Nijinda Durlga (Gangalidda) Indigenous Protected Area

MANAGEMENT PLAN

Prepared by Carpentaria Land Council Aboriginal Corporation on behalf of the Gangalidda People

This document was supported through the Commonwealth Government's Indigenous Protected Area program.

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This document was supported through the Commonwealth Government's Indigenous Protected Area program.

The Carpentaria Land Council Aboriginal Corporation would like to thank the following organisations and individuals for their assistance in formulating this plan:

- Department of the Prime Minister and Cabinet
- Commonwealth Department of Environment
- Queensland Department of Environment and Heritage Protection
- Fisheries Queensland (Department of Agriculture, Fisheries and Forestry)
- Department of National Parks, Recreation, Sport and Racing
- Burke Shire Council
- Dr Dermot Smyth of Smyth & Bahrdt Consultants

Photo over page: Beach front of Horse Island between Dumbara and Burrdwada.

WARNING: This document may contain the names and photographs of deceased Indigenous People.

Acronyms:

ACCU	Australian Carbon Credit Units
ACHA	*Aboriginal Cultural Heritage Act 2003* (Qld)
BSC	Burke Shire Council
CFI	Carbon Farming Initiative
CLCAC	Carpentaria Land Council Aboriginal Corporation
CO2e	Carbon dioxide equivalent
DAFF Biosecurity	Federal Department of Agriculture, Forestry and Fisheries
DATSIMA	Department of Aboriginal and Torres Strait Islander and Multicultural Affairs
EHP	Department of Environment and Heritage Protection
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ERF	Emission Reduction Fund
FHAs	Fish Habitat Areas
FQ	Fisheries Queensland
GGNTAC	Gangalidda and Garawa Native Title Aboriginal Corporation
GoCCFA	Gulf of Carpentaria Commercial Fishermen's Association
GRAC	Gulf Region Aboriginal Corporation
IBA	Important Bird Area
ILUA	Indigenous Land Use Agreement
IUCN	International Union for the Conservation of Nature
MERI	Monitoring, Evaluation, Reporting and Improvement
NCA	*Nature Conservation Act 1992* (Qld)
NPFI	Northern Prawn Trawl Fishery Industry Pty Ltd
NPRSR	Department of National Parks, Recreation, Sport and Racing
NRS	National Reserve System
PBC	Prescribed Body Corporate
PMC	Department of the Prime Minister and Cabinet
QPWS	Queensland Parks and Wildlife Service
RNE	Register of the National Estate
SPA	*Sustainable Planning Act 2009* (Qld)
VMA	*Vegetation Management Act 1999* (Qld)
WoC	Working on Country

Plan Structure:

The management plan consists of six parts and appendices:

Part 1: Provides an overview of the development of this Plan, outlines other potential stakeholders, sets out our vision, and briefly describes specific legislation relevant to natural resource management in the region.

Part 2: Describes the aspirations and management objectives of the Gangalidda People.

Part 3: Provides an overview of the cultural and environmental significance of our region, including the traditional laws and customs of the Gangalidda People involved with the development of this Plan.

Part 4: Sets out the management issues relating to the care of our cultural heritage sites and the natural environment and details how we intend to deal with these matters in an action plan.

Part 5: sets out our Action Plan.

Part 6: Illustrates how we propose to implement monitoring and review the various aspects of this Plan.

Appendix 1: Lists all of the mapped Regional Ecosystems across Gangalidda traditional country.

Appendix 2: Lists all of the plant species that have been physically found on Gangalidda traditional country.

Appendix 3: Lists all of the animal species that have been physically found on Gangalidda traditional country.

Appendix 4: Wetlands included in the Directory of Important Wetlands in Australia that occur on the proposed Gangalidda IPA.

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Contents:

Typical saltpan with the waterways stretching across the landscape.

Part 1:
Introduction and Background

PLAN PURPOSE AND OVERVIEW

This plan represents the agreed position of the Traditional Owners, the Gangalidda People on the management of our traditional country within the Nijinda Durlga Indigenous Protected Area (IPA). It is based on extensive discussion with Traditional Owners to identify key management problems and opportunities, visions for management of our country, management objectives and the actions needed to achieve these objectives.

This Plan sets out our rights and responsibilities in caring for our country. It does this by strengthening our existing resolve to care for our country using traditional laws and customs - rules for caring for country which have ensured our environment has remained truly pristine over millennia. At the same time, through this plan we intend to recognise the advantages of supplementing this traditional body of knowledge with contemporary knowledge where appropriate, particularly to assist us to deal with present threats. This plan outlines how we intend to manage country and how we intend to provide for the sustainable use of environmental resources.

The plan is developed as a living document to guide management actions and will be updated over time to suit changing circumstances and take advantage of new information. It is supported through the Commonwealth Government's IPA program and declaration of the area as an IPA. Nijinda Durlga is designed to inform the reader of the need to approach natural resource management in our region in a culturally appropriate manner and in a way that ultimately benefits the environment and the rich natural and cultural resources of Gangalidda traditional country.

Point Parker looking across to Allen Island.

THE IPA PROGRAM

The Indigenous Protected Area program was first proposed by the Commonwealth Government in 1997 as a scheme to provide effective mechanisms for Indigenous landholders to manage country in a sustainable manner and in accordance with the National Reserve System. Now forming part of the Commonwealth's Caring for Our Country initiative, the three stated goals of the program are to:

1. Support Indigenous land owners to develop, declare and manage IPAs on their lands as part of Australia's National Reserve System;
2. Support Indigenous interests to develop cooperative management arrangements with Government agencies managing protected areas; and
3. Support the integration of Indigenous ecological and cultural knowledge with contemporary protected area management practices.[1]

[1] http://www.environment.gov.au/indigenous/ipa/goals.html.

The IPA program has since grown into what has been described as "Australia's most successful innovation in protected area management and in Indigenous engagement in environmental management."[2] An independent review of the IPA program found that it:

- Contributes significantly to the National Reserve System and has been extremely cost effective in contributing to national conservation goals;
- Provides meaningful work opportunities for Indigenous Australians; and
- Operates robust monitoring and evaluation systems.[3]

The program is recognised as being flexible to meet the needs of the Traditional Owners, while at the same time providing clear management strategies to ensure the sustainable use of the environment and its resources.

The process of declaring an IPA is completely voluntary and is not intended to impact on native title rights and interests in country. Rather, it provides the opportunity to articulate a commitment to care for our country in a manner that is consistent with the IPA program, International Union for the Conservation of Nature (IUCN) protected area management categories and Australia's National Reserve System.

WHY AN IPA FOR GANGALIDDA COUNTRY?

We have watched the IPA program grow since its inception in 1997 with the first declaration at Natawarrina in South Australia, allowing Traditional Owners to articulate their management needs and aspirations over country. Our sea claim was lodged only a year prior, with similar long term goals – to have native title recognised over our sea country with a view to be able to effectively manage our traditional country in accordance with our traditional laws and customs, and to provide for cultural and environmental management.

Over time we have seen the IPA program deliver substantial benefits to Indigenous communities across Australia, offering training and funding required to manage country. We are hopeful that the IPA program will provide us with the opportunity to enhance the capacity of our rangers, promote the invaluable work that they do on country in the protection and conservation of biodiversity, and to acknowledge our contribution as Traditional Owners in maintaining our environment for future generations.

Native Title has given us legal recognition of our right to manage country and, like our country men to the north (the Wellesley Islands) we believe that an IPA is an appropriate mechanism under which to achieve our aspirations as an IPA has substantial benefits for Traditional Owners and the broader community. We are proud of our unique culture and the extraordinary diversity of our country from the sandstone ridges and escarpments following the rivers and streams through to the coast with their mangroves and sand dunes, and everywhere in between. Conservation has always been a key part of our culture. The flexibility of the IPA program will allow us to meet our cultural obligations in caring for our country, and provide financial and planning support to strengthen our conservation practices as well as national and international recognition to develop and actively manage country.

An IPA declaration will open the door to other funding opportunities to manage country. With active management will also come an increase in employment (both directly and indirectly); economic growth in the community and an overall increase in the well-being of all in our people and the community as a whole.

Our IPA will link directly to the Thuwathu/Bujimulla IPA initiative undertaken in the Wellesley Islands, providing two adjoining protected and managed areas amassing an impressive 175,350 hectares. Many of the consequences of inappropriate land management decisions are felt right across our traditional country, either as legacies we face from activities undertaken in the past on our own country, or as the result of activities past and present upstream from our country. We deal with these matters not in isolation, but together with our neighbours, including the Traditional Owners of the Wellesley Islands.

THE PLAN AREA: USING TRADITIONAL ESTATES AS DISCRETE MANAGEMENT AREAS

The proposed area for inclusion in the IPA incorporates:

- Pendine
- Bundella
- Tarrant
- Old Doomadgee
- Konka
- Brokera
- Doomadgee
- Troutbeck

The majority is covered by leases held by us under the *Land Act 1994* (Qld) and a small area (Old Doomadgee) is held under the *Aboriginal Land Act 1991* (Qld).

The Pendine and Konka pastoral properties are currently held under pastoral leases which are scheduled to transfer to the Gangalidda People in the near future. At this point the Gangalidda People will declare Stage 2 of the IPA which will take the total area of the IPA from 186,323ha to 541,095ha.

Coastline.

[2] Dr. Dermot Smyth in Gilligan, B. (2006) *"The National Reserve System Programme 2006 Evaluation"* Department of the Environment and Heritage, Canberra. pg 2. [3] *Ibid.*

Traditionally, Gangalidda country stretches from the Leichhardt River, west to Massacre Inlet. The extent of this core area has never been disputed with our neighbours.

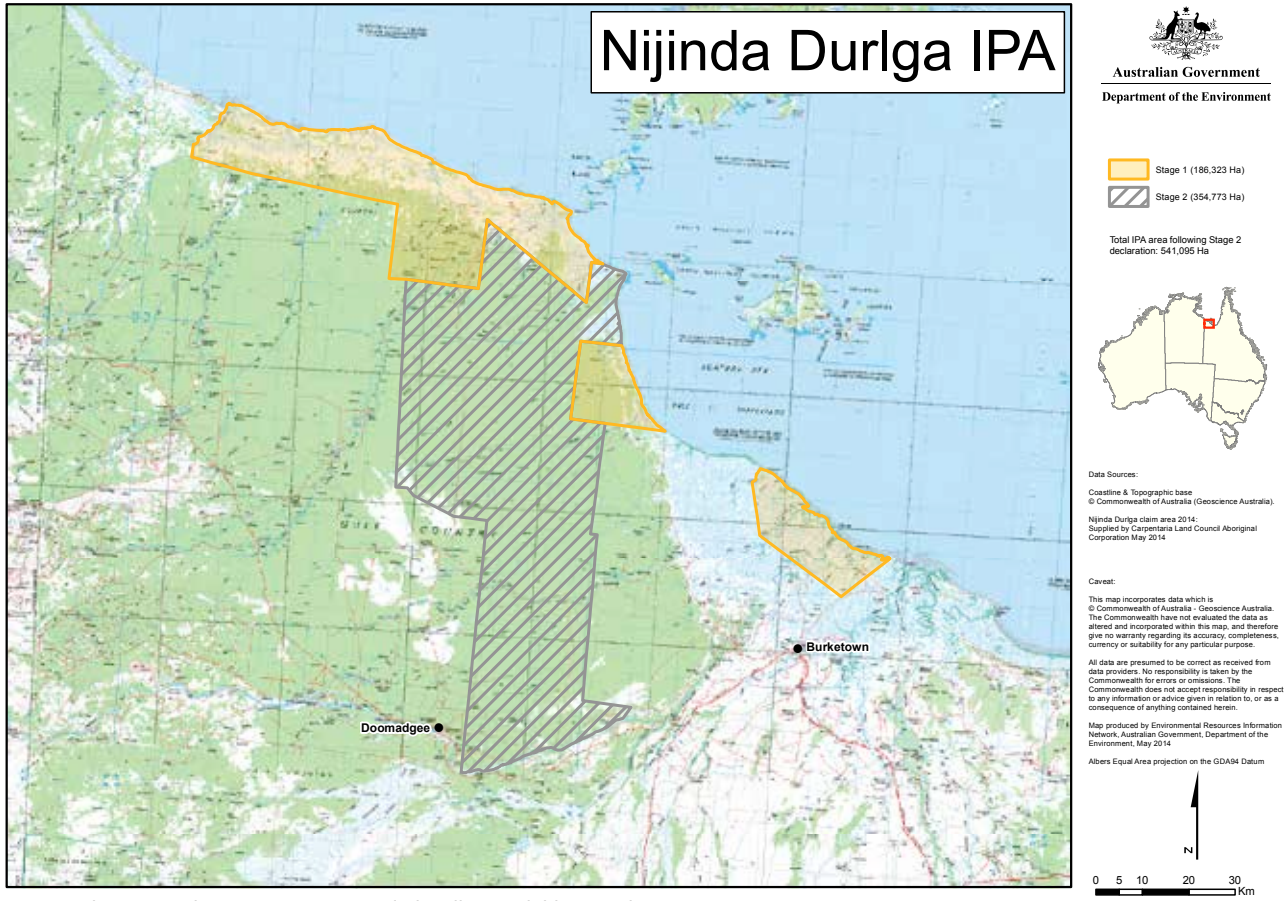
We have strong ties to our country, our cultural heritage and our traditional estates. Through anthropological studies conducted as part of our native title claims we have been able to demonstrate our connection to country and purposely map the area of our traditional family estates.

In a report prepared by David Trigger for our Wellesley Sea Claim, to which we were a party, the estates of our country have been described as:

- The coastal area of saltwater country from the Leichhardt, coming west to the Albert, Nicholson and Gin Arm Rivers (this area is not depicted on the map provided over);

A. Around Moonlight Creek (Hawk Dreaming);

B. Around Point Parker (Dingo Dreaming);



Map 1.1. The proposed management area includes all Gangalidda owned properties.

C. Around Syrell and Bayley Point (Dugong Dreaming);

D. Around Old Doomadgee Outstation (Groper Dreaming);

E. Around Bundella waterholes, and Beryl Creek (Brolga Dreaming);

F. Around Cliffdale Creek (Devil and Barramundi Dreamings);

G. Around the long sand ridge called Wambilbayi that runs westwards along the coast from Cliffdale Creek (Left-Hand Wallaby Dreaming).

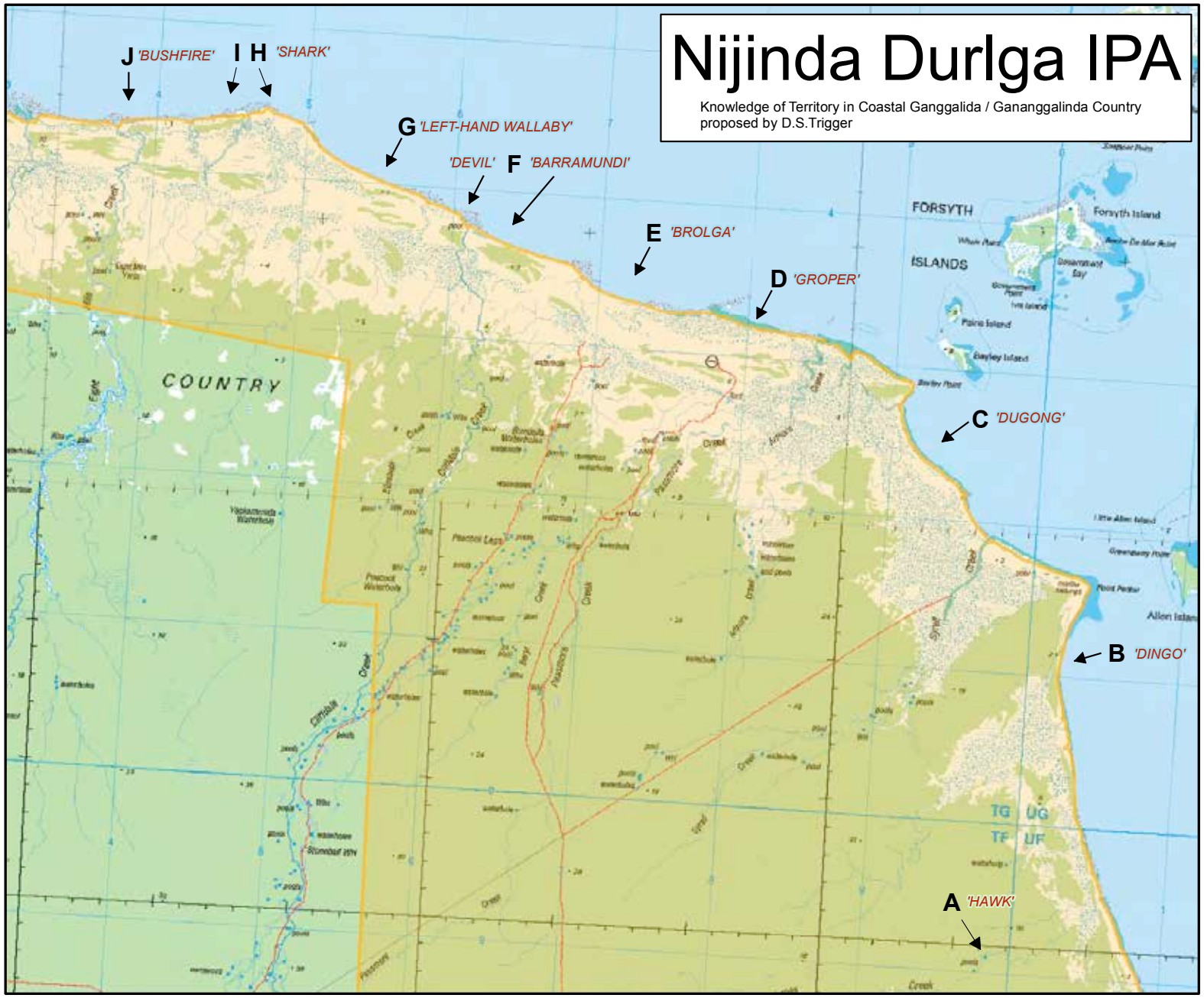
H. The area encompassing the coastal lands around Dumbara Island, extending westward as far as Massacre Inlet. Connected with this estate is another estate "I" extending inland along Eight Mile Creek (Shark Dreaming).

J. Around the vicinity of Massacres Inlet extending westward from there (Bushfire Dreaming).

We will be utilising our traditional estates as discrete management areas within the greater IPA area.

Gangalidda (and Garawa) at IPA consultation - May 2013.

Syrell creek stone fishtraps.



Australian Government
Department of the Environment

Nijinda Durlga IPA

Data Sources:

Coastline & Topographic base
© Commonwealth of Australia (Geoscience Australia).

Nijinda Durlga claim area 2014:
Supplied by Carpentaria Land Council Aboriginal Corporation May 2014

Caveat:

This map incorporates data which is © Commonwealth of Australia - Geoscience Australia. The Commonwealth have not evaluated the data as altered and incorporated within this map, and therefore give no warranty regarding its accuracy, completeness, currency or suitability for any particular purpose.

All data are presumed to be correct as received from data providers. No responsibility is taken by the Commonwealth for errors or omissions. The Commonwealth does not accept responsibility in respect to any information or advice given in relation to, or as a consequence of anything contained herein.

Map produced by Environmental Resources Information Network, Australian Government, Department of the Environment, May 2014

Albers Equal Area projection on the GDA94 Datum

N

0 5 10 Km

Map 1.2. The traditional family estates over Gangalidda country that will be used as discrete management areas within this plan of management.

IUCN PROTECTED AREA DEFINITION

The International Union for the Conservation of Nature (IUCN) defines a protected area as:

> '(a) clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve long-term conservation of nature with associated ecosystem services and cultural values.' [4]

This definition recognises Indigenous resource use and customary land management can be in harmony with, and contribute to, biodiversity conservation objectives on protected areas.

Selected IUCN Category

There are six different categories of protected areas established by the IUCN system. After careful consideration we have determined that Category V best described our management regime. This is in line with our neighbours, the Wellesley Islands to our north, who also felt this definition best represented their management reality.

The definition of Category V is below:

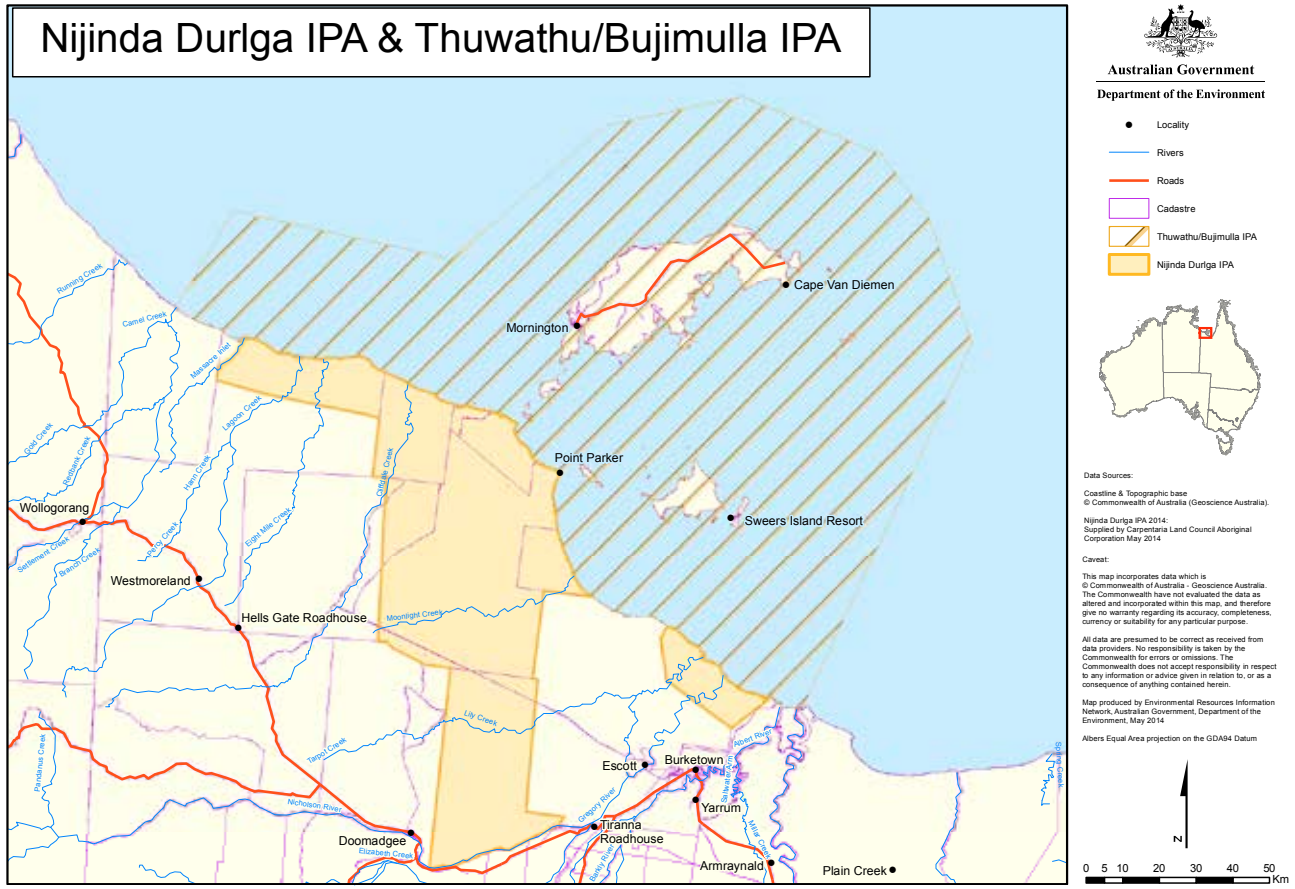
"CATEGORY V: Protected Landscape/ Seascape: protected area managed mainly for landscape/seascape conservation and recreation

Definition:
A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

The primary objective of Category V protected areas is to protect and sustain important landscapes/seascapes and the associated nature conservation and other values created by interactions with humans through traditional management practices.

Other objectives of category V protected areas are:

- To maintain a balanced interaction of nature and culture through the protection of landscape and/or seascape and associated traditional management approaches, societies, cultures and spiritual values;
- To contribute to broad-scale conservation by maintaining species associated with cultural landscapes and/or by providing conservation opportunities in heavily used landscapes;
- To provide opportunities for enjoyment, well-being and socio-economic activity through recreation and tourism;
- To provide natural products and environmental services;
- To provide a framework to underpin active involvement by the community in the management of valued landscapes or seascapes and the natural and cultural heritage that they contain;
- To encourage the conservation of agrobiodiversity and aquatic biodiversity;
- To act as models of sustainability so that lessons can be learnt for wider application."



The Nijinda Durlga (Gangalidda) IPA in relation to the Thuwathu/Bujimulla (Wellesley Islands) IPA.

[4] The source document for the information contained within this section is: Dudley, Nigel (ed.) 2008 *Guidelines for Applying Protected Area Management Categories.* IUCN, Gland.

We believe the description and objectives of category V protected areas is the best fit with the description of our country, how we have managed it in the past, and how we intend to continue manage it into the future. Our creation stories explain how our ancestors shaped the environment by their movements through our country and beyond. Many of our stories link to the creation stories of our adjoining mainland neighbours, then travelling through to the Wellesley Islands and sometimes beyond. Our traditional laws and customs, which determine the way we interact with the environment, have continued to shape the natural values of the region over the past millennia. We manage the country in this manner, using the resources of the region as part of our traditional interaction with country. We conduct increase ceremonies to ensure appropriate levels of resources are available for consumption, and other types of ceremonies to ensure the appeasement of our ancestral beings.

The natural values of the region are testament to our sustainable management of country and we will continue to manage country in this way.

THE DEVELOPMENT OF THIS PLAN

Building on past work

With the lodgment of the Wellesley Islands Sea Claim in 1996 we began a process of documenting all of our traditional laws and customs and talking about how we use the land and sea. A vast amount of information was gathered relating to the environmental management of our country the mapping of sacred sites and places of significance, our fishing and hunting practices and evidence of our laws relating to the access of our country. Anthropologists became frequent visitors to our country documenting this evidence on our behalf.

In 2001 we began working with a linguist to document our language with the creation of the draft Gangalidda Dictionary. The dictionary is a valuable resource as it translates from Gangalidda to English (and vice versa), and lists important plants and their uses across the region. Obtaining funding for this endeavour has been a struggle and several years have lapsed since the project began. In 2013 we finally obtained funding through the Indigenous Language Support Funding stream to finalise the dictionary. We hope to make this valuable resource available in 2014 to the schools and Elders across the region to reinvigorate our language and associated knowledge.

In 2004 and 2005 we lodged Native Title claims over our traditional lands and waters in conjunction with the Garawa People.

All of this knowledge has been utilised in the development of this management plan.

Consultation process

As with all IPA development projects an enormous amount of time has been spent consulting with our people to ensure the plan is inclusive of all Traditional Owner wishes and desires for the management of our country. Though supported by the CLCAC these consultations have been driven by Traditional Owners. These consultations took place as: one-on-one discussions with individuals with the right to speak for particular areas of country; in small group sessions involving family groups, or groups of Elders; or as large language group meetings. These discussions have always proved informative for all of those involved.

Desktop audit

Apart from the extensive and intensive consultations undertaken by Traditional Owners a full desktop audit was carried out to determine what species are likely to occur on our country. This audit was completed in October 2012 and since then our Gangalidda & Garawa Rangers have been busy ground truthing this information. Determining exactly what is out there is a tremendous task and is still being finalised by the rangers. It is expected that a full State of the Environment report will be produced for Gangalidda traditional country by the end of 2014, and it is possible that some of the management actions discussed later in this plan may need to be reconfigured to suit.

A full list of ecosystems and species identified by this desktop audit report can be found at Appendix 1, 2, 3 and 4.

Other planning processes

Until recently there had been little landscape-scale planning post European settlement in the lower Gulf of Carpentaria. In November 2013 the Gulf Region Aboriginal Corporation (GRAC) declared the Wellesley Islands and our mainland coastal waters as an IPA, and the CLCAC published the Thuwathu/Bujimulla IPA Plan of Management.[5] Management strategies determined within this plan will also inform actions in this plan where relevant to our coastal water management activities.

In 2014, the CLCAC began developing land and sea country plans with other neighbouring groups; the Garawa People to the west; and the Kukatj, Gkuthaarn and Kurtijar Peoples to the east. We will ensure any appropriate strategies developed through these plans will also be incorporated within this plan of management.

Also, 2014 saw the beginning of a comprehensive effort by CLCAC rangers to ground truth desktop audits of species presence ultimately leading to a State of the Environment report for the region covered by this management plan and other. Though not yet complete this SoE report will guide many management activities on country and dictate the revision of this plan once finalised.

We have completed significant consultations in relation to freshwater rights and interests and traditional fire management that have also been incorporated into this plan.

