National Research FLAGSHIPS
Water for a Healthy Country

CSIRO

www.csiro.au

INDIGENOUS WATER MANAGEMENT AND WATER PLANNING IN THE UPPER ROPER RIVER, NORTHERN TERRITORY: HISTORY AND IMPLICATIONS FOR CONTEMPORARY WATER PLANNING

Marcus Barber and Sue Jackson

April 2012

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

Australia is founding its future on science and innovation. Its national science agency, CSIRO, is a powerhouse of ideas, technologies and skills.

CSIRO initiated the National Research Flagships to address Australia's major research challenges and opportunities. They apply large scale, long term, multidisciplinary science and aim for widespread adoption of solutions. The Flagship Collaboration Fund supports the best and brightest researchers to address these complex challenges through partnerships between CSIRO, universities, research agencies and industry.

The Water for a Healthy Country Flagship aims to provide Australia with solutions for water resource management, creating economic gains of $3 billion per annum by 2030, while protecting or restoring our major water ecosystems. The work contained in this report is collaboration between CSIRO, the National Water Commission, and the Department of Sustainability, Environment, Water, Population and Communities.

For more information about Water for a Healthy Country Flagship or the National Research Flagship Initiative visit www.csiro.au/org/HealthyCountry.html

Citation: Barber, M. and Jackson, S. 2012. Indigenous water management in the upper Roper River, Northern Territory: history and implications for contemporary water planning. CSIRO, Darwin.

ISBN: 978-0-643-10824-0

This report was jointly funded and published by the National Water Commission and the Department of Sustainability, Environment, Water, Population and Communities. The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Australian Government or the Minister for Sustainability, Environment, Water, Population and Communities. While reasonable efforts have been made to ensure that the contents of this publication are factually correct, the Commonwealth does not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this publication.

Enquiries:

Dr Marcus Barber
CSIRO Ecosystem Sciences
PMB 44 Winnellie NT 0822
Phone: 08 8944 8420
Email: Marcus.Barber@csiro.au

Cover Photograph: Downstream view of traditional paperbark and bush timber weir, 16/10/1938. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection. (Image cropped for cover placement)

CONTENTS

FIGURES

ACKNOWLEDGMENTS

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. It also drew significantly on internal resources provided by the Water for a Healthy Country Flagship of the CSIRO. 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 was also an important context for the work.

The authors wish to acknowledge the assistance of all of the Indigenous research participants in this study who made the field research possible. We would also like to thank Michael Storrs and Murray Radcliffe from the National Water Commission; Cameron Colebatch and Bonnie Learmonth of the Department of Sustainability, Water, Population and Communities; Kirsty Howey and Ron Levy from the Northern Land Council; Helena Lardy at Jilkmingan community; Ian Rowbottom at Roper River Landcare Group; Hamish MacFarlane; Max Gorringe (formerly of Elsey Station, now Roper River Landcare Group); Chloe Gibbon and Mitchell Proudfoot (CSIRO volunteers); Francesca Merlan (ANU); Emily Prichard (NTAS); George Main (NMA); John Pini (NT Police Museum and Historical Society); Museum Victoria; Heinz Buettikofer (CSIRO); Brendan Dimech (formerly of NRETAS); Stuart Bunn (Griffith University); and Anna Boustead, Lorrae McArthur and Joe Morrison (NAILSMA). Reviewer's comments provided by Jon Altman (ANU) greatly assisted the concluding phase of the report's production and further recognition of its potential.

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 Assessment

NLC – Northern Land Council

NMA – National Museum of Australia

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

NTAS – Northern Territory Archives Service

NTPWS – Northern Territory Parks and Wildlife Service

NWC – National Water Commission

SIR – Strategic Indigenous Reserve

EXECUTIVE SUMMARY

This report contains the preliminary results from archival and field research about Indigenous water management and its implications for water planning in the upper Roper River, Northern Territory. The research for this report was conducted from 2010 to 2012, and it complements an earlier report (Barber and Jackson 2011a) exploring Indigenous water values and water planning issues from the same area. In particular, this report on water management focuses on the historical evidence for the traditional Indigenous practice of building temporary weirs[1] from logs and paperbark at certain locations in the braided sections of the Roper River. It also considers their contemporary implications for water planning.

First documented by pastoralists early in the 20th century (Gunn 1908), these weir structures encouraged water retention in swamps and billabongs lying upstream from the weir during the water-scarce late dry season. This increased the size and duration of available wetland habitat for key food species including fish, birds, reptiles and aquatic plants. During the pastoral era, Indigenous weir building adjacent to what was known as Red Lily Lagoon was encouraged and apparently amplified by the owners and managers of Elsey Station on the Roper River. This was because it directed water to areas from which cattle were easily able to drink, preventing them from getting bogged in swamps and dying of exhaustion and starvation. However in 1946 the practice was legally challenged in the Supreme Court by the owner and manager of the Roper Valley Station, which lay downstream from Elsey Station. The challenge was successful, leading to a court-ordered ban on further weir building. However knowledge of the practice and its utility was retained amongst the Indigenous population of the area, and despite the ban, weirs continued to be cooperatively built by Indigenous cattle workers and pastoralists on the adjacent Moroak Station from the early 1950s to the 1980s. In 2010, the technique was revived again on Elsey by local Mangarrayi elders and land managers for a new purpose and in another location. In this instance, it was intended to address problems with erosion mitigation, drying swamps and rapidly diminishing water flows to downstream stations (including Moroak) due to significant recent changes in channel flow.

The management context for the most recent weir building activity is the creation of the Mangarrayi Rangers, which has provided a structure, logistical support and resources through which wetland restoration and wider land management aspirations on Elsey Station can be more easily carried out. Mangarrayi people based at Jilkmingan are developing a wetland management plan for the Elsey Station area, and aspire to include traditional water knowledge and techniques as part of their planning regime and management actions. This raises the question of the rights and responsibilities of local Indigenous landowners with respect to the water regime and water management, and the resources available to them in the exercise of those rights and responsibilities.

An additional contextual element in this research was that it coincided with the first water planning process for groundwater resources in the Upper Roper River (Department of Natural Resources 2009b; Department of Natural Resources 2011). This was undertaken by the Northern Territory Government's water agency, the Department of Natural Resources, Environment, the Arts and Sport (NRETAS). Indigenous people are the major proportion of the population of the upper Roper River and own the majority of the land under various forms of tenure. Therefore an important part of the planning process was Indigenous consultation, leading to the establishment by the Northern Land Council (NLC) and the North Australian

[1] The obstructions at Red Lily are most commonly referred to as 'dams' in the material presented here. However, as will become clear from that material, the term 'weir' is probably more accurate, as the obstructions allowed water to flow through, over, and in some cases around them. 'Weir' will generally be preferred when referring to the practice in general , but both words will be used interchangeably at times, particularly in relation to the 1946 case when they were described almost exclusively as dams.

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). To this point the main focus of this group, known as the Mataranka Traditional Owner Water Allocation Reference Group (MTOWARG), has been the amount of the allocation from the consumptive pool for a Strategic Indigenous Reserve (SIR) and to a lesser extent the management regime associated with that allocation (Nikolakis 2011; Barber and Jackson 2011a).

The findings of the research reported here suggest that some additional questions are important to consider. These can be summarised as:

1) How do local Indigenous water planning, restoration and management articulate with broader government-driven water planning consultation processes?
2) What are the implications of the Indigenous weirs for contemporary water planning categories?

As they are intended to create areas of shallow standing water, evaporation from such areas would suggest that, at least in principle, such weirs are an important example of a traditional consumptive use. This undermines a common assumption reported in Finn and Jackson (2011) that Indigenous interests are capable of being addressed simply by determining an appropriate environmental flow allocation (i.e. a non-consumptive allocation). Although the weirs represent a manipulation of surface water, the (dry season) low flow regime in the Upper Roper is driven almost entirely by groundwater sources, and Indigenous research participants contributing to this project do not recognise a major distinction between groundwater and surface water. Therefore the question of the weirs, and of Indigenous water and wetland management aspirations generally, has a direct bearing on groundwater allocations in the catchment. These allocations are in the process of being determined for the first time and regulated under a water allocation plan for the Tindall Aquifer (Mataranka) (Department of Natural Resources 2009a). Nonetheless, the recognition of Indigenous customary water use and management in water planning is an objective of current national water policy (Jackson, Tan et al. 2012) and therefore warrants consideration in the allocation and planning processes underway in the Roper catchment.

As with the first report (Barber and Jackson 2011a), this report is based on archival sources, field observations, and interviews. Recommendations about important people to approach for interview were received from a range of sources, including a list of senior owners provided by the Northern Land Council (NLC) and individual recommendations from initial interviewees. In total, 19 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 a former pastoralist, Landcare and Mangarrayi Ranger staff, researchers familiar with the area, NLC staff, and Northern Territory Government staff with responsibilities for water planning and/or conservation.

The report concludes by summarising the wider research findings, noting some potential legal, planning, and governance implications of the weirs and making some recommendations for future action. These recommendations are:

1) That the legal position with respect to Indigenous weir construction be investigated, clarified, and if necessary, advocated as per the mandate of national water policy.
2) That relevant government staff and agencies consider how to incorporate weir building and customary wetland management into water planning.

3) That local Indigenous people, NRETAS and relevant representative organisations consider appropriate Indigenous governance arrangements for local Indigenous consumptive uses in the context of a wider catchment level representative group.
4) That NRM and water management funding bodies ensure adequate resourcing for Indigenous capacity building in the upper Roper, both at the general skills level and with respect to specific water and wetland management projects.
5) That relevant governments and agencies undertake further investigation of the substantial changes in erosion, river channel heights, and flow directions observed by local research participants in the past few years with a view to determining causes and supporting actions to mitigate significant negative effects.

1. INTRODUCTION

1.1. Background

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; Jackson, Finn et al. 2011; Woodward, Jackson et al. 2012).

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). 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; National Water Commission 2011; Jackson, Tan et al. 2012). 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, trading, provision of environmental water and catchment management (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 as well as its own intrinsic value, this knowledge can be valuable in understanding environmental change and adapting to environmental pressures. The initiatives under discussion 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 to 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, and supported by the Water for a Healthy Country Flagship of the CSIRO. 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 (Department of Natural Resources 2011), 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 ongoing planning process in the Roper River. It does this by informing government and the wider community about the nature and extent of Indigenous water management in the area and by helping Indigenous people understand and participate in the water planning process.

1.2. Report structure

This report has five main sections. This introductory section describes the background, aims, study area context, information sources and methods applied in the case study, as well as a brief discussion of the connections between this report and the previous one. Section two reports on the evidence for Indigenous water management emerging from archival records (letters, court transcripts, photographs and sketches) associated with traditional weir building adjacent to Red Lily Lagoon and its encouragement by non-Indigenous pastoralists at Elsey Station. The case took place in 1946. Section three reviews instances of Indigenous weir building (and other constructions such as fish traps) between 1946 and the present, and two notable examples were at Moroak Station up until the 1980s and at McCracken's Lagoon (Janggan) in 2010. Section four considers some of the legal, governance, and planning issues highlighted by Indigenous weir construction, particularly how the activity challenges existing conceptual categories in water planning. Section five connects the material in this report to the previous one (Barber and Jackson 2011a), makes some concluding remarks and provides some recommendations for future research and action. Section six contains the appendices, including research participant consent forms and information sheets and the full judgement of the 1946 court case.

1.3. Aims and methods

1.3.1. Aims

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

1) Locate and collate historical evidence of Indigenous water management in the upper Roper area.
2) Explore the significance of that evidence for contemporary Indigenous environmental and natural resource management in the local area.
3) Analyse the implications of traditional water management in the upper Roper with respect to catchment level governance regimes.
4) Analyse the implications of traditional water management for wider water planning categories and processes.
5) Provide concluding remarks and recommendations for future work in the catchment and on Indigenous water management generally.

1.3.2. Research methods

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 1.4.2 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 18 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 Indigenous people were interviewed who did not have strong genealogical connections to the area. They were usually long term residents with knowledge of past practices in the area and/or with an ongoing involvement in local management. 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. One section of the report draws heavily on interviews with Hamish MacFarlane, a non-Indigenous pastoralist whose family owned and operated Moroak Station from 1951 until the late 1980s.

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 6.1 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 a valuable 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 Indigenous 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 of Carpentaria, 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).

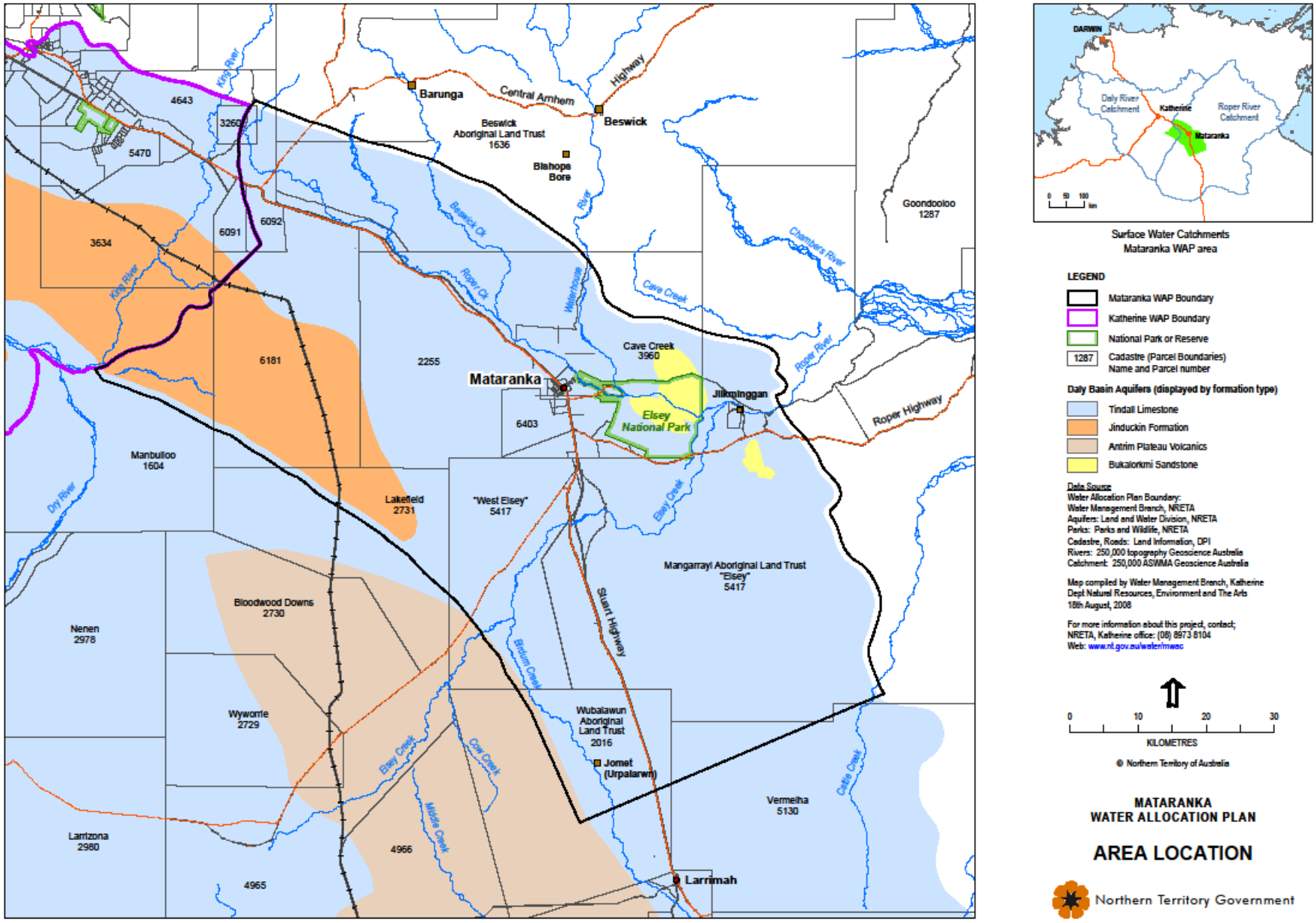
The Roper River is fed during the dry season by groundwater discharge from a large limestone aquifer covering a much larger area. Between Mataranka and the Red Lily Lagoon, the river gains flow from springs such as Bitter Springs and by seepage through the river bed and banks. At Red Lily Lagoon the 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.

Figure 1. The Roper Bar, understood to be where tidal influence on the Roper River ceases.

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).

Figure 2. (following page). The water planning area for the current groundwater planning process (Northern Territory Government 2009).

Figure 3. (second following page). Station boundaries and places mentioned in this report.



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

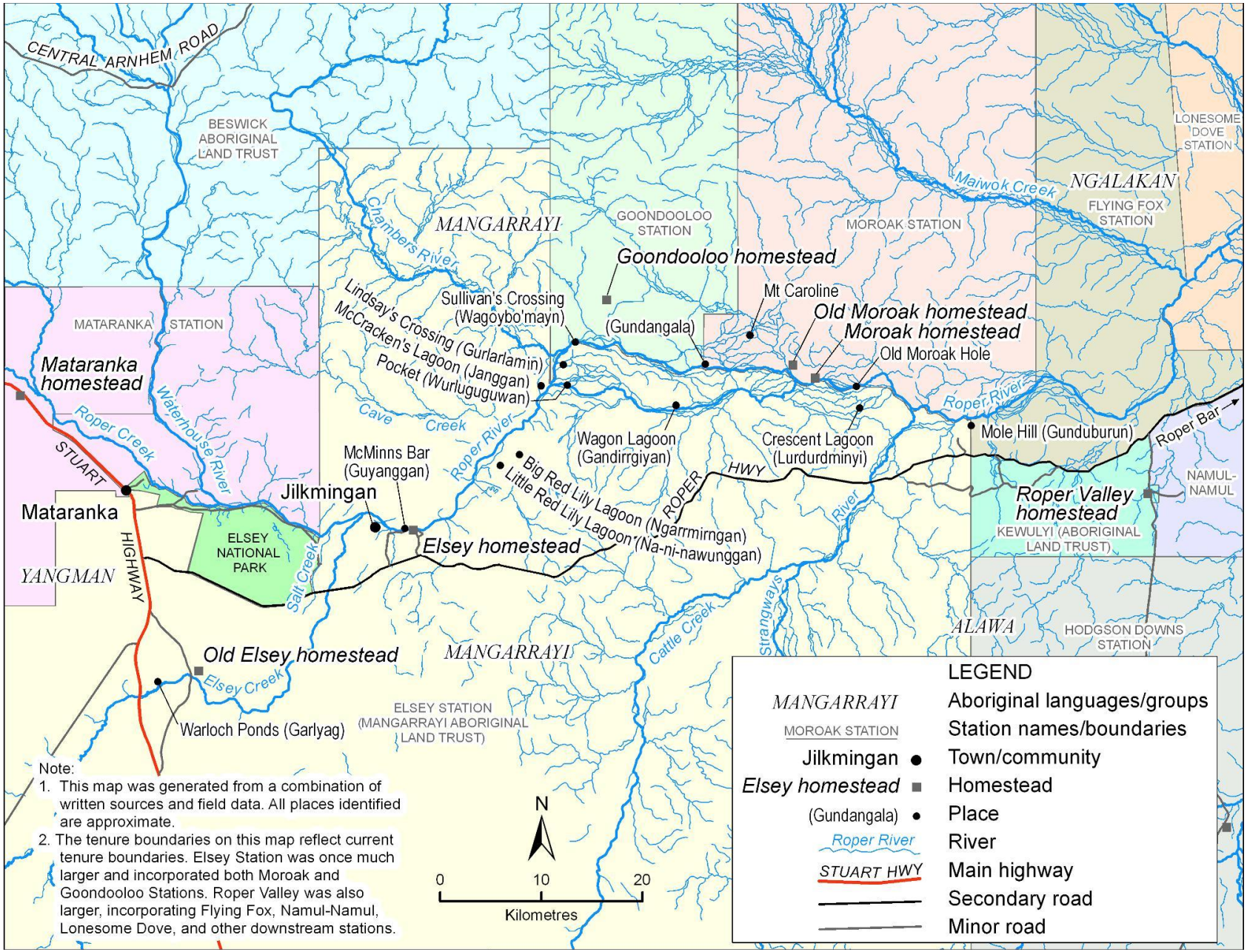
For more information about this project, contact;
NRETA, Katherine office: (08) 8973 8104
Web: www.nt.gov.au/water/mwac

0 10 20 30
KILOMETRES

MATARANKA WATER ALLOCATION PLAN

AREA LOCATION

Northern Territory Government


CENTRAL ARNHEM ROAD
BESWICK ABORIGINAL LAND TRUST
MANGARRAYI
GOONDOOLOO STATION
MOROAK STATION
NGALAKAN
FLYING FOX STATION
LONESOME DOVE STATION
Chambers River
Maiwok Creek
Goondooloo homestead
Sullivan's Crossing (Wagoybo'mayn)
Lindsay's Crossing (Gurlarlamin)
McCracken's Lagoon (Janggan)
Pocket (Wurluguguwan)
(Gundangala)
Mt Caroline
Old Moroak homestead
Moroak homestead
Old Moroak Hole
MATARANKA STATION
Mataranka homestead
Waterhouse River
Roper Creek
Cave Creek
Roper River
Wagon Lagoon (Gandirrgiyan)
Crescent Lagoon (Lurdurdminyi)
Mole Hill (Gunduburun)
Roper Bar
STUART HWY
ROPER HWY
McMinns Bar (Guyanggan)
Jilkmingan
Mataranka
Big Red Lily Lagoon (Ngarrmirngan)
Little Red Lily Lagoon (Na-ni-nawunggan)
Roper Valley homestead
KEWULYI (ABORIGINAL LAND TRUST)
NAMUL-NAMUL
ELSEY NATIONAL PARK
YANGMAN
HIGHWAY
Salt Creek
Elsey homestead
Old Elsey homestead
Elsey Creek
Warloch Ponds (Garlyag)
ELSEY STATION (MANGARRAYI ABORIGINAL LAND TRUST)
Cattle Creek
Strangways River
ALAWA
HODGSON DOWNS STATION
Note:
1. This map was generated from a combination of written sources and field data. All places identified are approximate.
2. The tenure boundaries on this map reflect current tenure boundaries. Elsey Station was once much larger and incorporated both Moroak and Goondooloo Stations. Roper Valley was also larger, incorporating Flying Fox, Namul-Namul, Lonesome Dove, and other downstream stations.
N
0
10
20
Kilometres
LEGEND
MANGARRAYI
Aboriginal languages/groups
MOROAK STATION
Station names/boundaries
Jilkmingan
Town/community
Elsey homestead
Homestead
(Gundangala)
Place
Roper River
River
STUART HWY
Main highway
Secondary road
Minor road

1.4.2. Elsey Station: history and sources

Figure 4. Crossing Salt Creek near the Roper River, Eastern Arnhem Land, Australia, July 1911. Photographer: Walter Baldwin Spencer. Courtesy Museum Victoria (XP 14098).

Elsey Station is a large cattle station, approximately 7,500 square kilometres (100km by 75 km) in its present configuration, but in the past it was much larger, incorporating downstream stations as well as what is now Mataranka and the Elsey National Park. It is also relatively old, having first been demarcated and stocked in the 1880s (Merlan 1978). The geographic focus of both the archival and field research was the area incorporating Mataranka, Elsey National Park, the community of Jilkmingan, and present-day Elsey Station, and in some respects this reflects the older boundaries of the station prior to World War Two. The focal area is a smaller area than the overall planning area covered by the government groundwater planning process (Figure 1), but it contains the major sites of active water management discussed here, 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.

The colonial history of the area was violent (Merlan 1978; Merlan 1986) and the pastoral era placed particular pressure on key water sources (see section 1.4.2 in Barber and Jackson 2011a and Merlan 1986). However the people of the Roper River region, particularly the Mangarrayi associated with Elsey Station, 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 (A. Godden, pers. comm.).

Elsey Station has a high profile because of an early account of life there that became popular and widely read. 'We of the Never Never' (Gunn 2003 [1908]) was a widely selling book, and many subsequent non-Indigenous visitors to Elsey as well as some of its longer term residents have documented their experiences there 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.

As well as popular accounts, Elsey has also been a focus for academic research. In anthropological terms, the first recorded visit by an anthropological researcher was that undertaken by Baldwin Spencer in 1911. Spencer took photographs which were republished in 1982 (Vanderwal 1982) and in 2005 (Batty, Allen et al. 2005). In the 1970s, following earlier anthropological work by John Bern, the anthropologist and linguist Francesca Merlan began working in the Elsey area and with the associated community of Jilkmingan. She has produced a range of important articles and books, as well as a language dictionary and documents for court proceedings. 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 Northern Territory Parks and Wildlife Service (NTPWS) to produce an ethnobotany for Mangarrayi areas (Wightman, Garalnganjak Roberts et al. 1992), a work which was recently revised and extended (Roberts, Conway et al. 2011). Along with court records and other documents associated with Indigenous land claims (Commonwealth of Australia 1990; Commonwealth of Australia 1997), these resources were used extensively in the previous report (Barber and Jackson 2011a) .

Elsey Station was also the location of the traditional weirs which were subject of the 1946 court case discussed in some detail here. An important result of this research was to identify the date and title of this case from general field and archival references to it. This enabled the relocation and analysis of the original 200 page transcript, as well as the examination of associated records about the weir building practice held by the Northern Territory Archives, the National Archives of Australia, and the Northern Territory Police Museum and Historical Society. That material, augmented by subsequent accounts of the case (Thonemann 1949; Merlan 1996), forms a substantial part of the current report. It is augmented by statements from interviews with fieldwork participants familiar with Elsey and/or with traditional weir construction on other adjacent stations such as Moroak Station (which was excised from Elsey after World War Two).

1.5. Indigenous water values and water management

The previous report from this research (Barber and Jackson 2011a) explores Indigenous water values in considerable detail, and so only a brief summary will be provided here for contextual purposes. Indigenous people have deep and varied attachments to places and to the landscapes in which those places lie (Williams 1986; Myers 1991; Baker 1999; Rose 2000; Bradley 2010). 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). Consistent with accounts from elsewhere (Strang 2001; Langton 2002; Strang 2002; Barber and Rumley 2003; Rose 2004; Barber 2005; Toussaint, Sullivan et al. 2005; Langton 2006; Jackson 2006a; Jackson 2006b; Cooper and Jackson 2008; Maclean and Bana Yaralji Bubu Inc. 2011; Barber and Jackson 2011b; Barber and Jackson 2011c), Indigenous people in the upper Roper have important ancestral accounts, popularly known as Dreamings, in which creator beings were responsible for giving form to the present state of the world and continue to live in it. Such beings are often associated with key water sites, and an aquatic orientation is a noticeable feature of the ancestral narratives of the upper Roper (Barber and Jackson 2011a). The Dreaming creators (known as Warrwiyan in the

Mangarrayi language) formed the country, but also populated it with living creatures such as people, animals and plants, provided language and laws to live by, and continue to dwell in the landscape. Such powers are to be respected, and a range of protocols, practices, and prohibitions exist to regulate conduct across the country in general and at key places where their powers are most concentrated. Local elder SC provides an example of this:

> SC: Warrwiyan. We talk about. You can't burn him, that tree or around anywhere there. You'll kill yourself. Not only yourself, everybody. And [there's a] stone there, on the side, red, like that car [dark red]. If you mucking around with that stone, you'll be finished. That one.
>
> Marcus: And you told me the story of how some young boys set fire to the paperbark in that place?
>
> SC: Yeah! They been have to go back and run back and [put] out that fire. Some young fellers. He [my father] told them: ' Go back and [put] out that fire!' My dad been growling those young fellers; my brother, [my] two brothers - cousin brother and my brother - and a friend, another friend. They been have to go back and [put] out that fire. We used to walk there, through Barramundi and come back in the afternoon.
>
> Marcus: Does this place have a name, this area?
>
> SC: Guwarlmbarlg.[2] Just a crossing, we used to go swimming there. And we used to dive in and we can get in, wheee! Inside that [sounds like] thunder eh! [Like] rain, when you listen to that thunder coming out? Him like that there. But we don't go now, too much that's sharp there, too big [important].
>
> Marcus: So somebody set the fire, and that's a rule about that place?
>
> SC: Yo eh! [yes]. [It's a] rule! You can't go stream side. Old people, olden times, didn't let people. Also that Crescent Lagoon. The same.
>
> Marcus: That you should not be burning that area?
>
> SC: Burning or cutting or digging. That's my country. That's rain Dreaming. Garnan. Warrwiyan.
>
> Marcus: So that's a Warrwiyan area too?
>
> SC: Yo eh! One big ridge go down. Down the river, and that high hill, and one go up like that, high bank.
>
> Marcus: Are there rules about that place?
>
> SC: Yeah! Jayway! Jayway.
>
> Marcus: Rainmaker? Someone who knows how to do it, make it rain?
>
> SC: Yes. Rain. You got to throw all the stone, and rain coming.

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 both land and water is appropriate conduct by human beings (see 2.3.2 and 2.4 in Barber and Jackson 2011a). Although emerging from a different basis, this desire for appropriate conduct correlates with the increasing focus in NRM on managing human activity. One unusual feature reported in the literature (Merlan 1982) and discussed further in the previous report (Barber and Jackson 2011a) was the significance given to large trees, often found adjacent to important water sites. These trees were named and associated with a particular person:

> Trees do have the name. Name of that person. The ones which grow in special places. When we see the Dreaming tree, we know not to touch that. Don't put a fence line through there, put it around it.
> RR

[2] This location is not marked on the map due to the restrictions on it indicated by SC above.

This additional significance given to riparian vegetation is noteworthy in the context of the current focus on water planning and wetland management.

As discussed in Barber and Jackson 2011, water is also of economic significance to Indigenous people. It provides the foundations for Indigenous subsistence and distribution of wildlife in general and of aquatic life in particular (Altman 2004; Altman and Branchut 2008; Finn and Jackson 2011; Jackson, Finn et al. 2011). This is a clear implication from the material presented in this report, which demonstrates that Indigenous people sometimes changed the local land and waterscapes to improve their subsistence returns, to water cattle, or for other related reasons. An understanding of the contemporary economic significance of water resources is also driving Indigenous interest in, and arguments for, the prospect of a Strategic Indigenous Reserve, a specific allocation of water from the consumptive and commercial pool in the water plan for the upper Roper area (Nikolakis 2011; O'Donnell 2011; Barber and Jackson 2011a). However rather than the SIR allocation, the primary focus of this report is modes of Indigenous water management which predate water planning processes, and indeed predate colonisation itself. The next section will begin to present this evidence in more detail, starting with the highest profile instance, which occurred in the vicinity of what is known as Red Lily Lagoon on Elsey Station.

