Persons who are darlnyin to areas of land are those whose link to it is traced through the mother's mother, who was herself mingirringgi to it. These relations to land areas may be traced on narrower or wider bases. Merlan 1987: 150.

Merlan goes on to outline specific roles for each, and in particular notes the prohibitions associated with those with the most direct relationship to a set of sites, that of the mingirringgi:

> They normatively hold and perform songs and ceremonies associated with their country. They often have names which are also applied to sites and particular natural features within their country. Some of these names are encoded in songs celebrating Dreamings which created sites in their country. Often mingirringgi are not allowed to drink water from major sites in their country, to collect wood, or make wide use of some natural resources. Tasks, including much of the custodial work for ceremonies relating to their country, must be done for them by people with other role-relations to it. These restrictions are underlain by the notion that the intrinsic connection which exists between them and their totems, sites, songs and ritual paraphernalia is powerful and must be mediated.
> Merlan 1987: 151-152.

Alongside restrictions as mingirringgi, those who are junggayi have responsibilities. These responsibilities also relate to the personalised trees or warrwiyan described previously:

> Those who stand in the junggayi relation to localities and their owners are responsible for keeping an eye on the state of repair of natural resources and warrwiyan. Mingirringgi cannot carry out conservation measures in their own places; the junggayi are supposed to be aware of what needs to be done, and to do it, and the mingirringgi are supposed to compensate them for their work. For example, if a soakage becomes blocked with debris, one or more junggayi should clear it. Mangarrayi consider it improper and even dangerous for mingirringgi to do this. If a warrwiyan falls or is destroyed, the person represented (if living) is responsible for paying his (one or more) junggayi, who in theory should have been aware of the situation and informed him of it.
> Merlan 1982: 156.

> At their own sites, mingirringgi are not supposed to gather wood, draw water, or light fires; persons in the junggayi relation to the mingirringgi and the localities should perform these jobs. Mingirringgi may exploit vegetable and flesh resources at their own localities, but only the junggayi may, in various ways, petition directly for bounty at the sites. Here the warrwiyan play an important role. Trees and other objects representing the mingirringgi are present at the sites, and as aborigines approach, anyone may greet the warrwiyan, generally by announcing who has come and his relation to persons represented. The junggayi, however, often say that they have come hungry, that they require a plentiful catch, hunt, or harvest; they flatter warrwiyan by saying that they are barraj-yirrag (unique mother's property), that is without equal in plenty and potential. The junggayi often stroke or pat trees representing people and may rub them with mud as part of the procedure of asking for plenty and to ensure fertility of the locality. Thus, the warrwiyan serve as a direct link to the potential of localities at which they stand.
> Merlan 1982: 155.

The powers that created such roles and rules must be respected, and serious consequences can befall those who fail to behave appropriately. For example, in the Elsey land claim it was noted that:

> Inappropriate behaviour at or near some sites is believed to cause sickness and death. An example is Nganawirdbird. Recent damage to a tree at the Two Mile was the cause of evidence of concern. Na-Liwu-Jaji is a mosquito increase site, at which inappropriate behaviour can cause plagues of mosquitoes. Such prohibitions on inappropriate behaviour are observed by the claimants. There are sites to which mingirringgi will not go without being accompanied by junggayi and darlnyin. At Buriyn.gan, Jessie Roberts gave evidence that mingirringgi needed to be accompanied by junggayi and darlnyin in order to walk around safe from the Jambarlwa. Prohibitions on eating the animal form of a dreaming of the same semimoiety as the person concerned are observed. For instance, at Gurlurndurnji, Splinter Harris gave evidence that he could not eat a goanna because it was of the same Gangila-Jamijim semi-moiety to which he belongs.
> Commonwealth of Australia 1997: 123.

However the changes necessitated by colonisation have also led to significant changes in the degrees to which such protocols can be and are followed. In an article that predates the Elsey land claim and examines the violent early colonisation history of the region, Merlan describes changes in practices:

> As these Aborigines have-become increasingly sedentary, visits to certain parts of their country have become less frequent and religious observances, maintenance measures and utilisation of resources in many places have been discontinued or are only sporadic. During a visit to Lududmini (Crescent Lagoon, Elsey Station), an important ‘sickness place' and also a rainmaking site, the Mangarrayi were describing the now-lapsed practices of the jayway, the ‘rainmakers’ of the descent group which owns the area. One of the present owners of Lududmini remarked, ‘I don't know how we get rain today. Must be we're just bludging the white man's rain'.
> Merlan 1978: 75.

It is important that readers of this report unfamiliar with the area do not expect full and accurate reproduction of the detailed systemic relations outlined by Merlan in the early 1980s from contemporary residents, particularly those born well after the time that her observations were recorded. Although present day Indigenous elders retain much of this kind of knowledge, colonial relations and social changes continue to alter the transmission and retention of local knowledge, practices, and understandings. Yet the example of the rain-makers above could equally be used to demonstrate the ongoing retention of the memory of a particular practice, even as the practice itself has lapsed. The primary structure of responsibilities generated by the three roles of mingirringgi, junggayi, and darlnyin remain important in the social landscape of the upper Roper, and many important rules are still followed. During one fieldwork trip for this research, a non-Indigenous local man arrived at Elsey Station requesting permission to fish at a local site over the coming weekend. The most senior owner of the area was rapidly identified by the group present, and he gave his verbal assent to the visit. The form and detail of some of the protocols and prohibitions have altered over time, but the underlying relationships between people and the country they hold are still strongly asserted.

2.5. Hunting and subsistence

In preliminary conversations about this research, a group of elders and residents at Jilkmingan commented on how the community were still dependent on the river and on bush food generally. People used the bush to manage the lean times, as a recent food basket survey had demonstrated that the cost of food at the local store exceeded the capacity of many people on low incomes to pay (A. Godden, pers. comm.). Significant casual employment associated with the school lapsed during the holiday periods, and so people used subsistence hunting to make up the shortfall. The ongoing importance of subsistence was evident from both the field and archival research undertaken here:

> Hunting and fishing was important then and it is important to us now. We still catch them the same way.
> D.D.

> Dry season is a good time, there is cooler shade and the water is going down. When the water goes really low it is a good time for fishing, but if there is no water then all the fish die.
> R.S.

> The plains kangaroos, the big grey ones, are around Warloch [Ponds]. But in the wet season they move to the high country. The wallabies stay around all the time. Magpie geese and whistling duck are also important food. They move out into the wetlands when it is wet times, but they go back to the big waterholes like Red Lily when its dry. There are two big waterholes at Warloch Ponds where those water birds stay.
> R.S.

> The seeds of the lotus lily were gathered and eaten during the hearing at Little Red Lily lagoon and freshwater mussels were gathered, cooked, and eaten at Beyward. Lily roots were gathered in several places. As is often the case, the class of those entitled to hunt and gather in particular areas was broader than the members of the group with particular responsibility for that area.
> Commonwealth of Australia 1997: 113.

Merlan (1982: 156) notes that in their travels, the Dreaming beings often distributed edible species at their own localities. She provides the example of jab (Whirlwind) Dreaming distributing yurrulanyan (white currant [Securinega melanthesoides]) at a number of localities. In this way knowledge of the Dreaming songs and stories also provides people with information about how to live. The fact that particular foods are associated with particular Dreamings also leads to food restrictions. Each person is assigned to a particular conceptual category called a semi-moiety based on their affiliations to sites and Dreamings (whose semi-moiety they share). That identity then becomes the basis for consumption restrictions on subsistence foods. These again underline the links between hunting activity and wider symbolic and mythological understandings:

> all persons within the semimoiety category are expected to observe food restrictions with respect to edible species of their semimoiety. This usually involves (in the case of animals and fish) prohibitions against eating only certain parts of the animal. For example, people of gangila-jamijin are prohibited from eating goanna tail, the part that is considered a special delicacy, but they may eat other parts. Members of the owning semimoiety are usually enjoined from eating large exemplars of their own vegetable species, but they may eat small(er) ones. Any person, however, may hunt or gather any species. This means that people of each semimoiety have a long list of things with respect to which they must observe food restrictions. If individuals are caught in an infraction of food restrictions, they must pay their junggayi. Formerly, payment was largely in edible foods but also in non-utilitarian and symbolic items such as locks of hair. Today, tobacco, money, cloth, and some other items of manufacture are also given. People say that when hunger forced someone to infringe a prohibition, he could later pay his managers and explain what had happened.
> Merlan 1982: 155-56.

Many food restrictions are also partial, which combined with the payment system provided considerable flexibility and prevented landowners from the worst effects of these prohibitions. As such prohibitions suggest, the process of hunting is itself an engagement with the powers

present in the country, and an important means by which people not only nurture themselves, but nurture the places they visit. The Elsey land claim report (Commonwealth of Australia 1997) noted several sites and areas which were ‘increase sites’ for species such as lilies and water chestnuts. People had to dive down and plant or replant them after taking some for subsistence purposes to ensure their ongoing survival. Such actions may not be demonstrably effective from a scientific perspective but they do provide a means for people to show their respect for the country and the resources it provides.

> Before we used to go out and dive in the water, no salties [saltwater crocodiles] then. We would pull those lilies. We used to cook up those cow pats to get rid of mosquitoes.
> Sheila Conway, in Normand 2010.

The circumstances of hunting have also changed over time, with the introduction of new technologies, variations in access associated with changing tenure patterns, changing capabilities amongst active Indigenous hunters, and changes in local environmental conditions. Local people are well aware of such shifts and comment on them when out in the places where activity has changed. Changes in conditions and activities are also matched by changes in those doing the hunting. For generations, residence patterns associated with colonisation have meant that many Indigenous residents of the upper Roper are not landowners for any of the major areas. Some of the long term residents interviewed for this research were from Arnhem Land, while Cooper and Jackson (2008) noted that in Katherine there were significant populations of people from distant parts of the Western Desert who have established a permanent presence in the town. The activity of these newer residents has been absorbed and accommodated within the local population and landscape in ways that are common to other Indigenous contexts:

> All of these groups have established associations and ties to the area and regularly access and use water sites in the study area for fishing, camping and other purposes. The patterns of their use are along customary lines. Many have been shown or introduced to water sites by local Aboriginal traditional owners and have permission to visit and use the sites.
> Cooper and Jackson 2008: 24.

The above comments and points indicate the key features of subsistence activity in the upper Roper: its ongoing significance to everyday life (particularly for people on low incomes); the seasonal and temporal variations in contemporary hunting activity; its significance as a demonstration of ownership and connection in contexts such as land claims; its connections to the Dreaming; its use in reaffirming social roles, ties and prohibitions; alterations in activity based on changing conditions; the changing demographics of hunters based on changes in residence patterns; and the way that such activity introduces and connects people to new places whilst at the same time reinforcing the important role played by existing protocols and owners. Subsistence hunting is highly valued by Indigenous Australians for a wide range of reasons, and maintaining the conditions which enable it to continue is an important priority for people in the upper Roper.