Gangalidda (and Garawa) IPA consultation - October 2012.

[5] The Gulf Region Aboriginal Corporation represents the interests of the Lardil, Kaiadilt, Yangkaal and Gangalidda People and is the Prescribed Body Corporate administering the Native Title rights and interests stemming from the Wellesley Sea Claim and the Wellesley Islands Land Claim (*Lardil People V State of Queensland* [2004] FCA298 and *Lardil, Yangkaal, Gangalidda and Kaiadilt Peoples v State of Queensland* [2008] FCA1855).

Juctice Spender presenting NT findings to Gangalidda and Garawa claimant Clara Foster, June 2010.

Murrandoo Yanner speaking at the IPA Consultation - Sweers Island.

Woomera dancers at the Gangalidda declaration.

Naidoc celebrations at Burketown public school.

POTENTIAL INTERESTED PARTIES

Proposed IPA Partners

We have always been mindful of what is happening with our country and what external forces could also impact on our use and enjoyment of our traditional lands. We keep watch and respond appropriately to all proposed government policies, laws and regulations. Utilising this approach, we can readily identify those parties who may be considered stakeholders in the management of our country and whose collaboration we seek to achieve the goals and objectives of the IPA.

The following organisations have been identified as stakeholders and proposed IPA partners to collaborate in the implementation of this plan:

Commonwealth Government Agencies

Department of the Prime Minister and Cabinet

The Department of Prime Minister and Cabinet (PMC) now incorporating Working on Country (WoC) and IPA initiatives has been a huge support throughout this planning process and continues to be instrumental in the delivery of services by the Gangalidda & Garawa Rangers through the WoC and IPA initiative. Through the continued delivery of ranger services the rangers will be in a position to deliver many of the environmental outcomes in line with Commonwealth Government priorities.

Furthermore, rangers across the southern Gulf of Carpentaria region continue to gather data concerning many endangered, threatened and vulnerable species listed in the EPBC Act with a view to providing government and non-government scientists with population trends and habitat health filling many of the current information gaps for this region.

Department of Environment

The Department of Environment has been a fantastic supporter of the various works program undertaken by the CLCAC Rangers. In the past the CLCAC has worked with the department to implemented project (administered by NAILSMA) such as the Dugong and Marine Turtle Project, Saltwater People Project, the Water Project, I-Tracker and other LandCare projects.

Even though programs such as Working on Country have been reallocated to the PMC, the CLCAC will be able to maintain our mutually beneficial relationship with this department through continuing projects such as the Biodiversity Fund Indigenous Fire and Weed Projec of Carpentaria.

It is expected that the Department of Environment will remain the key agency in the region responsible for the roll out of environment projects. We welcome their continued involvement and the CLCAC will strive to be the frontline for the provision of environmental services being delivered by the department across the region.

The Department also has custody of the National Reserve System (NRS) of which all IPA are a part. This section holds all the data associated with NRS properties and are responsible for mapping such sites. IPAs constitute over 40% of the NRS; a huge achievement given the relatively short lifespan of the program, with its inception in 1997.

DAFF Biosecurity (formerly AQIS)

Our rangers are perfectly placed within the region to serve as a "frontline" in defending Australian shores from infectious diseases, weeds and other pests. The Department of Agriculture, Forestry and Fisheries (DAFF) Biosecurity has provided training to rangers in weed and pest identification and reporting skills. We hope to further develop this partnership over time for the mutual benefit of both parties, with the increased capacity of the rangers and the increased capabilities of DAFF Biosecurity to fulfil their objectives.

Queensland Government Agencies

Department of Agriculture, Fisheries and Forestry (DAFF)

Within the Department of Agriculture, Fisheries and Forestry (DAF) lies Fisheries Queensland (FQ), the agency responsible for the management of all the commercial and recreational fisheries within the proposed IPA area, with the exception of the Northern Prawn Fishery.

In 2004, the Queensland Gulf of Carpentaria commercial line, net, trawl and crab pot fisheries were each approved as a Wildlife Trade Operation (WTO) under the *Environment Protection and Biodiversity Conservation Act 1999*[6]. The then Queensland Department of Primary Industries and Fisheries (now DAFF) submitted ecological assessments on each fishery in order to demonstrate they were being managed in an ecologically sustainable manner. Continued export approval for species harvested in the fisheries was contingent upon each fishery meeting a range of recommendations made by SEWPaC.

Through collaboration in the management of the IPA we welcome the opportunity to develop a solid working relationship with FQ. With the establishment of the rangers we are in an exclusive position in the lower Gulf to offer assistance to FQ (and Biosecurity Queensland) to patrol the region with regular frequency and report any suspicious activity. (Such assistance is already provided to the Australian Government's DAFF Biosecurity involving the identification and reporting of weeds and other potential pests, illegal foreign fishing vessels and marine debris.)

It should also be noted that FQ still administers the Fish Ladder Program. We are aware there exists some impediments to fishway movement on our country and we have been working with FQ and Reef Catchments (the organisation charge with the implementation and delivery of on-ground works) to ensure these barriers can be removed.

CLCAC also represented the views of Traditional Owners across the lower Gulf on the GulfMAC – the ministerial

[6] Commonwealth Department of Environment and Heritage 2004. Assessment of the Gulf of Carpentaria Inshore Finfish Fishery available at http://www.environment.gov.au/coasts/fisheries/qld/fin-fish/pubs/finfish-assessment.pdf.

advisory committee established to directly advise the responsible Minister on all fishing related matters in the Gulf of Carpentaria. With the announcement of the fisheries review by the State Government in March 2014, we will be keen to participate where possible to ensure our views are heard and acknowledged.

Environment and Heritage Protection

We have an excellent relationship with the Department of Environment and Heritage Protection (EHP) as developed primarily through the Queensland Indigenous Land and Sea Ranger program. The department funds six permanent positions in both the Gangalidda & Garawa Ranger unit and the Normanton Rangers. This program originally stemmed from the Wild Rivers legislation and the care of these rivers and their associated catchments continue to provide a focus for our rangers.

The EHP Indigenous Land and Sea Ranger program has been well received right across Queensland, even in those areas opposed to the *Wild Rivers Act 2005* due to its provision of mentors and trainers working closely with the rangers on all manner of activities that are tailored for specific scenarios and the area. We remain committed to this groundbreaking program.

We have also worked alongside the EHP in their investigation of the Wellesley Islands region, of which we are a part, as a marine protected area.

Department of National Parks, Recreation, Sport and Racing

As well as our recognition as the Traditional Owners of our sea country along the mainland coast in the Wellesley Sea Claim, exclusive Native Title was granted to us over many of our properties[7]. Collectively these properties cover over 9,360 square kilometres and represents an area of high conservation value.

The environmental significance of Finucane Island (located between the mouths of the Albert and Leichhardt Rivers) is already recognised by the State Government with its gazettal as national park. Though not immediately within the IPA area, Finucane National Park neighbours Tarrant directly to the west. The Gangalidda & Garawa Rangers undertake fee-for-service activities on Finucane Island primarily in relation to weed and feral animal control using both chemical and fire treatment applications. Our rangers do a fantastic job, as advocated by Queensland Parks and Wildlife Service (QPWS) Rangers who participate in joint management activities. We would wish for this arrangement to be again formalised, and for Gangalidda & Garawa management of this important area to be recognised nationally.

As well as looking after protected areas the Department of National Parks, Recreation, Sport and Racing (NPRSR) is also responsible for monitoring and managing protected species and our country has plenty of those. With its remote location and under our careful management our lands have become a stronghold for many threatened species. We would welcome the opportunity to work with NPRSR experts to learn western science best-practice techniques for management that can be used together with our traditional practices.

NPRSR also look after Fish Habitat Areas. In the 2012 DAFF assessment[8], the Eight Mile Creek FHA section highlighted that there is an opportunity for NPRSR to involve the Gangalidda & Garawa Rangers in their management and education programs – we would welcome this opportunity.

Local Government

The majority of our mainland country falls under the jurisdiction of the Burke Shire Council, with a percentage under the authority of the Doomadgee Aboriginal Council. The Gangalidda & Garawa Rangers are now in a position to, and indeed do, assist Burke Shire Council in meeting its obligations under the *Land Protection (Pest and Stock Route Management) Act* 2002 to treat weeds along road verges and by protecting towns and important infrastructure with the establishment and maintenance of fire breaks.

We expect that the efficiency of negotiations between ourselves and the Burke Shire Council will be improved in the near future with the registration of an Indigenous Land Use Agreement (ILUA) in late 2014.

We would welcome the strengthening of our relationship with Doomadgee Aboriginal Council and openly extend an invitation to the Council to converse on matters that could be mutually beneficial.

Commercial stakeholders

Gulf of Carpentaria Commercial Fishermen's Association

The Gulf of Carpentaria fishery is estimated to contribute approximately $12 million to the Queensland economy on an annual basis[9]. We see the chance to add to the value of this fishery by creating a "Traditional Owner Friendly" endorsed fishery symbol for commercial products in an increasingly socially responsible marketplace. Part of this process would be for us to provide cultural heritage awareness training to those commercial fishers who are active in the Wellesley Islands region. The first of such training programs was held in August 2010. Together with the Gulf of Carpentaria Commercial Fishermen's Association (GoCCFA) we are investigating ways of having such training recognised as a required accreditation on the Masters of Operation (requirement for all skippers of commercial fishing vessels).

Other stakeholders

Other interests include the adjoining pastoral stations of Cliffdale, West Moreland, Escott, Wentworth, Bowthorn, Almora, Beamsbrook, and tourism operators present in the region (Adel's Gove, King Fisher Camp, Cliffdale Station/Hell's Gate, Pungalina and Seven Emu). As part of the IPA process we again see an opportunity to add value to the experiences offered by these enterprises by incorporating local Indigenous tours, sale of paintings and other artefacts organised by appointment at the respective lodge, while at the same time ensuring the protection of our valued cultural heritage.

[7] *Gangalidda and Garawa People v State of Queensland* [2010] FCA 646. [8] Rebecca Batton, R., Derbyshire, K and Sheppard, R. *Declared Fish Habitat Area Network Assessment Report 2012 Fisheries Queensland*, Department of Agriculture, Fisheries and Forestry, June 2012. pg 43 http://www.nprsr.qld.gov.au/managing/pdf/assessment-report.pdf. [9] State of Queensland (2011). *Guidelines for Commercial Operators in the Gulf of Carpentaria Inshore Fin Fish Fishery.* DEEDI, pg 3.

Cultural Heritage Induction presented to Haliburton.

Cultural Heritage Survey with anthropologist Richard Martin.

Dr Helene Marsh talks dugong with our rangers.

Traditional Knowledge Camps.

Water lillies (gayarra).

Part 2:
Aspiration Statements

The term "nijinda durlga" means me, or my, land where I belong and I sit down:

Nijinda **Me or my**

Durlga **Land where I belong and I sit down**

This is an appropriate name for our management plan as this plan represents the vision we have for the management of OUR country under our own terms. We assert the following:

OUR VISION

We belong to this country and it belongs to us. We have cared for it across the millennia and will continue to do so until time's end. Although we faced the brunt of European occupation in northern Australia with massacres and other atrocities forced upon our people, we were never fully dispossessed of land and have always maintained our connections to country.

Our vision is to empower our people as the Traditional Owners to manage our land and waters of our diverse region in a sustainable manner based on our traditional laws, culture and knowledge in collaboration with our government and non-government partners for the benefit of the whole community.

OBJECTIVES OF THE IPA

Our vision articulates our desire for the management of our country. We will achieve our vision through the following means:

Albert River.

1. To manage the land, waters and natural resources of our country in a culturally appropriate and environmentally sustainable manner;
2. To advocate for our rights, interests and responsibilities across our country in relation to activities that impact upon our land and waters;
3. To promote education, training and employment of our people in traditional and contemporary land and sea management practices, natural resource management and conservation activities;
4. To promote, for the primary benefit of our people, the responsible development of commercial and other enterprises associated with the use and management of our land and waters;
5. To protect our sacred sites and areas of significance across our land and waters;
6. To promote the continuation of our culture, knowledge and language and protect our intellectual property rights; and
7. To actively educate the wider non-Indigenous community about our responsibilities to care for our country, specifically in traditional and contemporary land management practice, cultural heritage and conservation activities.

If we can successfully meet the challenges ahead using these objectives, our children and the generations to come, will inherit a vibrant environment and prosperous economy.

LEGISLATION AND REGULATION

- The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (the EPBC Act) is the primary Commonwealth law dealing with the creation and management of protected areas. The EPBC Act provides for the listing of nationally threatened species and ecological communities, native migratory species, and marine species.

  Specifically, the EPBC Act protects Australia's native species and ecological communities by providing for the identification and listing of species and ecological communities as threatened; the development of conservation advice and recovery plans for listed species and ecological communities; and the development of a register of critical habitats.

  We are interested in discussing the scope of the operation of the EPBC Act over our traditional country and more widely across the region, particularly the seas surrounding the Wellesley Islands.

  There are four areas within our traditional country that were included on the former Register of the National Estate (RNE):

  1. Southern Gulf Plains;
  2. Wentworth-Troutbeck National Park Proposal;
  3. Marless Lagoon; and
  4. Point Parker

  The first three are natural listings, with Point Parker being recognised for its Indigenous values.

- The *Nature Conservation Act 1992* (Qld) (NCA) establishes a framework for creation and management of protected areas, for example national parks, and protection and management of native flora and fauna.

Point Parker.

  Administration of the Act is now split between three departments: the NPRSR, EHP and DAFF. NPRSR now deals with all protected areas (except nature refuges) and EHP deals with nature refuges and protected wildlife.

  As a general rule, all native fauna is 'protected wildlife' and cannot be killed or harmed. Native plants have a more complicated system which is currently under review. It is generally accepted in Queensland that Traditional Owners may take protected species for traditional uses, such as food, in accordance with the *Yanner v Eaton* High Court decision.[10]

- The *Vegetation Management Act 1999* (Qld) (VMA) is designed to regulate the clearing of native vegetation on all tenures of land. It is worth noting that the amendment of the VMA to remove all reference to Wild River areas and declarations means that this Act now has no positive effect for the management of our country.
- The *Sustainable Planning Act 2009* (Qld) (SPA) is Queensland's principal planning legislation that coordinates planning at the local, regional and State levels.

  The stated purpose of SPA is to seek to achieve ecological sustainability, which is defined as achieving a balance that integrates ecological, economic and social objectives.

  The SPA controls the review and development of a shire's planning scheme and regulates where and how certain developments can occur. Currently the entire area subject to the IPA is classed as Rural with very little restrictions on planning and development. Due to the isolated nature of the area it is not anticipated this situation will change with any review of the Burke Shire Planning Scheme.
- *Coastal Protection and Management Act 1995* (Qld). Presumably because of the remoteness and isolation of our country this Act does not apply to our lands, even though previous State Planning Policies identified much of our country as Erosion Prone and subject to Acid Sulphate Soils. Most concernedly much of the area of declared acid sulphate soils and erosion prone overlap. (See maps 4.1 and 4.2 over.)

[10] [1999] HCA 53.

- *Water Act 2000* (Qld) and the *Water Resource (Gulf) Plan*. In 2011, after extensive lobbying of the State Government, the Water Resource (Gulf) Plan was amended to provide a Strategic Indigenous Reserve of 1,000 megalitres of water from the Nicholson River and 1,500ML from Settlement Creek. This water allocation, made in the form of a licence, belongs to the Traditional Owner groups that have an interest in the catchment and can be used for social and/or commercial purposes (it should be noted that a separate environment allocation is also in place).
- *Aboriginal Cultural Heritage Act 2003* (Qld) (ACHA). Obviously the purpose of the ACHA is to protect our cultural heritage by providing blanket protection of areas and objects of traditional, customary, and archaeological significance. The duty of care guidelines developed in accordance to the Act apply whether the area/object is listed on the Register or not.

  We are fiercely protective of our cultural heritage and all development on our country is monitored, no matter for what purpose.
- *Fisheries Act 1994* (Qld). Fish Habitat Areas (FHAs) are areas protected from physical disturbance associated with coastal development and declared under Queensland's *Fisheries Act 1994*. They are part of Australia's Nationally Representative System of Marine Protected Areas, and fit within the International Union for the Conservation of Nature and Natural Resources (IUCN) Protected Area Management Category VI - 'Managed Resource Protected Area'.

  The Eight Mile Creek FHA is located within our traditional country between Tully Inlet and Bundella Waterholes, near the Northern Territory border and has a management category of "A" – the strictest. This declaration means that no structures can be built within the FHA. In 2010, and with our consent , this FHA was expanded an additional four kilometres into Gulf waters and now covers over 35,000ha.
- *Wild Rivers Act 2005* (Qld). The *Wild Rivers Act* is no doubt the most controversial piece of legislation involving our country. The noble aim of the Act is to protect the pristine rivers of Queensland by preventing inappropriate activities or development occurring within the catchment and most significantly within the High Preservation Area (1km of the river bank).

  We have been keen supporters of this Act since the ideas behind it were first discussed in consultations conducted in the Gulf. If anything, we don't believe the Act goes far enough after concessions were made by the State Government in favour of mining companies. We enjoy the Gangalidda & Garawa Ranger program as a consequence of the Wild Rivers legislation, which funds six ranger positions under the rebadged Queensland Indigenous Land and Sea Ranger program.

  There are two Wild River declarations on our traditional country: Settlement Creek and the Gregory River.

GOVERNANCE STRUCTURE

With the success of the native title determination made by the Federal Court for the benefit of the Gangalidda People over part of their traditional lands and waters, there was a requirement to establish a Prescribed Body Corporate (PBC) that would hold all native title rights and interests as agent on behalf of the native title holders. The resulting PBC, the Gangalidda & Garawa Native Title Aboriginal Corporation (GGNTAC), was also chartered with the responsibility of pursuing appropriate social and community development outcomes. This corporation was determined by the Gangalidda and Garawa Traditional Owners to be the most appropriate body to preside over the development and implementation of the Nijinda Durlga IPA.

The GGNTAC is governed by a constitution approved by the Office of the Registrar of Indigenous Corporations that sets out the rules for example in relation to membership, the operation of the board, the need for consultation and the running of the community meetings. Only native title holders can be members of the Corporation.

The GGNTAC is the sole shareholder of the Gangalidda & Garawa Services Pty Ltd. This company exist to support the economic, environmental and community development aspirations of the Gangalidda and Garawa People, as well as to help protect native title rights and interests. To avoid confusion and duplication and to ensure decisions are consistent with native title and sustainable land management practices, our company directors are also the directors of the Board of GGNTAC.

The native title holders have resolved that the Board of Gangalidda & Garawa Services Pty Ltd should act as the Gangalidda representatives for the IPA Advisory Committee. The IPA Advisory Committee will be established following dedication of the IPA, and will meet on a regular basis to review progress in implementation of the IPA Plan of Management. The Advisory Committee will be a mechanism to help negotiating implementation issues, should they arise.

The Gangalidda and Garawa People believe that commerce and private enterprise are essential to Indigenous wellbeing, economic development and self-sufficiency. We believe that our people will not move from poverty to prosperity unless the conditions necessary for private enterprise and commerce thrive in our communities. We aim to achieve self-sufficiency by building business and enhancing the procurement and employment capacity of Indigenous persons, business operators and community groups. We promote the use of Indigenous products and services.

Aloe vera is often found near old camps.

Part 3:
The Significance Of Gangalidda Traditional Country

The savannah area of northern Australia is one of the largest naturally intact areas remaining on earth.[11] Our coastal fringe supports 27 different species of mangrove, extensive seagrass meadows, and a vast array of marine species using the mangroves and pristine estuaries as nurseries and crucial habitat.[12]

The presence, or lack thereof, of freshwater dictates the existence of animal and plant species across our country. In the past it also dictated where and when we could go places as it provided a focus to our hunting and gathering. It shaped the land, not just in the conventional sense by carving its way across and through the landscape, but also by shaping our connection to the land. Because we appreciated the need for freshwater and its significance in the landscape we have special rules concerning its use that are enforced even today. It shapes our law and our management of country.

Our climate is characterised by cool dry winters and hot wet summers with severe storms, the odd cyclone and prolonged rainfall, with most rain falling in the wet season. This sometimes results in severe prolonged flooding, like that of the 2009 floods, which have the potential to cause widespread loss of understory species and native fauna and dramatic loss of infrastructure.

The saltpans of the lower Gulf are the largest accumulative area of saltpans in Australia and during the wet season our country forms part of the largest wetland area in Australia in excess of 2,000,000ha. The Gregory River that also flows through our country is the only perennial river in the lower Gulf of Carpentaria.

Saltpans of Gangalidda country with their winding waterways.

CULTURAL AND SOCIAL SIGNIFICANCE

Water as a basis to divide country

Freshwater is the essence of our country. It connects the people and places and cannot be separated from the land or even the sky. Water belongs to the land and the land belongs to it.

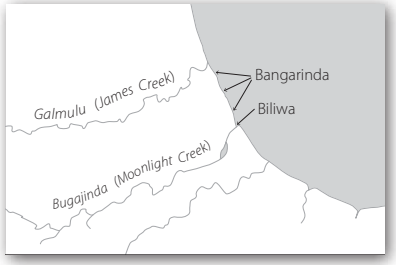
Gangalidda traditional country runs from the Leichhardt River, west to Massacre Inlet.[13] Importantly, while all Gangalidda People maintain rights and interests in all Gangalidda country, persons are generally more strongly affiliated to one or more of these estates. The vast majority of Gangalidda country is subject to our estate system, where discrete family units had control of the access and the resources of that area.

The presence of water defined our use of country, including the establishment of family estates. Each estate has its own totemic Dreaming that associates a particular spiritual quality with the people from that estate – our "skin". Our skin is shared by a major Dreaming, the estate where it is located, and the people who inherit the country through their fathers. These Dreamings are largely associated with the presence of freshwater (whether visible or not) and follows that water as it permeates the landscape.

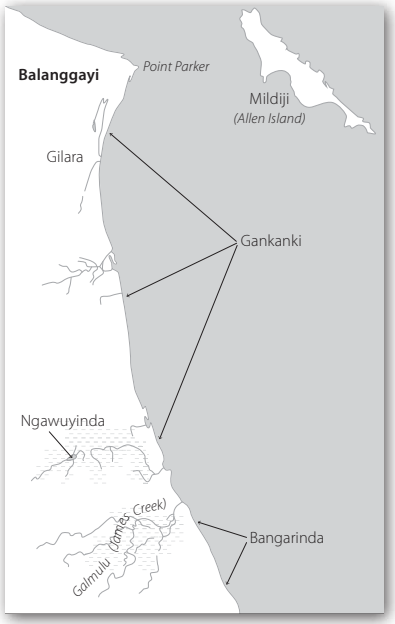
However, it is impossible to precisely demarcate the upper reaches of each estate due to the way in which watercourses tend to aggregate in the wet season. Additionally some estates also overlap on the same watercourse.

[11] Woinarski, J. et al (2007). *The Nature of Northern Australia.* Epress ANU, Canberra. [12] Perry, T.W., Blackman, J.G., Craven, S.A. 1997. *A Review of the Natural Values of the Wellesley Islands, Final Report to the Australian Heritage Commission.* Canberra. [13] Initially there was another language group associated with the country immediately in the vicinity of Burketown, going east to the Leichhardt, however with European first settlement of the region the Mingindda People were massacred and there surviving members were taken in by the Gangalidda People and their country succeeded by Gangalidda.

Map 3.1: Tarrant is included as part of the IPA.

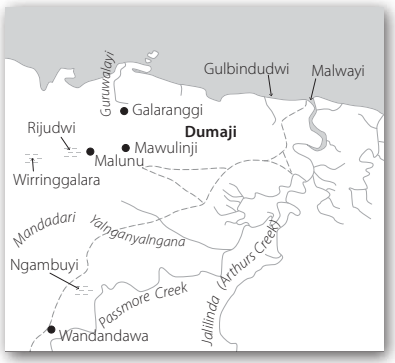


Map 3.1.A: Hawk country, around Moonlight Creek.



Map 3.1.B: Dingo country, around Point Parker.

Map 3.1.C: Dugong country, around Syrell Creek.



Map 3.1.D: Groper country, around Old Doomadgee.

Map 3.1.E: Brolga country, around Bundella.

Map 3.1.F: Barramundi and Devil country Creek.

Map 3.1.G: Left-hand Wallaby country, around Wambilbayi.

Map 3.1.H-I: Shark country, from Dumbarah to Madara.

Map 3.1.I-J: Bushfire country, around Eight Mile Creek.

Table 3.1 Traditional estates of Gangalidda country

Letter codes	Area of estate	Traditional estate name	Dreaming associated with estate
Not on map	Coastal area of saltwater country, encompassing as far east as the Leichhardt River, and including the Albert, Nicholson and Gin Arm Rivers.	Dalalguluwi, Bududarra, Moungibi	Bujimala or Burrjimarla (Rainbow Serpent), Burrayindu (Brolga) and Gugayinda (Crocodile)
A	Moonlight Creek country	Bugajinda	Bugaji (or Hawk)
B	Point Parker area	Ngawayinda or Ngawinda	Ngawa or Bajangu (Dingo)
C	Syrell Creek and Bayley Point area	Bijarrbanda	Bijarrba (Dugong), Bujimulla (Rainbow Serpent), Gurunda (Barramundi)
D	Vicinity of Old Doomadgee outstation	Dumaji	Guridi (Groper)
E	Around Bundella Waterholes and Beryl Creek	Dalwajinda	Burrayindu (Brolga), Guruntha (Freswater Barramundi), Ngabaya (Devil)
F	Around Cliffdale Creek	Gunamula	Ngabaya (Devil), Gurunda (Barramundi)
G	Long sand ridge called Wambilbayi (running westward from Cliffdale Creek)	Wambilbayi	Jagujagu (Left-hand wallaby)
H	Dumbara Island area, extending westward to Massacre	Dumbara	Guldiji (Shark)
I	Running inland along Eight Mile Creek (associated with H)	Burruluwarra	Burruluwarra (Bushfire), Buburna (Black Headed Python).
J	Around Massacre Inlet	Bangganwuluwi	Walalu (Rainbow), Burruluwarra (Bushfire)

Morning Glory. Photo courtesy of Noel Henderson.

Morning Glory Cloud.

The Morning Glory cloud formation

The Gulf of Carpentaria is only one of two places in the world where the Morning Glory cloud formation occurs on a regular and predictable basis (the other is the Gulf of Mexico). The Morning Glory has particular significance with all the groups in the lower Gulf. We, Gangalidda People, refer to this natural phenomenon as Mabunda or Mabuntha.

Stone Fishtraps

Another feature of our country is the stone fish traps. The southern Gulf of Carpentaria comprises the largest collection of stone fish traps in the world and there are many within our traditional boundaries, particularly in the vicinity of Point Parker. The significance of this place was not lost on the Commonwealth Government when it was registered as an Indigenous site on the Australia Heritage Database in 1987. All stone fishtraps are part of our connection to our past and are part of our cultural heritage. They were created by our ancestral beings and Dreamings. They are protected under the Aboriginal Cultural Heritage Act (Qld) 2003 and were included on the Register of the National Estate.

Figure 3.1: Seasonal calendar developed by the Gangalidda & Garawa Rangers

ENVIRONMENTAL SIGNIFICANCE

There is no disputing the natural beauty of our traditional country. From the ocean to the sandstone escarpments, the saltpans to the untamed rivers there are thousands of critters and plants that call our country home.

Our home forms part of the Gulf Plains Bioregion. The Gulf Plains is divided into ten subregions, three of which occur over our country. The Karumba Plains subregion comprises the seaward margin of the bioregion and covers almost half of the proposed IPA. This subregion encompasses landforms subject to coastal influences such as dunes, saline mudflats and the mangrove-dominated estuaries of the Gulf river systems.

The Doomadgee Plains subregion also covers a significant area of the proposed IPA including small portions of Troutbeck and Brokera leases, more significant areas of Bundella and Konka leases, and the entire Pendine lease. It lies in the far-west corner of the Gulf Plains bioregion and comprises of sandy plains dominated by eucalypt woodlands and a range of seasonal and permanent wetlands. Doomadgee Plains is regarded as one of the four most poorly known subregions within the bioregion.

A summary of the identified major threats to ecosystems and values occurring within these two bioregional subregions is presented below in Table 3.2.

Fishtrap.

Table 3.2: Summary of major identified threats to ecosystems and ecological values within two bioregion subregions of relevance to the proposed IPA.