Figure 5. Main channel of the Roper River and Red Lily wetlands. Image supplied by Mangarrayi Rangers.

2. INDIGENOUS WEIRS: THE CASE OF THE DAMMING AT RED LILY LAGOON

2.1. Introduction

> Those dams were made for fishing. My mother and father told me about them. My father helped make them too. His name was Jack Waawi.
> FR

> It was our fathers' fathers who used to do that. Those dams were on Mangarrayi country but the Yangman people used to help them.
> RS

The material in the following section describes an important regional instance of traditional Indigenous water management. In the past, Indigenous people in the upper Roper placed obstructions in the smaller channels created when the Roper River braided, most notably at a particular point on Mangarrayi country adjacent to what is known as Red Lily Lagoon. This was done during the dry season as the waters were receding and it slowed and diverted the water flow, sustaining significant areas of wetland habitat for key hunting species over the dryer months longer than would otherwise have occurred. When the upper Roper area was taken over and leased as Elsey Station during the colonial period, the practice continued and was encouraged by the owners and some managers of Elsey Station. It was encouraged because it reduced cattle losses by diverting water to areas of hard ground where the cattle could more easily drink without getting bogged.

The managers of the downstream Roper Valley Station had complained about the practice during the 1930s and 1940s, holding it responsible for diminution of the flow on the Roper and to their property in particular. In 1945 the then manager of Roper Station Thomas Holt took the Elsey owner (Harold Thonemann) and manager (Harold Giles) to court to uphold his riparian rights[3] and sued for damages incurred from significant cattle losses during a particularly dry spell in that year. The case was heard at the Supreme Court in Alice Springs in 1946, and Holt had a Sydney water engineer provide expert evidence of downstream reductions in flow as a result of the activity at Elsey. The judge in the case noted the weirs were an 'ancient' subsistence strategy but did not conceive of the practice as an incidence of an Indigenous right to water, and the case itself was legally understood as a case between two disputing non-Indigenous pastoralists. Holt won the case, and was awarded damages. Since that time the weirs have not been constructed at that point on the river.

A crucial part of the research undertaken for this report was the rediscovery, collation, re-transcription and reproduction of documents associated with this practice, following general reference to an early court case made by local people to the researchers in 2010. In order to tell the story of weir construction at Red Lily, edited excerpts of selected documents located during the archival research are re-presented here. These shed important light on the weir building practice, but are necessarily only a selection from documents that in themselves can provide only a partial account. Although at times apparently generated with the active

[3] The colonies in Australia had inherited the riparian doctrine of British common law, giving landholders conditional rights to the access and rights to surface water contiguous with and adjoining their land Clark , S. and I. Renard (1972). The framework of Australian water legislation and private rights. Research project 69/16: The law of allocation of water for private use. Melbourne. Bartlett, R. (1997). Native title to water. Water law in Western Australia: comparative studies and options for reform. R. Bartlett, A. Gardner and S. Mascher. Perth, Centre of Commercial and Resources Law, University of Western Australia**:** 125-160. Common law riparian rights were incidents of title to land, affording protection to a limited class of riparian owners who were required to consider the impact of their water use on downstream water users.

participation of Indigenous people from the area, these accounts are also oriented to the interests and motivations of non-Indigenous actors involved, and so some care should be taken in their interpretation. The documents include transcripts of interviews, private letters to legal counsel, letters from government officials, telegrams, excerpts from the transcript of the court proceedings, newspaper accounts, and three versions of the damming practice obtained from books- one from 1908, one produced in the 1950s, and the other in the 1990s.

Collectively these documents tell the story of this pre-colonial practice, its brief local conceptualisation as a customary water right, its co-existence with and benefits to the pastoral enterprise, how it came to be permitted by Northern Territory water law, and how that permission was challenged by competing pastoral interests on the basis of the ancient concept of riparian rights that Australia inherited from Britain. The practice was ultimately disallowed by the court in 1946, but the case produced considerable evidence about it. The origins and nature of the practice, the details of the court challenge, and subsequent accounts of it, are all explored in the material below.

2.2. An early account: Gunn 1908

Figure 6. Gathering red lily stalks and seeds from a lagoon, with a child sitting on the shoulder of a woman, Roper River, Eastern Arnhem Land, Australia, July 1911. Photographer: Walter Baldwin Spencer. Courtesy Museum Victoria (XP9568)

The earliest written account of Indigenous weir building at Red Lily Lagoon was located in Gunn's 'We of the Never-Never'(Gunn 2003 [1908]) . It details her observations from 1902, and contains several passages which describe features relevant to this study. She first details the existence of what she calls 'duck unders':

> Twice in our thirty-five miles of the Roper - about ten miles apart - wide-spreading rocky arches completely span the river a foot or so beneath its surface, forming natural crossing-places; for at them the full volume of water takes what Dan called a "duck-under," leaving only smoothly flowing shallow streams, a couple of hundred yards wide, running over the rocky bridgeways. The first "duck-under" occurs in a Ti Tree valley, and, marvelling at the wonder of the rippling streamlet so many yards wide and so few in length, with that deep, silent river for its source and estuary - we loitered in the pleasant forest glen…
> (Gunn 2003[1908]: 98)

> We turned back a short distance for better watering for horses, settling down for the night at the second "duck-under" - McMinn's Bar - within sound of the rushing of many waters; for here the river comes back to the surface with a mighty roar and swirling currents.
> (Gunn[1908]: 100)

The third of these 'duck-unders' is the location where the weirs were built. Gunn describes the location and the weirs as follows:

> The Red Lily lagoons lie away from the Roper, on either side of it, wide-spreading and shallow - great sheets of water with tall reeds and rushes about them, and glorious in flowering time with their immense cup-shaped crimson blossoms clustering on long stalks above great floating leaves - leaves nearly approaching three feet in diameter I think; and everywhere about the leaves hover birds and along the margins of the lagoons stalk countless waders, cranes, jabiroos (sic), and often times douce[4] native companions.
>
> Being so shallow and wide-spreading, the lagoons would dry up early in the "dry" were it not that the blacks are able to refill them at will from the river; for here the Roper indulges in a third "duck-under," so curious that with a few logs and sheets of bark the blacks can block the way of its waters and overflow them into the lagoons thereby ensuring a plentiful larder to hosts of wild fowl and, incidentally, to themselves.
>
> As the mystery of this "duck-under" lies under water, it can only be described from hearsay. Here, so the blacks say, a solid wall of rock runs out into the river, incomplete, though, and complicated, rising and terminating before mid-stream into a large island, which, dividing the stream unequally, sends the main body of water swirling away along its northern borders, while the lesser current glides quietly around the southern side, slipping partly over the submerged wall, and partly through a great side-long cleft on its face--gliding so quietly that the cleft can be easily blocked and the wall heightened when the waters are needed for the lagoons. Black-fellow gossip also reports that the island can be reached by a series of subterranean caves that open into daylight away at the Cave Creek, miles away.
> (Gunn 2003[1908]: 100-101)

Gunn's account highlights the unusual terrain at this point in the river, and the way in which Indigenous people were able to augment it to fill lagoons which would otherwise have drained. These lagoons provided 'a plentiful larder' for both 'wild fowl' and human beings, who could eat both the birds and the other aquatic resources (fish, reptiles, plants) which were attracted to the water. Human manipulation sustained wetland habitats for longer than they would have otherwise existed. Although already a cattle station, Gunn does not describe or explore the potential value of the strategy for the pastoral station. However, one further passage describes a situation she observed which, replicated across the subsequent decades, was to become important in future events at Elsey:

> "Could do with a drop of spring water," he said, but Dan's luck was out this trip, and the Spring Hole proved a slimy bog "alive with dead cattle," as he himself phrased it. Three

[4] Older word meaning quiet.

> dead beasts lay bogged on its margin, and held as in a vice, up to their necks in slime and awfulness stood two poor living brutes. They turned piteous terrified eyes on us as we rode up, and then Dan and the Maluka firing in mercy, the poor heads drooped and fell and the bog with a sickening sigh sucked them under. As we watched, horribly fascinated, Dan indulged in a soliloquy - a habit with him when ordinary conversation seemed out of place. "'Awful dry Wet we're having,' sez he," he murmured, "'the place is alive with dead cattle.' 'Fact,' sez he, 'cattle's dying this year that never died before.'" Then remarking that "this sort of thing" wasn't "exactly a thirst quencher," he followed up the creek bank into a forest of cabbage-tree palms - tall, feathery-crested palms everywhere, taller even that the forest trees; but never a sign of water.
> (Gunn 2003[1908]: 99)

The pastoralists at Elsey apparently sustained significant losses from cattle becoming bogged and starving or dying of exhaustion. The strategies they used to manage such losses relied heavily on Indigenous knowledge and labour. One strategy was to have people walking and riding around the property, rescuing animals that had come into difficulty. Another was to improve access to water supplies. The practice of Indigenous weir building at Red Lily was to gain a new kind of value in this context.

2.3. Water dispute correspondence and interviews 1937-1946

> They blocked that water at the Junction. Red Lily. Send that water back to swamp country. Some water goes to Red Lily, some to Moroak side. Put timber in the river, slow 'im down that water. If no dam, Red Lily go dry. Those cattle come down and get bogged. Block that water [and] you keep them cattle there. That water goes out. Then all comes back together down further.
> JD

> They catch 'im fish. Barramundi that big and that high (making hand gesture). That manager used to tell 'em to block him. Water been spread out, this big river, into every hole. Block him up with paperbark, stand 'em up with stick.
> JR

> They blocked from Pocket. Just at the corner, right at the end. And water comes into Red Lily. They did it for cattle. And also for fish.
> MR

> I worked at Elsey with all of those old people. I heard about the dams. But they did not do it anymore [when I was there]. Stopped. In those days they used to close that water, and the water would go right back to Red Lily. They would catch the fish. Basil, that old feller, Jabiru George. There was no shop selling line at that time. The people would throw out the small fish for the birds. Those areas are still wetlands. But they don't last so long [now].
> JC

Elsey Station was leased and operated for several decades during the twentieth century by the Thonemann family, and the primary family member responsible for it for much of that time was Harold. E. Thonemann. Thonemann lived in Melbourne and therefore the day-to-day operation of the station from the late 1920s was in the hands of the long-term manager, Harold Giles. Giles describes in some of the evidence below how Indigenous people on the station kept 'pestering him' to build the dams in his early years. He initially refused to allow it,

and then did so, and the value of it for avoiding stock losses by providing water for cattle in areas with harder ground became evident.

Roper Valley Station downstream was owned by Roy Chisolm and Thomas Holt from 1934-1939, after which management and then ownership passed to Holt alone. The relationship between the management of Elsey Station and the Roper Valley Station downstream was apparently poor, and Holt stated in testimony (court transcript 14/10/1946: 6) that he and Chisolm had been warned about the weir- building practice by the previous owner to Roper Valley Station, a John Rogers, particularly its effect in dry years. The weir-building practice was raised as an issue during the 1930s, and was of particular concern to Holt and Chisolm during the poor 1937 season (court transcript 14/10/1946: 2). This led to government investigations, police actions and attempts by Elsey Station to legitimise the practice. The documents show that government permission was granted over a number of years to legalise the 'blackfellows dam' (as it was referred to by the Chief Engineer of the NT's Department of Interior), using a water ordinance passed in 1938. Indeed such diversions were seen to be beneficial to the pastoral industry and more widespread application was mooted. However, alongside legitimating the practice through obtaining government permits, Thonemann in particular also tried to demonstrate that the weirs were legitimate based on their continuity with pre-colonial Indigenous activity.

Figure 7. Falls on Elsey. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection.

2.3.1. 'Black's water rights': interview of Dick Badbok by Harold Thonemann in 1937

In 1937 Thonemann interviewed a senior Aboriginal man from the area (identified here as Dick Badbok but also known as Yiworrondo, Jungle Dick) and a transcript of this interview was located in the Giles family personal papers (Northern Territory Archives Service, Giles et al.). It is the earliest located example of an identified Indigenous person speaking about the

weir-building practice, and later land claim research noted that for a range of kinship, marriage, historical and ancestral reasons, Dick Badbok was an appropriate successor and primary spokesperson for the Red Lily area (Merlan 1986: 63). In this interview, Thonemann spends considerable time tracing a 'genealogy' of managers to locate the origins of the practice before the pastoral era. He appears to be trying to establish a tradition which would underpin a customary right to undertake the activity. Support for this interpretation is found in Thonemann's reference to the subject of the interview as 'black's water rights'. Although the Elsey Station owners were clearly benefitting economically from the weirs through reduced cattle losses, it is noteworthy that Thonemann frames the issue of Indigenous river diversion or regulation (damming) as a water right, many decades before Indigenous legal rights to inland waters were recognised by Australian governments (Jackson and Altman 2009).

Declaration by Harold Eric Thonemann
Re: blacks water rights

I, Harold Eric Thonemann do solemnly declare that the following conversation is true and correct in every particular.

Q: What name you?
A: Dick Badbok.
Q: What name you tribe?
A: Youngmun (Warlock).[5]
Q: You old fellow?
A: Yes.
Q: You remember Tommy Sayle?
A: Yes.
Q: What man boss before him?
A: George Stevens.
Q: Who before?
A: I been manage station with Bertie and Nellie when Mr Gunn die[6].
Q: Who managed station before Mr Gunn?
A: Herbert Bryant and Jack McLennan. Jack McLennan build em iron, iron house longa one tree swamp.
Q: Who been there first time longa Jack McLennan?
A: Jack Roberts Longa Warlock.
Q: Who been there first time longa Jack Roberts?
A: Mr Campbell.
Q: Who been manage station first time Mr Campbell?
A: No more, I been forget who been there.
Q: Before him?
A: Mr Oakes.
Q: Him been married gottum white missus?
A: Yes.
Q: Who been manage before Mr Oakes?
A: Warland. Big bugger him live long Mr Palmer in grass house longa Warlock and Mr Oakes shiftum grass house to Gunns Elsey.[7]

[5] Yangman from Warloch Ponds, a site on Elsey Creek.
[6] Jeannie Gunn's husband died suddenly after only spending a year at Elsey Station.

Q: Mr Palmer her first time longa Warland?

A: Yes.

Q: How big you when Mr Palmer [here]?

A: I was little kid yet.

Q: Long time ago?

A: Yes.

Q: You work long Mr Palmer?

A: Yes. I been working him clean grass longa house

Q: When Mr Palmer here old feller boy dam the Red Lily?

A: Yes.

Q: Why dam the Red Lily?

A: Him run wrong way right up Roper Bar.

Q: When you dam him which way him run?

A: Long Wagon Lagoon.

Q: Why you want him run along Wagon Lagoon?

A: Make water run along Lagoon catchum fish.

Q: You catchum fish long Wagon Lagoon and long other holes?

A: Yes. Catchum fish when him dry.

Q: Your father catchum fish along Wagon lagoon?

A: Yes.

Q: What name your father?

A: Old Goggle Eye.

Q: Your father dam Red Lily?

A: Yes all about boy long time dam Red Lily to catchum fish.

Q: Alla same water Roper Bar?

A: Alla same water Roper Bar when big boy dam Red Lily and send him round Red Lily and Waggon Lagoon.[8]

Q: How long you take dam Red Lily?

A: One day or two day.

Q: How many boy?

A: Big mob boy.

Q: How you dam him?

A: Stickum paperbark.

Q: Does it stop all the water?

A: Him holdum lot water, lot water run through paperbark.

Q: When rain comes what happens?

A: Him open em up and wash em away. Many a time got all day mendum.[9]

---

[7] A reference to the fact that Elsey Station was relocated from a less appropriate site in the very early years of the station.

[8] This question and response has two interpretations. The first is simply confirming that the diverted water rejoins the river before it reaches the Roper Bar. However this is apparent from both local geography and from maps of the area, whilst downstream impacts from the weirs were the central issue. Therefore, Thonemann may well be asking if the water level and/or flow at the Roper Bar is unaffected by the damming activity, and Dick Badbok agrees with this. He also uses the term 'big boy' to refer to those making the dams. Presumably this refers to older and more senior Indigenous men.

[9] An important point to note in this comment from the earliest account is that the weir structures were not designed for flood control. This will be discussed further at 3.4 below.

I solemnly declare that the above particulars are true and correct.
(Sgd.) H. E. Thonemann
Witness – Harold S Giles JP
At Elsey Station, 9th June 1937.
(Northern Territory Archives Service, Giles et al.)

The damming is described above as an activity that takes many people ('all about boy') a couple of days to undertake. Dick Badbok considered that the weir could hold a 'lot of water' and later stated that people could 'catchum fish when him dry.' Testimonial provided later by Jungle Dick supports this, indicating that the fish were caught (or 'killed') as the wetland dried out (see 2.3.3 below). In the interview above, Dick Badbok states that the weir is not impermeable but allows at least some water through. It is also vulnerable to being washed away in heavy rainfall and the weirs would then be re-built 'many a time got all day mendum'. Evidence provided in the section below states that Wagon Lagoon is seven miles from the weir, suggesting that water was redirected a considerable distance by the weir structures.

2.3.2. The weirs in 1938: government inspections, police actions and photographs

Thomas Holt and Roy Chisolm took up the lease on Roper Valley Station in 1934, and Holt subsequently claimed in the court case that he and Chisolm were warned about the dams by the preceding owner, John Rogers, at the start of their tenure. He also claimed that it had been a regular source of complaint and discussion with Giles in the 1930s, at which time Chisolm was acting as primary manager at Roper Valley Station. A bad 1937 season led Chisolm and Holt to take their complaints about the weirs built at Red Lily to the government authorities of the day. Government employees, including water resources staff and police were sent to investigate in the latter part of the 1930s. Hydrological examinations were undertaken and the correspondence shows that the interests of the pastoral sector were of considerable importance in the assessments made. For many decades in the 20th century, water control and improved water storage and distribution (e.g. dams) were viewed as essential precursors to economic development and European settlement schemes, particularly in northern Australia (Davidson 1965; Powell 2000). As the weirs were considered a useful way of conserving water for grazing, the government officials appear to have been generally supportive of the practice. A Water Ordinance for the NT was created in 1938, and records show that Elsey Station obtained a licence to divert water under this Ordinance on an annual basis through the early 1940s. The relevant government correspondence was located in files held at the National Archives of Australia (National Archives of Australia). The first excerpt is from a letter by an Assistant Water Engineer, Sergeant Whitlock, who was asked to inspect the dams in September 1938 following earlier investigations by others:

REPORT RE DAMMING OF ROPER RIVER NEAR RED LILY LAGOON, NT
This dam or series of dams was inspected by me on 23rd to 25th September and also country affected by it. I have gone over the report of Mr Shepherd, copy of which I received. The only part of which I might differ with him is in paragraph dealing with evaporation, loss, etc. The river was dammed in a manner mentioned in Mr. Shepherd's report of May 1938 by the manager of Elsey station about 16th August[10] of this year. The main objective being to fill Wagon Lagoon some seven miles from the dam, which was at this time nearly dry. This is done along a channel which is practically a continuation of Roper River, but has become clogged up with silt and jungle growth. It is therefore

[10] This is earlier in the year than later references to the practice. It may reflect either a poor wet season, or the temporal extension of the practice by Elsey managers.

necessary to raise the level of the river and Red Lily approximately six inches to force water through this barrier. This is much better illustrated by graphic sketch attached.[11] I did not try to define area of Red Lily Lagoon at different levels as this would entail too much work, but am sure that extra area of Red Lily caused by raising level approximately six inches is not over one square mile.[12] This is counterbalanced by drying up of swamps to the north west and north east of the Dam.
(National Archives of Australia)

The letter then goes on to provide details of the inspections made and the measurements taken in reaching the conclusions below:

In summing up report on Damming Red Lily and Roper River, in my opinion damming of Red Lily and Roper River, if done systematically, can be of great benefit to both Elsey and Stations below on the Roper of which the Roper Valley is now the most active. If done indiscriminately can do stations below serious harm [original emphasis]. The extra area of Red Lily and Roper River caused by raising by level to force water along channel to Wagon Lagoon and resultant loss by evaporation, is counter balanced if swamps to north east and north west of dams are dried up. This is of great advantage to Elsey station and under present management is done when damming river. The Red Lily and Roper River is practically a huge natural reservoir and in my opinion should be kept at full height immediately after the wet. Channel to W.W. Lagoon can be controlled as at present with blackfellows' dam. In this manner flow of Roper would not be interfered with to any detriment of stations lower down.
(National Archives of Australia)

Of particular note above is that, alongside the main dam, the weir-builders at Elsey also constructed further small dams in side channels which flowed into a large swampy area known as Reedy Lagoon which was unsuitable for cattle. This directed more water to the intended target area at Red Lily, and it is suggested that from a downstream perspective, the action would counteract the evaporation effect of the main dam. However this activity was clearly insufficient to satisfy those at Roper Valley, and dated photographs from the NT Police Museum indicate that a few weeks after the above letter was written, police were despatched to the area.

One of those policemen was Constable James Mannion, who spent a considerable time in the Northern Territory. Photographs taken by him were recently shared with the NT Police Museum and Historical Society by Constable Mannion's daughter. These images included images of the weir clearly dated 16 October 1938, and they not only show the weir as it was constructed then, but also the police removal of them. The context for the order for their removal is not recorded in the government records at the National Archives, but may be locatable in further searches of police records. However the action is mentioned in subsequent material in the Giles file at the Northern Territory Archives Service, in which Giles describes it as 'a test only as per letter from Administrator', to see what would happen if the weirs were removed (see 2.3.4 below). Clearly this action by the police would have been a motivation for Elsey pastoralists to seek a permit for the activity in future years under the newly established 1938 Water Ordinance. There are references to the fact that the Elsey pastoralists encouraged the practice, and that Giles in particular suggested an alternative technique for constructing the weirs (see 2.5.1), so these 1938 images may represent an amplification of the weirs as they would have appeared in Gunn's time. However they are crucial as the only images located of a number referred to in letters and court transcripts from the period. They show how the weirs were constructed and the consequences of their removal, providing important context for subsequent sections of this report.

[11] This sketch was not found attached to the associated letter.
[12] The estimated area affected varied depending on the estimator and the time. This is the smallest figure referred to, but is nevertheless substantial.

Figure 8. Upstream view of the Red Lily dam, 16/10/1938. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection.

Figure 9 Downstream view of Red Lily dam, 16/10/1938. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection.

Figure 10. Destroying the dam, 16/10/1938. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection.

Figure 11. Dam area after destruction 16/10/1938. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection.

2.3.3. Government inspections and Elsey Station permits 1939-1945

Further inspections were made in August 1939, including by military personnel. Presumably these were requested in the context of Elsey seeking permits for the weir building activity under the 1938 Water Ordinance which was now in force. The letter below, from the Resident Engineer D.D. Smith, details the outcomes of these inspections.

> 30th August 1939
> His Honour,
> The Administrator of the Northern Territory,
> Darwin. N.T.
>
> In company with Major W. Patterson and Yr. Field Officer Clough, I made a thorough inspection of all the accessible portions of the Roper River together with the many anabranches and I am still of the opinion that no serious inconvenience is being caused to lessees below the dam on the Elsey Station.
>
> From appearances, the main dam in the open river is holding back very little water and I would say that the water on the top side of the dam would not be more than half an inch above that on the lower side. So far as the general damming is concerned, I am of the opinion that the management of Elsey Station is conserving water for stations below its property rather than reducing the flow. However, before any definite statement could be made regarding this matter it would be necessary to make a further investigation with the aid of scientific instruments to enable the stream to be correctly measured.
>
> My deductions for considering that there is more water going down the main stream generally at the present moment are borne out by the fact that the three anna branches marked in red ink on the attached sketch,[13] prevent at least 60% of the water going down into the swampy area known as Reedy Lagoon. The water from this lagoon is not used in any way by the owner of Elsey Station and I would suggest that in future, when damming is permitted, that the management be requested to block off the whole of the water which goes down these three arms branches into Reedy Swamp which is approximately 6 square miles in area and obviously takes a terrific volume of water to fill and keep filled. This, as may be seen, would more than offset the water drained from the main stream to fill the Red Lily and Wagon Lagoons. The whole of the Roper Valley is one which requires a considerable amount of investigation, not so much by the Government as by the various lessees with a view to utilising the water that flows down the main channel to the best advantage. The management of the Elsey Station is doing this to some extent but it is still very doubtful whether it is making the best use of the various channels which run out from the main stream. The little work they are doing I consider they should be commended upon and encouraged in rather than discouraged. I have no hesitation in recommending that annual permission be granted to the Elsey Station to dam the main stream, providing of course, that they seal the three main anabranches running into Reedy Lagoon as near to water-tight as possible.
>
> Mr. Giles, the manager of Elsey Station, accompanied us to the various positions on the Elsey Station and Roper Valley Station but unfortunately, on arriving at Roper Valley. Station we found that Mr Chisholm was away and therefore did not have an opportunity of discussing this matter with him. I would point out that if the management of both stations were to come together and discuss the whole situation in a true light I am sure that the management of Roper Valley Station would then appreciate the fact that no serious inconvenience was being caused by the damming of the river. It is obvious that if the management of the Elsey Station was instructed to remove the dam on the main channel that they would remove the obstruction from the three anna branches running into the

[13] This sketch was not found attached to the associated letter.

> Reedy Swamp which would have the effect of running millions of gallons of water away to waste and, as previously stated, would have very little effect on the main stream.
>
> It is regrettable that you were not able to visit the stations and make personal observations, as I am quite sure that if you had done so, you would have found it very difficult to understand what all the trouble was about. Finally, I have known Mr. Giles for many years and have found him most reliable and always ready to assist and I am quite certain that if he was of the opinion that he was causing any inconvenience or loss to his neighbours below him on the river, he would be the first one to rectify the position.
>
> (sgd) D.D Smith
> Resident Engineer
> (National Archives of Australia)

Major Patterson who accompanied Smith also wrote a letter to the Administrator of the Northern Territory. He described how Giles stated that he wanted to dam to maintain Red Lily Lagoon at approximately 3 square miles[14] and that he would maintain the side dams to 'prevent the flow of water to waste in swamp areas.' Patterson also spoke to Chisolm at Roper Valley Station and suggested 'damming a number of channels at Big Island on Roper Valley to divert the maximum flow into the channels of most use for watering stock.' This is noteworthy as one potential origin of occasional references in subsequent legal material to weir building also occurring on Roper Valley Station (despite Holt's legal challenge to the practice on Elsey), but such references would seem also to relate to past Indigenous practices. Major Patterson also wrote a second letter about the August 1939 inspection trip, the final summary of which is as follows:

> Summary:
> Inspection at this date confirmed the opinion of Mr W. H. Whitlock, formed in September 1938, that indiscriminate damming of the stream would increase the diversion to Red Lily Lagoon and swamp areas and reduce the flow downstream, but that judicious damming to prevent the loss to swamp areas and to control the diversion to Red Lily Lagoon and Wagon Wheel Lagoon channel to the effective minimum would result in an increased flow downstream.
> (National Archives of Australia)

The additional side dams preventing flow to the swamp areas are worth further comment here. Smith makes it clear that it was an existing practice at Elsey, not a suggestion from the engineers, but that they approve of it. What is not clear is whether these ancillary diversions were part of the pre-colonial Indigenous practice or an early augmentation during the pastoral era, as their origin is not discussed any further in the early records. The swamps were apparently of no use to the cattle, but depending on their exact extent may have had some value for Indigenous people in attracting subsistence game. However water flowing into the swamps appears to have diminished the effectiveness of the main Indigenous weir pushing water back to Red Lily, suggesting that they were also a pre-pastoral phenomenon. Regardless of the time they first appeared, they represent an inversion of the main Indigenous water management practice, for Smith notes that they had the effect of drying the swamp out – of diverting water away from a substantial low lying wet area rather than artificially sustaining one. There is some further discussion (and apparent disagreement) in the subsequent court evidence about the downstream impact of the side barriers to the swamp which will be noted in subsequent sections. At this point, by indicating an Indigenous-initiated practice of draining rather than sustaining a low lying wet area of some size (8 square miles and representing a 'terrific' volume of water in Smith's estimation), they add a further element to the story of landscape-scale effects of Indigenous water management at this location.

[14] Note the increase from the previous 1 square mile estimated by Whitlock in 1938.

Further government letters in the National Archive collection relate to the permissions obtained by Elsey Station lessees under the auspices of the 1938 Water Ordinance. The status of the permissions was to become a matter of some importance in the subsequent 1946 court case. The next section reviews the circumstances that led up to the matter being taken to court.

2.3.4. Court case preparations: correspondence and interviews 1945-46

By 1939 Thomas Holt had become the sole manager of Roper Valley Station. Although Elsey now had government-issued permits for the weir building practice, the 1945 dry season was particularly severe and further complaints by Holt that year led to government action in November. The Administrator directed Constable Abbott from Mataranka and Constable Mannion of Roper Bar to patrol Red Lily and report on the dams. A letter to the Administrator details the actions of the police, and that Holt was still dissatisfied:

> His Honour the Administrator;
>
> RED LILY LAGOON
>
> Mr Holt of Roper Valley Station contacted me by teleradio at 8.30am this morning. He asked what action had been taken since 21st November, when I advised him by telephone that Mr Giles and Constable Abbott had broken down 9 feet of dam in Roper River. He was informed that no further action had been taken and that it was considered he should negotiate with Mr Giles of Elsey station as the damming of the Roper River between his station and Elsey is a domestic matter. He then demanded that the Administrator send somebody immediately by plane to see the damage that had been done. He holds the Administrator responsible for such damage. He wants the matter officially looked at to make sure that it does not occur in the future. He states that the administrator has given permission for Giles to build dams and states that this is against the Ordinance relating to Rights in Natural Waters No. 13 of 1938. He states that this is an official demand and would like to know what action has been taken by this evening. He is reporting the whole matter to Canberra by next mail. Mr. Holt will be informed by radio this evening of the action directed by you.
>
> A.R. Miller
>
> 26.11.1945
>
> (National Archives of Australia)

A sketch was attached to a further letter from Constable Abbott to the Administrator on Dec 15 1945 and is reproduced here (Fig 12). Although a number of sketches were referred to in correspondence, this was the only one located with the relevant files.