2.6. Environmental classification and change

2.6.1. Classification

Indigenous classifications of what might be termed in English as habitats or environmental zones can correlate with those characteristic of Western natural scientific classifications, but such classifications also imply a range of additional associations and connections. Merlan discusses this issue with respect to the Mangarrayi:

> the WARRWIYAN are also placed in relation to environmental features and zones. For example, wijwij (opossum) is often described as belonging to bulula ("jungle," i.e., bullrush and lagoon country), within which many opossum sites are located. By association, people affiliated with opossum are also said to belong to, or be of, bulula country. Every named land area is associated with at least one totemic creator.
> Merlan 1982: 150.

Collaborative research links between the Mangarrayi people and the ethnobotanist and researcher Glenn Wightman have yielded much valuable material (Wightman et al 1992) and an updated and extended publication will amplify this material (G. Wightman, NRETAS, pers. comm.). This study is not yet publicly available, and exploring the full significance and implications of it is beyond the scope of this report, but it will represent an important statement about Indigenous taxonomic understanding, modes of classification, and environmental knowledge in the upper Roper.

In terms of classifications of water, the landscape in the Katherine and Mataranka area is quite a dynamic one, with large seasonal variations, associated fluctuations in the local watertable, and changes wrought by the dissolution of soft limestone rocks, creating sinkholes. Change or collapse of sinkholes can be induced by land uses causing changes in the water table or drainage system and they can act as pathways for water to rapidly recharge to the underlying aquifer. As Cooper and Jackson (2008) report, the dynamic nature of the seasons and weather, the variations in water flows, and the diversity of geological formations through which the water moves are reflected in the richness of the terms and concepts relating to water in the local Indigenous languages around Katherine:

> Every aspect of water as a phenomena and a physical resource as well as the hydro-morphological features it creates is represented and expressed in the languages of local Aboriginal cultures: mist, clouds, rain, hail, seasonal patterns of precipitation, floods and floodwater, river flows, rivers, creeks, waterholes, billabongs, springs, soaks, groundwater and aquifers, and the oceans (saltwater).
> Cooper and Jackson 2008: 4.

The authors go on to note the relative precision of particular terms; that the Jawoyn language has a term for water that is carbonated or high in lime, maminga, and other languages can identify different kinds of water with similar precision:

> Wardaman have a parallel term, yigargin. Other kinds of ‘light water’ are derived from sandstone (igilarrang) and from rock puddles (yikalal). In contrast, water from igneous rocks, such as basalt, yiman wiyan, is regarded as ‘heavy’. Other types of water include yingol wiyan, which gets its sweet taste from being filtered through the dense root systems

of paperbark trees, and water from trees (karrikbal), which is highly regarded for its medicinal uses.
Cooper and Jackson 2008: 27.

Detailed linguistic inquiries were not a primary priority in this research, but one research participant noted an immediate connotation of a primary word for water in the local Mangarrayi language:

Marcus Barber: What do you call that water?
SC: That water is ngugu, like we say 'spring'. Ngugu is all the time spring water.
Marcus Barber: So if you are being clear, that word really means water from the ground, not water from the sky?
SC: No, not water from the sky. When him rain, that's jilgway. Ganan.

Aboriginal languages are also attuned to social context, with particular words being replaced by others when people who are in particular relationships with each other are present. These replacements can often occur in 'avoidance' relationships, such as that between a mother-in-law and son-in-law, or between a brother and sister. Water and water features are sometimes involved in such word replacements, and Merlan notes that ngugu, the standard Mangarrayi word for water, is replaced by the term 'buyala', which literally means 'dew', in such avoidance situations (Merlan 1989). Such replacements sensitise people to the social relationships present, but they can also highlight links between environmental phenomena, and in turn between environmental phenomena and the relevant social relationships. Therefore environmental classifications and social relationships become interlinked.

2.6.2. Environmental change

It has already been noted that the landscape associated with the Tindall aquifer around Mataranka and Katherine is dynamic, with wide seasonal fluctuations in rainfall and soft limestone terrain. The upper Roper River area adds an additional layer of dynamism because the shallow terrain and braided channels can alter, either slowly and incrementally with the dry season flows but also at times dramatically in response to a significant rain event. Long term Indigenous residents in the area are aware of these changes, and use them as a marker of change and as a baseline against which significant change is measured. Reflecting long-term rainfall patterns in the Mataranka area over recent decades as well as the heavy wet season of 2010-2011, an observation made by a number of research participants was that the country is wetter at present than it has been in the past:

> Things have changed now. There is more rain now than before. There are a lot more waterholes on the river. We used to go to the main ones, and sometimes we would dig the sand to get the water. You had to look out for the water trees. In the old days there wasn't enough water. People had to move around to live. Now it's coming out of every single pocket.
> F.L.

> In those days these rivers used to be dry, just a sandbank. Now they run all year round. We can get water from everywhere. At that time there used to be no water, but we knew where to find it. Elsey and Mataranka were always wet; they have not gone from dry to wet like around here. There's been a lot of rain and cyclones this year. It's been a good year I suppose.
> F.R.

> There's more water now. That creek there used to dry up but now there's water all the time. That spring is stronger now too. This is a resting place for that water.
> J.M.

An NTPWS staff member responsible for managing the Elsey National Park also noted changes in vegetation over the last 10-15 years with the higher rainfall (E. Webber, NTPWS, pers. comm.). The eucalypts and paperbarks are moving higher up the banks as the water rises. The same interviewee also noted that the 1998 flood shifted the main river channel 3-4 metres to one side, and the bigger trees knocked over by the flood became logjams further down and altered the flow. The dynamic nature of the local terrain was also noted by long term Indigenous residents:

> There are lots of changes on the riverside. The trees grow, the bullrushes grow, sites move around. There has been a lot of changes. Water cleans up, moves the rubbish. The water takes all the things away, the rotten trees, and makes space for the new ones to grow.
> M.S.

> A long time ago there used to be one river channel, right down to Moroak and Roper Valley. There is more than one now. You get lots and it's no longer possible to remember where the right channel is. We used to cross with a plant of horses and there was one channel. The crossing was right on Elsey. There is still one big main channel but you can't

remember where he go now. There's too many creeks. It spreads out on Elsey, comes back close to Moroak, then spreads out again.
J.C.

Other residents of the Elsey area noted that the floods seemed to have a lesser effect on Jilkmingan community in recent years. Elsey has experienced quite severe floods in the past, including one notable one in 1940 when the station was inundated to the point that the predicament of the station manager's wife attracted media attention:

"Mrs Giles as Flood victim lived three days on damper"
…Mrs Giles was forced to abandon the [Elsey] homestead and she was taken to a hill on a paper bark raft. The station natives, who made the raft, pushed it along in front of them as they swam from the threatened house. They were assisted by the head stockman, Mr Jack Rogers. The flood waters rose so rapidly that when Rogers and the Aborigines returned for supplies they were unable to get at them. As a result Mrs Giles had to live on damper until the water subsided sufficiently for her to return to her home. The waters rose above the dining room table at the homestead. Mr Giles was marooned on another hill 40 miles away.
Northern Standard, 12 January 1940.

These dramatic floods were a precursor to the extremely dry period of the 1950s when the river stopped flowing entirely (Northern Territory Government 2010). Jilkmingan last flooded in 2000, and the water was high again in 2004 (E.Webber pers. comm.), but residents of the community have noticed that in recent years it has not flooded when other areas that traditionally flood at the same time have done so, and speculate that one cause of this may be changes in the depth of the channels, again reflecting the dynamic nature of the local

landscape. The heavy rain of the 2010-2011 wet season was a prominent feature of the fieldwork period, and certainly shaped assessments of current conditions. However not all of those interviewed recognised the wet weather of recent decades as being the only pattern:

> That water has changed, in my country. Early 1990s we got it back, and the creek did not always flow but there were places where you knew there would be water. Over the last twenty years the river is getting drier and drier. Now we are relying on the rainfall. We've been lucky with the rain the last few years, it's been going back to the way it was before, but that is just due to the rain. Five years ago it was dry, dry like I'd not seen. My mother told me that the billabong never went dry, that you could always live in our country. "You'll never die because there is water in these two billabongs". Those were always our meeting, camping, and cultural areas in our region. But we are not getting the flows like we used to. The whole country is heating up. The Birdum crosses a few cattle stations and a lot of those creeks are not fenced off, they are used for grazing. There are lots of dams and bores, whatever. And the water is going down. That runoff from Beswick is getting used up before it gets to our area. Mataranka station has more cattle than before. My mother's sense was that the country was hotter. I don't know if it is El Nino or something, but she must have lived through some of those. One time I came out there and those billabongs had dried up only two months after the wet, it had all dried out! But recently there's been so much rain. I went down a couple of months ago and the billabongs were all full. And I thought, wow, this is what my mother was talking about! I felt good now to see it, but bad about what was happening before, about the drying and the country getting hotter. We are relying on the rain now, but before the water was always there.
> A.M.

A.M. draws a distinction between rainfall patterns and observations of surface and groundwater on the country, which appears drier. Others interviewed remembered an occasion when the landscape dried out far more than usual:

> The Elsey river and Red Lily Lagoon dried out more. The barramundi, you could see them in the water. For the first time, the river dropped right down. All the creek dried out, but I don't know why. Maybe it was climate change, because not much rain was there.
> R.S.

An older resident of the Mataranka area noted how surface expression of springs can dry up, but this does not mean that the underlying water has vanished.

> The springs have stayed the same. Because they come from underground they keep going. Sometimes there are dry springs. The springs come up dry. The soil gets hard and the water stays down, sinks down to the bottom. The water is still there, but you have to dig it. Sometimes down three or four feet. Only in the wet season when the rain gets into it can you see the water. Knowing where they were was important when people were hunting around.
> M.S.

Indigenous people who know the area well can provide observations of changes in the surrounding country which represent an important source of relevant additional information for water and environmental managers relying on scientific and modelled data. In these

observations, the question of surface water expression and its relationships to rainfall, groundwater, and land use are all potentially important. Increased siltation and sedimentation associated with changing land use affects surface water expression, even during periods of higher rainfall. Cooper and Jackson note this issue with respect to the Katherine area:

> Some of these impacts can be directly attributed to land uses, such as pastoralism. During the course of this study we visited a number of culturally-significant waterholes and billabongs on the King River on Manbulloo Station that had (in 1957) deep, permanent water but which were shallower or dry at the time of the visit (during the dry season of 2007). These sites appear to have had largely unrestricted access by cattle, which have, over time, broken down the banks and contributed to soil erosion runoff into the waterholes and billabongs)… All the water sources visited had significantly-reduced depths and extent of water present. At one significant billabong, Bill Harney indicated an old Eucalypt (dimalan) tree which used to stand at the water's edge but which now stands some 20 metres from the present edge of the billabong.
> Cooper and Jackson 2008: 43.

Yet part of the concern expressed above about the long term drying of the landscape is that cattle have not been directly present on the land AM has observed, reflecting the importance of regional management and of the role of other cattle stations along the Birdum:

> Our country is virgin country, never been big cattle there. My mother said it was her heritage to us, to be able to say that we had that country.
> A.M.