Bioregional subregion	Major ecosystem types and their key threats	Particular ecological
Karumba Plains	**Offshore tidal flats (including seagrass communities):** impacts from trawling and illegal netting	Internationally and/or nationally significant for waders, dugong and marine turtles
	Tidal river channels and mangrove communities: Impacts from illegal netting and tourism (camping, inappropriate vehicle use and fishing)	Seasonally significant for waterbirds (feeding, roosting, rookeries) and important nursery grounds for fish
	Beach and dune habitats: Infestation by introduced plants such as rubber vine *Cryptostegia grandiflora*, buffel grass *Cenchrus ciliaris* and chinee apple *Ziziphus mauritianus*; and impacts from high grazing pressure, wind erosion and tourism (camping and vehicle use)	Seasonally significant for marine turtle nesting Important feeding areas for waterbirds and waders
	Wetlands fringing saline plains: Threatened by possible invasion by ponded pasture species	
Doomadgee Plains	**Permanent and seasonal wetlands:** Impacts of grazing pressure and disturbance by cattle, horses and feral pigs; threatened by possible invasion of ponded pasture species	National/bioregional/regional significance as feeding, breeding and moulting sites for waterbirds
	Depressions and flood plains: Degradation and habitat loss due to high grazing pressure; possible invasion by ponded pasture species; disturbance by pigs; infestation by rubber vine, buffel grass, parkinsonia (*Parkinsonia aculeate*) and other invasive species	Numerous terrestrial habitats provide bioregional/provincial/ seasonal refugia for fauna or flora; or significant habitat for arboreal and hollow-dependent fauna
	Riparian habitats: Impacts of fishing and tourism (major river channels);habitat loss; high grazing pressure and erosion; disturbance by feral pigs; infestation by Rubber Vine and other invasive plants	Major river channels have high habitat values for aquatic fauna
	Plains habitat: Overgrazing resulting in reduced ground cover, erosion and scalding, and the replacement of perennial grasses by annuals (which has implications for granivorous bird and small mammal species); invasion by buffel grass and Rubber Vine and the consequent displacement of native species	

Gangalidda coastline.

Biodiversity summary:

Wetlands

- Our country includes four Nationally Important Wetlands that covers over 2 million hectares (2,221,612 ha) of wetlands in the lower Gulf; the Nicholson Delta Aggregation; the Marless Lagoon Aggregation; part of the Wentworth Aggregation; and part of the Southern Gulf Aggregation. These are outstanding examples of rich, unique and diverse permanent and seasonal wetlands, providing extensive areas of critical habitat and breeding grounds for migratory waterbirds, freshwater turtle, fish, mammals and native plants.
- The Southern Gulf Aggregation is the largest continuous estuarine wetland of its type in northern Australia and one of the three most important areas for shorebirds in Australia. The aggregation provides habitat for species listed under international agreements: 22 species under JAMBA (Japan – Australia Migratory Bird Agreement) and 31 species listed under CAMBA (China- Australia Migratory Bird Agreement).[14]
- The wetlands found on our country fulfil Ramsar criteria on several fronts and qualify as wetlands of International importance (see Table 3.3).

[14] DIW 2010.

Out of nine Ramsar Criteria South Gulf Aggregation fulfils at least seven—this more than qualifies these wetlands for Ramsar listing as being of International Importance.

Albert River.

Clouds.

Table 3.3: Ramsar criteria fulfilled by the southern Gulf wetlands

Ramsar Criteria fulfilled by Southern Gulf Wetlands	Notes
Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.	The Southern Gulf Aggregation wetland site is the largest continuous estuarine wetland of its type within the Gulf of Carpentaria Drainage Division and is significant for its diversity and extent of wetland types.
Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically or endangered species threatened ecological communities.	There are at least 11 threatened species under the Federal EPBC Act and NCA (Qld) that depend on Gangalidda wetlands for survival
Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.	19 Threatened Ecosystems are found within the Gulf Plains bioregion- all of them have been recommended for increased status to vulnerable or endangered. There are more than 30 species of shorebirds that are protected under international migratory bird agreements found in Gangalidda wetlands.
Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.	There are at least 205 wetland dependant/ wetland indicator species in the lower Gulf area. This area supports large breeding populations of the vulnerable sarus crane, brolga and numerous waterfowl species. The beach stone curlew also utilises the area for breeding.
Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.	The Southern Gulf Aggregation supports in excess of 20,000 shorebirds during the Summer-Autumn period. Counts of over 200,000 have been made.
Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.	South East Gulf wetlands regularly support 1% or more of the global population of at least 12 waterbird species
Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks depend.	Eight Mile FHA has been declared under the Fisheries Act to protect critical fish habitats and breeding areas in the region.

Sarus Crane.

Birds

- The Gulf Plains is of global bird conservation importance[15] and is classified as an Important Bird Area (IBA).
- The concentration of migratory shorebirds within this part of the Gulf is higher than anywhere else in Queensland. At least half of the state's waders pass through or spend extended time at the site from September to April each year and, importantly, high numbers of young birds or non-breeding adults also over-winter here.[16]
- The Gulf Plains IBA supports the main (and perhaps only) breeding populations of the vulnerable Sarus Crane and more than 1% of the global population of twelve species (Brolga, Black-tailed Godwit, Great Knot, Eastern Curlew, Sharp-tailed Sandpiper, Lesser Sand Plover, Grey-tailed Tattler, Little Curlew, Pied Oystercatcher, Broad-billed Sandpiper, Red-necked Stint and Black-winged Stilt) the near threatened Australian Bustard and nine savannah biome-restricted species.[17]
- The Gulf of Carpentaria is of "outstanding importance" to migratory waterbirds.[18] Globally, migratory waterbird populations have plummeted by 79% over the last 24 years, so the protection of remaining habitat areas and breeding grounds in the Gulf is now of crucial global conservation importance for these species.
- Four species of resident shorebirds (non-migratory) have declined significantly in Australia over the last 30 years—The Black-winged Stilt (by 80%), Red-necked Avocet (85%), Banded Lapwing (98%) and Masked Lapwing (69%). All of these species occur in Southern Gulf wetlands.[20]
- The Gulf Plains IBA meets Ramsar listing requirements (Ramsar, 1971).
- A National Plan for Shorebird Conservation in Australia, recognised by the Federal Government, identifies the south east Gulf of Carpentaria (including our country) as being of outstanding importance to shorebirds.[21]
- This area is internationally important for between 15 to 20 species and nationally important for an additional four species of shorebirds.

Albert River (Gumbumunda) sunset.

[15] All of our country falls within this bioregion. [16] Garnett 1987, Lane and Davies 1987, Driscoll 2001. [17] BirdLife International (2008a) Waterbirds are showing widespread declines, particularly in Asia. Presented as part of the BirdLife State of the world's birds website. http://www.birdlife.org/datazone/sowb/casestudy/71. [18] Australian Natural Resources Audit (ANRA) Theme assessments (2002) Biodiversity Assessment-Gulf Plains. http://www.anra.gov.au/topics/vegetation/assessment/qld/ibra-gulf-plains.html. [19] Op cit 15. [20] Wetlands International: http://www.wetlands.org/WatchRead/Scientificarticlesreports/tabid/1860/Default.aspx. [21] Watkins (1993) *A National Plan For Shorebird Conservation in Australia*. Australasian Wader Studies Group. RAOU Report No.90.ROAA 1993.

- The wetlands support the largest concentrations of shorebirds in the East Asian - Australasian Flyway.
- The importance of the Gulf of Carpentaria is further increased by its significance as a staging site for shorebirds on migration into and out of Australia. In the south east Gulf, none of these wetlands are protected within a conservation area and the "protection of this site should be given the highest priority" by Governments.

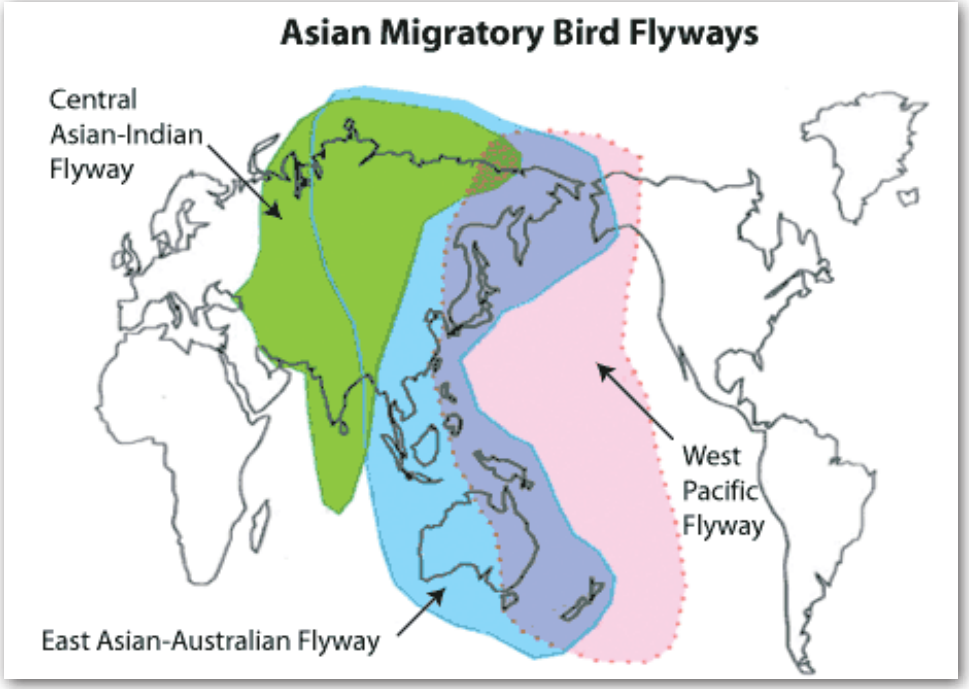
Threatened species

There are eight threatened species found on our country:

- Bog Figwort (*Rhamphicarpa australiensis*): a herb to 0.4m – near threatened under the NCA
- *Fimbristylis adontocarpa*: a sedge – near threatened under the NCA
- *Ectrosia blakei* – vulnerable under the NCA and EPBC
- Gouldian Finch (*Erythrura gouldiae*) – endangered under the NCA and EPBC
- Gulf Snapping Turtle – endangered under the NCA and EPBC
- Little Tern (*Sternula albifrons*) – endangered under the NCA
- Beach Stone Curlew (*Esacus magnirostris*) – vulnerable under the NCA
- Purple-crowned Fairywren (*Malurus coronatus*) - vulnerable under the NCA
- Jabiru (*Ephippiorhynchus asiaticus*) – near threatened under the NCA

It is likely that we also have the following threatened species calling our country home, however it has not been conclusively proven:

- Northern Quoll (*Dasyurus hallucatus*) – endangered under the EPBC
- Red Goshawk (*Erythrotriochis radiatus*) – endangered under the NCA
- Australian Painted Snipe (*Rostratula australis*) – vulnerable under the NCA and EPBC;
- Grey Goshawk (*Accipiter novaehollandiae*) – near threatened under the NCA
- Grey Falcon (*Falco hypoleucos*) – near threatened under the NCA
- Pictorella Manikin (*Heteromunia pectoralis*) – near threatened under the NCA



Map 3.3: Asian migratory bird flyways

Purple Crowned Fairy Wren.

- Square-tailed Kite (*Lophoictinia isura*) – near threatened under the NCA
- Golden-backed Honeyeater (*Melithreptus gularis laetior*) – near threatened under the NCA
- Eastern Curlew (*Numenius madagascariensis*) – near threatened under the NCA
- Radjah shelduck (*Tadorna radjah*) – near threatened under the NCA.

The general trend of populations of these threatened species are declining, and recovery of the majority of the threatened species requires significant intervention. Key threatening processes include feral animals, weeds, clearing and grazing pressure.

The federal government recognises that aside from migratory bird data this bioregion is woefully under surveyed, and monitoring to increase understanding about the flora and fauna of the southeast Gulf is crucial for long term management and planning.[22]

The CLCAC rangers are already implementing environmental monitoring programs to address this lack of scientific knowledge.

Dugong and marine turtles

- All six Australian marine turtle species occur in the southern Gulf of Carpentaria – Green turtle (vulnerable), Flatback turtle (vulnerable), Hawksbill turtle (vulnerable), Leatherback turtle (endangered), Loggerhead turtle (endangered) and the Olive Ridley turtle (endangered).
- The Southern Gulf of Carpentaria supports a genetically distinct sub-population of green turtles, numbering around 5,000. A main nesting area for green sea turtles is the Wellesley Island Group, however green and flatback turtles in particular nest extensively along our coasts.
- It is known that the Olive Ridley turtles also nest in the region, however the nesting distribution of this endangered species is one of the most poorly understood in Australia, and more surveys are required.[23]
- Rangers have commenced marine turtle surveys along these coastlines and are protecting turtle nests against feral pigs with effective nest protection barriers.
- The Queensland coast of the Gulf of Carpentaria is identified as being important Dugong areas. The total number of dugongs in the Gulf of Carpentaria (from the Northern Territory to Queensland) is in the range of 20,000 to 30,000, with the Wellesley Islands particularly important for dugong habitat and feeding grounds.[24]

This area has some of the most extensive wetlands in the country, is one of the most important areas in the world for migratory waterbirds, supports critical breeding grounds and habitat areas for over 800 native species and provides invaluable ecosystem services... But less than 10% of this unique bioregion is protected.[25]

A full list of ecosystems and species identified by a desktop audit undertaken by CLCAC can be found at Appendix 1, 2, 3 and 4.

Yellow-tinted Honeyeater.

Sand frog.

Sea eagle catch.

[22] ANRA, 2002. [23] SEWPaC, 2012. [24] NAILSMA, 2006. [25] CAPAD 2010 and IBRA 2012 mapping.

Great Egret.

Part 4:
Our Action Plan

SPECIFIC MANAGEMENT OF KNOWN THREATS AND OTHER ISSUES AFFECTING GANGALIDDA COUNTRY

Depletion of dugong numbers

Dugong hunting is not regularly undertaken by Gangalidda Traditional Owners, with dugong only being hunted for specific ceremonies, or events. Rather most dugong is obtained, as it has been done for generations, by trading resources with our Wellesley Island neighbours. Though the depletion of dugong numbers will have the ability to affect our use of dugongs as a resource, we will not seek to impose our restrictions on these other groups. This matter has been addressed extensively in the Thuwathu/Bujimulla IPA Plan of Management and we will concur with their management actions on this matter. Traditional Owners of the Wellesley Islands have also implemented local management arrangements in relation to particular family estates and known prime hunting areas.

Action Table: Dugongs

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Sick and/or underweight dugong being found	Gangalidda & Garawa Rangers to regularly patrol sea country.	High	Record finding of patrol and store data	Ongoing
	Take necropsy samples as required.	Medium	Gangalidda & Garawa Rangers to undertake training in necropsy sampling.	2014
			Necropsy samples collected and sent for analysis.	Ongoing
Unreliable and unquantified by-catch data	Undertake regular ranger patrols of sea country to ensure fisheries operators are conforming to regulations.	Low	Ranger presence on country will encourage fisheries operators to obey regulations.	Ongoing
	Encourage scientific research to establish better picture of by-catch species and quantity in the Gulf.	Low	Long-term goal to have rangers delegated authority under the Fisheries Act to have enforcement capabilities.	2015/16
Seagrass degradation through smothering, increased turbidity etc	Monitor seagrass meadows	Medium	Gangalidda & Garawa Rangers to undertake Seagrass-Watch training	2014
	Educate wider community, particularly pastoralists, concerning the flow-on effects of mainland activities.	Low	Gangalidda & Garawa Rangers to monitor seagrass meadow in accordance with Seagrass-Watch Program.	Ongoing

Specifically, during sea country patrols our rangers will record the sighting of all dugong, noting any sick, injured or underweight dugong, and the number and location of feeding trails through seagrass meadows.

Further, we would like to work with the Gulf of Carpentaria Commercial Fishermen's Association and the Northern Prawn Trawl Fishery to negotiate seasonal closures to important dugong feeding and breeding grounds within our sea country.

Depletion of marine turtle numbers

A number of important considerations need to be highlighted in regard to the management of marine turtles. Firstly, recent research has identified the green turtle population of the Wellesley Islands region (that includes our sea country) as being genetically distinct to east-coast populations and thus careful management of this population will need to occur to ensure their survival. Secondly, marine turtles do not migrate and nest every year, but rather there can be several years between these events. This means that accurate data predicting population trends of marine turtles needs to collected over at least ten years.[26] It also means that if an event has a significant impact on turtles now, it could be several years before the full effects on numbers is realised.

As with dugong sighting our rangers will record the sighting of all marine turtles during sea country patrols, noting any sick, injured or underweight turtles and those

[26] NAILSMA (2006) Dugong and Marine Turtle Knowledge Handbook – Indigenous and Scientific Knowledge of Dugongs & Marine Turtles in Northern Australia, Tropical Savannas CRC & National Heritage Trust. pg62.

that are unable to dive. Further our rangers propose to undertake extensive turtle nest monitoring during the nesting and hatching seasons. Surveys will be conducted where all nesting turtles will be measured, their health assessed, whether the nested successfully, then the size and location of their clutch recorded, and where possible barriers erected to prevent predation by pest species.

In collaboration with Queensland Parks and Wildlife Services the Gangalidda & Garawa Rangers are undertaking nest monitoring to determine the ratio male/female hatchlings, and hatchling success rates.

Anecdotal evidence provided by QPWS has indicated the presence of net fishermen in certain areas at certain times of year can be a significant threat to marine turtles. As suggested in relation to our concerns for the management of dugong populations, we would like to work with the Gulf of Carpentaria Commercial Fishermen's Association and the Northern Prawn Trawl Fishery to negotiate seasonal closures to important turtle feeding and breeding grounds within our sea country.

The table below describes some of the biological characteristics of marine turtles. Using this information and our traditional knowledge of where and when we will find these species, we have developed a monitoring plan targeting nesting turtles.

Until recently it was thought that most nesting occurred on the beaches of the Wellesley Islands, however Gangalidda & Garawa Ranger monitoring programs have begun to gather evidence that both flatback and green turtles nest extensively along the mainland coast adjacent to the islands in the lower Gulf, in far greater numbers than the western scientific community suspects. Interestingly there is some emerging scientific data that suggests most male turtles are hatched just off shore on the lighter sand coloured Wellesley Islands, and the mainland Gangalidda beaches predominately product female turtles with these darker coloured sands.[27] Our rangers are working with QPWS turtle specialists to prove this hypothesis can be maintained in the lower Gulf.

Table 3.1: Biological characteristics of marine turtles*

Turtle Species	Maturity (ave. # years)	Nesting times in lower Gulf region	Incubation period (ave. # days)	Years between nesting	Fidelity to nesting sites
Green	40-50	Jul-Sep	60	4-6	Nest in region of birth and high level of fidelity during a nesting season.
Loggerhead	30	NOT PRESENT	45-70	2-10	
Hawksbill	30-35	NOT RECORDED	60	2-5	Nest in region of birth and high level of fidelity during a single and over successive nesting seasons.
Olive Ridley	15	Jun-Sep	48-53	UNKNOWN	UNKNOWN. Nesting believed to be largely confined to the Wellesley Islands.
Flatback	20	Sep-Nov	42	1-5	High level of fidelity during a single and over successive nesting seasons.
Leatherback	15-20	Present, but not known	63-93	2-3	High level of fidelity during a single and over successive nesting seasons.

**Most of the available data that has been used in this table has been extrapolated from mostly east coast information and needs scientific validation for the lower Gulf region.*

Turtle nest monitoring.

Turtle nest monitoring.

[27] Col Limpus. Per comms with Gangalidda & Garawa Head Ranger, Terrence Taylor, Jan. 2014.

Action Table: Marine Turtles

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Unknown causes of sick turtles and fatalities	Gangalidda & Garawa Rangers to regularly patrol sea country.	High	Rangers will receive training in water quality and necropsy sampling and become highly proficient at undertaking tests.	Ongoing
	Take necropsy samples are required.	Medium		Ongoing
	Encourage scientific research.	Medium	Rangers to be trained in first response training to treat sick and injured turtles.	2014
	Rangers to undertake water quality testing/monitoring.	High		Partially completed
Unknown predominate sex and overall number of hatchlings	Gangalidda & Garawa Rangers to monitor nesting turtles and nest sites	Medium	Rangers to receive training in turtle and egg handling and using remote temperature sensors.	2014
Unreliable and unquantified by-catch data	Undertake regular ranger patrols of sea country to ensure fisheries operators are conforming to regulations.	Low	Ranger presence on country will encourage fisheries operators to obey regulations.	Ongoing
	Encourage scientific research to establish better picture of by-catch species and quantity in the Gulf.	Medium	Long-term goal to have rangers delegated authority under the Fisheries Act to have enforcement capabilities.	2015/16
Ghost nets	Gangalidda & Garawa Rangers to continue ghost net cleanup.	High	Removal of ghost nets on a continuing basis. Reduction in marine fauna becoming tangled in nets.	Ongoing
Predation of nests by animals	Gangalidda & Garawa Rangers to develop and trial various barriers to prevent predation.	Medium	Determine best methods to address problem and continue to install over nests.	Ongoing
			Increase in hatchling numbers over time.	Ongoing
Increased occurrence of nesting site drownings	Monitor nest sites to determine extent of threat. Relocate nests as appropriate.	Low	Record number of nests requiring relocation in database.	Ongoing
Interaction of nesting turtles with weeds	Monitor weed occurrence along known turtle nesting beaches and remove as required.	Medium	Reduction of weeds along the coastal fore-dunes and reduction in the number of turtles prevented from nesting due to interaction with weeds.	Ongoing
Commercial harvest of jellyfish	Objection to harvest of jellyfish due to un-investigated impact on turtles as a food-source	Low	Denial of developmental fishery permit by DAFF (FQ)	Ongoing when required

Other protected species and ecological communities

Waders

Beach Stone-Curlews populations are in decline in southern areas. They often nest directly on the sand and this can make their eggs easy prey for many feral animals such as cats, dogs and pigs who eat the eggs and hard-hoofed ferals such as brumbies that trample nests. We have observed these solitary birds along our foreshores though we are not certain of their numbers on our country. Whilst predation is still certainly an issue, they are not subject to the same habitat degradation issues they face on the east coast so it is hoped the presence of good numbers are detected with dedicated wader surveys to be conducted by our rangers.

Pied Oystercatchers are found in large numbers across our country and have similar habitats to the Beach Stone-Curlew in that they forage the intertidal zone and they lay their eggs in shallow depressions in the sand, making them susceptible to the same threats as the curlew.

Beach Stone-Curlew.

Eastern Curlew.

Australian Painted Snipes dot the landscape in large numbers no doubt as a consequence of the large expanse of undisturbed wetlands found on our country. They are listed nationally as vulnerable and rare in Queensland. Like the curlew they become active around dusk and they nest on the ground again making them vulnerable to particular threats.

Finches and wrens

Our lands are home to many species of finch and wrens. Of particular note are the Purple-crowned Fairy Wren, Carpentarian Grass Wren, Gouldian Finch, Crimson Finch and the Star Finch.

The primary threats to wrens and finches include grazing, weeds, erosion and fire – often with cumulative effects. Grazing at the end of the dry focuses on riparian corridors and the saltpan islands where grasses are more plentiful, resulting in cattle directly competing with the wrens and finches, reducing their foraging and breeding opportunities. The consequent lack of cover also directly relates to an increase in predation rates.

The presence of cattle also assists in the distribution of certain weeds species; some such as calotrope have the potential to become a monoculture further reducing the opportunities of these bird species. The movement and nature of cattle in walking distinct trails to freshwater bodies quickly leads to erosion in our country as the soils turn to powder and the furrows channel water during the wet. Intense grazing that can denude areas allowing for greater infestation of weeds doesn't occur on our country; however there are feral cattle present that have the same behaviour as domestic cattle when they traverse country.

In recent times fire has not been used correctly on our country. Large wildfires were a frequent occurrence burning out foraging areas and nest sites. Our Elders have told us these species were far more prolific in years gone by and we can attest to this outcome for ourselves. We have now documented our traditional fire practices that worked with the country. We have redeveloped these practices together with best-practice fire management to produce the "Gulf Savannah Fire Management Guidelines" we are educating our mob as to the correct when and where of burning. Slowly we are seeing a return of these species and many others such as the Australian Bustard, Spinifex Pigeon etc.

Wading birds.

Other migratory and nomadic birds

As you have read our country is an incredibly important area for migratory birds – as the scientists call it: critical habitat. The Gulf is the first landing place in Australia for many birds travelling the East Asian-Australasian Flyway. It is not uncommon to see huge flocks of Godwits that have just landed for the first time in five days and are suffering such extensive muscle fatigue they are unable to stand.

Our wetlands are regular home to over 22 species of birds listed under JAMBA and 31 species listed under CAMBA international agreements. As discussed previously these populations are globally significant and their continued presence is dependent on our management of country and mitigation of threats. These threats include grazing, fire, weeds, erosion and anthropogenic habitat degradation and actions to mitigate their impacts are dealt with elsewhere.

Sawfish

There are three species of sawfish that are commonly found in our traditional waters. We can attest to the fact their numbers are in serious decline. All scientific evidence points to our traditional country as being particularly important as the nursery grounds for sawfish in general, however a greater amount of research is required to fully understand the life cycle of all species.

The Commonwealth Department of Environment released a Species Recovery Plan for Sawfish in early 2014 and our rangers would be keen to work with scientists to ensure the local survival of these species.[28] The key

[28] Department of Environment (2014). Draft Recovery Plan for Sawfish and River Sharks: Largetooth Sawfish (Pristis pristis); Green Sawfish (Pristis zijsron), Dwarf Sawfish (Pristis clavata), Speartooth Shark (Glyphis glyphis), Northern River Shark (Glyphis garricki). Copies available at: http://www.environment.gov.au/topics/biodiversity/threatened-species-ecological-communities/recovery-plans/recovery-plans-open.

Characteristics/ Species	Large sawfish *(Pristis microdon)*	Green sawfish *(Pristis zijsron)*	Dwarf sawfish *(Pristis clavata)*
Maximum size	7m and 600kg	7.3m	3.1m
Size when born	72-90cm	76cm	65-81cm
Gestation period	5 months as egg		
Ave # pups/litter	Up to 12	Up to 12	Up to 12
Growth rates	52cm in year 1, slowing to 17cm by year 5	52cm in year 1, 33cm in year 2	Not known
Life expectancy	80 years	53 years	34 years (though could reach 80 and get to 5m)
Sexual maturity	At 3m in size	3.8m in size (approx. 9 years old)	8-10 years old
Diet	Fish and crustaceans	Baitfish and crustaceans	Not known
Preferred habitat	Females give birth where they were born. Spends several years upstream as a juvenile and then return to marine environment at maturity. Gulf rivers important nursery grounds.	Found mainly inshore, mainly in mangrove and associated mudflats. Not found in freshwater.	Coastal and estuarine waters, not fresh. Found over silt bottom with no structure. Estuaries act as nurseries for juveniles up to 3 years old.
Breeding frequency	Every 1-2 years	Every 2 years, with birth just before or during wet season.	Every 1-2 years with birth during wet season, up to May.
Conservation status	EPBC: vulnerable NCA: High priority under Qld Back on Track Species Prioritisation Framework and a no-take species under fisheries regulation	EPBC: vulnerable NCA: High priority under Qld Back on Track Species Prioritisation Framework and a no-take species under fisheries regulation	EPBC: vulnerable NCA: High priority under Qld Back on Track Species Prioritisation Framework and a no-take species under fisheries regulation
Management considerations	Females give birth where they were born in river mouths, young migrate upstream for several years	Little movement between populations	Gulf population genetically distinct and little movement between populations, therefore treat and manage as individual populations

threats all types of fishing activities (commercial; recreational; Indigenous; and illegal, unreported and unregulated fishing (IUU)), and habitat loss. It is noteworthy that there is no existing monitoring program in place and one of the key objectives of the recovery plan is to design and implement such a program. We would be keen to assist in any such endeavours.

Other management strategies included establishing marine reserves over areas of critical habitat for sawfish. We commenced negotiations with the then State Government Department of Environment and Resource Management for the creation of an unzoned marine park over the area covered by the Thuwathu/Bujimulla IPA and would include such areas. Unfortunately after the 2012 State Election the elected government had differing priorities and the marine planning process was abandoned. We would gladly resume these discussions.

Mammals (bats, whales, dolphin/porpoise)

There is substantial recent evidence of rapid declines and local extinctions of many native mammals in extensive areas of northern Australia. This has occurred across all types of land tenures, including large conservation reserves, and represents the most substantial biodiversity conservation challenge facing the north. The factors causing this decline appear to be a cocktail of predation by feral cats, inappropriate fire regimes, and vegetation change due to total grazing pressure, with some possibility of disease also playing a possible role. The relative contribution of these factors may vary across the north and amongst different species, but has not been clarified. The effects are most certainly accumulative.

In the course of monitoring exploration activities have conducted studies outside of the IPA management area at Hells Gate and Westmoreland Station on the Northern Territory border. These properties include areas of sandstone ridges escarpments and forest country and carry other specialist species such as the Carpentarian Rock-rat, and the Orange Leaf-nosed Bat.

Rainbow Bee-Eaters

Freshwater Crocodile.

Friarbird.

Two-Lined Dragon.