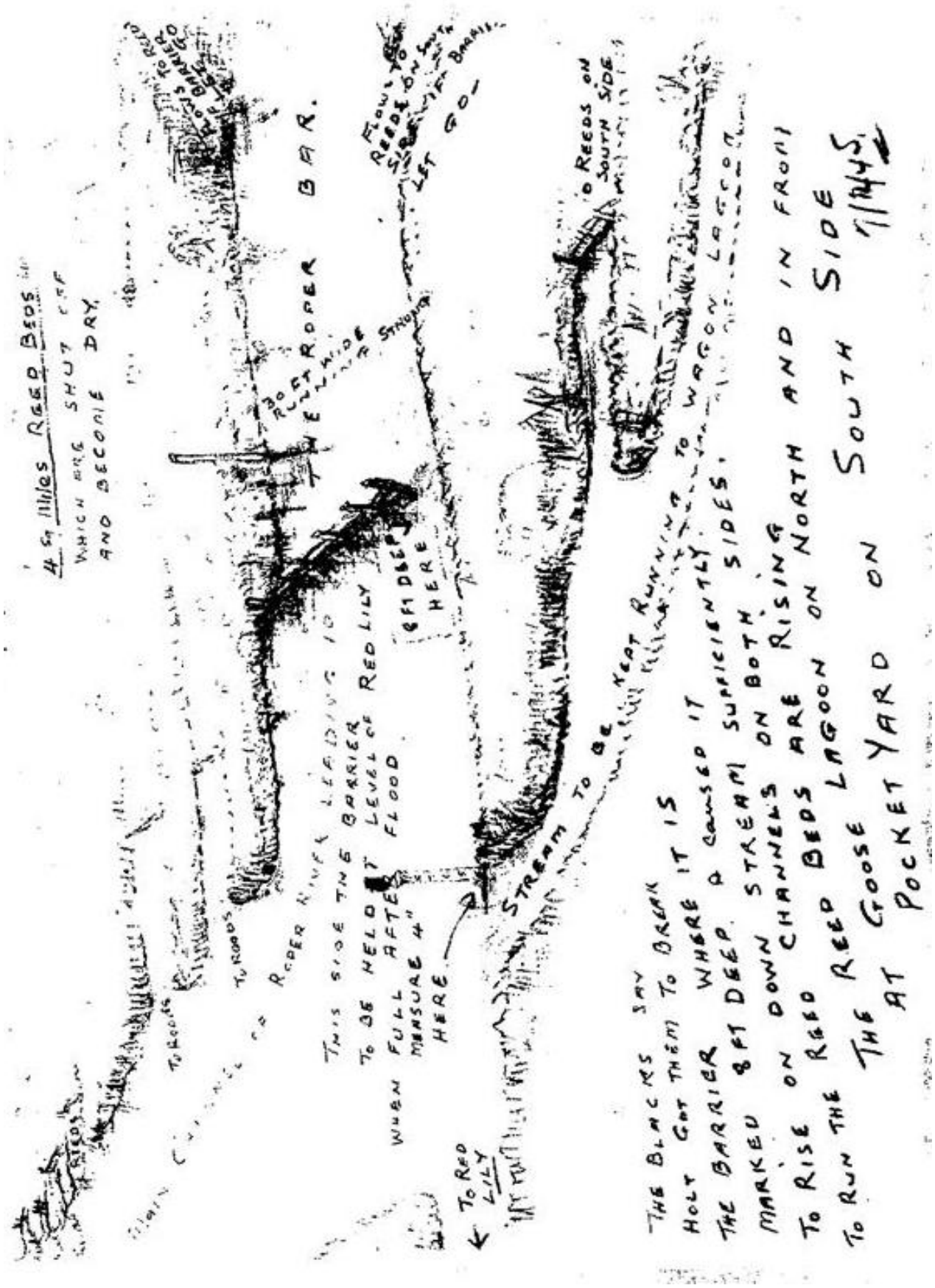


Figure 12. Diagram drawn by Constable Abbott of the Red Lily dams as they appeared in 1945. Source: National Archives of Australia, File F1 1946/406

The police action to remove the dams was insufficient from Holt's perspective. He was upset that police had not been instructed to inspect damage to Roper Valley Station, only to patrol and inspect Red Lily Lagoon. The following telegram in the government records indicates his displeasure:

> ROPER VALLEY VIA RADIO 56 7P DEC 21st
> ADMINISTRATOR
> DARWIN
> DESPITE MY REPEATED REQUESTS FOR SOMEONE TO COME HERE AND OFFICIALLY CONFIRM MY COMPLAINT RELATIVE LOSSES SUSTAINED DIRECTLY ATTRIBUTABLE DAMMING ROPER BELOW RED LILY LAGOON CONSTABLES WHO INSPECTED RED LILY FOURTEEN INSIST HAD NO SUCH INSTRUCTIONS STOP WHY STOP AM MOST DISSATISFIED YOUR ACTIONS VERY APATHETICAL THIS EVIDENCE HERE CRUCIAL FACTOR WHOLE ARGUMENT …HOLT (COMPLAINT)
> (National Archives of Australia)

Further correspondence in 1946 between Giles and the NT Administrator refers to permits to 'bank the Red Lily Billabong' rather than dam it, with the softened language perhaps indicating the contention around the issue, but nevertheless permission was granted to continue the practice. However, Holt decided to take legal action, and the lessees and managers of Elsey Station began to prepare their defence. Sourced from the Giles papers at the NT Archives (Northern Territory Archives Service, Giles et al.), the following is an excerpt from a June 1946 letter by Thonemann to his legal counsel, Mr. Lyons. In this correspondence, Thonemann again makes reference to the 'ancient rights' exercised by Indigenous people and makes the claim that they may 'come under' and presumably be recognised by the NT Water Ordinance. He further offers his lay opinion on the effect of statutory water law on Indigenous people's activities; on what he appears to be suggesting are customary rights. Thonemann states that the regulation of the dams under the 1938 Water Ordinance should not affect the validity of any Indigenous claim or right to water, and presumes here that the relevant senior Indigenous person, Jungle Dick, will be the primary defendant in any legal action, but that the Elsey lessees and managers may join him. Without reference to the superseded ordinance it is not possible to gain a full understanding of the basis of his argument, but the general intent is clear:

> The dam on this site has been erected by the blacks from time immemorial as you will see by enclosed. For many years it has been done by (Jungle) Dick (see my questions to him to follow).[15] We claim on their behalf these ancient rights which may come under section 24 (e) of the Land Ordinance.[16] Although we have asked permission to dam that should not invalidate their claim and it may be necessary to join (Jungle) Dick in the case. He would be a good witness I believe and is available. Giles tells me the blacks also dam the river further down and in fact in the river actually on the Roper Valley. It seems to me most important to stress the ancient rights of the blacks. Each year they desire to dam the river and only await <u>our</u> permission [original emphasis].
> (Northern Territory Archives Service, Giles et al.)

Noteworthy here is a very clear statement about the practice being undertaken in more than one location. The wording is unusual, particularly the phrase 'in the river actually on the Roper Valley.' It is not clear whether Thonemann is emphasising the fact that damming also occurred on Holt's own station, or that it was 'in the river' (presumably meaning the main

[15] It is unclear whether this is a reference to the transcript of the 1937 interview with Dick Badbok taken some years earlier, or of an interview with another Indigenous man called Dick taken at the time of the preparations for the case in 1945-46.
[16] A reference to the 1938 Water Ordinance.

channel), or both. What is evident is that, from Thonemann's perspective, dams were being constructed in at least three places - at Red Lily, downstream from Red Lily (which may or may not refer to Gundangala on Moroak- see 3.3), and on Roper Valley Station. He also makes it clear that the impetus for damming rests with the Indigenous population. In another section of this letter, Thonemann goes on to comment on the possibility that Elsey may have exceeded their permit by building the dam too high, then considers the consequences if they fail in their arguments to defend the practice. He believed Holt would have a hard time proving his case for damages, as the late arrival of the wet meant that many cattle died that year. He lists 'engineers, etc' who had inspected the dam over the years,[17] discusses locating some of them, and then moves on to consider Holt's general position:

> The main reasons why the dam does not affect him adversely is that we also dam side channels solidly with earth. These channels run into extensive reed beds (t[sic] square miles on the north of the river) and if not dammed make very large evaporating pans. When dammed the water is then available for the 2 channels of the river. I do not think there is only 1 channel, but as the river drops, the southern and smaller ones ceases flowing. The effect of the damming holds back but does not rise the level of the river and sends its fair share via the Southern channel known as the Wagon Lagoon channel. I will send a photo of it.[18]
>
> Holt claims maybe that we had the water 4 inches higher above the dam than it was immediately below the dam. Last year he complained that the water was 8 inches higher and Constable Abbott or Constable Mannion was sent out to inspect and maybe break it down to that level.[19] That is our weakest link, but both Abbott and Mannion are now generally favourable to us as against Holt. I am getting Giles to find out what he can from them and advise us both direct. We are also trying to find out how his cattle fared last year and this years' brandings may show no reduction. He may desire to boost his brandings to give his place a good name if cross-examined to that end. Even with or without the dam there is no need for running water to water the cattle as there are many lagoons. He may say his weak cattle got bogged. They may have been weak through poor season. Our horses were too poor to run brumbies on the Elsey but Fogarty ran a few on Hodgson Downs.
>
> The Southern channel does not run through Jungle country and has not many large expanses of surface for evaporation and may not waste so much water as the main channel. Attached is a rough sketch[20] to show you the location, etc. Will send a better one for the case. It will be noted that the southern channel joins the main one about 15 miles before the River runs into Roper Valley.[21]
> (Northern Territory Archives Service, Giles et al.)

Thonemann finished by noting that Holt had recently been near the site, and that he should be sent a letter warning against trespass. As preparations for the case proceeded, further preparatory interviews were undertaken. Handwritten notes and transcripts of these interviews form part of the Giles papers at the NT archives (Northern Territory Archives Service, Giles et al.). The interviewer is not identified, but seems likely to have been legal counsel and/or Thonemann. The interviews are undated, but Giles indicates his length of service and from other dates given they must have taken place after 1945, effectively as part

[17] The full list as it is written is: Easton Horspborough, Hobbler Sheppard (died) Branekreg, D.D. Smith, Major Patterson, W. L. Clough, W. H Whitlock, also Constable Abbott and Mannion.
[18] This photo was not found with the associated letter.
[19] In this instance, rather than complete removal as occurred in 1938, the police action was to reduce the weirs to the permitted height.
[20] This sketch was not attached to the associated letter.
[21] This was the primary argument that Giles had apparently been making to Holt and Chisolm during the 1930s; that the diverted water at Red Lily flowed back into the river well before the river flowed through Roper Valley Station.

of direct preparations for the case. The Giles interview contains only brief notes after the initial answers, and again the term ‘bank’ rather than ‘dam’ is used to describe the activity:

> Q: You have been managing Elsey many years?
> Giles: Yes nearly 19 years. In October 1936 a lot of money was spent fencing the Big Red Lily off and putting in ramps for cattle to drink as the Lily was not dammed that year. It proved a failure as it became a bog hole in 1937. Permission was given to bank the Lily on 18th August 1938. In Sept that year Mr Wittock [Whitlock] took levels and reported on the river channels lower down. On 13th October 1938 Constable Mannion came down and knocked the dam down.[22] The water mostly ran into weed beds and diminished in flow. This was a test only as per letter from Administrator.
> (Northern Territory Archives Service, Giles et al.)

Figure 13. Red Lily Lagoon. Image supplied by Mangarrayi Rangers.

[22] Giles date conflicts slightly with the dates on Mannion’s photographs, but it clearly refers to the same events.

Further brief notes from the Giles interview state that the channel:

> … was not banked in 1930 but photos [were] taken in November 1930.[23] It was banked November 1931 and photos were taken again. No difference to levels on boundary below Mole Hill. It was banked again 1932. Entry [was] dammed 2 Nov 1933 and [there were] bogging cattle. Entry 26 Sept 1934 Dick watching R[ed] Lily embankment. 8 Oct 1934 Bog[ged] cattle [at] Red Lily.
> (Northern Territory Archives Service, Giles et al.)

More detailed handwritten transcripts were located of an interview with a non-Indigenous stockman, George Conway, who had a long association with Elsey (Merlan 1986), and of interviews with four local Indigenous men: Jaberoo George, Elsey Dick, Sandy, and Jungle Dick. Taken in August 1945, the unnamed interviewers attempt to demonstrate that Roper Station cattle died from starvation due to lack of feed and because the managers did not employ people to pull them out of the mud, rather than from a lack of drinking water. George Conway is clear on this point and on his observations of the weirs:

> Q: You have been a long time amongst cattle in this country?
>
> A: Yes.
>
> Q: Do you think last year was a good year?
>
> A: No.
>
> Q: Did you work cattle late last year?
>
> A: No.
>
> Q: Why not?
>
> A: Because they were too poor.
>
> Q: Was it for the want of water or was it the grass?
>
> A: It was grass.
>
> Q: Did they die away from river frontages?
>
> A: Yes.
>
> Q: Is it not the same every year or was it more so last year?
>
> A: Last season was unusually bad. I saw an area 40 miles off the Roper frontage with cattle dead everywhere from poverty. There was plenty of water.
>
> Q: Were you working land on Elsey from July to December last year?[24]
>
> A: No I was not working for Elsey during those months.
>
> Q: Do you know if Roper Valley employed boys especially to pull cattle out of bog last year? They did not last year?
>
> A: No.
>
> Q: Did Elsey station?
>
> A: Yes.
>
> Q: Have you ever seen blacks catching fish by damming channels?
>
> A: Yes.
>
> Q: Are there channels on Roper Valley that can be dammed to catch fish?
>
> A: Yes.[25]
>
> Q: Were you at Roper Valley late last year?

[23] These photos were not found in the records located.
[24] This question and answer suggests that the interviewer was legal counsel – the Elsey pastoralists would seemingly know already and not have needed to ask it.
[25] Confirmation that suitable terrain existed on Roper Valley for weir building, but not that it occurred. It is unclear why the second question was not asked.

A: Yes

Q: Do you know if they had poor cattle in their paddocks and had to turn them out?

(Northern Territory Archives Service, Giles et al.)

No further notes of the interview exist here, perhaps due to a missing sheet in the records. However notes for other interviews do exist which establish the poor conditions for cattle that year. Notes from an interview with Jaberoo George describe that the problem was poor grass for food and cattle bogging, rather than an absence of water:

> That dry time very bad for feed. We been knock off brand[ing] calf early, horse and cattle [were] too poor. I been go past Red Lily and River Channel. Cattle bog and die everywhere. Another year not bad like that. Two boys [and] 2 gin[26] hard work pull cattle out bog. Boss can't let soldiers go Red lily too many poor cattle. Plenty water, only cattle die just the same.
> (Northern Territory Archives Service, Giles et al.)

Notes from interview with Elsey Dick and John Hodgson make a similar case for poor feed and bogging cattle:

> Dry time been start early last year. Me and Elsey Dick, Dagan [and] old Nellie been camp [at] Red Lily. [We] go walk along every morning and night [to] pull out bogged cattle, make 'em get up [and] walk away. Big mob been die all way. Plenty water been longa [there to] drink but him die no good grass. That Red Lily water not too high, only just same every year.
> (Northern Territory Archives Service, Giles et al.)

Assuming the notes were an accurate reflection of local Indigenous peoples' statements, the cattle were actually dying of starvation rather than due to the lack of water, as Holt was arguing. Further interviews with Indigenous men called Sandy and Jungle Dick make this point but also emphasise the subsistence basis of the activity and its origins in the pre-colonial past. Sandy was to become one of the witnesses in the subsequent court case:

Interview with Sandy

Q How you catch fish?

Ans: We stop water from run[ning]. We make another channel, then [when] water half dry we spear 'em longa waterhole.

Q: Any other boy been with you?

Ans: Yes old Roper Valley Billy and other fellow been help me at Duck Ponds.

Q: You see any dead cattle?

Ans: Yes some cattle dead all way.

Q: Him all longa bog?

Ans: Some longa bog, some outside.

Q: What make him like that?

Ans: Oh him too weak!

Q: Why too weak?

Ans: Him feed all dry up. Grass no good.

Q: Big water him longa Mole Hill and low down from Mole Hill any time all year?[27]

Ans: Yes

[26] Colloquial term for Aboriginal women. This is the only explicit reference to women being directly involved in pastoral activity.

[27] A question intended to show that there was water upstream and downstream from Mole Hill in 1945.

Q: Last time Mr Holt been have anybody pulling out bog cattle on Roper Valley station?

Ans: No. I not see many cattle dead along River.

Q: Mr Holt him cattle out of paddock dry time?

Ans: Yes all too poor, no grass longa paddock. Him take 'em out.

Jungle Dick

Q: You been longa Elsey in summer time?

Ans: Yes

Q: When you go holiday- walkabout, where you go?

Ans: Longa jungle

Q: Any fish there?

Ans: Yes

Q: How you catch fish?

Ans: Oh, we stop water, make [it] go another channel. [When] water dry, we kill fish.

Q: Red Lily Billabong go dry?

Ans: Yes. Suppose no more dam, we put paperbark and mud. Keep water full. Then plenty goose and duck come.[28]

Q: How high you make dam belonga water?

Ans: Like that [shows 4 fingers horizontal].

Q: suppose you make 'em more high, what him do?

Ans: Oh, paperbark pull down. Water bustem.

Q: How many channels [do you block]?

Ans: Oh big mob.

Q: What for you stop big mob?

Ans: Oh, some go longa weed. We stop em go longa weed,[29] then him make big water him Big River go Wagon Lagoon and Roper Valley.

Q: How long you been make dam?

Ans: When I been picanninny, I see old fellow black fellow show me.

Q: You see any cattle die last hot weather?

Ans: Yes everywhere longa Red Lily. Boy pullem out, but no matter, [a] big lot die just the same.

(Northern Territory Archives Service, Giles et al.)

It is clear from these interview notes that those at Elsey were determined to demonstrate the origins of the damming practice in pre-colonial subsistence behaviour, and if their notes are accurate, that these origins were widely known. Further, they wanted to establish that the cattle losses experienced by Roper Valley Station were not due to a lack of water, but to lack of feed, bogging and associated exhaustion. They had also received clear advice from government investigations in the 1930s that the practice had minimal impact on the flow. This was the basis of their initial case. However it is evident that the legal defence to be pursued began to alter as matters progressed. In a letter from Thonemann to Giles in July 1946, Thonemann outlines the changes:

[28] The most commonly elicited non-pastoral explanation for the practice was to catch fish, but here it is explicitly stated that waterbirds were also an objective.

[29] This response certainly suggests that creating additional ancilliary dams to prevent water from flowing to the adjacent swamps was an Indigenous initiated activity associated with the main Red Lily weir. Jungle Dick does not state it explicitly, but the subsequent response about having dammed 'when I been picanninny' implies that the swamp diversion (and therefore Indigenous drainage of low-lying areas) was not a recent pastoral addition.

> We have been on the 'phone to [Thonemann's counsel] Lyons and he tells us that he feels quite confident about the injunction.[30] Counsel down here see one or two snags in the main case. In the first case we only have permission to dam the Red Lily Billabong, no mention being made of the Roper River. As permission was given after inspection by the engineers, Lyons will have to connect it up, and the words "Red Lily Billabong" will have to be treated as a colloquialism. They consider that Holt is entitled to the flow of water to the Roper Valley and the onus will be on us to prove that either we have not reduced his flow or if we have it did not adversely affect him. The onus will be on us to prove that at no time was it over 4 inches higher above than below the dam. You will remember that on several of my visits I discussed the question of 4 inches with you, and Counsel considers that it means as above. It will be advisable therefore to keep sweet with [Constables] Mannion and Abbott and be sure that they are in no position to state that it was ever higher than that. If we lose on all these cases then the estimate of damages has to be proved or disproved. Any evidence as to the dry season and causation of bogging through Holt's fault or damming on Roper Valley would be valuable.
> (Northern Territory Archives Service, Giles et al.)

In a following August 1946 letter from Lyons to Thonemann regarding the injunction taken out by Holt, the progression becomes clearer. Most crucially from a present day perspective, the case is no longer focused on whether the Elsey Station practice was based in pre-colonial Indigenous rights and/or practices. Rather the case has become about the specific situation in 1945, the legal basis for the permissions granted by the NT Administrator under the 1938 Water Ordinance, and whether the dams constituted an obstruction or a diversion:

> We enclose herewith a copy of the writer's notes of what transpired at the hearing. You will see from the notes that the Plaintiff is basing his claim for an Injunction on the following matters:
>
> 1. There is no authority for the Administrator to authorise the construction of dams such as have been constructed.
>
> 2. The dams were not constructed as authorised by the Licence.
>
> 3. That in fact the Control of Waters Ordinance of 1938 is a re-statement of the common law rights of Riparian owners, with the additional proviso that before a diversion of waters for irrigation and other purposes is authorised, the owner must obtain a Licence under Section 13 of the Control of Waters Ordinance.
>
> 4. The dams erected were obstructions to the natural water course and were not diversions.
> (Northern Territory Archives Service, Giles et al.)

After relating some administrative matters, Lyons comments that he does not think Holt's claim for damages will succeed if the facts are as the defence believes them to be, then focuses on the injunction. Of particular note is his distinction between an obstruction and a diversion:

> Dealing with the question of the Injunction, bereft of all its verbiage, it simply comes down to the position of determining whether or not the construction of the dams obstructs the natural flow of water through the Plaintiff's property. As we understand the position, however, a Riparian owner can divert the water of a stream for purposes in connection with his land, provided the diverted water is returned into the main stream before it leaves his land [and is] substantially undiminished in volume. If water is flowing out of the main stream to the Roper River and through Waggon Lagoon, and rejoining the Roper River substantially undiminished in quantity throughout the year, we fail to see what interference

[30] An injunction sought by Holt after initiating proceedings in 1945 to prevent further damming.

there is to the Plaintiff is Riparian rights. However, the main matter will be to establish by competent technical evidence the exact position.
(Northern Territory Archives Service, Giles et al.)

The remainder of the letter reproduced below contains several points of note. These include; the focus on conditions in 1945 in the list of witnesses; another reference to Indigenous people damming at Roper Valley Station as well as on Elsey; potential problems with the legitimacy of the license approval; pre-existing animosity between the NT Administrator and the judge in the case; the limited experience of the local government water resources staff; and the possibility of calling an expert water engineer as a witness. Lyons begins with the witness list:

> At the moment we have in mind subponeaing the following:
>
> Mannion and Abbott, to supply evidence of their investigations in 1945 and of seasonal conditions.
>
> Messrs. D.D. Smith, Clough and Whitlock, to supply technical evidence of their investigations.
>
> Mr. Giles, on the issues generally.
>
> Aboriginal Dick and the other Aboriginals who were damming the Roper River both on Elsey Station and Roper Valley Station during the year 1945.
>
> Messr Pigott, to produce the official files, if necessary.[31]
>
> However, as far as Mr Pigott is concerned, we understand that the Plaintiff will probably call him as a witness, in an endeavour to show that the Administrator adopted a "hole in the corner" tactic in considering the application and granting of the licence. The purpose of this, of course, would be an attempt to fan the flames of animosity which existed between His Hon. the Judge and the Administrator. However, although the Judge might make some caustic comments, we do not think that such a move would avail the Plaintiff very much, as the whole of the official information on the file indicates that the position was fully considered by technical experts, who came to the conclusion that the damming of the Roper River is justified.[32] It was very apparent from Holt's cross examination that he really does not know very much about damming or the dams, particularly those on the North side of the River. One difficulty that may be encountered with Whitlock is that he is not a qualified technician, and his experience is somewhat limited. We would really like to have at the hearing an expert witness, who is competent to give technical evidence based on a complete knowledge of the facts, and experience as an Engineer in water conservation.
> (Northern Territory Archives Service, Giles et al.)

No questions were asked of either Holt or Indigenous witnesses during the case about damming on Roper Valley Station during 1945, but Holt was asked about it being previously suggested by representatives of the NT Administrator to his then-business partner Chisolm. He denied knowledge of the suggestion, and was not asked about its implementation. As the legal question at issue was the permissions for and impact of the Red Lily weirs of 1945, what was occurring elsewhere was of only peripheral relevance. The issue of Indigenous people building weirs and dams elsewhere on the Roper has greater significance in the present context of Indigenous rights and water planning, and is explored further in subsequent sections of this report. Other points noted in Lyons' letter above, particularly the question of the legitimacy of the license and the testimony of expert technical witnesses, were to be very significant in the subsequent case.

[31] Mr Pigott was the relevant employee of the NT Administrator.
[32] This seems an acknowledgement that the practice has a flow impact, but a 'justifiable' one.

2.4. Courtroom testimony

Figure 14. Elsey River, Herbert Basedow collection. Supplied by the National Museum of Australia

> They block the water, [and] it come up to Red Lily. They block the Roper. Nobody could get water [so] Roper Valley put a policeman on my grandfather. They use it to catch fish. Push the water, that's why they block em, that water. My grandfather nearly go to jail. My father go to court with him.
> ND

Understanding the legal progression of the matter in 1946 is crucial to understanding the outcome of the case and how the issue is generally remembered. It initially appeared to rest on the nature of a pre-colonial subsistence practice ('Black's Water Rights' in Thonemann's language) which, even when amplified for pastoral purposes, had minimal impact on flow in the estimation of local engineers. However the question shifted to the legal distinction between a diversion and an obstruction and to the legitimacy of government permissions for specific actions taken in 1945 and the impacts of those actions. From the perspective of the present day, it is notable in the letter from Lyons at the end of the previous section that the Indigenous witnesses would not be called upon to give detailed evidence about past practices, and this is reflected in the transcripts of the testimony which appears below. By this point in the water resources dispute, any discussion of Indigenous rights had been eclipsed by the discussions of the riparian rights of pastoral lessees. Furthermore, the power of the court to regulate, control, or in fact outlaw the 'ancient' Indigenous practice was not questioned.

The following sections contain selected excerpts of testimony and evidence given during the court hearings, which took place between the 14th and 18th of October 1946. The testimony was located in NT Law archives (Northern Territory Archives Service and Supreme Court of

the Northern Territory). It was heard by Justice Wells and the full transcript and judgement of the case represent close to 200 pages of documents. Only brief excerpts highlighting critical aspects are presented here, with the exception of the final judgement, which is included in full in Appendix 6.2.

2.4.1. Excerpt from testimony of Harold Giles, Elsey Station manager

In this testimony, Giles describes his arrival in the area and the sequence of events leading up to 1945. Although not all the testimony is possible to follow without a detailed knowledge of the location, the complex local surface hydrology, which is easily shifted and even reversed by minor changes in water levels, is clearly evident.

> MR. LYONS[33]: Going back to when you first came there, do you know the condition of affairs that existed in regard to the Red Lily billabong, that was in 1928? What was done?
>
> ---It was just in its normal state.
>
> Did you have any conversation with the aboriginals?---Yes
>
> And you gave them certain directions?---Yes, I told them to leave the river alone.
>
> And in that year, or in 1930, do you remember what happened in relation to the Red Lily?
>
> ---I went down the river and there was a tremendous lot of water in the pot holes and in Red Lily itself and I had a look all along these channels. In 1931 the natives again kept pestering me.[34]
>
> About something?---Yes, and I allowed them to build a dam in a channel, and that gave water into the Red Lily which brought it out about another 15 yards on the south side, which enabled the cattle to drink from hard ground. It also brought the Lily to the level of the channel just above where they put a barrier in the main channel, and this stream led out through what we call the Pocket, and made its way down to Wagon Wheel lagoon which, in previous years since I have been there, had gone dry.[35] It is on a stock route. It continued on and joined the main stream at Mt. Sir James, a distance of about 17 miles from the dam.
>
> What about the other waters? What happens to the other waters in the Roper River?
>
> ---That goes down the river but we found it was not necessary to raise the main stream very much on account of the many streams leading in on the north side which covered that area, a much bigger area than the Red Lily which is kept full, and the only seepage would be from the main channel. By stopping the other channels and confining the water to the main channel it gave us pretty well the level that was required.
>
> What happened the following year?---We did the same. It was the same in 1932, 1933 and 1934, and then Mr. Chisholm and Mr.Holt came.
>
> Do you remember Mr. Breckenridge?---Yes, Breckenridge and Chisholm came. Mr. Shepherd also was the Chief Survey in Darwin and it had been surveying the Red Lily prior to my taking over the management.
>
> And later he came to Elsey?---Yes.

[33] The formatting retained for the court testimonies is that of the original transcript. In this case Giles' responses follow three dashes at the end of each question from Lyons.

[34] This is a reference to Indigenous people pressuring Giles to assent to them undertaking the practice, assent which clearly was not assured. In the circumstances of colonial pastoralism, it would have extremely difficult to proceed without it.

[35] A further implication of the weir building practice made explicit here. Wagon Lagoon (and the channel which flowed into it) received and retained water longer than it otherwise would have. Giles refers below to the channel going dry in the years it was not dammed.

Do you know what they did?---They examined the channels there and the levels and in the following year, in 1934, we got the necessary permission.[36]

What happened in 1935?---In 1935, 1936 and 1937 we did not dam.

Or interfere with the Roper River at all?---No.

After 1934 did you have conversations with aboriginals and give them certain directions and as a consequence no work was done on the Roper?---No, not during those years.

MR. LYONS: What happened in those years?--- It just went back to the bog holes and a lot of money was spent in trying to fence off the Red Lily and to make ramps so that the cattle would not get bogged. I tried to make a dam ten miles out on the river, which had no connection with local waters, but that was not a success.

What about the reed beds on the north side?---They were full of water. The Waggon Lagoon channel went dry.

These reed beds, how long have they remained full?---Right up to the flood time.[37]

What about the area round the edge of the Red Lily?---That dried away and the cattle were melting away into the bog and we could not cope with them. There is a big body of cattle running there. There are thousands round that area.

And I suppose the water stopped running into the Red Lily billabong?---Yes, that was cut off.

Did water remain in the billabong itself?---Yes, in the centre of it.

What happened in 1938?--- We got the necessary permission then.

Did someone come down to the Elsey?--- Yes, Mr. Smith and Mr. Patterson and Mr. Clough came down and looked at the stream and went down to where the river went through the boundary again, saw Waggon Lagoon, and went down to the Duck Ponds.

What happened in 1938?--- The aborigines started to do the channels again on their walkabout. That is their main home in the jungle.[38]

What did you do in relation to that?--- I had taken particular notice of the level of the north bank when the river had ceased to flow in the Lily in 1937, and in 1938 I stayed the water while it was running in this channel before it went too low and I noticed that in the Red Lily and in the Waggon Lagoon the channel was about four inches.

Did you allow the aboriginals to build any higher than that?---I marked that on a tree on the north bank between the 4th and 5th channel and I remember pointing it out to His Honor on the day of the inspection on the 7th of this month.[39] I mentioned that if the bed of the channel was raised any higher it would only make extra channels. That channel has hard banks and the Roper would be the same level as the Red Lily. Flood waters are kept in position by having a very small barrier in the main stream to prevent the water going into the reed beds.

