

YAWURU INDIGENOUS PROTECTED AREA

Walyjalajala nagulagabu birrangun buru

Plan of Management 2016 - 2026





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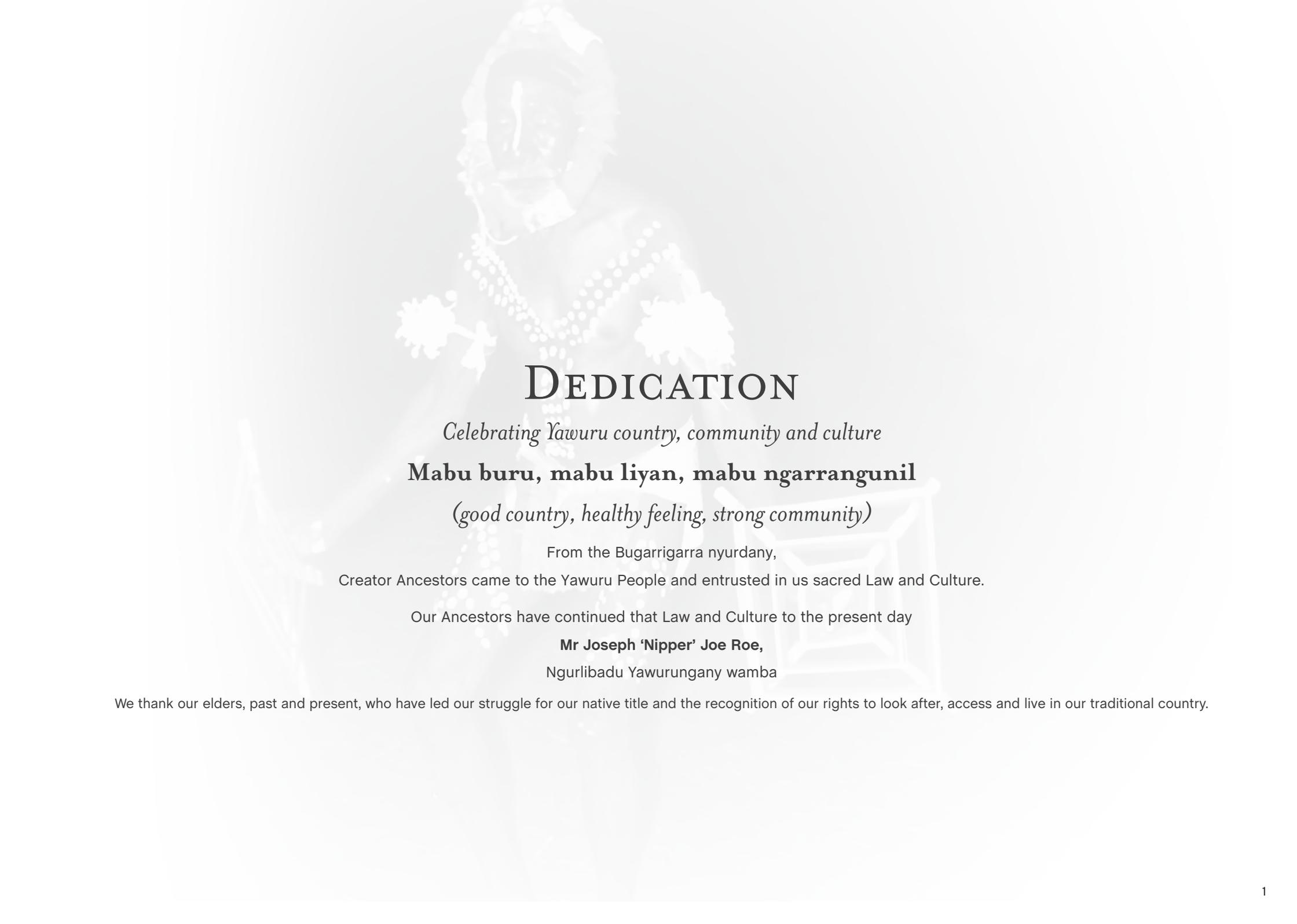
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All duty of care was taken to truly represent the views and desires of Yawuru people throughout this plan.

WARNING

This plan contains images, names and references to deceased Aboriginal people

Walyjalajala nagulagabu birrangan buru means - to look after the country from the sea to the land .



DEDICATION

Celebrating Yawuru country, community and culture

Mabu buru, mabu liyan, mabu ngarrangunil

(good country, healthy feeling, strong community)

From the Bugarrigarra nyurdany,

Creator Ancestors came to the Yawuru People and entrusted in us sacred Law and Culture.

Our Ancestors have continued that Law and Culture to the present day

Mr Joseph 'Nipper' Joe Roe,

Ngurlibadu Yawurungany wamba

We thank our elders, past and present, who have led our struggle for our native title and the recognition of our rights to look after, access and live in our traditional country.

ACKNOWLEDGEMENTS

This plan is the result of many years of work by the Yawuru community and the land and sea unit of Nyamba Buru Yawuru Ltd, firstly as part of their native title claim processes, and then through projects relating to the management of their country. There are too many to name but we thank all those who have contributed in some way to this commitment to looking after Yawuru country. We thank the staff of Nyamba Buru Yawuru, in particular those in the Land and Sea Unit, Dean Mathews, Sarah Yu, Julie Melbourne, Nathan Kay, Toby Munro and the Yawuru Country Managers for their support and contributions.

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In producing the plan we thank Belinda Oliver and Toby Munro for their GIS and mapping skills, Michael Dawson for his graphic design, and the Yawuru artists Martha Lee and Maxine Charlie for their wonderful work.

Sarah Yu, Julie Melbourne, Nathan Kay, Toby Munro and Dean Mathews prepared this plan with the assistance of the Yawuru Registered Native Title Body Corporate (RNTBC) Land and Sea Subcommittee.

ABBREVIATIONS

AQIS	Australian Quarantine Inspection Service	NTH.....	Native Title Holders
CAP.....	Conservation Action Planning, developed by The Nature Conservancy	PL	Pastoral Lease
DAFWA	WA Department of Agriculture and Food	POM.....	Plan of Management
DER.....	WA Department of Environmental Regulation	RBWG	Roebuck Bay Working Group
DSEWPAC	Department of Sustainability, Environment, Water, Population and Communities	RCM.....	Rangelands Condition Monitoring sites
PaW	WA Department of Parks and Wildlife	RNTBC.....	Registered Native Title Body Corporate
DoE	Department of Environment	RPS	Roebuck Plains station
DoW.....	WA Department of Water	TEK.....	Traditional Ecological Knowledge
EK.....	Environs Kimberley	TO.....	Traditional Owner
FESA.....	Fire and Emergency Services Authority	UOM	Use and Occupancy Mapping
GIS	Geo-spatial Information Systems	VCSRG.....	Vic and Chris Semeniuk Research Group
ICCA	Indigenous and Community Conserved Areas	WKICB.....	West Kimberley Integrated Cattle Businesses
ILC.....	Indigenous Land Corporation	WWF	World Wildlife Fund
ILUA	Indigenous Land Use Agreement	YCE	Yawuru Conservation Estate
IPA.....	Indigenous Protected Area		
IUCN	Indigenous Union for the Conservation of Nature		
LAT	Lowest Astronomical Tide		
KLC	Kimberley Land Council		
MPRA	WA Marine Park Reserves Authority		
MOLA	Multi-Objective Land Allocation		
NAILSMA.....	Northern Australian Indigenous Land and Sea Management Alliance		
NBY	Nyamba Buru Yawuru Ltd		
NGO.....	Non-Government Organisation		
NRM.....	Natural Resource Management		

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Yawuru Bilby surveying with partner organisation.



A Grevillea growing down by the Broome Port area.

Our Vision and Goals*

mabu liyan, mabu buru, mabu ngarrunguil — good feeling, healthy country, strong community

- *mabu liyan*: Liyan is the feelings we hold inside us, particularly when we are in our country.

Good liyan comes from our connection to our country, our ancestors and our way of life; it reflects our sense of belonging to Yawuru society.

Good liyan expresses our emotional strength, dignity and pride.

The guiding principle for good management of Yawuru country is that we as Yawuru have to maintain good, clear liyan with the country within the modern, ever-changing world.

- *mabu buru*: Our country is alive and our role is to protect it and ensure that the cultural stories (our ngan-ga), the spirit of the country and all the life it supports, are maintained.
- *mabu ngarrunguil*: Our people carry the knowledge of Yawuru country.

To protect our country we want:

- to have a strong community, a unified organisation and knowledgeable and skilled people who know and understand the country;
- to maintain our customary practices; and
- to help others understand and respect our relationship to country and how we feel about it.

Our Goals to achieve this vision are to:

- maintain our customary life;
- protect and manage our country;
- nurture our culture;
- provide opportunities for Yawuru people;
- foster understanding and respect from others; and
- engage Yawuru people as managers of our land and sea country

*from the Yawuru Cultural Management Plan

1. THE YAWURU PEOPLE & COUNTRY

1.1 Yawuru cultural landscape

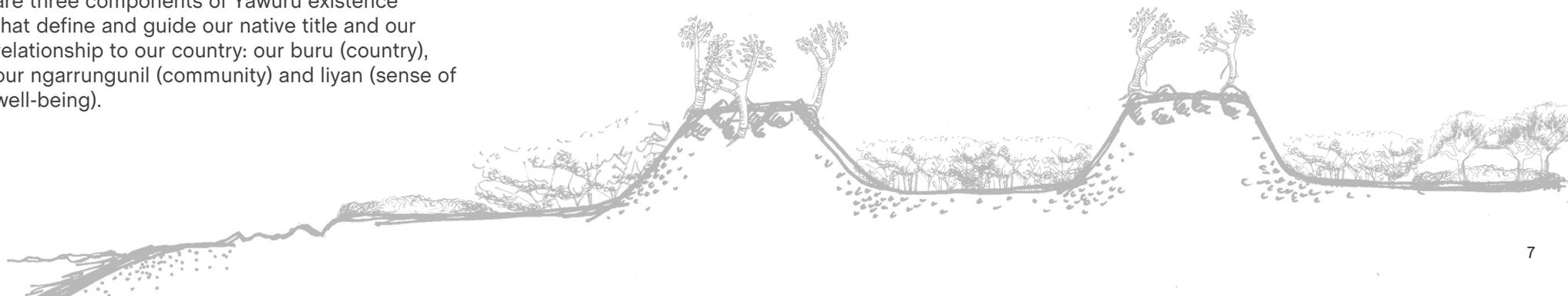
For thousands of years our ancestors have lived along the foreshores of Roebuck Bay, across the pindan plains, as far inland as Walan-garr, the Edgar Ranges, and along the fringes of the Great Sandy Desert. Our country is land and sea, moulded by the cycle of seasonal changes.

We are the native title-holders of this land, sharing cultural traditions with our neighbours. Created and given form by *Bugarrigarra*, our country is the source of our spirit, our culture, our language, and it is where our spirits return when we die. *Bugarrigarra* is the 'time before time' when the creative forces shaped and gave meaning and form to the landscape, giving the languages to the people within those landscapes and creating protocols and laws for living within this environment. *Bugarrigarra* is not an historic event, but when our world was created at the beginning of time. It is not detached from contemporary life. It continues to exist and is the spiritual force that shapes our cultural values and practices, our relationships with each other and our obligations and responsibilities within our community.

Within this broad framework of *Bugarrigarra* are three components of Yawuru existence that define and guide our native title and our relationship to our country: our buru (country), our ngarrungunil (community) and liyan (sense of well-being).



Stanley & Cissy Djiagween. Source: Leon Mead



NATIVE TITLE DETERMINATION WAD 6006 of 1998 & WAD 0223 of 2004

MAP 1

As amended by Orders of French J made 23 November 2006, 30 April 2007 and 9 May 2007 and of Branson, North and Mansfield JJ made 18 July 2008.

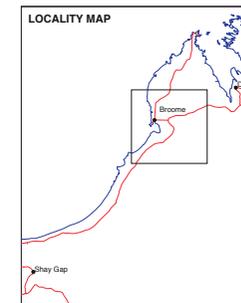
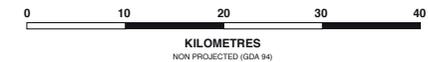
LEGEND

- SCHEDULE 3** AREAS WHERE NATIVE TITLE DOES NOT EXIST
- SCHEDULE 4** EXCLUSIVE NATIVE TITLE AREAS
- SCHEDULE 5** NON EXCLUSIVE NATIVE TITLE AREAS
- SCHEDULE 6** TIDAL NATIVE TITLE AREAS

AREA 2500 (PASTORAL LEASE 3114/0499) AND AREA 2501 (PASTORAL LEASE 3114/0635) ARE SUBJECT TO MULTIPLE SCHEDULES WITHIN THE DETERMINATION BUT ARE NOT DEPICTED AS SUCH ON THIS MAP. REFERENCE SHOULD BE MADE TO THE WRITTEN DESCRIPTION.

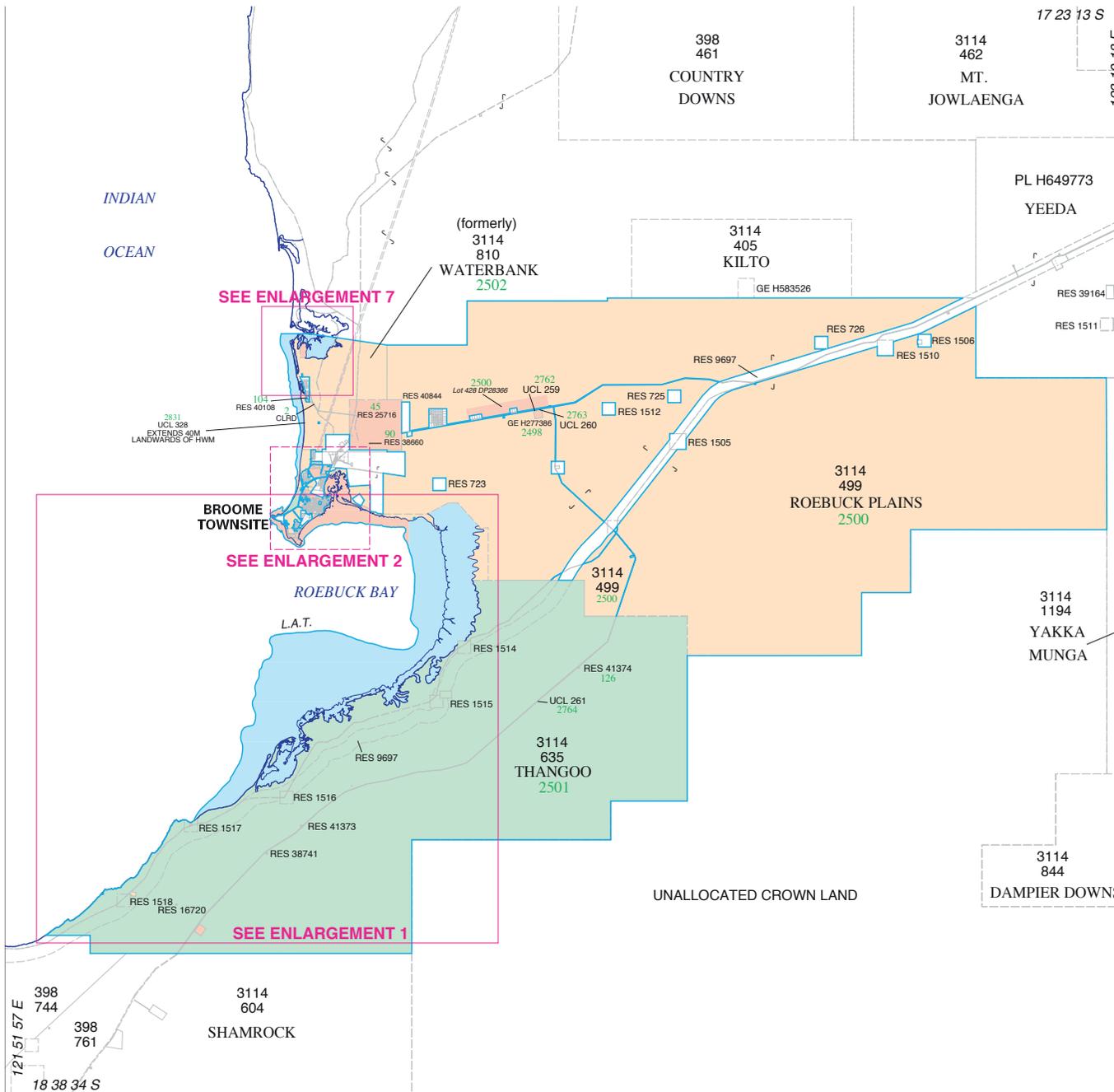
DETERMINATION AREA

2500 AREA NUMBER



PRODUCED 08/08/2008

CADASTRE SOURCE DOLA SCDB MAY 2001
OUR REF: G:\WAG\WAG006_08\DETERMINATION\AMENDED_ORDERS_210708\DND\DET_GDA
IN THE EVENT OF ANY DISCREPANCY BETWEEN THE AREAS DESCRIBED IN THE WRITTEN DETERMINATION
AND THE AREAS DEPICTED IN THIS PLAN THE WRITTEN DETERMINATION SHALL TAKE PREFERENCE
AS THE MAPS AND ENLARGEMENTS ARE INDICATIVE OF THE DETERMINATION AREA ONLY.
NATIVE TITLE CLAIM BOUNDARY INTERPOLATED FROM THE NATIONAL NATIVE TITLE TRIBUNAL REGISTER



Map1: Yawuru Native Title Determination Map.

1.2 Getting our country back – native title, the global agreement and the Yawuru Conservation estate

Since the first Europeans arrived on the west Kimberley coast, we have remained in our country, following our traditions. In the face of occupation and a harsh legislative regime that took our land and controlled our lives, we survived to establish our native title rights. Our native title claim was finally determined by the Full Federal Court in 2008. Under Western Law we became the holders of native title over some 530,000 hectares of land in and around Broome. Much of this land is determined as exclusive possession native title, while other parts, including the intertidal zones, are determined as non-exclusive native title.

Yawuru commenced negotiations with the Western Australian Government in 2006 and a Global Agreement was executed in February 2010. The resulting Indigenous Land Use Agreements being the Yawuru Area Agreement and the Yawuru Prescribed Body Corporate Agreement (ILUAs), were officially registered by the National Native Title Tribunal on 6 August 2010. The signatories to the ILUAs are the State of Western Australia, the Shire of Broome, the Yawuru Registered Native Title Body Corporate

(RNTBC), the Conservation Commission of Western Australia and others.

The Yawuru ILUAs are intended to balance the recognition and protection of Yawuru native title with the future development of Broome. For Yawuru their primary purpose is to safeguard culture, identity and the Yawuru way of life.

1.2.1 The Yawuru Conservation Estate (YCE)

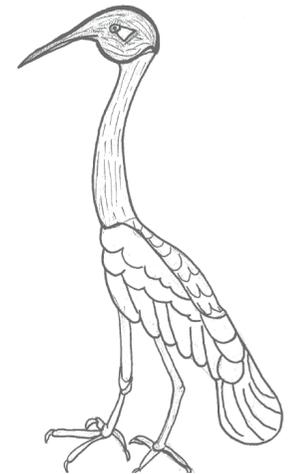
Under the ILUAs the Yawuru joint management YCE will be created to cover an area of 1018.96 square kilometres, including 100 kilometres-long coastal park. The Yawuru Cultural Management Plan (CMP) was developed first to inform the management of Yawuru lands and seas.