Tree snake.

Marbled velvet gecko.

Hills Sheathtail Bat.

Currently only terrestrial species of mammals are monitored by our rangers as part of greater biodiversity surveys due to competing resources and available funding.

Gulf Snapping Turtle

We only became aware of this turtle as a distinct species in late 1994 after being contacted by Dr. Col Limpus who had observed us eating this threatened species during a sit-in at Adel's Grove to protest the impending establishment of Century Mine that was televised on the news. We thought we were eating old adult freshwater turtles, however Dr Limpus could not believe the footage showing what was a previously thought extinct species (and it was dinner!).

These turtles are relatively plenty on our country and are found from the Nicholson River on the southern boundary of Pendine, over to Robinson River and beyond to the Roper River. They are found in deep permanent pools in large rivers, lagoons and lakes.

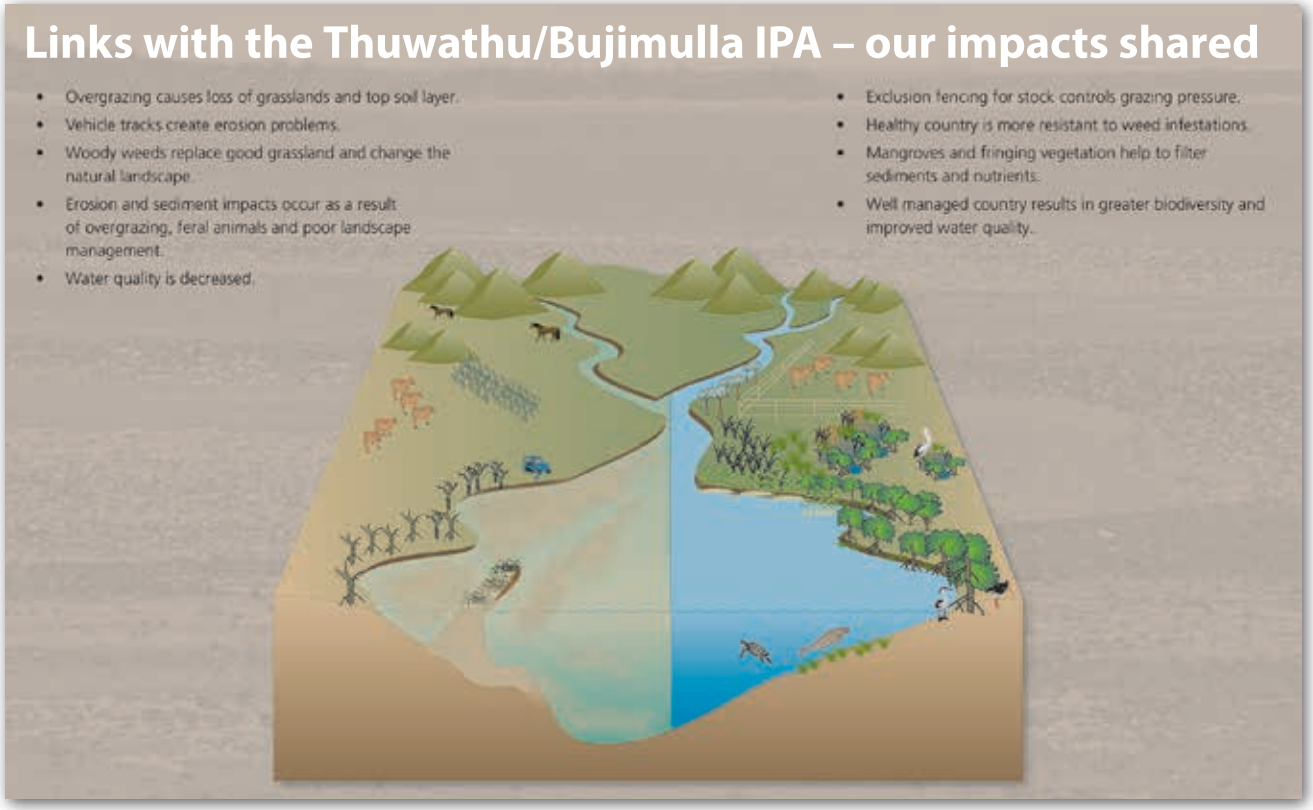
Action Table: Other protected species and ecological communities

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Insufficient data on some migratory bird species present	Gangalidda & Garawa Rangers to identify and monitor	Low	Appropriate ornithologists undertake seasonal bird surveys	2015
			Ornithologists train rangers in bird identification	2015
Inappropriate fire regimes	Identify isolated populations of finches	Medium	Implementation of the Gulf Savannah Fire Management Guidelines	Ongoing
			Monitor populations to ensure appropriate fire regime in operation	Ongoing
Unknown population trends of waders	Monitor populations to determine long-term trends	Low	Populations levels determined and the number of breeding pairs established	Ongoing with counts determined by 2015
Unknown population of Gulf Snapping Turtles	Definitive population characteristics are determined.	Medium	Education program to assist in the identification of this species.	Ongoing
			Rangers to undertake training to determine priority nesting habitat along the Nicholson River.	2015
	Unquantified Traditional Owner take	Low	Undertake training and surveys to determine level of take.	2015
Unknown level of interaction of commercial fishermen and sawfish	Lobby FQ for the release of this information		Establishment of protected areas for sawfish	2014-16
	Lobby for the recommencement of the Wellesley Islands marine park planning process			

Increased pollutants in Gulf waters

Our rangers need further resourcing to be able to conduct and expand the scope of the work they were previously undertaking with the Carpentaria Ghost Net Project. There is a substantial area to cover and nowhere near the resources to do so. Due to the extensive coastal areas and their remoteness with limited ability to access by road, most ghost nets are collected by slinging under a helicopter – an expensive, but necessary activity. Other forms of marine debris are a considerable problem with hatchlings and juvenile turtles particularly vulnerable to ingesting small flotsam causing gut blockage and eventual death. It is impossible to quantify the magnitude of this problem in the lower Gulf, but it is known to occur.

Our rangers can conduct monitoring water quality by testing for contaminants in both fresh and sea water. Four different sites are proposed for testing of heavy metal contaminants, turbidity and silt levels. Samples will be sent for analysis of possible heavy metals present every six months. We also need to educate the wider community in relation to the consequences of large amounts of silt washing off the mainland into the sea.



Action Table: Pollutants

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Ghost nets	Regular zoned patrols across country. Collection of all nets discovered and tagging of all nets too large for immediate removal.	Medium	Reduction in the amount of rubbish found on beaches and the amount of animals being potentially caught in nets.	Ongoing
Decrease in fresh and sea water quality	Rangers trained in water sampling techniques. All results entered in database to monitor quality over time.	Medium	Water quality testing methodology established.	2014
			Rangers trained in water quality sampling.	2014
			Rangers to collect samples of seawater from designated locations twice a year for heavy metal analysis.	Ongoing
			Rangers undertake turbidity sampling four times a year at designated locations to monitor quality.	Ongoing

Threats are everywhere.

Action Table: Baseline Data

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Lack of information concerning many species in the region	Encourage scientific research in the region.	Low	Results of monitoring will be available to government and researchers on request. Database will become a valuable asset over time for natural resource management.	Ongoing
	Establish a database to store all monitoring activities.	High		
	Ranger surveys undertaken on a regular basis to monitor population trends and ecological health.	Medium		
Lack of recorded traditional ecological knowledge	Rangers to interview and record Elders on traditional names and uses of plants and animals to develop a handbook of traditional knowledge incorporating western scientific names and other basic information.	Medium	Interviews with Elders digitally recorded and saved. Information on traditional ecological knowledge entered into database and handbook developed over time.	Ongoing with handbook to be regularly updated with each additional interview.
	Compile traditional ecological knowledge from publications by anthropologists and other published sources.	Low	Previously published information on traditional ecological knowledge available in easily accessible format.	2014/15

Lack of available baseline data

As part of the process of developing this management plan we have become aware there is a serious shortfall in scientific knowledge concerning many species in our region. Such shortfalls include species population levels and trends and overall habitat health. It is important that these baseline values be established to ascertain the effectiveness of our management plan and day-to-day ranger activities. We actively invite scientists involved in research projects applicable to our region, visiting researchers, etc to work with our rangers in what will be a mutually beneficial arrangement to collect environmental information across the region.

Commercial fishing operations

We hope that infringements by the commercial fishery can be reduced as a result of our rangers patrolling sea our country on a regular basis. Eventually, we would like to see our rangers fully trained in fisheries enforcement and receive the appropriate delegations from the Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries Queensland.

As outlined above, we would like to work with the Gulf of Carpentaria Commercial Fishermen's Association (GoCCFA) and the Northern Prawn Trawl Fishery to negotiate seasonal closures to important feeding and breeding grounds within our sea country and inshore closures for sorry business. In return for these closures, we propose to develop a "Traditional Owner Friendly Fishery" Symbol for the commercial sector to use as an economic incentive to buyers in an increasingly socially aware market place.

The GoCCFA has agreed to cultural heritage induction training for all commercial fishermen who operate within the Wellesley Islands region and along the mainland coast in our waters. The commercial fishermen have suggested this training be compulsory and form part of the Master of Operations, much in the same way as Interaction with Protected Species training is required by all vessel Masters.

Commercial fisherman undertake inductions.

Building upon this idea, under the proposed Traditional Owner Friendly Fishery Symbol all commercial fishers would be required to attend a cultural heritage induction to operate in the management area and to be entitled to use the symbol. In an increasingly socially-aware marketplace such a symbol can have a real economic benefit to fishers adding value to their products. Participation in the scheme is voluntary, though it is eventually hoped failure to participate will result in the exclusion of the fisher from the management area.

All Gangalidda properties are private property and now subject to exclusive Native Title. We ask that no commercial fishing operator land on any part of the coastline, except in the case of emergency. In such circumstances, we would appreciate being notified as soon as possible to ensure the safety of the crew and to assess any possible resulting damage to the area.

Unregulated tourism

Tourists are often found camping on the coastline of our traditional country and then travelling by boat over to the reefs, the Wellesley Islands, or up our waterways. Most of these individuals should not be termed tourists, but rather eco-terrorists! They travel straight pasted signs advising they are entering private property and will be trespassing and set up well equipped camps adjacent to

Action Table: Commercial Fishing

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Infringements	Patrolling (negotiation of potential enforcement role)	Medium	Reduction in illegal fishing activity, greater protection for cultural heritage sites within the littorial zone, reduction in conflict between Traditional Owner and commercial fishermen	Ongoing
	Proposed development of TO Friendly fishery symbol	Low		2015
Overfishing and fishing in traditional fishing grounds	Negotiate a cultural heritage management protocol with GoCCFA.	Medium	Greater protection for cultural heritage sites in the littoral zone, reduction in conflict between fishers and Traditional Owners.	2014-15
	Lobby FQ for compulsory cultural heritage induction training for commercial fishermen operating in the lower Gulf	Medium due to 2014 FQ management review		2014-15
	Lobby FQ to re-establish discrete fisheries area for all commercial fishing activities (e.g. east coast and Gulf crab fisheries)	Medium due to 2014 FQ management review		2014-15
	Lobby for the reduction of commercial fishing effort through a buy-back of licence and/or compensation for a reduction in access to areas	Medium due to 2014 FQ management review	Reduction of commercial fishing effort in the region and greater access for Traditional Owners to marine resources.	2014-15
	Creation of a Traditional Owner Friendly Fishery symbol for use in the market-place.	Low	Commercial incentive for fishers to complete cultural heritage induction to limit fishing effort in our waters only to those who have completed the training.	2015
Bycatch	Quantify bycatch level of marine turtles, dugong and other species of interest (e.g. sawfish)	Medium	Work with GoCCFA, the NPFI and scientific community to quantify and monitor bycatch of iconic and indicator species	2015-16
		Medium	Closure of known areas to prevent hatchlings, pups etc from becoming lost as bycatch.	2016
Unsatisfactory fishing regulations in relation to Traditional Owners	CLCAC to participate in the review of Queensland fishing industries to ensure adequate respond to long-held concerns are addressed.	High due to 2014 FQ management review	Partition for funds to conduct the Indigenous Subsistence Fishing Survey in the lower Gulf to determine Traditional Owner take.	2014

freshwater points. Often their camps will consist of several vehicles, boats, quad bikes, generators, freezers, illegal nets and guns. They show no regard for the country, or us as Traditional Owners. They stay for weeks at a time (given the opportunity); take as much fish and crab as their freezers can hold; shoot anything that moves, not just feral animals; trample sacred sites; and leave their rubbish as the final insult.

In comparison with more popular destinations, tourism numbers are quite low due to the remoteness of the region and the lack of knowledge in relation to the unique natural and cultural wonders of the area we are aware that numbers of visitors are on the rise. The advent of cheaper, but more sophisticated GPS systems available on the market has corresponded with an increase in the number of private recreational fishermen entering our waters, often with dangerous consequences. For example, in 2010 there was a marked increase in call-outs for the Volunteer Marine Rescue organisations due to unseasonably late rain and rapid deterioration in weather conditions and increase in the amount of small vessels travelling in open waters.[29]

In our sea country there are many dangerous places on the water and the weather can change quickly without warning. We do not wish to see people come to harm on our country. There are also dangerous places on our country where spirits can do you harm if you are not accompanied by the right people for that area.

Because of the potential dangers that can be encountered on our country, and the overwhelming disrespect show by some visitors camping is strictly prohibited on Gangalidda country. In the future we hope to be able to introduce a permit system that will enable visitors to come to certain parts of our country and enjoy the unique culture and the superb environment in a way that is environmentally sustainable and culturally respectfully.

Another illegal camp at massacre inlet.

Undersized mud crab haul.

Remains of an illegal tourist camp.

By-catch.

[29] Paul Poole, Vice President, Gulf Zone, Volunteer Marine Rescue Queensland – Per. Comm. 09/06/2010.

Action Table: Tourism

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Unauthorised access to country	Introduction of a permit system	Medium	Reduction of unauthorised access	2014
	Establish authorised camping areas	High	Increased protection of cultural heritage sites	2014
	Visitor brochures for regional tourism information offices	High	Improved relationship between Traditional Owners and semi-permanent visitors Increase in cultural tourism	2014

Damage to cultural heritage sites

Most Gangalidda sites on country have been mapped, however Indigenous cultural heritage can be both physical (e.g. an artefact), or spiritual (dreaming tracks, songs etc). Sites can be damaged in a number of ways; by intentional malicious vandalism; unintentional desecration by uniformed visitors; or through acts of nature.

It is impossible for visitors to our country to detect spiritual sites of significance. Some of these sites can be dangerous and some can be damaged by mere presence on country. It is of great offence to us when such desecration, often unintentional, occurs. It is for this reason we have closed our country to visitors.

Damage to cultural heritage sites has also been the result of feral animals trampling area and we are endeavouring to protect the most at risk sites through vertebrate pest reduction methods and fencing, though this matter is addressed later in the document.

A full inventory of sites known to be at risk of degradation will be conducted opportunistically by rangers through the course of other activities (e.g. biodiversity surveys, chemical weed work etc). A matrix will be developed to prioritise the order of sites requiring restoration. The highest priority will be given to the restoration of the burial sites of our ancestors should the need arise. Another priority area is the stone fish traps in the vicinity of Point Parker (included on the former Register of the National Estate). The area will be monitored and repairs conducted in a timely manner as needed.[30]

Action Table: Cultural Heritage Sites

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Damage to cultural heritage sites	Maintenance of all cultural heritage sites	High	Establishment of a matrix to prioritise restoration works.	Ongoing as required
	Restoration of exposed burial sites.	Medium	Survey of all known burial sites and at risk cultural heritage sites.	2014/15
		High	Remediation works on all exposed burial sites.	Ongoing as required
	Restoration of stone fish traps	Medium/low	Remediation works of all damaged fish traps	Ongoing as required
	Provide required information to DATSIMA to include all cultural heritage sites on the Queensland Cultural Heritage Register	Low	All sites will be included on the Queensland Cultural Heritage Register.	2014/15

Croc illegally shot by tourists.

Tourists camping illegally at Masacre Inlet.

Illegal tourist camp found at Point Parker.

[30] Visits to Point Parker occur at least on an annual basis coinciding with the Traditional Knowledge Camp.

Well stocked tourists can camp for weeks.

Pumping water straight from the creek.

Rangers erect signs advising of restricted access to private property.

Extra supplies.

Extra provisions, mean extra time to spend.

Commercial resource extraction (mining)

Mining is often an emotive topic in the broader community and it is no different for Traditional Owners. Because all mineral rights are vested with the State once a mining project is given the go-ahead from Government there is little we can do to stop its development.

We know we have uranium deposits on our country. In fact our old law men used to use it as a toxin against those who broke specific laws. We also have many companies scouring our country for minerals such as copper, zinc and bauxite, as well as shale oil gas. To date there has not been a find on a significant scale to proceed from exploration to mining phase.

We have seen what has happened to other peoples' country when things go wrong and we do not want to suffer the same consequences. We specifically worry that mining developments could:

- **Be too close to significant rivers.** During the battle to establish the Wild Rivers legislation we argued that the High Preservation Area needed to provide extended cover across the catchment to ensure greater protection from adverse activities that included mining. In a compromise with mining companies the State narrowed the provisions of the High Preservation Area so that only one kilometre of land on either side of the declared waterway (and its major tributaries) is protected from mining.

  Just over the border in the Northern Territory our neighbours the Garawa People suffer the devastating effects of the Redbank Mine. This is the worst case scenario! The full implication of this pollution is yet to be realised and we are struggling to impede the extent of its reach. The CLCAC has been attempting to assist the Garawa People in holding those responsible for this disaster accountable, to mitigate the damage already done and prevent the pollution from leaching further.

Exploration for mineral resources can damage country.

  There are also concerns that proposals to expand existing mining operations in the region could also pose a threat to the Gulf's spectacular rivers and wetlands.

- **Impact on ground water.** The search for shale oil gas is particularly concerning for its potential impact on ground water systems should gas be found in viable quantities. There is a staggering amount of movement within the soil column in our country, particularly during wet season when all of the low lying areas are submerged. Our concern is that during the extraction of gas, the casing of these shafts can be compromised and contamination occurs. We are assured this is highly unlikely, but we will be constantly monitoring all operations to ensure the worse doesn't occur.

- **Industrialise our land.** We live in a very remote, pristine part of the world that has seen little development. With any development there is always the concern it can adversely change the lives of those in the immediate vicinity. Any new mine develop in the Gulf will impact all Gulf communities, but we realise it's not just in a negative way and mines can provide prosperity for our people. We will need to ensure any such developments are carefully planned and executed and we do not lose vast tracts of native landscapes, cultural sites and our way of life.

Monitoring is the key and all exploration and mining activities are carefully monitored by Traditional Owners trained to protect cultural heritage and the environment.

Case study: The Redbank Mine experience

Redbank Mine Meeting

On 16 September the Gangalidda & Garawa Rangers travelled to Redbank Mine in the Northern Territory with other stakeholders to discuss the matter of long term pollution leaching from the mine into surrounding waterways.

The rangers were joined by other Garawa People; three CLCAC Directors; the Northern Territory Minister for Mines and Energy; the Northern Territory Minister for Lands, Planning and the Environment, the new mine director and other interested parties.

Garawa People and the CLCAC have growing concerns with contaminated material leaching into waterways that comes from the mines. The surrounding natural water ways have been contaminated for over 20 years now with waste runoff from the mine site down into Settlement Creek and eventually into the Gulf.

The Gangalidda & Garawa Rangers have seen evidence of this pollution firsthand, consisting of what we now know to be copper sulphide flowing across the border into Queensland and Settlement Creek, a declared Wild River area. It is a serious concern that contaminated flows (from two different point sources within Redbank Mine) will extend further into the Wentworth Aggregate Wetlands (Nationally Important Wetland) and the Gulf where endangered turtles, dugongs and other species exist.

CLCAC Garawa Director, Jack Green, voicing his concerns.

Victor Godfrey & William Davey, junggi (senior boss men) for the area.

Redbank Mine Meeting

All present expressed concerns and supported each other in what happens to the country, the river and the creek systems.

From information provided by government representatives, such problems exist at another 1,000 old mine sites in the Northern Territory, called legacy mines, where past poor management resulted in continuing serious environmental damage. The Mines and Energy Minister gave a commitment to make Redbank Mines the number one priority to remediate. A committee of stakeholders was formed to ensure this commitment was upheld.

After so many years of neglect at Redbank traditional owners remain deeply concerned about the impacts that this disaster is having on their traditional lands and water ways. There needs to be a commitment given by the Northern Territory Government to stop the leaching of contaminated material into our rivers and creek systems and help to repair the damage already done. We have also called for an independent assessment and rehabilitation plan to be developed for this site.

Self regulation of mining companies is unacceptable, and the government needs to play a stronger role in regulating and ensuring this does not occur elsewhere again. This is not good enough! This is why the Wild Rivers legislation is so important for Queensland because it protects our country and waterways from disasters like the Redbank Mine.

Article by Donald Bob - Gangalidda & Garawa Ranger

Garawa representatives at the meeting

More Traditional Owners present at the meeting

Above: Extracts from the Carpentaria Land Council Aboriginal Corporation Newsletter: July-September 2013 - Edition 16

Environmental Monitoring: Redbank Mine

As reported in the last issue, environmental monitoring by the Gangalidda-Garawa Rangers has provided first hand evidence of copper sulphide pollution from the Redbank Mine, flowing downstream into Settlement Creek and over the Queensland border. The water within this creek system is so polluted that rocks have been bleached and there appears to be not only a lack of aquatic life, but an overall lack of life in the vicinity.

This pollution has been occurring for over 20 years in the form of leaching and has raised new concerns about the health of the Wild River Declared Settlement Creek system, especially with the Northern Territory Government granting a Waste Discharge Licence on 23 of December. This two year long licence allows Redbank Cooper Ltd to discharge waste into Hanrahan's Creek, which flows into Settlement Creek.

Traditional Owners are very concerned that this heavy metal pollution will extend further into the Wentworth Aggregate wetlands (which are listed as nationally important) and into the Gulf, where endangered turtles and dugongs exist.

Above: The small warning sign at Hanrahan's Creek were it crosses the main road. A perfect example of the pollution downstream of the mine site

Environmental Monitoring: Redbank Mine

Traditional Owners have raised concerns that, as a result of the pollution, they can no longer fish or swim in these local rivers. They are also concerned about future generations who will suffer the long term impacts of this pollution.

Prior to the granting of this licence, the Gangalidda-Garawa Rangers Unit delivered a powerpoint presentation to stakeholders at a meeting about the proposed reopening of the mine, which included the Northern Territory Minister for Mines and Energy and the Minister for Lands, Planning and Environment. This presentation showed the environmental impacts observed during a patrol over Settlement Creek
Wild Rivers protected area.

Guarantees were provided by the Ministers at the September meeting that the cleanup of Redbank would be a priority under the Legacy Mine Program (a NT government program charged with rehabilitating derelict mine sites). The grant of the permit to continue to discharge waste into Hanrahan's Creek does not bode well for the delivery of this commitment.

Further examples of the pollution caused downstream of the mine site. The falls area in the photo at left is a registered sacred site under Northern Territory legislation.

Above: Extracts from the Carpentaria Land Council Aboriginal Corporation Newsletter: October-December 2013 - Edition 17

Gully and other forms of erosion

The soils of our country are described as friable, highly erodible and extremely fragile – not the best combination for grazing country. The damage from running hard hoofed animals on such country is easy seen from the air, where cattle pads in particular show crushed and powdered soils that easily blow away in the wind or are washed away by the relentless wet season rains.

The result is the formation of gullies all leading to popular watering holes or wetlands, the loss of bank integrity, the reduction of native vegetation and the exposure of acid sulphate soils. This also affects water quality in our waterways and for the islands immediately to the north, as pictorially provided over the page.

Of particular concern are the vast areas that were declared by the Queensland State Government as known acid sulphate soil areas under the former State Planning Policies and their alignment with declared erosion prone areas. (See maps 3.1 and 3.2.).

We know that we have three area of serious concern:

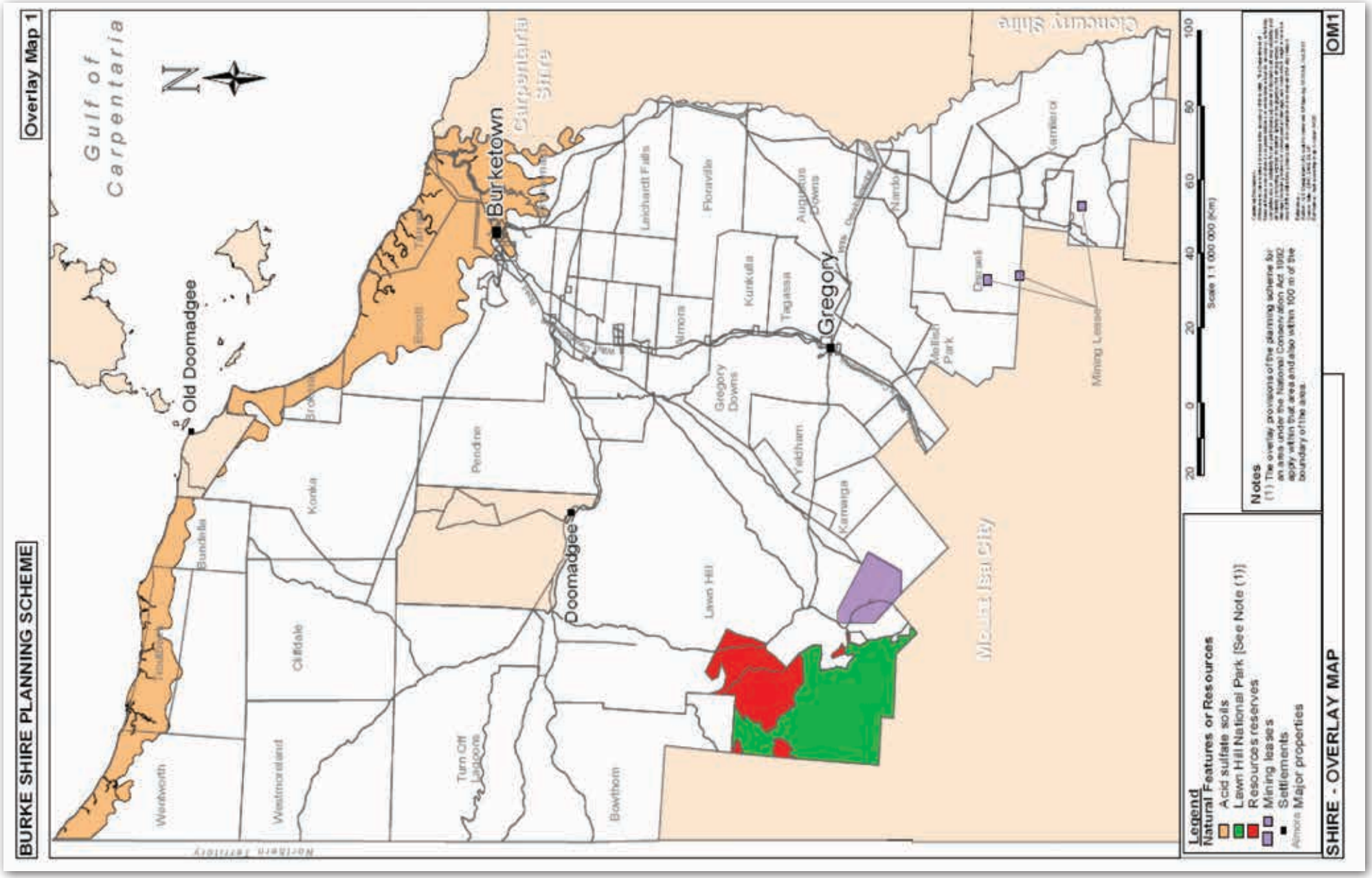
- High level of erosion of major waterway banks;
- Gully erosion leading to freshwater bodies;
- Inappropriate land use, including road works.

The Gangalidda & Garawa Rangers do not receive funding to carry out activities specifically related to mitigating erosion across our country, however they have been able conduct discrete projects and have received training in erosion mitigation methodology and restoration works. Priority sites requiring restoration activities need to be identified and funds sourced to complete the work.

It is predicted with rising temperatures associated with our changing climate that rainfall events will become more extreme. More extreme rainfall results in increased erosion with silt smothering the seagrass meadows along our coastal waters, in turn affecting the marine turtles and Dugong populations. We have observed this phenomenon early in the last decade (2000s) when the rains successive wetter than normal wet seasons scoured our country removing vast quantities of soil and depositing them offshore. This is a usual and critical event for the Gulf known as estuarine outwelling where nutrients are reallocated from the mainland to the Gulf waters. With the extreme amounts of sediments being lost from the mainland and deposited offshore, huge tracts of seagrass meadows were covered and a mass starvation event was observed with sick and underweight Dugong and diseased turtles were the result.