Cattle are not the only animals to effect significant changes on the landscape, and on the presence or absence of other animals. Reflecting on observed changes in their lifetimes, older residents of the planning area also noted changes in animal species:

> We used to have goannas here before, before the toad frog came, now there is not hardly ever a snake. The water goannas are alright, but the desert goannas have gone away.
> F.R.

> We don't see much animals around, we don't see kangaroo and goanna anymore, because of that cane toad.
> J.M.

> The cane toad came from Queensland. Only that green frog and sand frog we know from the old time. But they are still around. There's no goanna now after those toads. Only the water goanna. All the snakes are dead but we don't eat them. The Brahmins came when the goannas were still alive. The pigs are still the same, the dingo, the bush cat, and the donkey.
> M.S.

> Those pigs were brought from Lemon River station to Elsey. They got wild and ran away and bred up. That's why there are so many there now.
> J.C.

Indigenous residents in the upper Roper remain sensitive to changes in their local surroundings, and assess those changes based on decadal understandings of previous change. These represent a potentially important management resource in terms of local conditions, particularly when shared in ways which facilitate knowledge exchange and mutual learning. Further discussions with local Indigenous ranger groups and with the recently constituted Indigenous water reference group (MTOWARG) may demonstrate productive ways in which this knowledge can aid water planning and management activities.

2.7. Traditional water management

Traditional water management in the upper Roper will be the major focus of the second report on this research. However some brief comments about this topic is appropriate here. Traditional water management is a part of the wider obligations people have to manage the country as a whole. From an Indigenous perspective, the country and the places it contains are active participants in the life of human beings, responding to events and actions in the world, particularly the actions of those people with whom it is strongly connected ancestrally. Therefore an important first step in the proper management of water is appropriate conduct by human beings. This means that the previous sections about protocols and prohibitions (2.4), and about boundaries and connections (2.3.2), represent important aspects of traditional water management. Although emerging from a different basis, this desire for appropriate conduct correlates with the increasing focus in NRM on managing human activity.

The strongest newly located evidence for traditional water management in the upper Roper relates to the construction of traditional weirs on Mangarrayi country. This activity is the major focus of the second report, which details archival research about the practice and about the Supreme court case in the 1940s which banned the practice. The archival research yielded both documentation associated with contestations between the managers of Elsey and Roper stations over the issue in the 1930s, as well as extensive documents and transcripts from the 1946 court case (1946). Much of this material was text-based, but it also contained a diagram of the weir as it appeared in the 1940s (see Figure 2). In a formal sense, the case was a contest between two non-Aboriginal pastoralists as it related to the relevant water ordinance, rather than an evaluation of the ‘traditional water rights’ of local Aboriginal groups, but its effect was a general suppression of the Aboriginal practice, despite acceptance in the evidence and judgement that the practice had its origins in traditional pre-colonial activities. Although it has been suppressed for several decades, field research demonstrated ongoing Aboriginal and wider community knowledge of the history of the practice, as well as a local desire to re-institute small scale water diversions on Mangarrayi country for wetland management and subsistence purposes. Preliminary legal advice provided by the Northern Land Council suggests that the original 1946 decision no longer represents an ongoing legal precedent, as the 1938 Water Ordinance under which it was made has been superseded by the Water Act. Nevertheless there are potentially a range of complex legal and water planning issues associated with local Aboriginal aspirations to revive the traditional practice. These will be provisionally explored in more detail in the second report to follow.

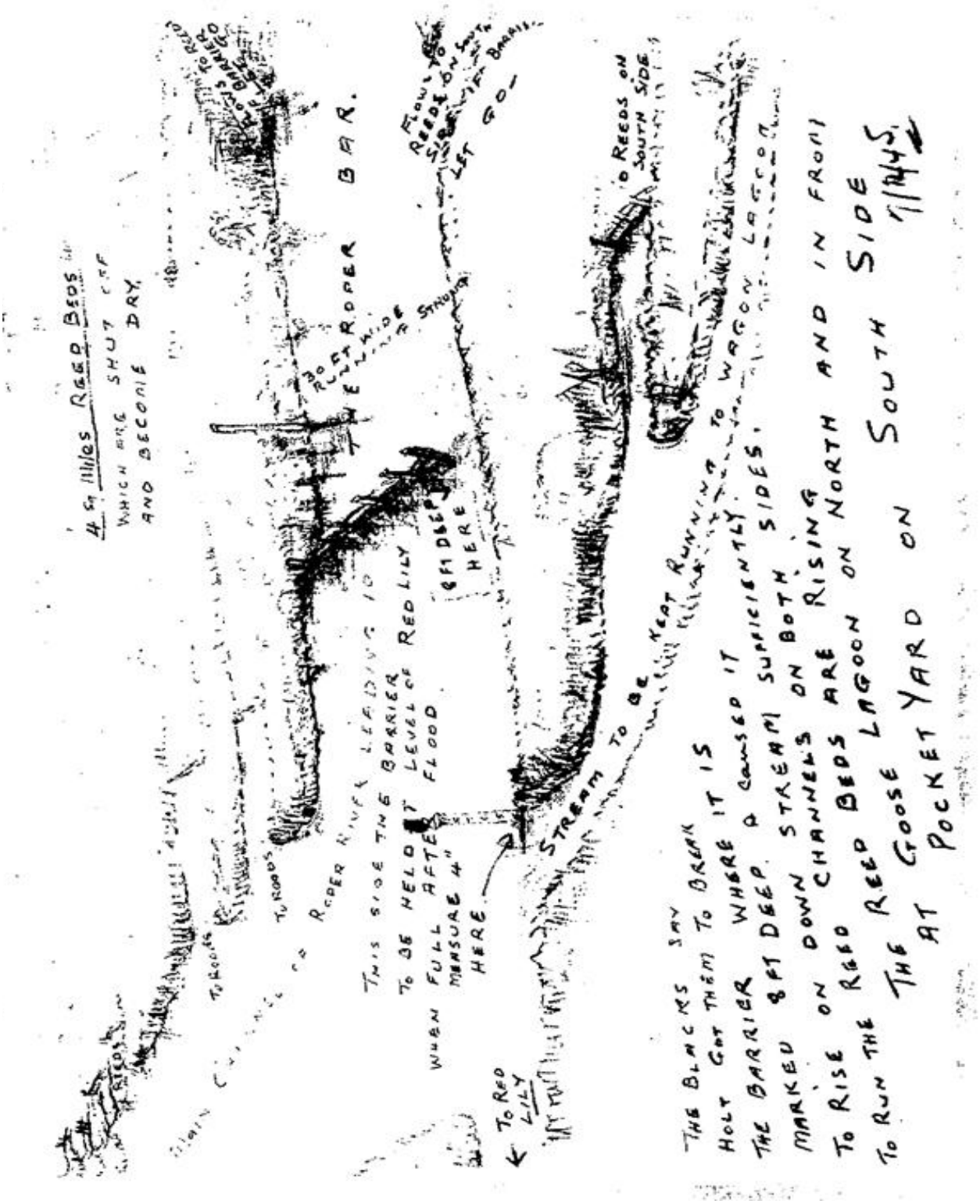

Figure 2: Diagram drawn by Constable Mannion in 1945 of the temporary weir constructed by local Aboriginal people to divert water from the main channel of the Roper River. Source: National Archives of Australia, File F1 1946/406

2.8. Current issues and impacts

A lease for the original Elsey station was taken out in 1877, although the property was not declared stocked until five years later, and neighbouring Hodgson Downs was established in 1884 (Merlan 1978). This means that the central region associated with the planning area has been experiencing direct impacts from non-Indigenous colonisation for well over a century. As was noted earlier, those language groups directly associated with areas that became cattle stations were able to avoid relocation to distant missions, but the level of violence and disruption to traditional life was nevertheless considerable (Merlan 1978). Following the pastoral era, the advent of land rights in the Northern Territory afforded local landowners the opportunity to reclaim significant control over territory, but there remain many areas that are either unable to be claimed or areas for which access is impeded in some way.

Colonisation tended to follow rivers and other major water sources, accelerating Indigenous dispossession and solidifying non-Indigenous permanent presence in areas that often were of the most practical and symbolic importance to local Indigenous inhabitants (McGrath 1987). Cooper and Jackson (2008) identified three primary impediments to Indigenous customary water use: the alienation of water sources by non-Indigenous acquisition and occupation of land containing such sites; the damage or destruction of water sources through the impacts of land uses and natural processes; and the loss of cultural knowledge of water sites through the inability to pass on knowledge and to show sites to younger generations. They go on to review in more detail the various provisions and enabling legislation designed to facilitate access and use, but note that in a number of circumstances such formal recognition is not able to be realised in practice.

2.8.1. Limestone quarry and mango farm

With respect to the focal area of Mangarrayi and Yangman country around Mataranka and Elsey, two examples of contemporary impacts demonstrate some of the issues. One is the limestone quarry near the corner of the Roper Highway which has been an ongoing issue for many years (F. Merlan, Australian National University (ANU), pers. comm.). During the Elsey land claim it was described how sacred objects for use in ceremonial activity used to be stored in crevices in limestone in the area and that the storage places have now been destroyed by quarrying operations. The loss of those places and of some sacred objects has been the cause of considerable distress amongst claimants. Burial sites in the same area have also been dug up, which created further distress about the quarrying operations(F. Merlan ANU, pers. comm.). The issue has had a long history but was mentioned by some research participants during the current research and has also been discussed with other researchers operating in the area (Normand 2010).

The second development which has raised significant issues for people recently is the large mango farm that has been sited adjacent to the river at Jarrmurrak, which is an important location for local people as it was the primary responsibility of the mother of a senior living person (F. Merlan, ANU, pers. comm.). Of particular concern is the water usage of this farm, and the potential impact of this usage on the surrounding area. The mango farm was brought up almost immediately in preliminary discussions with local Jilkmingan residents about the

research conducted here, and people felt that some form of damages should be payable for the location of the farm and/or rent for the water it is using should be passed on the local owners.

These examples reflect the importance of conducting local consultations with appropriate people about the impact of new developments and taking advice on where and how they are sited. They also point to the need for early and ongoing discussions about water planning and water allocations for such developments. Indigenous understandings of the ownership of country take land and water as an indissoluble whole, and any new initiative which has significant implications for water usage will engage the attention of local landowners and may lead to significant conflict if not managed appropriately. This is true even if the development itself is on land that they do not formally control but consider as part of their traditional estate.

2.8.2. Land management: pastoralism and conservation

A full survey of Indigenous participation in land management activities in the wider planning area is well beyond the bounds of this research. The cattle industry and management for conservation purposes are the two major forms of land management of direct relevance to Indigenous people in the focal area around Mataranka. Following a successful land claim, Elsey Station is now owned by the Mangarrayi and is currently used by a range of non-Indigenous lessees to hold and improve the condition of cattle for sale on the commercial market. Until recently the station was directly managed by an employee of a corporation set up for the purpose of overseeing station activities, with the board of the corporation being

made up of local Indigenous owners. Now the lessees operate under the auspices of new agreements and tenancy revenue is collected by the NLCl and distributed to those recognised by the NLC as being traditional owners of the station territory (S. Rama, NLC, pers. comm.). Regardless of the details, both of these arrangements demonstrate that Indigenous people have a direct stake in commercial operations occurring on territory they control, and a vested interest in seeing them carried out successfully.