What happened after that? Did you have a visit from Constable Mannion?---Yes.

What happened?---He came out and knocked the dams down.

What happened in relation to the Red Lily?--- That just let itself go and the 'streams running into the lagoon started rushing out. The constable knocked all the dams down.

You went down the Roper river that year to see if there was any increase in the water going down the river?---No. I did not go down.

---

[36] This apparently is a reference to permissions given prior to the 1938 Water Ordinance. It is not made clear what kind of permissions they were, and no other records were found about these early permissions.

[37] This statement is indirectly supported by a further statement from Sandy, one of the Indigenous witnesses (see below).

[38] The importance of the weir area as a residential site is reasserted in a subsequent account by Sheila Conway at 2.5.2 below

[39] The judge travelled to the site on the journey from Darwin to Alice Springs, where the court session took place.

In 1937 what happened?--We went on from year to year and there were no complaints from anyone until this business cropped up in 1945.

And in 1945 what happened?---Mr. Holt went down and had a look at it.

(Northern Territory Archives Service and Supreme Court of the Northern Territory)

Figure 15. View of the Roper. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection.

2.4.2. Testimony from Indigenous witnesses Dagan and Sandy

Indigenous witnesses were called in the courtroom, although at this time in colonial Australia their testimony was not given the same weight as that given to non-Indigenous witnesses. Noteworthy in the early testimony of Dagan is the immediate counsel focus on water levels in 1945 ('last year before wet season time') rather than on the wider context for and history of Indigenous water management practices. Holt's primary counsel, Mr Ward, objects to an unsolicited answer from Dagan which asserts the pre-colonial origins of the weir building. The judge also asks questions of the witness:

ABORIGINAL DAGAN called and cautioned to tell the truth.

MR. LYONS: You name Dagan?---Yes.

You bin work alonga Elsey Station?---Yes.

How long you bin workem?---Long time since I bin little boy.

You savvy last year before wet season time?---Yes.

Whereabout you work then?---At Elsey.

What work you do then? -- Pullem bullock alonga Red Lily.

You savvy that Red Lily?---Yes.

And that Roper River?---Yes.

Where that Roper River bin join up alonga Red Lily?---In Jungle.

Where him bin join up, piccaninnie blackfellow and dog walk across there?--- Yes.

That water where Red Lily and Roper bin join up, how deep?---six inches.

When you bin walkem water that deep?---Yes.

How deep that one mud?---15 inches.

How deep you bin in water?---15 inches.

And in that mud?---6 inches.

HIS HONOR: How far water come up alonga leg?---15 inches.

How far mud? --Alonga water.

MR. LYONS: Plenty dog and piccaninnie walk across?---Yes

No more him bin swim?---No.

What other blackfellow do alonga jungle?---Him block in the water

before white man.

MR.WARD Objects.

What him bin do there, other blackfellow?--- Do that for fish. Makem plenty water for duck.

You tellem that one time this one big fella boss, Mr Giles and another man come alonga other side?---Yes.

And pick up other blackfellow?---Him block in that water so plenty water go them reeds.

Plenty water go out alonga big fella boss there?---Yes

You savvy when Mr. Giles tell blackfellow no more block water? ---No

MR. LYONS: Him bin running there?---Yes.

Him bin spread out?---Yes.

(Northern Territory Archives Service and Supreme Court of the Northern Territory)

The examination continued as reprinted below. After an initial objection to the question by Holt's second counsel, Mr Newell, Lyons is able to ask Dagan about damming occurring downstream from Elsey, past the 'jungle'. This could be a reference to damming on the Roper Valley Station, which Lyons mentioned in his pre-case letter above, but as no evidence for this was requested from Holt, it may refer to a third location, which Dagan calls 'new yard'. In the excerpt above, Dagan spoke of damming for fish and to provide habitat for ducks. Here he speaks of further reptile prey species (turtle and crocodile), and of using a fish trap made from a hollow log. This appears to be an activity at 'new yard' as Lyons then asks if there is a place 'further down alonga Roper' where dams are built, presumably downstream from the second site, and Dagan states that there is. In response to a question from the judge, Dagan answers that these were temporary structures for catching fish, which were forced out through a narrow opening. This is an example of a situation where a discussion of the weirs designed to sustain wetland habitat and in place for longer periods until the onset of the wet season leads to comments about smaller scale fish traps which are actively removed once they have served their purpose. One further interpretation from the transcript below is that Dagan is pointing to the use of a combination of techniques (i.e. that first the dam or weir is used to back up the water and make it deeper, then a hollow log is placed in the pool to catch fish). What is clear is that Indigenous people were altering flows at a number of points and in channels of different scales along the braided section of the river:

Mr LYONS: Little bit further along Roper River, after you bin come out alonga jungle, you bin see blackboy do anything alonga that one shell alonga water?

Mr NEWELL objected - Question allowed.

Mr. LYONS (to witness): You savvy that one Old Dick? -Yes

Below where blackboy bin make dam alonga jungle, water bin come out then alonga main stream.?---Yes.

Little bit further down alonga jungle, you savvy any blackboy bin makem any one dam there?--- Yes, right down new yard.

What him bin do?---Him bin puttem dam there.

What for him bin puttem dam there?---For fish - killem turtle and fish, killem croc.

Make water dry a little bit?--- Dry and cuttem hollow log, makem bit hole, and all fish go inside there.

Him bin makem dam like that another place alonga Roper?---Yes.

Further down alonga Roper?---Yes.

one blackboy bin do that?---Yes, him bin do that.

HIS HONOR: They no more bin leavem there after them catchem fish; they bin takem away?---Yes, they catchem fish and lettem water go.

R. LYONS: Blockem up little while?---Yes, and then lettem go away.

(Northern Territory Archives Service and Supreme Court of the Northern Territory)

In the cross examination below, Mr Newell (acting for Holt) focuses almost entirely on Dagan's observations of what happened to the water flows when the dam was not constructed, and specifically, whether water continued flowing into the reed beds (called Reedy Swamp later in the case) and into Red Lily Lagoon respectively. This was an important point, because part of Elsey's argument for minimal downstream impact of the main weir was that these ancillary dams counteracted any impact from the main weir by diverting water to Red Lily and on downstream via Wagon Lagoon, water that would otherwise flow to and evaporate from the shallow reed beds. If, when the river was in its unaltered state, water continued flowing into the reed beds all through the dry season, then these ancillary dams would be responsible for diverting considerable additional flow down the Roper. However if unaltered channels stopped flowing into the reed beds sometime during the dry, then Elsey's argument for the impact of the ancillary dams was weakened, as at a certain point they become redundant. Newell may have misunderstood Dagan's earlier response to Lyons about water 'going into them reeds', which appeared to be a reference to Reedy Swamp, but actually was more likely a reference to Red Lily itself, which was also relatively shallow and full of aquatic plants. Dagan was initially confused by the questions, but with the assistance of further questions from the judge, ultimately responded by saying clearly that water continued to run into the reed beds throughout the dry season, but that it ceases flowing to Red Lily during the dry, with Red Lily itself retaining some water throughout.

CROSS-EXAMINED BY MR. NEWELL:

You bin talk-talk about those reeds on other side of river; you bin talk, "Water run in there and no more dam"?---Other side of river.

Those reeds other side of river, you bin talk, "Water run in there when no more dam?---Dam straight across river.

But that one dam alonga Red Lily, when those dams no more there, water still run alonga reeds on other side of river? --- No bin talk that way.

You savvy them reeds where we go alonga motor car?---Yes.

Where we see Cranky Dagan that day?---Yes.

That one year blackfella no more dam Red Lily, how long water run alonga reeds that time? All through dry time or him bin finish before dry time finish? You no more bin savvy what I bin talk?- No.

HIS HONOR: You savvy that time no more dam bin put in; Mr Giles bin talk alonga blackfellow "No more putem dam, in there"? --- Yes.

That time flood go, water run out alonga reeds?---Yes.

How long him bin run - flood time finish and him still run?---Yes, still run.

And dry time come, still run alonga them reeds;---Yes, still run.

MR. NEWELL: Close up end of dry time, run alonga them reeds?---Yes.

Them reeds where we bin meet Cranky Dagan?---Yes.

Run alonga there all the time?---Yes.

No more dam alonga river, no dam at all, dam finish?--Yes.

Water still run out alonga them reeds? -- Yes.

All time, right through dry time'?---Yes, right through dry time.

MR LYONS: Water bin run in Red Lily all through dry time, no more dam, dam finish, water bin run alonga Red Lily right through dry time?--- No, water bin finish.

Water bin finish alonga them reeds some time --

HIS HONOR: You savvy that time you no more put dam, dam finish?---Yes.

Water bin run out of river into Red Lily how long; flood time finish, him still run into Red Lily?---No, water finish alonga Red Lily, except right in Red Lily.

But no more run out of river into Red Lily?---No.

Middle of dry time?---Yes.

And when him finish run into Red Lily, him still run into them big reed beds?---Yes.

All the time?---Yes.

(THE WITNESS WITHDREW)

(Northern Territory Archives Service and Supreme Court of the Northern Territory)

This is the only matter about which Dagan was cross-examined, and his evidence indirectly supports Elsey's argument for the role of the ancillary dams. If they are not there, water will run into the big reed beds 'all the time', with consequent impacts on evaporation rates. From a contemporary perspective, it confirms that Indigenous people were not just involved in sustaining wetlands, but also intervening in ways which, whilst not actively draining wetlands, had the effect of prematurely drying them out in one spot whilst sustaining them elsewhere (Red Lily and Wagon Lagoon, which took the overflow from Red Lily via Wagon channel). The next Indigenous witness called was Sandy. In his evidence he describes catching fish by 'poisoning' them, a reference to the technique of manipulating water quality by cutting branches of particular trees and placing them in smaller bodies of water to stun the fish,[40] and also of people building some kind of fish trap which involved blocking the stream with stone and leaving a small outlet through which the fish would fall:[41]

SANDY, Indigenous, called and cautioned to tell the truth.

MR. LYONS: You bin Roper River boy?---Yes.

Before dry season time last year, you bin work alonga Mr. Holt?---Yes.

And by and by you bin leavem Mr. Holt and go walkabout?---Yes.

Where abouts you bin go walkabout?---Alonga river.

Whereabouts?--Duck Ponds.

You bin up alonga top side alonga Duck Ponds?---Yes, top side.

Bin alonga Brennong?---Yes.

MR. KEVIN WARD: I think you must not lead so much.

MR. LYONS : It is only formal.

HIS HONOR: I do not know that it is formal. It is certainly leading.

MR. LYONS (to witness): Him bin hot weather time last year?---Yes.

Dry season time?---Yes.

[40] Still practiced in other parts of north Australia Toussaint, S., P. Sullivan, et al. (2005). " Water ways in Aboriginal Australia: an interconnected analysis." Anthropological Forum **15**(61–74).

[41] These techniques are discussed further in 3.2 and 3.3 below.

All right, what you bin do there?---Walkabout there; I bin sit down there and rain bin come up, then I bin go away.

Before rain bin come up, what you bin do?---Go away alonga top.

MR. LYON: Up alonga Elsey place?--Yes.

What you bin do when you bin sit down there, alonga Brennong way?---Killem that fish.

Which way you bin killem fish?---Alonga Duck Pond.

You savvy that creek that go along to Big Yard?---Yes.

What you bin do there?---Him bin dry all the time.

All right, you bin catchem fish?---I bin poison fish.

Which way you bin poison? --I bin poison alonga river.

Which way you bin poison-em?--- With waddy, tomahawk.

What other blackfella bin do alonga that water?--- Him bin stop-em water.

Him bin stop-em water?---Catchem fish.

Which way him bin stop-em water?--- Mudbugger.

What him bin do alonga water?--- Put stone alonga water, and put-em little bit cut out, and fish bin fall in.

Him bin stoppem water running:---Yes.

(Northern Territory Archives Service and Supreme Court of the Northern Territory)

Mr Lyons then goes on to ask Sandy about the issues of water and food availability for the cattle during the dry season of 1945. In the excerpt below, Sandy replies that the problem was food, not water, that the 'thin fella' cattle were dying in 'dry' places (places with no grass) having come back from drinking water, and that Roper Valley Station had not done what Elsey Station had done, which was to continue to employ 'blackboys' to pull the cattle out of the bog ('Mr Holt bin sack you?--Yes'). Counsel also establishes that he is clearly talking about the previous dry season of 1945 ('how many wet weather bin come up since then –one fella'):

Mr LYONS: Plenty of water alonga river alonga Duck Pond that time?-- Yes.

Alonga big billabong?---Yes.

What name mob of cattle bin run alonga Duck Pond; you savvy that one Mr. Holt talkem Rex down there?---Yes.

You bin work alonga him?---Yes.

Him bin have-um bullock alonga paddock?---Yes, him bin have-um bullock alonga paddock.

What name that bullock - fat fella, poor fella?---Poor fella.

What matter him bin poor?---Poor grass, plenty water.

What name that grass? --Grass bin no more grow; him bin dry.

What about that bullock - him bin thin fella?---Yes, thin, poor fella; him bin drinkem water, him come back and die alonga dry place.

Blackboy alonga Roper Valley, they bin pullem bullock out alonga bog?--No.

Not all same alonga Elsey?---No.

Alonga Elsey they bin pullem out?---Yes.

Mr. Holt bin sack you?--Yes.

How many wet weather bin come up since then?---One fella.

No more two fella?--No more two- one

MR. NEWELL: One wet weather bin come up after him bin sack you?---Yes.

Then you go alonga Mudbugger, and another one wet fella bin come up and you go alonga Elsey?---That is right.

MR. LYONS: When next wet fella bin come up, you bin go alonga Elsey?--Yes.

Before last fella wet season, where you bin?---Bin alonga Roper Valley.

(Northern Territory Archives Service and Supreme Court of the Northern Territory)

Sandy and Dagan were the only two Indigenous witnesses called, and the above represents their entire testimony. Whilst what is recorded is of great interest, the restricted nature of the testimony is in stark contrast to the initial approach taken by Thonemann, who was keen to establish the pre-colonial origins of 'blacks' water rights' and their legitimacy with respect to colonial water law. Even though it was to have a profound impact on local Indigenous water management in the upper Roper River and at Elsey in particular, the court case had become almost entirely focused on a different set of issues. Whilst there were other witnesses, including Holt and Thonemann, in the light of the subsequent judgement it is the evidence of an expert witness, a Sydney water engineer,that is most important to reproduce here.

2.4.3. Excerpt of testimony from Mr Blair, consulting engineer

Lyons (acting for Elsey) had referred to the possibility of calling an experienced water engineer in his pre-case letter. In the end the defence relied on the evidence of Major Paterson, who had previously inspected the dams and reported to the NT Administrator. Holt and his counsel produced their own water engineer, a Mr Blair from Sydney, as an expert witness. Blair's evidence was extensive and at times complex. However a major conclusion he reached was that the Elsey practice did have an effect on the downstream flow, with evaporation a significant cause. Blair also undermines the Elsey arguments for the ancillary dams, stating that if the main weir were not there, the secondary dams would not be necessary, and that the water from the swamps would flow back into the river. The following excerpt is from Blair's initial examination by Holt's counsel, Mr Ward. It begins with the statement of the loss of estimated flow to the river between Elsey Crossing and Lindsay Crossings, which was the section in which the Elsey weirs were constructed:

MR. KEVIN WARD: After studying all the above facts, did you go into the question of the loss of the 167 cusecs over a 17 mile section from Elsey Crossing to Lindsay Crossing?--- Yes.

What conclusion did you arrive at on that?--The loss was caused primarily by interfering with the normal function of the swamp; in other words by backing it up.

And by backing it up, I suppose, into the Red Lily?--- Yes.

Without the dams, what would have happened?--- If the dams were not there, the water from Red Lily [Reedy] Swamp and [Red Lily] Lagoon would have flowed back into the river and supplemented the dry weather flow.

And assuming that the dams or weirs were not in the channels leading into the Reedy Swamp, what would have happened?--- if all the dams were removed, the dams to Reedy Swamp would not be necessary, as the water in the lagoon would drop about two feet and the channels flowing into the swamp would close off like the channels elsewhere throughout the Roper.[42]

The effect of what you have said would be, I take it, to reduce the water area of the Red Lily Lagoon and Swamp when the "dry" is on?---Yes.

To what extent?-- Five square miles.

In your opinion, how much would the Red Lily Lagoon and Swamp fall in water? --- Two feet would be the maximum drop.

[42] Note that this contradicts Dagan's evidence above, as Dagan stated that water continued to flow into the Reedy Swamp throughout the dry season.

What would be the result of removing the dams and thus lowering the water in Red Lily and confining the water to channels?--- With regard to the flow lower downstream, you would get a twofold result. First, the amount of water that is stored in the swamps would flow into the river over a period. Secondly, the amount of water taken monthly by the swamps for evaporation would be available continuously for the lower river.

Those results be cumulative? --- The first one is only a temporary one until it dries up, but they are cumulative while the first one is functioning.

Take the first one in detail. What quantity of stored water did you calculate would be directly available to flow downstream from the Red Lily, if those dams were removed`--- On the five square miles, allowing an average depth of 18 inches, you would get 1300 million gallons.

Where would that go?---Of that, you could allow a third to be wasted, trapped in the billabongs and lagoon, with two-thirds available for the river, which is equivalent to 880 million gallons.

And would you reduce that back into cusecs?-- If that all flowed off in a month, it would be equivalent to 53 cusecs flowing continuously for a month.

You could thus add those 53 cusecs, I take it, to the cusecs you registered at Lindsay Crossing? --That would be available at Lindsay Crossing.

So that it would have the effect for one month of increasing the flow there from the 70 you previously mentioned to how much?--- 123.

Mr KEVIN WARD: Actually, is that first number illustrated in any way by the drain which you saw flowing from the swamp down towards Wagon 'wheel?--- The drain with the four cusecs supplying Wagon Wheel is fed in this manner from the small swamp downstream of the dams.

You have allowed in that calculation a loss of one-third?--Yes.

In your opinion, is that an adequate allowance?--- Yes, it is a conservative figure.

HIS HONOR: A loss at what point? --- The whole of the water cannot flow back into the river. You get it trapped with billabongs and holes and so I have estimated that the trapped amount is a third of the total.

At Lindsay Crossing? --- Yes.

MR KEVIN WARD: In those calculations, have you assumed 18 inches? --- Yes.

You told me a little while ago that your opinion was that the billabong would recede by two feet? --- That is right.

Why have you selected 18 inches? --- It will not take a uniform depth of two feet out of the Lagoon.

The 18 inches you have allowed is what in your opinion would be the position? --- It would be a conservative depth.

Now with the second result that you mentioned, can you give us some details of that? With the Red Lily Lagoon and the swamps lowered, you said before that the surface area would be so much less and therefore there would be less evaporation? --- September to December are the highest months of evaporation, and for those months, on the evaporation figures we have, I allowed ten inches per month evaporation. That means that the evaporation losses alone on the Red Lily Lagoon and swamps are equivalent to 733 million gallons per month or 44 cusecs, and that goes on continuously through the dry season.

So it comes to this - that if the dams were not there, that loss of evaporation would be saved and available for flow down beyond Lindsay Crossing?---Yes.

HIS HONOR: All of it? --- Yes.

MR KEVIN WARD: And what is that equivalent to in cusecs? --- 44 cusecs.

You have spread that over the whole period? --- Over the whole of the dry weather. While ever the weather is dry, there will be 44 cusecs saved.

And those two results are cumulative? --- They will be while the water is running out of the swamp. Towards the latter end of the dry season, the storage value will have been lost.

HIS HONOR: How long do you think it would take before the stored water came out? --- It would commence immediately and continue for well over a month.

MR. KEVIN WARD I am not sure His Honor or my learned friend understands clearly your answer in regard to evaporation loss? --- The evaporation loss over a swamp is tremendous and equivalent to pouring ten inches of water over the whole of the swamp for a month purely to balance evaporation.

(Northern Territory Archives Service and Supreme Court of the Northern Territory)

Under cross-examination some of the assumptions and calculations raised above were queried, notably the complex effects of the porous limestone rock formations of the local area on water flows. However Blair's general credibility as a witness and his statements about the impacts of evaporation were to be influential in the final judgement, as the following section demonstrates.

Figure 16. View of the Roper. Photographer: James Mannion. Image supplied by the Northern Territory Police Museum from the James Mannion Collection.

2.4.4. Judgement from Justice Wells

The full judgement from Justice Wells can be found in Appendix 6.2 below, but the following summary and excerpts contain the substantive elements. In Wells' analysis, the three key defences of the practice put forward by Thonemann and Giles at Elsey were:

1) That they were not responsible for the construction of dams (they were an Indigenous practice);

2) That the dams did not diminish the flow, or did not diminish it in a way that was detrimental to Holt; and

3) That, if the dams were detrimental, they were lawful based on the licence granted by the Administrator.

In terms of the overall case, Wells decided that his decision was best formulated in terms of response to several key questions. These were as follows:

(a) Were the natives who were erecting and maintaining the dams acting as the servants and agents of the defendants?

(b) Did the practice represent a "diversion" of the waters flowing in a water-course, as opposed to 'its use for domestic purposes or for the watering of stock or cattle' within the meaning of the common law principles and of Section 5 of the Control of Waters Ordinance 1938?

(c) Did the practice diminish the flow of water onto the property of the plaintiff?

(d) Were the licenses for it issued under the 1938 Ordinance legitimate?

(e) If the dams unlawful, did the plaintiff suffer damages and if so, what amount?

The case was focused on the events of 1945, and so the answers reflected that. For (a), Wells had no hesitation in identifying that the natives had been acting as agents for the Elsey managers in constructing the 1945 dams, and therefore that the managers were answerable. In relation to (b), Wells concluded that:

> unless the water which is diverted into the Red Lily Billabong is returned to the river at some point within the Elsey Station boundaries, without sensible or material diminution in quantity, the diversion would be unlawful at common law; and it is in definite terms prohibited by section 5 of the Control of Waters Ordinance, unless the appropriate licence is obtained under the provisions of the Ordinance.
> (National Archives of Australia)[43]

With regard to downstream flow being reduced, he concluded that there was insufficient evidence to assess this in full, but he was satisfied with the evidence about one aspect. This was:

> [The] loss caused by evaporation from Red Lily Billabong, which, if the billabong is to maintain its level, must be replaced from the waters of the river, with a consequent diminution of the volume of water flowing downstream to the plaintiff's property. This loss was estimated by Mr Blair, an expert witness called by the plaintiff, as of the order of 44 cu secs, this estimate being based on an evaporation rate of ten inches per month over an area of five and three quarter square miles. The evaporation rate was confirmed by Colonel Paterson, called as an expert witness by the defendants, but he and other of the defendants' witnesses challenged the estimate of the area affected, suggesting that it was nearer to three and a half square miles. Colonel Paterson estimates that the amount of loss to the river waters by evaporation from this area would be somewhere about 30 cu secs. Probably the true figure lies somewhere between these two estimates; but even if we take the low figure of 30 ca. sacs, it represents a very considerable loss indeed, having regard to the rate of flow of the river itself.
> (National Archives of Australia)

He therefore concluded that the answer to (c) was that Holt had received reduced flows. Before the case, Lyons had regarded the potential issues of the legitimacy of the licence and of the reported animosity between the Judge and the Administrator as able to be negotiated successfully. His assessment was incorrect. Wells noted that section 18 of the 1938 Ordinance required regulations to be prescribed specifying how licences were to be granted

[43] The judgement is available from both the original case file at the Northern Territory Archives Service and from the government correspondence file at the Darwin branch of the National Archives.

and this was to be expected given that other sections in the Ordinance allowed for quite serious interference with common law riparian rights. However it was clear that:

> the Minister has never made any regulations under section 18 and nowhere in the Ordinance are to be found any provisions prescribing the manner in which an application under section 13 is to be made, the particulars it is to contain, or the cases in which statements made in it are to be verified by statutory declaration; nor is there anywhere in the Ordinance to be found the prescribed form of the Licence to be granted under section 14.
> (National Archives of Australia)

Given that it is impossible for the Administrator to follow proper regulations in the issuing of licences if those regulations have not been written, Wells concluded that any licences issued without them must be void and ineffective. Therefore, the apparently legitimate licences obtained by the Elsey managers are 'merely permissions given without any statutory or other authority'. Therefore question (d) was also resolved in Holt's favour. With regard to question (e), the matter of damages, Wells noted the difficulties of fully accurately assessing them, but via a calculation based on stock losses he ultimately arrived at a sum of £350, with legal costs to be paid by the defendants.

2.4.5. Case conclusion

The judgement represents a comprehensive win for Holt. This is particularly so in the light of the circumstances leading up to the case, in which the Elsey defendants felt they could demonstrate a practice that: had pre-colonial origins and in effect represented the exercise of a customary right; had survived repeated examinations by government officials; had a government permit; and was complemented by evidence that the losses occurring on Roper Valley Station in 1945 were due to reasons other than diminished water supply. The case had a sufficient profile for the final judgement to receive media coverage at the time (The Northern Standard 1946)[44] and both the government bureaucrats involved and Harold Giles felt that the outcome justified lodging files and correspondence with relevant archives in Darwin on which the current research is based.

Preliminary legal comment from the Northern Land Council obtained by the authors suggests that as the 1938 Water Ordinance is now superseded, the case no longer functions as a legal precedent, and so in many respects its contemporary implications lie elsewhere. Viewed from that perspective, two matters arising from the judgement stand out. One was the directive issued by the judge alongside the findings and assessment of damages:

> There will therefore be an order that the defendants forthwith remove all artificial obstructions from the main channel of the Roper River below the Red Lily Billabong, and from all the other channels at or near that point which lead down to Lindsay Crossing; an order that they be restrained from erecting or causing to be erected in such channels at the same point or elsewhere in the said river, any dams, weirs or obstructions of any sort whatsoever which will obstruct or diminish the flow or divert the waters or the said river, except under the authority of and in accordance with the conditions of a licence properly obtained under the provisions of the Control of Waters Ordinance 1938 or other statutory authority.
> (National Archives of Australia)

The building of diversionary weirs and other structures was now generally outlawed in NT law. It was only permitted in specific circumstances through a licensing process that was both inaccessible to the Indigenous people who built the structures and which would require considerable political and regulatory action before it could be safely used without further legal

[44] The outcome also received coverage in the Adelaide Advertiser and The West Australian on the same date

challenge. A case between two pastoralists had made the continuance of the Indigenous tradition far more problematic. Given that situation, and that specific rights for Indigenous people are now enshrined in various forms of legislation, two early paragraphs of the Wells judgement also stand out as relevant. At the time they were preparatory to the main judgement, functioning as a kind of prelude to the primary findings and substantive legal issues. However given the subject matter and their ongoing status as an evidentiary finding of the Supreme Court, they remain of interest today:

> It has been for many years the custom of the natives, some at least of whom have been employed by the defendants, to dam or partially dam the Roper River where it flows through or adjacent to what is known as the Red Lily Billabong, just a few miles downstream from Elsey Station homestead, for the purpose, from the point of view of the natives, of maintaining during the dry season the level of the water in the billabong and conserving therein supplies of fish, and attracting to it quantities of ducks and geese which the natives catch and use for food purposes. From the point of view of the defendants, the maintenance of a high level in the billabong during the dry season is important for the reason that it enables cattle depasturing on Elsey Station to drink from the billabong on hard ground and thus avoids or minimises the danger of losses through bogging of cattle.
>
> The evidence shows that the practice of damming the river by the natives for their own purposes had been going on for many years; that it was, in fact, an “old fellow black fellow" custom, or, to put it in legal terms, had been in existence from time immemorial. Whether or not the native practice was always carried out to the extent necessary to serve the purposes of the defendants is not clear, but apparently it was done to such an extent for some time prior to 1934, when the plaintiff first acquired an interest in Roper Valley Station.
> (National Archives of Australia)

Media reports of the case did describe this aspect, noting that “the defence brought evidence from natives that barriers had been made from time immemorial in order to hold the barramundi and attract geese and ducks” (1946). The pre-colonial origins are a part of people’s contemporary memories of the weirs, but unsurprisingly given the events described above and their consequences, the legal decision clearly shapes the way people remember the dams at Elsey in the present day, most notably by rendering it a past rather than an ongoing practice at that point on the river. The following section presents two subsequent written accounts of these events.

2.5. Subsequent accounts

2.5.1. ‘Tell the White Man’ (Thonemann 1949)

The first written account of the 1946 case (Thonemann 1949) emerged only a few years after it concluded. It was incorporated as part of the life story of Buludja (Bunny), an Indigenous woman who spent her life on Elsey Station Her story was written and edited by Harold Thonemann, who clearly had a very strong partisan interest in the damming issue and this no doubt shapes the way his account of Buludja’s story is presented. The book presents its material in the ‘voice’ of Buludja, and therefore the reader is expected to consider the content as at the least an edited paraphrase of her own words. The account prioritises the legitimacy of the Indigenous practice and the illegitimacy of it being banned:

> Another thing we do not understand is why you are so fussy about damming the river at the Red Lily. Our Kwiangan [Guyanggan] (Roper) is a beautiful river lined with dense green pandanus palms and large paper-bark trees, as it slowly winds its way through our country. For seven miles it is very wide and deep, but just where it enters the jungle it ceases to be wide and runs through the jungle in several small streams that are only waist deep and about two spear-lengths wide. Some of these streams break up into even

smaller ones; some disappear underground. About here the water flows into the lovely Red Lily Lagoon on one side of the river, and into reed beds and jungle swamps on the other side. Further down, the stream joins up again for some distance and then separates into a number of channels. In some places we can travel all day long in a boat and at others walk across the numerous small streams. Just below the jungle, the river divides into the two main streams. One flows on all the year round, but the other, which has to flow over a low bank, sometimes stops running in the latter part of the dry season. This causes a large lagoon called Wagon Lagoon almost to dry up. In some very dry years it dried up earlier than in others, but we like to see plenty of water run into it so that it gets filled with fish, which we can spear or trap as the water ebbs. We also like to see water in the jungle all the time, for birds of all kinds gather near it and the food plants that we like grow better. To keep the water at the right height we put sticks and paper-bark in the narrow part of the stream to prevent it running out of the jungle and the Red Lily Lagoon too quickly, and also to keep it high enough to flow down the channel which runs into the Wagon Lagoon.[45]

Old Goggle-Eye, who was a very old man and "been finish" when Mrs. Gunn was here, taught his son, Jungle Dick, how to do this. He told him the Mungari [Mangarrayi] had stopped the water running out too quickly for as long as he could remember. In fact, they had done it in Kurnallan (far past times). As the small channels sometimes change their positions and character, each one is blocked separately. Where the stream was a small one he had taught his son to chop down a tree so that it would fall across it. Sometimes that stopped the water altogether, but if not, sticks and earth were piled up against the log. Where the stream was deep with steep banks it was harder to stop. In some places the water even ran under the banks which had been cut away by the flowing stream. Then they had to knock those overhanging banks away, but because of the tree roots, they could never completely confine the water to one place. Usually they cut down a small tree, carried it to the channel and laid it down as if for a bridge. We did not need a bridge as such, because we could easily walk through the water, but that is the easiest way to describe it to you. Our boys then cut a number of big sticks about as tall as themselves, pushed them into the mud and leaned them against the upstream side of the log. We used plenty of sticks, but as the water ran between them freely we got sheets of paper-bark, laid them against the sticks and then pushed in a few more sticks to hold the bark in position. Most of the water still ran through the cracks, but it stopped enough to keep the water at the height suitable for our purpose. We did not have to raise the water, because we did the work before it fell to its lower level in the dry season. Except just after the wet season the level of the water in the jungle never changes more than about the width of one hand, but if it fell as much as that some of the swampy grounds and the channel to Wagon Lagoon would dry up and our hunting and fishing grounds be left empty.