Erosion

Subsequent scouring of remediated erosion area.



Map 4.1: Areas known to contain acid sulphate soils within Burke Shire. (Provided courtesy of Burke Shire Council)

Map 4.2: Areas formerly declared as erosion prone within Burke Shire. (Provided courtesy of Burke Shire Council)

Case study: The Woods Lake Project

Within the living history of the current generation of Gangalidda People we have watched Woods Lake slowly die. What once was a vibrant permanent freshwater ecosystem that sustained our people for hundreds of years and provided all the freshwater needs of Burketown, has deteriorated into a seasonal bog hole. The deterioration was rapid and not seen on this scale anywhere else on our country, a result of the gross mismanagement by the non-Indigenous settlers, culminating in the development of a raised bitumen road on the watershed to the catchment.

The lake once teemed with native wildlife. Now the most frequent visitors are feral pigs and cattle that trample the banks, uproot the vegetation and defecate in the water and saltwater threatens to intrude the northern reaches of the lake with ever encroaching tides.

In 2011 our Gangalidda & Garawa Rangers obtained funding to undertake limited restoration work to the lake. An erosion specialist completed an inspection of the lake catchment and proposed 17 sites in need of mitigation works before the lake could begin to heal itself. The highest priority site was identified and the rangers trained to complete these work themselves.

During wet season Woods Lake is a popular spot for hundreds and sometimes thousands of birds.

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Woodslake Rehabilitation Project

Woodslake is perhaps the most culturally significant site in the closer Burketown locality. Traditional owners once relied on this pristine freshwater ecosystem as a water, food, cultural and recreational source.

Since then pressures and impacts from road construction, pastoralist activities and other forms of infrastructure have created major erosion and sediment control problems in and around the lake.

The adverse impact to water quality and general loss biodiversity over this time, as seen through the eyes of Gangalidda and Garawa Traditional Owners, has been alarming.

For many years the CLCAC viewed the rehabilitation of the Woodslake as a priority project but it was not until this year, in partnership with Southern Gulf Catchments and Burke Shire Council that the vision was realised.

The strategy for the rehabilitation of Woodslake, which will continue to require long-term project commitment, was structured in three focused stages.

Rangers measuring and recording GPS locations of sediment depths around the Lake in early 2012

1. Consultation

The CLCAC contracted Dr Hugh Pringle, a renowned landscape ecologist specialising in erosion management, to work with Rangers and Traditional Owners (TO) to investigate and prepare a plan of management for the rehabilitation strategy.

Dr Pringle used an "Environmental Management Understanding" (EMU) process to ensure TO ownership and project direction, through the compilation of their historical and cultural knowledge and their sound understanding of the local hydrological influences impacting on the lake.

Using maps of the area Rangers created overlays delineating all the uses and impacts the lake was and is subject to, from past hunting practices to current weed and feral incursion. At all times the maps and the pens where firmly in the hands of the Rangers and between the young and older men of the group; all had stories and knowledge that prescribed from the mouth to the page. This is was the EMU process in its true form.

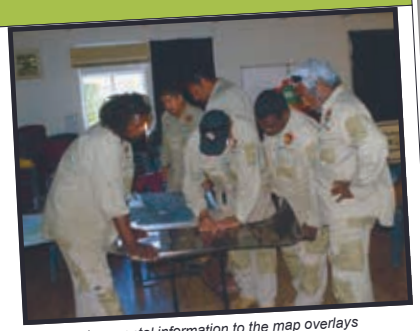
This consultation was coupled with extensive field survey and an aerial charter flight at which end the Rangers, with Dr Pringle's guidance, had identified 17 areas of concern in and around the Lake. Based on their level of impact Rangers then prioritised these sites for management.

Gangalidda and Garawa Rangers with Dr Hugh Pringle and Larissa Lauder (SGC) on the field work survey exercise

Larissa Lauder from Southern Gulf Catchments attended this week-long workshop presenting an appreciated funding commitment and welcomed NRM partner in this important project.

Above: Extracts from the Carpentaria Land Council Aboriginal Corporation Newsletter: April-June 2013 - Edition 15

Woodslake Rehabilitation Project cont.



Rangers adding their combined knowledge to compile cultural and environmental information to the map overlays

2. Technical training / Soil Conservation techniques

It became obvious that wet season culvert discharge, cattle pads, secondary roads and tracks all played a major role in forming the gullies, gully heads, top-soil loss and general erosive 'nonsense' that was sending vast amounts of sediment up and into the lake system each year.

Rangers received theory training in the construction of various structures to slow, spread and re-direct this 'angry' sediment laden water. With Dr Pringle's simple terminology, the Rangers were able to grasp the principles of the causes and effects impacting and degrading the Woodslake system.

This week culminated in the Rangers delivering a presentation to the Partners and Community in outlining the outcomes and planning strategy for the commencement of the on-ground works.

GE image of Priority Site 1 road culvert and gully leading into Woodslake and aerial photo from flight survey

Special mention must also be given to Kevin Anderson CLCAC, Philip Keirle and Neil Clemola BSC, Casey and Benny the gun grader drivers of BSC and Bullrider and his old Dozer 'Ten Tonne Tess'. The CLCAC looks forward in continuing this community partnership and seeks funding support as we plan to initiate works on the next priority site.
The upcoming wet season floods will be the real test on determining the success of this initial project and will be monitored closely. However, by design, theory and the hard work involved its purpose is assured.

Woodslake Rehabilitation Project cont.

3. On-ground soil conservation works

The first culvert gully on the main road west out of Burketown was agreed as the number one priority works site. This culvert was acting as a wet season downpipe, forcing a significant torrent of flood water to rip through the gully carrying a vast amount of sediment to discharge into the Lake.

Dr Pringle, accompanied by earthworks specialist Mark 'Sharkie' Fran, returned to Burketown for a week to support this first stage of ground works.

Burke Shire Council partnered in on the project supplying heavy machinery, operators and rock supplies need for the construction works.

Over the following weeks, with Head Ranger Billy Jackson as Project Manager on the site the Rangers achieved more than first thought possible, resulting in:

- the opening, grading, reshaping and battering 100mtrs of gully from the culvert discharge point, required to effectively spread the water over a wider and deeper area, dramatically minimising the force of water.
- Constructed 2 rock wall drop structures approx 50mtrs long x 1.2mtrs high x 2mtrs wide (set precisely on a base of geomatting) with wire mesh armoured notch openings to further reduce water force and catch sediment.
- Grader formed 4 'whoaboys' and a check bank to either side of the old detour road to slow and control overland water flow.

Additional works included contour ripping to the perimeter of the entire site and some minor gullies to the NW.

The first of many 'filter' traps was installed with many more required at strategic points along the gully running into Woodslake.

To look at the site on completion of these works, a significant feat of engineering is evident and it is a major achievement for the Gangalidda and Garawa Rangers and the partners involved.

Above: before and after photos of Priority Site 1.

ABOVE: One side of the first drop structure (partially complete) down from the culvert and the wire armouring to the apron opening

Above: Extracts from the Carpentaria Land Council Aboriginal Corporation Newsletter: April-June 2013 - Edition 15

Degradation of riparian corridors

On the "plains of promise" riparian corridors are especially important as the repository of biodiversity. With endemic grasses naturally crowding out all other species over the extensive floodplains the waterways of the lower Gulf provide a haven to species unable to gain a foothold elsewhere. Here waterways are home to timbers that reciprocate by providing integrity to the banks of stream in an otherwise fragile geological realm. The waters nourish both plant and animal species alike and the plants provide refuge from the harsh environment of the plains to the animals.

Not only are these corridors the repository of biodiversity, but they are also generally the most threatened parts of the landscape as they concentrate the upstream impacts of a wide area into the small ribbon of land that is further impacted by its draw of attention of all animal species and their need for water.

Because of these factors the healthy condition of the riparian corridors is critical to the health of the wider landscape.

Much of the conditions of the lower Gulf waterways are largely undetermined, not just as a consequence of our isolation, but because of the unique landscape where the grass is king, making classification of "condition" unique to this region and yet to be quantified.

What our rangers proposed to do is to map the current condition of our riparian zones by determining whether weeds are present, there is any visible disturbance by feral animals, any visible impact by human forces, and/or the presence of erosion. Once the baseline is established then we can monitor their status. Photo points will greatly assist in this endeavour as will standard water quality testing, including:

- Photos to determine pool stability within a watercourse;
- Photos to determine native vegetation type and density;
- Surveys to determine native vegetation type and density, weeds present and signs of erosion; and
- Water quality testing measuring turbidity, clarity, pH, suspended solids.

Riparian zones also tend to be the most ecologically and economically productive parts of the landscape. However, as focal areas for livestock, humans and other threats, these ecosystems are often quite degraded or under threat of degradation, from a variety of sources. As they tend to integrate the combined impacts of upstream disturbances, riparian zones are often heavily impacted by weeds, as well as sediment and nutrient inputs. Indeed riparian ecosystems are thought to be the most highly degraded and/or threatened ecosystems in many parts of the region. However, at present no baseline has been established by which to objectively determine this, nor does an appropriate methodology exist, that has been fully validated, for measuring the ongoing condition of riparian zones in this region. As such it is critically important that an objective methodology is developed for assessing riparian condition, which is suitable for this region, and that accommodates the inherent variability of the region's riverine landscapes. We will actively work with NPRSR, EHP and other stakeholders to develop such methodology.

Black swans.

Climate resilience

If you look at topographic maps of our country there's one thing you won't see very many of – contour lines! In a series of nine 1:100,000 scale maps covering all of the coastal areas from Burketown to Massacres Inlet there are none. Despite the odd depression, swale or wetland there is no change to the elevation of our country from one side to the other. This unique landscape provides one particular challenge: wet season! In such an unending flat landscape, when waterways flood they inundate vast areas.

We know from current research that our climate is changing and over time we are expecting greater tidal intrusion; more extreme rainfall events; increased bushfire potential; greater potential for weed introduction and spread; flooding and erosion.

Saltwater intrusion

Obviously, on flat country any rise in sea level is going to allow the tides to cover a greater amount of land and push further up tidal rivers. To compound the issue many wetlands found on our country are below sea level. So this issue alone has the potential to completely change our landscape with the inundation of freshwater bodies, changing associated vegetation and driving animals looking for freshwater further inland.

Along the Mary River in the Northern Territory it has been documented that entire paperbark forests have perished with the increase of salt being intolerable as the tidal reach of the river pushed a further 30km inland over the last 50 years.[31] Saltwater intrusion is already an issue for Woods Lake, near Burketown and without the development of a levy at the northern end to prevent saltwater intrusion the lake will become a brackish environment over a relatively short timeframe. This same fate will be suffered by many wetlands on our country, many of which are recognised as Nationally Important Wetlands.

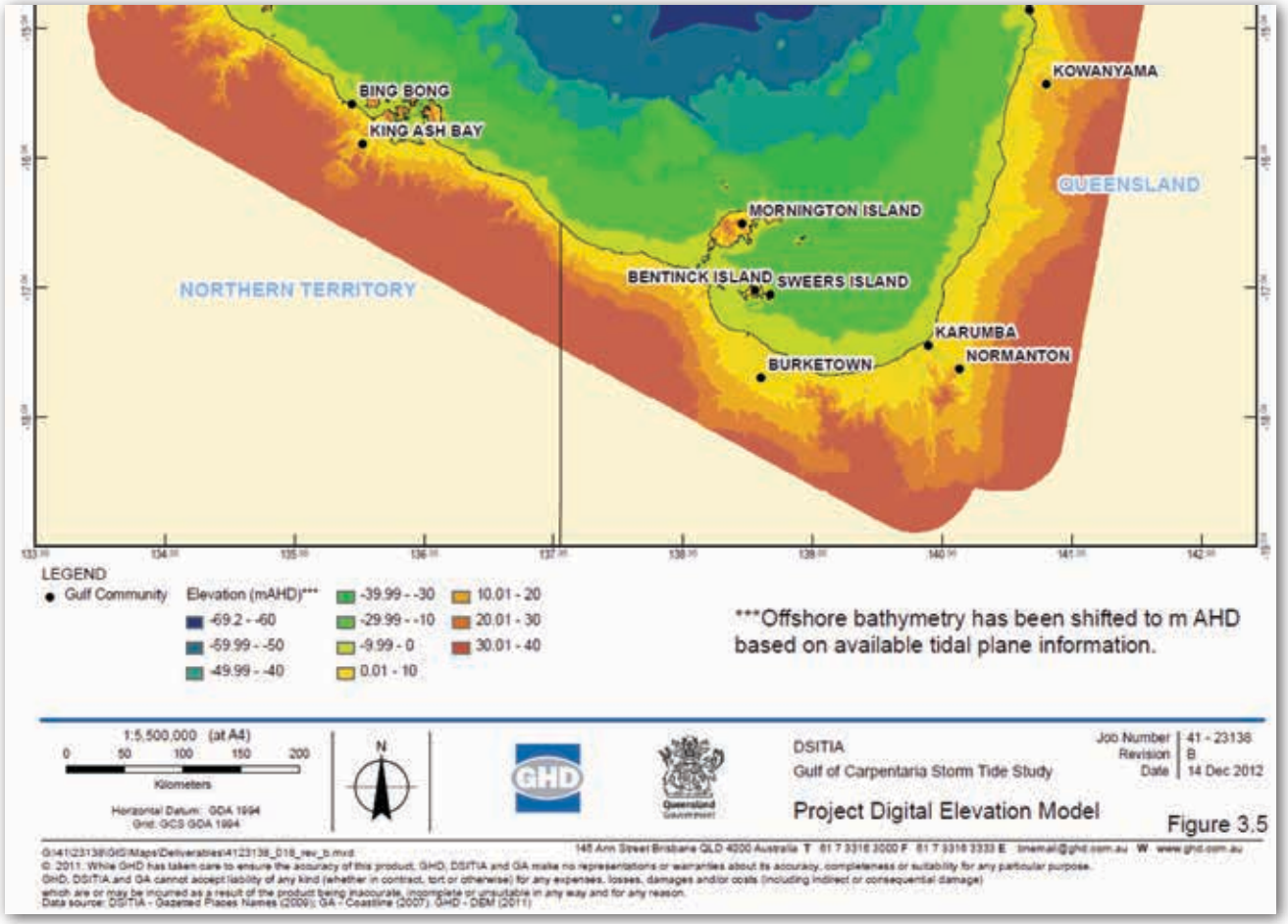
Sea level rises will result in significant changes to seagrass distribution and abundance.[32] The distribution and extent of mangrove communities are likely to change, including the possible migration further up coastal waterways and losses along the coastal fringe due to inundation stress.[33]

Storm events (cyclones)

A 2013 study by GHD stated that:

> ***"Given the shallow waters, mild nearshore seabed slopes and low lying coastal topography together with the level of tropical cyclone threat, the southern Gulf is likely the most hazardous storm tide region of Australia....Estimates for potential storm tide inundation up to 9m AHD at the coastline and for inland penetration across flat featureless coastal margins as much as 30km....the threat is highest in the southeast corner."***[34]

The map below is also extracted from this study to show the extent of the low lying areas that would be inundated in the event of storm tides being experienced. Storm tides as their name suggests are experienced in severe



Map 4.3: Australian Height Datum – i.e. height above sea level.

[31] Knighton et al 1991. [32] Coles *et al* (2004). [33] Ninan (2012). [34] Smith, M and Harper, B. (2013). Gulf of Carpentaria Storm Tide and Inundation Study. GHD, Brisbane.

Gangalidda & Garawa rangers called in to assist after Cyclone Yasi.

weather events. If we are unfortunate enough to experience a storm tide at the same time as a high tide the devastation would be widespread as depicted in map 4.3.

Seagrass meadows in the southern Gulf are also susceptible to damage from cyclone-induced erosion and increased cyclone activity could result in significant loss of these habitats.[35]

Weeds grow out of control in vast areas of country.

Weeds

Invasion of our country by invasive plants species such as Rubber Vine *(Cryptostegia grandiflora)* and Calotrope *(Calotropis procera)* have the potential to change vast tracts of vegetation by creating monocultures, displacing our native vegetation, and with that the native animals that rely upon it. They can choke our freshwater wetlands further preventing our native wildlife from gain access to freshwater and limit the nesting sites of birds, amphibians and reptiles alike.

With the intrusion of saltwater into previous freshwater domains and the loss of associated native vegetation this will provide further opportunity for the spread of these already present and highly resilient weed species to inhabit widespread areas of country as native vegetation unable to tolerate increasing salinity dieback. Periods of higher rainfall, as predicted, will also aid in their dispersal across our lands.

Higher temperatures also assists with the germination of seeds for introduced weeds such as Rubber Vine and Calotrope which have the tendency as adult plants to stay dormant for long periods of time and reactivate with small amounts of rain. Whereas higher temperatures will stress our native plants, reducing pollen viability and result in dieback, again providing greater opportunity for weeds to colonise and create a monoculture.

Weeds like calotrpoe and rubber vine have taken over huge areas.

Jabiru nesting on rubber vine.

Invasive weeds quickly transform country.

[35] Coles *et al* (2004).

Wetlands of national and international importance are found right across Gangalidda country.

Wetland integrity

The Gulf has one of the largest intact wetland systems left in Australia: the Southern Gulf Aggregation, which encompasses an area of 2.2 million hectares. Extensive marine, estuarine and freshwater wetlands are the distinctive features of the land. These wetlands are an extremely important site for more than 22 species of migratory wading shorebirds and waterbirds, which visit the Gulf each year. The sheer number and variety of migratory birds makes the Gulf a place of international conservation significance.

Twenty-three percent of Australia's surface water flows through this landscape. The health of the Gulf's rivers supports the existence of many of the communities and industries including fishing and tourism that exist in the region. Threats to these wetlands potentially include the development of irrigated agriculture in northern Queensland including cotton. Broad scale irrigation will draw water from the wetlands and could alter the natural wet/dry seasonal cycle, increasing the potential for salinity.

Hotter times also mean less permanent freshwater bodies and increasing pressure on those remaining bodies. Unseasonal hot weather has already resulted in several incidents of freshwater fish kills that have been observed by our rangers.

Fresh water weed beds and algae will also be adversely impacted.

Wetlands of national and international importance are found right across Gangalidda country.

Carpentarian Rock-rat.

Other natural processes

Fire, floods, cyclones and drought are all naturally occurring processes that have the potential to damage the plants, animals and people that live within an environment. Knowing these events are predicted to become even more intense is deeply concerning to say the least. Increased rainfall means increased vegetation growth, together with increased extended dry periods means increased potential for extreme wildfire events and decreased opportunities to use fire as an effective management tool.

There are many threatened species on our country that simply won't survive these changes. Their populations are marginal at best. The Gouldian Finch and the Carpentarian Rock-rat are two such species, but there are many that will fall victim.

The rise of sea temperature will affects seagrasses and reefs of our saltwater country and the neighbouring Wellesley Islands group, impacting iconic species such as marine turtles, Dugong and other important reef species. Too much heat will also affect sex ratios of turtle hatchlings and reduce clutch viability.

In the 2009 wet season over 250 mines in northwest Queensland were breached and contaminants were lost into surrounding waterways due to the extraordinary rainfall. It was and still is the worst environmental disaster in Queensland history, but was virtually unreported in the media as a consequence of the remoteness of the region and also the fact that at the same time a freight ship lost some of its cargo of ammonium nitrate in Moreton Bay. We worry with such extreme events predicted there will be more of these events in the future.

Gouldian Finch.

Loggerhead hatchling.

Orange Leaf Nosed Bat.

Inappropriate fire regimes, feral animals and weeds

Fire and weeds

Together inappropriate fire regimes, and the presence of feral animals and weeds represent the most significant current threat to our traditional country. Inappropriate fire regimes have altered the presence of native species, and in some cases resulted in the loss of particular species from the region (e.g. spinifex pigeon). This trend has been reversed in recent years with the Gangalidda & Garawa Rangers undertaking controlled burns at suitable times of the year, conducting an extensive education program in the communities and liaising with pastoralists to consolidate their efforts.

In recognition of the importance of this threat CLCAC has developed a pests and weeds management plan, in combination with the fire guidelines, setting out in detail the key threats and planned management actions to be taken by CLCAC Gangalidda & Garawa Rangers to deal with these threats. The Gulf Savannah Fire Management Guidelines took over 18 months to compile using a combination of traditional fire knowledge (including decades of Traditional Owner observation in relation to the changes on our country) and best-practice scientific knowledge. These guidelines are truly unique in their approach and are considered a world first.[36]

Many weeds in the Southern Gulf are spread by wind and water. Circular currents in the Gulf bring weeds from Cape York and strong southerly winds during dry season bring weed seeds from the south. Inappropriate fire can kill off large tracts of vegetation allowing weeds to establish and form a stranglehold on country, feral animals also assist in the distribution of weed seed through ingestion or by the seed becoming lodged on the animal and being moved across country.

Chemical treatment of Bellyache Bush.

Damaging wildfires is a threat we are reducing over time.

Gel torch for targetted weed work.

[36] Carpentaria Land Council Aboriginal Corporation (2013) Gulf Savannah Fire Management Guidelines. Copies available at: http://www.clcac.com.au/files/documents/42/gulf_savannah_guidelinesv9print_webready.pdf.

Feral animals

Weeds are synonymously spread by feral animals in the Australian environment. In the Gulf it is mesquite, calotrope and prickly acacia that are some of the major weeds spread with the movement of cattle, pigs and brumbies across the landscape. Feral animals such as these also trample the nests of ground dwelling birds and mammals, deplete diminishing water points during dry season and complete for grass with native species.

We have previously discussed the fragile nature of our soils. Feral animals such as brumbies, cattle (there a quite a few feral cattle found on traditional Gangalidda country as a token of the time when these areas were operated as grazing enterprises), pigs, donkeys and even a few goats and deer can be encountered on our traditional country. All of these animals have a couple of things in common: their destructive nature and their hard hooves. Their hooves crush the soil compacting areas on the edge of popular wetlands and waterholes, and turn it to powder elsewhere making our already erosion prone soils susceptible to the forces of gully erosion.

Key actions from this plan are summarised below. For more detail see:

http://www.clcac.com.au/files/documents/42/gulf_savannah_guidelinesv9print_webready.pdf

Brumbies trample country.

Rangers with a cache of feral pigs.

Feral cattle dot the landscape.

Feral cat traps being set.

Feral cats rip native wildlife to shreads.

Mudcrab haul.

Unusual marine debris up along the banks.

Shoreline patrol.

Action Table: Pests and Weeds

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Weeds and inappropriate fire regimes impacting on native species, landscape connectivity and culturally significant sites	**WEED MANAGEMENT** Weeds will be chemically treated in fire-sensitive areas; weeds will be controlled through careful planning and ongoing management.	High	Invasive weeds, particularly Weeds of National Significance (WoNS), will be actively controlled and a measurable decrease in the distribution and abundance of weeds will occur over time. Baseline data has already been established.	Ongoing
		High	Rangers trained in chemical handling, use and transport. Nationally accredited certifications will be gained by each ranger.	Completed, but ongoing as required
		High	Eradication or significant reduction of weeds from fragile coastal areas.	Ongoing
		Low	Community education to eradicate weeds from domestic gardens.	Ongoing
	Rangers to use fire at appropriate times to eradicate large areas of weeds.	Medium	Mapping to monitor weed distribution and success of treatment type; including mapping of strategic outlier WoNS communities (containment line monitoring—analysis of pre-treatment vs. post-treatment).	Ongoing
		Low	Increased assistance for Burke Shire Council in weed and pest management particularly around town areas.	Ongoing as required
	TRADITIONAL FIRE REGIMES Educate Traditional Owners on the importance of using traditional fire regimes to care for country.	High	Re-establishment of traditional fire regime on Gangalidda properties.	Ongoing
		High	All rangers achieve nationally accredited FMI (Fire Management) certificate I.	Ongoing
		High	Over time Country is healthier, due to the right burning happening early in the dry season. The same Country is not burnt every year.	Completed, revisited with new rangers as required
	A planned early season fire regime is implemented across Gangalidda Country.	High	Visual Burn Assessments are undertaken for every burn to ensure the outcome is in line with the Gulf Savannah Fire Management Guidelines. The final outcome desired is a rich mosaic of burnt and unburnt patches, a diverse vegetation structure and ultimately increased biodiversity values.	Mid-long term
		High	Pre/post fire plots continue as per usual Rangers fire program to monitor changes in native vegetation and weeds within managed areas.	Ongoing
		Medium	Landscape connectivity and function is restored, native flora and fauna increases, significant sites are protected.	Ongoing
		High	Biodiversity surveys conducted by Gangalidda & Garawa Rangers will monitor trends in native species populations to measure the impacts of weed and fire management.	Long-term
	INCREASED KNOWLEDGE OF IMPACTS ON BIODIVERSITY The impacts of inappropriate fire and weeds on native species are understood and this knowledge informs management plans and on-ground activities	Medium	Culturally significant species will be targeted during monitoring and through special projects to assess population health.	On-going (annually)
		Medium	Fire sensitive species will be targeted during monitoring and through special projects to assess population health.	As required
		High	Conduct population survey to determine numbers and location hotspots.	As required
Feral animals impacting on native species and landscapes	**FERAL ANIMAL MANAGEMENT**	High	Conduct aerial culling program targeting brumbies and feral pigs.	Completed
	Reduce feral animal numbers by culling	High	Fencing (if required) of significant fresh water features.	2014
		Medium	Monitoring of fenced areas will occur to measure changes in water quality, bank erosion and native vegetation cover as a way to record improvements in environmental condition due to fencing.	As required
	Monitor impact of feral animals on fresh water holes, riparian corridors and other fragile ecosystems	Medium	Record interactions between introduced species and turtle/bird nesting sites; for example feral pigs predating marine turtle nests along coastlines. Experimental exclusion barriers to protect nests will be trialled.	As required
		Low	As management actions are undertaken, an increase in fledgling/hatchling numbers will occur naturally over time	Ongoing

Fencing injures a lot of wildlife.

Ghostnet with turtle bones.

Ghostnets can be found high up along the banks.

Fire regimes are governed by the desired outcome and consideration must be given to the amount of moisture present and the type of landscape. These management guidelines are set out in an easy to understand and comprehend format that allow the reader to quickly determine the appropriate fire regime for any given area.

NATURAL RESOURCE MANAGEMENT OPPORTUNITIES FOR TRADITIONAL OWNERS

Employment opportunities

The Commonwealth Department of the Environment and Heritage (now Department of Environment) 2006 review of the IPA program noted that:

> ***"Indigenous sea rangers are the eyes and ears along Australia's most remote northern coastline. They are the guardians of local knowledge, providing invaluable backup for Police, Fisheries, Conservation, Customs and Quarantine. Indigenous sea rangers routinely tackle a diverse caseload involving surveillance and monitoring, marine debris clean-up, animal rescue and cultural educational activities. Sea rangers need to be properly trained and resourced to keep illegal fishing vessels, feral animals and diseases from reaching Australian shores. To date, most Indigenous sea ranger positions have been funded through CDEP and appropriate resources to effectively support the program have not been available."***[37]

The review went on to note that a properly funded and integrated ranger program would engage Indigenous land and water managers, enabling more efficient use of the available on-ground resources and expertise, better coordination and prioritisation of activities within the 'caring for country' framework across conservation areas; and a more educationally engaged and experienced pool of young people.[38]

In the relatively short time the Gangalidda & Garawa Rangers have been together, most have successfully completed studies in Land Conservation Management Certificate III, outboard maintenance; GIS/GPS training; I-Tracker;, compliance and investigation training; turtle-tagging; dugong biopsy techniques; AQIS training; interviewing techniques; leadership training; team-bonding sessions; chemical use, transport and application; chainsaw use and maintenance; quad bike training; mapping and orienteering; time management; burial site restoration; traditional knowledge recording; advanced chemical handling; weed identification; tree felling; bird survey techniques; earthworks and erosion control techniques; various computer courses; boating; and extensive fire training. Some have even progress onto a Certificate IV level and have completed coxswain training and training and assessment qualifications.

The capacity of the Gangalidda & Garawa Rangers will develop over time as they undertake additional training. Further funding and resourcing of this group is required to ensure this important work continues. Further scientific (technical) advice/training is required in turtle and dugong necropsy work, fisheries sampling, biodiversity survey work, water quality sampling and enforcement.

Ranger Billy Jackson undertaking a biodiversity study.