As a contrast with respect to orientations in land management, Elsey Station is also the main base of operations for activities conducting by the Mangarrayi Rangers. This is a relatively small and new ranger group operating under the auspices of the Roper River Landcare group and its facilitator Ian Rowbottom[9]. Prior to the establishment of the ranger group in 2010, some of the rangers had been employed directly by Landcare. Currently there are three rangers employed on a range of projects, with weed management being the primary activity. Weeds were a major reason for the establishment of the group as Elsey Station was not managed properly for a number of years and the weeds became a major problem. However, the strategic role of Elsey Station in regional fire management is also an important aspect of ranger activities. The group is gradually expanding its scope and is beginning the process of developing a wetland management plan for the local area. It also has an archival project to explore past records about the station, and the research undertaken here will contribute directly to that local initiative. Tourism is an important feature of the economic life of the region (and also of Indigenous concerns about impacts on the local land and waterscapes), but at present local capacity to run cultural tourism enterprises is limited and the Mangarrayi Rangers' efforts are focused elsewhere. The potentially enhanced role of the ranger group with respect to water allocations, wetland management, and Indigenous capacity building needs further consideration, but the formation of the group represents an important development with respect to regional land management in the focal area of the upper Roper[10].

2.9. Water planning and consultation processes

The research outlined here was intended to be undertaken as a complementary process to consultation and discussion processes occurring as part of the NT government water planning process. The delays in research permissions and the deadlines for completion of the initial Mataranka area groundwater plan limited the degree to which this research could generate direct input to the initial plan. Nonetheless, the research here involved talking to people about the importance of water and how particular uses of water should be prioritised from a local Indigenous perspective. In light of this goal, attempts were made to communicate with two discrete but overlapping groups of research participants from the region. One group were senior traditional owners and long term residents of the area who could comment on traditional knowledge and values and on changes in the landscape over time. The second was the group of people actively involved in the consultations about water planning facilitated by the NLC through the new reference group, the MTOWARG. A

[9] Information in this section was supplied by the facilitator over several meetings at Elsey Station and in Katherine

[10] The much larger and longer established Jawoyn ranger group operating from Katherine is important to the wider planning zone, as their area of operations incorporates some of the creeks and rivers that form part of the catchment for the upper Roper. However no Jawoyn rangers were spoken to during the course of the current research, and their area of operations does not include the key springs and water sites around Mataranka and the river itself.

deliberate strategic decision had been made by a large meeting of senior owners to actively promote some younger people to be members of this group. This was to give them the chance to learn more and also gain experience in speaking for their country and for the interests and priorities of Indigenous people. The comments below come from members of both groups, with those not directly involved in the planning process making general comments about priorities in the use of water and those with experience of the current negotiations making more specific comments about processes and outcomes with respect to the current phase of water planning. Before considering these specific comments, it is useful to review the comments of research participants when reflecting on general priorities in the allocation and use of water.

2.9.1. Water for the country and environmental flows

An important theme in the comments made by research participants about water issues was the need to provide water 'for the country'; water that ensured the ongoing viability of local habitats and local practices:

> The first one is water for looking after the animals. We need water for fishing, otherwise we can't get anything. The main thing is the water for the country.
> J.C.

> You can take water out but water for swimming and fishing is important. So that the fish and animals are there for us. As long as the water underground is ok. The main one is river water for the animals and camping and dreaming side. Then the groundwater for people, for the job side, for whatever we need.
> M.S.

> Most important is water for the springs and the river itself. For the animals to drink, for people to go fishing, the palm trees. Also the other trees and birds. The water also needs to flow down to Moroak station, to reach the Ngukurr people.
> S.R.

> It is up to the future generations to decide [their priorities]. But the wetlands come first, filling the rivers and creeks. They want to live too, you see. We don't want to use too much water. Enough for community drinking water, keeping the kids clean.
> R.S.

> Most important is water for the country, and for the animals and plants. We have to keep some water for them. And for fishing and hunting. But they can take some water for sprinklers, and use it for the lawn [gestures to nearby sports field], use it for the watering.
> J.M.

> The most important water is for the fish and the animals. We need to keep that billabong, that whirlwind place. It's a Dreaming place for us. Its ok maybe a little bit for others, but that water comes first.
> R.B.

A clear primary priority in the comments above is what might be considered in water resource management terms as environmental flows. The maintenance of sufficient water of sufficient quality in the system to ensure the health of plants, animals, and the country as a whole was a consistent attitude amongst research participants. However this response also encompassed the water required to maintain subsistence hunting and socio-cultural activities such as fishing and swimming, and this reflects the priority these activities have for local Indigenous owners and residents.

It also indicates the potential limits of a purely environmentalist understanding of the flows required; for Indigenous people it is not just the presence of animals and plants that is important, but the presence of key species in sufficient numbers to make subsistence hunting a viable activity. This distinction has been explored in more detail elsewhere (Finn and Jackson in review). But it is important to note here as a cursory reading of the comments may collapse the priority placed on water for the country into a version of 'environmental flows' that is oriented to the maintenance of basic ecosystem function and the presence or absence of key species of conservation importance. This is in contrast to a conception that takes the ongoing viability of human subsistence activity as an important aspect of the 'environment' being maintained by such flows. Nevertheless noting this shift in interpretation should not diminish the clear correlation between a primary Indigenous aspiration with respect to allocation and the sustainability goals that are at the heart of contemporary water planning.

2.9.2. Ownership and obligation

Evident from the comments made in interviews is the sense of obligation people feel with respect to looking after the country. This obligation is tied to, and interrelated with, a particular form of ownership that in 1.6 above was described in terms of guardianship and responsibility. Other comments about water and its availability reflect this conception of responsible ownership, of people asserting their rights as owners but also reflecting on the obligations that come with those rights – obligations to look after and respect others present on the land.

> The country needs water. We respect the farmers for growing the food we eat and we can share with them, but we have to look after the country as well.
> K.M.

> We pay rent for water to our houses. Why do we do that? They should be paying us for that water.
> A.M.

> Water is life. We want business in the future. We respect the farmers. If there are no farmers, there is no food. We can share the water, but you got to tell us the proper story. That's the story for the country, balancing the water, fire and land.
> M.R.

> We need water along that highway back to Ngukurr; water supply for travellers who may need it.
> M.S.

> If they want to establish a farm, they should ask the people first. If it is on their land, then they should pay.
> J.M.

> It's ok to do a bore to make a business, but the water must keep running on the river.
> F.R.

> Animals need water to live their lives. But business can come along too.
> P.H.

> It's important to keep the idea of running a community business. If someone wants to run a business here then we can go together, like a partnership. That's one way.
> D.D.

> What about the miners and the water? We had a meeting about the exploration near Warloch. And what happens to the licenses when someone is finished? Do they go back to the government? Or are they selling them?
> S.R.

> We are not asking for all the water. But the consultation process was wrong and so we did not get the chance to negotiate. Being the majority landholders, I felt we had that right.
> A.M.

The range of comments here reflect assertions of ownership, concern to accommodate competing interests, willingness to negotiate, criticism of processes that have not respected them as owners, concern for matters that may not have been properly considered, and an underlying need to protect the country. They reflect more extended comments and formal positions taken by the group in a background briefing paper produced by NAILSMA (North Australian Indigenous Land and Sea Management Alliance 2011). These are the foundations on which the Indigenous residents of the Roper responded to the general challenges and questions posed by contemporary water planning processes in the area.

The Indigenous representative on the Mataranka Water Advisory Committee was the former manager of Elsey Station Max Gorringe. He indicated that the primary concern people from Jilkmingan and Mataranka expressed when he consulted them about water planning issues was the preservation of flows at key ancestral and Dreaming sites (M. Gorringe, Roper Landcare Group pers. comm.). This response is consistent with the analysis outlined here, as those sites are the focus for obligation and ownership. Maintaining flows at key sites was also the primary water planning goal of the NTPWS representative on the advisory committee (E. Webber, NTPWS, pers. comm.). From the perspective of the Indigenous representative there seemed agreement across the advisory group that the maintenance of such flow regimes was a key goal of the planning process (M. Gorringe, pers. comm.).

2.9.3. Indigenous water values and attitudes to the Strategic Indigenous Reserve

The comments in the previous section reflect the nature of contemporary Indigenous ownership and, as has been noted previously, Indigenous ownership and tenure systems do not make the radical separation between water and land that is characteristic of non-Indigenous Australian property and natural resource management regimes (O'Donnell 2011). Water and land are taken as an indissoluble whole and Indigenous attitudes to water and its management reflect that assumption. Indigenous people see their role as not just guardians of country, but as potential beneficiaries of productive activities that take place there. Discussions of water allocations for commercial purposes are therefore of primary interest to people who regard themselves as the owners of that water. That these people are also economically marginalised and are searching for opportunities to mitigate that marginalisation only increases their desire for appropriate recognition.

The water planning process in the upper Roper has built upon the foundations provided by the Katherine water allocation plan (Tindall Aquifer) and set aside a proportion of the water for consumptive purposes into a special reserve for Indigenous people, referred to as a Strategic Indigenous Reserve (SIR). Some commentators have noted an emerging consensus concerning the need to establish an Indigenous specific allocation in many if not all water plan areas as a means of satisfying the NWI requirement to grant water access entitlements to address Indigenous needs (O'Donnell 2011). The reserve could be accessible by the grant of licenses (entitlements) at no charge that are saleable as a temporary trade only. Although the Northern Territory Water Act does not specifically recognise the appropriateness and need for an Indigenous specific allocation from the consumptive pool for commercial purposes, a reservation has recently been declared for a groundwater resource in the Katherine region. At the time the fieldwork for the current research was undertaken, there was wide discussion about an SIR for the Mataranka plan,

and following the lead of the Katherine plan, consideration was being given to setting the SIR at approximately 25% of the total consumptive allocation.

An objective of the Tindal Aquifer water plan is to provide for economic development opportunities on Indigenous land (Department of Natural Resources 2009a). Indigenous people comprise 20% of the region's population and a native title application has been lodged over a small part of the plan area. The plan mandates 680 ML for Indigenous commercial development if the existence of native title is recognised within five years of the commencement of the plan (Department of Natural Resources 2009a). This amount of water has been determined by the percentage of the plan area land under native title claim – approximately 2%. However for as long as the native title determination issue is unresolved, there remains no Indigenous specific allocation.

The nature and size of the SIR was not a focus of this research project. However, as the research coincided with formal water planning discussions, it was regularly raised by research participants as a significant issue, and so the comments below are included here to further demonstrate contemporary Indigenous attitudes to water and its management. Compared with Katherine, Indigenous people form a much larger proportion of the resident population of the upper Roper River and, through various forms of title, hold a significant proportion of the land title in the area. Local Indigenous people's awareness of these facts strengthened the generalised sense of entitlement to water allocations based on their understanding of their position as owners of the 'country' as a whole. This sense of entitlement is reflected in comments about the size of the SIR allocation in the upper Roper:

> I don't understand how we can have 67% of the land and they only give us 25% of the water. We have to fight hard for that water because the connections and links between the people are tight. We are bonded together. This water planning, there was no consultation with the majority of the landowners. I thought we would automatically be a part of it, as the landowners.
> A.M.