For as long as Old Goggle-Eye could remember, this was how it had been done. We, too, followed this method until Giles showed us an easier way to keep the water in big channels. He told us to put the "bridge" as usual, with a few stakes upstream as before, and then to make frames ("hurdles" he called them) and to wire sheets of bark on them. Then he wired one side of the hurdle to the bridge with the other side floating on the top of the water up-stream. He then told a number of our boys to jump on the upstream side of the hurdle and push it under the water. The job was then finished because the flowing water kept the hurdle pressed against the stakes. A deal of water ran through the bark and stakes, but that did not matter. It stopped enough. Some years later Giles stopped us from doing anything to the river. He said "Big Fellow Policeman say No." We said we wanted to make the water keep high, but still we were told not to do anything. It made little, if any, difference to the flow, and only a slight change in the height. Giles got Jungle Dick to put in sticks to register the height, and was satisfied that what we told him was

[45] This passage makes an explicit distinction between flooding ‘the jungle’ and the Red Lily Lagoon. It is not clear what area the former is meant to represent but it again suggests a landscape-scale impact from the activity.

> correct. After the next wet we were allowed to do it again each year for some years. There have been many wise white Buk Buks who have come and measured the height, and each time have allowed us to do what we have done for many years past to our Kwiangan.
>
> Lately, Giles took two of our boys to Alice Springs, where we told the white man judge about it, but after much talk he said that Giles must not help us to do it again. He showed us how, and helped us only once, but still we are not allowed to do it. He says the white man's law says it is wrong, so we must not do it. As Jungle Dick, who is Buk Kuk of Red Lily, still wants to do it, we do not understand why we are not allowed to. You took our country from us and now you stop our keeping water where we want it, so that we can get plenty of food easily. We try to make the best use of our water and our country, but you keep stopping us, saying: "White man's laws will not allow it." We think it is time you changed your laws when they interfere with our freedom to live our own way. (Thonemann 1949:150-153)

Thonemann's editorial influence and role in selecting content are clear in the above passage, and the consistency with information from previous accounts from the case is unsurprising given that the book emerged only three years later, and Thonemann was both defendant and editor/author respectively. Nevertheless, the account lends further evidence to the argument for a pre-colonial practice, as well as describing the location in some detail. The second account emerged almost 50 years later under quite different circumstances.

Figure 17. Canoe on the Roper, photographer: Margaret Giles, later Margaret Voller, 1940. Supplied by the National Museum of Australia

2.5.2. ‘Big River Country’ (Merlan 1996)

This version (Merlan 1996) of the damming issue is also an Indigenous account facilitated by a non-Indigenous editor, but in this case the account is far less mediated, as the anthropologist Merlan’s language skills enable the story to be presented in both English and Mangarrayi.[46] In the introduction to this version, the emphasis is placed on the practice emerging from the needs of the cattle industry, and that its value for attracting fish and game was a kind of by-product of the process. This relative weighting may well reflect the reinterpretation of events that had occurred locally in the intervening decades between the case and this account - the emphasis on the needs of cattle and on the non-Indigenous pastoralists role generally which are a feature of contemporary Indigenous accounts may have been a means of deflecting responsibility for the ban that followed the case. The people recounting this narrative were very young when the events took place. However, although Elsey pastoralists were involved in weir construction, it seems clear that it had considerable pre-colonial origins and a subsistence orientation. This also emerges in conversations with people from the area.

Merlan:

Mary Nurniyn tells how her father, Jungle Dick, or Yiworrondo (Gondo for short), dammed the Roper River at Red Lily lagoons on behalf of Elsey Station, causing the lagoons, or branches of the river at Ngarrmirngan, or Big Red Lily Lagoon, and Na-ni-nawunggan, known as Little Red Lily Lagoon, to fill with water. Jungle Dick was asked to do this by station manager Harold Giles, both to provide water in these places for the cattle, and to prevent them from bogging along the main river. But the damming also pleased Elsey's Aboriginal people, as Sheila Conway tells in the story following this one, because it enabled them to catch plenty of fish and game. The results were not so pleasing to Roper Valley Station downstream, however, a situation to which Mary and Sheila both refer. Mary also tells about the movements of the Elsey mob up and down the river with her father, Jungle Dick, and Sheila's father, Gelwanggin, or Billy in English, among others. She relates how these men taught them to look after country, and emphasises well how older women taught them to collect and prepare foods.

Mary Nurnyin:

When my father dammed the jungle, the water went to Red Lily for the buligi-wu cattle and then the water rose at Red Lily. My father went and removed the paperbark [dam]. Your granny[47] threw it away. My father went and dammed the water in the jungle. He sent it to Big Red Lily and right up to Little Red Lily the billabong. And then those two billabongs grew. My father went and removed the paperbark. He threw it away and sent the water to Gulyiwayi [on Moroak Station] and Mole Hill [both downstream]. That whitefella came, Mr Holt [from Roper Valley Station], they used to call him 'rock wallaby'[48]. He came and asked my father.

'Why are you blocking off the water?'

My father said, 'I'm blocking off the water for our cattle.’

‘I want the water to flow downstream too,' he said.

'Big Red Lily and Little Red Lily should fill up so it doesn't get muddy.' [said jungle Dick] 'So the cattle don't bog.'

[46] For brevity, only the English language translation is included here

[47] This is probably a further reference the father of the speaker, using the listener (Merlan’s) relationship to him as a classificatory granddaughter.

[48] [Footnote from original] Tom Holt, manager of Roper Valley Station, was called 'rock wallaby' in one of the languages spoken there, Ngalakan. People have explained to me this was because of the way he walked, his shoulders and arms held somewhat stiffly.

> He just came and asked my father. He asked your two grannies.He asked them and they knocked him back. 'We block the water for our cattle.' He went back to Roper Valley.
> (Merlan 1996: 45-47)

Noteworthy in the above story is that Holt did not get what he wanted – his request was rejected by the two Indigenous men, whose stated primary reason for acting is to generate water for the cattle and prevent the lagoon becoming 'muddy' (boggy). This may be a recollection of an event in the 1930s or early 1940s prior to the case, an event which places the agency and decision making power firmly in Indigenous hands. A second version of the story is given by Sheila Conway, a current elder and spokesperson for the Jilkmingan community. In the introduction to this version, Merlan provides more detail and also refers, as does the storyteller, to the pre-colonial nature of the practice. She also notes Giles' suggestions for modifying the barrier:

> Merlan: Sheila Conway tells about life at Elsey when she was a girl, just around and after the War, during the period Giles was manager. Her account makes clear the extent to which Indigenous people continued to collect bush foods, moving up and down the river, though they also received rations. She also refers to the `water battle' with Roper Valley Station, and indicates that not only did Giles encourage them to dam the river at Red Lily lagoons to keep the cattle from bogging, but also, the Indigenous people exploited the plentiful supplies of fish, game and resources that abounded along the river as a result. She tells how Bordjong, or Left Hand Sandy[49] as he was also called, was sent over by Tom Holt, manager of Roper Valley Station, to find out what had happened to the water supply. The damming of the river was described by H. E. Thonemann in Tell the White Man (1949, pp. 150-3). He notes that the Roper River ceases to be wide where it enters the jungle, breaking up into small channels, and flowing on one side into Red Lily lagoons, on the other into reed beds and jungle swamps. Just below the jungle, the river divides into two streams. One flows all year, but the other sometimes stops running in the latter dry season, causing Wagon Lagoon (the Mangarrayi name of which is Gandirrgiyan (gahn-deer-ghee-yan) downstream to dry up. To keep the water at the right height the Elsey people put sticks and paperbark in the narrow part of the stream to prevent it running out of the jungle and the Red Lily lagoons too quickly, and also to keep it high enough to flow down the channel which runs into Wagon Lagoon.[50] Jungle Dick claimed the Mangarrayi had done this for as long as he could remember. But Giles showed them another way of building the barrier to keep the water in big channels. The water issue culminated in a court case at Alice Springs. Thonemann (1949, p. 153) reports that, following the court case, Giles stopped the Elsey people from damming the river, and was told by the judge that he must not take part in altering the water flow.
> (Merlan 1996: 56)

Some further observations additional to the introduction provided above by Merlan are worth noting here. Sheila Conway prioritises the role of Bordjong (Sandy), who gave evidence in the case. In this account he was not sacked by Holt and moved to Elsey, but rather was sent by Holt to investigate the water supply. Sheila also relates the story of the damming to a further issue between Holt and Giles which culminated in a second court case in 1949 (The Argus 1949). Holt was charged with shooting cattle which belonged to Elsey for meat.

> Sheila Conway: The army was cutting wood at the sawmill. They were cutting Leichhardt and paperbark trees. But we kids, we stayed right back in a pocket. Old people went and got cow's tongue. They wrapped it in paperbark. They carried it and went back to camp. Mosquitoes didn't bite us at night. In the early morning the old people would jump into the water. We would go to Rendezvous Hill [near the jungle]. We would wait there. Old Kayko

[49] Presumably the Sandy who gave evidence in the case.
[50] Further and more explicit description that the consequences of the weir were not just the temporal and spatial extension of Red Lily lagoon, but also of Wagon Lagoon.

Giles would come. `Here!' he'd say to us. `Here are your rations.' And they'd dive into that river. Our fathers and mothers. They'd put the food on paperbark floats now. Take it back to camp. They'd take it back to our camp. We took it and went to the `canal'[51]. The water was backed up to Pocket Creek, Yamdarran, and there were barramundi at Birlinybirliyn. There were yabbies, barramundi, freshwater crocodiles and fish of all kinds. Our fathers got them. We ate flying foxes and dingo. There were lots of old people - Mangarrayi, Ngarrabadji not just one![52] When they'd knock off in the stock camp, a big mob would come this way. And they'd go up to Jirrgijaji, Juwarra, Birlinybirliyn, right up to Gundangala [on Moroak Station].They'd go up to Gulyiwayi [on Moroak Station] along the bank, and then that way. On foot, no motorcars! The old people went along that road, got river lily and carried it. Honey, and what's-it? cheeky yam. They got it and brought it back to camp. They'd bring back paperbark bundles this way to camp. Our fathers would carry them. They would make canoes out of Leichhardt trees. They'd climb up and make them. They'd burn them out and do all sorts of things. When they'd dried out they'd put them in the water. Old man Bordjong would come sneaking up [from Roper Valley, where he lived]. That old man would sneak up, my grandfather, I called him. He'd come to the station and look around nothing! He wouldn't find man or woman! He'd wait around, maybe some others would be working. He'd ask and ask them.

`Where are all the old people?'

`There's just camp here [no people]!' he'd say.

`They're not here!'

`They're at the jungle!'

`The jungle!'

`They're after that canal there!' He'd come stealthily, like a sorcerer. He [Holt] sent that old man.

'Yes, I'll try going.'

Then he got up. He dived in at Birrarran, at Guwarlmbarlg [near the jungle]. He came along the bank and looked. They looked, `Here he is! He's come from Roper Valley!' they said. They gave him fish, he ate it. They'd give him flying fox and cheeky yam. Wijwij mob, Buwab, Janmag mob. All my grannies. Garragayin was still a young woman.

All right, he looked around then, `You've dammed it here!'

`We make a canal,' they said, poor things.

`We just shut it off for the fish!'

'It [water] doesn't go downstream.'

In the afternoon he went, came out and told their manager [Tom Holt].

`We sit here and sit here, I found the old people are damming the river and have made a canal!'

`So we're sitting here with no water!' the old man said.

That whitefella [Holt] sent telegrams every which way then. The policeman came and asked Kayko Giles. He [Tom Holt] was stealing his cattle, he came from the east and was stealing his cattle. That one, and also from here. They were taking cattle off each other. That's not going on today. Then the old man went back. He sent telegrams to the police. The police picked up that old man (Giles]. He took him to Alice Springs and they had court. And then what he [Giles] said was,

`You can't keep on taking my cattle. If you take them, I'll close off the water for good!'

(Merlan 1996: 60-62)

[51] The 'canal' or ditch created by the damming of the river

[52] Mangarrayi people also use the word Ngarrabadji to refer to themselves. This term is less commonly used, and nowadays, its use is something of a mark of insider status and knowledge.

In the light of the previous information, Sheila's account bears considerable further analysis, more than can be undertaken here. She refers to many of the features already discussed, including the role of the 'weirs ('canal in this account') in subsistence catch. However she also brings in the arguments between the station managers about cattle, claiming not just that Holt was taking cattle from Giles, but that 'they were taking cattle off each other'. She recasts the water story as one of punishment, in which Giles is able to exercise control over the water in response to cattle thefts by Holt. As was noted in the introduction, the second court case about cattle theft occurred in 1949, well after the weir issue was resolved in 1946. Yet once the temporal ordering is removed, as is likely to have occurred in oral accounts over the intervening decades, Sheila's account makes sense as an explanation for both events and provides seemingly logical motivations behind them. Her interpretation makes even more sense if disputes about missing cattle were occurring in the decade or two before the 1949 case rather than just in that immediate period. No doubt the 1946 water dispute was a significant motivation in Giles bringing the subsequent 1949 action against Holt about the dead cow. Lastly, noticeable in both of the 1996 accounts from Merlan is the absence of the court decision – in one the Indigenous actors reject Holt's attempts to control their activities, in the second Giles is given primacy as the actor responsible for determining if the weirs are built, even after the court case has happened. It is not possible here to further explore the potential implications for notions of memory and history, and of interpretations of human motivations in the past, that this material suggests. What is important for the present circumstances is to note the consistency of these accounts with the previous evidence – the role of the weirs in both subsistence and in watering cattle combined with the presence and agency of key Indigenous and non-Indigenous actors – alongside the variations in terms of the profile assigned to the 1946 case.

Figure 18. The natural barrage of debris that has formed at the point at which the Red Lily weirs were constructed until 1946.

2.6. Conclusion

Although much of the technical detail of the Red Lily dams and their flow impacts in both the government correspondence and the court transcript has been omitted here, the preceding sections demonstrate the depth of historical detail that exists about the weirs and ancillary dams associated with Red Lily Lagoon on Elsey Station. Even though it is many decades since those structures were built there, the story of the weirs still emerges in contemporary consultations:

> Pocket: “the river here is more like a narrow fast flowing aqua coloured channel cutting into the rich alluvial brown soil. The main arm of the Roper divides up into several looping and winding lagoons and narrow creeks. In the wet the region is completely inundated but now in late September, only 2 channels are still running. It is possible to cross from one side of the Roper to the other without getting wet. Every year the path of the river here changes, and for longer than people can remember, Mangarrayi people have been tending to the life of the surrounding swamplands by making temporary dams to divert the rivers flow.”
> (Norman 2010:43).

Understanding the main features the 1946 case is crucial to understanding the nature of the pre-colonial practice, how it was influenced by the pastoral era then undermined by colonial water resource law, and how it is remembered by living people. In a sense, the court order was effective, as it prevented further weirs being built at that particular point on the Roper River. However it is also clear from the case evidence that Red Lily was not the only location in which such structures were being built prior to 1946, merely the largest and highest profile. The relatively low profile of the Wells decision in more recent Indigenous accounts may be partly due to the fact that, although it caused major weir construction on Elsey to cease (and indeed in recent years a natural barrage has formed where the weir used to be sited), the judgement did not spell the end of such activity elsewhere on the upper Roper. Further analysis of the implications and consequences of the 1946 case material appears in Section four, but before undertaking that additional analysis, it is important to examine other instances of Indigenous water management practices on the upper Roper after 1946.

3. INDIGENOUS WATER MANAGEMENT IN THE UPPER ROPER AREA AFTER 1946

3.1. Introduction

> My aunty said there was also a dam at Gundungala. That's Moroak.
> MR

> Joey and old Daylight know the story of those dams. They will give you the right story. At Lindsay crossing near Goondooloo they used to block the water too. Poles, paperbark, tin. The water was not going out to the Roper. They did it for the cattle.
> MS

Further evidence located during the field research for this project demonstrates that Indigenous people continued to place small obstructions to catch fish and alter water flows after 1946. Three instances will be discussed here; fish traps in the decades after 1946, weir construction to flood low-lying areas and sustain cattle fodder on Moroak Station from the 1950s to the 1980s, and recent activity intended to redirect water and mitigate erosion at McCracken's Lagoon on Elsey Station. This section provides some further context and elaboration which connects the pre-1946 situation with the present.

3.2. Fish traps and fish kills: aquatic food sources

As noted above in interviews for the 1946 case, when Indigenous people from the Roper River are asked about the weirs, they also respond by talking about techniques for catching fish: minor diversions or blockages of water flow with outlets to trap fish; barriers to enable easy and effective spearing; and local manipulations of water quality to stun or poison fish. The subsistence objective of the weirs was to generate and sustain additional habitat for a wider suite of food species (plants, birds, fish and reptiles) and they had landscape scale effects. The fishing activities operated at a more modest scale, were often temporary, and had one objective. When specifically asked about weir building activity after the Red Lily case, one contemporary local Indigenous elder responded in a similar fashion to the case witnesses, by describing blocking small channels to catch fish:

> [We did it] just in the little channel to catch fish. We had no wire spears. The old people would find the little channel and block 'im up. Then get the iron wood tree, sharpen 'im up and kill that fish.
> SC

> They would block the lagoon and make a bush net to catch the fish. I saw it when I was 12 or 13. They are not doing it now, they just use the line.
> FR

> We saw the old people blocking the water to catch fish. When we were little fellers we saw them doing it, the old people showed us. They would go out to the jungle, to the small channels.
> RR

Others described manipulating the water quality of smaller standing bodies of water. Leaves and branches of particular trees were placed into smaller lagoons and billabongs which would 'poison' or stun the fish:

> They would drag the bushes through the water and you would see the fish floating. That tree has red fruit, but they are poison.
> FR
>
> We do that in the hot weather time. Put that bark in to catch the fish.
> MH
>
> We could do it at Strangways, when the water go down. We know one place, a billabong, we would get the tree, put the poison in, and the fish would float up. Only on the small billabong.
> SC

It seems that water quality manipulation relied predominantly on using existing small billabongs rather than creating small water bodies by placing obstacles to dam smaller channels. However there seems no reason why both techniques could not be applied in together in appropriate circumstances, and Sandy appeared to refer to this in his evidence in the 1946 case. This question was not investigated further during the current research. SC's descriptions of the fish stunning occurring 'only on the small billabong' and the previous reference to blocking 'little channels' to aid spear fishing demonstrates an awareness of the differing scales of this fishing activity when compared with the habitat creation process operative at Red Lily. The verbal emphasis on the reduced scale may partly be due to knowledge that obstructing the river had been made illegal by the court case, but is also consistent with statements by others, that these practices were designed to 'catch fish' rather than create wetland habitat for wider prey species and/or provide water for cattle. Indigenous responses about fish traps and kills usually implicitly or explicitly recognise the distinction in scale and purpose between this activity and weir building. Yet in responding to questions about weirs with information about fish traps, people are also showing that the sharp Western property law distinction between water itself and the resources that water contains does not operate as strongly within local Indigenous laws, traditions and perceptions. From an Indigenous perspective, the acts of spearing a fish, of temporarily blocking a minor stream to trap fish, and of significantly diverting water over a period of months to create large areas of fish habitat are differing expressions of the same set of rights and of the same subsistence objective, rather than occupying different conceptual and legal categories as they would potentially do under European-derived Australian law.

The building of smaller scale temporary fish traps was locally important in providing food, used the same techniques as larger landscape scale water diversions, and, as has been shown, is likely to arise in any discussions of Indigenous water management practices in the area. Depending on how such activities were undertaken, some of these fishing techniques may also technically fit Western legal definitions of a water diversion, but of a smaller scale and intensity of outcome when compared with the process at Red Lily. The manipulation of water quality associated with fish poisoning or stunning is harder to classify, but nevertheless further indicates Indigenous manipulation of the local landscape. As indicated by the comments from local research participants, these techniques continued to be used in the decades after 1946, but as nylon fishing lines, hooks, and nets became more common, their use did decline. This decline, added to the fact that they operated at a much smaller scale than the Red Lily weirs, means that they are not explored further in this report. However these techniques do represent one form of continuity with the pre-colonial and pastoral era actions at Red Lily. A more substantial continuation of Indigenous weir construction for landscape manipulation purposes after 1946 is discussed in the next section.

3.3. Flood irrigation and subsistence: weir construction on Moroak Station

3.3.1. Historical practices

Moroak station was excised from Elsey Station after World War Two, and in 1951 was occupied by the MacFarlane family. Hamish MacFarlane, son of the original lessee, was interviewed as part of this research and provided the majority of the information for this section. The MacFarlanes operated the property until the late 1980s, and had Indigenous people working on the property throughout that period. According to Hamish MacFarlane, a significant number of stockmen came over from Elsey Station to work at Moroak Station in the early years, and there was regular movement of people between them:

> Well, keep in mind the work force at Moroak. I think I'm talking out of school, but I think it was at excised off Elsey late forties or something, so it was brand new. The workforce that went to Moroak in '51, they were doing these things [weirs and fish traps] on Elsey. They were probably doing these things as they walked [as well]. To give you an idea, I know it looks huge [on the map], but Bigfoot John was a [message] stick man when I was a child. He would walk from Moroak to Elsey Station to deliver a stick and they would mark the stick and recite the message with the marks and then he would receive his stick back. He'd be back [at Moroak] at sundown. You know they'd trot along through that country effortlessly, very quickly and it's not a great, in direct lines we are not talking big areas. But it is a large river system.

When the MacFarlanes arrived, they followed and maintained the local practices:

> Aboriginal people, to our knowledge [which comes] from the fifties onwards, had always blocked and maintained flows into lagoons. The premise always was to push the water out to the outside channels, to dissipate water as far as you could to give more abundance for wildlife, plant growth, and all those good ideas. As children we saw them, my father saw them as soon as we got there and we maintained that practice.

Hamish noted that good station owners prior to the 1970s made major land management decisions on a 50/50 partnership basis with their experienced local Indigenous workers. Both Indigenous and non-Indigenous people were aware of the 1946 court decision, but acted based on other motivations:

> We still did it because we had beliefs, same as they did, we grew up with them, that we have responsibilities to land. And sometimes if you have to do the wrong thing to maintain your principles and your responsibilities, then that's what you do. And I believe they're in the same boat nowadays.

Former Aboriginal stockmen from Moroak also recalled building the weirs at Moroak:

> AF: I was young, just a teenager when I went to Moroak.. Moroak was just starting up. I was doing stockwork there.
> Marcus: Who was the boss there on the Aboriginal side?
> AF: Madmayin,[53] Robin John's grandfather was our boss. He and his brothers. They went from Elsey to Moroak. He'd tell us "You can't go to that area, that's a sacred area." He would show us where we could drink. Sometimes he would say no, we could not go somewhere.
> Marcus: Was he the one who said to hold up the water?
> AF: He and his brothers would tell us where to hold up that water.

[53] Provisional spelling.

Marcus: How did you do it?:
AF: We would cut a tree, and get the paperbark. The water would fill up. When it was full, we would let it out.

I used to do that too. I was there later [than AF]. When I was 15, it was still going on then. We used to go out in the morning, check the paperbark, fix 'em up, put 'em back on top. RJ

In terms of specific locations, Hamish MacFarlane identified a location a short distance downstream from the homestead which was dammed for recreational and basic subsistence purposes:

Below the house at Moroak is an area where the Aboriginal people went everyday for swimming and fishing, food collection, mussels and that sort of thing. That was always dammed, they used rocks in that area. Just to lift that water. It was done at every opportunity basically. I'd be guessing, those guys would know a hell of a lot more than me, but it seemed to me that the purpose was always to spread the water across the landscape, to give a bigger abundance of food supply.

However water was also blocked up and diverted elsewhere on the station over a considerably wider area. For the MacFarlanes, this was to facilitate pasture growth in the areas close to permanent water:

Everything congregates to water. The last water that you can guarantee yourself in this country is on the river with few exceptions. So you always manage to keep the abundance of feed on the water, for as long as possible, in case you have a bad year, simple as that.

Aboriginal stockman RJ confirmed Hamish's reasoning:

Marcus: why did people do it?
RJ: it makes the grass grow.
Marcus: for the cattle?
RJ: for the cattle and the other animals. The kangaroos all come [to the water] the same way.
Marcus: was it happening before the McFarlanes came?
RJ: I think maybe [it was happening] before I was born. For the animals. And for the people to have water to drink.

Hamish reported that the first step in the process was to wait until the wet season flows had subsided:

The back-up wasn't done until the water had stabilised and cleared. So the speed of the water is already now at its slowest point and that was when the backing up was done. It was only done to lift it a foot, maybe half a foot really I suppose. They're lifting the water table in the flood area both sides of the river.

The area that this activity affected on Moroak was substantial:

Mt Caroline, we used to block it at what they call Gundangala, which is basically on the Moroak/Goondooloo boundary; we owned Goondooloo back then as well. The big basalt hill that comes in close to the river, we used to trap brumbies there. So we would trap it on that channel there and force the water into a 10 square km area there and flood the whole area out and it would come back in, probably at that channel there [pointing to the map]. That's where the old station was there. It would flow past the old station

However, in contrast to the technique at Elsey (and perhaps partly in response to the problems Elsey's activity had created with downstream users), the Moroak weirs were removed once the area had been successfully flooded:

> Hamish: The swamp from Mt Caroline, the foot of Mt Caroline there to probably that channel there. That used to be the main water channel in the river that goes past there, that's all now dry. So we would block it on that channel there and that channel there. We would force it to flood out there and it would come back in past the old station here. As soon as it got around and flowed back into the river, we'd open her up again and drain her off. That would be generally done, depending on the season, [around] September and would take some time, a month to flow around, saturate the soils. [It would] flow around, link back into the river and then we'd open her up again. But those two areas there were traditionally [the ones], as I understand [it], as a little child. A tractor with a trailer full of people would just go out there for two or three days to camp. They'd fiddle around with their paperbark and flood that swamp. There'd be magpie geese, brolgas, all sorts of stuff.
>
> Marcus: So when it reaches the other end you'd open it up? You'd remove the barrier, so it was almost like flushing it?
>
> Hamish: It was a flood irrigation system. It wasn't designed to be permanent. It's there to promote plant growth. It stopped flowing nearly immediately, within a day [after barrier removal]. Water then would hold right through until rain season, in the low points. There's some big water holes there. Not sure what whether they'd show [on the map]. But there are some big permanent billabongs there. Because it's cracking black soil, they would be dry in August [but] they'd fill up on this process.

The water control activity undertaken on Moroak was part of a wider land management process. In particular, the presence of grasses on the floodplain to slow down the water and trap silt was crucial. The need for the presence of this grass made fire a real risk, as Hamish states:

> They [Indigenous people] seem to know this process, it's all part and parcel [of it]. And it was, I'd say, illegal, as far as they were concerned and we were concerned, for anybody to light a fire on alluvial black soil. Ever! You just did not burn that country [areas adjacent to the river]. It was left [for] dry times at the end of the year, for animals to congregate on, [both] native and our animals as well. And they would, within the first couple of inches of rain they would leave that country and not come back until next dry season. That was the migration process that they had for their native animals and we adopted that with ours.

The ongoing action of this combination of fire and water management affected the floodplain topography:

> Hamish: the other thing is, if you don't burn the country and if you do get slower flooding rates, then silt is deposited in the dead grass material, the whole system is totally different, its dynamics. It starts to bring soils, not deplete soils. And you can get to the point, it's not visible in the Roper because its such a wide braided channel, but you can see it in many other rivers where, because there is no hard-roofed animals here for fifty, sixty, eighty thousand years; debatable point but you know, for a long period of time, the clay sticking to clay made the river the highest point in the flood plain. The water was sitting in the highest point of the flood plain and seepage underground was keeping the floodplain flora healthy.
>
> Marcus: Just so I'm clear, if it's the highest point on the floodplain the water wouldn't be congregating there would it?
>
> Hamish: The river, the source of the water is even higher than that. This could be second, third tier, fifth tier, twentieth tier down the floodplain. The floodplain always works in a series of steps.

Hamish's observations point to an interesting, though perhaps an untestable proposition, which is that the characteristics of the Roper floodplain, and in particular the braided channels and black alluvial soil, were augmented by human intervention. It is possible to imagine that the gentle gradients of the underlying substrate made a degree of human water flow manipulation possible, and that countless generations of such activity in turn altered water flows and the deposition of suspended soil, enhancing the creation of a wide flat area of alluvial soil and braided channels. However there were limits to the area in which such activity was effective, as Hamish noted when asked about damming on Roper Valley Station:

> Yes, as far as I'm aware [they did it]. I can't specifically say they did it here, there or wherever. But the logic behind it was to slow the water flow at the down side of the braided channels, whenever they came back to form a major waterhole, so as to dissipate water. The braided channels go into Roper Valley, so I would suggest logically that it would have still been in usage down to that point. From that point onwards there are no braided channels and the system begins to break down.

3.3.2. Recent changes

Understanding the long term regional landscape consequences of such human intervention is well beyond the bounds of this study. More important to note for present purposes is that there has been significant changes in vegetation in recent decades, and in the flow regime on Elsey and Moroak over the past few years. Hamish believes the two are linked:

> What's happened in the river now, is the river's totally changed its course through the speed of the water flow. It has dug out the main channel, which has lowered it, lowered the level of the outside channel and the swamps so it would [all] drain into one river system. That's basically the beginning of desert system. They [Indigenous people] would just, it would be a foot, half a foot [weir], that's all we're talking about, just to fill the outside channel. To slow that water flow so it deposits silt, taking into account back then vegetation is nothing like we see it now. You know, we used to have to sit on the roof of the Toyota after the wet to get across these areas and have someone walk in front, the grass was ten foot high. There is no grass there now because the speed of the water has changed. And if it comes together it takes the seed, top soil and everything away.