Action Table: Employment

Issue	Traditional Owner management response	Priority	Expected outcomes/activities	Timeframe
Increase local skilled employment opportunities in natural resource management	Rangers to visit festivals, workshops and conferences (e.g. NAIDOC, World Indigenous Network Conference, National Indigenous Land & Sea Management Conference) to promote their invaluable work	Low	Raise awareness of the valuable work of the rangers and lobby for additional resourcing. Increase the capacity of rangers.	Ongoing
	Rangers to participate in Employment Expos at local high schools	Low	Increased interest in school aged children in caring for country and becoming rangers	Ongoing
	Continue to lobby for additional ranger resourcing through funding agencies	High	Additional funding for ranger places, increased training opportunities for rangers, increase in ranger bases across the islands	Ongoing
	Seek fee-for-service arrangements as appropriate across the region (e.g. fire abatement programs for mining operations; easement weed work for Ergon Energy etc)	Medium	Additional revenue sources for rangers allowing further rangers to be employed and trained.	Ongoing

[37] Gilligan, B. (2006). *The Indigenous Protected Areas programme - 2006 Evaluation.* Department of Environment and Heritage, Canberra. p.39. [38] Ibid at 40.

Turtle tagging.

Young Gangalidda men - Trinity Yanner and Warick Walden working on the new Gumbumunda Bridge in Burketown.

Ranger Kelly Walden undertaking castnet survey.

Sea country patrol.

Service delivery for government resource management agencies

Our rangers are perfectly placed to offer service delivery to both government and non-government agencies working in the lower Gulf of Carpentaria and are keen to develop their capacity in this regard. Rangers already work with DAFF Biosecurity undertaking marine debris, weeds, feral animal surveys and patrols for foreign fishing vessels. Over time and with the assistance of DAFF(FQ) and NPRSR it is hoped our rangers will receive enforcement powers under the *Fisheries Act 1994* and investigation powers the *Nature Conservation Act 1992*.

We would request all agencies operating in our region work alongside our rangers to develop their capacity for this type of work. Our rangers live and work within the region, know the region intimately and are a cost effective alternative to bringing in outside officers to undertake similar activities.

We still see evidence of illegal foreign fishing vessels in the lower Gulf, despite effort of government to stem these incursions. Our rangers can offer a cost effective solution to conduct surveillance of the region.

Ranger Terrence Taylor with Dr Col Limpus monitoring turtle nests.

Fencing off a significant site.

Fish ladder monitoring.

Action Table: Service Delivery

Agency	Priority	Expected outcomes/activities	Timeframe
DAFF Biosecurity	High	DAFF Biosecurity to provide training for rangers	Ongoing as required
		Service agreements established for rangers to undertake agreed activities	Completed
		Surveillance of country to ensure biosecurity maintained	Ongoing
DAFF (FQ)	High	Training for rangers in fisheries evidence collection and compliance	Initial training completed. Remaining training to be delivered over time.
		Reduction of fishing infringements over time	Ongoing
Burke Shire Council and Doomadgee Aboriginal Shire Council	High	Service agreement established for rangers to undertake weed eradication and fire management in/around town areas	Completed

Pastoralism

Since the earliest explorers labelled the lower Gulf "the plains of promise" graziers have been attempting to graze stock for profit. What has been determined is the marginal value of this activity. Boom and bust, drought and famine are a very real part of the landscape in the Gulf. Only the most hardy and generally large-scale properties can withstand this cycle. Much of the Gulf savannah has been over grazed and is now largely degraded country when no remedial activities were implemented. Though not the case for all, that was certainly the experience of our people when we took over the pastoral leases that cover the backbone of our traditional country (Tarrant, Pendine, Konka, Brokera, Bundella and Troutbeck).

In the short time we were marginalised from our country, many pastoralists have attempted, at the determent of land, to run cattle as a profitable venture. That is not to say that all pastoral properties in the region have been, or are doomed to failure. There are some very successful ventures that we would seek to emulate, though on a smaller scale and away from marginal areas and areas of environmental and cultural significance.

Grazing pressure has been one of the major threats to the environment in the Gulf. Areas such as the largely intact Gangalidda properties have significant value being maintained as such and could provide benefits to Traditional Owners as a focus in the Gulf as an area of conservation. Indeed, this is one of the core values of the IPA program – the provision of funding to Traditional Owner groups to manage country for conservation purposes to maintain these natural landscapes. The lower Gulf forms part of one of the largest remaining natural landscape tracts in the world, providing a strong incentive for conservation investment in northern Australia.

Any decision to commence grazing on a commercial basis will require agreement by the IPA Advisory Committee and be limited in its scale to ensure conservation integrity is maintained.

Environmentally sustainable tourism

We are poised to commence a tourism venture over a pilot area in the vicinity of Burketown. If this project proves successful we will roll it out over the remaining Gangalidda properties that form the IPA management area. Currently tourists around Burketown have been allowed to camp anywhere along the river banks (Albert, Leichhardt and Nicholson) for as long as they wished, without any regards to the consequences. This needs to stop and the Burke Shire Council has agreed to work with us to prevent inappropriate camping.

Initially we will establish designated camping areas with the provision of limited services such as fire wood and a bbq plate and permits will be issued allowing the right to use the facilities and the site. Daily monitoring of sites will be undertaken to ensure they remain clean and viable for use by other campers. Cultural heritage information will be provided so tourists are aware of the significance of the area, providing greater value to their experience. Depending on the demand tours can be arranged.

Limited sites will be made available and the location of these sites will be frequently shifted to reduce impact. Over time we hope to increase the facilities on offer to include portable toilets, showers and fresh potable water.

Tourism ventures on a larger, more permanent scale have been discussed over several years, such as the construction of an eco-resort out on country, so tourist can better understand the raw beauty of our country. We are slowly working our way towards this lofty ambition, but for now we need to develop what we can in a way that it acceptable to our people, be gentle on the environment, and be attractive to the tourist.

Carbon farming*

The carbon market in Australia was worth an estimated of $6.58 billion in 2013 in its first compliance year, which saw a fixed price of $23 per tonne of carbon dioxide equivalent (CO2e). A total of 372 liable entities were included in the scheme on the basis that their annual

Goose Berry.

scope one emissions were greater than 25,000 tonnes of CO2-e. The Clean Energy Regulator issued 1,750,179 Australian Carbon Credit Units (ACCU) in the first year of operation. Almost all of the issued ACCUs, 97%, were purchased by 18 liable entities to meet part of their compliance obligations.[39]

The Carbon Farming Initiative (CFI) allows land managers to earn ACCUs by storing carbon and reducing greenhouse gas emissions by undertaking certain land activities supported by government methodologies.

Carbon Credits can then be sold to large businesses that are liable under the Clean Energy Plan. The CFI is a legislated Offsets Scheme that has support of all major political parties. The underpinning legislation of the CFI was passed in parliament in August 2011 and is known as Carbon Credits *(Carbon Farming Initiative)* 2011 *(CFI Act)*.

The Emission Reduction Fund (ERF) will be developed as part of the government's broader Direct Action Plan, which includes a number of initiatives (i.e. *One Million Solar Roofs* and the *20 Million Trees* Program).

[39] Caron Market Institute (2014). [40] Department of Environment (2014).
* The source document for this information contained within this section is: Select Carbon. (2014) *Carbon Farming Feasibility Assessment Report: Carpentaria Land Council.* Cairns.

Gangalidda elder Eva Gilbert collecting freshwater bullrush (gugandu) with its sweet nut on the roots.

Wild passionfruit.

Ranger Kelly Walden collecting water lilly seed (gardarra).

Wild orange (duruji).

Cherubin.

Wild banana.

The aim of the Direct Action Plan is to achieve emissions reductions of 5% based on 2000 levels by 2020. On current emissions projections, this target represents a reduction amount of 131 million tonnes of CO2-e in 2020 and a cumulative amount between 2014 and 2020 of 431 million tonnes.[40]

Potential Project Opportunities for CLCAC

The potential projects CLCAC can currently undertake is limited due to the number of available methodologies that are applicable for the given areas found within CLCAC's jurisdiction. For example, the existing savannah burning methodology *(Reduction of Greenhouse Gas Emissions through Early Dry Season Savanna Burning—1.1)* excludes areas that receive rainfall below 1100mm per annum. Therefore most of the land that is currently managed as part of ongoing fire management activities by Gangalidda & Garawa Rangers would be excluded from undertaking a project in its current form as the majority of our country falls in the 600-1,000mm per annum bracket. However, there remains potential for us to capitalise on the CFI as it continues to grow in the coming months and years with the ongoing development of new methodologies.

Available methodologies applicable on our country

1. Managed regrowth of native forest: this project activity is eligible in areas that may have been cleared in the past and have regrown as a result of excluding stock or other active management practices to help regrowth of native forest.

2. Environmental planting: for areas that are planted with native species for rehabilitation purpose, or which have been planted in the past with the intention to earn carbon credits (2007 onwards).

3. Afforestation and reforestation: allows for reforestation of cleared land and afforestation on land where no forest previously existed in order to sequester carbon.

There are currently two methodologies being developed that will allow CLCAC a more direct route into the CFI in the future. These include a low-rainfall (1000-600mm p.a.) savannah burning methodology and a biosequestration methodology. The new biosequestration methodology will initially only fit in with the existing high rainfall (>1100mm p.a.) savannah burning methodology, with a low-rainfall version of the biosequestration methodology expected in the next two years.

The biosequestration methodology is intended to work in conjunction with the existing savannah burning methodology, as it is essentially measures the carbon sequestration that is already occurring due early dry season savannah burning, as opposed to measuring the emissions avoidance from savannah burning alone. As a result, there will be no additional work required by the project proponent and it is expected that both the biosequestration and savannah burning methodology will be linked together, meaning that the project proponent will have the option to include biosequestration as part of their overall project. Early research suggests such a scenario would see an additional four times the abatement as is currently recognised under the savannah burning methodology which will substantially enhance the project viability.

The waterways of the lower Gulf are spectacular wet or dry season.

CLCAC Gangalidda & Garawa Rangers 2014.

Part 5:
Implementation, Monitoring & Review

This plan has been developed by the Traditional Owner community with the assistance of the Carpentaria Land Council Aboriginal Corporation. The action plan will be implemented by the CLCAC over the next five years.

THE GANGALIDDA & GARAWA RANGERS

The Traditional Owners, with the support of the CLCAC, strongly believe that we are best placed to achieve the most cost effective methods of environmental management in this remote locality. We hold a vast amount of ecological knowledge specific to the region, it seasons and its species. Traditional Owner management also fulfils Traditional Owner responsibility to care for country, thus raising the motivations of the community as a whole to 'care for country'. Feedback given to rangers by Traditional Owners (and other stakeholders/interested parties) will also be an important monitoring tool.

The success of this management plan will initially be measured against the amount of information that is collected by the Gangalidda & Garawa Rangers and entered into the appropriate database maintained by CLCAC. Reports will be able to be generated on all aspects of the collated information for use by rangers across the Gulf region and any other agencies upon request. The success of the database will only be realised after at least two-years of data collection. Over time, the database will become an essential reporting tool on the health of the environment of the region. Success will also be measured by the number of requests we receive from government agencies and researchers for access to information held in the database, and in our Rangers obtaining further contracts from other agencies such as Biosecurity and Customs.

Biodiversity survey work.

The introduction and use of the I-Tracker/Cyber Tracker system has greatly enhanced the capacity of the Gangalidda & Garawa Rangers to monitor the outcomes of this management plan. Already activities are being achieved and the level of their success measured accurately. This system generates full reports on all ranger activities and can produce maps plotting weed spread and eradication efforts, turtle and dugong migration paths, feeding grounds etc. Photographs documenting the success or failure of particular activities are also capable of being linked to these reports. All information collected is entered into the database for long term monitoring of results of activities/patrols.

We expect that over time the qualifications held by our rangers will also increase. For example, a key long-term measurable outcome in this regard will be the delegation of appropriate powers under legislation for our rangers to undertake enforcement of Fisheries Regulations.

A Monitoring, Evaluation, Reporting and Improvement (MERI) plan will operate alongside this management plan to ensure the outcomes of all activities are monitored effectively. MERI provides a model for assessing our actions and the state of change over time in our country against planned immediate, intermediate and longer-term outcomes. It will provide us with the opportunity to improve program and project design and delivery and to target and reallocate resources as required over time.

IMPLEMENTATION SUPPORT FROM STAKEHOLDERS

In order for the ranger program to have the capacity to fully implement, monitor and review the management activities outlined in this plan we will require assistance from various government agencies in the way of funding, training and the provision of appropriate infrastructure. We are very grateful to the Department of the Environment and the Department of the Prime Minister and Cabinet for funding our rangers through the Working on Country program and also the Department of Environment and Heritage Protection for funding under the Queensland Indigenous Land and Sea Ranger program. What is currently lacking is the availability of trainers to travel to this remote region and train our rangers in discrete activities such as turtle necropsy and biopsy sampling, biodiversity surveying techniques, water quality sampling, fisheries enforcement, coxswain tickets etc. Our rangers desperately require this training to ensure a full host of monitoring activities can occur.

Further negotiations are also required in relation to the Cultural Heritage Management Protocol. We appreciate the ongoing consultations between Traditional Owners and CLCAC with the Gulf of Carpentaria Commercial Fishermen's Association and hope to finalise such arrangements in 2015.

The table below set outs from our prospective areas showing agreed support from these stakeholders and issues of ongoing negotiation.

DAFF vet Beth Cookson training rangers in autopsy techniques.

Croc awareness school visit.

Rangers erecting a culicoides trap.

River patrol.

Action Table: Implementation Support

Interested Party	Agreed Support	Further Negotiations Required
PMC	• support for WoC Rangers, ranger activities and the Indigenous Carbon Farming Fund • Funding and ongoing support for the IPA • Representation on the Advisory Committee • Facilitation and assistance with other government agencies and other interested parties (as appropriate)	• Level of funding • Scope of activities
EHP	• Funding and ongoing support for Queensland Indigenous Land and Sea Rangers • Establishment of the Junior Ranger program to engage our kids in the NRM process.	• Obtain EHP support for the creation of the IPA; • Develop water monitoring strategy in conjunction with EHP. EHP to train rangers.
DAFF (FQ)	• Develop a protocol for the assessment of new/developmental fisheries in the region that includes the Traditional Owners in the beginning of the application process, rather than a right to be informed and comment on proposals at the conclusion of the assessment process; • Establish a line of communication between Traditional Owners and DAFF (FQ) to improve the working relationship between them and to provide a clear pathway for the DAFF (FQ) to communicate with Traditional Owners;	• Obtain DAFF(FQ) support for the creation of the IPA; • Form a partnership with DAFF (FQ) to develop primary industry enterprises and undertake biodiversity/ biosecurity surveillance; • Review of existing area closures in the Southern Gulf with DAFF(FQ) and neighbouring Traditional Owner groups (these were initially created without Traditional Owner consultations taking place); • Negotiate training and possible resourcing of rangers to undertake the Indigenous Subsistence Fishing Survey across the region • Possible training and resourcing rangers to become Authorised Officers under the *Fisheries Act 1994* (Qld) to enforce Fisheries Regulations in the region (currently only 4 Authorised Officers in the entire Gulf of Carpentaria: 2 based in Weipa and 2 based in Karumba,). This is a long-term goal of the community and the Gangalidda & Garawa Rangers with the support of the GoCCFA and GulfMAC; • Creation of a "Traditional Owner friendly" endorsed fishery scheme; • Inclusion of cultural heritage induction training as part of the Master of Operations.
DATSIMA		• Negotiate resources and funding to assist the Traditional Owners to include cultural heritage sites on the Queensland Register.
NPRSR	• Establish a working relationship between the NPRSR and Traditional Owners;	• Obtain NPRSR support for the creation of an IPA across the region; • Discussion on the creation of new Fish Habitat Areas along the mainland coast; • Training for rangers, especially in water quality assessment; • Creation of a shared management regime for Finucane National Park; • Creation of a Marine Park (Qld) in State Waters underpinning the Thuwathu/Bujimulla and Nijinda Durlga IPAs; • Training and resources for rangers to implement conservation management, including workshops with wildlife experts such as Dr Col Limpus.
Tourism operators		• Develop access protocols with tourism operators and other visitors to the region as part of the negotiations with these organisations
GoCCFA	• Fishermen to undertake cultural heritage awareness training (beginning of barramundi season). • Additional training for rangers in commercial fishery compliance.	• Develop access protocols with commercial fishermen and other visitors to the region as part of the negotiations with these organisations; • Agreement on area closures within region; • Support the development of a "Traditional Owner friendly" endorsed fishery scheme.
General outcomes	• Development of ranger work protocols/procedures and work plans based on management issues identified in the management plan; • Capacity development of rangers, including possible fee-for-service arrangements with government agencies – e.g. Australian Customs and Border Security Service, DAFF Biosecurity, Fisheries Queensland inspection & enforcement etc.; • Increase in community awareness of potential environmental risks/hazards; • Increase in community participation in NRM projects; • Increase in knowledge transfer to younger Traditional Owner generation;	• Develop access protocols with tourism operators, commercial fishermen and other visitors to the region as part of the negotiations with these organisations; • Develop a cultural induction for all visitors to the region with delivery by the Gangalidda & Garawa Rangers; • Creation of a "Traditional Owner friendly" endorsed fishery scheme • Increase in the awareness of the community both within the region and beyond of the activities of the Gangalidda & Garawa Rangers; • Establishment of a positive working relationship between the Traditional Owners and other stakeholders within the region; • Establishment of clear communication pathways for rangers to be able to report back to various government departments/ agencies on the conditions of the region (many ecological reports on the region are critical of the knowledge gaps that still exist in relation to many species present in the region).

PLAN REVIEW

Our culture is dynamic and has been continually adapted over time to reflect the changing environment. Like our culture, this plan too is dynamic and will be amended over time to reflect the successes or failures of our management strategies. Our rangers are charged with the important and challenging task of managing country in a manner that is responsive to new emerging threats and changes in best practice scientific knowledge and practices. This plan will be reviewed on an annual basis as will the complementary ranger work plans to ensure the targets within the management plan continue to be met and remain realistic.

LINKS WITH OTHER CLCAC MANAGEMENT INITIATIVES

Our management plan links in closely with other NRM planning initiatives completed by CLCAC:

- Gulf Savannah Fire Management Plan: Uses traditional burning regimes of the lower Gulf Indigenous groups in combination with best-practice scientific techniques. The plan helps land managers plan hazard reduction burning and in undertaking planned burns for improved production and conservation outcomes. This was a world first. Copies of the plan can be accessed through the CLCAC website: **http://www.clcac.com.au/files/documents/42/gulf_savannah_guidelinesv9print_webready.pdf.**
- Thuwathu/Bujimulla Indigenous Protected Area Plan of Management that articulates the Traditional Owner aspirations for the management of country to our north (and includes Gangalidda sea country). A copy can be accessed through the CLCAC website: **http://www.clcac.com.au/files/documents/58/clcac_ipa_management_plan_online_version.pdf**
- Wellesley Islands IPA Management Guidelines which explains the required fire regimes to assist in the eradication of weeds and other management actions across the Wellesley Islands. The plan is available at: **www.clcac.com.au.**
- Thuwathu/Bujimulla Sea Country Plan was developed through an initiative by the National Oceans Office. The plan helped establish Traditional Owner aspirations for the management of sea country across the Wellesley Islands, outlining how various State and Commonwealth departments and agencies could assist in this endeavour. Copies can be downloaded from: **http://www.environment.gov.au/indigenous/publications/thuwathu-bujimulla-plan.html.**
- Living on Saltwater Country: Southern Gulf of Carpentaria Sea Country Management, Needs and Issues was funded by the National Oceans Office to articulate the rights and interests of all Indigenous groups within the CLCAC region. Though developed in 2004 as part of the North Marine Planning process it still proves to a useful resource in understanding the foundations of Traditional Owner sea country management aspirations. Copies can be downloaded from: **http://www.environment.gov.au/coasts/mbp/publications/north/losc-carpentaria.html**

Gangalidda & Garawa rangers Kelly Walden, Derek Cole and Mervyn Anderson prepare for community consultation.

Rangers consult with commercial fisherman while on bird survey.

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Old buoy.

Appendix 1:
Regional Ecosystems within the Nijinda Durlga IPA

Regional Ecosystem number	Regional Ecosystem sub-type	Status (VMA 1999)	Area (ha)	Property	Description (shortened)	Threats
2.1.2		Least Concern	229.8	Brokera; Konka; Old Doomadgee; Tarrant; Troutbeck	Avicennia spp. low shrublands and woodlands (mangroves). Occurs on low coastal rises subject to tidal inundation; mainly saline muds, possibly with accumulating shell materials and sands.	None listed
2.1.3		Least Concern	18338.72	Brokera; Bundella; Konka; Old Doomadgee; Tarrant; Troutbeck	Mangrove communities including Avicennia spp., Rhizophora stylosa & Ceriops tagal. Occurs on margins and levees of channels subject to tidal inundation; saline muds.	Threatening processes include illegal netting.
2.1.4		Least Concern	115390.99	Brokera; Bundella; Konka; Old Doomadgee; Tarrant; Troutbeck	Predominantly unvegetated but includes areas of Tecticornia spp., Sarcocornia spp. and Suaeda spp. on slightly higher areas. Occurs on saline clay plains; periodically inundated; solonchaks.	None listed
2.2.1		Least Concern	245.38	Brokera; Bundella; Konka; Old Doomadgee; Troutbeck	Scattered Casuarina equisetifolia and Hibiscus tiliaceus, ground cover dominated by Spinifex longifolius and Ipomoea pes-caprae. Occurs on beaches and fore dunes; unconsolidated siliceous sands or calcareous shell fragments.	Threatening process is infestation by rubber vine *Cryptostegia grandiflora, Calotropis procera, Parkinsonia aculeata, Urochloa, Cenchus and the impact of high total grazing pressure, high vehicle use and camping use. Survey required to verify condition.
2.2.2	2.2.2x1	Least Concern	5370.84	Brokera; Konka; Old Doomadgee	E. pruinosa or A. torulosa low woodland. Occurs on old weathered sandridges.	
2.2.2		Least Concern	31083.39	Brokera; Bundella; Konka; Old Doomadgee; Tarrant; Troutbeck	Vegetation variable throughout subregion, but includes grasslands, herb fields, woodlands and semi-deciduous and evergreen shrubs. Sedge lands and Melaleuca spp. in swales. Occurs on secondary dunes and swales; unconsolidated sands or stratified shells and mud, and clay soils in swales.	Threatening processes include high total grazing pressure leading to wind erosion, and invasion of shrubs by rubber vine *Cryptostegia grandiflora. Survey required to identify the component ecosystems of this complex. 2.2.2b: Invasion by rubber vine *Cryptostegia grandiflora.

Regional Ecosystem number	Regional Ecosystem sub-type	Status (VMA 1999)	Area (ha)	Property	Description (shortened)	Threats
2.3.1	2.3.1x1	Least Concern	1752.75	Brokera; Bundella; Old Doomadgee; Tarrant; Troutbeck	Estuarine wetlands (e.g. mangroves). Tidal lagoon on mud flats usually situated between two higher land masses flushed periodically by saline water. Occurs on tidal mud flats.	
2.3.1	2.3.1x30	Least Concern	1430.12	Brokera; Bundella; Konka; Old Doomadgee; Troutbeck	Riverine wetland or fringing riverine wetland. Lagoon in stream channel. Flushed by fresh water stream flows and prone to back fill with saline water at high tides. Occurs at junction with estuarine mud flats.	
2.3.1	2.3.1x31	Least Concern	884.04	Bundella; Old Doomadgee; Troutbeck	Lacustrine wetland (e.g. lake). Lagoon. Occurs on clay plain with partial saline influence.	
2.3.1	2.3.1x51	Least Concern	2246.36	Bundella; Konka; Old Doomadgee; Troutbeck	Grevillea striata low open-woodland. Occurs on Cainozoic clay plains adjacent to estuarine mud flats.	
2.3.1		Least Concern	26608.25	Brokera; Bundella; Konka; Old Doomadgee; Tarrant; Troutbeck	Grassland, usually including Xerochloa spp., Dichanthium spp. & Panicum spp.; Oryza spp. & Pseudoraphis spp. on slightly lower areas. Occasional trees may include Grevillea striata, Pandanus spp.or Excoecaria parvifolia. Occurs on low - elevated plains seasonally inundated by fresh water or rarely by saline waters; solonetzic soils.	None listed
2.3.10	2.3.10x41	Least Concern	5666.55	Pendine	Floodplain (other than floodplain wetlands). Eucalyptus microtheca low open-woodland with a sparse grassy ground layer dominated by species including Chrysopogon fallax, Eriachne glauca and Dichanthium sericeum. Occurs on Cainozoic clay plains.	Cryptostegia grandiflora is common on some sites.
2.3.11	2.3.11x1	Least Concern	1274.03	Pendine	Eucalyptus pruinosa low open-woodland with grassy ground layer. Occurs in patches on recent alluvium.	
2.3.11		Least Concern	42940.31	Brokera; Bundella; Konka; Old Doomadgee; Pendine; Troutbeck	Eucalyptus microtheca +/- Excoecaria parvifolia open and low open-woodlands. Ground cover includes Eulalia aurea and Dichanthium spp. Occurs on depressions and floodplains on Quaternary and Tertiary alluvial plains; calcareous cracking clays.	Subject to degradation from high total grazing pressure. Includes a variety of seasonal wetlands requiring further classification.
2.3.17		Least Concern	684.08	Pendine	Eucalyptus microtheca +/- E. camaldulensis fringing woodland. Variable and diverse ground cover. Occurs on major and minor channels; fine alluvial soils, minor calcareous clays.	Subject to very high grazing pressure. Widespread erosion and habitat loss. Extensive invasion by buffel grass *Pennisetum ciliare on sandier soils. Diverse ecosystem requiring further analysis.
2.3.21		Least Concern	24383.49	Brokera; Bundella; Konka; Old Doomadgee; Pendine; Troutbeck	Eucalyptus leptophleba, Corymbia tessellaris, C. bella, C. polycarpa and/or C. confertiflora frontage woodland. Dense ground cover of Heteropogon contortus, Aristida spp. & Chloris spp. Occurs on abandoned levees, and levees associated with current major watercourses; fine sands, alluvial soils and red earths.	Subject to high total grazing pressure; rubber vine *Cryptostegia grandiflora invading some areas. Survey required to verify condition.
2.3.22		Least Concern	1362.93	Brokera; Bundella; Konka; Pendine; Troutbeck	Corymbia polycarpa & Melaleuca spp. frontage woodland +/- Eucalyptus microtheca on heavier soils of back plains. Eucalyptus camaldulensis and Pandanus spp. on levees. Eucalyptus microtheca +/- Excoecaria parvifolia on smaller channels. Occurs on channels, levees and plains associated with recent watercourses; alluvial soils, mainly sands and earths.	Subject to heavy total grazing pressure and associated vegetation changes and erosion. Survey required to verify condition.

Regional Ecosystem number	Regional Ecosystem sub-type	Status (VMA 1999)	Area (ha)	Property	Description (shortened)	Threats
2.3.24	2.3.24x11	Least Concern	96.48	Pendine	Riverine wetland or fringing riverine wetland. Bare sand with scattered low shrubs and patches of grasses, forbs and sedges. Occurs in larger river channels.	
2.3.24	2.3.24x12	Least Concern	842.95	Brokera; Bundella; Konka; Old Doomadgee; Pendine; Troutbeck	Riverine wetland or fringing riverine wetland. Waterholes and lagoons, generally permanent. Occur in the beds of large river channels.	
2.3.24		Least Concern	4130.01	Brokera; Bundella; Konka; Pendine	Melaleuca leucadendra and/or M. argentea fringing forests and woodlands. Occurs on channels and inner levees on younger Quaternary alluvium; alluvial sands and loams.	Some invasion by rubber vine *Cryptostegia grandiflora. Subject to high total grazing pressure leading to habitat loss and erosion. Includes within channel aquatic ecosystems.
2.3.28	2.3.28x1	Least Concern	21313.4	Brokera; Bundella; Konka; Old Doomadgee; Pendine; Troutbeck	Floodplain (other than floodplain wetlands). Melaleuca viridiflora low open-woodland. Melaleuca viridiflora usually dominates the sparse canopy. Sometimes Eucalyptus pruinosa is dominant with M. viridiflora. Occurs on drainage depressions or alluvial plains adjacent to streams	Subject to high total grazing pressure leading to habitat loss. Some soils prone to scalding and erosion. This ecosystem poorly known. More information required to confirm conservation status.
2.3.29	2.3.29x1	Least Concern	1727.61	Bundella; Konka; Old Doomadgee; Troutbeck	Melaleuca acacioides and Excoecaria parvifolia tall shrubland to open-shrubland. Very sparse ground layer with grasses including Xerochloa imberbis. Occurs on gently sloping plain adjacent to estuarine mud flats with silty sand or sandy loam surface soil.	Floristic changes occurring due to high grazing pressure. More information required to confirm conservation status.
2.3.34	2.3.34x31	Least Concern	1592.46	Brokera; Bundella; Konka; Old Doomadgee; Troutbeck	Palustrine wetland (e.g. vegetated swamp). Open-tussock grassland of Ectrosia spp. or Leptochloa spp. Occurs in depressions between old sand dunes.	
2.3.34	2.3.34x32	Least Concern	5561.33	Brokera; Konka; Pendine; Troutbeck	Palustrine wetland (e.g. vegetated swamp). Lagoon. Occurs on higher level clay plain not influenced by tides.	
2.3.34		Least Concern	1906.85	Brokera; Bundella; Konka; Old Doomadgee; Pendine; Troutbeck	Lagoon vegetation dominated by Pseudoraphis spinescens and a fringing woodland of Eucalyptus camaldulensis. Occurs in rounded shallow lagoons which are seasonally flooded; yellow podzolic soils.	
2.3.4	2.3.4x40	Least Concern	8455.66	Brokera; Konka; Tarrant	Floodplain (other than floodplain wetlands). Enteropogon minutus, Sporobolus virginicus and Cyperus spp. open tussock grassland or Eulalia aurea, Chrysopogon fallax open tussock grassland with small patches of Oryza australiensis open tussock grassland and Cyperus victoriensis open sedgeland. Occurs on Cainozoic clay plains adjacent to estuarine mud.	
2.3.4	2.3.4x41	Least Concern	7976.32	Pendine	Floodplain (other than floodplain wetlands). Eulalia aurea, Chrysopogon fallax, Dichanthium fecundum and/or Brachyachne convergens open tussock grassland to tussock grassland, +/- emergent Excoecaria parvifolia or Atalaya hemiglauca. Includes patches of Ophiuros exaltatus sparse tussock grassland. Occurs on Cainozoic clay plains and slight depressions on gently undulating Cainozoic clay plains.	