> 25% or 30% from the government is not enough, they have kept more water than we have.
> R.B.

> That water should be 50:50 split, between Indigenous and government. People can have the water from us if they want it. We will give the permit.
> R.S.

The comments reflect the social significance of water for Indigenous people and the direct links between that significance and how water should be shared. If the SIR is implemented in some form and is successfully managed by Indigenous representatives nominated for that task, then that demonstrated capacity to manage consumptive licensing may be used as a further justification for arguing for an increase to the proportion of water allocated to the SIR in subsequent plans. Conversations about these matters are ongoing, and involve a range of organisations and Indigenous groups across Northern Australia (North Australian Indigenous Land and Sea Management Alliance 2011). The process of establishing and maintaining a substantial SIR is seen as an important step in the contemporary economic development possibilities available to Indigenous Australians in northern Australia.

However, in such discussions about the detail of allocations for commercial opportunities, it is important not to lose sight of the overall Indigenous priorities and aspirations expressed in the comments found in this report. Aspirations for managing commercial licensing and its associated revenues emerge from a wider sense of ownership, and that wider sense prioritises 'water for the country'. This perspective was also commonly expressed by many from the numerous Indigenous language groups participating in land and water planning exercises in the Daly River catchment during recent years (Jackson 2004; Jackson 2006b). For example, at a workshop on water and Indigenous interests in 2006, the group discussed the need for balance between economic values or goals (consumptive use of water, for example) and non-consumptive (water for the environment, for people's social life etc). Marcia Langton noted that:

> The discussion needs to be wider than cultural values because of the way that economic values and cultural values are separated. In the non-indigenous world, economics and culture are treated differently, or separately. Should we be putting economies on the table within the 'cultural' values scope? What about cattle grazing, economic development, infrastructure for living? The rush to development doesn't seem to be taking into account that Aboriginal people want a balance – isn't that in itself an Aboriginal value?
>
> Cultural values doesn't mean that there's necessarily any conflict with economic values. They can be compatible like Margie's example shows. The technocratic thinkers don't see that. We have to find ways of point that out. Some scientists can't see that contemporary Aboriginal culture has an economic component. An Aboriginal value is that people live on their land and continue to do so with their children. The history of the Daly River people has been entangled with economic development.
> Jackson 2006: 19.

The goal of providing 'water for the country' accords with the priority given to meeting the environmental requirements of aquatic ecosystems in contemporary water planning (Arthington and Pusey 2003). Alongside this alignment, good water planning and associated research can have other positive impacts on Indigenous communities, impacts that may be unexpected at the start of the process and which may not relate directly to such questions as the amount of a particular allocation, such as learning about hydrological relationships and limits to development of the water resource. For instance, during the course of water plan discussions Indigenous participants were presented with information on groundwater systems of the Roper:

> We actually didn't know about exactly how the groundwater flows until they showed us at that meeting. But then we saw the cycle, the water coming in a circle. That's how we worked it out with our countrymen, finding the links now with that research. My mother died and we lost that connection, but now the underwater flow shows how we are linked up to the Elsey mob. We knew they were countrymen, but did not know the link. We are starting to fit it into place.
> A.M.

Water planning processes have the ability to enhance Indigenous participation in the contemporary market economy, but, as A.M.'s comment above demonstrates, they can also play a role in reviving and regenerating important socio-cultural networks within Indigenous

communities. The primary focus of the comments of the preceding section was on the nature and extent of the SIR, but A.M.'s comment here, the evidence for traditional water management practices briefly described in 2.7, and the importance of 'water for the country' evident in the comments reported in 2.9.1 reflect the multifaceted nature of contemporary Indigenous relations with water resources. Ownership of water is perceived to be associated with ownership of land, and its importance for contemporary economic development is well understood. Yet its role in maintaining the country, the presence of key plants and animals, and its role in supporting hunting and fishing activities is also emphasised. Traditional water management practices in the past were also designed to improve hunting and fishing returns, practices which later supported the cattle industry. Finally, water is understood to be important in social terms, with the flows connecting and reconnecting people in significant ways.

3. CONCLUSIONS AND FURTHER RESEARCH

3.1. Water values

The evidence from archival and field research gathered here suggests that Indigenous people in the upper Roper value water in a manner consistent with reports from elsewhere in the country. Water itself is understood as an integral part of the world created by the ancestral beings during what is colloquially known as the Dreaming, and those beings are still present in current land and waterscapes. Places with permanent water are usually of key significance, and although the snakes which are characteristically associated with water in many parts of Indigenous Australia (Cooper and Jackson 2008; Barber and Jackson 2011) are not the major ancestral beings reported from the focal area around Elsey Station, they are nevertheless a feature of Indigenous understandings of the wider Roper catchment and play an important role in regional connectivity. There are a range of important associations with water evident in the Dreaming stories provided by local inhabitants in previous research documents, including research for academic, community, and legal purposes. Taken together and combined with the fact that this material has been collected over several recent decades, it suggests clear, consistent and ongoing continuities in the role and relevance of water to local people.

There is also evidence of a range of practices, protocols and prohibitions with respect to water, as well as clear statements about the ongoing value of hunting and fishing to contemporary life. The high rainfall levels of the past decade have played a role in more general perceptions of environmental changes occurring in living memory, changes which people interpret in a range of ways but which drive ongoing desires to manage the company appropriately. Such desires for management are one manifestation of a broader sense of ownership over and obligations towards the country that emerge from the Roper data and are consistent with Indigenous attitudes to country found elsewhere. In turn, this sense of ownership and obligation drives Indigenous responses to contemporary processes such as water planning and management.

There are two features of particular note evident in the archival and ethnographic record for the area. One, identified by Merlan in a publication in the early 1980s, is the significance of riparian vegetation, particularly large trees growing at major water sites, and their association with past and present individual people. Merlan argues for the distinctiveness of this practice with respect to the literature on Indigenous Australians elsewhere. As it implies an additional layer of meaning and significance for riparian vegetation, in a contemporary water planning context it suggests that some additional management effort with respect to that vegetation may need to be considered. The other feature is the traditional practice of the construction of weirs in the upper Roper, to be discussed in more detail in the subsequent report. These two more unusual features, combined with strong positions taken with respect to the SIR, represent different aspects of Indigenous relations with water, incorporating spiritual, cultural, historical, economic and physical dimensions. There is a clear understanding amongst local Indigenous inhabitants of the role and importance of water in this hydrologically complex area. There is also an ongoing desire to be involved in managing the impacts and receiving the benefits of contemporary activities which use, need and rely on consistent potable water supplies.

3.2. Water planning issues

The water planning process in the upper Roper undertaken to produce the draft plan initially incorporated community feedback through the MWAC. However, several Indigenous residents of the Roper who were familiar with the planning process expressed reservations to the researcher about the level and nature of Indigenous representation on that committee, and the meetings held by the NLC in the first half of 2011 were partly in response to those criticisms. These meetings provided further opportunity for Indigenous people to become informed about and comment on the planning process, including hearing presentations from and speaking with government representatives. This activity led to the establishment of the MTOWARG facilitated by both the NLC and NAILSMA (North Australian Indigenous Land and Sea Management Alliance 2011).

From the evidence gained during field research, it is clear that the Indigenous residents of the upper Roper have a wide range of interests in water planning and management. One clear current aspiration is to manage a much larger share of the consumptive allocation than is proposed in the current draft plan. This reflects well-established Indigenous cultural attitudes, including the inseparability of land and water in ownership terms, the rights of traditional owners to decide what activities are undertaken in their territory, and the right and the opportunity to benefit from economic activity undertaken on that territory. O'Donnell (2011) provides a list of suggested criteria to determine the amount of water for the SIR, including

- the percentage of Indigenous land ownership/interests;
- that land ownership is not the only criteria for access to a water entitlement and that a minimum amount apply in such circumstances;
- the existing entitlements held by traditional owner interests be taken into account;
- the extent of Indigenous need and disadvantage in the area; and a
- a cultural flow component to maximise Indigenous engagement in water management.

O'Donnell 2011: 19.

The area of land under Indigenous control in the upper Roper planning area is much greater than in Katherine, where the previous water plan was completed and an SIR first allocated, and so the first point above is considered by local residents to be of crucial importance. That the catchment population is equivalently dominated by Indigenous people only strengthens their view that an increase is justified. The MTOWARG was established and is being constituted as a Prescribed Body Corporate primarily to manage individual licensed allocations from the overall SIR allocation, which is itself an allocation from the overall consumptive pool. This was the basis of the expressed desire to increase the share. However, the comments above were made in the context of a strong focus on the SIR by institutional supporters such as the NLC and NAILSMA, rather than on water planning and management more generally. Indeed in interviews conducted in the first half of 2011 with some research participants involved in the SIR discussions, it was clear that knowledge was quite low about how the SIR articulated with the wider planning process and about the goals of that process. During the field research, this was addressed as often as required at the time as part of a reciprocal information sharing process, and it has subsequently been addressed with further training and education for the MTOWARG members by NAILSMA and the NLC. Nonetheless, it does point to a wider issue, which is the question of the role of Indigenous people in water planning and governance beyond control and distribution of allocations within the SIR. Regardless of its final size and/or how the SIR is calculated, the evidence collected here suggests that the economic outcomes it aims to achieve clearly do not exhaust the full

array of aims, expectations, and needs existing amongst traditional owners. Active participation in managing a sizeable SIR will be essential, but it will not be considered a sufficient outcome by those participating in this study.

The overall effect of this combined series of values, rights, practices and claims is to highlight the multifaceted role for Indigenous water governance with respect to contemporary water planning. It strongly suggests that some form of co-management model which takes a more holistic account of Indigenous involvement is required to meet the challenges of water planning and governance in the upper Roper. Successfully enacting such a model will require capacity building in both Indigenous and non-Indigenous communities. Such capacity building is generally conceptualised in terms of educating Indigenous people about non-Indigenous governance rules and to a lesser extent about educating non-Indigenous people about Indigenous rules and practices. However, the field circumstances in the Roper suggest that capacity building for water planning involves a range of measures. These include: further empirical research and knowledge generation within the non-Indigenous water governance community, particularly focused on adapting the water entitlements framework to meet multiple and diverse Indigenous needs; improved communication and knowledge partnerships between Indigenous people and water planners (Maclean and Robinson 2011); improved communication between Indigenous and non-Indigenous residents of the upper Roper; and the ongoing regeneration, development, and sharing of water knowledge and water governance practices within the Indigenous community.

With regard to water governance within the Indigenous community, one of the most important considerations is how such water management arrangements can be structured. As was noted previously, the current MTOWARG has been primarily and understandably focused on the size and nature of the SIR, but it is conceivable that its role could be expanded to incorporate a broader array of water management interests and tasks. Indeed, it may have been understood by local traditional owners that this was its role when they first nominated representatives for it. If that is the case, then the role of the group with respect to water allocations, interests, and management objectives other than those related to the SIR is even more important to clarify, both with external parties and within the relevant Indigenous communities. A concurrent process is needed to establish how entitlements and allocations related to Indigenous interests are incorporated into plans, and how those allocations are managed by both Indigenous and government parties under the auspices of those plans. These issues were not the primary focus of the work described here, which was oriented to Indigenous water values as expressed in the archival record and in fieldwork interviews, but they are potentially important matters arising from it.