Hamish goes on to describe further observations of the changes at Moroak and some of the reasons for them:

> Hamish: I buried my mother at Moroak two years ago and that's the first time I'd been back for a long long time. I went to the old station, which was the original site in 1950/1, before we moved and that watercourse there has never stopped flowing in my lifetime. There was not even mud in the bottom of the river. That's when, I'd heard second hand that [it had changed but] you tend to be a little bit pessimistic. I haven't stopped talking to people since, but it's only in the last year or so that it's becoming common knowledge.
>
> Marcus: Why is there no longer any water there?
>
> Hamish: Instantly people will tell you that we're in a high rainfall period and the floods are bigger etc. etc. etc.
>
> Marcus: Yet the water course is empty.
>
> Hamish: Yeah that's one of our points, but they say that's because the floods are bigger, they're gouging out the central channel which is draining the outer channels and the swamps back into the central river. My point is, why didn't it happen in the '56 floods? Why didn't it happen during the seventies? Why didn't it happen? And our theory is quite simple and it's based on the history of the world, that when you change the relationship between animals, sorry plants, herbivores and predators, you stop the function of soil creation and start the function of soil degradation. That's the simplicity of it, and these

> people were aware of that. What we did was we mimicked their animal husbandry[54] practices through migrating our herds on the same line. And until fences came and stopped that.

Hamish went on to talk about the declining Indigenous labour force from the 1970s onwards affecting animal management practices on the stations and encouraging further fencing. Cattle clearly have a direct effect on the landscape, but Hamish also believes that human management of the dingo population has had an indirect effect, by enabling larger numbers of natural herbivores, notably wallabies, to build up and remain in areas close to the river, increasing grazing pressure on vegetation.

3.3.3. Implications

> We still have the knowledge. We can go and show them how to block it up.
> RR

Indigenous water management techniques continued to be used on Moroak Station until the 1980s, although in the final years the blocking was done mechanically rather than by hand with paperbark. Hamish reported that the entire workforce on Moroak, other than his own family and occasional visitors, was made up of local Indigenous people from the Alawa, Mangarrayi, Yangman and Ritharrngu groups. A significant number of living people worked on Moroak and were involved in land and water management practices there. Clearly the water management practices at Moroak have substantial implications for the continuity of Indigenous knowledge about the techniques, purpose, and consequences of building dams and weirs. They move weir building and landscape manipulation activities for subsistence and pastoral purposes from cessation in the 1940s to a point where they were being undertaken in the past by people still living today.

3.4. Flow restitution and attempted erosion control: McCracken's Lagoon (Janggan)

Figure 19. View of McCracken's Lagoon (Janggan) from downstream.

[54] A reference to Indigenous people maintaining unburned vegetation close to permanent water and river frontages to provide food and water for native flora and fauna, and therefore for people, at the end of the dry season.

3.4.1. Flow changes

> We are worrying about that water at Pocket. It's running too fast.
> JR

> They used to go right up to Mole Hill, Ngalakan and Mangarrayi [people]. They would have ceremony there. They would be getting fish. Now there is no water, you can't even swim. The water has gone low. No croc or turtle. We used to hold him [the water] up a little bit there. Make him spread out.
> SC

Hamish MacFarlane's observations of drying creeks at Moroak and reports of the deepening of the main Roper channel are entirely consistent with concerned comments made by participants during the field research, and by observations made during field trips. According to these reports, there has been a dramatic change in the Roper's flow through Elsey, a change which is both unprecedented in living memory and has significant negative consequences from a local perspective. Water flow through the 'jungle' below the point where the 1946 weirs were built on Elsey is now protected by a natural barrage that has formed and re-formed in the previous few years. In effect, it is no longer necessary to build a weir at the point they were constructed prior to 1946, as a natural barrage currently exists. That barrage enhances what is already a naturally occurring flow down a northern channel leading to a place called McCracken's Lagoon (Janggan).

Figure 20. Inflow channel into McCracken's leading from the main Roper channel. Note the drop in height and white water at the entry point.

The water flows through this lagoon until it reaches a series of smaller channels leading off from it. Until recently the main 'channel' leading downstream from McCracken's flowed north, along the historical boundary between Elsey and Moroak. However in the past few years, newly eroded channels have opened up leading in the opposite direction, back towards what

is known as Pocket Creek (Wurluguguwan). High rainfall and associated flooding have expanded these new channels extremely rapidly, lowering the height of McCracken's Lagoon, substantially increasing water flows and erosion at Pocket, and directing water away from the channels and wetlands which feed onto and lie on Moroak Station. According to Max Gorringe, former manager of Elsey, in previous decades, the river level would drop only 6-8 inches across the full year and flow slowly, but now the water is rushing out of the braided section far more quickly, and dropping far more rapidly. A former vehicle crossing is now heavily eroded and impassable because of the new flows coming from McCracken's. The road to Goondooloo Station, which was a main thoroughfare, also cannot be used. Wetlands and channels on Moroak Station are starved of the flow that used to come from McCracken's, and cattle from Moroak have been forced to move onto Elsey Station due to the lack of water, enabled by some damaged fencing. Mangarrayi Rangers staff believe that buffalo wallowing at the edge of McCracken's created the weak point, which was then eroded by heavy wet season flows and generated the channels now flowing back to Pocket (I. Rowbottom pers. comm).

Figure 21. New and heavily eroded channel leading from McCracken's to Pocket.

The description above comes from a combination of reported observations by research participants and field observations from the researcher. Below, two Jilkmingan residents comment further on the situation. They note the unprecedented drying of the channel to Moroak (Barramundi Channel), the access problems getting to Moroak and Goondooloo, and the erosion and increased water flow at Pocket:

> Marcus: So you were saying that in that Barramundi Channel[55] area right now it's really dry?
>
> SC: Might be him dry now eh?
>
> PC: Him dry!
>
> Marcus: Does that happen every year?

[55] A name for the channel leading to Moroak.

SC: No, not before. Not before.

Marcus: Is this the first time?

PC: Second time. Last year and this year.

Marcus: Why do you think it is going dry?

SC: Maybe the [mango] farm, that they came and worked. Mango and watermelon farm. Lot of water they've been taking.

Marcus: In the past, did that water always flow through there?

SC: Yeah. Big water!

PC: Got a big mob water everywhere

SC: Yeah, we got a lot of water. All the time. But I don't know how this big river [changed], you know? [Now] you can look dust, fish, him running everywhere.

PC: But we know that main problem is Pocket now.

SC: Pocket. Can't go through now. Moroak, Goondooloo. Goondooloo and Moroak.

PC: Janggan, Janggan. McCracken. You know where that water been. Jungle there. All the water flowing away. I think there must be two channels there, one going to the main Roper, one going back to Red Lily. No water been running through that Pocket [before] eh?

Marcus: And now?

PC: Him running like hell that water.

Figure 22. Newly eroded channel leading from McCracken's to Pocket.

On another occasion, SC spoke of the radical change in the water flow and water level, and again linked it to the recent agricultural developments:

> This water been all there, healthy, staying on the mark, all the time full, and nothing been run out. Like Big River country right up to Jungle and everywhere been just fit. But this time been come, second time, that water make us running around [trying to fix it- see

below]. Wrong. Mango farm and watermelon farm been go ahead, that's the time [its] been happening. Water been go down, and go down, and go down. My niece been go down to our river, for swimming, she see that water go down and said to me: 'Mum, go and have a look at that junction! Water [is] running away!' Maybe that mango farm and watermelon farm.

SC's niece was observing places on the river closer to Jilkmingan, Elsey Station homestead, and most importantly, to the irrigated agriculture farm, which SC identifies as the primary cause of the drop in river level. It was one of the senior Mangarrayi Rangers who first reported to the elders at Jilkmingan that there was a major change in channel flow at McCracken's, and that it was impacting both erosion at Pocket and the flows to Goondooloo and Moroak. Community inspections led to serious concerns about erosion, fish kills as the fish were stranded in the drying swamps and watercourses, and adequate water supplies to downstream pastoralists relying on the flows from McCracken's. Taking action became a priority, but there were community concerns about how this would be perceived by government authorities, and that any action should not make the problem worse (I. Rowbottom, pers.comm). It was decided that the situation at McCracken's was severe enough that action by the relevant landowners and managers was warranted.

Figure 23. Junction of eroded channel with main channel at Pocket (this was a former vehicle crossing).

Figure 24. Dried out wetland on the traditional path of the water flowing from McCracken's towards Moroak Station.

Figure 25. Exposed bank of McCracken's Lagoon following significant drop in water level.

Figure 26. Exposed bank and riparian vegetation at McCracken's Lagoon.

3.4.2. Flow restitution and erosion control

> Those fish were all running out of water. All dying in the wetland last year. We caught some, and took some back to the community. But we needed to make that water run on in the channel.
> KR

A number of people were involved in addressing the situation at McCracken's, including some Indigenous members of the Mangarrayi Rangers.[56] The work was supervised by one of the Jilkmingan elders, and utilised some ranger infrastructure, notably a boat. Non-Indigenous ranger staff were not directly involved, and the owner of Moroak Station was aware of the activity and highly supportive of it. The use of machinery was considered but rejected in favour of traditional materials and techniques. The primary action taken was to block the newly formed channel leading back to Pocket with paperbark and bush timber. The action took place towards the end of the dry season in 2010, when the site was accessible, and when the water flow had subsided. The work took a day to complete, and was highly successful in redirecting water towards the wetlands and channels leading to Moroak. The wetlands adjacent to McCracken's refilled over the subsequent three weeks (I. Rowbottom, pers. comm.). SC notes that the action worked in redirecting water to fill downstream lagoons (here she names Flying Fox) and to provide for animals on downstream stations:

> Marcus: Why did you block that water at McCracken's? What was happening?
>
> SC: We didn't block the water at McCracken's, we let that water go out there. They was going there to open him up, to let that water go right up to Moroak. All over that big river country and the Flying Fox…we just let the water go because they got horse and cattle and everything. Right up to Big River [Station] and right up to Flying Fox [Station].

SC rightly rejects the question framed as a 'blockage' given that the action taken was a diversion towards Moroak and away from Pocket. She goes on to explain that building the structure in the erosion channel was actually a process of 'opening up' the right way for the water to flow. Ongoing awareness of the sensitivity of this action makes it important to describe it correctly. However others were more explicit about what was required to deal with the newly eroded channel leading to Pocket. PC also describes that the traditional structure was unable to stand up to the subsequent wet season:

> PC: We went there last time trying to block it. We had that waterhole blocked, a little bit. But then it was too heavy wet, so then [after] maybe one weeks time [raining], all that water come in and was flowing towards the main creek [back to Pocket].
>
> Marcus: So when you blocked it, it worked a little bit?
>
> PC: Yeah, it went too soon - it wasn't that deep eh? Even when we went up to [name inaudible], where that bridge is, that water just come, and went around Goondooloo. No water there, but that bloke [still] got all his cattle there.
>
> Marcus: He's got no water? Because your water is running differently?
>
> PC: Yeah.
>
> SC: Yeah. In our place too.

[56] The estimate provided by one observer was 20 people.

Figure 27. Location at McCracken's where the water diversion weir was successfully constructed and lasted until wet season flooding.

The structure put in by the Jilkmingan people was in the fashion of a traditional weir. It was effective in diverting water into the wetlands and channels, but ineffective in continuing that process once the wet season began. Given the history of this technique described in previous sections, this is not surprising. Its primary purpose was low-flow diversion and wetland augmentation, not flood control and erosion mitigation. The photos of McCracken's and the erosion channels accompanying this report are photos taken towards the end of the 2011 dry season, after the 2010-2011 wet season in which most of the erosion occurred following the floodwater's destruction of the 2010 diversion. Jilkmingan people and the Mangarrayi Rangers had intended to undertake a similar water diversion process at McCracken's during the dry season of 2011. However, once access was possible and the site was inspected, the increased size and number of erosion channels leading back to Pocket and the limited extent of available resources made it clear that the intended action was unrealistic. These are new problems for Elsey land and water managers to deal with. They will require new tools and techniques, something which people are well aware of:

> PC: Well, we haven't got any help at the moment. We are trying our best, trying to put that gap [back].
>
> Marcus: But it's a big gap now?
>
> PC: Yes.

The action taken at McCracken was a single instance, but it reflected peoples' long term understanding of the country, their active engagement with significant processes occurring in it, their sense of responsibility to facilitate habitat for local animals and plants, and their sense of obligation to maintain flows to downstream users. As a dry season flow restitution and wetland sustenance process, it was highly successful. As wet season erosion control, a purpose for which the technique had not previously been used and for which it was not designed, it was unsuccessful. However the previous report (Barber and Jackson 2011a) described numerous observations of the high levels of rainfall and flooding in the upper catchment in recent years, and as Hamish MacFarlane noted above, there are a range of broader landscape scale processes occurring in the upper Roper which may also have

mitigated against the effectiveness of the structure in the wet season[57]. However, what is important to note from this example is not the lack of success in dealing with major floods, something that much larger and more complex infrastructure can fail to do. Rather it is that the action at McCracken's represents Indigenous water management techniques applied to a new context. In this case, the purpose was not the potentially increased returns from pastoral activities on the station where the action took place, nor was it primarily driven by the goal of a subsistence return for local Indigenous people. Rather the primary goals were the maintenance of the country, erosion control and wetland sustenance, and concerns for the needs of downstream water users. The next section will summarise some of the key findings of the previous two sections detailing instances of Indigenous water management in the upper Roper, and consider some of the legal and planning implications of this material.

[57] Commenting on the flood damage and erosion at McCracken's, Hamish MacFarlane also noted that erosion and associated flooding appeared to be worse on the northern tributaries of the Roper (the Chambers and Waterhouse Rivers) rather than on the southern ones (Elsey, Salt and Cattle Creeks, and the Strangways River). One possible cause is changed land management practices in the northern part of the catchment.

4. LEGAL, GOVERNANCE, AND PLANNING ISSUES RAISED BY THE INDIGENOUS WEIRS

4.1. Introduction

The upper Roper water planning area contains a unique set of conditions for water governance and planning. The conditions include a relatively high percentage of land under Indigenous control; major water places of Indigenous significance which are also important for non-Indigenous conservation, tourism and heritage; highly complex groundwater hydrology; a long established commercial cattle farming sector; and a growing irrigated agricultural sector. However, perhaps most significantly from a planning and allocation point of view, there is clear evidence that prior to European settlement, Indigenous people controlled water flows in the braided sections of the Roper, and they continued to alter flows throughout the pastoral era and up to the present day. Although the context varied from subsistence to cattle watering to wetland management, the general aim was sustained inundation of low lying areas late into the dry season. The owners and residents aspire to have this past activity recognised and its present applications supported rather suppressed, and have long term aspirations for the important role such techniques can play in land and water management in the upper Roper.

The example of the Roper weirs adds to the existing literature regarding Indigenous manipulation of water flows (Lourandos 1980; Humphries 2007). The eel channels and trap systems of the Gunditjmara people in southwest Victoria are the most well known (Richards 2011), but there are also accounts of Indigenous aquatic resource use and manipulations of water flows from elsewhere, notably the Murray-Darling (Beveridge 1882; Gilmore 1986[1934]; Humphries 2007). There is an ongoing debate about the degree to which Indigenous people were agents of environmental change (Gammage 2011) which cannot be reviewed in detail here, but in terms of water flows, the Gunditjmara people appear to have been hydrological engineers who dramatically modified wetland landscapes to assist capture and farming of eels (Builth, Kershaw et al. 2008; McNiven and Bell 2010). Historical sources argue for the significance of Indigenous water management activity elsewhere (Gilmore 1935; Gilmore 1986[1934]). The Roper example represents another significant instance of water management activity with potential effects at the landscape scale.

The Roper weir building practices also raise legal and water planning issues of potentially wide significance, and these will be explored in more detail. The discussion to follow is framed by three initial questions with preliminary responses. The existence of traditional weirs raises a number of significant inter-related questions that potentially have legal and management implications within and beyond the immediate region. In the absence of a thorough legal and hydrological analysis, we offer these comments to contribute to future multi-party discussion between traditional owners, the Indigenous Water Planning Group, their legal representatives, the Mangarrayi Rangers, and NRETAS. The questions are:

1) What kind of legal authority under Australian law do traditional owners have to divert, regulate or alter the flow in the upper Roper, given current statutory and common law recognition of Indigenous water rights and the particular circumstances of that area?
2) If it is implemented on an ongoing basis, should any hydrological impact of the practice be managed under the water plan? If so, what are some preliminary consequences of accounting for the practice under the respective categories used in existing water plans?
3) What are the water governance and management issues raised by this practice in the context of the upper Roper? Who might be involved in controlling and

managing the flow regime and other land or water activities required to meet the needs intended by weir construction?

As already indicated, the research findings here are also of considerable research and academic significance, particularly relating to the technical and philosophical implications of long-term Indigenous landscape modification. However it is the three questions above which will be the main focus of the analysis, andwe will address each of these issues in turn in the discussion below.

4.2. Legal implications

4.2.1. Indigenous Australian legal rights to water

As with other Australian regions, the nature and extent of legal rights to water in the NT, particularly native title rights and interests, remains uncertain. The history of water law development is very complex and is only now being researched with a view to understanding its interaction with Indigenous customary law and impact on Indigenous water use and management (Bartlett 1997; Jackson and Altman 2009; Godden and Gunther 2010; O'Donnell 2011; O'Donnell 2011; Jackson and Langton in press). It was not until the Australian High Court's Mabo decision in 1992 and the Native Title Act 1993, that Indigenous legal rights to inland waters were recognised nationally. Native title law has been amended since national water policy was introduced and a number of states, including the Northern Territory have amended their statutes and propose new changes in light of rapidly changing management requirements brought about by national water reform.

When the Native Title Act 1993 was passed, the scope of native title was defined to include rights over waters located within traditional estate boundaries. O'Donnell reports that rights to water are generally in the following terms:

1) A right to take water,[58] for the purposes of satisfying personal, domestic, social, cultural, religious, spiritual or non-commercial communal needs, including the observance of traditional laws and customs;
2) A right to control access to water and make decisions about the use of natural resources including water where there is an exclusive possession determination of native title.

A right to protect sites or areas of significance that include waters has also been recognised as a native title right (O'Donnell 2011). Such native title rights will be subject to existing laws and grants and are of a more limited nature than rights attached to land (Collings 2002). At this time there is no recognition of any native title rights to use water for commercial purposes (O'Donnell 2011).

4.2.2. Legal status of Indigenous weirs on the Roper River: preliminary comments

Any comprehensive statement about the legal status of the re-institution of the weir-building practice will require more analysis and comment than can be undertaken here. Nevertheless, based on initial observations about the existing circumstances, some preliminary comments can be made. Although it led to the cessation of Indigenous weir building in the area, in legal

[58] The term 'take water' here was perhaps intended to cover issues such as drinking water. However the weirs could arguably be considered an instance of taking water to satisfy 'non-commercial communal needs', at least in their pre-colonial and subsistence manifestation.

terms the 1946 case was between two non-Indigenous pastoralists, not a case deciding on the status of the pre-colonial Indigenous practice. In making his determination, the judge recognised and accepted the pre-colonial origins of the activity, but at that time there were no legal mechanisms for further exploring that recognition or to support the continued existence of the practice. Indeed the final decision in the case completely suppressed it. Preliminary legal comment from the NLC NOted that, as the 1938 Water Ordinance has been superseded, the Wells decision no longer functions as a legal precedent. Given that newer legal instruments such as the Aboriginal Land Rights Act (NT) and native title appear to provide such support mechanisms, an important question is if and how the pre-1946 practice and its subsequent applications elsewhere in the upper Roper relate to those instruments and to any future activity in line with local aspirations. This would require careful legal consideration, well beyond the terms of reference of this report and of the expertise of the authors. One clear recommendation from this work would be for the legal questions this material raises to be further investigated.

4.2.3. Indigenous water rights and the National Water initiative

Moving from a consideration of the legal issues to their articulation with water policy, the National Water Initiative (NWI) recognises the special rights and interests of Indigenous people to water. The policy urges the Australian states to establish water entitlement frameworks and planning processes to protect Indigenous interests, including the need for access to water. Under the NWI, Indigenous access is to be achieved principally through planning processes that:
:

1) Incorporate Indigenous social, spiritual and customary objectives.
2) Have strategies for achieving these objectives.
3) Take account of the possible existence of native title rights to water in the catchment or aquifer area.
4) Account for any water allocated to native title holders for ‘traditional cultural purposes’ (NWI, clauses 52-54).

It is clear then that the NWI gives considerable attention to native title as the rationale for meeting Indigenous people’s water needs and involving them in water management. The policy acknowledges the need to take account of ‘strategies’ for meeting social, spiritual and customary objectives as well as the ‘possible existence’ of native title. A purposeful reading of these clauses would suggest that water planners should consider the contemporary relevance of customary management activities and strategies (such as manipulation of the flow regime for subsistence use) to meet their direct water needs and interest in reviving cultural practices. In this sense, the NWI and the planning processes it supports are obliged to follow the legal precepts established by existing native title conditions but are not limited to those, and indeed are encouraged to respond to the possible existence of native title rights which are yet to be legally established, and to account for water for ‘traditional cultural purposes’; a phrase which could clearly include a practice like weir construction. Given this situation, it is useful to consider how the weirs might articulate with the existing language and categories used in water planning processes, and about implications for local water governance. These issues will be considered in the sections below.

4.3. Indigenous weirs and existing water planning categories

4.3.1. Introduction

In considering the issues below, a necessary starting point is the assumption that a management planning framework allows government and stakeholders the ability to consider the rights and interests of all water users, including the environment and the wider public. It also assumes the process enables water allocation decisions based on sound information,

reflection on those decisions over the course of time, and adaptation to new information with revisions to management strategies. Indigenous groups can and do contest the nature of their 'stake' in water resources, arguing that they are owners with water rights established under their own laws and customs, and that therefore they have rights to control and manage water, not merely be consulted by other government controllers and managers about its use (Jackson and Altman 2009; O'Donnell 2011). Current water law acknowledges the power of the government to control and manage water under scientific processes of resource management, including structured processes that seek input from water users. Although not without its problems (Jackson and Morrison 2007; Jackson and Langton in press), water planning provides a framework with which to take account of the aspirations of traditional owners and Indigenous managers to maintain and/or restore their customary practices, be more fully involved in management, learn more about water resource management and monitoring and mitigate any environmental impacts while enhancing social benefits (Tan, Mooney et al. 2010). On this basis it is important to consider how traditional weir building may articulate with established water management terms, categories and processes and be accounted for within them. Six relevant categories will be considered here; environmental flows, interception activities, the Strategic Indigenous Reserve, cultural flows, Aboriginal environmental licenses and native title.

4.3.2. Environmental flows

A common assumption is that flows for Indigenous cultural needs can be met by setting aside water sufficient to meet the requirements of aquatic ecosystems (this is referred to as an environmental flow). This assumption is based on the idea that traditional Indigenous practices and cultures were 'non-interventionist', living passively off the natural productivity of the land and water flows in the catchment sufficient to maintain subsistence hunting and fishing.. Environmental flows are considered to be a non-consumptive use of water that mimic the natural flow regime. A range of methods are used to determine environmental flows and to date in Australia, none have taken sufficient account of Indigenous people's needs (Finn and Jackson 2011).

Recent work (Finn and Jackson 2011) has suggested that the existence of subsistence hunting and fishing may oblige water planners take account of the water requirements of species assemblages of importance to Indigenous households and communities. Further, water planners should also consider the economic needs of Indigenous people by, for example, ensuring that environmental flows sustain key species at rates that allow for a viable subsistence economy. Such species might be common and yet vulnerable to changes in the flow regime. The construction of traditional weirs on the Roper heightens the distinction between environmental flows and a flow regime that would be required to meet Indigenous subsistence needs. The weirs were intended to facilitate and enhance subsistence in places and at rates not provided for by the natural flow regime. It is therefore arguable that uses to which traditional owners along the upper Roper put the water can be conceived as consumptive. Assuming evidence led in the 1946 case is correct, holding up the water in shallow standing water bodies resulted in a loss to downstream users because of evaporation from the lagoons created by the diversion and subsequent regulation.

We consider that the Roper case provides further evidence that customary Indigenous needs and non-consumptive environmental flows should not be conflated in water plans. Planners should not take for granted that an environmental flow will meet the water requirements of Indigenous communities. In every new water plan context, planners and scientists will need to examine the flow relationships between Indigenous use and other values of importance to the community concerned. For further insight into methods and approaches see Finn and Jackson (2011) and Jackson et al (2011).

4.3.3. Interception

Traditional weir building can also be interpreted as an interception activity, as defined by the NWI. The agreement includes farm dams, plantation forestry, capture of overland flows and groundwater extraction in its definition (NWC Interception Position Statement). From a water resource regulation perspective, there is a similarity between diverting the flow to a wetland for subsistence use and diverting it to inundate a floodplain for cattle grazing for example.

The agreement explicitly recognises that water interception activities can reduce water availability and that unaccounted water presents a risk to the security of water access entitlements and the achievement of environmental objectives for water systems. Governments have committed to estimating the amount of water intercepted in water systems neither fully allocated or approaching full allocation. In those water systems that are fully allocated, over-allocated, or approaching full allocation, significant interception activities should be recorded (e.g. via a licensing system) - with any proposals for additional interception activities requiring a water access entitlement.

Given current demand for water in the Roper, there does not yet appear to be a need to licence any water diversions by Indigenous people as interceptions. Indeed there may be good reasons for not doing so, not least being the technical difficulty involved. However it remains one of the range of existing categories in which this activity could be considered.

4.3.4. Strategic Indigenous Reserve (SIR)

As was indicated in section 2.8.3 above, there is discussion about the need for an important consumptive allocation in the upper Roper that is specifically reserved for Indigenous people. The exact proportion of the consumptive pool represented by the SIR is still a matter of discussion, but what are clear are its overall intentions. The major goal of establishing an SIR is to increase contemporary economic opportunities for Indigenous people, by reserving water for current and future Indigenous business enterprises requiring an entitlement, but also through possible revenue streams derived from trading water to non-Indigenous enterprises if and when water trading commences. Income from the latter will clearly be affected by the size of the SIR, meaning that the proportion of the consumptive allocation reserved for this purpose is a significant issue, both for local landowners and for the wider aspirations that the SIR is meant to facilitate.

In water allocation terms, the traditional weirs might be considered consumptive, and that was certainly the assessment made about the Red Lily instance in 1946. The people undertaking their construction were Indigenous, and it was clearly an ongoing practice. It is therefore plausible to ask: is the SIR is the most appropriate mechanism for managing the weirs? There are some important comments to be made regarding this line of argument.

The weirs at Red Lily and Moroak were actively managed, being rebuilt and repaired each year depending on the conditions rather than being semi-permanent structures (like, for example, the stone fish traps found elsewhere in Indigenous Australia). This suggests that dealing with their reintroduction through a fixed allocation bracketed within the SIR (or for that matter, from the general consumptive pool) will lead to inaccuracies in allocations. Allowing water for the weirs to be allocated on a proportional basis (i.e. in line with other allocations from the consumptive pool) renders a traditional and pre-colonial practice equivalent to other consumptive uses with potentially deleterious effects in particularly dry periods. One solution might be to assign priority to traditional consumptive uses within the SIR.[59]

[59] The draft water plan released for the upper Roper assigns priority water to existing license holders, effectively creating a ‘two-tier’ system of water access rights. In high flow regimes, the difference in classification is minimal. In low flow regimes, it may be significant (Northern Territory Government

A management structure is currently being designed for the SIR based on guidance from the NLC and NAILSMA, and this Prescribed Body Corporate provides one mechanism for such ongoing management of a weir allocation. General water entitlements are allocated on a proportional basis to allow for changing conditions and the SIR would be expected to follow this protocol. In this scenario where the weirs are allocated to the SIR, the relative priority accorded to them within the overall SIR proportion (for example in extreme low-flow conditions) could be a matter for that new PBC to assess.

Although it suggests a greater level of oversight and ongoing management, generating an allocation for weir building through the SIR raises some further issues. The weirs were originally and primarily a subsistence strategy which became recontextualised during the pastoral era, and is now the source of wetland management aspirations. Whilst there may be some economic benefits to be derived from NRM funding for wetland activities, the clear intention of the SIR is to encourage Indigenous participation in the market economy through providing people with the means to use and temporarily trade consumptive allocations. This fits with wider government orienting principles such as 'Closing the Gap', and 'mainstream' employment programs. Placing the weirs within this SIR allocation reduces the amount of water specifically available to Indigenous people to engage in commercial market transactions, which is a primary goal of the overall reserve.

In accepting the conceptual separation of water and land and emphasising participation in the market economy, the SIR is very much a product of dominant value systems and frameworks generated from outside Indigenous settings (albeit a product which recognises Indigenous territoriality in some form and therefore accords with some general principles of Indigenous ownership). This potentially creates further issues for using the framework as the basis for reintroducing and managing a traditional practice. One way of demonstrating this in practical terms is to note the relative geography involved. Although there were a range of people involved in weir construction (notably members of the Yangman language group), the Red Lily weirs were sited on country belonging to the Mangarrayi, and so major decisions about their location and construction would have been made by Mangarrayi people, or by those closely associated with the Mangarrayi according to specific kin relationships. Yet the Indigenous committee responsible for managing the SIR is, quite appropriately, drawn from a much wider set of groups based on the land areas included in the upper Roper planning area. As members of groups lying upstream from the Mangarrayi, they may well have a role to play in decisions about weir construction, as well as about other land and water management issues on Mangarrayi country. But placing control over allocations for weir construction in hands of that body (if an allocation for the weir was to be made as part of the SIR consumptive pool) may run the risk of subverting the local Mangarrayi/Yangman decision making processes that would normally have operated with respect to the weirs.

It must be acknowledged here that the recently constituted PBC in the upper Roper has not considered the issue of the weirs, being primarily focused to this point on the size and basis for calculating the SIR. Nevertheless, the primary role of the SIR is facilitating participation in the private/commercial economy. Placing the weirs within the SIR without an equivalent increase in SIR size would seem to entail a potential 'cost' in water flows. The potential complications created by making a local Mangarrayi traditional practice subject to non-local and non-traditional Indigenous structures and groupings also suggests that some caution should be exercised. The current SIR allocation and the current PBC structure may not be the most appropriate means for recognising and managing the strategic revival of Indigenous water management practices in the Roper River.

(2011). Draft water allocation plan, Tindall limestone aquifer, Mataranka. Darwin, Northern Territory Government**:** 31.).