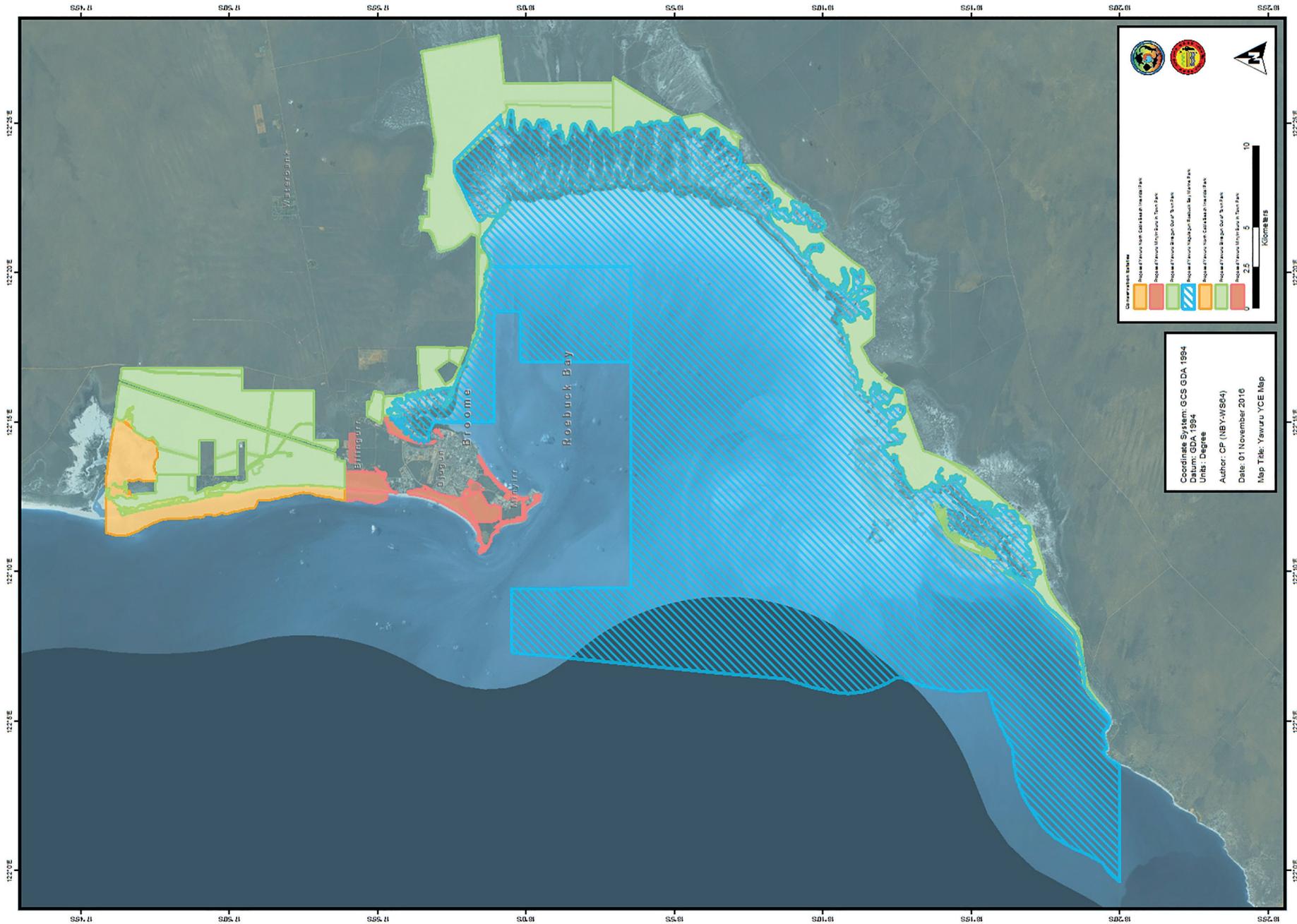
The YCE comprises:

- The Nagulagun Roebuck Bay Marine Park will be created as an “A” class Marine Reserve, vested in the Marine Parks Reserve Authority WA (MPRA) for joint management between Yawuru RNTBC and PaW through the Nagulagun joint management plan.
- The Birragun out of town Conservation Park will be created by a grant of conditional freehold to the Yawuru RNTBC for the purpose of *conservation, recreation and traditional and customary Aboriginal use and enjoyment and for the purposes of practising, sustaining and maintaining native title rights*



Minmin flower. Source: Sarah Yu





Map 2: The Yawuru Conservation Estate areas

and interests, and leased back to the State of WA for joint management between the Yawuru RNTBC and PaW in accordance with the Birragun joint management plan.

- The Minyirr Buru in town Conservation Park will be created as mainly “A” class reserves for the purpose of *conservation, recreation and traditional and customary Aboriginal use and enjoyment* with the management orders for the care, control and management of the Townsite areas to be placed jointly with the Shire of Broome (SOB) and the Yawuru RNTBC for joint management in accordance with the Minyirr Buru joint management plan.
- The Northern Cable Beach Conservation Park area will be created as “A” class reserve for the purpose of *conservation, recreation and traditional and customary Aboriginal use and enjoyment* with the management orders for the care, control and management of the area to be placed jointly with the Conservation Commission, the SOB and the Yawuru RNTBC for tri-partite management in accordance with the joint management plan. This Park is still to be given a Yawuru name.

Although there will be four Conservation Estate joint management plans they have been informed by and are consistent with the Yawuru Cultural Management Plan to ensure the parks will be managed as an interconnected land and sea scape.

A Yawuru Park Council is established under a Joint Management Agreement contained in the



Cissy Djiagween picking fruit at Minyirr Park. Source: Kate Golson

ILUAs and is responsible for the development, implementation, monitoring and evaluation of the joint management plans for the Parks. Its membership is made up of representatives of the three partner organisations. Voting is in accordance with the relevant joint management jurisdiction.

Yawuru Rangers are employed at PaW as part of the joint management team to undertake the on-ground management works on behalf of the Partners.

1.3 Yawuru Governance

Following the ILUAs the Yawuru Corporate Group was formed. The Yawuru RNTBC, which has the responsibility to hold and protect our native

title rights and interests, consists of 12 positions for Yawuru Directors made up of maximum 6 Yawuru-nominated law bosses and 6 elected positions. The RNTBC Board appoints the Yawuru representatives of the Yawuru Park Council.

Nyamba Buru Yawuru Ltd (NBY), a fully owned subsidiary of the RNTBC is the operational arm of the governance structure. It holds Yawuru’s land assets, executes the Yawuru strategic plan and provides a range of programs and services to assist to strengthen our community and care for our country and culture.

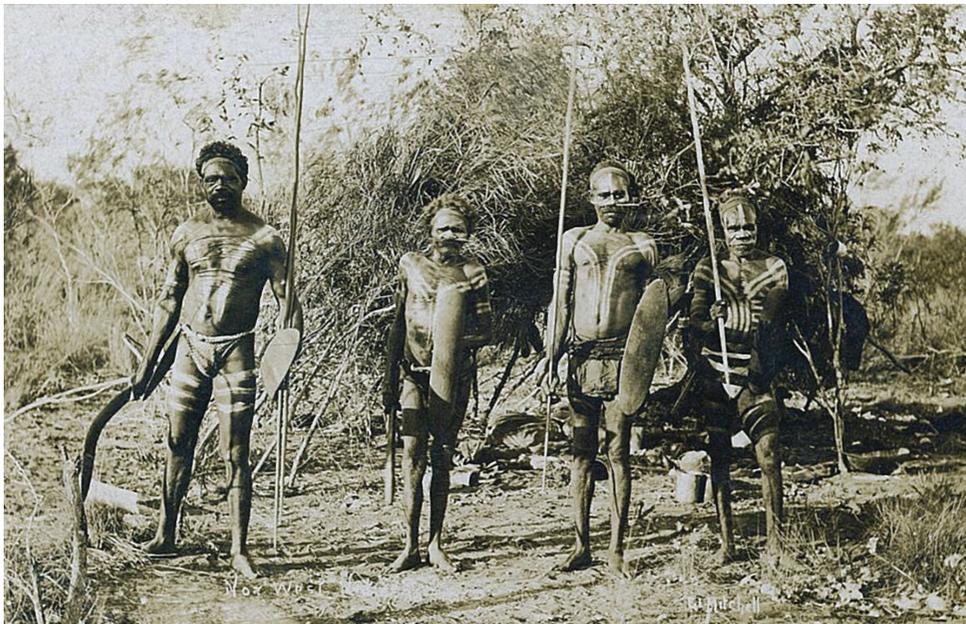
Staff are employed by NBY. The NBY Board comprises 5 Directors; 3 Yawuru and 2 Independent Directors.



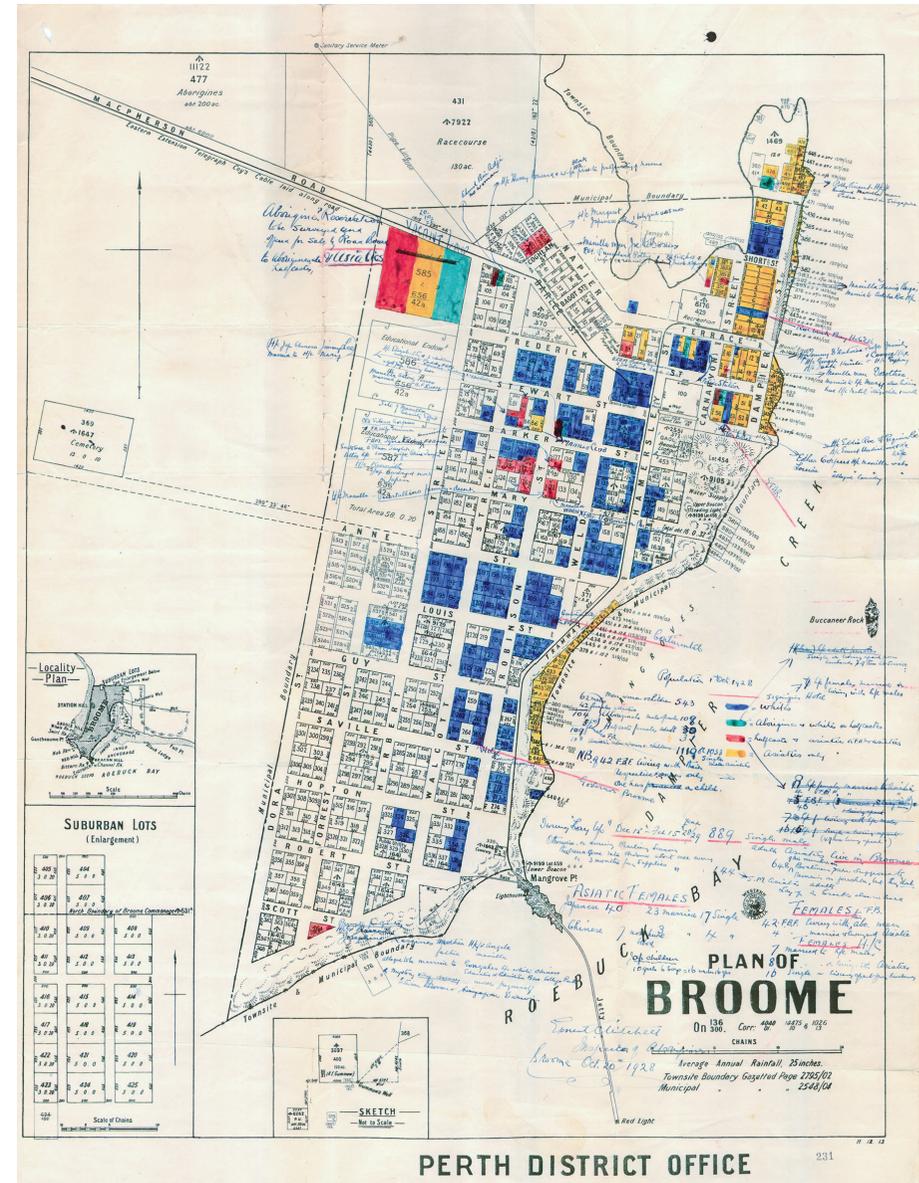
Unveiling the Yawuru Conservation Park boundary sign at Gauntheume Point by RNTBC Director Neil McKenzie with the Yawuru PaW Rangers and Shire of Broome President Graeme Campbell.



Pearling workers returning home to Kennedy Hill. Source: Broome Museum



Traditional Yawuru people. Source: 1907 Broome postcard



Colour-coded street map of Broome depicting where the different ethnic groups live. Source: SROWA 993 1927/0248 Native Matters Broome

2. NON-INDIGENOUS HISTORICAL BACKGROUND

In 1864, first attempts to settle in Yawuru country were made by the Roebuck Bay Pastoral and Agricultural Association in the area of Cape Villaret at the southern end of Roebuck Bay. The people abandoned their plans after significant stock losses and sustained resistance from the Yawuru and Karajarri people. A period of violence followed for a number of years as retribution was sought for the murder of three explorers, Panter, Goldwyer and Harding.

From the 1860s pearlers from the Cossack area brought their pearling fleets along the north-west coast. The kidnapping of young Aboriginal men and women for the purpose of diving for pearlshell — ‘blackbirding’ as it became known — was a common practice during this time. With the discovery of the pearling beds in Roebuck Bay and along the Eighty Mile Beach, the town of Broome was gazetted in 1883 and was soon to become the ‘pearling capital of the world’. Meanwhile, pastoralists, many of whom were also pearlers, established leases along the coast



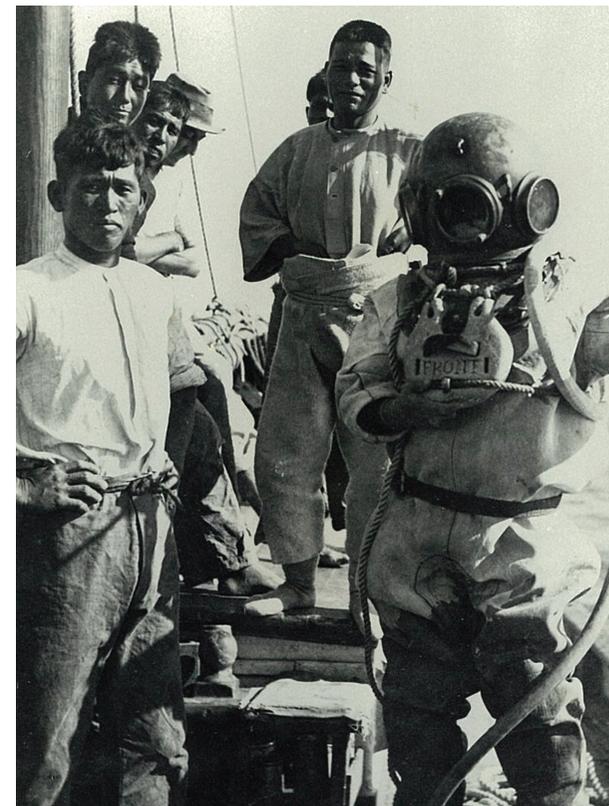
Streeters station workers Source: Battye Library 68190P



Travellers coming to Broome from the stations. Source: William Peaseley

south of Broome, across to the Fitzroy River and up the Dampierland peninsula during the 1880s.

Yawuru people and their neighbours became an essential labour force for the development of pastoral leases in the area. They lived in bush camps near homesteads or in out-camps. They moved often from station to station, when their relationships with owners or managers compelled it, or when they had cultural and family business to attend to.



Hard hat diver. Source: Battye Library 28045P



3. OUR PLAN

What is a protected area?

A clearly defined geographical space, recognised, dedicated and managed to achieve the long term conservation of nature with associated ecosystem services and cultural values.

Yawuru are the Native Title Holders (NTH) of the land and intertidal zone along the south-west Kimberley coast from Willie Creek in the north, and around Roebuck Bay to Bangarangara on the southern end of Thangoo station. To the east, Yawuru country extends from the ridges of Garuwany near Nilabublica across to old Dampier Downs station and then south past Dipingujarra in the Great Sandy Desert, east of the Thangoo station. (see native title Map 1)

In 2009 NBY received funding from Federal Government's Caring For Our Country program to commence the Yawuru Indigenous Protected Area (IPA) consultation project. This Plan is the culmination of that work, being a Plan of Management for areas of our country which we will dedicate as an Indigenous Protected Area, to protect the cultural and ecological values of our country.

The IPA Governance framework includes the Yawuru RNTBC Land and Sea sub-committee, the Stakeholder Reference Group and the Yawuru Conservation Estate Park Council. The RNTBC Land & Sea subcommittee is responsible for the implementation, monitoring and evaluation of the Yawuru Indigenous Protected Area (IPA) Plan of Management (POM). The Land and Sea Sub-

Committee is a formal RNTBC Sub-Committee that reports quarterly to the Board. Three positions are nominated by the Board. Nine positions are nominated from the community and senior Yawuru people with cultural knowledge and authority. An open invitation exists for other interested Yawuru community members to attend the meetings. The Land and Sea Sub-Committee will also liaise with the Yawuru Park Council from time to time for collaboration with the Joint Management Program.

Yawuru Country Managers are engaged by NBY to undertake the on-ground management works on behalf of the Yawuru RNTBC in accordance with the IPA POM.

3.1 The purpose of this Plan

The Plan explains how Yawuru want to manage the Yawuru IPA. The IPA is a dedicated area that Yawuru agree to manage, with their partners, for the protection of natural and cultural values in accordance with international guidelines.

3.2 Developing the Yawuru IPA Plan

This plan is the culmination of seven years work including consultation with Yawuru individuals, family groups, Yawuru Rangers and Yawuru Country Managers many of whom participated in the fieldwork. We have also worked closely with the Indigenous Land Corporation (ILC) to come to agreement for the development of the Plan over significant springs, wetlands and cultural sites within the Roebuck Plains cattle station.



Yawuru Rangers and Yawuru Country Managers at KLC Ranger forum 2015 (source: Yawuru Country Manager's photo library)



Spectacle Hare Wallaby - first sighting on Yawuru Country through sensor cameras in 10 years. (source: Yawuru Country Manager's photo library)

The RNTBC subcommittee have guided the Plan through meetings and planning workshops. They have generously contributed their cultural knowledge to develop the vision and direction of this Plan.

To reach the Vision for the IPA, Yawuru people stressed that Yawuru land and seas are an interconnected cultural landscape and must be managed as a single protected area. The IPA program together with the joint management regime of the Yawuru Conservation Estate provides an excellent framework to achieve this requirement for the management of Yawuru land & seas.

Staged Approach to the IPA

The area for the IPA will be dedicated in two stages. All areas referred to in the body of this plan are part of Stage 1. Stage 2 areas are contained in Appendix 5 and will be incorporated into the IPA in 2017.

Stage 1 will overlay the YCE (excluding those areas identified in Appendix 5), together with areas within Roebuck Plains station, the pastoral lease that is Yawuru exclusive possession native title. The pastoral lease is held by NBY having been divested by the ILC in 2014, and the cattle business is subleased to NIPE, a fully owned subsidiary of the ILC, for the next 15 years.

Stage 2 includes:

i) the YCE Minyirr Buru in-town park. This park is to be jointly managed by Yawuru and the Shire of Broome. The Shire of Broome while approving in principal the Yawuru IPA Plan of Management was not able to provide full support until the

Minyirr Buru joint management plan is finalised.

ii) the Northern Cable Beach Intertidal Conservation Park. This Park is to be managed jointly by the Shire of Broome, Yawuru and PaW. The Shire of Broome is not able to provide full support until the joint management plan for this intertidal park is finalised.

iii) a portion of the Nagulagun marine park is to be surrendered from Kimberley Port waters. This is progressing through the surrender process and will be incorporated into the IPA once completed (Appendix 5).

As one of a few multi-tenure land and sea IPAs, and the first IPA to be dedicated over areas within a commercial cattle station and recognised in Australia, the Yawuru IPA will make a significant contribution to the development of protected area policy in Australia, and add to Australia's National Reserve System (see IPA Map 3).

Other areas of Yawuru country may be added later to the IPA, subject to consideration by Yawuru native title holders, other tenure holders and future assessments of the cultural, ecological and economic values across the Yawuru estate.