3.3. Wetland and Natural Resource Management

The establishment of the Mangarrayi Rangers as an independent entity early in 2010 following longer term Indigenous participation in Landcare projects reflects the wider sectoral growth in the Indigenous NRM sector. The Mataranka water planning area also incorporates territory managed by the larger and older Jawoyn rangers based in Katherine, but the Mangarrayi rangers are an important new conduit and structure for expressing Indigenous land and water management aspirations in the focal research area around Mataranka and Jilkmingan. There is significant established NRM effort associated with the Elsey National Park. The recently released draft management plan for the park (Parks and Wildlife Service of the Northern Territory 2011) notes or contains:

- Acknowledgment of the traditional ownership of the Yangman and Mangarrayi people
- Discussion of the ongoing use of the park by Indigenous people for subsistence purposes
- the existence of numerous registered sacred sites, unrecorded and/or archaeological sites in the park and the need for their protection
- the aspiration to incorporate Indigenous knowledge and input into park management
- opportunities for Indigenous involvement in content generation and delivery to park visitors
- opportunities for the new Mangarrayi Ranger program to tender for park management contracts, and encouragement for local Indigenous people to nominate for NTPWS training and apprenticeship programs.

However direct involvement from traditional owners in day to day park operations appears to be relatively limited at present, and the plan does not currently contain significant aspirations with respect to joint or co-management arrangements. This means that the Mangarrayi Ranger initiative is a locally important one for direct Indigenous participation in NRM activities.

The Mangarrayi Rangers have been identified by local Indigenous people as the most appropriate contemporary structure for ongoing water and wetland management (I. Rowbottom, Roper River Landcare Group, pers. comm). The Mangarrayi people have already committed to a Caring for Our Country project to generate a wetland management plan, which was motivated by the need to manage wetlands for environmental health, subsistence, and erosion control (I. Rowbottom, Roper River Landcare Group, pers. comm). Whilst responsibility for the SIR currently lies elsewhere, the Mangarrayi Rangers will clearly play an important role in the Indigenous management of crucial wetland zones within the overall planning area. The roles and responsibilities of the respective ranger groups, their articulation with existing governance structures within Indigenous communities, and their articulation groups such as the MTOWARG which have been generated by external requirements are important issues to be considered in water, wetland and wider natural resource management in the area. A full account of these issues is beyond the scope of this report, but the existence of the rangers and their likely role in traditional water management practices suggests that in the upper Roper it will be more important than is usual to ensure that Indigenous NRM organisations have an appropriate place in an overall water management framework.

3.4. Future research

The current report outlines results of the first phase of research in the Roper River catchment as they relate to Indigenous water values. As was indicated in the introduction, the circumstances and timing of the research dictated a stronger than expected focus on archival information, but the strength of the archive about the upper Roper has yielded important research results. Further research and analysis in the second half of 2011 is building on current results. The ongoing research effort includes actions to:

- Undertake preliminary legal, hydrological, and planning analyses of the archival material gathered in order to complete the second report focused on Indigenous water management
- Undertake further field investigations regarding contemporary wetland management and its relationship to historical practices including:
    - The collation and systematisation of remembered knowledge associated with the construction of the traditional weirs
    - Fieldwork about aspirations for ongoing weir construction
    - The investigation of the cultural and ecological significance of riparian vegetation
    - The investigation of the relationship between past and present wetland management objectives
- Continue archival investigations by focusing on the photographic archive of Elsey station and its capacity to inform accounts of local environmental change
- Document additional seasonal and hydrological knowledge to complement existing knowledge generated by other researchers
- Collate research and analysis into forms useful both for local community purposes and for further public dissemination

This report presented preliminary findings and selected matters of relevance to Indigenous water values and water planning as part of an ongoing research process. The report itself provides a basis for further research, and work on the above aims will continue throughout the remainder of 2011 and in the first half of 2012.

4. APPENDICES

4.1. Indigenous water declarations and policies

The following declarations and policies provide context and complementary information to the local accounts of Indigenous water values presented in previous sections. A number of general statements about values and interests in water have been produced in the past ten years, and three of particular relevance are re-produced here. The first is the major international declaration produced at the Third World Water Forum in Kyoto in 2003. The others are recent declarations emerging from events held in northern Australia, the first a meeting of international Indigenous representatives held at Garma in Arnhem Land in 2008, the second a meeting of northern Australian Indigenous representatives at Mary River in 2009. The final document included is the water policy produced by the Indigenous Water Policy Group of the North Australian Indigenous Land and Sea Management Alliance. These represent progress from the oldest to the most recent, but also increasing refinement of values, goals and objectives as well as an increasing emphasis on Indigenous Australians.

4.1.1. Indigenous peoples Kyoto water declaration, Japan 2003

Relationship to Water

1. We, the Indigenous Peoples from all parts of the world assembled here, reaffirm our relationship to Mother Earth and responsibility to future generations to raise our voices in solidarity to speak for the protection of water. We were placed in a sacred manner on this earth, each in our own sacred and traditional lands and territories to care for all of creation and to care for water.

2. We recognize, honour and respect water as sacred and sustaining all life. Our traditional knowledge, laws and ways of life teach us to be responsible in caring for this sacred gift that connects all life.

3. Our relationship with our lands, territories and water is the fundamental physical cultural and spiritual basis for our existence. This relationship to our Mother Earth requires us to conserve our freshwaters and oceans for the survival of present and future generations. We assert our role as caretakers with rights and responsibilities to defend and ensure the protection, availability and purity of water. We stand united to follow and implement our knowledge and traditional laws and exercise our right of self-determination to preserve water, and to preserve life.

Conditions of Our Waters

4. The ecosystems of the world have been compounding in change and in crisis. In our generation we see that our waters are being polluted with chemicals, pesticides, sewage, disease, radioactive contamination and ocean dumping from mining to shipping wastes. We see our waters being depleted or converted into destructive uses through the diversion and damming of water systems, mining and mineral extraction, mining of groundwater and aquifer for industrial and commercial purposes, and unsustainable economic, resource and recreational development, as well as the transformation of excessive amounts of water into

energy. In the tropical southern and northern forest regions, deforestation has resulted in soil erosion and thermal contamination of our water.

5. The burning of oil, gas, and coal, known collectively as fossil fuels, is the primary source of human-induced climate change. Climate change, if not halted, will result in increased frequency and severity of storms, floods, drought and water shortage. Globally, climate change is worsening desertification. It is polluting and drying up the subterranean and water sources, and is causing the extinction of precious flora and fauna. Many countries in Africa have been suffering from unprecedented droughts.When the terms territory, land and water are used, it is inclusive of all life such as forests, grasslands, sea life, habitat, fish and other biodiversity. The most vulnerable communities to climate change are Indigenous Peoples and impoverished local communities occupying marginal rural and urban environments. Small island communities are threatened with becoming submerged by rising oceans.

6. We see our waters increasingly governed by imposed economic, foreign and colonial domination, as well as trade agreements and commercial practices that disconnect us as peoples from the ecosystem. Water is being treated as a commodity and as a property interest that can be bought, sold and traded in global and domestic market-based systems. These imposed and inhumane practices do not respect that all life is sacred, that water is sacred.

7. When water is disrespected, misused and poorly managed, we see the life threatening impacts on all of creation. We know that our right of self-determination and sovereignty, our traditional knowledge, and practices to protect the water are being disregarded, violated and disrespected.

8. Throughout Indigenous territories worldwide, we witness the increasing pollution and scarcity of fresh waters and the lack of access that we and other life forms such as the land, forests, animals, birds, plants, marine life, and air have to our waters, including oceans. In these times of scarcity, we see governments creating commercial interests in water that lead to inequities in distribution and prevent our access to the life giving nature of water.

Right to Water and Self Determination

9. We Indigenous Peoples have the right to self-determination. By virtue of that right we have the right to freely exercise full authority and control of our natural resources including water. We also refer to our right of permanent sovereignty over our natural resources, including water.

10. Self-determination for Indigenous Peoples includes the right to control our institutions, territories, resources, social orders, and cultures without external domination or interference.

11. Self-determination includes the practice of our cultural and spiritual relationships with water, and the exercise of authority to govern, use, manage, regulate, recover, conserve, enhance and renew our water sources, without interference.

12. International law recognizes the rights of Indigenous Peoples to:

- Self-determination
- Ownership, control and management of our traditional territories, lands and natural resources
- Exercise our customary law

- Represent ourselves through our own institutions
- Require free prior and informed consent to developments on our land
- Control and share in the benefits of the use of, our traditional knowledge.

13. Member States of the United Nations and international trade organizations, international and regional financial institutions and international agencies of economic cooperation are legally and morally obligated to respect and observe these and other related collective human rights and fundamental freedoms. Despite international and universal recognition of our role as caretakers of Mother Earth, our rights to recover, administer, protect and develop our territories, natural resources and water systems are systematically denied and misrepresented by governmental and international and domestic commercial interests. Our rights to conserve, recreate and transmit the totality of our cultural heritage to future generations, our human right to exist as Peoples is increasingly and alarmingly restricted, unduly impaired or totally denied.

14. Indigenous Peoples interests on water and customary uses must be recognized by governments, ensuring that Indigenous rights are enshrined in national legislation and policy. Such rights cover both water quantity and quality and extend to water as part of a healthy environment and to its cultural and spiritual values. Indigenous interests and rights must be respected by international agreements on trade and investment, and all plans for new water uses and allocations.

Traditional Knowledge

15. Our traditional practices are dynamically regulated systems. They are based on natural and spiritual laws, ensuring sustainable use through traditional resource conservation. Long-tenured and place-based traditional knowledge of the environment is extremely valuable, and has been proven to be valid and effective. Our traditional knowledge developed over the millennia should not be compromised by an over-reliance on relatively recent and narrowly defined western reductionist scientific methods and standards. We support the implementation of strong measures to allow the full and equal participation of Indigenous Peoples to share our experiences, knowledge and concerns. The indiscriminate and narrow application of modern scientific tools and technologies has contributed to the loss and degradation of water.

Consultation

16. To recover and retain our connection to our waters, we have the right to make decisions about waters at all levels. Governments, corporations and intergovernmental organizations must, under international human rights standards require Indigenous Peoples free prior and informed consent and consultation by cultural appropriate means in all decision-making activities and all matters that may have affect. These consultations must be carried out with deep mutual respect, meaning there must be no fraud, manipulation, and duress nor guarantee that agreement will be reached on the specific project or measure. Consultations include:

a). To conduct the consultations under the communities own systems and mechanisms;

b). The means of Indigenous Peoples to fully participate in such consultations

c). Indigenous Peoples exercise of both their local and traditional decision making processes, including the direct participation of their spiritual and ceremonial authorities, individual members and community authorities as well as traditional practitioners of subsistence and

cultural ways in the consultation process and the expression of consent for the particular project or measure.
d). Respect for the right to say no.
e(. Ethical guidelines for a transparent and specific outcome.