4.3.5. Cultural flows

An additional avenue for categorising traditional weirs in the existing water management discourse is through the term 'cultural flow'. This term is included in the draft Roper plan but is undefined in terms of allocations, and so some further discussion of how it was generated and may be understood is necessary here. The term 'culture' has acquired a particular potency when used by Indigenous peoples across the world to collectively describe their lifeways - systems of law, kinship, practices and so on. Yet it has a wide range of meanings, even when used by specialists in the field, and its use in water planning remains problematic. There has been some recent discussion of the definitional and practical difficulties (Barber and Jackson 2011a; Jackson and Langton in press).

The 'cultural flow' concept emerged from the Murray Darling Basin where traditional owner groups made a case for water rights on the basis of cultural differences (Weir 2009), and over the past few years, interest has grown in distinguishing a flow regime separate to the environmental flow (see for example, Weir 2009). The case being advocated in the Murray is for a 'cultural flow' to 'express how their interests compare and contrast with the priorities of others' (Morgan et al. 2004: 18). This reflects its role as a response to Indigenous marginalisation in the intense conflicts between non-Indigenous water users in over-allocated zones like the Murray-Darling Basin (Morgan, Strelein et al. 2004). A definition can be found in a report to the NSW Healthy Rivers Commission:

> Cultural flows should be an essential component of river management. A 'cultural flow' can be set and monitored as sufficient flow in a suitable pattern to ensure the maintenance of Aboriginal cultural practices and connections with the rivers (Behrendt and Thompson 2003)

So far it has proved difficult to conceive of a practicable and coherent way to specify the quantity of water required to meet the needs of 'culture' as expressed in the cultural flow concept. According to the early proposal advanced by the Murray Darling Nations (Anonymous 2003) , a water allocation should be available 'to each Indigenous Nation to enable them to exercise their custodial responsibilities to care for the river system' (Anonymous 2003). Autonomy amongst the individual Nations would entitle each to decide its use: whether the allocation should contribute to environmental flows or help generate greater economic independence (Anon 2003: 7). In such a case, water might be put to different uses under the auspices of a 'cultural flow' (Weir 2009), although how this change in use from consumptive to non-consumptive would be accounted for in entitlement frameworks is unclear. Methods to accommodate the multiple values (commercial, social and environmental) underpinning this definition and governing its use, allocation and the distribution of any benefits have not yet been developed (Jackson and Langton in press). In recent times, NSW has experimented with a cultural access licence, but these have not yet proven popular (Jackson and Langton in press) with only one having been granted to the Nari Nari Tribal Council to water a wetland and restore its health (ibid).

In northern Australia, many rivers remain unregulated and in relatively good health, whilst the Indigenous proportion of the population in many catchments is substantial (and in areas like the Upper Roper, it is the dominant proportion). There is merit in questioning direct application of the term 'cultural flows' to the northern region given the differing circumstances of the Murray-Darling and the apparent lack of specificity in current usages of the term. Yet it appears that Indigenous groups in north Australia are using the term with respect to local circumstances (see Appendix 6.1.4 in Barber and Jackson 2011) and it is already manifested in the language of water plans such as that for the Roper (Northern Territory Government 2011). For some Indigenous people in Northern Australia the term may mean the whole range of Indigenous water interests, including water flows intended for commerce under structures such as the SIR. The Murray Darling Indigenous groups give a version of this interpretation above, when they declare that each group can decide how their cultural flow allocation can be utilised. However this is in the political context where the very great

majority of water flows are being controlled by others and protection of 'culture' is the only means by which Indigenous people can gain any kind of separate water allocation without having to buy an entitlement on the open market. The need for maximum flexibility in the use of that theoretical allocation is therefore substantial.

In the upper Roper, Indigenous people seem likely to have significant control over some consumptive allocations through the SIR, as well as important rights and interests in 'environmental flow' allocations through mechanisms such as native title and sacred sites protections (O'Donnell 2011). They are also major landholders and have some say over land use in the region. This means a locally meaningful interpretation of 'cultural flows' would need to consider the other existing tools and allocations intended to enhance Indigenous recognition and planning participation in northern catchments, and to consider the local circumstances. In the case of the upper Roper, arguably the most distinctive local circumstance is the weirs and the Indigenous water flow management they represent.

Describing the weirs as a manifestation of a 'cultural flow' highlights some important points. Even taking the most narrow and conservative interpretation of what constitutes legitimate traditional Indigenous cultural practices, the weirs would appear to qualify, and yet their creation also challenges the common taken-for-granted assumption that traditional Indigenous cultures and production systems did not substantially manipulate the flow regime and/or the adjacent environment. The role of the weirs in Indigenous subsistence more generally was not of major importance in the 1946 court case which provides the most documentary evidence of their features, so recovering detailed evidence of their impact on subsistence seems unlikely. What is important to note here is that the weirs directly undermine the assumption that Indigenous subsistence activity is adequately accounted for by a general calculation of environmental flow (which is meant to mimic the natural flow regime), and this is true when using even the most constrained, conservative and traditionalist interpretation of the term 'culture', an interpretation that Indigenous peoples themselves are refusing to countenance in the Murray-Darling and elsewhere – for example see the Mary River water rights statement (Various 2009). The nature of the local weir construction practice also means that, in this instance, there exists a potentially calculable allocation for a 'cultural flow' independent of both the consumptive SIR and environmental flow allocations. This would appear to be the first example of such a definable, consumptive 'cultural flow' in Australia.

However it is important to note that identifying this interpretation of cultural flow as 'conservative' is doing so in a political, rather than an ecological sense. It is arguing that even in the most narrow traditionalist interpretation of what constitutes 'culture', Indigenous people played an active role in water management, a role which in some cases appears to have had demonstrable effect on the Roper's flow. Yet to restrict understandings of contemporary culture to pre-colonial subsistence practices alone is conceptually highly problematic as well as being historically inaccurate given the role the technique played in land management during the pastoral era. In ecological and hydrological terms it can actually lead to a gross underestimate of the full range of flows required to sustain and regenerate contemporary Indigenous cultures, communities and ways of life. Therefore in a water planning context, assuming that pre-colonial practices are the basis for calculating water flows needed for contemporary Indigenous cultural life can result in an underestimate of the actual flows required. Underestimating the flows necessary is far from conservative in an ecological and hydrological sense.

In relation to the use of the term 'cultural flows' in water planning terms, some further observations can be noted here. All human beings possess culture, as the term is generally understood to mean an array of behaviours, attitudes, and practices learned from others. So without further specification with respect to Indigenous people, the term cultural flow is potentially open to a wide array of interpretations. In fact, it could be argued that the entire process of water planning reconstructs water as 'cultural flows', with concepts of 'in-stream'

or ‘environmental’ flows and the demarcation of water as part of a consumptive or non-consumptive pool being themselves cultural artefacts which emerge from particular socio-historical traditions. Perhaps more importantly, failing to specify that ‘cultural flows’ refers to Aboriginal/Indigenous requirements leaves open the possibility of it being interpreted in terms of the preservation of non-Indigenous cultures. This has already occurred in the context of cultural heritage, where local sites from the colonial era are given equivalent protection to or greater profile than those which represent Indigenous habitation for millennia prior to that period. Taking the upper Roper as an example, the historical significance of Elsey Station for Anglo-Celtic Australians could potentially see an argument mounted that intercepting water to preserve cattle grazing in the area should be an important goal of a ‘cultural flow’ allocation. Although there is no danger of imminent cessation of this industry and although Indigenous people have their own participation in and ongoing commitment to cattle work, it seems unlikely that the original intention of including a ‘cultural flow’ component in allocations was intended to have this kind of outcome. Identifying the weirs as an example of a ‘cultural flow’ gives further impetus to this formulation in water planning. If this is to occur, then it is equally important that the implications of using this terminology are fully considered, and that its intent to support Indigenous practices is clearly specified.

4.3.6. Aboriginal environmental licences

One further means of categorising traditional weirs in the existing language of water plans could be via a form of entitlement now available in New South Wales. NSW’s water legislation makes provision for Aboriginal access licences – for commercial and cultural purposes. It has recently come to our attention that a new licence category has been created – an Aboriginal environmental licence – and has been proposed for the Barwon-Darling Water Sharing Plan (Daniel Connor pers comm.). It may be that this licence has been established in recognition of the importance of providing water under Aboriginal control to environmental features of significance to Aboriginal people. The new licence would appear to be distinct from an environmental water entitlement. It is likely that Aboriginal Environmental Licences have been developed to overcome restrictions on the amount of water available under cultural access licences (Jackson and Langton in press) . In NSW cultural access licences are capped at 10 ML; and it has been suggested that the small size of this entitlement may account for the lack of popularity of the licence (Jackson and Langton in press). There may be value in examining the relevance of the new Aboriginal Environmental Licence to the Roper circumstance.

4.3.7. Native Title

Moving beyond the implications for the environmental/cultural distinction in water planning, the material on the weirs presented above raises interesting questions for how native title is conceptualised within water plans. The uses for which water is to be provided under the NWI and Native Title Act are hunting, fishing, gathering, cultural and spiritual activities; O’Donnell (2011) describes it as ‘personal, domestic, social, cultural, religious, spiritual or non-commercial communal needs including the observance of traditional laws and customs’. As discussed above, in current water sector terminology, these uses tend to be considered ‘non–consumptive uses’ because people do not need to extract or take water to undertake the activity. Nor is a water licence required for Indigenous people to pursue these activities, according to the NTA. In unregulated systems (rivers without dams or weirs) there may be no need to protect such ‘non-consumptive’ uses by an entitlement. Instead they are protected by limits on water extraction.

Given that the evidence cited above points to a significant level of flow alteration in the pursuit of customary objectives, is there a case for accounting for that water within a contemporary entitlement system? The NWI calls for water plans to account for water allocated to native title but there are few examples that can provide guidance to water planners in deciding that matter. Only in NSW, has water has been allocated to native title

purposes and only in two cases (Jackson and Langton in press). The Apsley WSP provides 0.01 ML/per day to an Indigenous community residing on the Apsley River. This amount was determined using a formula based on per capita residential water use, not to considerations relating to spiritual or cultural objectives or patterns of customary use of aquatic resources for example. According to David Miller (pers comm. 2009), an officer of the NSW Department of Natural Resources, when determining the volume there was considerable discussion about the nature of this right, both in-house and with the affected Indigenous community. In this case, the community had a water frontage and was therefore entitled to a basic landholder right to water for domestic and stock purposes, making articulation of the difference between the basic right and the native title right difficult. This right is available to all landowners or lessees in all Australian jurisdictions (McKay, 2005). In contrast, others have argued that native title should acknowledge contemporary resource rights, allowing for Indigenous people to benefit from the exploitation of resources (Langton, Mazel et al. 2006).

The Roper weirs could therefore represent an important example of interest to native title law. In this categorisation of the weirs they are classified neither as environmental nor as cultural flows, nor are they included as part of the SIR. The weirs could receive a specific allocation directly from the consumptive pool as a recognised consumptive use for native title purposes. As section 4.2 indicated, the current legal status of any revived weir construction process requires some further analysis, but the recognition of both land rights and native title are markers of how the legal regime has altered since the original judgement banning the practice was made. The general intent of the relevant sections of the NWI relating to native title would seem to suggest that the weirs can and should be incorporated into water governance and allocation arrangements. One pathway for doing this is to simply allocate a proportion of the general consumptive pool for native title purposes. However, similar to the issues relating to the SIR above, doing this has some limitations with respect to Indigenous oversight and governance, as well as the flexibility needed to manage the allocation properly. These issues will be discussed in more detail in the sections below.

4.4. Governance implications

A discussion of the water governance implications of the full range of Indigenous interests in water in the upper Roper is not possible here. However, the weirs demonstrate another facet to those interests – a traditional subsistence use which is apparently consumptive. This means that Indigenous people in the Upper Roper have a clear stake in water management on three grounds:

1) Access to entitlements from the consumptive pool via the SIR.
2) Significant established legal rights with respect to the protection of ‘natural’ flow rates which sustain sacred sites and wild foods that formed part of the customary economy.
3) A customary consumptive or ‘cultural flow’ entitlement, which would be required to account for the effects of traditional weir construction.

The addition of this third element potentially bridges the space between environmental flows and consumptive commercial extractions. As was discussed above, there are issues with the classification of this activity in any of the existing categories currently being considered as a means of addressing Indigenous interests in water planning in the NT. However, what it does indicate even more strongly is that the context of the upper Roper requires that Indigenous people participate in decisions affecting both consumptive and non-consumptive allocations and that they, along with other water uses, are mindful of the inter-dependencies between both. For instance, over-allocation of water for agricultural use may diminish the aquatic resource base upon which the customary sector depends for subsistence food or ‘bush tucker’ (see Jackson et al 2011; Jackson and Altman 2009). Equally, as apparently occurred in 1946, a practice with its origins in pre-colonial subsistence was seen to have significantly

affected water available for pastoral use downstream. The threat of legal and police sanction has meant that the practice has been dormant at its most high-profile location, but it has clearly continued elsewhere and the legal regime which suppressed it has been superseded by a range of instruments designed to support Indigenous cultures, customs, and livelihoods. The aspiration people have to reintroduce it and to have that reintroduction supported represents an additional role in water management for Indigenous people in the upper Roper. The articulation between the weirs and the broader research findings, and some comments about future activities and research, will appear in the concluding section.

Figure 28. Red Lily wetland. Image supplied by Mangarrayi Rangers.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction: water values and wider research findings

Evidence from the Roper River case raises issues of local, regional and national importance to contemporary water planning and its engagement with the aspirations, needs, and traditions of Indigenous Australians. To provide additional synthesis and context to the current report, findings and conclusions made in the previous report focused on Indigenous water values will also be incorporated into this concluding section. After that brief review it will focus on conclusions regarding Indigenous weir construction and its contemporary implications.

In terms of water values, 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 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 valuation of subsistence activity also led people to emphasise the primary importance of 'water for the country', or to use the language of water planning, of an environmental flow sufficient to maintain abundant prey species for Indigenous hunters. This may be a level different from (and in fact higher) than the level of flow sufficient to maintain basic ecosystemic functions or the presence/absence of vulnerable species. 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. 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 country 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. These 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.

With respect to water planning issues, two distinctive features of note emerged during the research. One was the significance of riparian vegetation, particularly large trees growing at major water sites, and their association with past and present individual people (Merlan 1982). 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 second additional feature, examined in detail in this report, was the weir construction and wider water management activity associated with it. This will be discussed in more detail below

Although not a primary focus of the research, Indigenous attitudes to contemporary water planning and in particular to the question of the size and governance of a separate Indigenous water allocation from the consumptive pool (an SIR) was also an important

aspect of the research. 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. 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. The process of establishing and maintaining a substantial SIR is seen as an important step in the contemporary economic development possibilities available to Indigenous people in the region. Comments made on this topic reflect assertions of ownership, concern to accommodate competing interests, willingness to negotiate, criticism of processes that have not respected Indigenous people as owners, concern for matters that may not have been properly considered, and an underlying need to protect the country. In 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 wider values discussed across the two reports. 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'.

Regardless of its final size and/or how the SIR is calculated, it is also clear that economic outcomes it aims to achieve do not exhaust the full array of aims, expectations, and needs existing amongst traditional owners. Active participation in managing a sizeable SIR will be an essential outcome, but by itself not a sufficient one for those participating in this study. Alongside the desire for an appropriate SIR, the need for 'water for the country', the richness of the ancestral narratives association with the upper Roper, the particular valuation of riparian vegetation, and the construction of weirs represent different aspects of Indigenous relations with water, incorporating spiritual, cultural, historical, economic and physical dimensions. A clear understanding amongst local Indigenous inhabitants of the role of water in this hydrologically complex area was evident. 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.

With respect to local Indigenous NRM planning and implementation, the establishment of the Mangarrayi Rangers as an independent entity early in 2010 following longer term Indigenous participation in Landcare projects is an important development. There is significant established NRM effort associated with both the Jawoyn Rangers in Katherine and with the Elsey National Park, but the Jawoyn Rangers do not operate in the focal area for this study and Indigenous involvement in day to day National Park operations appears limited. The new Park plan does not currently contain significant aspirations with respect to joint or co-management arrangements, and this means that the Mangarrayi Ranger initiative is a locally important one for direct Indigenous participation in NRM activities. The Jilkmingan community have already committed to a Caring for Our Country project to generate a wetland management plan for Elsey, and the Rangers have been identified as the most appropriate contemporary structure for ongoing water and wetland management. However the Mangarrayi Rangers are still a small organisation, making them vulnerable to personnel changes, variations in the funding cycle, and capacity development challenges. In addition, the roles and responsibilities of the respective ranger groups, their articulation with existing governance structures within Indigenous communities, and their articulation with new water planning 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. The distinctive Indigenous water management practices of the upper Roper means that it seems more important than usual to ensure that Indigenous NRM organisations are supported and developed to the point where they have appropriate places in water planning, governance, management and implementation.

5.2. Indigenous weir construction and water management

5.2.1. Indigenous weir construction

Indigenous fish traps are well known from a range of locations across Australia and at times these structures were quite extensive, with the fish traps at Brewarrina (Humphries 2007) and the eel channels in Victoria (McNiven and Bell 2010) being two notable examples. However, instances of the kind of landscape scale wetland manipulation practiced by Indigenous people using the weirs on the Roper are far rarer from north Australian literature. It appears weir building was a well established activity when it was first documented on the Roper in the early 20th century (Gunn 2003 [1908]) , and based on its effectiveness for a relatively modest outlay of time, energy and materials, it seems quite possible that the practice is very old and may well have been practiced in other appropriate locations in the dry tropics. The weir structures documented above encouraged water retention in swamps and billabongs lying upstream from the weir, increasing the available habitat for key food species including fish, birds, reptiles and aquatic plants. During the pastoral era, Indigenous weir building adjacent to what was known as Red Lily Lagoon was encouraged and amplified by the owners and managers of Elsey Station. This was because it directed water to areas from which cattle were easily able to drink, preventing them from getting bogged in swamps and dying of exhaustion and starvation. Importantly in terms of categories of water and wetland manipulation, to be fully effective the weir at Red Lily also required ancillary dams which prevented water flow into nearby swamps. This meant that Indigenous people were involved not only in interventions to replenish and sustain wetlands, but also in actions which had the effect of draining or drying them out. Evidence from documents associated with the 1946 court case also strongly suggests smaller scale but similar weirs were being constructed at strategic locations elsewhere in the braided section of the Roper during the colonial and pastoral periods, with the clear implication that these activities were also pre-colonial in origin.

The successful Supreme Court challenge led to a ban on further weir building on Elsey from 1946 onwards. However, knowledge of the practice and its utility was retained amongst the Indigenous population of the area, and despite the ban, weirs continued to be cooperatively built by Indigenous cattle workers and pastoralists on the adjacent Moroak Station from the early 1950s to the 1980s, and perhaps also elsewhere. In the case of Moroak, two distinct practices were identified. One was the creation of a pool for subsistence, bathing, and recreational swimming close to the old homestead. The other had much more extensive landscape effects and could be characterised as a flood irrigation system. It involved the insertion of a barrier to flood an extensive area of low lying swamps and wetlands, then the removal of that barrier once flooding had occurred. The primary orientation of this practice following the creation of Moroak was pasture improvement for cattle, but it also attracted food species for Indigenous hunters.

In 2010, the weir technique was revived again on Elsey by local Mangarrayi elders and land managers for a new purpose and in an additional location. In this instance, it was intended to divert dry season flow to address problems with drying swamps and rapidly diminishing water flows to downstream stations, notably Moroak. It was successful as a dry season diversion, but unsuccessful for its additional intended purpose, which was erosion mitigation and flood control. All the historical evidence gathered for this report suggests that Indigenous techniques were implemented during low flow periods, or at the point just prior to lowest flow. The substantial erosion problems present at McCracken's Lagoon and the significant implications they have had for flow rates in both the main Roper channel and for Moroak Station suggest that additional support, resources and techniques will be required for Indigenous people to successfully address this problem. Although they may assist in the dry season and certain techniques may be adapted to be useful in high flow regimes, major erosion and/or flood diversion is not a problem that traditional Indigenous weirs were designed to solve.

5.2.2. Legal, planning and governance implications

This report and Barber and Jackson (2011) have provided a solid evidence base for Indigenous weir construction and indeed for Indigenous roles and responsibilities with respect to water management in the upper Roper more generally. Any discussions of the implications of this evidence for legal, planning and governance regimes must necessarily be preliminary, but a few important points can be noted from analysing this information. The analysis presented here was based on posing and providing preliminary responses to three key questions:

1) What kind of legal authority under Australian law do traditional owners have to divert, regulate or alter the flow in the upper Roper?
2) If it is implemented on an ongoing basis, what are some implications for the existing language and classifications of water planning?
3) What are some key water governance and management issues raised by this practice?

In many respects, these questions are also highly suggestive in terms of future actions and recommendations (see 5.3 below). In terms of discussion in the present report, it was noted that rights to water is an evolving and complex field of Australian law, and that with respect to Indigenous people, research is ongoing into the articulation between Indigenous customary and statutory water governance. Limited rights were granted as part of the native title process, rights which emphasise the right to take water for a range of customary and traditional needs which to date have been interpreted as non-commercial needs. The weirs would seem to qualify in this regard, but to this point there has been the implicit expectation that such traditional native title rights and uses are non-consumptive in nature. The weirs challenge this conception, meaning that their legal status warrants careful consideration. The 1946 judgement based on the 1938 Ordinance no longer operates as a legal precedent, but as weir building involves placing obstructions in the river and diverting and damming flows, it seems likely that any ongoing practice would require some kind of legal recognition with respect to contemporary water resources statutes. This question requires further investigation.

With respect to policy, relevant sections of the National Water Initiative encourage the recognition and incorporation of Indigenous interests in water use. This includes existing native title rights, but also native title rights which are yet to be legally established. The NWI also recommends that jurisdictions account for water for ‘traditional cultural purposes’, a phrase which could clearly include a practice like weir construction. This led to a consideration of the implications of the weirs for the existing language and categorisations within water planning. It appears to:

1) Pose conceptual and practical challenges for conventional understandings of environmental flows.
2) Not fit well with an SIR allocation from the consumptive pool aimed at market participation and commercial development.
3) Provide a potentially quantifiable but highly traditionalist example of cultural flows, which in turn requires the specific meaning of that term in water planning to be more clearly defined.
4) Raise the question of whether Aboriginal Environmental Licenses may be an appropriate means of handling this kind of activity.
5) Suggest new avenues for the articulation between native title rights and interests and water planning, notably the possibility of direct allocations from the consumptive pool for native title purposes.

Lastly, with respect to water governance, the weirs provide further impetus to the need to involve Indigenous people in water planning. The weirs appear to be a traditional subsistence consumptive use, adding a third element alongside access to commercial consumptive allocations via the SIR and established legal rights with respect to the protection of 'natural' flow rates – 'water for the country' in the language of the people of the upper Roper. This third element potentially bridges the space between environmental flows and consumptive commercial extractions. It emphasises the need for Indigenous people to be involved in managing both consumptive and non-consumptive allocations, as well as problematising existing water planning categories. Importantly, it also raises questions for contemporary Indigenous governance, and the degree to which wider consultative and decision making bodies such as MTOWARG will be involved in water planning allocations and water management decisions on the country of some of its members.

Examining the evidence across the two reports, 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 (Hoverman, Tan et al. 2011) is required to meet the challenges of water planning and governance in the upper Roper. Successfully enacting such a model will require resources and capacity building in both Indigenous and non-Indigenous communities.

5.3. Future actions and recommendations

Field discussions about the 1946 case led to the uncovering of additional instances of weir building in other parts of the Roper after that time. This in turn led to a stronger than expected focus on this research element during the second phase of data gathering. There was a need to establish baseline information and evidentiary detail regarding a wider array of Indigenous water management practices. For this reason some issues, such as the articulation of weir construction with past and present wetland management objectives were not explored in as much detail as originally intended. The evidence presented here suggests a number of important avenues for future action. These are presented as recommendations:

1) That relevant Indigenous representative organisations thoroughly investigate the legal position of the Indigenous weirs on the upper Roper, and if necessary, undertake actions to gain appropriate recognition of the practice from relevant government and judicial authorities. If successful, this will provide important support to Indigenous landowners and natural resource managers in their ongoing attempts to manage water and wetlands with certainty in the upper Roper River.

2) That relevant government staff and agencies consider how weir construction and other customary management activities can be adequately recognised and supported within the upper Roper water planning framework. This report highlights that element, but Indigenous people understand themselves to have a range of roles and responsibilities across the consumptive and non-consumptive spectrum, suggesting that co-management arrangements will be important to consider.

3) That local Indigenous people, MTOWARG members, the NLC, and NAILSMA determine appropriate governance arrangements for local Indigenous water and wetland management activity, recognising that local landowners may make management decisions (such as building weirs) which have consumptive implications for the whole catchment, the level at which MTOWARG is constituted.

4) That relevant NRM, Indigenous, and water management funding bodies ensure adequate resources are made available to build local Indigenous NRM capacity, particularly in terms of the Mangarrayi rangers. This includes: general skill

development and resourcing; specific projects relating to wetland management, weir construction, and flood erosion mitigation; and the ongoing regeneration, development, and sharing of water knowledge and water governance practices within the Indigenous community.

5) That the Northern Territory government and other relevant research bodies (such as the CSIRO and the Tropical Rivers and Coastal Knowledge Research Hub) undertake urgent research into the major changes in flow regimes in the upper Roper that were reported by a number of knowledgeable research participants, and work with local Indigenous managers on appropriate actions to try to mitigate negative effects.

6. APPENDICES

6.1. Informed consent form and research information sheet

6.1.1. Consent form

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

PRINCIPAL Dr Marcus Barber

INVESTIGATORS 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.	

6.1.2. Research information sheet (text-only version)

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

Indigenous 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:

Dr Marcus Barber
CSIRO Ecosystem Sciences
PMB 44 Winnellie NT 0822
Phone: 08 8944 8420
Mobile: 0407 867 445
Email: Marcus.Barber@csiro.au

6.2. 1946 Supreme Court judgement from Justice Wells

IN THE SUPREME COURT OF THE NORTHERN TERRITORY OF AUSTRALIA. (NO.6 of 1946.)
Between THOMAS ALLISON HOLT (Plaintiff) and
HAROLD ERIC THONEMANN (trading as F. Thonemans and Sons) AND HAROLD STANAGE GILES (Defendants)
TRANSCRIPT OF PROCEEDINGS BEFORE HIS HONOR MR. JUSTICE WELLS
ALICE SPRINGS MONDAY 21ST OCTOBER 1946 AT 10AM.
MR. KEVIN WARD,with him MR. A.B. NEWELL, appeared for the Plaintiff
MR T CLELAND, with him MR JOHN LYONS, appeared for the defendants.
21/10/46.

HIS HONOR (WELLS J): This is an application for an injunction to restrain the defendants from obstructing or continuing obstruct the natural flow of the Roper River, flowing through the property of the defendants, known as Elsey Station, and thence on to and through the property of plaintiff, known as the Roper Valley Station, in such to infringe the rights of the plaintiff as a riparian owner; and for an award of damages for losses of cattle which the plaintiff claims he has sustained through such obstruction of the water course during the year 1945.

The history of the dispute, as set out in the evidence of the parties and their witnesses before the court, is briefly as follows: It has been for many years the custom of the natives, some at least of who have been employed by the defendants, to dam or partially dam the Roper River where it flows through or adjacent to what is known as the Red Lily Billabong, cost few miles downstream from Elsey Station homestead, for the purpose, from the, point of view of the natives of maintaining during the dry season the level of the water in the billabong and conserving therein supplies of fish, and attracting to it quantities of ducks and geese which the natives catch and use for food purposes. From the point of view of the defendants, the maintenance of a high level in the billabong during the dry season is important for the reason that it enables cattle depasturing on Elsey Station to drink from the billabong on hard ground and thus avoids or minimises the danger of losses through bogging of cattle.

The evidence shows that the practice of damming the river by the natives for their own purposes had been going on for many years; that it was, in fact, an “old fellow black fellow" custom, or, to put it in legal terms, had been in existence from time immemorial. Whether or not the native practice was always carried out to the extent necessary to serve the purposes of the defendants is not clear, but apparently it was done to such an extent for some time prior to 1934, when the plaintiff first acquired an interest in Roper Valley Station. It would appear from the evidence of the defendant Giles that it was in fact done to that extent in 1931 for the first time after he took over the management of Elsey Station in 1928, but whether it had been done before that is not clear. The evidence also shows that the former owner of Roper Valley station, the late Mr Warrington Rogers, had protested concerning the practice and had warned his successors about it when they took over from him. Roper Valley Station was acquired about December 1934 by the Royallison Pastoral Company United, a company in which the plaintiff and the late W. Roy Chisholm held the whole of the shares. For some years W. Chisholm managed the property; then, in 1939, he left to take over the management of another property in the Alice Springs district which had been acquired by the company, and the plaintiff became manager of Roper Valley Station; and eventually, in 1944, the plaintiff became the sole owner of Roper Valley Station and has managed the property ever since.

The evidence shows that both during the time when Mr Chisholm was manager and after the plaintiff took over control of Roper Valley Station, protests were made from time to time about the damming of the river. Probably as result of these protests, the natives were not allowed to construct dams in the years 1935, 1936 and 1937. Then in 1938 the damming was re-commenced, the defendants having sought and been granted what purports to be a permit or

licence to construct the dams under the provisions of the Control of Water Ordinance 1938. Although the defendant denied under cross-examination that he had been responsible for procuring the enactment of this Ordinance, it may be suspected that the defendants were at any rate very interested in its provisions, which are intended to afford a means for securing the legalisation of a practice which they were undoubtedly anxious to continue.[60]

Broadly speaking, the Ordnance continues in force the provisions of the common law which are applicable to the circumstances of this case, except that the diversion and the taking and using of water from a water-course, save in the exercise of the general right of all persons to take water for domestic purposes or for watering cattle or other stock, is prohibited; whereas at common law it was not unlawful to divert water for purposes other than domestic purposes connected with the user of the tenement, provided it was returned to the watercourse within the confines of the tenement without sensible alteration as to quantity or quality. But, by Sections 13 and 14 of the Ordinance, it is provided that riparian owners and others may apply to the Administrator for and may be issued with, in a specified way and under certain conditions, a license to take and divert waters to such extent and subject to such conditions as the Administrator thinks fit. The damming of the Roper River has been continued from 1938 up to the present time under what purport to be permits or licences issued under the provisions of these sections.