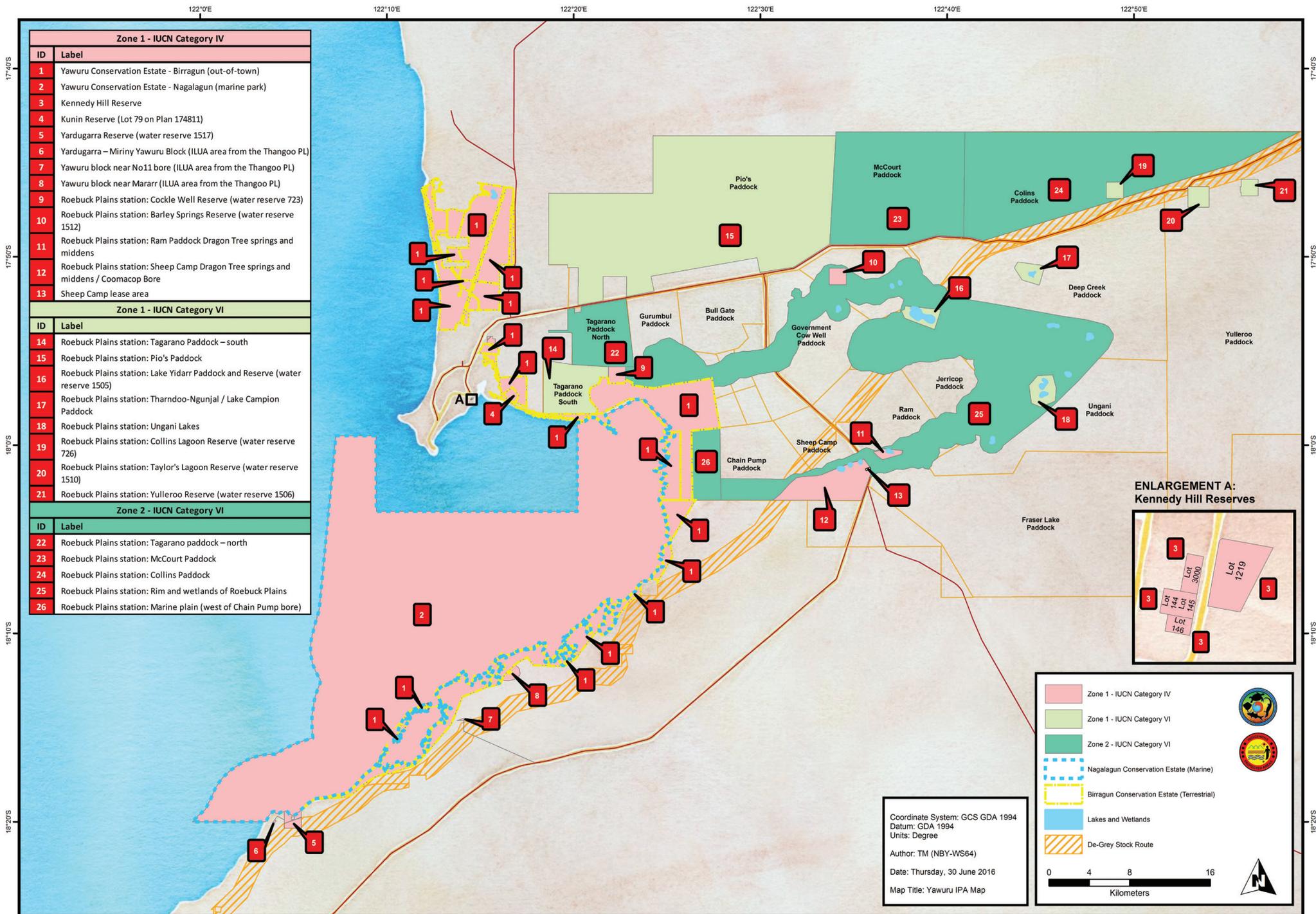
During planning workshops eight targets were identified as the core structure of this Plan to achieve holistic planning over the Yawuru Protected Area Estate.



Osprey nesting. Source: Tim Willing

- Target 1: Yawuru cultural knowledge and practice
- Target 2: Yawuru significant areas
- Target 3: Yawuru rights and responsibilities
- Target 4: Niyamarri — sand dunes
- Target 5: Bilarra — wetlands
- Target 6: Birra — bush and pindan country
- Target 7: Nagulagun — saltwater country (deep water and intertidal)
- Target 8: Seasonal resources and biodiversity

Within these targets there are many subsidiary or 'nested' targets; for example, in Nagulagun (Target 7) there are endemic species such as Snubfin Dolphin, threatened animals such as turtles, and internationally significant birds such as the migratory waders. We intend to look after all the nested targets within each greater target.



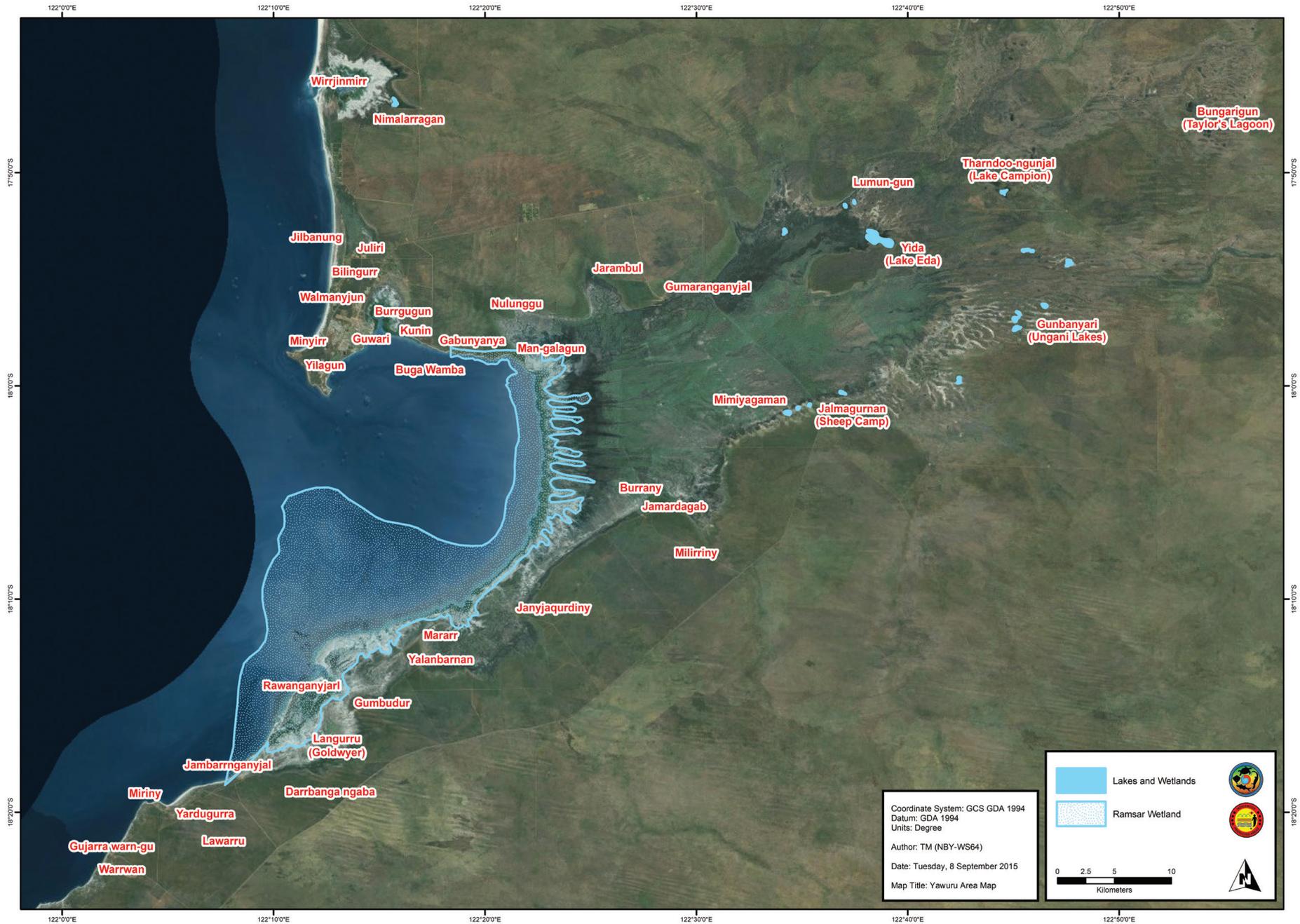
Map 3: Stage 1 IPA Map showing management zones



Yawuru IPA Country Managers: (from left) Vaughn Lee, Eduardo Maher, Pius Gregory, Johanni Mamid and Jacob Smith.



Country Managers clearing site for cultural use for Nurlu Project.



Map 4: Yawuru sites and wetlands map.

4. OUR VALUES

Values are what we think is important about country and about what we want to protect.

4.1 Overarching cultural values

In developing this Plan we adopt the same values presented in the Yawuru Cultural Management Plan and the jointly-managed Yawuru Conservation Parks.

- Yawuru country is a living cultural landscape.
- Yawuru traditional ecological knowledge is the foundation for ecologically sustainable resource management.
- Yawuru have the right to enjoy Yawuru country and to maintain their customary practices.
- Yawuru are responsible for looking after Yawuru country.

4.2 Key cultural values :

- Yawuru named sites, mostly cultural sites, tracks and areas both coastal and inland
- historical sites: associated with the pearling and pastoral industries and the legacy of indigenous affairs policies
- archaeological sites: fossils; middens; burial sites; rock art; fishtraps
- traditional bush/sea resources used for food, medicine, tools and other uses

- Yawuru language concepts and protocols
- wetlands and permanent water sources

4.3 Key biodiversity values:

- reefs and sea-grass beds providing habitats for dugong (*Dugong dugon*) and four migratory and EPBC Act-listed threatened sea turtle species including Hawksbill Turtle (*Eretmochelys imbricata*), Loggerhead Turtle (*Caretta caretta*), Green Turtle (*Chelonia mydas*) and Flatback Turtle (*Nataden depressus*)
- Roebuck Bay holds one of the largest known populations of Australian Snubfin Dolphin (*Orcaella heinsohni*), which occur in near-shore areas (Palmer et al 2014, Brown et al 2014)
- pearl shell beds for pearl oysters (*Pinctada maxima*)
- Potential habitat for 28 Environmental Protective Biodiversity Conservation (EPDC Act) listed threatened species: six birds, eight mammals, eight reptiles, five fish, and one plant. Potential habitat also exists for 55 EPBC Act-listed migratory species, and 95 marine species (DoE 2015)
- Roebuck Bay Ramsar Site. The site meets seven of the nine criteria for Ramsar listing (DoE 2011);
- significant groundwater-dependent ecosystems;
- wetlands that provide breeding habitat for numerous waterbird and shorebird species, and dry season refuge for fauna, especially birds; (Chris Hassell pers. comm. January 2015)



Yawuru country Managers and Yawuru Rangers undertaking Snub fin dolphin survey in Roebuck Bay. Source: Country Manager's Photo Library.



Girrbaju (Bush Honey). Source: Sarah Yu



Walga Walga (Blue Nose Salmon)



Bilari at Yinanamana-gala. Source: Sarah Yu



Wetlands. Source: Sarah Yu

- Roebuck Bay is of national and international significance for migratory birds. It regularly supports over 100,000 waterbirds, and the total number of shorebirds using the site may exceed 300,000 annually. It is the fourth most important site for waders in Australia in terms of absolute numbers and the most important in terms of the number of species it supports in internationally significant numbers (DoE 2011). Roebuck Bay has the greatest diversity of shorebird species of any site on the planet (Birdlife 2012), and 29 species are found in internationally significant numbers (Bennelongia 2009). ;
- monsoon vine tickets, an EPBC Act-listed and state-listed threatened ecological community, and culturally important source of bush food, materials and medicine;
- mangrove communities providing nursery grounds for culturally important fish and crab species, roosting and feeding sites for megabat and microbat populations, and important habitat for numerous bird species (Willing 2012);
- intertidal mudflats: important feeding grounds for migratory and resident shorebirds, as well as roosting habitat at low tide (Bennelongia 2009). The Roebuck Bay mudflats Species-rich faunal community of the intertidal mudflats is a state-listed threatened ecological community, listed vulnerable;
- intertidal creek and bay systems providing important habitat for fish and invertebrate species; and
- Roebuck Bay contains a diverse range of finfish, sharks and rays, including acting as a nursery ground for many finfish species (PaW 2015).



Ngarlgumirdi (Bilby) recorded at Roebuck Plains Station 2015. Source: Country Manager's Photo Library.



Roeback Plains

4.4 The values of Roebuck Plains

The following values have been identified on Roebuck Plains station by members of the RNTBC Land & Sea subcommittee (Map 5).

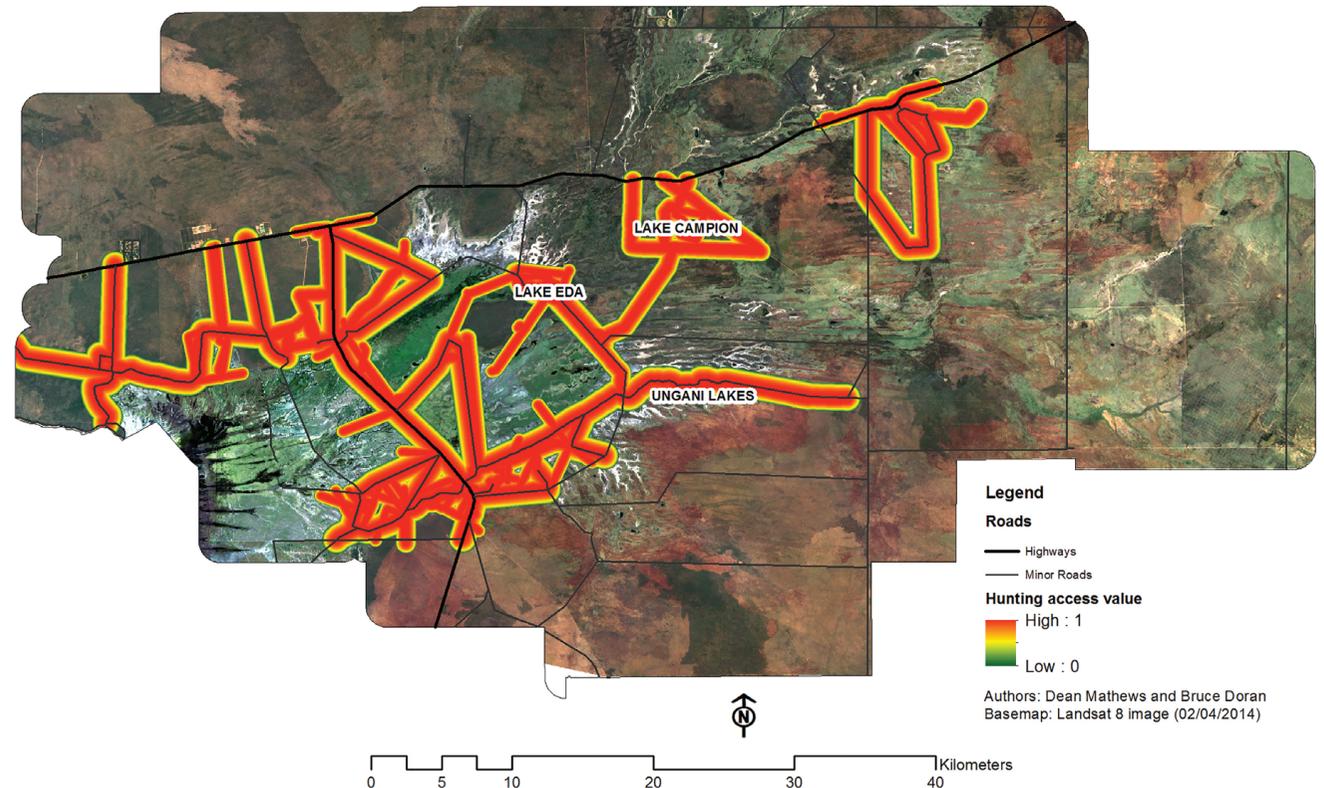
Cultural and ecological values:

- Yawuru cultural sites (Map 4)
- Historical sites and areas
- Marine Plains: Ramsar site (Map 4)
- Hunting resources (Map 5)
- Plant resources
- Diverse habitats: paperbarks/mangroves/pindan
- Complex wetlands: springs (Map 8)
- Dune systems that surround the plains

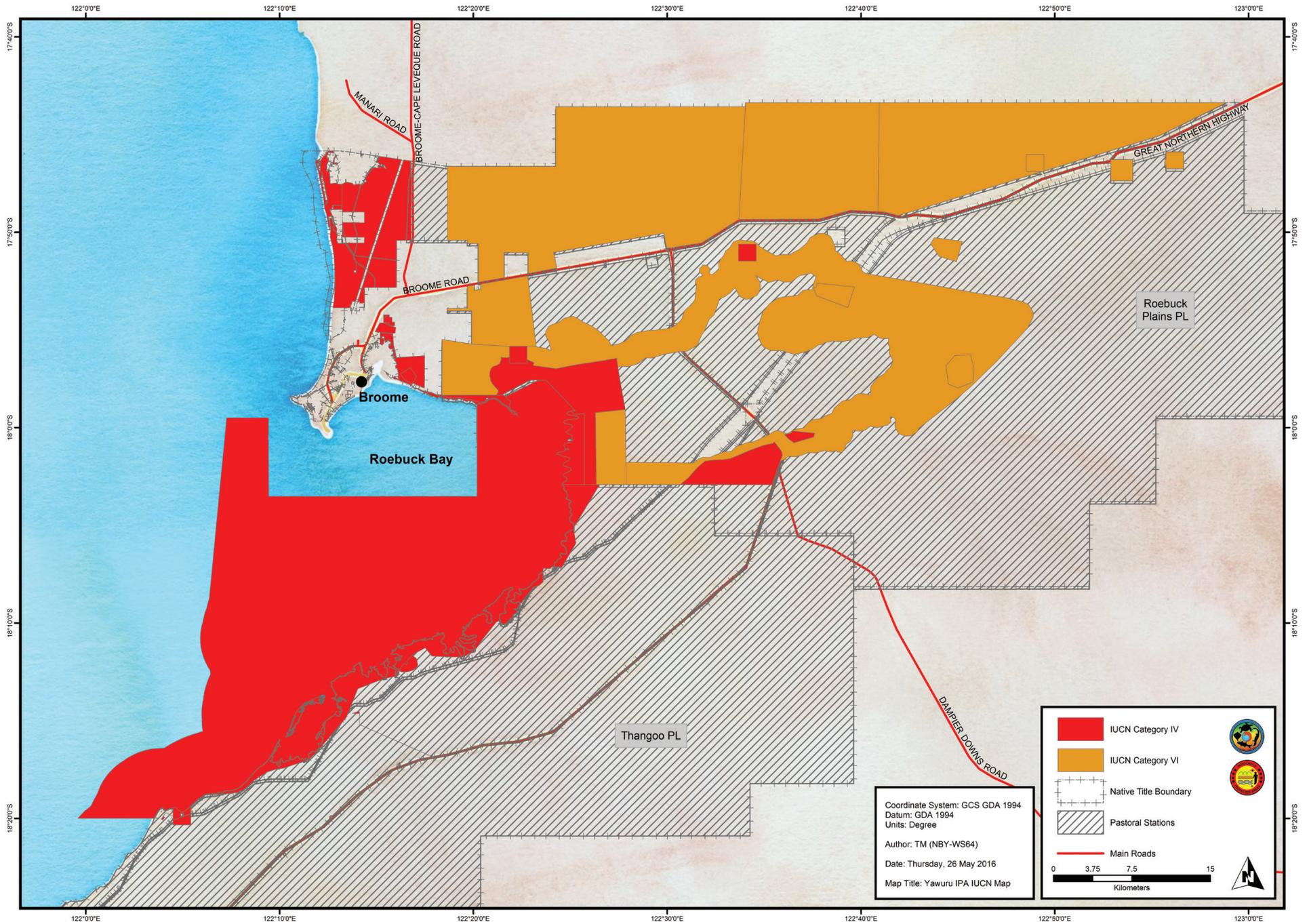
4.5 Potential economic values:

- pastoral activities
- tourism
- hunting and resource collection
- mining and exploration
- carbon markets

Roebuck Plains Yawuru Hunting Access Values



Map 5: Hunting Access by Yawuru People on Roebuck Plains pastoral lease: - Roebuck Plains Property Management Plan report - Prepared by Tanya Vernes and Dean Mathews - October, 2013.



Map 6: Stage 1 IPA Map showing IUCN categories map.

5. HOW WE DEVELOPED OUR IPA PLAN OF MANAGEMENT UNDER IUCN CATEGORIES.

The proposed Yawuru IPA covers 2109 km² of Yawuru coastal and inland country.

It will be managed with our partners – ILC, PaW, Broome Shire, and others, and will include areas to be dedicated as an Indigenous Protected Area according to IUCN categories and guidelines.

The IPA falls into two of the IUCN Protected Areas Categories, which identify and classify protected areas according to their management objectives (*Map 6*). The categories are recognised by international bodies such as the United Nations, and by many national governments, as the global standard for defining and recording protected areas and are increasingly being incorporated into government legislation.

5.1 IUCN Category IV: Habitat/species management area

Areas identified for the protection of particular species or habitats with management strategies to reflect this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category (*Map 6*).

5.2 IUCN Category VI: Protected area with sustainable use of natural resources

Protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.