Plan of Action

17. We endorse and reiterate the Kimberley Declaration and the Indigenous Peoples Plan of Implementation on Sustainable Development which was agreed upon in Johannesburg during the World Summit on Sustainable Development in September 2002.
18. We resolve to sustain our ancestral and historical relationships with and assert our inherent and inalienable rights to our lands and waters.
19. We resolve to maintain, strengthen and support Indigenous Peoples. movements, struggles and campaigns on water and enhance the role of Indigenous elders, women and youth to protect water.
20. We seek to establish a Working Group of Indigenous Peoples on Water, which will facilitate linkages between Indigenous Peoples and provide technical and legal assistance to Indigenous communities who need such support in their struggles for the right to land and water. We will encourage the creation of similar working groups at the local, national and regional levels.
21. We challenge the dominant paradigm, policies, and programs on water development, which includes among others; government ownership of water, construction of large water infrastructures; corporatization; the privatization and commodification of water; the use of water as a tradeable commodity; and the liberalization of trade in water services, which do not recognize the rights of Indigenous Peoples to water.
22. We strongly support the recommendations of the World Commission on Dams (WCD) on water and energy development. These include the WCD report's core values, strategic priorities, the 'rights and risks framework' and the use of multi-criteria assessment tools for strategic options assessment and project selection. Its rights based development framework, including the recognition of the rights of Indigenous Peoples in water development is a major contribution to decision-making frameworks for sustainable development.
23. We call on the governments, multilateral organizations, academic institutions and think tanks to stop promoting and subsidizing the institutionalization and implementation of these anti-people and anti-nature policies and programs.
24. We demand a stop to mining, logging, energy and tourism projects that drain and pollute our waters and territories.
25. We demand that the World Bank, the International Monetary Fund (IMF), regional banks like the Asian Development Bank, African Development Bank, Inter-American Development Bank, stop the imposition of water privatization or full cost recovery as a condition for new loans and renewal of loans of developing countries.
26. We ask the European Union to stop championing the liberalization of water services in the General Agreement on Services (GATS) of the World Trade Organization (WTO). This is not consistent with the European Commission's policy on Indigenous Peoples and development. We will not support any policy or proposal coming from the WTO or regional trade agreements like the NAFTA (North American Free Trade Agreement, Free Trade Area of the Americas (FTAA), on water privatization and liberalization and we commit ourselves to fight against such agreements and proposals.
27. We resolve to replicate and transfer our traditional knowledge and practices on the sustainable use of water to our children and the future generations.

28. We encourage the broader society to support and learn from our water management practices for the sake of the conservation of water all over the world.
29. We call on the States to comply with their human rights obligations and commitments to legally binding international instruments to which they are signatories to, including but not limited to, such as the Covenant on Civil and Political Rights, the Covenant on Economic, Cultural and Social Rights, International Convention on the Elimination of all Forms of Racial Discrimination; as well as their obligations to conventions on the environment, such as the Convention on Biological Diversity, Climate Convention, and Convention to Combat Desertification.
30. We insist that the human rights obligations of States must be complied with and respected by their international trade organizations. These legally binding human rights and environmental obligations do not stop at the door of the WTO and other regional and bilateral trade agreements.
31. We resolve to use all political, technical and legal mechanisms on the domestic and international level, so that the States, as well as transnational corporations and international financial institutions will be held accountable for their actions or inactions that threaten the integrity of water, our land and our peoples.
32. We call on the States to respect the spirit of Article 8j of the Convention on Biological Diversity as it relates to the conservation of traditional knowledge on conservation of ecosystems and we demand that the Trade Related Aspects of the Intellectual Property Rights (TRIPS) Agreement be taken out of the World Trade Organization (WTO) Agreements as this violates our right to our traditional knowledge.
33. We call upon the States to fulfi the mandates of the United Nations Framework Convention on Climate Change (UNFCCC) and to ratify the Kyoto Protocol. We call for the end of State financial subsidies to fossil fuel production and processing and for aggressive reduction of greenhouse gas emissions calling attention to the United Nations Intergovernmental Panel on Climate Change (IPCC) that reported an immediate 60% reduction of CO2 is needed to stabilize global warming.
34. We will ensure that international and domestic systems of restoration and compensation be put in place to restore the integrity of water and ecosystems.

4.1.2. Garma international Indigenous water declaration- August 2008

Declaration Preamble

Context

Recognising and reaffirming that the Indigenous peoples of the World are and have been since time immemorial sovereign over their own lands and waters and that Indigenous peoples obtain their spiritual and cultural identity, life and livelihood from their lands and waters.
We assert that water has a right to be recognised as an ecological entity, a being with a spirit and must be treated accordingly. For the Indigenous peoples water is essential to creation; Ancestral beings are created by and dwell within water.
We do not believe that water should solely be treated as a resource or a commodity.
Nation States, in asserting competing sovereignty over the lands and waters, have introduced and enforced unlawful and unjust mechanisms resulting in trespass of the legal entitlements of Indigenous Peoples to the ownership, use, management and benefit of the

lands and the waters, without consultation, consent or just compensation where required by law.
Furthermore Nation States have grossly mismanaged the lands and waters of Indigenous peoples, causing ecosystem collapse, human induced climate change, severe water quality degradation, extreme stress upon ecologies and species extinction at a scale and rate which is unprecedented; and
Gross mismanagement of the lands and waters and denial of access of Indigenous Peoples to their lands and waters has caused severe, widespread and on going detrimental impacts to all aspects of the lives and livelihoods of Indigenous Peoples. This includes significant disadvantages to the health, economy and social well being of many Indigenous Peoples. Cultural and linguistic diversity has also been compromised, leading to loss of culture and lifeways of Indigenous Peoples. A contributing factor is the concomitant degradation and expropriation by Nation States of significant landscapes and sites of spiritual and cultural importance to Indigenous Peoples.
Indigenous Peoples have responsibilities and obligations in accordance with their Indigenous Laws, Traditions, Protocols and Customs to protect, conserve and maintain the environment and ecosystems in their natural state so as to ensure the sustainability of the whole environment.

Acknowledgements
We acknowledge our ancestors and Elders who have honoured and maintained the land and waters to the highest standards.
We acknowledge the work of past Indigenous Peoples in drafting and implementing international instruments and customary international law that informs our work towards justice.

The Declaration
We the Indigenous Peoples of the World declare that:
Water is not a commodity. Water is a spirit that has a right to be treated as an ecological entity, with its own inherent right to exist.

We further declare that:
Indigenous Peoples of many Indigenous Nations have inherent aboriginal, treaty and other rights to water and waterways for navigation, customary and cultural uses of water.
Have inherent and human rights to water for basic human needs, sanitation, social, economic and cultural purposes.
Have a right to access adequate supplies of water that are safe for human consumption, hygiene and cooking.
Must be fully involved in source water and water shed protection planning and operational processes including controlling Indigenous water licenses and fair allocation policies and practices; and
Have a right to access and control, regulate and use water for navigation, irrigation, harvesting, transportation and other beneficial purposes.

Indigenous Peoples also declare that States must:

- Fully adopt, implement and adhere to those international instruments that recognise the rights of Indigenous peoples and our right to land and water. These include but are not limited to the:

International Convention on the Elimination of All Forms of Racial Discrimination 1965 (CERD);
World Heritage Convention 1972;
International Covenant on Cultural, Economic and Social Rights;
International Labour Organisation Convention 169;
Rio Earth Summit Declaration;
Palenque Declaration;
Kyoto Water Declaration;
Ramstad Convention;
Convention on Biological Diversity 1992;
United Nations Declaration on the Rights of Indigenous Peoples, specifically Articles 8, 20, 24, 25, 26, 27, 28, 29, 31 and 32;
International Covenant of Political and Civil Rights;
UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005);
UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001);
UNESCO Convention on the Safeguarding of Intangible Cultural Heritage (2003);

- recognise that all traditional Intellectual Knowledge and interpretation of the knowledge is the property of the Indigenous peoples and knowledge holder(s);
- fully engage with Indigenous peoples and obtain their free prior and informed consent on matters affecting them. States shall engage with the Indigenous Peoples delegated representatives in accordance with Article 19 of the United Nations Declaration of the Rights of Indigenous Peoples, and
- continue adoption of major cuts to greenhouse gas emissions to combat human induced Climate Change, as well as other harmful compounds and chemicals that cause pollution of water sources.

4.1.3. Mary River statement- August 2009

The following is the formal statement generated from the Mary River Indigenous Water Experts Forum. For the full statement, including underlying principles and practical recommendations, see:
http://www.nailsma.org.au/nailsma/forum/downloads/NAILSMA_Mary-River-Statement_Web.pdf

Mary River Statement, 6th August 2009

We the delegates of the Mary River Water Forum make this statement to bring to the attention of the Australian Government the fundamental principle that water, land and Indigenous people are intrinsically entwined. Indigenous Peoples have rights, responsibilities and obligations in accordance with their customary laws, traditions, protocols and customs to protect, conserve and maintain the environment and ecosystems in their natural state so as to ensure the sustainability of the whole environment. Consideration by the Australian Government to separate land and water in future policy development for Northern Australia and establish a new regime for the allocation and use of water is of critical concern to us. As traditional owners we have an inherent right to make decisions about cultural and natural resource management in Northern Australia. In accordance with Article 19 of the United

Nations Declaration on the Rights of Indigenous Peoples we must have a central role in the development, implementation and evaluation of policy and legislative or administrative measures that may affect us concerning water. Any policies and legislation that are developed in water allocation and management in North Australia needs to ensure that Indigenous rights are paramount.

In accordance with Article 26 of the United Nations Declaration on the Rights of Indigenous Peoples we assert that:

We, the Indigenous peoples, have the right to the lands, territories and resources which we have traditionally owned, occupied or otherwise used or acquired.

We the Indigenous peoples, have the right to own, use, develop and control the lands, territories and resources that we possess by reason of traditional ownership or other traditional occupation or use, as well as those which we have otherwise acquired.

States shall give legal recognition and protection to these lands, territories and resources. Such recognition shall be conducted with due respect to the customs, traditional and land tenure systems of the indigenous peoples concerned.

We further assert that in accordance with Article 32 of the United Nations Declaration on the Rights of Indigenous Peoples, that:

We the Indigenous peoples, have the right to determine and develop priorities and strategies for the development or use of our lands or territories and other resources.

States shall consult through our representative institutions in order to obtain our free and informed consent prior to the approval of any project affecting our lands or territories and other resources, particularly in connection with the development, utilisation or exploitation of mineral, water or other resources.

States shall provide effective mechanisms for just and fair redress for any such activities, and appropriate measures shall be taken to mitigate adverse environmental, economic, social, cultural or spiritual impact.

Indigenous peoples have always been part of and are crucial to the maintenance of our ecosystems and therefore want to ensure minimal impact from settlement and unsustainable development across Northern Australia. We urge the government to ensure that sufficient resources are provided to enable the equitable participation of the Indigenous owners of Northern Australia in the development of policies, setting of allocations and management of regulatory schemes that may evolve. We the Indigenous peoples of Northern Australia will work with the Government to establish what water entitlement and allocation is required to satisfy our:

(i) social and cultural;
(ii) ecological; and
(iii) economic needs.