The contention of the plaintiff is that whilst in good seasons the interference with the natural flow of the river may not cause him any material damage, it is unlawful; that in bad seasons it seriously diminishes or causes to cease entirely the flow of the river waters through his property, causing serious losses of cattle through bogging and lack of water; that 1945 was a bad season, in which such serious losses were so caused; and that he reasonably apprehends similar losses will occur towards the end of the present dry season and in future bad years unless the interference is removed. He asks that the Court order the defendants to remove the existing obstructions in the river and restrain them from again similar obstructions, and for an amount of damages for the losses which he claims he suffered in 1945 by reason of the existence of these obstructions.

The substantial defences relied upon by the defendants are - (1) a denial that they are responsible for the erection of the obstructions in the river; (2) a denial that such obstructions diminish the flow of the river materially or at all, or sere in any way detrimental to the plaintiff; and (3) a plea that if they have obstructed the river or caused it to be obstructed in such a way as to diminish the flow of water therein to the detriment of the plaintiff, they did so pursuant to the lawful authority conferred by licences granted by the Administrator under the Control of Waters Ordinance 1938.

The case raises a number of issues of considerable complexity, on several of which the evidence brought before the Court is scanty and inconclusive. I think that a proper decision on the matters is dispute must be sought by endeavouring to arrive at answers to a series of questions which may be formulated as follows:(a) Were the obstructions which at the relevant times have been erected and maintained by the natives in the main river channel and other channels nearby which lead down to what is known as Lindsay Crossings erected and maintained by such natives acting as the servants and agents of the defendants (b)Is the raising of the river level by these obstructions so as to cause the river waters to continue to flow into and replenish the waters of the Red Lily Billabong a “diversion” of the waters flowing in a water-course, as 'opposed to its use for domestic purposes or for the watering of stock or cattle within the meaning of the common law principles and of Section 5 of the Control of Waters Ordinance 1938? (c) Is the effect of such obstructions to diminish the flow of the river waters from Elsey Station on to the property of the plaintiff to such a material extent as to be detrimental to the plaintiff? (d) Do the documents which have been put in evidence on behalf of the defendants and marked as Exhibit 9 constitute or amount to licences duly issued by

[60] This suggestion, that the Elsey lessees actively lobbied for favourable legislation, was not covered in the evidence review provided in the main report.

the Administrator under the provisions of Sections 13 and 14 of the Control of Waters Ordinance 1938, authorising the erection or maintenance of the obstructions as they existed in 1945 and exist at the present time? (e) If the erection and maintenance of the obstructions was in 1945 unlawful, did the plaintiff suffer any and if so what amount of damages as a result of the existence of such unlawful obstructions?

The first of these questions is not a very difficult one to answer. During the course of the hearing, certain formal admissions were made by the defendants' counsel bearing on this question, which appear at page 54 of the transcript, and the defendant Giles when in the witness box was cross-examined as to the extent to which he supervised and regulated the construction and maintenance of the dams by the natives. Taking those formal admissions together with the evidence given by Mr. Giles on this point, I have no hesitation in finding that the natives, in erecting and maintaining these dams, were in fact acting as the servants and agents of the defendants, and that the defendants are legally answerable for whatever consequences are attributable to their handiwork.

Nor is question (b) one of very great difficulty. During the wet season and probably for some time afterwards, whilst the river is running at a high level, its waters naturally flow into Red Lily Billlabong to an extant varying with the height of the river, but as the river recedes in height a point is reached at which the intake to the billabong is cut off. If, at or before this stage, steps are taken to raise the height of the river artificially, so as to keep it above the level of the intake and thus cause the river waters to continue to flow into the billabong, this is, I think as much a diversion of waters as if they had been drawn off through an artificial canal or by other similar means. The directing of a quantity of water from the billabong into the channel leading into Waggon Wheel Lagoon is of course, a diversion in the strictest sense of the term; although at the present time it is small and of little consequence, owing to the fact that the Waggon wheel Lagoon is now being mainly fed by a natural channel flowing from the marshes east of the river and below the dams at the Red Lily Billabong. It follows that unless the water which is diverted into the Red Lily Billabong is returned to the river at some point within the Elsey Station boundaries, without sensible or material diminution in quantity, the diversion would be unlawful at common law; and it is in definite terms prohibited by section 5 of the Control of Waters Ordinance, unless the appropriate licence is obtained under the provisions of the Ordinance. Section 5 of the Ordinance certainly contains the words "except as provided in this Ordinance or in some other Ordinance or Law"; but I have not been referred to any other Ordinance or law which qualifies the provisions of the Section, nor am I myself aware of any. The next question (c) is one of considerable difficulty for the reason that the evidence relating to some of the factors which it is suggested enter into it is quite inconclusive. With regard to one factor, however, which I regard as of primary importance, there is definite evidence. That is to loss caused by evaporation from Red Lily Billabong, which, if the billabong is to maintain its level, must be replaced from the waters of the river, with a consequent diminution of the volume of water flowing downstream to the plaintiff’s property. This loss was estimated by Mr Blair, an expert witness called by the plaintiff, as of the order of 44 cu secs, this estimate being based on an evaporation rate of ten inches per month over an area of five and three quarter square miles. The evaporation rate was confirmed by Colonel Paterson, called as an expert witness by the defendants, but he and other of the defendants’ witnesses challenged the estimate of the area affected, suggesting that it was nearer to three and a half square miles. Colonel Paterson estimates that the amount of loss to the river waters by evaporation from this area would be somewhere about 30 cu secs. Probably the true figure lies somewhere between these two estimates; but even if we take the low figure of 30 ca. sacs, it represents a very considerable loss indeed, having regard to the rate of flow of the river itself, The nearest point below the dam at which the flow of the river can be checked with reasonable accuracy is Lindsay Crossing, where the whole of the water coming downstream from the Red Lily Billabong is confined to one channel. A measurement taken there very recently for the purposes of this case, by Mr. Blair showed a flow of 70 cu. seas. A measurement made by the defendant Giles at the same point within a week or thereabouts showed 62 and two-fifths cu secs.

Lindsay Crossing is some miles below the dams at Red Lily Billabong, and between those points the river flows through a number of channels and reedbeds so that it is quite impossible to say what proportion of an additional 30 to 44 cu secs saved at Red Lilly Billabons would reach Lindsay Crossing. This is one of the points on which the information before the Court is very scanty. Nevertheless, I regard it as a safe assumption that the augmentation of the flow at Lindsay crossing would be very considerable.

As against this, it is argued on behalf of the defendants that the damming of certain channels leading from the river into what is known as Reedy Swamp, on the northern side of the river opposite to Red Lily Billabong, and above the dams in the main river channel and other channels leading to Lindsay Crossing has, by preventing the river water from running to waste in Reedy Swamp, more than counterbalanced any loss occasioned by maintaining the level of Red Lily Billabong.

Now, it is clear that when the river is high large quantities of water would run into Reedy Swamp. It is probable that with the river artificially held at a sufficiently high level to maintain the height of Red Lily Billabong, a considerable quantity of water would run into Reedy Swamp if the dams in the channels leading into it were unblocked- how much the loss would be the evidence does not enable one to say. But whether there would be any loss, or any considerable loss, with the river running at its natural dry season level, is a question an which no light whatever is shed by the evidence of the witnesses. It is true that the defendant Giles and an aboriginal witness named Dagan, who was called on behalf of the defendants, both said that in the years when the river was not dammed water continued to flow into these channels during the dry season. In one part of his evidence in chief Mr. Giles used the expression, 'it trickled in'. At a later stage of the examination in chief his counsel endeavoured with more or leas success to get him to qualify this early statement, but I was left with a feeling that this was really what the witness meant. It also seems highly probable from the evidence given by this and other witnesses as to the lay-out of what is called Reedy Swamp- which seems to extend to areas through which the river runs below the dams on the main channel- that some proportion, at any rate, of the water which runs into Reedy Swamp, both in flood time and at other times, either runs or seeps back into the river between the dams at Red Lily Billabong and Lindsay Crossing. This, of course, is merely speculation, based upon the apparent lay-out of the reed beds, but it seems to me that on the evidence before the Court the whole position in regard to losses of water into the northern reed beds, if the dams were removed, is entirely a matter of conjecture.

It is also suggested by the plaintiff's expert witness, Mr. Blair, that if the dams were removed and the level of Red Lily Billabong allowed to fall, there would be an immediate augmentation of the flow of the river by an amount of 53 cu, secs for one month, due to the release of the stored water. No doubt a proportion of the stored water would find its way down to Lindsay Crossing; but what proportion it is very difficult to say. If the dams in the channels into the northern reed beds were removed before or at the same time as the dam in the main channel, it is clear that a considerable proportion of the stored water would find its way into the reed beds; and in any case another proportion; no doubt, would be lost in the jungle channels between Red Lily Billabong and Lindsay Crossing. Mr. Blair's estimate of the amount of stored water that mould be released is challenged by the defendants' witnesses who suggest that it would be considerably less than his estimate. The amount depends, of course, upon the real area of the billabong and the extent of the drop in the level of the stored water; the latter factor, of course, depending upon the depth of the channel through which the water runs ran back into the river. At any rate I regard the matter of the stored water as of very little consequence. Even if a large proportion of it did reach the plaintiff's property, it would quickly drain away and would be of no lasting benefit to him. In my opinion, the important factor is the saving to the river of the water now lost in replacing evaporation from the billabong; and in my opinion again, based on the evidence before the Court, this would be a substantial benefit to the plaintiff. It may be, of course, that careful observation and checking of the river when flowing at its natural level would reveal other factors,

particularly in connection with the reed beds above and below the positions of the present dams; but the Court has to base a decision on the definite evidence which is before it, and on that evidence I consider that the answer to question (c) must be in the affirmative.
It now becomes necessary to consider question (d) and to decide whether or not the defendants now have and had during the relevant part of the year 1945 licenses properly issued in accordance with the provisions of the Control of Waters Ordinance 1938 for the construction and maintenance of dams in the main river channel and other channels leading to Lindsay Crossing, and the diversion of the waters into Red Lily Billabong.

Section 13 of the Ordinance, which gives a right to riparian owners and other to apply for licenses to divert and use water, provides (a) that the application shall be made in the prescribed manner; (b) that it shall be signed by the applicant or by his solicitor or other agent; (c) that it shall contain such particulars as are prescribed; and (d) that in such cases as are prescribed it shall be accompanied by a statutory declaration verifying the several statements made therein. Section 14 of the Ordinance provides(a) that the Administrator may grant applications made under Section 13, either wholly or in part, after considering the effect of the proposed diversion or use on other owners of the land, and whether it is in the public interest that the application should be granted; (b)that the Administrator may direct that a licence in the prescribed form be issued to the applicant in respect of the land (if any) and user of the water specified in the application, or of so much of it as he thinks fit; (c)that the licence shall be subject to such special conditions and provisions as the Administrator determines and to the provisions of the Ordinance so far as they are applicable; and (d) that the license shall remain in force for such period not exceeding five years as is specified in it but subject to revocation, suspension, or modification at any time, in the circumstances and manner prescribed by Section 16 of the Ordinance. Section 18 of the Ordinance provides that the Minister may make regulations prescribing all matters required or permitted by this Ordinance to be prescribed, or which are necessary or convenient to be prescribed for carry out or giving effect to the Ordinance.

Now, as a matter of fact, the Minister has never made any regulations under section 18 and nowhere in the Ordinance are to be found any provisions prescribing the manner in which an application under section l3 is to be made, the particulars it is to contain, or the cases in which statements made in it are to be verified by statutory declaration; nor is there anywhere in the Ordinance to be found the prescribed form of the Licence to be granted under section 14. It is submitted on behalf of the plaintiff that the Provisions of Sections 13 and 14 must be strictly complied with in the issuing of licences; that this is clearly impossible until the Minister makes regulations prescribing the matters required by the provisions of those sections to be prescribed and that any permission granted by the Administrator otherwise than in strict compliance with those sections is void and ineffective. No authorities have been cited by counsel either for or against this proposition, and I have myself searched to vain for any reported case that would throw any light on the matter. It is probable that none exist for the reason that such a state of affairs is unlikely to occur elsewhere than in the Northern Territory.

It is apparent that sections 13 and 14 of the Ordinance contemplate the possibility of a quite serious interference with the common law rights of riparian owners in some circumstances, and it is the natural assumption that the legislative authority intended that such interferences should only be effected in a careful and regularised manner, not casually and haphazardly, but in such a way that very careful consideration should be given to the whole proposition, and that the rights of all interested parties should fully considered. The provisions of sections 13 and 14 are apt to achieve this object; but only if the matters necessary to be prescribed to give effect to those provisions are in fact prescribed and strictly complied with. Looked at in this light, they are matters of substance and not of form, and come within the words of Section 18 as being matters which are necessary to be prescribed for carrying out or giving effect to the Ordinance. I am therefore of the opinion that it was not the intention of the legislative authority that the provisions of sections 13 and 14 of the Ordinance should

become operative until these necessary matters were prescribed. It follows that the documents comprised in exhibit 9 do not constitute licences within the meaning of sections 13 and 14 of the Ordinance, but are merely permissions given without any statutory or other authority. The plea of the defendants based on these documents therefore fails.

It follows from the decisions set out above that the plaintiff's action must succeed, both as to his claim for an injunction and as to his claim for damages. But the matter of the quantum of damages is again a very difficult one to deal with on the evidence. The damages claimed are in respect of losses of cattle sustained towards the end of 1945, when, by reason, as I am convinced, of the defendants' damming of the Red Lily Billabong, the river fell to a very low level and finally ceased to flow altogether at a place known as Duck Ponds, on the plaintiff's property. The plaintiff in his evidence suggested that the biggest proportion of the losses occasioned by water shortage occurred in a a locality known as Big Islands which is situated on his property some distance down the river from Duck Ponds, and where a large part of his herd is depastured. He claims that the figures of brandings at big Island Yard over the relevant period indicate a reduction in the herd at that locality, through losses, of something between 600 and 700 head. Evidence was given by plaintiff's head stockman, Sullivan, that in September 1945 the channels at Big Island were drying up and the cattle bogging, and that in about October 1945 he counted large numbers of dead cattle, some 200 head, at a place called Nipper's Lagoon which is a portion only of the Big Island country. But it is admitted that in this country there are considerable losses of cattle towards the end of the dry season, even in normal years, and it is further admitted- by everyone except Sullivan – that 1945 was a bad year, in which abnormal losses would have been sustained even if there had been no interference with the river flow. The plaintiff estimates his losses during the year 1945 at 50 per cent., equal to about 700 head, above normal losses; the whole of which abnormal loss he attributes to the effect of the damming of Red Lily Lagoon on the river flow. I am quite prepared to accept the figure of 700 head as representing losses for 1945 above normal losses; but having regard to the evidence of the particularly bad conditions generally in this year, and the opinion I have formed during the hearing of the case as to the probable extent of the effect of the Red Lily dams on the river, I do not feel that anything more than a proportion of the plaintiff's abnormal losses can be attributed to this cause. I assess this proportion at about 25 per cent or 175 head. This figure may be low, but I do not think that on the whole of the evidence it can be placed any higher.

A further difficulty arises with regard to the valuation per head of these cattle. Here again the evidence is scanty and inconclusive, and I think better evidence on the point might have been obtained from representatives of some of the big pastoral agency companies operating in the Territory. The plaintiff's valuation is £2/10/- per head, the defendants suggest 20/- to 25/- as a proper valuation. The latter figure was probably near the mark, some years ago, but the considerable appreciation in the value of fat and store cattle in the Territory in recent years suggests that it must now be increased considerably. I consider that £2 per head is a reasonable figure under present conditions; especially as the evidence shows that the cattle lost included a fair proportion of bullocks. I adopt that figure and assess the losses of the plaintiff during 1945 which are attributable to the damming of the river by the defendants at £350.

There will therefore be an order that the defendants forthwith remove all artificial obstructions from the main channel of the Roper River below the Red Lily Billabong, and from all the other channels at or near that point which lead down to Lindsay Crossing; an order that they be restrained from erecting or causing to be erected in such channels at the same point or elsewhere in the said river, any dams, weirs or obstructions of any sort whatsoever which will obstruct or diminish the flow or divert the waters or the said river, except under the authority of and in accordance with the conditions of a licence properly obtained under the provisions of the Control of Waters Ordinance 1938 or other statutory authority; and an order that the defendants pay to the plaintiff the sum of £350 as damages for losses sustained by him as a result of the erection by the defendants, their servants and agents, of the existing dams in

the said river. The defendants must pay the plaintiffs costs of the action. There will also be an order that a sum of £5, paid in as security in connection with the order for interrogatories obtained by the plaintiff, be paid out to the plaintiff or his representative.

There will be a further order that the Exhibits in the case remain in the custody of the Court for a period of 21 days, and that thereafter, if no further action is taken in connection with the case, that they be handed out upon request to the parties tendering them or their representatives.

Judgement 21/10/46

7. REFERENCES

Altman, J. (2004). "Indigenous interests and water property rights." Dialogue **23**: 29-43.

Altman, J. and V. Branchut (2008). Freshwater in the Maningrida region's hybrid economy: intercultural contestation over values and property rights. CAEPR Working Paper. Canberra.

Altman, J. and M. Cochrane (2003). Innovative institutional design for sustainable wildlife management in the Indigenous-owned savanna. CAEPR Discussion Paper. Canberra, CAEPR. **247/2003**.

Anonymous (2003). Report to the Murray Darling Basin Commission: Indigenous Response to the Living Murray Initiative. Murray Darling Basin Commission.

Baker, R. (1999). Land is life: from bush to town: the story of the Yanyuwa people. Sydney, Allen and Unwin.

Barber, K. and H. Rumley (2003). Gunanurang (Kununurra) big river, Aboriginal cultural values of the Ord River and wetlands. Western Australian Water and Rivers Commission, Perth.

Barber, M. (2005). Where the clouds stand: Australian Aboriginal attachments to water, place, and the marine environment in Northeast Arnhem land. PhD Thesis., Australian National University.

Barber, M. and S. Jackson (2011a). Indigenous water values and water planning in the upper Roper River, Northern Territory. Darwin, CSIRO.

Barber, M. and S. Jackson (2011b). Water and Indigenous people in the Pilbara, Western Australia: a preliminary study. Darwin, CSIRO.

Barber, M. and S. Jackson (2011c). "Aboriginal water values and resource development pressures in the Pilbara, northwestern Australia." Australian Aboriginal Studies.

Bartlett, R. (1997). Native title to water. Water law in Western Australia: comparative studies and options for reform. R. Bartlett, A. Gardner and S. Mascher. Perth, Centre of Commercial and Resources Law, University of Western Australia**:** 125-160.

Batty, P., L. Allen, et al., Eds. (2005). The photographs of Baldwin Spencer. Melbourne, The Miegunyah Press.

Behrendt, J. and P. Thompson (2003). The recognition and protection of Aboriginal interests in NSW rivers. OCP 1008,. Sydney, Healthy Rivers Commission of NSW.

Beveridge, P. (1882). Of the aborigines inhabiting the great lacustrine and riverine depression of the Lower Murray, Lower Murrumbidgee, Lower Lachlan and Lower Darling. Read before the Royal Society of New South Wales, 6 June, 1882

Bradley, J. (2010). Singing saltwater country: journey to the songlines of Carpentaria Melbourne, Allen and Unwin.

Builth, H., A. P. Kershaw, et al. (2008). "Environmental and cultural change on the Mt Eccles lava-flow landscapes of southwest Victoria, Australia." The Holocene **18**(3): 413-424.

Clark , S. and I. Renard (1972). The framework of Australian water legislation and private rights. Research project 69/16: The law of allocation of water for private use. Melbourne.

Commonwealth of Australia (1990). Mataranka Area Land Claim Report No. 29. Report by the Aboriginal Land Commissioner, Mr Justice Maurice, to the Minister for Aboriginal Affairs and to the Administrator of the Northern Territory. Canberra, Australian Government Publishing Service.

Commonwealth of Australia (1997). Elsey Land Claim No. 132. Report and recommendation of the Aboriginal Land Commissioner, Justice Gray, to the Minister for Aboriginal and Torres Strait Islander Affairs and to the Administrator of the Northern Territory. Canberra, Aboriginal and Torres Strait Islander Commission.

Cooper, D. and S. Jackson (2008). Preliminary study on Indigenous water values and interests in the Katherine region of the Northern Territory. Darwin.

Davidson, B. (1965). The Northern myth: a study of the physical and economic limits to agricultural and pastoral development in tropical Australia. Adelaide, Melbourne University Press.

Department of Natural Resources, Environment, the Arts and Sport (2009a). Water allocation plan for the Tindall limestone aquifer, Katherine 2009-2019. Katherine, Northern Territory Government**:** 86.
Department of Natural Resources, Environment, the Arts and Sport, (2009b). Mataranka water allocation plan: situation analysis. Katherine, Northern Territory Government.
Department of Natural Resources, Environment, the Arts and Sport, (2011). Draft water allocation plan: Tindall limestone aquifer, Mataranka, November 2011. Katherine, Northern Territory Government.
Douglas, M., S. Jackson, et al. (2011). The future of tropical aquatic ecosystems. Northern waters - aquatic biodiversity of the Australian wet-dry tropics. B. Pusey. Darwin, Charles Darwin University Press.
Finn, M. and S. Jackson (2011). "Protecting Indigenous values in water management: a challenge to conventional environmental flow assessments." Ecosystems **14**(8): 1232-1248.
Gammage, B. (2011). The biggest estate on earth. Melbourne, Allen and Unwin.
Gilmore, M. (1935). More recollections. Sydney, Angus and Robertson.
Gilmore, M. (1986[1934]). Old days: old ways. Sydney, Angus and Robertson.
Godden, L. and M. Gunther (2010). "Realising capacity: Indigenous involvement in water law and policy reform in south-eastern Australia." Journal of Water Law **20**: 243-246.
Gunn, J. (2003 [1908]). We of the Never-Never, Project Gutenberg.
Hoverman, S., P. Tan, et al. (2011). Co-management in New Zealand, Canada and Australia. NAWFA social and cultural project: sub-project 3**:** 43.
Humphries, P. (2007). "Historical Indigenous use of aquatic resources in Australia's Murray-Darling Basin, and its implications for river management." Ecological Management & Restoration **8**(2): 106-113.
Jackson, S. (2006a). "Compartmentalising culture: the articulation and consideration of Indigenous values in water resource management." Australian Geographer **37**(1): 19-31.
Jackson, S. (2006b). Recognising and protecting Indigenous values in water management: a report from a workshop. Darwin, CSIRO.
Jackson, S. and J. Altman (2009). "Indigenous rights and water policy: perspectives from tropical northern Australia." Australian Indigenous Law Review **13**(1): 27-48.
Jackson, S., M. Finn, et al. (2011). Indigenous socio-economic values and river flows. Darwin.
Jackson, S. and M. Langton (in press). "Trends in the recognition of indigenous water needs in Australian water reform: the limitations of 'cultural' entitlements in achieving water equity." Journal of Water Law.
Jackson, S. and J. Morrison (2007). Indigenous perspectives on water management, reforms and implementation. Managing water for Australia: the social and institutional challenges. K. Hussey and S. Dovers. Melbourne, CSIRO.
Jackson, S. and P. O'Leary (2006). Indigenous interests in tropical rivers: research and management issues: a scoping study for Land & Water Australia's Tropical Rivers Program, Unpublished report prepared for the North Australian Land & Sea Management Alliance. Darwin.
Jackson, S., N. Stoeckl, et al. (2008). "The changing value of Australian tropical rivers." Geographical Research **46**(3): 275-290.
Jackson, S., P. Tan, et al. (2012). "Principles and guidelines for good practice in Indigenous engagement in water planning." Journal of Hydrology.
Langton, M. (2002). Background briefing papers: Indigenous rights to waters. Lingiari Foundation, Broome: 43–64.
Langton, M. (2006). Earth, wind, fire and water: the social and spiritual construction of water in Aboriginal societies. The Social Archaeology of Australian Indigenous Landscapes. B. David, B. Barker and I. McNiven. Canberra, Aboriginal Studies Press**:** 139-160.
Langton, M., O. Mazel, et al. (2006). "The 'Spirit of the Thing': the boundaries of Aboriginal economic relations at Australian common law." The Australian Journal of Anthropology **17**(3): 307-321.

Lourandos, H. (1980). "Change or stability?: hydraulics, hunter-gatherers and population in temperate Australia." World Archaeology **11**(3): 245-264.
Maclean, K. and Bana Yaralji Bubu Inc. (2011). Water Dreaming: Kuku Nyungkal people, water and country in the Wet Tropics. Brisbane, CSIRO.
McNiven, I. and D. Bell (2010). "Fishers and farmers: historicising the Gunditjmara freshwater fishery, western Victoria." The La Trobe Journal **85**: 83-105.
Merlan, F. (1978). "'Making people quiet' in the pastoral north: reminiscences of Elsey station." Aboriginal History **2**(1): 70-106.
Merlan, F. (1982). "A Mangarrayi representational system: environment and cultural symbolisation in Northern Australia." American Ethnologist **9**(1): 145-166.
Merlan, F. (1986). Mataranka land claim: senior anthropologist's report on behalf of the claimants. Darwin, Northern Land Council.
Merlan, F., Ed. (1996). Big river country: stories from Elsey Station. Alice Springs, IAD Press.
Morgan, M., L. Strelein, et al. (2004). Indigenous rights to water in the Murray-Darling Basin. AIATSIS Discussion Paper,. Canberra, Australian Institute of Aboriginal and Torres Strait Islander Studies. **14**.
Myers, F. (1991). Pintupi country, Pintupi self: sentiment, place and politics among western desert Aborigines. Berkeley, University of California press.
National Archives of Australia File F1 1946/406. Darwin.
National Water Commission (2011). The National Water Initiative - securing Australia's water future: 2011 assessment. Canberra, NWC.
Nikolakis, W. (2011). Providing for social equity in water markets: the case for an Indigenous reserve in northern Australia. Water resources planning and management. R. Grafton and K. Hussey. London, Cambridge University Press**:** 629-646.
Northern Territory Archives Service, H. Giles, et al. NTRS 298, Personal papers, memoirs, and diaries of Giles family relating to Elsey, Springvale, and Bonrook stations ca 1890-1981, Folder 4.
Northern Territory Archives Service and Supreme Court of the Northern Territory E101/P9, Civil dockets, annual single number series, 1927-1977, Item 6/1946.
Northern Territory Government (2009). Mataranka water allocation plan boundary map, Northern Territory Government.
Northern Territory Government (2010). Gulf water study: Roper River facts. Darwin, Northern Territory Government.
Northern Territory Government (2011). Draft water allocation plan, Tindall limestone aquifer, Mataranka. Darwin, Northern Territory Government**:** 31.
O'Donnell, M. (2011). Indigenous rights in water in North Australia (March 2011), Northern Australian Indigenous Land & Sea Management Alliance.
Powell, J. (2000). Snakes and cannons: water management and the geographical imagination in Australia. Environmental history and policy: still settling Australia. S. Dovers. South Melbourne, Oxford University Press**:** 47–71.
Pusey, B., Ed. (2011). Northern waters - aquatic biodiversity of the Australian wet-dry tropics. Darwin, Charles Darwin University Press.
Richards, T. (2011). "A late nineteenth-century map of an Australian Aboriginal fishery at Lake Condah." Australian Aboriginal Studies **2011/2**: 64-87.
Roberts, J. G., S. Y. Conway, et al. (2011). Mangarrayi and Yangman plants and animals: Aboriginal biocultural knowledge from Elsey and the Roper River, north Australia. Katherine, Diwurruwurru-jaru Aboriginal Corp/ Mimi Aboriginal Art and Craft, Department of Natural Resources, Environment, the Arts and Sport, and the Indigenous Literacy Foundation.
Rose, D. (1996). Nourishing terrains: Australian Aboriginal views of landscape and wilderness. Canberra, Australian Heritage Commission.
Rose, D. (2004). "Freshwater rights and biophilia: Indigenous Australian perspectives." Dialogue **23**: 35-43.
Rose, D. B. (2000). Dingo makes us human: life and land in an Australian Aboriginal culture, Cambridge University Press.

Rural Solutions (2008). Aboriginal access to water across Australia. Adelaide, Department of Water, Government of South Australia, Land and Biodiversity Conservation.
Strang, V. (1997). Uncommon ground: cultural landscapes and environmental values. Oxford, Berg.
Strang, V. (2001). Negotiating the river: cultural tributaries in Far North Queensland. Contested Landscapes: Movement, Exile, Place. B. a. W. Bender, M. Oxford, Berg.
Strang, V. (2002). 'Life Down Under': water and identity in an Aboriginal cultural landscape. Goldsmiths Anthropology Research Papers. London, Goldsmiths. **7**.
Tan, P., C. Mooney, et al. (2010). Tools for water planning: lessons, gaps and adoption. Waterlines Report. Canberra, National Water Commission.
The Argus (1949). NT Station owner on cattle theft charge. The Argus, January 15, pg 3. Melbourne.
The Northern Standard (1946). Verdict for Roper Valley in water rights case. The Northern Standard, 25 October, pg 9. Alice Springs.
Thonemann, H. (1949). Tell the white man: the life story of an Aboriginal lubra. Sydney, Collins.
Toussaint, S. (2010). Fitzroy valley Indigenous groups and the multi-criteria value of fishing and fish: a report for the social and economic values project (2.2) for Tropical Rivers and Coastal Knowledge (TRaCK). Perth, University of Western Australia.
Toussaint, S., P. Sullivan, et al. (2005). " Water ways in Aboriginal Australia: an interconnected analysis." Anthropological Forum **15**(61–74).
Vanderwal, R., Ed. (1982). The Aboriginal photographs of Baldwin Spencer. Melbourne, Currey-O'Neill.
Various. (2009). "Mary River Statement." Retrieved 01/02/2011, 2011, from http://www.nailsma.org.au/nailsma/forum/downloads/Mary-River-Statement.pdf.
Weir, J. (2009). Murray River country: an ecological dialogue with traditional owners. Canberra, Aboriginal Studies Press.
Wightman, G., J. Garalnganjak Roberts, et al. (1992). Mangarrayi ethnobotany : Aboriginal plant use from the Elsey area northern Australia.
Williams, N. (1986). The Yolngu and their land. Canberra, Australian Institute of Aboriginal Studies.
Woinarski, J., B. Mackey, et al. (2007). The nature of northern Australia: natural values, ecological processes and future prospects. Canberra, ANU Press.
Woodward, E., S. Jackson, et al. (2012). "Utilising Indigenous seasonal knowledge to understand indigenous aquatic resource use and inform water resource management,." Ecological Management and Restoration **13**(1).
Zaar, U. (2009). Gulf water study: water resources of the Roper River region. Darwin, Northern Territory Government**:** 218.