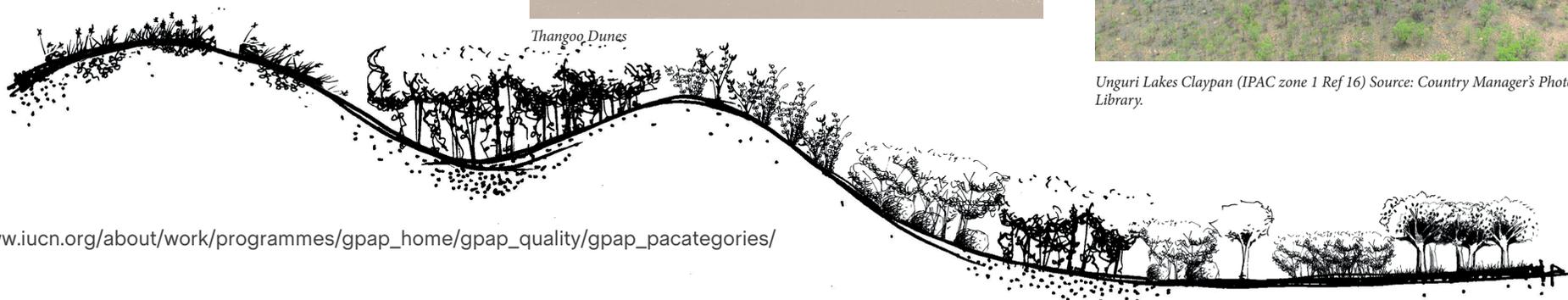
Marrul (Blackberry Tree). Source: Sarah Yu.



Thangoo Dunes



Unguri Lakes Claypan (IPAC zone 1 Ref 16) Source: Country Manager's Photo Library.





Lake Yidarr

5.4 Yawuru IPA on Roebuck Plains station

In preparation for this IPA POM, fieldwork was undertaken to identify significant cultural and environmental areas of Roebuck Plains to be included in the Yawuru IPA. This information informed negotiations with the ILC the then leaseholders of Roebuck Plains station.

The vegetation of the Roebuck Plains station includes:

1. intensively grazed saline grasslands,
2. dense belts of groundwater-dependent saltwater paperbark which is peripheral to the pindan terrain,
3. local patches of groundwater-dependent freshwater Dragon Tree copses,
4. a shore-parallel band of samphires as low heath landward of the mangroves, and
5. extensive pindan-vegetated sand-plains.

There also are culturally and ecologically-significant springs, and shallow freshwater wetlands supporting an abundance of waterbirds. A century of cattle grazing has significantly degraded plains, springs and wetlands.

Freshwater wetlands are rare in pindan country and serve as an important dry season refuge for birds. Within our site, Taylor's lagoon, Lake Yidarr and Champion Lake are listed together as a National Wetland of Significance, also meeting three Ramsar criteria". The wetland plain is important to Yawuru people for food and medicine, and for camping and hunting, history, Law and teaching. The wetland Plain and the immediately adjoining pindan terrain contain ancient midden deposits formed over the past 7500 years, which tell the story of changing sea levels"" and changing marine food sources — a story also recorded in our cultural history of the plains. Thus the plains, through the mapping of human occupation sites, will tell the story of global climate change, sea level history, geography changes, and ecological changes over the last 7500 years

It is the parties' intentions that the pastoral business continues whilst these natural and cultural heritage values are protected and enhanced.

The ILC's key policy document, where relevant priority land management outcomes are set out is the National Indigenous Land Strategy (NILS).

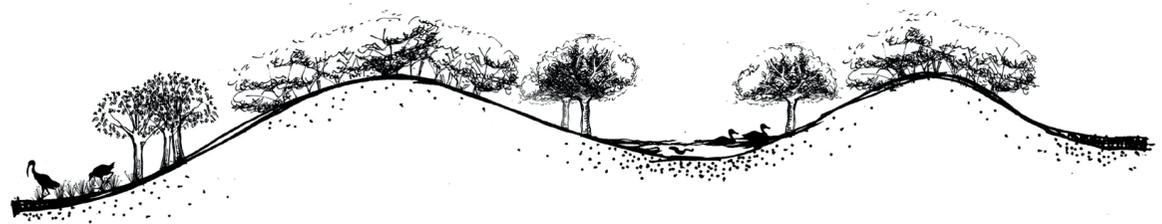


Roebuck Plains

Priority outcome 1: access to and protection of cultural and environmental values

Land is central to the cultural identity of Aboriginal and Torres Strait Islander peoples. The ILC is committed to assisting Indigenous people acquire and manage land of cultural and environmental significance and protecting and maintaining the cultural and environmental values of land.

The priority outcome reflects the ILC's intention to secure access to and protect and maintain land with high cultural and/or environmental significance or values.



*V & C Semeniuk Research Group 2014. *Wetlands on the Roebuck Plains – distribution, plant composition, ecological values, and status. Report to Nyamba Buru Yawuru, April 2014*

**Environment Australia 2001. *A Directory of Important Wetlands in Australia, Third Edition.* Environment Australia, Canberra.

***Semeniuk V 2008. *Sedimentation, stratigraphy, biostratigraphy, and Holocene history of the Canning Coast, north-western Australia. Journal of the Royal Society of Western Australia 91: 53-148.*



Groundtruthing IPA boundaries with Roebuck Plains Station Manager. Source: Country Manager's Photo Library.

Priority outcome 2: socio-economic development

The ILC assists projects that provide sustainable employment, and training that leads to employment. The ILC believes that sustained employment creates a range of benefits for Indigenous people, including higher income and improved standards of living, health and wellbeing.

This priority outcome is reflected in the good will, collaboration and support to our IPA and the Country Managers team.

5.5 IPA model: serial sites of cultural and natural value and adaptive management

In order to reconcile the potentially conflicting interests of operating a successful pastoral enterprise and protecting the natural and cultural values of Roebuck Plains and catchment area, we have developed a new model based on UNESCO's nomination of Heritage sites.

Under UNESCO's Convention concerning the Protection of the World Natural and Cultural Heritage, serial heritage sites can be listed for their cultural and/or natural values. These sites can form a single World Heritage nomination containing a series of cultural and/or natural properties in different geographical locations.

The sites:

- ... need not be contiguous and are nominated with the consent of all States and Parties concerned ... include component parts related because they belong to:
- the same historico-cultural group;
- the same type of property which is characteristic of the geographical zone;
- the same geological, geomorphological formation, the same biogeographic province, or the same ecosystem type;
- and they can be nominated, provided it is the series as a whole – and not necessarily the individual parts of it – which are of outstanding universal value*.

Under UNESCO's guidelines for nomination these areas include the site/s and the buffer zones around them.

To form the IPA on Roebuck Plains we have adopted UNESCO's model of serial heritage sites by identifying a series of significant areas on Roebuck Plains station (Zone 1), recognised for their cultural and natural values, surrounded by buffer zones (Zone 2), which include other areas of natural and cultural significance that will be closely monitored and researched while the cattle operations continue (Map 3). These zones are consistent with the IUCN categories IV and VI respectively.

In accordance with their policies, the ILC has agreed to recognise and respect the cultural and natural significance of these places and the benefits of including these areas (Zone 1), and the broader geographical buffer areas (Zone 2), within the Yawuru IPA (Map 3). It is recognised that the full cultural significance of these buffer areas and implications for cattle management will not be fully understood until further consultation, research and monitoring are carried out. Roebuck Plains station will continue to be managed using sustainable grazing land management principles whilst the identified cultural and natural values are protected.

This model of adopting the world heritage principles for the recognition of serial heritage sites, surrounded by buffer areas, allows for:

- the demarcation and protection of specific sites with high cultural and natural significance
- the demarcation of buffer areas, with recognized cultural and natural values that are closely monitored and researched
- Yawuru to manage those values effectively
- the development of adaptive management of the station that is responsive to the results of research and monitoring
- the shared goal of NBY and the ILC to continue to operate a successful cattle enterprise on Yawuru Roebuck Plains station.

*UNESCO's Convention for Protection of World Natural and Cultural Heritage: guidelines for nomination of sites for listing.



Kennedy Hill Cultural Site

5.6 Zoning in the Yawuru IPA

Under this model, we have identified two zones for the Yawuru IPA on Roebuck Plains station, which correlate with the IUCN categories IV and VI (*Map 3*).

Through the negotiations between the Yawuru and the ILC, actions for the protection of serial heritage sites and buffer areas that surround them have been identified. ILC and IPA funding will cover some of these activities. Future applications for funding will be made by Yawuru with ILC support to carry out future activities.

Zone 1 areas (IUCN Category IV):

Zone 1 includes a series of high priority areas that require protection within the pastoral lease, and on existing water reserves. Many of these areas are to be fenced to allow for stock exclusion and will be core IPA business (*Map 3*).

Zone 1 also includes other areas of land across the Yawuru estate (see *Map 3 : Areas 1–8*), which are subject to various tenures and agreements – e.g. the Yawuru Conservation Estate land and land where Yawuru have cultural or native title interests, and which are included in the IPA by agreement with the other tenure holders such as PaW, Western Australian Department of Lands, the Kunin Registered Native Title Body Coporate (Kunin RNTBC), and the Rubibi Aboriginal Land, Heritage and Development Company.

List of Zone 1 areas in the IPA: (see *Map 3*)

1–2. The Parks of the Yawuru Conservation Estate

The terrestrial and marine areas (Birragun and Nagulagun) to be managed by the joint management partners of the Conservation Estate – Yawuru and PaW. The IPA will provide an extra layer of protection to allow the Yawuru Country Managers to work collaboratively with the Yawuru Rangers to enhance the values identified in the Joint Management Plans and the IPA POM.

3. Kennedy Hill

Area of great cultural significance, to be used only for ‘cultural purposes’, requiring the protection of dunes and middens (*Map 3*). Also a significant historical camping site, providing access to the shores of Roebuck Bay. This area includes the following:

- Lot 1219, No.45 Carnarvon Street, Broome Lot 3000, No. 30 Carnarvon Street, Broome Lot 144, No. 34 Carnarvon Street, Broome
- Lot 146, No. 36 Carnarvon Street, Broome
- Lot 149, No. 4 Haas Street, Broome
- Eastern part of 13 Hamersley Street, Broome

4. Kunin Freehold (Lot 79 on Plan 174811)

Area of great cultural significance and to be used only for ‘cultural purposes’. Eventually to be conditional freehold held by Yawuru for the purposes of *conservation, recreation and traditional and customary Aboriginal youth and enjoyment and for the purposes of practising, sustaining and maintaining native title rights and interests.*

5. Yardugarra Reserve (water reserve ^1517)

A jila (permanent water source) of great cultural and historical significance and one of the main government wells of the Kimberley–DeGrey stock route, lined by coastal dunes, which contain burial sites. It was established here to support the cattle and provide a water source for the old Broome Highway. Under the ILUAs it will be transferred to NBY as conditional Freehold for the purpose of *conservation, recreation and traditional and customary Aboriginal use and enjoyment for the purpose of practising, sustaining and maintaining native title rights and interests.*

6. Yardugarra – Miriny Yawuru Block (ILUA area from the Thangoo station)

A significant cultural area to be transferred to Yawuru RNTBC under the ILUA as a perpetual lease.

7. Yawuru block near No11 bore (ILUA area from the Thangoo station)

A significant cultural area to be transferred to Yawuru RNTBC under the ILUA as a perpetual lease.

8. Yawuru block near Mararr (ILUA area from the Thangoo station)

A significant cultural area to be transferred to



Cockle Well Water Resource (IPA Zone 1 Ref 9)

Unguri Lakes (IPA Zone 1 Ref 18)

Yawuru under the ILUA as conditional freehold for the purpose of *conservation, recreation and traditional and customary Aboriginal use and enjoyment for the purpose of practising, sustaining and maintaining native title rights and interests.*

9. Cockle Well (water reserve ^723)

A wetland and government well site of great cultural and historical significance, with an old midden site and traditional camping area. A government well was established here, on what was the old Broome Highway, to service the Kimberley–De Grey stock route. It is intended the water reserve be re-fenced and gated and considered as a site for cultural tourism in the future. The area may continue to be strategically grazed to minimise risk of wildfire.

10. Barley Springs (water reserve ^1512)

A water reserve and old government well site, of historical and cultural significance. To be fenced to the Reserve boundary. This area is identified for permanent stock exclusion.

11. Ram Paddock Dragon Tree springs (Roebuck Plains station)

Springs of great cultural and ecological significance, which have been badly damaged by cattle. Fence enclosures to be renewed around three Dragon Tree (*Sesbania formosa*) springs in Ram Paddock, consistent with fence-lines of previous enclosures, and to be revegetated.

12. Sheep Camp – Coomacop bore (Roebuck Plains station)

Sheep Camp was one of the main Yawuru living areas until the 1960s, and along the southern fringe of Roebuck Plains there is a series of culturally-significant springs and ancient embayments, surrounded by distinctive vegetation and containing many midden sites. By agreement between the Yawuru and the ILC, this will become a prime conservation area on the station. Fence enclosures will be renewed around three Dragon Tree (*Sesbania formosa*) springs; the most westerly enclosure will include the nearby sand-dune midden/s. Southern Sheep Camp paddock (south of the newly installed subdivision fence) will become a separate grazing unit, subject to sustainable grazing management.

The overflow on Coomacop bore is located over an existing Dragon Tree spring. The ILC will maintain a stock-proof fence around this spring.

13. Sheep Camp lease area

This is a small lease, of significant historical and cultural importance to Yawuru that is not part of the Roebuck Plains station lease.

Zone 1 (IUCN Category VI):

14. Tagarano Paddock south (Roebuck Plains station)

This paddock, adjacent to Man-galagun (Crab Creek area) contains cultural restricted areas, culturally significant water sources and many bush resources. The area may continue to be strategically grazed to minimise risk of wildfire.

15. Pio's Paddock (Roebuck Plains station)

An area identified for total stock exclusion when a prescribed burning regime consistent with cultural, conservation and asset protection goals has been developed cooperatively by Yawuru RNTBC and the ILC and has been implemented. Yawuru to undertake prescribed burning in cooperation with ILC and station management.

16. Lake Yidarr paddock and water reserve (Roebuck Plains station and water reserve ^1505)

A wetland, with permanent surface water, of great cultural and historical significance, supporting a wide variety of bird life, including migratory species that are inland specialists. To be re-fenced and grid re-installed. It is proposed that a regime of sustainable stock control be introduced. The ILC and Yawuru to agree on and install Rangeland Conditional Monitoring (RCM) sites within Lake Yidarr paddock.

17. Tharndoo-Ngunjal / Lake Campion (water reserve ^9697)

A wetland of great cultural and historical significance, to be fenced and a regime of sustainable stock control introduced.

18. Ungani Lakes (Roebuck Plains station)

A series of ephemeral lakes to be protected for their cultural and ecological significance. In future be looking at ways to strategically graze to minimize risk of wildfire.



Roebuck Plains - possible midden on 7000yr shoreline (zone 2)



Mimiagaman spring before fencing.

19. Roebuck Plains: Collins Lagoon (water reserve ^726)

A wetland of great cultural and historical significance continues to be a major watering point for the pastoral lease and the Kimberley–DeGrey Stock Route, to be monitored for its ecological and cultural values.

20. Roebuck Plains: Taylor’s Lagoon (water reserve ^1510)

A wetland of great cultural and historical significance continues to be a major watering point for the pastoral lease and the Kimberley–DeGrey Stock Route, to be monitored for its ecological and cultural values.

21. Roebuck Plains: Yulleroo water reserve

A wetland of great cultural and historical significance continues to be a major watering point for the pastoral lease and the Kimberley–DeGrey Stock Route, to be monitored for its ecological and cultural values.



Mimiagaman spring after fencing.

Zone 2 buffer areas (IUCN Category VI):

Zone 2 areas include agreed buffer zones around culturally and ecologically significant (zone 1) serial sites (*Map 3*). In zone 2 pastoral activities are closely monitored for their impact on the identified natural and cultural values.

Research into the values of the area will be conducted, and agreed conservation activities carried out when resources allow.

List of Zone 2 buffer areas (IUCN Category VI):

22. Roebuck Plains station: Tagarano Paddock (north)

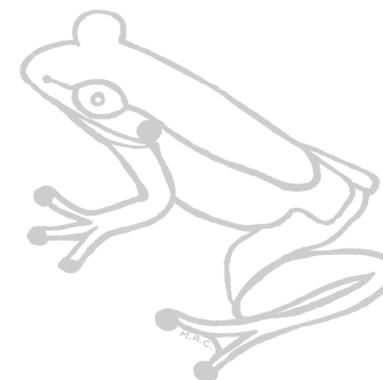
This area contains many cultural significant sites and water sources. This paddock will continue to be stocked. A prescribed burning regime that is consistent with cultural and conservation asset protection and pastoral goals (including post-fire grazing management) may be cooperatively developed between Yawuru RNTBC and the ILC. All prescribed burning to be undertaken in cooperation with ILC and the station management.

23. McCourt Paddock (Roebuck Plains station)

This paddock will continue to be stocked. A prescribed burning regime that is consistent with cultural and conservation asset protection and pastoral goals (including post fire grazing management) may be cooperatively developed between Yawuru RNTBC and the ILC. All prescribed burning to be undertaken in cooperation with the ILC and station management.

24. Collins Paddock (Roebuck Plains station)

This paddock will continue to be stocked. A prescribed burning regime that is consistent with cultural and conservation asset protection and pastoral goals (including post fire grazing management) may be cooperatively developed between Yawuru RNTBC and the ILC. All prescribed burning to be undertaken in cooperation with the ILC and station management.



Size of the Yawuru Stage 1 IPA

	ha	km ²
Size of the whole IPA =	200,522.76	2,005.23
Zone 1 - IUCN Category IV	97,615.49	976.15
Zone 1 - IUCN Category VI	32,776.56	327.77
Zone 2 - IUCN Category VI	70,130.71	701.31
Zone 1 Total	130,392.05	1,303.92
Zone 2 - Total	70,130.71	701.31
Zone 1 within Roebuck Plains PL =	38,234.37	382.34
Zone 2 within Roebuck Plains PL =	70,130.71	701.31
Total within RP PL =	108,365.08	1,083.65

Ram Paddock Roebuck Plains - cattle water point.

25. Rim of Roebuck Plains and wetlands of Roebuck Plains, including the Lake Yidarr point area

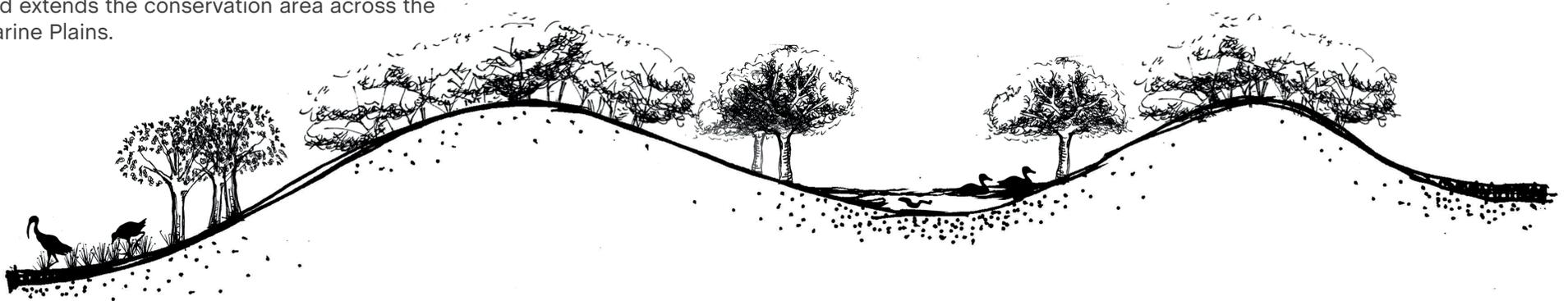
This area forms a buffer around natural and cultural features that line the edge of Roebuck Plains. This area marks the boundary of the 7000 year-old coast and contains many possible midden sites that require assessment and protection (*Map 7*). The middens are near major station infrastructure — water points and holding yards, such as those at Lake Yidarr Point. They will therefore be subject to monitoring and research to map the values and wet-season habitat preferences of cattle and the impacts of cattle grazing, so that appropriate management regimes can be developed. An agreed Plan to protect middens will be developed, perhaps including the fencing of key sites along the sand-dune perimeter.