The delegates of this forum support the North Australian Indigenous Land Sea Management Alliance, Indigenous Water Policy Group, representative bodies or individuals to proactively pursue positive outcomes in line with this Mary River Forum Statement. Two nominations of people from each State/Territory from the North Australian Indigenous Experts Water Futures forum are provided below to support NAILSMA and representative bodies in advocating this Statement.

Queensland - Ron Archer, Marceil Lawrence
Western Australia- Anne Poelina, Andrew Wungundin
Northern Territory- John Christophersen, Mona Liddy

Context of this statement

In August 2009, about 80 Indigenous experts from northern Australia convened at Mary River Park in the Northern Territory to discuss and present to the Northern Land and Water Taskforce their water interests and issues. Convened by the North Australian Indigenous Land and Sea Management Alliance, the 'North Australian Indigenous Experts Water Futures Forum' provided an opportunity to raise ideas and concerns about economic development and opportunities; the potential impacts of developments in the north of Australia; and governance and institutional arrangements as they affect Indigenous community interests, aspirations and issues. As outcome to that forum, the Mary River Statement was written. The Statement offers testament to the seriousness of Indigenous peoples contribution and participation in policy decision making. It is also sends a message that Indigenous people can not remain on the margins of discussions about development in the north.

A policy statement on North Australian Indigenous water rights.
Issued by the North Australian Indigenous Land and Sea Management Alliance and the Indigenous Water Policy Group, November 2009.

Introduction

As traditional owners we have an inherent right to make decisions about cultural and natural resource management in Northern Australia. In accordance with Article 19 of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), we must have a central role in the development, implementation and evaluation of policy and legislative or administrative measures that may affect us concerning water.

This Policy Statement should be seen in the context of the following assumptions:
a) Water is a limited resource and in some catchments the appropriateness of the division of water use into consumptive and environmental allocations remains unclear. While the Indigenous Water Policy Group position claims a guarantee of an equitable allocation to Indigenous peoples from the consumptive pool, such a rights-based claim is made on the assumption that environmental and cultural flows are properly assessed and protected.
b) Indigenous knowledge is integral for any decision making (in accordance with Article 31 UNDRIP).
c) Indigenous people do not wish to exacerbate avoidable environmental degradation associated with over-allocation of water and therefore believe that water allocations should be based on the best available knowledge (including traditional and contemporary Indigenous knowledge and western scientific knowledge), sensitive to variations in the flow regime and open to review and adaptation.
d) Maintaining water flows is fundamental to ensuring the vitality and existence of Indigenous heritage and spirituality.
e) Water, land and Indigenous people are intrinsically entwined. (Mary River Statement, August 2009.)

Recognition and reaffirmation

The NAILSMA Indigenous Water Policy Group (IWPG) maintains, in accordance with Article 19 of the UNDRIP that:
'states shall consult and cooperate in good faith with the Indigenous people concerned through their own representative institutions, in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them'.

The IWPG expects the Australian Government to be responsive to the rights of Indigenous peoples in accordance with the United Nations Declaration, specifically:
- to maintain and strengthen their spiritual relationship with their traditionally owned territories and waters (Article 25); and,
- to approve the commercial use and development of water on their traditional territories. (Article 32.2)

The Australian Government indicated its formal support for the UNDRIP in April 2009. Preceding this, the Commonwealth, State and Territory governments of Australia committed to policies to 'close the gap' in socio-economic status between Indigenous peoples and the broader community.

The IWPG states that recognising and enhancing Indigenous cultural and commercial rights in the ownership, management and use of water is fundamental to facilitating Indigenous economic development and reducing Indigenous disadvantage.

A Policy Statement on North Australian Indigenous Water Rights
The recognition of native title in Australia has been a significant advance in the position of Indigenous peoples. Indigenous rights to land and waters are recognised within the Native Title Act (1993). The non-discriminatory protection of native title is a recognised human right. It is therefore important to Indigenous peoples to build upon the rights recognised under the Native Title Act to ensure all Indigenous peoples can benefit from the commercial use of waters on their traditional lands. Furthermore, Indigenous people are ready to engage and contribute to the Council of Australian Governments (COAG) water policies and the National Water Initiative (NWI). The NWI requires significant improvement with respect to the recognition of Indigenous rights and interests.

The Garma International Indigenous Water Declaration (2008) acknowledges that water is essential for life and that access to clean water is a human right. First Nation peoples, the Indigenous people of Australia, have maintained sovereignty over their lands and waters from which they obtain their spiritual and cultural identity, life and livelihoods.

The IWPG maintains in accordance with the Mary River Statement (2009) that the Indigenous peoples of northern Australia are the traditional owners and custodians of the land and waters of the region. Water land and Indigenous people are intrinsically entwined.

The IWPG advocates for the recognition of Indigenous rights to the ownership, management and use of waters for both customary and commercial purposes. Its advocacy for commercial rights is a pragmatic response to the COAG Water Reform Agenda, specifically the NWI, and the sudden pace of development in the north of Australia.

The Indigenous Water Policy Group
The IWPG is an initiative created and facilitated by NAILSMA. Its members represent some Indigenous land councils and corporations across north Australia and other Indigenous institutions and community groups. (For more details go to www.nailsma.org.au)
Formed in 2006, it is the only construct in the north of Australia examining Indigenous water policy and coordinating across state and territory jurisdictions. The IWPG continues the work of the Lingiari Reports (2002) to address Indigenous rights, responsibilities and interests in

water. The IWPG aims to improve people's awareness about government water reform agendas and to engage in research relating to Indigenous rights, responsibilities and interests in land and water resources.
The IWPG is one of three initiatives of the NAILSMA Indigenous Water Resource Program. The IWPG works in parallel with the Indigenous Community Water Facilitator Program, which supports regionally based Indigenous engagement and research in water policy and management. The IWPG also works with Tropical Rivers and Coastal Knowledge (TRaCK) through its Theme 6 on Sustainable Enterprises, which examines water markets and rights relating to Indigenous interests.

4.2. Informed Consent Form and Research Information Sheet

4.2.1. Consent Form

Indigenous Water Knowledge and Water Planning in Mataranka and the Upper Roper River

PRINCIPAL INVESTIGATORS Dr Marcus Barber
Tropical and Arid Ecosystems, CSIRO, Darwin
PROJECT TITLE: Indigenous water knowledge and water planning at Mataranka
CONTACT DETAILS *Marcus Barber: 08 8944 8420 (w) 0407 867 445 (m)*
Marcus.Barber@csiro.au

The person signing this form is showing that they give their permission to take part in the CSIRO research project about Indigenous water values and interests in Mataranka and the upper Roper. The Northern Territory government is developing a Water Allocation Plan for the Mataranka area. This process will decide how water is shared between the environment and different human uses, including drinking water, farming, and businesses. The CSIRO is a research organisation and it has staff in Darwin who do research across Australia about Indigenous peoples' knowledge, values, and interests in water. The research helps Indigenous people communicate how water is important to them, and helps water planners and the general community better understand Indigenous water interests. Recording Indigenous water and seasonal knowledge also helps secure that knowledge for Indigenous communities to share with future generations.

The CSIRO has made an agreement with the Northern Land Council and with Indigenous people from the area to do research on Indigenous water and seasonal knowledge. This will help with the Northern Territory Government's water planning process, but the research can be broader than just what is required for water planning. Indigenous people from the area can decide what kind of knowledge needs to be recorded, what the important areas are to talk about, and how that knowledge will be used. The CSIRO has Marcus permission to do this research. If you sign this form it shows that you have given your permission for Marcus to speak to you and that he can use what you say in reports, community resources, and research articles.

The aims of this study have been clearly explained to me and I understand what is wanted of me. I understand that it is my choice to take part and that I can stop at any time. I understand that any information I give will not be shared without my permission.

Name: *(printed)*	
Signature:	**Date:**

We may want to identify you as the source of some information you give, particularly if it is unusual or important. If you give us permission for your name to be written down, tick the box below marked 'Yes'. If you do not want your name recorded in public documents, tick the box marked 'No'. This permission can be changed at any time prior to final publication.

Yes, I give permission for my name to be recorded in the report.	
No, I do not want my name recorded next to my comments.	

4.2.2. Research Information Sheet (text-only version)

Indigenous Water Knowledge and Water Planning in Mataranka and the Upper Roper River

Aboriginal people have lived on the country for many thousands of years and through that time have developed knowledge of the water cycles, seasons, plants and animals. The Northern Territory is continuing to develop and there is more pressure on the country as the number of people and businesses keeps growing. Water is one important area where this development pressure is happening and so better management of water will be needed in the future. The Northern Territory government is developing a Water Allocation Plan for the Mataranka area. This process will decide how water is shared between the environment and different human uses, including drinking water, farming, and businesses.

The CSIRO is a research organisation funded by the Federal government. It has staff in Darwin who do research across Australia about Indigenous peoples' knowledge, values, and interests in water. These staff work in the Daly River, in the Kimberley, in Cape York, in the Murray-Darling Basin and in the Pilbara. The research helps Indigenous people communicate how water is important to them, and helps water planners and the general community better understand Indigenous water interests. Recording Indigenous water and seasonal knowledge also helps secure that knowledge for Indigenous communities to share with future generations.

The CSIRO has made an agreement with the Northern Land Council and with Indigenous people from the Mataranka water planning area to do research on Indigenous water and seasonal knowledge. This process began last year but has been delayed, and so the researchers are starting work this year. The main CSIRO researchers for this project are Dr Marcus Barber and Dr Sue Jackson, and Marcus will do most of the fieldwork. Their research will focus on the area around Elsey station and Elsey national park and so they plan to work with the Mangarrayi rangers and perhaps with staff at Jilkmingan school. But they are also interested in hearing about important water places and about seasonal and water knowledge across the whole Mataranka planning area. This is because they will also be writing a report for government and communities about Indigenous water knowledge to help provide information to make decisions in the Mataranka area. Marcus wants to talk to traditional owners in the area, but also to Indigenous people from elsewhere who have lived in the area for a long time and know it well. Research participants will decide what the important areas are to talk about and what kind of knowledge needs to be recorded. Marcus would like to ask questions like:

- What is the rainfall like in this area? Where does the water for the area come from?
- Have some places always had water?
- Have wetlands, springs and river country changed?
- How have people used this country in the past?
- Has this changed? What are the places that people visit really often and what activities happen there?
- Are there important places that need protection under the new water plan?

- Are there stories about water – creeks, billabongs, water under the ground, springs – that could help non-Indigenous people like scientists and water planners make a better water plan?

Marcus can come and meet people where they live or work, but would also like to visit water places with people so that they can see the country and better understand what is being said about it. Marcus and Sue have already spoken to some people at the NLC meeting in May 2010 and in preliminary visits to Jilkmingan. Marcus and Sue are looking forward to meeting other people interested in this research during interviews and meetings in 2011.

For further information:

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