Regional Ecosystem number	Regional Ecosystem sub-type	Status (VMA 1999)	Area (ha)	Property	Description (shortened)	Threats
2.3.4	2.3.4x50	Least Concern	2892.21	Old Doomadgee	Floodplain (other than floodplain wetlands). Xerochloa imberbis open tussock grassland. Occurs on Cainozoic clay plains adjacent to estuarine mud flats.	
2.3.4		Least Concern	2404.96	Bundella; Troutbeck	Dichanthium spp., Eulalia spp. grassland +/- Aristida latifolia. Occurs on Tertiary and Quaternary alluvial plains; heavy grey and brown clays.	
2.3.9		Least Concern	2.79	Bundella	Eucalyptus microtheca and Lysiphyllum cunninghamii low open-woodland with grass layer of Aristida spp., Eriachne armitii & Chloris pumilio. Occurs on Tertiary and Quaternary alluvial plains; earths and solodised solonetz soils.	
2.5.13		Least Concern	25156.72	Brokera; Bundella; Konka; Old Doomadgee; Pendine; Troutbeck	Microphyll to notophyll vine forest +/- Araucaria cunninghamii. Characteristic species include Araucaria cunninghamii, Cupaniopsis parvifolia, & Dendrocnide photinophylla. Occurs on remnant Tertiary surfaces especially lateritised basalt.	
2.5.15	2.5.15x2	Least Concern	260697.95	Brokera; Bundella; Konka;Old Doomadgee; Pendine; Troutbeck	Melaleuca citrolens &/or Eucalyptus pruinosa &/or Melaleuca viridiflora low woodland to occasionally low shrubland. Flat to gently undulating terrain on sandplain.	
2.5.15	2.5.15x7	Least Concern	103196.21	Brokera; Konka; Pendine	Melaleuca citrolens &/or Melaleuca viridiflora &/or Asteromyrtus symphyocarpa low woodland to occasionally low shrubland. Flat to gently undulating terrain; shallow soil over ferricrete.	
2.5.15		Least Concern	7217.46	Bundella; Konka; Troutbeck	Low woodland dominated by Melaleuca spp. including M. nervosa, M. acacioides and M. stenostachya. Corymbia polycarpa or Eucalyptus microneura sometimes occur as emergents. Gently undulating plains on Tertiary and Quaternary deposits; grey and brown massive earths and yellow podzolics.	
2.7.5		Least Concern	16855.74	Brokera; Bundella; Konka; Pendine; Brokera	Woodland dominated by Terminalia canescens and Corymbia setosa subsp. setosa. Common associates include Eucalyptus leucophylla, Erythrophleum chlorostachys & Ventilago viminalis. Grass layer dominated by Triodia pungens. Occurs on dissected landward margins of Tertiary surfaces; skeletal soils.	
2.9.1	2.9.1x90	Least Concern	11177.39	Konka	Eucalyptus pruinosa low open-woodland with a ground layer of tussock grasses or hummock grasses. Occurs on Tertiary duricrust, often over Mesozoic sediments.	
estuary	estuary	Non-remnant	2848.66	Bundella; Konka; Old Doomadgee; Tarrant; Troutbeck		
non rem	non rem	Non-remnant	368.48	Bundella; Konka		
ocean	ocean	Non-Remnant	7.77	Konka; Old Doomadgee; Tarrant		

Appendix 2:
Recorded Plants Species Within The Nijinda Durlga IPA

(Properties column: no superscript = Taxon listed for that property in both data sets; superscript 1 = only listed in Herbarium for that property; 2 = only listed in Wildnet for that property). Data source 1 = HERBRECS; 2 = WildNet. Y = Non-native; NT = Near threatened, V = Vulnerable to decline.

Family	Taxon	Properties	Weed	Status	Data Source
Acanthaceae	*Hygrophila angustifolia*	Konka[2], Pendine[2]		C	1 & 2
	Nelsonia campestris	Konka[1], Bundella		C	1 & 2
Aizoaceae	*Sesuvium portulacastrum*	Tarrant[1], Brokera, Konka[2]		C	1 & 2
	Trianthema compacta	Brokera[2], Konka[2]		C	1 & 2
	Trianthema triquetra	Tarrant[2]		C	1 & 2
Amaranthaceae	*Achyranthes aspera*	Tarrant		C	2
	Alternanthera denticulata	Brokera[2], Konka[2], Tarrant[2]		C	1 & 2
	Amaranthus interruptus	Brokera, Konka[2]		C	1 & 2
	Gomphrena canescens	Konka, Brokera		c	1
	Gomphrena canescens subsp. canescens	Brokera, Konka		C	2
	Gomphrena humilis	Tarrant, Old Doomadgee, Konka[2]		C	1 & 2
Apocynaceae	*Calotropis procera*	Pendine	Y		2
	Cryptostegia grandiflora	Pendine[2], Tarrant[2]	Y		1 & 2
	Cynanchum carnosum	Bundella		C	1 & 2
	Marsdenia australis	Pendine		c	1
	Marsdenia cymulosa	Konka		c	1
	Marsdenia viridiflora subsp. tropica	Pendine		C	2
	Tylophora cinerascens	Bundella, Brokera, Konka[2]		C	1 & 2
Araliaceae	*Hydrocotyle grammatocarpa*	Konka, Pendine[2]		C	1 & 2

Family	Taxon	Properties	Weed	Status	Data Source
Asteraceae	*Acanthospermum hispidum*	Pendine[2]	Y		1 & 2
	Blumea diffusa	Konka		C	1 & 2
	Blumea integrifolia	Konka[2]		C	1 & 2
	Blumea saxatilis	Troutbeck[2]		C	1 & 2
	Cyanthillium cinereum	Tarrant, Brokera, Konka[2]		C	1 & 2
	Eclipta prostrata	Bundella		C	1 & 2
	Pluchea rubelliflora	Tarrant		C	2
	Pterocaulon intermedium	Tarrant		C	1 & 2
	Sphaeranthus africanus	Bundella		C	1 & 2
	Thespidium basiflorum	Konka[2], Brokera[2]		C	1 & 2
	Xanthium	Pendine		C	2
	Xanthium occidentale	Pendine	Y		2
Avicenniaceae	*Avicennia marina*	Konka		c	1
Boraginaceae	*Heliotropium ovalifolium*	Troutbeck, Brokera, Konka[2]		C	1 & 2
	Heliotropium peninsulare	Konka[2]		C	1 & 2
	Trichodesma zeylanicum	Brokera		c	1
	Trichodesma zeylanicum var. latisepalum	Tarrant		C	2
	Trichodesma zeylanicum var. zeylanicum	Konka, Brokera		C	2
Burseraceae	*Canarium australianum*	Old Doomadgee Broke		c	1
	Canarium australianum var. australianum	Brokera, Konka, Old Doomadgee		C	2

Family	Taxon	Properties	Weed	Status	Data Source
Byttneriaceae	*Waltheria indica*	Brokera		C	1 & 2
	Lysiphyllum cunninghamii	Pendine		C	2
Caesalpiniaceae	*Parkinsonia aculeata*	Konka[1], Pendine[2], Tarrent[2]	Y		1 & 2
	Petalostylis cassioides	Pendine[2]		C	1 & 2
	Senna occidentalis		Y		2
	Senna planitiicola			C	2
Campanulaceae	*Lobelia quadrangularis*	Pendine, Konka[2]		C	1 & 2
Caryophyllaceae	*Polycarpaea corymbosa*	Konka		C	1 & 2
	Polycarpaea spirostylis	Old Doomadgee		c	1
	Polycarpaea spirostylis subsp. glabra	Old Doomadgee, Konka		C	2
Casuarinaceae	*Casuarina cunninghamiana*	Pendine[2]		C	1 & 2
	Casuarina cunninghamiana subsp. miodon	Pendine		C	2
	Casuarina equisetifolia	Old Doomadgee, Troutbeck, Bundella		C	1
	Casuarina equisetifolia subsp. equisetifolia	Troutbeck, Bundella, Konka, Old Doomadgee		C	2
Centrolepidaceae	*Centrolepis banksii*	Konka		C	1 & 2
Chenopodiaceae	*Enchylaena tomentosa*	Tarrant		C	2
	Salsola australis	Troutbeck, Tarrant[2]		C	1 & 2
	Sclerolaena bicornis	Tarrant[2]		C	1 & 2
	Sclerolaena glabra	Tarrant[1]		C	1 & 2
	Tecticornia indica	Tarrant[2]		C	1 & 2
Cochlospermaceae	*Cochlospermum gregorii*	Old Doomadgee, Konka[2]		C	1 & 2
Colchicaceae	*Iphigenia indica*	Konka[2]		C	1 & 2
Combretaceae	*Lumnitzera littorea*	Tarrant		C	2
	Macropteranthes kekwickii	Konka		C	1 & 2
	Terminalia canescens	Konka		c	1
	Terminalia porphyrocarpa	Old Doomadgee, Konka[2]		C	1 & 2
	Terminalia subacroptera	Troutbeck, Broker[2], Konka[2]		C	1 & 2

Family	Taxon	Properties	Weed	Status	Data Source
Commelinaceae	*Cartonema parviflorum*	Konka[2]		C	1 & 2
	Commelina agrostophylla	Old Doomadgee, Konka[2], Pendine[2]		C	1 & 2
	Cyanotis axillaris	Konka[2]		C	1 & 2
Convolvulaceae	*Bonamia media*	Pendine[2]		C	1 & 2
	Bonamia sp. (Musselbrook M.B.Thomas MRS639)	Konka		C	1
	Bonamia sp. (Musselbrook M.B.Thomas+ MRS639)	Konka		C	2
	Cressa australis	Old Doomadgee, Konka[2]		C	1 & 2
	Ipomoea gracilis var. sagittata	Pendine		C	2
	Ipomoea macrantha	Bundella, Konka[1]		C	1 & 2
	Ipomoea pes-caprae	Bundella		c	1
	Ipomoea pes-caprae subsp. brasiliensis	Bundella		C	2
	Ipomoea polymorpha	Konka[2], Pendine[2]		C	1 & 2
	Merremia gemella	Tarrant[1]		C	1 & 2
	Polymeria ambigua	Konka[2]		C	1 & 2
	Polymeria lanata	Konka[2]		C	1 & 2
	Polymeria marginata	Pendine		C	1 & 2
	Polymeria subhirsuta	Konka		C	1 & 2
	Xenostegia tridentata	Konka[2]		C	1 & 2
Cucurbitaceae	*Cucumis althaeoides*	Brokera		C	1 & 2
	Cucumis melo	Tarrant		C	2
Cyperaceae	*Abildgaardia ovata*	Pendine, Konka		C	2
	Bulbostylis barbata	Tarrant		C	2
	Cyperus aquatilis	Konka		C	1&2
	Cyperus breviculmis	Konka		C	1&2
	Cyperus carinatus	Old Doomadgee, Konka[2]		C	1&2
	Cyperus conicus	Brokera[2], Konka[2]		C	1&2
	Cyperus difformis	Bundella, Pendine[2]		C	1&2

Family	Taxon	Properties	Weed	Status	Data Source
	Cyperus fucosus	Konka[2]		C	1&2
	Cyperus iria	Pendine		C	2
	Cyperus javanicus	Troutbeck, Pendine[2]		C	1&2
	Cyperus procerus	Brokera, Konka[2]		C	1&2
	Eleocharis geniculata	Bundella		C	1&2
	Eleocharis philippinensis	Konka		C	1&2
	Fimbristylis dichotoma	Pendine		C	1&2
	Fimbristylis littoralis	Konka[2], Pendine[2]		C	1&2
	Fimbristylis modesta	Konka		C	1&2
	Fimbristylis oxystachya	Konka		c	1
	Fimbristylis quinquangularis	Pendine		C	2
	Fimbristylis rara	Brokera[2], Konka[2]		C	1&2
	Fimbristylis velata	Old Doomadgee, Troutbeck, Konka[2]		C	1&2
	Fuirena arenosa	Konka, Pendine[2]		C	1&2
	Fuirena ciliaris	Konka, Pendine[2]		C	1&2
	Lipocarpha microcephala	Pendine		C	2
	Rhynchospora affinis	Konka[2]		C	1&2
	Rhynchospora longisetis	Konka		C	1&2
	Rhynchospora subtenuifolia	Konka[2]		C	1&2
	Schoenoplectus subulatus	Pendine		C	2
	Scleria brownii	Konka[2]		C	1&2
	Scleria rugosa	Konka		C	1&2
Droseraceae	*Drosera angustifolia*	Konka[2]		C	1&2
	Drosera indica	Konka		C	1&2
	Drosera lanata	Konka[2]		C	1&2
Ebenaceae	*Diospyros humilis*	Konka, Brokera		C	1&2
Elatinaceae	*Bergia pusilla*	Konka		C	1&2
Eriocaulaceae	*Eriocaulon depressum*	Konka		C	1&2
	Eriocaulon fistulosum	Konka		C	1&2
	Eriocaulon nanum	Konka		C	1&2

Family	Taxon	Properties	Weed	Status	Data Source
Euphorbiaceae	*Euphorbia mitchelliana*	Brokera, Konka[2]		C	1&2
	Euphorbia sp. (Georgetown D.Hassall 7631)	Brokera[2], Konka[2]		C	1&2
	Excoecaria ovalis	Bundella		C	1&2
	Aeschynomene americana	Tarrant	*		1
Fabaceae	*Aeschynomene aspera*	Pendine[2]		C	1&2
	Aphyllodium biarticulatum	Brokera, Konka[2]		C	1&2
	Bossiaea bossiaeoides	Konka		c	1
	Canavalia rosea	Bundella		C	1&2
	Clitoria ternatea	Pendine	Y		2
	Crotalaria brevis	Brokera, Konka[2]		C	1&2
	Crotalaria medicaginea	Bundella		c	1
	Crotalaria medicaginea var. neglecta	Bundella		C	2
	Crotalaria montana	Konka, Tarrant		c	1
	Crotalaria montana var. exserta	Tarrant		C	2
	Crotalaria novae-hollandiae subsp. lasiophylla	Pendine		C	2
	Crotalaria novae-hollandiae subsp. novae-hollandiae	Tarrant		C	2
	Crotalaria verrucosa	Pendine[1]		C	1&2
	Cullen badocanum	Troutbeck		C	1&2
	Cullen cinereum	Brokera, Konka[2]		C	1&2
	Desmodium filiforme	Konka, Pendine		C	1&2
	Desmodium muelleri	Tarrant		C	2
	Desmodium trichostachyum	Konka		C	1&2
	Flemingia pauciflora	Pendine		C	2
	Indigofera colutea	Bundella, Pendine[2], Tarrant[2]		C	1&2
	Indigofera haplophylla	Pendine[2]		C	1&2
	Indigofera linifolia	Konka, Troutbeck		C	1&2
	Sesbania brachycarpa	Pendine		C	2

Family	Taxon	Properties	Weed	Status	Data Source
	Sesbania cannabina	Konka		c	1
	Sesbania cannabina var. cannabina	Tarrant, Konka, Brokera		C	2
	Stylosanthes hamata	Pendine[2], Konka[2]	Y		1&2
	Tephrosia brachyodon	Bundella, Brokera		c	1
	Tephrosia brachyodon var. longifolia	Konka, Bundella, Brokera		C	2
	Tephrosia leptoclada	Pendine[2]		C	1&2
	Tephrosia pumila	Bundella, Tarrant[2]		C	1&2
	Tephrosia remotiflora	Konka		c	1
	Tephrosia sp. (Barkly Downs S.L.Everist 3384)	Brokera, Konka[2]		C	1&2
	Tephrosia sp. (Mt Isa P.L.Harris 277)	Pendine[2]		C	1&2
	Vigna lanceolata	Pendine[1]		C	1&2
	Zornia muriculata subsp. angustata	Konka		C	2
	Zornia prostrata var. prostrata	Pendine, Konka		C	2
	Schenkia australis	Konka		c	1
Gentianaceae	*Goodenia byrnesii*	Konka		C	1&2
Goodeniaceae	*Goodenia chthonocephala*	Konka		C	1&2
	Goodenia lamprosperma	Pendine[2]		C	1&2
	Goodenia pilosa	Konka[2]		C	1&2
	Goodenia purpurascens	Pendine[2], Troutbeck[2]		C	1&2
	Goodenia strangfordii	Pendine		C	2
	Velleia macrocalyx	Troutbeck		C	1&2
	Myriophyllum dicoccum	Pendine[2]		C	1&2
Haloragaceae	*Myriophyllum implicatum*	Pendine, Konka		C	1&2
Hydrocharitaceae	*Vallisneria caulescens*	Pendine[2]		C	1&2
Hydroleaceae	*Basilicum polystachyon*	Pendine		C	2

Family	Taxon	Properties	Weed	Status	Data Source
Lamiaceae	*Clerodendrum floribundum*	Tarrant		C	2
	Clerodendrum inerme	Troutbeck, Tarrant		C	1&2
	Mesosphaerum suaveolens	Pendine[2]	Y		1&2
	Vitex rotundifolia	Konka		c	1
	Vitex trifolia var. subtrisecta	Tarrant,		C	2
	Vitex trifolia var. trifolia	Pendine,		C	2
	Cassytha filiformis	Old Doomadgee, Konka[2]		C	1&2
Lauraceae	*Thysanotus chinensis*	Konka[2]		C	1&2
Loganiaceae	*Mitrasacme multicaulis*	Konka[2]		C	1&2
	Mitrasacme prolifera	Konka		C	1&2
	Amyema conspicua	Troutbeck		c	1
Loranthaceae	*Amyema conspicua subsp. conspicua*	Troutbeck		C	2
	Amyema villiflora	Konka		c	1
	Lysiana maritima	Bundella, Tarrant[2]		C	1&2
	Lysiana spathulata	Brokera		c	1
	Lysiana spathulata subsp. spathulata	Konka, Brokera		C	2
	Lysiana subfalcata	Troutbeck, Konka, Brokera, Tarrant[2]		C	1&2
	Ammannia baccifera	Konka		c	1
Lythraceae	*Nesaea muelleri*	Konka		C	1&2
	Abutilon hannii	Tarrant		c	1
Malvaceae	*Gossypium australe*	Pendine		C	2
	Hibiscus leptocladus	Konka[2], Pendine[2]		C	1&2
	Hibiscus meraukensis	Tarrant[2]		C	1&2
	Hibiscus panduriformis	Pendine		C	2
	Hibiscus tiliaceus	Konka		c	1
	Malvastrum americanum	Pendine[2]	Y		1&2
	Sida	Brokera[2], Konka[2]		C	1&2
	Sida cordifolia	Pendine	Y		1&2
	Sida spinosa	Tarrant	Y		1&2

Family	Taxon	Properties	Weed	Status	Data Source
	Thespesia populnea	Tarrant		C	2
	Thespesia populneoides	Troutbeck, Tarrant[1]		C	1&2
	Marsilea	Konka, Bundella		C	1&2
Marsileaceae	*Melia azedarach*	Konka, Brokera		C	1&2
Meliaceae	*Owenia reticulata*	Pendine[2], Tarrant[2]		C	1&2
	Tinospora smilacina	Konka[1], Konka[2]		C	1&2
Menispermaceae	*Nymphoides crenata*	Bundella, Troutbeck[2]		C	1&2
Menyanthaceae	*Nymphoides exiliflora*	Konka		C	1&2
	Nymphoides indica	Konka		c	1
	Acacia dimidiata	Konka		c	1
Mimosaceae	*Acacia gonoclada*	Konka		c	1
	Acacia hammondii	Konka, Pendine[2]		C	1&2
	Acacia holosericea	Old Doomadgee, Konka		C	1&2
	Acacia lamprocarpa	Konka, Brokera, Troutbeck[1]		C	1&2
	Acacia leptocarpa	Troutbeck, Konka		C	2
	Acacia monticola	Pendine[2]		C	1&2
	Acacia nuperrima	Old Doomadgee, Konka, Troutbeck, Pendine[2]		C	1&2
	Acacia platycarpa	Konka		c	1
	Acacia stenophylla	Tarrant		C	2
	Acacia torulosa	Konka, Pendine, Old Doomadgee		C	1&2
	Acacia umbellata	Brokera, Old Doomadgee, Konka[2]		C	1&2
	Acacia victoriae	Pendine		C	2
	Cathormion umbellatum subsp. moniliforme	Tarrant		C	2
	Neptunia gracilis forma gracilis	Tarrant		C	2
	Neptunia monosperma	Tarrant[2]		C	1&2
	Vachellia farnesiana	Konka[1], [2], Pendine[2]	Y		1&2
	Vachellia sutherlandii	Pendine		C	2
	Ficus aculeata	Bundella, Konka		c	1
Moraceae	*Ficus aculeata var. aculeata*	Bundella		C	2

Family	Taxon	Properties	Weed	Status	Data Source
Myoporaceae	*Myoporum acuminatum*	Brokera, Bundella, Konka[2], Tarrant[2]		C	1&2
	Aegiceras corniculatum	Konka[1], [2]		C	1&2
Myrsinaceae	*Asteromyrtus symphyocarpa*	Konka, Tarrant[1]		C	1&2
Myrtaceae	*Calytrix brownii*	Pendine		C	1&2
	Corymbia bella	Konka[1]		C	1&2
	Corymbia confertiflora	Pendine		C	1&2
	Corymbia curtipes	Pendine		C	2
	Corymbia polycarpa	Pendine[1]		C	1&2
	Eucalyptus camaldulensis	Pendine, Konka		c	1
	Eucalyptus microtheca	Pendine		C	2
	Eucalyptus miniata	Pendine		C	1&2
	Eucalyptus pruinosa	Konka		c	1
	Melaleuca acacioides	Troutbeck, Konka, Old Doomadgee[2], Bundella[2]		C	1&2
	Melaleuca citrolens	Konka		C	1&2
	Melaleuca dealbata	Konka		c	1
	Melaleuca leucadendra	Brokera, Pendine[1], Konka[2]		C	1&2
	Melaleuca nervosa	Troutbeck, Konka[1]		C	1&2
	Melaleuca stenostachya	Konka, Old Doomadgee		C	1&2
	Melaleuca viridiflora	Troutbeck, Old Doomadgee, Konka		c	1
	Melaleuca viridiflora var. viridiflora	Troutbeck, Konka, Old Doomadgee		C	2
	Boerhavia mutabilis	Brokera, Konka[2]		C	1&2
Nymphaeaceae	*Nymphaea violacea*	Konka[1], Pendine[2]		C	1&2
	Jasminum didymum	Bundella		c	1
Oleaceae	*Jasminum didymum subsp. didymum*	Bundella		C	2
	Ludwigia perennis	Konka[2]		C	1&2
Onagraceae	*Opilia amentacea*	Brokera, Konka		C	1&2

Family	Taxon	Properties	Weed	Status	Data Source
Pandanaceae	*Pandanus spiralis*	Tarrant, Bundella		C	1&2
	Passiflora foetida	Konka1, Pendine[2], Tarrant[2]	Y		1&2
Passifloraceae	*Melhania oblongifolia*	Konka		c	1
Pentapetaceae	*Melhania ovata*	Brokera, Konka[2]		C	1&2
Phyllanthaceae	*Breynia oblongifolia*	Tarrant		C	2
	Phyllanthus carpentariae	Konka,		C	2
	Phyllanthus exilis	Troutbeck		C	2
	Phyllanthus hebecarpus			c	1
	Phyllanthus maderaspatensis			C	1&2
	Phyllanthus minutiflorus	Konka[2]		C	1&2
	Phyllanthus sulcatus	Konka, Pendine[2]		C	1&2
	Phyllanthus virgatus			C	1&2
	Poranthera microphylla	Konka[2]		C	1&2
	Sauropus trachyspermus	Konka		C	1&2
	Petalostigma pubescens	Konka		c	1
Picrodendraceae	*Alloteropsis semialata*	Konka[2]		C	1&2
Poaceae	*Aristida holathera var. holathera*	Tarrant		C	2
	Aristida hygrometrica	Pendine[2]		C	1&2
	Aristida latifolia	Tarrant[2]		C	1&2
	Bothriochloa decipiens	Pendine		c	1
	Cenchrus echinatus	Tarrant	Y		2
	Chamaeraphis hordeacea	Pendine[2]		C	1&2
	Chionachne cyathopoda	Pendine[2]		C	1&2
	Chloris lobata	Pendine[1], Tarrant[2]		C	1&2
	Chloris pectinata	Konka[1], [2]		C	1&2
	Chrysopogon elongatus	Tarrant[1], Wills Developmental Road[1], Konka[2], Pendine[2]		C	1&2
	Dactyloctenium radulans	Tarrant[2]		C	1&2
	Dichanthium sericeum	Pendine[2]		C	1&2
	Dichanthium sericeum subsp. polystachyum	Tarrant		C	2
	Digitaria nematostachya	Konka[2]		C	1&2
	Dinebra neesii	Tarrant		C	2
	Diplachne fusca var. fusca	Konka, Brokera		C	2
	Ectrosia agrostoides	Konka[2]		C	1&2
	Ectrosia danesii	Konka[2], Tarrant[2]		C	1&2
	Ectrosia schultzii	Brokera[2], Konka[2], Pendine[2]		C	1&2
	Elionurus citreus	Troutbeck		C	1&2
	Eragrostis concinna	Konka		C	1&2
	Eragrostis cumingii	Pendine*		C	1&2
	Eragrostis exigua	Troutbeck		C	2
	Eragrostis fallax	Konka		C	1&2
	Eragrostis interrupta	Pendine		C	2
	Eragrostis pubescens	Konka		C	1&2
	Eragrostis speciosa	Pendine[1]		C	1&2
	Eragrostis stagnalis	Pendine,		C	2
	Eriachne glauca	Konka[2]		C	1&2
	Eriachne melicacea	Konka[2], Pendine[2]		C	1&2
	Eriachne obtusa	Tarrant		C	2
	Eriachne stipacea	Konka		C	1&2
	Eriochloa australiensis	Tarrant		C	2
	Eriochloa crebra	Brokera[2], Konka[2], Tarrant[2]		C	1&2
	Eulalia aurea	Konka[2]		C	1&2
	Heterachne abortiva	Konka[2]		C	1&2
	Heterachne gulliveri	Konka		C	1&2
	Heteropogon contortus	Konka		C	1&2
	Hygrochloa cravenii	Konka, Pendine		C	1&2
	Ischaemum fragile	Konka		C	1&2
	Mnesithea formosa	Konka		C	1&2

Family	Taxon	Properties	Weed	Status	Data Source
	Ophiuros exaltatus	Wills Developmental Road[1], Pendine[2]		C	1&2
	Panicum laevinode	Konka[2], Tarrant[2]		C	1&2
	Panicum mindanaense	Konka, Brokera[2], Pendine[2]		C	1&2
	Paspalidium distans	Pendine		C	2
	Paspalidium rarum	Pendine[2], Tarrant[2]		C	1&2
	Perotis rara	Pendine[2], Tarrant[2]		C	1&2
	Phragmites karka	Troutbeck		C	1&2
	Pseudopogonatherum contortum	Troutbeck[2], Konka[2]		C	1&2
	Sacciolepis indica	Konka[2]		C	1&2
	Sarga plumosum	Troutbeck[2]		C	1&2
	Schizachyrium fragile	Pendine[2]		C	1&2
	Schizachyrium pseudeulalia	Troutbeck		C	2
	Sehima nervosum	Konka		C	1&2
	Setaria queenslandica	Konka[2]		C	1&2
	Spinifex longifolius	Troutbeck		C	1&2
	Thaumastochloa brassii	Konka		C	1&2
	Thaumastochloa major	Pendine[2]		C	1&2
	Thaumastochloa pubescens	Konka[2]		C	1&2
	Urochloa piligera	Pendine		c	1
	Urochloa polyphylla	Konka[2]		C	1&2
	Urochloa subquadripara	Tarrant	Y		2
	Vacoparis laxiflorum	Pendine		C	2
	Xerochloa barbata	Tarrant[2]		C	1&2
Polygalaceae	*Polygala difficilis*	Konka[2]		C	1&2
	Polygala exsquarrosa	Konka[2]		C	1&2
	Polygala linariifolia	Konka		C	1&2
	Polygala longifolia	Troutbeck		C	2
	Polygala stenoclada	Konka[2]		C	1&2
	Persicaria attenuata	Konka		c	1