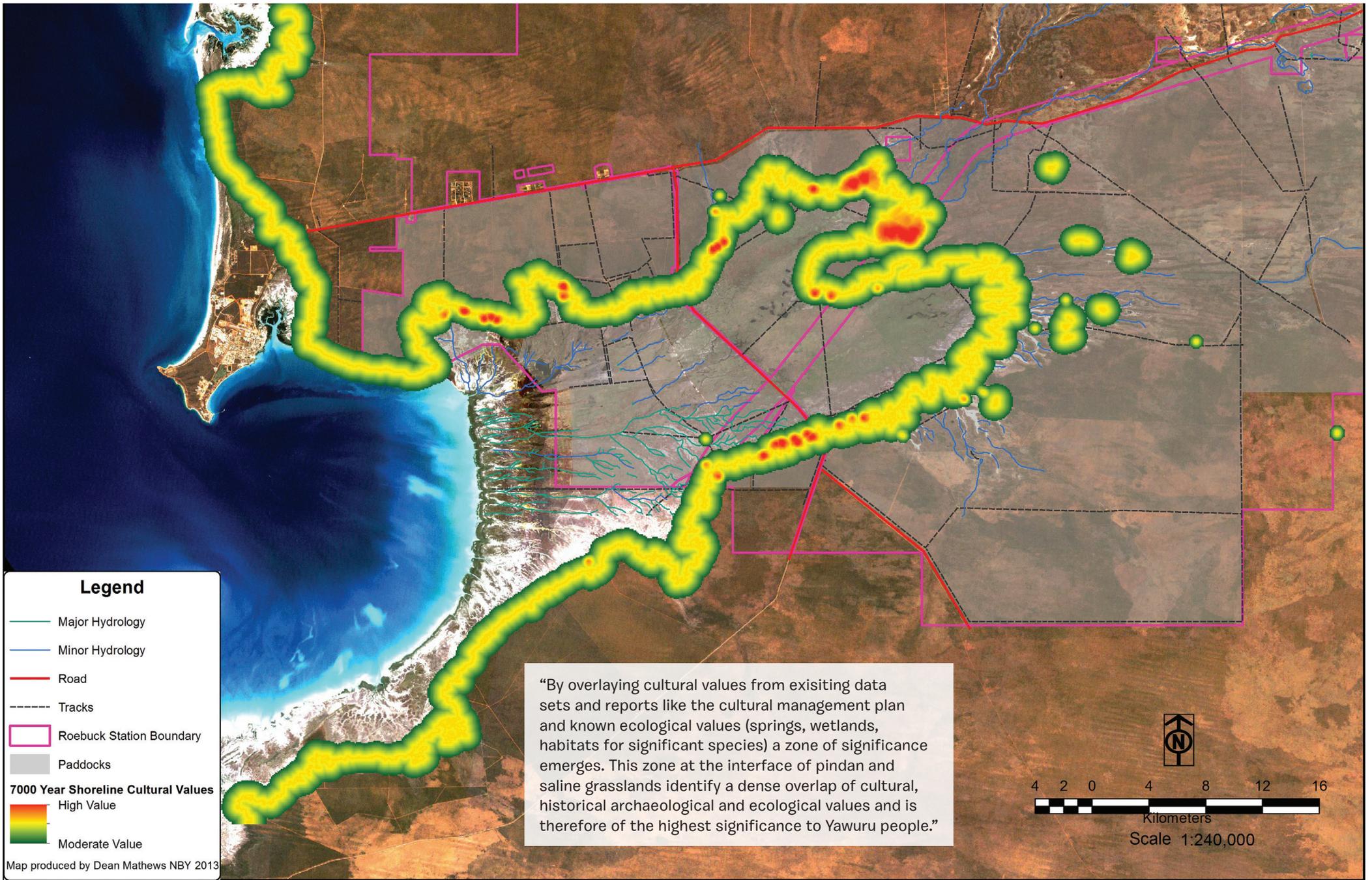
26. Roebuck Plains: Marine plain (west of Chain Pump bore)

This area links the Yawuru Conservation Estate terrestrial areas with the IPA on Roebuck Plains and extends the conservation area across the Marine Plains.



Roebuck Plains Station - ESRM Workshop with ILC, Station Manager and Yawuru Country Managers and Land & Sea staff - 2015.





Map 7 Cultural Conservation and Pastoral Values: *Roebuck Plains Property Management Plan* prepared for NBY by Tanya Veines and Dean Mathews - October, 2013.

5.7 Sustainable cattle grazing on Roebuck Plains station.

Roebuck Plains station operates within a highly competitive and high-risk industry. Management is continually seeking improved efficiency and productivity critical to maintaining economic viability. While all activities on Roebuck Plains station must be considered within this economic reality, a high degree of cultural and environmental awareness appropriate for the IPA is paramount.

Across the station, the ILC promotes the use of grazing land management principles which focus on long-term sustainable environmental, cultural, and economic outcomes for its land. The current grazing practice on Roebuck Plains station is based on continuous grazing of pindan areas, with moderate stocking rates. A wet season grazing rotation is in place on the marine plains to provide paddocks with a rest from grazing every other wet season. This rotation is dependent on seasonal conditions and stock distribution at the time. Stocking rates are estimated regularly by the manager based on visual Feed On Offer (FOO) assessments, and condition score of stock.

Adaptive Management and grazing management in the IPA

Yawuru and the ILC are committed to applying adaptive management principles to grazing activity within the IPA, ensuring a balance for commercial, social, cultural, and environmental outcomes. The proposed zoning of the Yawuru IPA over the lease, Zone 1 (Cat. IV), Zone 1 (Cat. VI) and Zone 2 (Cat VI), is an innovative way of achieving this outcome (*Map 3*).

Proposed management of grazing within IPA areas has been developed in consultation primarily with representatives from NBY Land & Sea unit, the Yawuru community and the ILC, however representatives from Rangelands NRM, Australian National University, and Biota Environmental Services have contributed to the discourse on grazing management in the Yawuru IPA.

Rangelands NRM supported the development of the Ecologically Sustainable Rangelands Management Plan (ESRM) for Roebuck Plains station in 2015 which was undertaken as a joint process with the ILC, station management and the Yawuru Land and Sea Unit and Country Managers. The ESRM plan is a foundational document for the management of the station and incorporates grazing management strategies as well as environmental and cultural strategies to improve the rangeland condition and protect areas of significance to Yawuru. The ESRM Plan will provide an informed and agreed source of the annual works plans for the Yawuru Country Managers and a framework for monitoring and evaluation of these works.

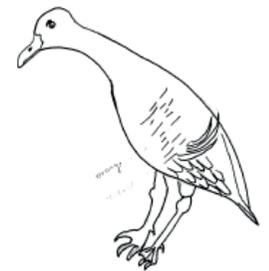
This consultative and highly iterative approach aims to maximise productive potential, reduce economic, cultural and environmental risk to the values of the IPA areas, and allow for informed decisions that maintain or improve land condition consistent with the IUCN Protected Area categories.

Monitoring and Evaluation- Adaptive Management Tools

To ensure that the cattle enterprise within the IPA is sustainable, a comprehensive monitoring and evaluation process is proposed to be implemented. This will initially be based on three monitoring systems, chosen for their specific site suitability and IPA zoning. See *Appendix one - Adaptive Management Tools*.

Analysis

Analysis of monitoring data would be undertaken in consultation between NBY Land & Sea Unit, Yawuru Country Managers and the ILC, using existing relationships with research institutions, technical specialists, and regional NRM stakeholders. It is envisaged that these parties would form a technical working group, discussing results and providing recommendations to inform future management.





Nimalararagun Wetlands

6. OUR PARTNERS TABLE

6.1 Yawuru current IPA Project partners and their roles:

Indigenous Partners	
Kunin Registered Native Title Body Corporate -	Yawuru Native Title Holders
Rubibi Aboriginal, Heritage and Development Company	Yawuru Native Title Holders
Federal government:	
IPA program (DPMC & DOE)	funding, support, training, liaison and networking with national Indigenous conservation groups and agencies
Indigenous Land Corporation (ILC)	partnership in managing ecological and cultural values of Roebuck Plains PL: pastoral station management, ranger program training; fencing liaison and contracting; relocation of water points away from springs; prescribed early burning
State Government agencies:	
Department of Parks and Wildlife	Yawuru Conservation Estate Partner for management of marine park, out of town terrestrial and northern Cable Beach intertidal park.
WA Department of Water (DoW)	groundwater monitoring and analysis
FESA	landscape-scale fire planning, management, training and implementation
MPRA	marine park management and research
Agriculture WA	technical advice on sustainable rangeland management and carbon farming initiatives
WA Department of Lands	tenure information
Research and training partners:	
Kimberley Training Institute (KTI)	ranger training
Fenner School of Environment and Society, ANU College of Medicine, Biology & Environment	community-based research, GIS training and support
V & C Semeniuk Research Group (VCSRG)	designing the wetland monitoring; training Yawuru Country managers; research in wetland ecology and analysis of monitoring data, technical expertise
Broome Bird Observatory and Global Flyway Network	advice and participatory field training in migratory bird monitoring, focusing on nomadic coastal and inland specialists
Murdoch University, Curtin University	Research and training, Snubfin monitoring
Conservation agencies:	
NRM Rangelands	sustainable rangeland management: technical advice, funding
Environs Kimberley (EK)	environmental research, monitoring and mapping
Northern Australian Land and Sea Management Alliance (NAISMA)	culture-based economies: I-tracker; water rights; carbon initiatives
Roebuck Bay Working Group (RBWG)	partner to support protection and management of Roebuck Bay
UDLA Landscape Architects	environmental landscaping and planning
World Wildlife Fund (WWF)	support and guidance during Snubfin Dolphin survey and monitoring program
Local agencies	
Kimberley Port Authority	Neighbours of the joint management and IPA partners.
Shire of Broome	Yawuru Conservation Estate Partner for management of in-town coastal parks and northern Cable Beach intertidal park.

7. YAWURU SEASONS

7.1 Everything has a season

Yawuru people live by six seasons. We read the changing signs in the wangal (winds), the wula (rainfall) and temperature, and the plants and animals, and notice how these come together.

The wattle flowers in Barrgana (the cold season) mean that the salmon and catfish are fat. When the wattle gets seeds, the mullet lay their eggs, and when the seeds open up, the eggs have hatched.

We have cultural rules and responsibilities about how we use and look after the country, plants and animals. We have rules about when certain animals can be eaten and by whom, as well as responsibilities about not wasting what can be eaten.

We use everything except the guts and bone. This is our tradition. We share with other families. There is no waste. This is out of respect. We eat the fat, wing, tail and head.

Jimmy Edgar

Turtle, we get 'em when cloud come running afternoon time from garangu (West). He tell you Turtle coming now, it's egg time – hot time. Laja is proper hot time. They go sand beach now and before the wet season start, they have their young ones. Janga (oysters) [are] fat hot time when you see gunurru flowers. Same like Stingray too, like that one with janga on his back. We get stingray before Christmas. Crab – hot time too.

Man-gala is rain time, when we burn gunggara and bullock shit for mosquito.

Marrul is after rain finish.

Wirralburu is first southeast blow and the salmon start. Catfish and mullet fat in Wirralburu, before salmon.

Then salmon fat when proper Barrgana time. Barrgana is proper cold time, when the gardgu tree is blooming. Bilawal (Bloodwood) flower cold time.

Wirburu is coming hot. After this finish, you get 'em reef fish – in hot time when we see gunurru (White Gum) flowering.

Mati Gilbert



Caustic Grevillea



Jigal Tree

7.2 Seasons

Laja

HOT time
Build up to wet season
Late September – November

Man-gala

The WET
Strong north-west winds
wangal jarrangu
(cyclones)
December – March

Marrul

CHANGING season
Little wind or rain
Humidity drops
April – May

Wirrburu

WARMING-up season
Westerly winds start to blow
September – October

Barrgana

COLD season
Strong dry south-easterly winds
guju-guju (dust storms)
June – August

Wirralburu

COOLING season
Strong south-east winds
No rain
May – June





8. THREATS

8.1 Nutrient run-off into Roebuck Bay:

Drainage into the bay from across Roebuck Plains and from townsite drainage systems is having a detrimental effect on the ecological values of the bay, with increased nutrient loads, erosion and pindan run-off. Drainage of nutrients has been shown to cause an increase in algal blooms (Lyngbya).

8.2 Cattle:

There is evidence that the wetlands are being degraded by grazing activity (significant springs such as those at Mimiyaamin were fenced and after 18 months significant regeneration had occurred. In August 2015 the fence was cut and the area returned immediately to pre protection state (see page 37)). The fringing middens of Roebuck Plains are also being trampled by cattle. Stock access and numbers need to be considered with respect to the ecological and cultural values present.

8.3 Vegetation changes:

There is evidence of compositional changes to the grasslands and samphire communities on the supra-tidal plains, possibly caused by nutrient enrichment resulting from cattle activity.

8.4 Erosion and unmanaged vehicle access:

Erosion, particularly along roadways, across the sand dunes and through drainage areas, is destroying the coastal landscape, exacerbated by unmanaged vehicle tracks to the coast.

8.5 Overfishing:

Greater numbers of people fishing and using new technologies adds pressure on fish stocks and may threaten Yawuru people's use of traditional marine resources.

The main threat from commercial gillnet fishing has been removed by the state purchase of the commercial gill netting licenses.

8.6 Growth in tourism:

The rapid growth in tourism has meant greater use of resources, increasing recreational activities in the country and heavier visitor impacts in culturally and environmentally sensitive areas. For example, in popular areas this has led to illegal camping with the attendant human waste, the dumping of rubbish, and the use/creation of unauthorised trails.

8.7 Urban development:

As a consequence of population growth,

urban infrastructure and housing estates have encroached on Yawuru land, in many cases alienating people from culturally significant areas. Environmental impacts of such development, such as inadequately managed drainage and leaching, are believed to be changing the ecology of Roebuck Bay and surrounds. Approvals for development projects occur on a case by case basis rather than with a view to the whole of the Broome area's ecosystems.

8.8 Population growth:

The rapid growth of Broome as a regional centre has led to greater use of and competition for resources and space, including recreational use of coastal and marine areas of Yawuru country. Increasing numbers of vehicles drive on beaches and there is a rise in recreational boating and fishing.

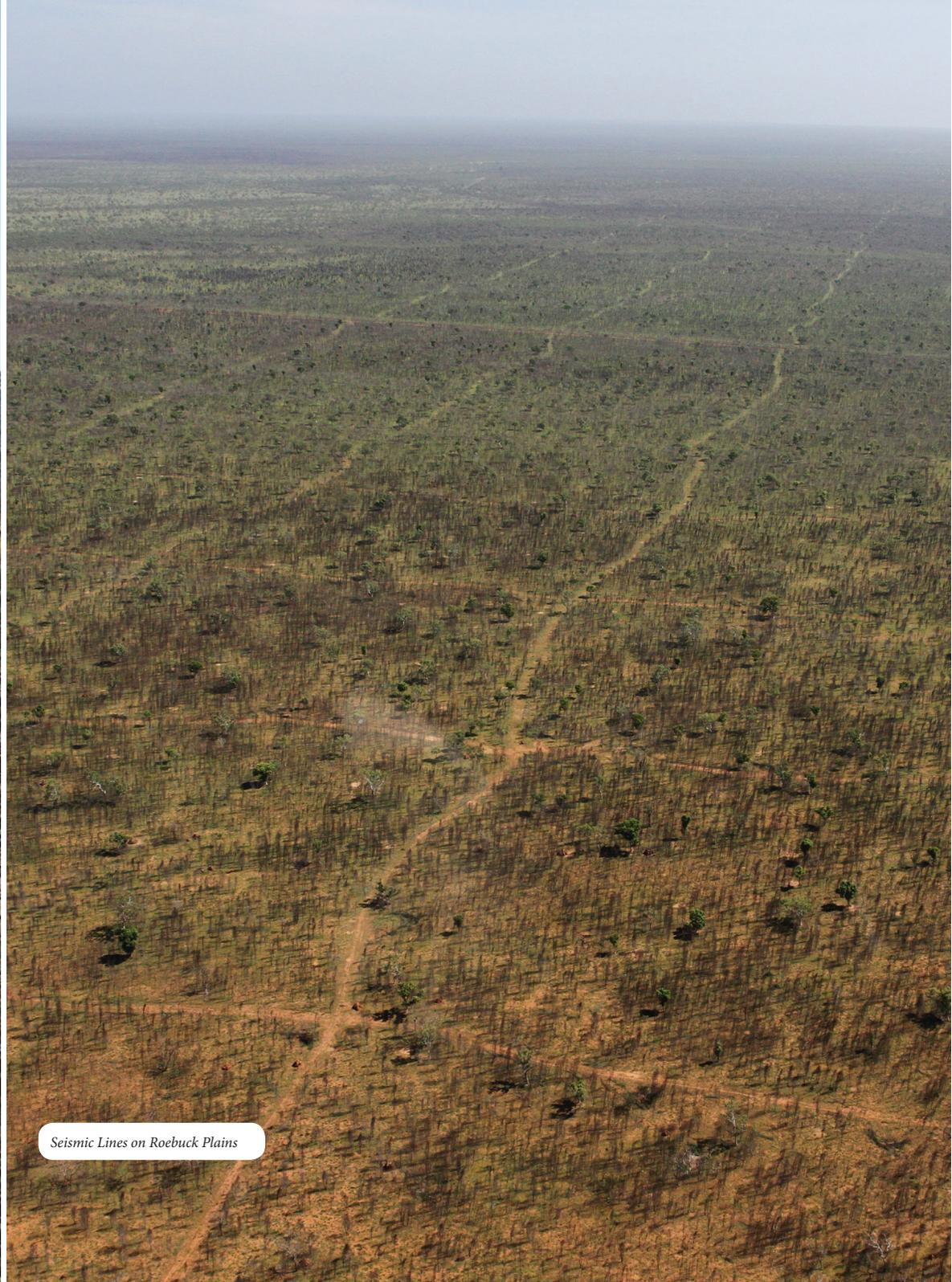
8.9 Climate Change:

In addition to the anticipated impacts of climate change on biodiversity, rainfall and frequency of severe weather events, Yawuru country is particularly vulnerable to rising sea levels because of its low elevation and topography; seawater could encroach on groundwater reserves.

A rise in sea level and an increase in temperature can affect the health and distribution of coral



Roebuck Plains after fire



Seismic Lines on Roebuck Plains

reefs and fish populations, and bring about a loss of seagrass meadows. Other effects would be expected on land.

Traditional ecological knowledge can be applied to detect effects of climate change.

8.10 Inappropriate fire:

Burning regimes, combined with a lack of understanding of Yawuru values and rights, can cause damage to culturally sensitive areas across the whole of Yawuru country. Unmanaged wild fires also pose a continual threat to Yawuru country. Fire, particularly on the marine plains, can also threaten the pastoral enterprise.

8.11 Mining resource exploration and development:

Interference with culturally significant environment continues to be a major threat from the oil and gas exploration programs of the Canning and Browse Basins.

8.12 Invasive species:

Marine pests pose a risk to all forms of marine life. Discharge of contaminated ballast water from ships at sea can have devastating consequences for the marine resources that Yawuru people rely upon.

WEEDS: Weeds are becoming an increasing threat to Yawuru country through more frequent visitors and people unknowingly spreading seed into undisturbed areas.

Established weeds such as Calotropis (*Calotropis procera*), Neem Tree (*Azadirachta indica*), Coffee Bush (*Leucaena leucocephala*), and Buffel Grass (*Cenchrus ciliaris*) require on-going management, with informed and long-term planning.

ANIMALS: Introduced feral animals such as foxes and cats threaten native animal species and require control measures.

Other feral animals such as camels and wild horses cause damage to wetlands and grasslands.

It is anticipated that cane toads will arrive in Yawuru country before 2020. Surveys of the native fauna are urgently required as a baseline from which to assess the damage and species imbalances that the invasion will inevitably produce.

8.13 Broadscale Agriculture in the Region:

Over the past 20 years there have been proposals to increase the area of land used for broad-scale irrigated agriculture, such as cotton.

The Yawuru and their Karajarri neighbours vigorously opposed the original development for fear of the potential threat to the groundwater system and the natural environment of the region. The project did not go ahead. A water allocation plan exists now for the La Grange Basin. Smaller agriculture projects, including feed-lots for cattle, are now being put forward by most of the pastoral lessees in the area. These projects will require consistent and detailed monitoring of the water table and flows to ensure that the groundwater-dependent wetlands are protected. The proposed WA Government tenure reform program is expected to allow more diversification of use of pastoral leases for agricultural and horticultural purposes

8.14 Loss of access to country:

Loss of opportunities for Yawuru to access their traditional country because of tenure changes, restrictions imposed by pastoral leaseholders, and land and marine infrastructure developments threaten the continuity and transmission of Yawuru culture, knowledge and practices.

8.15 Failure to transmit cultural knowledge:

One of the biggest threats to the health of our country and our people is failure to hand down our knowledge from one generation to the next. It is vital that our stories and language are recorded for the benefit of our next generation and we need to ensure that our children visit country sites often.

8.16 Unsustainable harvesting of food resources

Yawuru are establishing their own rules and regulations regarding hunting and collecting bush food in their country to ensure that the proposed management of these activities (for their own use) is acceptable and sustainable before being adopted.

Yawuru use their land for collecting bush food, materials, hunting feral animals and native animals for food. Other people enter the land to hunt and fish (illegally at times). Management of the land must include efforts to stop unauthorised entry and associated illegal activities.



Using the plan

General principles for managing the Yawuru IPA

- Support joint management
- Develop zoning systems (as per the Yawuru Cultural Management Plan, 2011)
- Support stakeholder partnerships, for example, research institutions, NGO's.
- Continue cultural mapping
- Respect and apply Yawuru cultural knowledge to land and sea management
- Yawuru people working on and enjoying Yawuru country

Management Objectives and strategies:

Under the objectives of each target are strategies to manage a target, in the 10-year timeframe and within the capacity of Yawuru, with their partners, to attain the objectives and to mitigate the threats outlined above.

9. MANAGING YAWURU COUNTRY - TARGETS, OBJECTIVES AND STRATEGIES

Target 1: Yawuru Cultural Knowledge and Practice

Traditional cultural and ecological knowledge (TEK) is held by the elders of the Yawuru community and passed down through story and song through the generations.

To maintain our culture and traditional knowledge we have to:

- visit our country;
- respect our ancestors;
- continue our cultural traditions;
- look after all the plants, animals and other resources that are part of our country;
- maintain and protect our sacred places;
- foster our relationship with our country;
- record our stories;
- assume cultural responsibility for the future use and development of Yawuru country; and
- work with our young people to ensure our knowledge, skills and practice are maintained and passed on.
- Our aim is to achieve balance between the protection and the development of our country.

Nested targets:

- cultural mapping, communication and education
- using the Yawuru language
- maintaining culture through art
- fostering good liyan between people and country

- developing the Yawuru knowledge database and collection

Objectives:

- Yawuru cultural knowledge and practice is recorded, active and being passed on to younger generations.
- Yawuru people, especially the youth, are accessing country for cultural, educational and recreational purposes.
- Successful interpretive and educational projects across the Yawuru estate are providing opportunity for Yawuru and others to learn and practise Yawuru culture.

Strategies:

- Use Yawuru IPA program budget to resource Yawuru customary practices in IPA areas.
- Develop Yawuru country knowledge database within a Yawuru seasonal framework that is accessible to the Yawuru community.
- Integrate art and language programs with country management to interpret and present cultural knowledge.
- Develop programs for Yawuru people to access Yawuru country for cultural purposes, hunting and recreation.
- Develop a broad communications strategy to include:
 - Bi-annual reports to the Yawuru RNTBC and community to inform Yawuru people of the progress of the IPA management

and educate people about new protection measures, public information sessions and community events.

- Classroom presentations by rangers and cultural advisors at local schools.
- Engage media, eg. Goolarri Radio and produce a documentary about the Country Manager's work and protection of native vegetation.
- Participate in the Roebuck Bay Working Group meetings and contribute to Ramsar ECD/PoM and other local planning documents.
- Produce small AV videos of Yawuru Country Manager and Yawuru Ranger work and project outcomes.
- Give regular update on activities of Country Managers in the Yawuru newsletter.



Back to Country - Lake Yidarr. Source: Country Manager's Photo Library.

Yawuru GIS Program

Yawuru are developing mapping and digital databases from advanced technology so that Yawuru have the most comprehensive information to plan and make decisions about protecting and developing our country, our community and our culture.

Geographic Information Systems (GIS) have long been used to support decision making in a wide range of land-use planning contexts. Some of the key advantages of a spatial approach to land use planning relate to the ability to generate scenario-based mapping outputs, and to incorporate different stakeholder perspectives into the planning process. GIS mapping incorporates different layers of information including Yawuru cultural data, scientific data and official data from government departments and other agencies

Given these advantages, there is real benefit in developing culturally appropriate GIS methods to assist with the complex land use planning challenges that face Indigenous people in Australia. Yawuru are developing a geospatial program to support social and cultural planning across their country.

In-house GIS capability is being developed with the aim of implementing a robust data collection strategy using rugged digital devices. A strategy to manage all collected project data, along with all current available geospatial data is currently being developed and implemented. Wherever possible the strategies put in place will be based on best possible practices to ensure that Yawuru remain at the head of the field in regards to in-house GIS data collection and management capabilities.

Establishing local geospatial capacity will also help Yawuru negotiate and engage with government, third party partners, developers and stakeholders.

Target 2: Yawuru Significant Areas

Throughout Yawuru country are many significant sites. (see *Map 5*) They are significant for their name, their story, their use (past and present), their ecological values and their spiritual meaning. As the development of Broome and the Kimberley coast progresses many are under threat.

All our men and women sites need protection to uphold our cultural integrity, to preserve the knowledge associated with them for future generations.

Many of our archaeological sites that lie within our coastal and inland dunes contain ancient middens. These middens, are vulnerable to degradation and will require focused management once archaeological surveys have been completed. There are many burial sites within the coastal dunes and we will ensure that the resting places of our elders and ancestors are cared for in a respectful way.

Yawuru people want to make sure our cultural areas are not violated by visitors, and that visitors are not put at risk by going to restricted areas. The Yawuru IPA will enable us to protect restricted areas such as Kunin and others specified in the Yawuru Cultural Management Plan .

We also need to record and protect resource areas where local people harvest food, medicines and other materials

Nested targets:

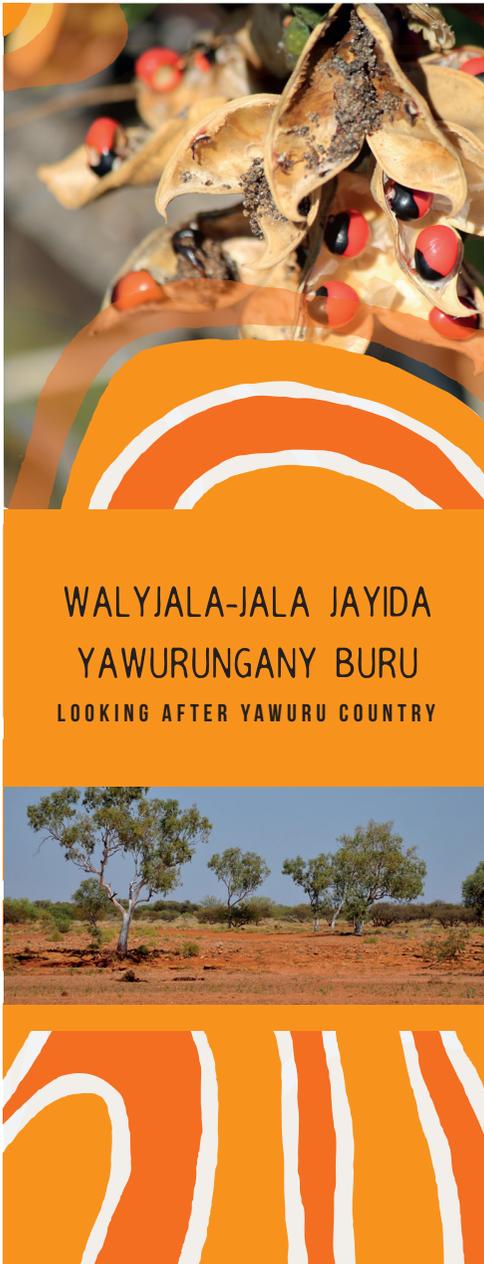
- Bugarrigarra areas
- named sites
- camping sites
- hunting and harvesting areas
- water sites — wetlands, jila and springs
- historical sites
- burial sites and rayi places
- old sites: archaeological and other heritage sites such as at Kunin.

Objectives:

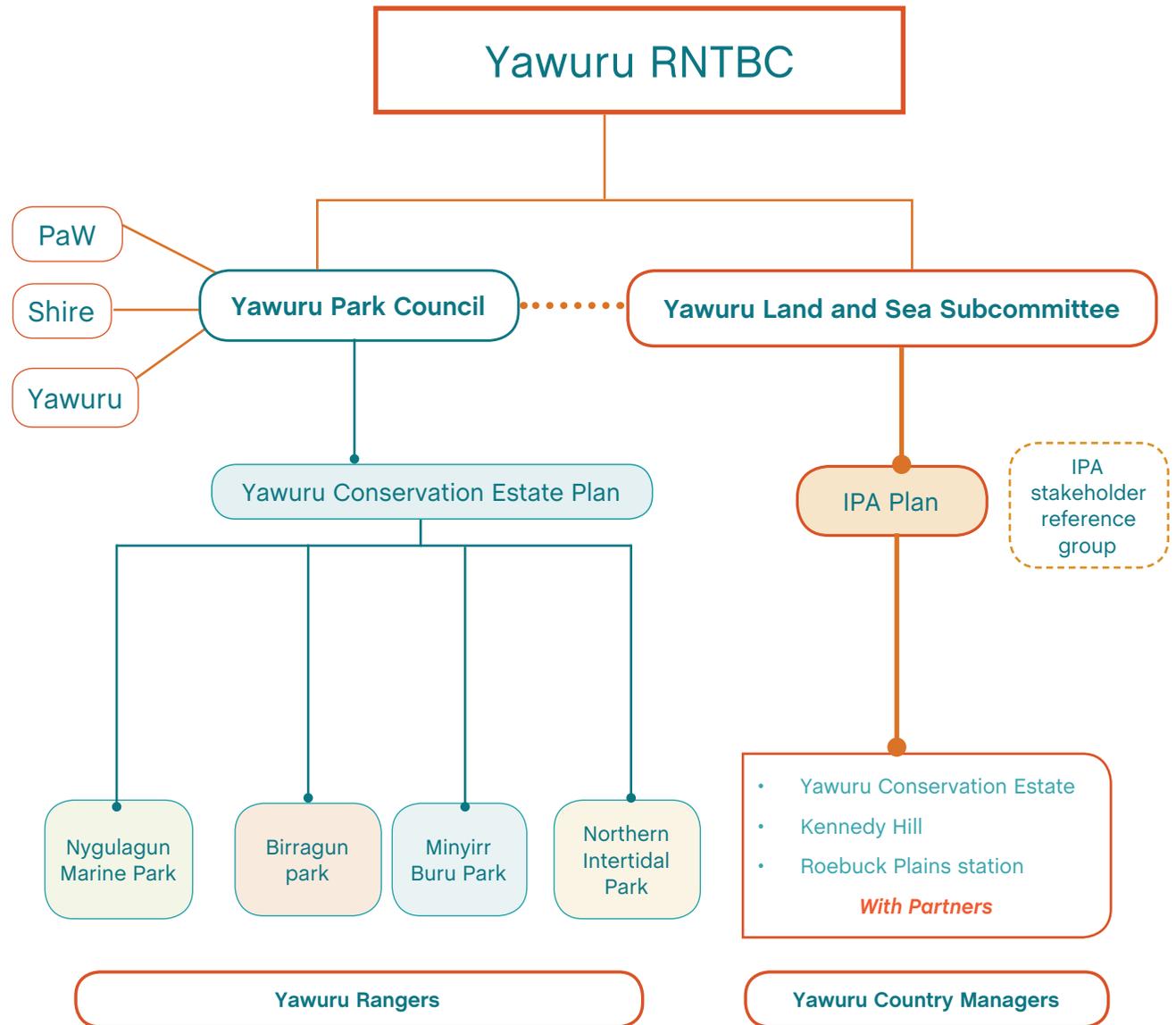
- Cultural mapping of all areas of significance within the Yawuru IPA is completed and digitized, available to the Yawuru community, and being used by the Yawuru GIS program to support planning and decision making.
- All significant Yawuru areas within the Yawuru IPA are managed according to the IPA POM.

Strategies:

- Use Yawuru GIS capability to digitize Yawuru cultural mapping data for storage, communication, education, site management and site protection.
- Develop site-specific management plans, particularly for restricted areas.
- Seek funding for Yawuru cultural and ecological mapping by Yawuru country managers.
- Develop geospatial mapping technique for Roebuck Plains station as a tool for assessment and decision-making for integrated land use for biodiversity, cultural, conservation, pastoral, agricultural and mining interests.



Yawuru IPA Governance Framework



Target 3: Yawuru Rights, Responsibilities and IPA Governance

Yawuru people have a cultural responsibility to take care of the country as well as to help educate others about the land and waters, especially places that need to be protected.

Under the Yawuru IPA POM we will refer to our Yawuru RNTBC sub-committee to guide our land and sea country management work. It is through such consultative governance structures that the management of Yawuru IPA will be sustained.

We will work closely with our partners, in particular PaW and the Yawuru Rangers across the Yawuru Conservation estate, to plan, undertake research and manage the Yawuru protected areas, and will seek their support to develop a culture-conservation based economy that will support the Yawuru Country Managers programs (see Appendix 4).

Vital to this is the recruitment and training of the Yawuru Country Managers, and developing on-country programs for Yawuru youth.

Ensuring access to important cultural sites through the implementation of the Yawuru IPA work plan will foster the teaching and leadership development of our young people, so that they can continue our conservation and cultural protection work.

Education and communication about the IPA will assist us in gaining support and respect in the wider community for our conservation work and the cultural values of our country.

Nested targets:

- Yawuru country managers: male and female, advised by the Land and Sea sub-committee
- economic independence: to develop a cultural conservation economy that supports the Yawuru
- Yawuru leadership and succession
- Yawuru access to country
- Yawuru training and leadership
- youth programs such as Yawuru youth rangers

Objectives:

- Yawuru people are managing the Yawuru IPA capably and effectively, with good governance and sound evaluation processes.
- Yawuru have successful collaborative partnerships with stakeholders.
- Yawuru people are working as land and sea managers, with a functioning and well resourced Yawuru Country Manager group.
- Yawuru run a well-funded and continuing IPA project based on culture-based business models.

Strategies:

- Develop a Stakeholders Reference Group of Yawuru community representatives, NBY staff, partners and stakeholders, and hold regular meetings.
- Hold regular PBC sub-committee meetings.
- Employ and train a team of Yawuru country managers (fulltime/part time/flexible work arrangements) using all on-ground activities as opportunities for employment, training and education.
- Develop fee-for-service arrangements with third parties, using Yawuru Country Managers' skills and experience.
- Formalise partnerships through agreements, with regular reporting and communications with all partners.
- Report and communicate regularly with all stakeholders and Yawuru community.
- Develop programs and projects to encourage Yawuru participation and engagement.
- Evaluate and review Yawuru IPA project annually, through MERI Plan and other means.
- Work with joint management partners (PaW and Shire) to develop management strategies and implement them on a landscape scale for fire management, weed eradication and other activities of common benefit.



Yawuru dune systems

Target 4: Niyamarri – Sand Dunes

The sand dunes defend our country from the tidal surges that come with wet season cyclones.

Old people used to camp all along there – it's full of middens, shells. Bush tucker all around – yaminyarri (*Terminalia ferdinandiana*), ngaliwany (wild pear/*Personia falcata*). People would grind wattle seeds. They'd eat langgurr (possum) that lived in the big gum trees where the golf course is now. That area was full of trees – and barrjarniny (wallaby/kangaroo) and jiribuga (echidna). You would find jiribuga in the rocks, some in the ant beds; they taste like pig and you burn off the spikes and roast.

Cissy Djiagween

Exposed Holocene white dunes run parallel to the coast along Cable Beach and to the north. Older, pink pleistocene dunes fringe Roebuck Bay. These dunes sometimes cover limestone platforms. There are some low limestone cliffs from Willie Creek south towards Coconut Wells and around Yardugarra on Thangoo station.

Our niyamarri (sand dunes) carry many of the stories of our ancestral beings that formed our country, revealed in songlines that cross the Australian continent.

In the 40s and 50s this whole place [Beacon Hill at the New Jetty] had big, white dunes – sandy, you'd sink into them. They were filled with middens and artefacts – shells, grinding stones. There were three places in these dunes that should never be touched – for cultural reasons. There is a cycle that everyone should understand; people would sing and make corroboree and then everything – fish, oysters, grubs – would be in their thousands. I told them not to damage those dunes. They are also important for cyclone protection, a windbreak for the town.

Cissy Djiagween

The foredunes are often sparsely vegetated. On the more established sandhills, pockets of vegetation contain species such as the Beach Bean creeper (*Ipomea pes-caprae*) and jigily (*Lysiphyllum cunninghamii*). Dense shrublands exist on the back slopes and in hollows behind the dunes.

Within the shelter of coastal sand dunes lie the monsoonal vine thickets. These form a distinct ecological community, allied to rainforests further north, which includes many useful shrubs

and trees, from which we harvest berries, fruits, seeds and gum of plants to eat (e.g. narwulu/Blackberry tree, magabala/Bush Banana); parts of plants used medicinally (e.g. yaminyarri bark used to treat rheumatism and sores, and gunggara/konkerberry leaves used as a smoke medicine to cure diarrhoea or sores) and for ornamentation. Yaminyarri (*Terminalia ferdinandiana* – commonly known as gubbinge) are found behind the dunes. They help to stabilize the base of dunes with their roots. The wood of certain trees was used for fires and for making tools.

Because of their ecological significance and vulnerability, the monsoonal vine thickets – *mayingan manja balu* – have been listed as a Threatened Ecological Community (TEC) under the EPBC Act.

Introduced weeds, such as Black Pea (*Macroptilium atropurpureum*) and Hairy Morning Glory (*Merremia aegyptia*) often overwhelm the vine thickets. Late hot bushfires damage vine thickets and yaminyarri groves.

Some significant animal and plant species in niyamarri:

- yirraman-ga – umung-umung/Hermit Crab
- gunbaliny – *Haematopus longirostris*/Pied Oyster catcher
- gardgu – *Corymbia polycarpa*/Long-fruited Bloodwood
- nirliyangarr – *Acacia bivenosa*/Dune Wattle



Midden at Broome Port. Source: Sarah Yu

- bardirl-bardirl – *Ptilotus exaltatus*/Mulla mulla
- rarrga-rarrga – *Spinifex longifolius*
- min-min – *Crotalaria cunninghamii*/Green Birdflower

We burn rarrga-rarrga on top of the dunes, and the ashes from the burning grasslands in the water attracts the fish, like burley. The wind has to be in the right direction, or you do it on a still day.

Jimmy Edgar

Nested targets:

- Bugarrigarra stories
- Middens
- Burial and rayi (conception/spirit) sites
- Mayingan manja balu – Monsoonal vine thickets
- Camping and cooking areas
- Kennedy Hill
- Old living areas such as Jilbanung

Objectives:

- Maintain and protect coastal sand dunes and maintain ecosystem health.
- Coastal and inland middens are mapped and being protected.

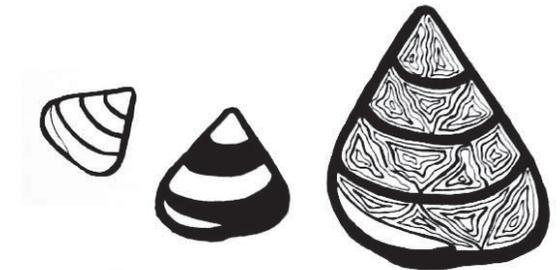
- Coastal monsoonal vine thickets are mapped, assessed and being protected from threats.
- Biodiversity and habitats of inland, linear sand dunes are being protected.