Family	Taxon	Properties	Weed	Status	Data Source
Polygonaceae	*Calandrinia quadrivalvis*	Konka, Brokera[2]		C	1&2
Portulacaceae	*Calandrinia spergularina*	Brokera[2], Konka[2]		C	1&2
	Portulaca filifolia	Konka		c	1
Potamogetonaceae	*Grevillea parallela*	Konka		c	1
Proteaceae	*Hakea arborescens*	Konka[1], Pendine[2]		C	1&2
	Alphitonia pomaderroides	Konka		C	2
Rhamnaceae	*Colubrina asiatica*	Konka		c	1
	Ziziphus mauritiana	Pendine	Y		1&2
	Bruguiera exaristata	Bundella		C	1&2
Rhizophoraceae	*Ceriops tagal*	Konka[1], Bundella		C	1&2
	Rhizophora stylosa	Bundella		C	1&2
	Dentella browniana	Pendine[2]		C	1&2
Rubiaceae	*Oldenlandia galioides*	Konka, Pendine[2]		C	1&2
	Pavetta brownii	Brokera		c	1
	Pavetta brownii var. brownii	Konka, Brokera		C	2
	Psydrax attenuata	Tarrant		C	2
	Psydrax paludosa	Konka[2]		C	1&2
	Spermacoce brachystema	Konka[2]		C	1&2
	Spermacoce latimarginata	Brokera, Tarrant[1], Konka[2]		C	1&2
	Spermacoce omissa	Pendine[2]		C	1&2
	Timonius timon	Konka		c	1
	Exocarpos latifolius	Konka, Tarrant[2]		C	1&2
Santalaceae	*Santalum lanceolatum*	Konka[1], Troutbeck, Tarrant[2]		C	1&2
	Cardiospermum halicacabum	Brokera	*		1
Sapindaceae	*Cardiospermum halicacabum var. halicacabum*	Pendine, Konka, Brokera	Y		2
	Dodonaea lanceolata	Konka		c	1
	Dodonaea lanceolata var. lanceolata	Konka		C	2
	Dodonaea oxyptera	Konka, Brokera		C	1&2
	Dodonaea platyptera	Troutbeck, Konka[1], Tarrant[2]		C	1&2

Family	Taxon	Properties	Weed	Status	Data Source
	Bacopa floribunda	Konka[2]		C	1&2
	Buchnera urticifolia	Konka[2]		C	1&2
	Lindernia	Konka[2]		C	1&2
	Lindernia sp. (Hann River J.R.Clarkson 7953)	Konka[2], Pendine[2]		C	1&2
	Lindernia subulata	Konka		C	1&2
	Microcarpaea minima	Pendine, Konka[2]		C	1&2
	Peplidium maritimum	Bundella		C	1&2
	Rhamphicarpa australiensis	Pendine		NT	1&2
	Striga curviflora	Konka[2]		C	1&2
	Physalis angulata		Y		1&2
Solanaceae	*Corchorus aestuans*	Old Doomadgee, Konka[2]		C	1&2
	Corchorus sidoides subsp. vermicularis	Konka		C	2
	Grewia retusifolia	Brokera, Konka[2]		C	1&2
	Triumfetta pannosa	Brokera, Bundella, Konka		C	1&2
	Stackhousia intermedia	Konka[2]		C	1&2
Stackhousiaceae	*Stackhousia viminea*	Konka		C	1&2
	Brachychiton diversifolius	Brokera, Konka		c	1
Sterculiaceae	*Brachychiton diversifolius subsp. diversifolius*	Konka, Brokera		C	2
	Stylidium capillare	Konka[2]		C	1&2
Stylidiaceae	*Thecanthes sanguinea*	Brokera, Konka[2]		C	1&2
Thymelaeaceae	*Celtis paniculata*	Konka		c	1
	Celtis philippensis	Brokera, Konka		c	1
	Celtis philippensis var. philippensis	Konka, Brokera		C	2
Ulmaceae	*Hybanthus enneaspermus*	Bundella		C	1&2
Violaceae	*Tribulus cistoides*	Tarrant		C	2
Zygophyllaceae					

Rare afternoon glory.

Aerial Tide.

Appendix 3:
Recorded Animal Species With The Nijinda Durlga IPA

Information in this appendix was collated from WildNet database and BirdLife Australia bird atlas records.

Family	Scientific Name	Common Name	IPA Properties	NCA Status	EPBC Status
Amphibian					
Bufonidae	*Rhinella marina**	cane toad	Konka		
Birds					
Accipitridae	*Accipiter fasciatus*	brown goshawk	Pendine, Konka, Troutbeck, Tarrant		
Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar	Pendine, Konka		
Anatidae	*Anas gracilis*	grey teal	Tarrant		
Anatidae	*Anas superciliosa*	Pacific black duck	Old Doomadgee, Pendine, Tarrant		
Anhingidae	*Anhinga novaehollandiae*	Australasian darter	Old Doomadgee, Pendine, Troutbeck, Tarrant		
Anseranatidae	*Anseranas semipalmata*	magpie goose	Konka		
Motacillidae	*Anthus novaeseelandiae*	Australasian pipit	Tarrant		
Psittacidae	*Aprosmictus erythropterus*	red-winged parrot	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
Accipitridae	*Aquila audax*	wedge-tailed eagle	Old Doomadgee, Pendine, Troutbeck, Tarrant		
Ardeidae	*Ardea ibis*	cattle egret	Konka		
Ardeidae	*Ardea intermedia*	intermediate egret	Old Doomadgee, Konka, Brokera		
Ardeidae	*Ardea modesta*	eastern great egret	Old Doomadgee, Pendine, Konka, Tarrant		
Ardeidae	*Ardea pacifica*	white-necked heron	Old Doomadgee, Pendine, Konka, Troutbeck, Bundella		
Otididae	*Ardeotis australis*	Australian bustard	Old Doomadgee, Pendine, Tarrant		
Artamidae	*Artamus cinereus*	black-faced woodswallow	Old Doomadgee, Konka, Tarrant		
Artamidae	*Artamus leucorynchus*	white-breasted woodswallow	Pendine, Tarrant		
Anatidae	*Aythya australis*	hardhead	Pendine, Konka, Tarrant		
Burhinidae	*Burhinus grallarius*	bush stone-curlew	Pendine, Konka		
Ardeidae	*Butorides striata*	striated heron	Old Doomadgee, Troutbeck		

Family	Scientific Name	Common Name	IPA Properties	NCA Status	EPBC Status
Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo	Pendine		
Cacatuidae	*Cacatua sanguinea*	little corella	Old Doomadgee, Troutbeck, Tarrant		
Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper	Tarrant		
Scolopacidae	*Calidris ferruginea*	curlew sandpiper	Old Doomadgee, Konka, Brokera, Tarrant		
Scolopacidae	*Calidris ruficollis*	red-necked stint	Old Doomadgee		
Scolopacidae	*Calidris tenuirostris*	great knot	Tarrant		
Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo	Old Doomadgee, Pendine, Troutbeck, Tarrant		
Cuculidae	*Centropus phasianinus*	pheasant coucal	Old Doomadgee, Pendine, Konka		
Alcedinidae	*Ceyx azureus*	azure kingfisher	Pendine, Troutbeck		
Cuculidae	*Chalcites minutillus minutillus*	little bronze-cuckoo	Konka, Brokera		
Charadriidae	*Charadrius mongolus*	lesser sand plover	Old Doomadgee		
Charadriidae	*Charadrius ruficapillus*	red-capped plover	Old Doomadgee, Tarrant		
Anatidae	*Chenonetta jubata*	Australian wood duck	Pendine		
Laridae	*Chroicocephalus novaehollandiae*	silver gull	Old Doomadgee, Troutbeck, Tarrant		
Accipitridae	*Circus assimilis*	spotted harrier	Konka, Tarrant		
Meliphagidae	*Cissomela pectoralis*	banded honeyeater	Pendine		
Cisticolidae	*Cisticola exilis*	golden-headed cisticola	Pendine, Tarrant		
Cisticolidae	*Cisticola juncidis laveryi*	zitting cisticola	Tarrant		
Climacteridae	*Climacteris melanura*	black-tailed treecreeper	Pendine		
Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush	Pendine		
Meliphagidae	*Conopophila rufogularis*	rufous-throated honeyeater	Pendine		
Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant, Bundella		
Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike	Old Doomadgee, Pendine, Konka, Bundella		
Corvidae	*Corvus bennetti*	little crow	Pendine		
Corvidae	*Corvus coronoides*	Australian raven	Pendine, Troutbeck, Tarrant		
Corvidae	*Corvus orru*	Torresian crow	Pendine, Konka		
Corvidae	*Corvus sp.*		Pendine		
Artamidae	*Cracticus nigrogularis*	pied butcherbird	Old Doomadgee, Pendine, Konka, Bundella, Tarrant		
Artamidae	*Cracticus tibicen*	Australian magpie	Pendine, Konka		
Anatidae	*Cygnus atratus*	black swan	Pendine, Konka		

Family	Scientific Name	Common Name	IPA Properties	NCA Status	EPBC Status
Halcyonidae	*Dacelo leachii*	blue-winged kookaburra	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
Neosittidae	*Daphoenositta chrysoptera*	varied sittella	Old Doomadgee, Pendine, Konka		
Anatidae	*Dendrocygna eytoni*	plumed whistling-duck	Pendine		
Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird	Pendine, Troutbeck, Tarrant		
Ardeidae	*Egretta garzetta*	little egret	Old Doomadgee, Pendine, Troutbeck, Bundella, Tarrant		
Ardeidae	*Egretta novaehollandiae*	white-faced heron	Old Doomadgee, Pendine, Troutbeck, Tarrant		
Ardeidae	*Egretta picata*	pied heron	Konka		
Accipitridae	*Elanus axillaris*	black-shouldered kite	Pendine		
Charadriidae	*Elseyornis melanops*	black-fronted dotterel	Old Doomadgee, Pendine, Konka, Tarrant		
Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater	Old Doomadgee, Troutbeck		
Cacatuidae	*Eolophus roseicapillus*	galah	Old Doomadgee, Pendine, Tarrant		
Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork	Old Doomadgee, Pendine, Konka, Troutbeck, Bundella, Tarrant	NT	
Burhinidae	*Esacus magnirostris*	beach stone-curlew	Old Doomadgee, Konka, Troutbeck	V	
Eurostopodidae	*Eurostopodus argus*	spotted nightjar	Old Doomadgee, Pendine, Konka		
Coraciidae	*Eurystomus orientalis*	dollarbird	Pendine		
Falconidae	*Falco berigora*	brown falcon	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant, Bundella		
Falconidae	*Falco cenchroides*	nankeen kestrel	Pendine, Tarrant		
Falconidae	*Falco longipennis*	Australian hobby	Pendine, Konka		
Laridae	*Gelochelidon nilotica*	gull-billed tern	Old Doomadgee		
Columbidae	*Geopelia cuneata*	diamond dove	Old Doomadgee, Pendine, Konka, Bundella		
Columbidae	*Geopelia humeralis*	bar-shouldered dove	Old Doomadgee, Pendine, Konka, Troutbeck, Bundella		
Columbidae	*Geopelia striata*	peaceful dove	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant, Bundella		
Acanthizidae	*Gerygone albogularis*	white-throated gerygone	Pendine, Konka, Troutbeck		
Acanthizidae	*Gerygone levigaster*	mangrove gerygone	Old Doomadgee, Konka, Troutbeck, Tarrant, Brokera		
Monarchidae	*Grallina cyanoleuca*	magpie-lark	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
Gruidae	*Grus antigone*	sarus crane	Pendine, Konka		
Gruidae	*Grus rubicunda*	brolga	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
Haematopodidae	*Haematopus longirostris*	Australian pied oystercatcher	Old Doomadgee, Troutbeck, Bundella, Tarrant		
Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant, Bundella		
Accipitridae	*Haliastur indus*	brahminy kite	Konka, Troutbeck, Tarrant		

Family	Scientific Name	Common Name	IPA Properties	NCA Status	EPBC Status
Accipitridae	*Haliastur sphenurus*	whistling kite	Old Doomadgee, Pendine, Konka, Tarrant, Bundella		
Accipitridae	*Hamirostra melanosternon*	black-breasted buzzard	Pendine		
Estrildidae	*Heteromunia pectoralis*	pictorella mannikin	Pendine	NT	
Accipitridae	*Hieraaetus morphnoides*	little eagle	Pendine, Konka		
Recurvirostridae	*Himantopus himantopus*	black-winged stilt	Tarrant		
Laridae	*Hydroprogne caspia*	Caspian tern	Old Doomadgee, Tarrant		
Jacanidae	*Irediparra gallinacea*	comb-crested jacana	Pendine, Konka		
Ardeidae	*Ixobrychus flavicollis*	black bittern	Pendine		
Campephagidae	*Lalage sueurii*	white-winged triller	Pendine, Tarrant		
Meliphagidae	*Lichmera indistincta*	brown honeyeater	Old Doomadgee, Pendine, Konka, Tarrant, Bundella		
Scolopacidae	*Limosa lapponica*	bar-tailed godwit	Old Doomadgee		
Scolopacidae	*Limosa limosa*	black-tailed godwit	Tarrant		
Accipitridae	*Lophoictinia isura*	square-tailed kite	Pendine	NT	
Anatidae	*Malacorhynchus membranaceus*	pink-eared duck	Old Doomadgee, Konka		
Maluridae	*Malurus coronatus*	purple-crowned fairy-wren	Pendine	V	
Maluridae	*Malurus lamberti*	variegated fairy-wren	Old Doomadgee, Pendine, Konka, Tarrant, Bundella		
Maluridae	*Malurus melanocephalus*	red-backed fairy-wren	Old Doomadgee, Pendine, Konka, Troutbeck		
Meliphagidae	*Manorina flavigula*	yellow-throated miner	Old Doomadgee, Konka, Tarrant		
Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater	Old Doomadgee, Pendine, Konka, Troutbeck		
Meliphagidae	*Melithreptus gularis laetior*	golden-backed honeyeater	Pendine	NT	
Psittacidae	*Melopsittacus undulatus*	budgerigar	Old Doomadgee, Pendine		
Meropidae	*Merops ornatus*	rainbow bee-eater	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant	Pendine, Tarrant		
Petroicidae	*Microeca fascinans*	jacky winter	Pendine		
Accipitridae	*Milvus migrans*	black kite	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
Alaudidae	*Mirafra javanica*	Horsfield's bushlark	Old Doomadgee, Konka, Tarrant		
Monarchidae	*Myiagra inquieta*	restless flycatcher	Old Doomadgee, Pendine, Konka, Tarrant		
Monarchidae	*Myiagra rubecula*	leaden flycatcher	Pendine		
Monarchidae	*Myiagra ruficollis*	broad-billed flycatcher	Konka, Brokera		
Meliphagidae	*Myzomela erythrocephala*	red-headed honeyeater	Old Doomadgee, Konka, Tarrant, Troutbeck		

Family	Scientific Name	Common Name	IPA Properties	NCA Status	EPBC Status
Estrildidae	*Neochmia phaeton*	crimson finch	Pendine		
Estrildidae	*Neochmia phaeton phaeton*	crimson finch	Tarrant		
Strigidae	*Ninox boobook*	southern boobook	Pendine, Troutbeck		
Strigidae	*Ninox connivens*	barking owl	Pendine, Konka, Troutbeck		
Scolopacidae	*Numenius madagascariensis*	eastern curlew	Old Doomadgee, Bundella, Tarrant	NT	
Scolopacidae	*Numenius phaeopus*	whimbrel	Bundella, Tarrant		
Ardeidae	*Nycticorax caledonicus*	Nankeen night-heron	Pendine, Troutbeck		
Cacatuidae	*Nymphicus hollandicus*	cockatiel	Pendine, Tarrant		
Columbidae	*Ocyphaps lophotes*	crested pigeon	Old Doomadgee, Pendine, Tarrant		
Oriolidae	*Oriolus sagittatus*	olive-backed oriole	Pendine		
Pachycephalidae	*Pachycephala lanioides*	white-breasted whistler	Konka, Tarrant, Brokera		
Pachycephalidae	*Pachycephala melanura*	mangrove golden whistler	Tarrant		
Pachycephalidae	*Pachycephala rufiventris*	rufous whistler	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
	Pandion cristatus	eastern osprey	Tarrant		
Pardalotidae	*Pardalotus striatus*	striated pardalote	Pendine, Konka, Tarrant		
Pelecanidae	*Pelecanus conspicillatus*	Australian pelican	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant, Bundella		
Hirundinidae	*Petrochelidon ariel*	fairy martin	Tarrant		
Hirundinidae	*Petrochelidon nigricans*	tree martin	Troutbeck, Tarrant		
Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant	Pendine		
Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant	Old Doomadgee, Pendine, Tarrant, Bundella		
Columbidae	*Phaps chalcoptera*	common bronzewing	Old Doomadgee, Pendine, Konka, Bundella		
Meliphagidae	*Philemon citreogularis*	little friarbird	Pendine, Konka		
Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill	Old Doomadgee		
Threskiornithidae	*Platalea regia*	royal spoonbill	Old Doomadgee, Konka, Tarrant		
Threskiornithidae	*Plegadis falcinellus*	glossy ibis	Pendine, Konka, Tarrant		
Podargidae	*Podargus strigoides*	tawny frogmouth	Pendine, Konka		
Podicipedidae	*Podiceps cristatus*	great crested grebe	Pendine, Konka		
Petroicidae	*Poecilodryas cerviniventris*	buff-sided robin	Pendine		
Estrildidae	*Poephila acuticauda*	long-tailed finch	Pendine, Konka, Brokera		
Estrildidae	*Poephila personata*	masked finch	Pendine		

Family	Scientific Name	Common Name	IPA Properties	NCA Status	EPBC Status
Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler	Old Doomadgee, Pendine, Konka		
Psittacidae	*Psitteuteles versicolor*	varied lorikeet	Pendine		
Ptilonorhynchidae	*Ptilonorhynchus nuchalis*	great bowerbird	Pendine, Troutbeck		
Meliphagidae	*Ptilotula flavescens*	yellow-tinted honeyeater	Pendine, Tarrant		
Meliphagidae	*Ptilotula plumulus*	grey-fronted honeyeater	Pendine		
Rhipiduridae	*Rhipidura albiscapa*	grey fantail	Pendine, Troutbeck		
Rhipiduridae	*Rhipidura dryas*	Arafura fantail	Pendine		
Rhipiduridae	*Rhipidura leucophrys*	willie wagtail	Old Doomadgee, Pendine, Konka, Troutbeck, Tarrant		
Rhipiduridae	*Rhipidura phasiana*	mangrove grey fantail	Old Doomadgee		
Rhipiduridae	*Rhipidura rufiventris*	northern fantail	Pendine		
Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo	Pendine		
Acanthizidae	*Smicrornis brevirostris*	weebill	Pendine		
Laridae	*Sternula albifrons*	little tern	Konka, Troutbeck, Brokera, Bundella, Tarrant	E	
Glareolidae	*Stiltia isabella*	Australian pratincole	Old Doomadgee		
Meliphagidae	*Stomiopera unicolor*	white-gaped honeyeater	Pendine, Troutbeck, Tarrant		
Corcoracidae	*Struthidea cinerea*	apostlebird	Pendine, Tarrant		
Estrildidae	*Taeniopygia bichenovii*	double-barred finch	Pendine, Konka, Troutbeck		
Threskiornithidae	*Threskiornis molucca*	Australian white ibis	Old Doomadgee, Pendine, Konka, Tarrant		
Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis	Old Doomadgee, Pendine		
Halcyonidae	*Todiramphus chloris*	collared kingfisher	Tarrant		
Halcyonidae	*Todiramphus pyrrhopygius*	red-backed kingfisher	Pendine		
Halcyonidae	*Todiramphus sanctus*	sacred kingfisher	Old Doomadgee, Pendine		
Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet	Old Doomadgee, Pendine, Konka, Troutbeck, Bundella		
Scolopacidae	*Tringa brevipes*	grey-tailed tattler	Tarrant		
Scolopacidae	*Tringa nebularia*	common greenshank	Old Doomadgee, Bundella, Tarrant		
Scolopacidae	*Tringa stagnatilis*	marsh sandpiper	Tarrant		
Turnicidae	*Turnix velox*	little button-quail	Pendine		
Charadriidae	*Vanellus miles*	masked lapwing	Pendine, Konka		
Timaliidae	*Zosterops luteus*	yellow white-eye	Old Doomadgee, Pendine, Tarrant		

Family	Scientific Name	Common Name	IPA Properties	NCA Status	EPBC Status
Mammals					
Canidae	*Canis lupus dingo*	dingo	Pendine		
Delphinidae	*Orcaella heinsohni*	Australian snubfin dolphin	Troutbeck	NT	
Macropodidae	*Macropus agilis*	agile wallaby	Pendine		
Macropodidae	*Onychogalea unguifera*	northern nailtail wallaby	Pendine		
Suidae	*Sus scrofa**	pig	Pendine		
Vespertilionidae	*Chalinolobus nigrogriseus*	hoary wattled bat	Pendine		
Reptiles					
Agamidae	*Amphibolurus gilberti*	Gilbert's dragon	Pendine		
Agamidae	*Diporiphora bilineata*	two-lined dragon	Pendine		
Chelidae	*Chelodina canni*	Cann's longneck turtle	Konka, Old Doomadgee		
Cheloniidae	*Chelonia mydas*	green turtle	Konka	V	V
Chelidae	*Chelodina rugosa*	northern snake-necked turtle	Konka, Old Doomadgee		
Elapidae	*Pseudechis australis*	king brown snake	Pendine		
Pygopodidae	*Lialis burtonis*	Burton's legless lizard	Pendine		

Goanna warming on concrete causeway.

Appendix 4:
Wetlands Included In The Directory Of Important Wetlands In Australia That Occur On The Proposed Nijinda Durlga IPA

DIWA Criteria for listing wetlands as nationally important:

1. **It is a good example of a wetland type occurring within a biogeographic region in Australia.**
2. **It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex.**
3. **It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail.**
4. **The wetland supports 1% or more of the national populations of any native plant or animal taxa.**
5. **The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level.**
6. **The wetland is of outstanding historical or cultural significance**

**** Note: fauna values for Southern Gulf Aggregation updated from BirdLife International's Important Bird Areas factsheet.***

Site	Gangalidda properties	Criteria for inclusion and significance	Description	Fauna values*
Southern Gulf Aggregation	Western quarter of aggregation occurs on Escott, Tarrant and Brokera	1,2,3,4,5,6 Largest continuous estuarine wetland of its type in northern Australia and one of three most important areas for shorebirds in Australia	Complex, continuous (262x30km) wetland system comprising marine intertidal flats, beaches, dunes, saline clay plains, tidal channels, estuaries, low plains, swamps and depressions. Both estuarine tides and massive freshwater flood events influence the wetland system. Inland catchments in the west of the system (relevant to the IPA area) include Moonlight and Lily creeks and the Nicholson and Albert rivers. Marine and estuarine habitats support seagrass and mangrove communities, with samphire communities characterising the extensive saline clay plains. Rushes and succulents dominate estuarine marshes and channels, and the wetlands and plains of the system's inland margins are vegetated with floodplain grass, chenopod sub-shrubs and a range of other grass and herb species.	Internationally important for shorebird species including: black-tailed godwit, great knot, eastern curlew, sharp-tailed sandpiper, lesser sand plover, grey-tailed tattler, little curlew, pied oystercatcher, broad-billed sandpiper, red-necked stint, black-winged stilt. Nationally important for the above species along with the bar-tailed godwit, greater sandplover, red-capped plover, Pacific golden plover, common greenshank, marsh sandpiper, terek sandpiper, curlew sandpiper, whimbrel, marsked lapwing and grey plover. 22 species listed under JAMBA and 31 species listed under CAMBA international agreements occur here. Green turtle, flatback turtle, hawksbill turtle, olive ridley turtle, leathery turtle and dugong occur in shallow marine areas, and the estuarine crocodile is common throughout.
Marless Lagoon Aggregation – QLD108	Entire extent occurs on IPA properties (Konka, Escott &, Pendine) and also extends onto Doomadgee	1,2,3 Characteristic example of a wetland of its type within the Gulf Plains bioregion. Seasonally abundant waterbird fauna.	Extensive (68x38km) wetland system comprising streamlines, drainage depressions, lakes and swamps. Mainly seasonal and semi-permanent to depths of 3m. Aquatic vegetation comprises *Nyphoides* spp. (marshworts), *Nymphaea gigantea* (giant waterlily) and *Ludwigia* spp. (water primroses), with a range of grass and sedge species dominating wetland margins and shallow waters. Tea-tree (*Melaleuca viridiflora*) - dominated swamps occur throughout, and woodlands of coolibah (*Eucalyptus coolibah*) and northern box (*E. tectifica*) fringe the wetlands.	Provides aquatic habitat for seasonally abundant waterbirds, including moulting black duck, grey teal and hardhead. Other waterbirds observed include pelicans, white-faced heron, white-necked heron, nankeen night heron, straw-necked ibis, comb-crested jacana, masked lapwing and black-winged stilt. White-bellied sea-eagles also recorded.

Site	Gangalidda properties	Criteria for inclusion and significance	Description	Fauna values*
Nicholson Delta Aggregation	Majority of delineated wetland extent occurs on Escott	1,2,3 Best example of wetland of its type in the southwestern portion of the southern Gulf of Carpentaria. Provides drought refuge for a range of waterbird species, as well as breeding, roosting, feeding and moulting habitat.	Rich complex of wetland systems (43x21km) including riverine channels and floodouts of the Nicholson, Gregory and Albert rivers and numerous minor streams, freshwater swamps, and estuarine tidal channels and claypans. Giant and blue waterlilies, marshworts and nardoo (*Marselia drummondii*) dominate aquatic vegetation, with chenopods (e.g. *Halosarcia* spp.) and salt-tolerant grass and sedge species occurring in saline areas. Sedges and a variety of sub-shrubs and grasses occur across large areas of the wetland, and river red gum (*E. camaldulensis*), coolibah and gutta-percha (*Excoecaria parviflora*) are common trees in riverine communities. Dense *Melaleuca viridiflora* and mangrove stands are another feature of the wetland system.	The seasonal wetlands provide drought refuge and habitat for herons, egrets, black-necked stork, ibises, black swan, duck and teal species, green pygmy goose, brolga, comb-crested jacana and masked lapwing. Australian freshwater and estuarine crocodiles are common in the area.
Wentworth Aggregation	Very small area of eastern limit of delineated wetland site extends onto Troutbeck (Massacre inlet on Troutbeck forms the eastern site boundary)	1,2,3 Best example of a wetland of its type occurring in the Doomadgee and Karumba plain sub-regions of the Gulf Plains bioregion. Provides seasonally rich waterfowl habitat and extensive wader habitat.	A complex aggregation of hydrologically-related alluvial and estuarine wetland systems (74x3-40km), which comprises the stream channels and floodouts of Gold, Settlement and other minor creeks, freshwater swamps and lakes, and coastal alluvial floodplains, saline claypans, tidal creeks and tidal flats. Waterlilies, marshworts, nardoo and other aquatic herbs and reeds occur in freshwater wetlands, and a ange of grasses and sub-shrubs dominate wetland margins. Coolibah, river red gum and gutta-percha r are common in riverine communities. Estuarine areas dominated by mangrove forests, low chenopod (e.g. *Halosarcia* spp.) shrubland, and salt-tolerant sedges and grasses. *Casuarina equisetifolia* and occasional dense stands of Pandanas occur in the coastal dunes and swales.	Site contains prime wader habitat, with flocks of 1000-5000 recorded in the area. Species include masked lapwing, eastern curlew, greenshank, marsh sandpiper, red knot and curlew sandpiper. Also important for waterbirds, with pacific black duck, brolga, egrets, terns, black-necked stork, pied stilts, Australian pelican, waders, and white-faced heron recorded. Pink-eared duck and Australasian shoveler were noted moulting. Estuarine crocodiles are common in the area.

Sunset at Gunamula.

EDGE DESIGNS: 0408 130 126