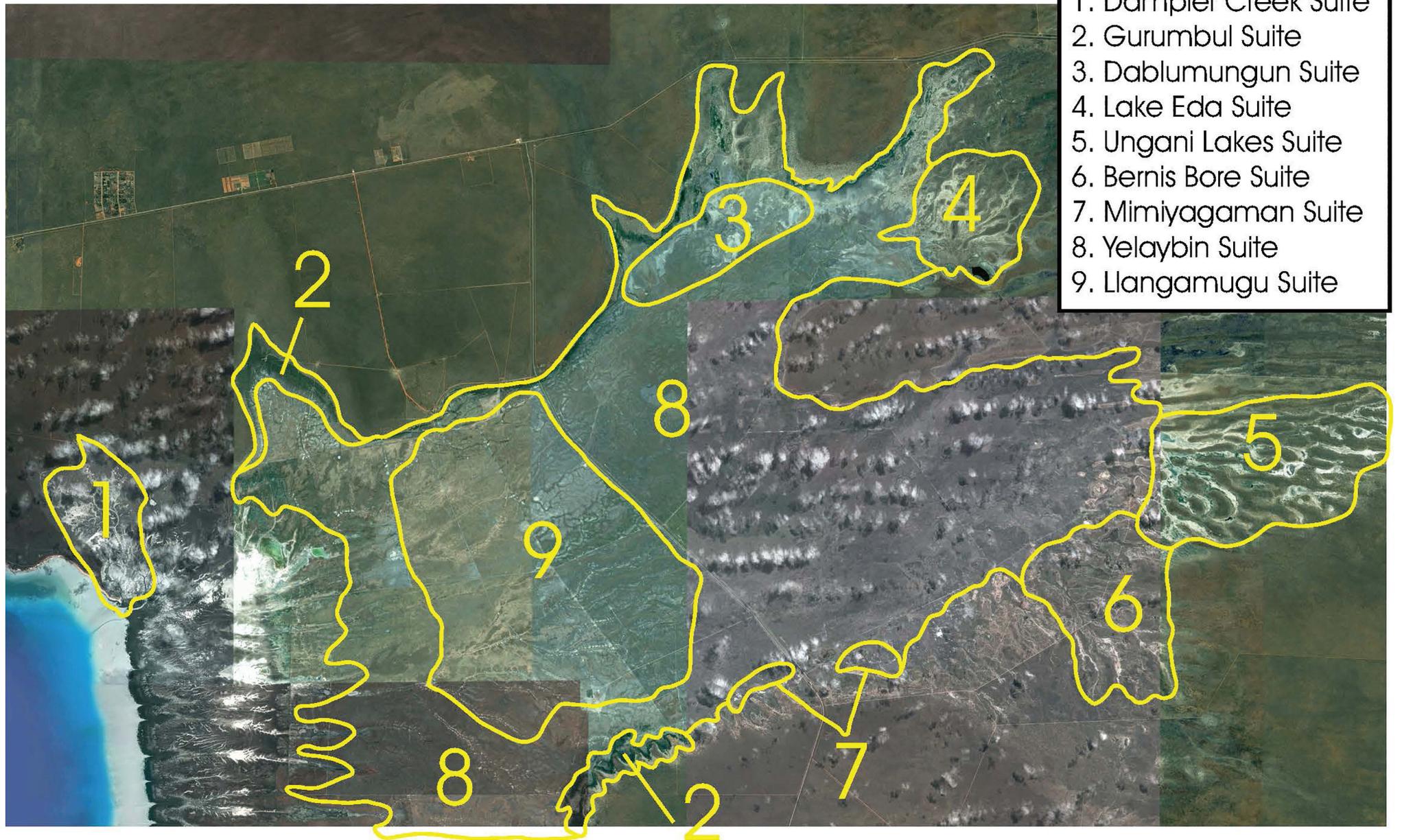
Strategies:

- Identify and limit track access in popular areas, focusing initially in the Coconut Wells and Bilingurr and Crab Creek areas.
- Rehabilitate damaged dune systems by track closure, revegetation and removal of weeds from monsoonal vine thickets.
- Investigate archaeological sites.
- Engage Yawuru people and supporters in dune rehabilitation, maintenance and protection, starting with Kennedy Hill.
- Develop fire management programs to protect dune ecosystems, in particular the ecologically significant vine thickets and middens.
- Stabilize and rehabilitate fire-damaged dunes with partners.
- Develop programs with partners for weed removal and annual monitoring/management in coastal dune systems.
- Develop programs with partners to protect endangered species, such as the Bilby, and others that may become threatened by the cane toad invasion.



Yawuru Rangers mapping monsoon thickets in Yawuru conservation estate and IPA





Map 8; Megascale Wetland Suites: Semeniuk 2013.

Target 5: Bilarra – wetlands

We call our permanent water places jila, or 'living waters'. In Yawuru country there are jila, springs, lakes and ephemeral soaks and sumplands scattered along the coast and across Roebuck Plains. There are no rivers. Our most extensive wetlands are at Nimirragun, the plains behind Jilbanung and across Roebuck plains and its catchment area around Deep Creek. Many of our most significant springs are on the fringes of the southern end of Roebuck Plains.

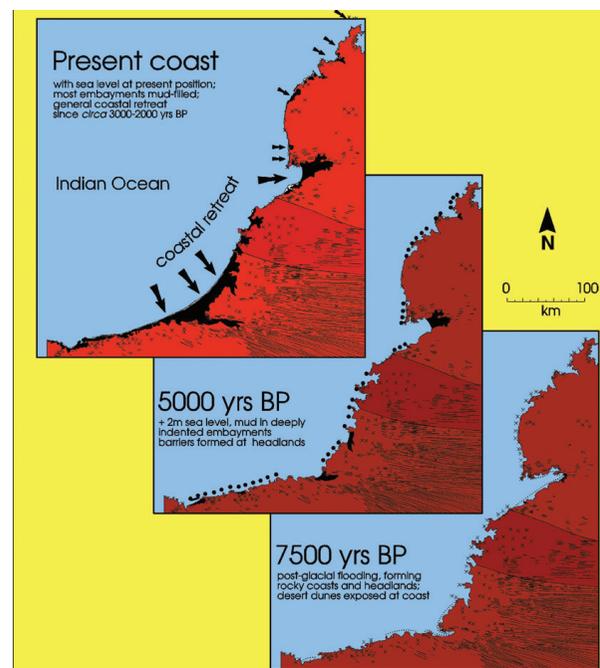
Our wetlands sustain many plant and animal species including much birdlife, and provide breeding habitats for aquatic invertebrates and other animals.

Historically, our wetlands have been damaged by grazing pressures, feral animals and weeds, increased run-off and changed fire regimes, resulting in declining ecosystem health or fragmentation. More recently, Yawuru people have become concerned about the extent of groundwater use for the many new development projects that affect Yawuru country – the construction of roads and housing estates, changing land use for fodder crops, on-shore oil and gas extraction and other mining activities.

The surface wetlands are created and sustained through a range of hydrogeological processes [Semenuk 2010], which are not yet fully understood.

The largest wetland in Yawuru country is the Roebuck Plains megascale wetland (Semenuk and Semenuk 2013) that lies within the Roebuck Plains and Thangoo stations (see Map 8 mega

scale wetlands). Roebuck Plains and Roebuck Bay are usually considered to be separate entities, however, our research indicates that they are one. 7000 years ago, the sea level extended to the dunes and creek systems near Lake Yidarr and the Ungani Lakes. Across the plains, climate change is now evident in the fringing middens, where the remains of shellfish and other mangrove organisms are found. Climate change has also been recorded in our cultural history of the plains. Roebuck Plains are of great ecological significance at a global, national and regional level for their many hydrogeological, ecological and cultural values.



7000 yr coastline: Semenuk and Semenuk 2013

Cultural values of wetlands

Traditionally, Yawuru people moved according to seasons between water sources along the coast, across Roebuck Plains and towards the range country of the Walang-gar (the Edgar Ranges). Knowledge of the location, size and condition of the water sources was essential for our survival as we traversed the country from inland to coast. These waters are manifest of *Bugarrigarra*. Their names were given by *Bugarrigarra*, as were their associated narratives, which link water places both geographically and temporally.

Most of our jila or springs are thought to be inhabited by various jurru (metaphysical serpents, called yungurungu in Nyikina), powerful beings to be respected and approached in prescribed ways.

Paddy Roe, a Nyikina elder who lived at the Sheep Camp on Roebuck Plains station, explains about the jurru that form the springs on Roebuck Plains:

All springs country ... never dry up ... Yungurungu is the rainbow snake. He hold that water always. Never go dry must be something underneath ... that's why these springs [are] permanent springs you know from Bugarrigarra. He bin like that water snakes never go 'way from this part of the country.

(quoted in Benterrak, Muecke & Roe 1984:37/51)

Paddy Roe



Fence Spring at Mimiyagaman

Paddy also describes the characteristics of the yungurungu that reside in Mimiyaagaman, a spring on the southern end of Roebuck Plains, and the consequences of disturbing them:

That's the boss Mimiyaagaman that grass there that's his ... beard ... belong to that yungurungu snake that his beard ... [and] if someone break the grass take away the leaves – oh big rain.

(quoted in Benterrak, Muecke & Roe 1984:85-86)

Paddy Roe

Our 'living waters' are physical evidence of the continuity of the *Bugarrigarra* in the present, and under our Law it is our responsibility to look after our living waters.

Nested targets:

- Ramsar Wetland of intertidal mudflats, samphire/saline grasslands of high value bird habitats supporting globally-significant biomass of marine invertebrates.
- springs
- lakes
- groundwater (flows and recharge)
- cultural sites

Objectives:

- All wetland suites are assessed and monitored, providing baseline data on groundwater, salinity levels and water quality.
- All springs are in good condition, free of weeds and cattle, and with unimpeded groundwater flow.
- All wetlands are managed to reduce cattle impacts.
- Wetland vegetation is intact to support the biodiversity of habitats, including those for migratory birds.
- Yawuru rights in groundwater management are promoted and secured.

Strategies:

- Develop a monthly monitoring program of groundwater levels and salinity to establish baseline data against which to measure future changes (eg impacts of climate change) and evaluate condition.
- Remove and monitor weeds in all springs over the next five years.
- Remove pump and cattle at Sheep Camp spring (Roebuck Plains) by 2017.
- Fence around lakes and springs to remove and/or control cattle by 2017.
- Manage cattle in all wetlands (through fencing and periodic removal). Exclude cattle from selected wetlands by 2017.
- Complete map and assessment of wetland ecosystems by 2017.



Vic Semeniuk with Yawuru Rangers Anthony Richardson and Yawuru Senior Jimmy Edgar, water monitoring.

- Regenerate native vegetation (trees, shrubs and grasses) in selected lakes and springs, using resources from Yawuru native nursery.
- Continue research into groundwater processes, specifically:
 - Wetland monitoring program
 - Carry out cross-seasonal field assessments with wetland scientists and the Yawuru country managers during Barrgana, Laja and Man-gala seasons
 - Monitor wetlands annually and mitigate impacts of cane toads (if/when they occur).



Roebuck Plains

Target 6: Birra – inland country

Birra includes the pindan plains, containing many species of grasses, shrubs, eucalypts, acacias and other overstorey species, which extend east to the range country and the red desert sand dunes on the eastern boundary of our traditional country. Scattered through birra are inland springs, claypans, lakes and jila, paperbark forests, and rocky outcrops, each with distinctive vegetation and soil type providing habitats for a variety of wildlife.

- Murruga yirr Garnburr: Paperbarks: Saltwater paperbarks fringe the saline grasslands, growing in characteristic multi-stemmed clumps with a dense evergreen crown. Paperbark thickets provide shade and shelter, and are habitat for many animals, from butterflies to nesting birds such as honeyeaters.
- Murruga (Melaleuca alsophila) trees, the smaller paperbarks, form a corridor beside sandy creek banks — for example, along Deep Creek and Collins Creek, which enters Gumaranganyjal (Roebuck Plains) from the north-east.
- Gurlju buru is the Yawuru name for grasslands, which are found along dunes and the edges of the marshes. Long speargrass, spinifex, razor grasses and kangaroo grass are found on the marshes. At the end of the season, the wallabies dig up their roots to eat.
- Bundu: Saline grasslands/mudflats: behind the mangroves are broad tidal flats with wirn-gi/samphire (*Tecticornia* spp.) and other shrubs usually found growing on the landward margins. Above the high-water mark on the flats are large pastures of grasslands, such as those found on Gumaranganyjal (Roebuck Plains) inland from Crab Creek, at Buckley's Plains and behind Willie Creek. Rains in the wet season flood the grasslands. These ephemeral wetlands support a myriad of birds, including inland-specialist migratory birds. Yarrinyarri (bush onion) bulbs are eaten during Wirralburu (May), also sought by ngamagarri (Little Corella), gudurrwarany (Brolga) and barrgara (bush turkey/Bustard).
- Bundurr-bundurr: pindan country is the grassy woodland vegetation, with eucalypts and wattles, that dominate the red sandplains of Yawuru country; it is where most of our fruit and medicine trees are found. This is where we hunt for warli (meat) — turkey, goanna and blue-tongue skinks, echidna, kangaroo and wallabies.
- Warnangarri: Scattered across birra are some rocky outcrops formed from lateritic gravel, mostly on the southern end of Thangoo, where caves form and erosion gullies carry water to the coast. Here are caves that provided shelter during the wet and other cultural sites.

A major threat to birra is wild, hot, unmanaged bushfires, which damage the country and encourage the invasion of weeds such as Wild Passionfruit (*Passiflora foetida*). The Yawuru IPA will provide opportunities to develop fire management Plans with partners such as government agencies including the ILC, and to train Yawuru Country Managers in best-practice fire management of landscape-scale areas, and across pastureland for the cattle enterprise.

Although vast, this area is vulnerable and increasingly under threat from mining activities.

The animals in Birra will be the first casualties of the coming cane toad invasion. Through the IPA we will closely monitor these changes and impacts, and develop adaptive strategies to work towards maintaining a balance as the food chain is disrupted.

Nested targets:

- fire management
- flora
- fauna
- hunting areas
- bush resources
- habitats
- cane toad mitigation



Roebuck Plains after fire.



Roy Eastwood Jr with Jarlangardi (Goanna).

Objectives:

- The biodiversity of Yawuru pindan country is mapped, assessed and being protected from known threats.
- Well-trained fire management team, comprising Yawuru and partners, is integrating traditional principles to manage wild fires in Yawuru country.
- A connected and well-managed conservation estate is reached across the diverse tenures of Yawuru country.
- Traditional hunting and harvesting areas in pindan country are being protected and are accessible to Yawuru people.



Country Manager Pius Gregory undertaking Rangeland Condition Monitoring.

Strategies:

- Work with partners to reduce impact of feral animals: cats, horses, camels, foxes and cane toads (when they arrive).
- Integrate traditional knowledge and best station management practices to develop with partners
- a suitable fire management regime over Yawuru country and pastoral lease.
- Negotiate with mining interests to minimize impacts of mining and exploration and apply monitoring and environmental standards.
- Protect traditional hunting and harvesting areas on Roebuck Plains station and within the Yawuru Conservation Park.
- Develop further stages of Yawuru IPA to ensure connectivity of conservation values across Yawuru country.
- Develop a land-based resources strategy to build a scientific knowledge base of terrestrial species and health of country alongside Yawuru traditional knowledge.
- Due to arrive in Yawuru country by the wet season of 2015.





WALYJALA-JALA JAYIDA
YAWURUNGANY BURU
LOOKING AFTER YAWURU COUNTRY

RIGHT-WAY HUNTING
TAKE ONLY WHAT YOU NEED



Target 7: Nagulagun – saltwater country

(Roebuck Bay: deep water and intertidal zone)

Nagulagun is our sea country—the coastal region where we have lived and sustained our families. Nagulagun includes all that lives in the sea: the fishes, turtles, dugongs, and their habitats. It is nagula (seawater), the seabed, barnany (the reefs), muri (tidal creeks), jani (white sandy beaches), the sand bars that cross Roebuck Bay, the seagrass meadows, jabarlbarl (mudflats and claypans) and all the life they support. It is the currents and tides.

Cultural values

I learnt to read the sea. I saw today, it is good for bluebone...there's all different seasonal shifts for molluscs, fin-fish and crustaceans...oyster, birrga-birrga, cockles, bunymin, li, mulj (like periwinkle in the mangroves), njiwa (green crab in the long bombs, taste like prawns), umung-umung (hermit crab)... you never starve at the ocean.

Kevin Puertollano

Customary fishing

For Yawuru, fishing is more than a recreational activity. Fishing is an expression of culture that reconnects people with their country, their spirit places, their ancestors and *Bugarrigarra*.

Ecological values

Roebuck Bay is a Ramsar-listed site, with one of the world's most diverse suite of benthic fauna [see NIOZ 97 report]. The benthos of the coastal mangrove area and intertidal zone attract tens of thousands of migratory birds, which feed here during the northern hemisphere winter. Extensive seagrass beds support turtle and Dugong. The Roebuck Bay marine environment also provides habitat for the Snubfin Dolphin and a range of other species listed as of importance under the EPBC Act. It is essential that conservation measures effectively protect this intertidal and coastal zone from present and future degradation of these values. [See Map 5]

Nested targets

- saltwater jurru (metaphysical serpent-like beings)
- fish-traps
- dolphins and whales
- dugong and turtle
- fish
- stingray
- shellfish
- reef & coral
- mudflats (calcium carbonate) and the intertidal area
- mangroves

Objectives:

- Biodiversity of intertidal and deep water areas is maintained and healthy, to protect the culturally and globally significant values of Roebuck Bay.
- Sustainable fishing is being practised in Roebuck Bay by all users.
- Nutrient and stormwater run-off into Roebuck Bay is reduced significantly.

Strategies:

- Work with partners to develop a model of marine conservation and management that builds on Yawuru cultural traditions to ensure a healthy marine environment, e.g. adapt fishing regulations to match Yawuru seasonal harvest of marine resources.
- Develop an education program for Broome's fishing community to generate respect for the Yawuru saltwater seasons and customary fishing practices.
- Maintain and develop monitoring of drainage and nutrient run-off into Roebuck Bay, and improve drainage management by adopting environmentally sustainable principles with partners and stakeholders.
- Build a scientific knowledge base of marine species and health of country alongside Yawuru traditional knowledge, by developing relevant marine research projects with partners.



Yawuru 2011 Use and Occupancy Map Survey Jim Edgar

0 5 10
Kilometres

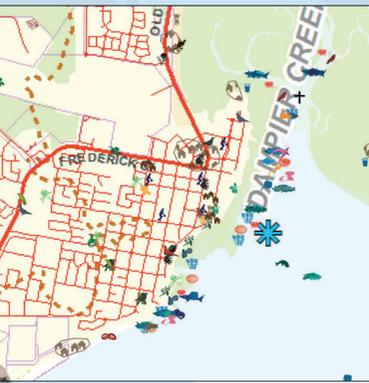
Map produced by Spatial Data Analysis Network, Charles Sturt University, for the Indigenous users of the Yawuru area, February, 2012.

Note: The location of some Use and Occupancy points have been displaced slightly for cartographic purposes



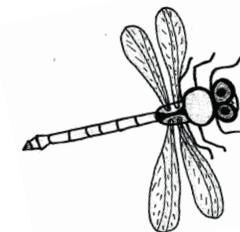
The Yawuru Native Title Holders are undertaking this map survey on their traditional lands with the support of the Yawuru Native Title Holders and under the auspice of Nyamba Buru Yawuru. This individual map biography was conducted during May 2011 as part of a pilot for a larger project. The information depicted on this map is only a portion of the total area used by Yawuru people and extent to which Yawuru country and resources are utilised. To date, only a small number of Yawuru people have been interviewed.

This map displays information that is the intellectual property of the mapped individual and the Yawuru Native Title Holders and is confidential. It is to be used only for the purposes authorised by the Yawuru Native Title Holders. The map may not be copied, examined or viewed in any public place without permission from the Yawuru Native Title Holders. This map does not constitute an Indigenous knowledge or use of the traditional lands of the Yawuru Native Title Holders.



Birds	Occupancy	Fish	Invertebrates	Plants, Wood & Earth	Mammals
<ul style="list-style-type: none"> Bar Shouldered Dove Birds Eggs Bush Turkey Ducks Emu Friar Bird Honeyeater Magpie Geese Masked Lapwing Miner Mud Hen-Coot Peaceful Dove Sandpiper Quail Sandpiper Snipe Topknot Other Bird 	<ul style="list-style-type: none"> Birth Site Camp Death Site Dream Story Site Permanent Community Camp Permanent Residence Sacred Site Swimming Place Sporting Ground Other Cultural Site Dream-story Site Permanent Community Camp Ceremony Site Dream-story Site Other Cultural Site 	<ul style="list-style-type: none"> Barramundi Barramundi Cod Bluebone Bream Butterfish Catfish Coral Trout Flatfish Flathead Garfish Groper Grunter Jewishfish Leatherjacket Longtom Mackerel Mangrove Jack Mullet Mulloway Pumpkin Head Queenie Rock Cod Saw fish Shark Skippy Salmon Sly Sly Snapper Spanish Flag Stringray Sweet lips Trevally Tuna Whiting 	<ul style="list-style-type: none"> Big Pearl Shell Birna Bomb Shells Clam Cookies Conch Shell Girrbaju Little Pearl Shell Mud Crab Mussels Oyster Prawn Squid Other Crabs 	<ul style="list-style-type: none"> Beach Spinifex-Rtarrga Billy Goat Plum Blackberry Tree Blood Wood Bush Banana Bush Onion Conkerberry Drinking Water Earth Material Food Plant Guwai Mangrove Fruit Medicine Bark Tree Medicine Plant Munduru Ngaliwany Saltwater Paper Bark-Murga Sandlewood Specialty Wood Billy Goat Plum Blood Wood Jigily 	<ul style="list-style-type: none"> Agile Wallaby Cattle Dugong Flying Fox Red Kangaroo Reptiles Big Goanna Green Back Turtle Other Goanna Turtle Eggs Yawuru living water site Yawuru cultural site Homesteads Cadastre Roads Watercourse Contour Swamps and areas that food Lakes Sands Native vegetation Non vegetated areas

Target 8: Seasonal Resources and Biodiversity



Our use of the land and sea is based on knowledge and traditions. A senior Yawuru man Jimmy Edgar has completed a biographical map depicting where and what resources he has harvested in his lifetime.

We will use our traditional knowledge and cultural heritage to guide our planning for the successful conservation of our land and sea.

Protecting our harvest species and ensuring that they are plentiful has a cultural base. Seasonal rules regulate the harvest of natural resources, and in the past, increase ceremonies were performed to ensure that particular resources, such as bluebone, salmon, or shellfish, were in plentiful supply in the right season.

Yawuru people follow six seasons. We know when animals are fat and ready to be eaten, or when they are mating or breeding and should be avoided. People constantly read the changes in the land and sea to know where to go and what to hunt and collect.



Yawuru people are aware of the food web that links their resource and harvest species to the other species within their country. It is important to ensure that balance is maintained. Cane toads will disrupt this balance and we are committed to monitoring and where possible, mitigating their impacts.

Objectives:

- Yawuru seasonal framework is adopted in all Yawuru country management plans and activities, to provide indicators to assess climate changes to Yawuru country.
- Cultural and ecological corridors are in place across Yawuru country.
- Ecologically-sustainable harvesting of species practised by Yawuru and other users.
- Yawuru seasonal resource harvest calendar is used as a guide to sustainable recreational and commercial fishing.
- Cane toad invasion is mitigated and and threatened species are protected.

Strategies:

- Collect and collate data to develop a seasonal framework as a management tool for assessing and monitoring climate change.
- Using the Yawuru GIS program, map location of Yawuru harvest species and develop an evaluation program to assess their health to inform the development of ecological and cultural corridors across Yawuru country.

- Assess and monitor harvesting of seasonal resources by Yawuru and other indigenous people living in Yawuru country.
- Implement communication and education strategies to promote the Yawuru seasonal framework.
- Assess impacts of cane toad invasion on popular harvest animals, such as goanna, and develop appropriate seasonal harvest practices to adjust to these changes.
- With support from partners, connect conservation areas with various tenures through the declaration of Yawuru IPA in stages.





10 YAWURU IPA PROGRAM LOGIC

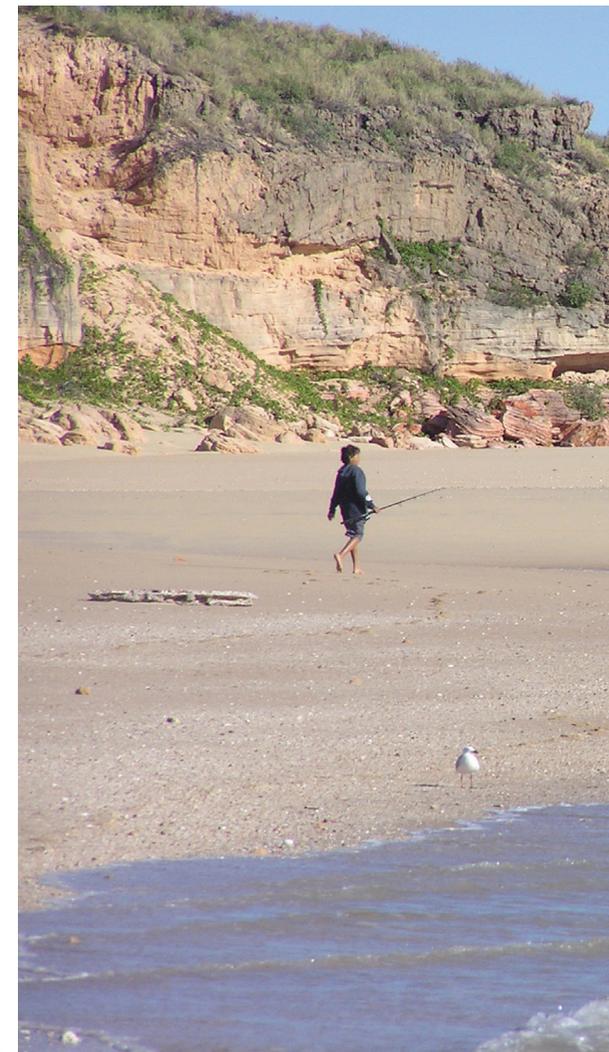
The Yawuru IPA will monitor and evaluate its progress towards the targets outlined in this plan in accordance with the Yawuru Program Logic Framework.

A Monitoring, Evaluation, Reporting and Improvement Plan (MERI) will be developed in the first year of operations and then implemented to achieve ongoing adaptive management of Yawuru Country.

The Yawuru IPA Country Managers will undertake onground works and training within this plan to achieve the cultural and conservation objectives.

The MERI plan will set indicative performance benchmarks to review management success and change.

See Appendix 2 Yawuru IPA Program Logic.





Vicki Mckenna and Jan Tamwoy talking about Yawuru Country.



Crabbing at Thangoo - Jimmy Edgar and Keiffer Yu



Fieldwork - preparing the IPA Plan of Management.

11. THE NEXT 10 YEARS

Through the IPA Yawuru plans to achieve the following outcomes within the next ten years:

- Dedication of Stage 2 Areas by 2018.
- Improved habitat condition and connectivity of existing native vegetation through stock exclusion, weed eradication and selective replanting of native grassland species across Roebuck Plains.
- Established strong partnerships to reduce the impact of invasive species notably weeds, cats, foxes and cane toads. across Roebuck Plains and the connected Roebuck Bay Ramsar site — part of the Yawuru Conservation Estate. This will substantially enhance biodiversity values over a range of connected habitats and land tenures.
- Foundation built for future engagement in Carbon Farming Initiatives (CFI) by securing biodiversity and carbon benefits through improved management.
- Reduced impact of wild fires by developing a prescribed burning program (ground and aerial) at end of each wet season incorporating traditional ecological knowledge, scientific principles and requirements of station operations, undertaken by Yawuru Country Managers and Yawuru Rangers in partnership with ILC, PaW and FESA.
- Improved condition of the mega-scale Roebuck Plains wetland and its nine

components, especially degraded ecosystems such as the culturally significant springs and other wetland habitats.

- Engaged and trained Yawuru people as Country Managers in sustainable, integrated cultural and natural resource management, based on sound scientific analysis and traditional ecological knowledge, beyond project completion.
- Enhanced biodiversity values by creating a more resilient and better connected landscape over a range of habitats through wildlife corridors extending from Roebuck Bay, the Roebuck Bay Ramsar site, across Roebuck Plains and catchment to the boundaries of Yawuru country.
- Increased the capacity of Yawuru people to become engaged in sustainable, integrated ecological and cultural management of country.
- Educated the broader community about the conservation/biodiversity values of Roebuck Plains and their link to Roebuck Bay through various media productions.
- Established an archive of scientific and traditional knowledge from on-ground field activities, such as groundwater monitoring, to be used in future planning and work programs, and to contribute to the national government's collection of data

Within the next 10 years, Yawuru aim to put into practice the principles of our holistic view of country and have a connected conservation estate/domain across the whole of our country.

With the development of our country knowledge database and the GIS system we will have the capacity to monitor and assess changes in our country through a Yawuru seasonal framework that will also be used for predictive modelling. The Yawuru Country Managers will be trained and working with their partners in the PaW Yawuru Ranger group and with neighbouring indigenous ranger groups.

The cultural and natural values of Yawuru country will be monitored and assessed, and strong measures taken to protect and manage them, integrating Yawuru ecological knowledge in this process.

Yawuru youth will be able to access their country, their traditional knowledge and language and will be visiting and learning about culture and country on a regular basis.

That through the work of the IPA and the Yawuru Land and Sea Unit that our liyan will feel good and strong as we tackle the pressures of our ever-developing world.



APPENDIX ONE – ADAPTIVE MANAGEMENT TOOLS

Zone 1 savanna - utilisation rate monitoring

Strategic grazing of livestock will continue in some Zone 1 areas on Roebuck Plains, in order to manage wildfire risk, but also in recognition that current grazing regimes are beneficial to many bird species, particularly those occurring in internationally important numbers such as Little Curlew, Oriental Plover and Oriental Pratincole (Watkins & Jaensch 2007).

A pro-active management regime will be established based on agreed triggers to determine when livestock are to be removed from these areas, and hence ensuring the approach is sustainable. Grazing periods and 'stock removal triggers' will be fine-tuned over time in the light of experience and monitoring results.

To date, sustainable utilisation rates of marine couch pastures have not been determined, but we are currently working with rangeland specialists from the Department of Agriculture and Food WA to address this deficiency and develop an appropriate methodology for stock removal based on improved scientific information.

Zone 1 riparian areas - transect and water quality monitoring

Livestock grazing is identified as a threat to wetlands on Roebuck Plains station (Semenuik 2014, DEC 2009). Cattle activity can provide a corridor for environmental weeds, lead to degradation within and around lake margins, and nutrient enrichment of the water body. It is proposed that these threats be monitored using the NAILSMA and UWA-developed Kimberley Wetland Assessment tool, which includes vegetation transects, photo-point monitoring, and water monitoring. This methodology is consistent with that being applied to freshwater monitoring by many Indigenous groups across northern Australia.

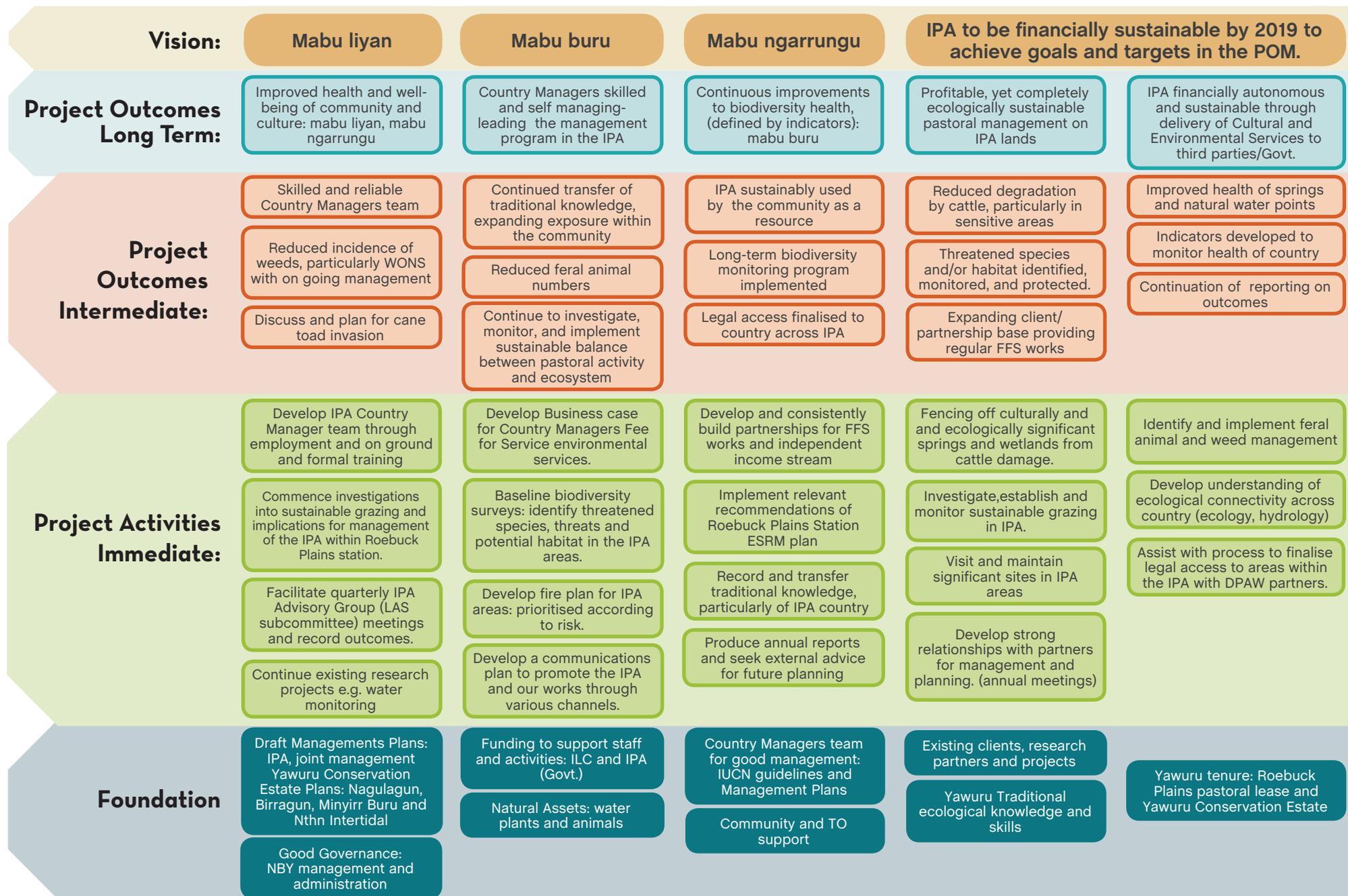
Monitoring would be undertaken annually during the late dry season, or following exclusion of cattle from riparian areas. Significant deterioration of water quality that potentially impacts riparian fauna or flora will trigger grazing management adaptations to manage the impact.

Zone 2 savanna - Rangeland Condition Monitoring

Current grazing of Zone 2 areas will continue. Ongoing monitoring will be consistent with the ILC national pastoral monitoring framework, in which photo-points are established on high productivity grazing lands to monitor long-term changes in vegetation condition (Rangeland Condition Monitoring). These are erected 1.5 to 2.5 kilometres from permanent waters, with photograph and vegetation species and density information collected. These sites are to be re-monitored at least once a year, in the early dry season when maximum species diversity is expected. Remotely sensed fractional vegetation cover data will be incorporated when it becomes readily available, which will complement the photo-point data on vegetation species and density.

Rangeland trends will inform ongoing pastoral management. It is important to recognize that short-term variation in environmental condition may not indicate long term trends, and in Zone 2, short and medium-term grazing pressure decisions are made by the station manager in relation to a multitude of seasonal, market and livestock variables.

APPENDIX TWO - YAWURU PROGRAM LOGIC

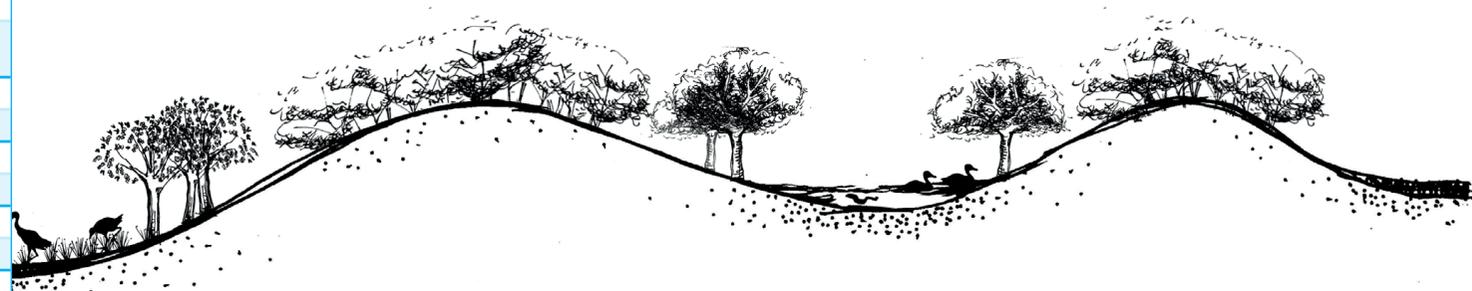


APPENDIX THREE - GLOSSARY OF LANGUAGE

Fish	Yawuru Language
Barracuda	Bararr – small
Barramundi	Mandi
Blue spotted stingray	Girngirn
Bluebone	Yingaliwa
Box Fish	Gubirdi
Bream	Munggu
Butterfish	Nyingul
Catfish	Langa
Coconut tail stingray	Yubugurr
Cod (Rock)	Munyjiyirdi
Coral Trout	Munyjiyirdi
Flat Fish	Ngarrayalu
Flathead	Gunabu
Flying stingray large spotted	Jirrimbi
Groper	Gambirdijunu
Grunter	Gungunbiny
Hammerhead shark	Lurrurr
Mackerel	Dirrga
Mangrove Jack	Yilany
Manta Ray	Manyjurral
Mullet	Gulbany
Oysterback stingray	Jangabarri
Pumpkin Head	Murruwarran
Queenie	Murruwarran
Reef Shark	Jurrwayi
Reef stingray	Bunyarnangga
Salmon	Walgawalga (Bluenose)
Sawfish	Yalwarr
Shark	Burdugunanda
Shark, large with flat head, edible	Bumbudjunu
Skippy	Juluniminy
Snapper	Yilany
Spanish Flag	Bandirrbandirr
Spotted small stingray	Jaya
Stingray generic	Birndany
Stonefish	Jayumardaji
Trevally	Yilinyjirri
Whiting	Rirrgalinya

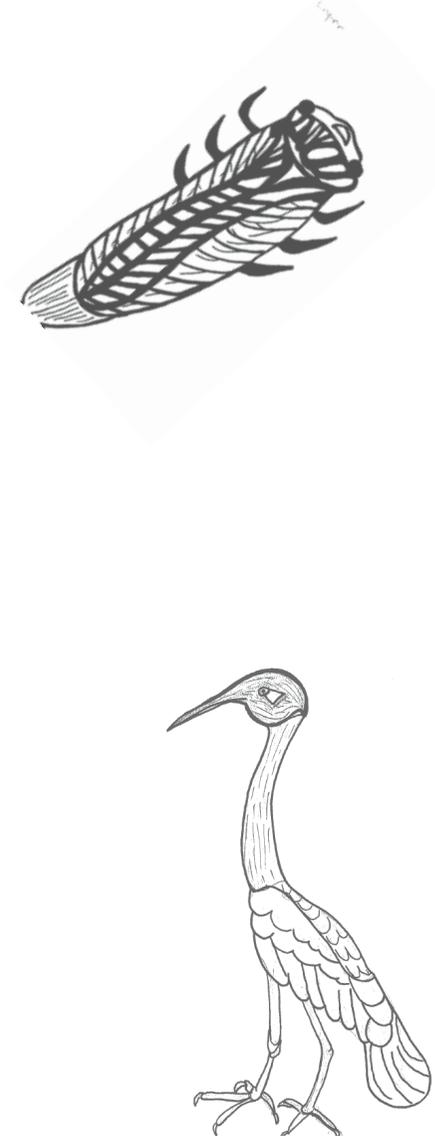
Birds	Yawuru Language
Barn Owl	Wiraju
Bar-shouldered Dove	Jugujuju
Bird Eggs	Jimbu (egg)
Black kite	Janun
Black winged stilt	Didirr
Blue winged kookaburra	Jawarrjawarr
Brolga	Gudurrwarany
Brown Honeyeater	Jilygily
Brown Quail	Burndaru
Bush Turkey	Barrgara
Ducks	Jibilyurr
Emu	Bijarda
Friar Bird	Jibalgurru
Frog mouth owl	Gulbijawa
Galah	Ngagalyalya
Ibis	Minarla
kookaburra	Galgaruru
Little Friar Bird	Jubagijubagi
Mud Hen / Coot	Duldul
Osprey – sea hawk	Jir
Pelican	Bilari
Pied Honeyeater	Warlgardirdi
Snipe	Guwayi
Southern Boobook Owl	Durrurr
White bellied sea eagle – large	Milginngurru
White Cockatoo / Little Corella	Ngamagarri

Mammals	Yawuru Language
Agile Wallaby	Barrjaniny
Big Red Kangaroo	Mirdimarlu
Bilby	Nalgumirdi
Cattle	Burlimanu
Dingo	Gurrirdi
Dolphin	Bajalbarra
Dugong	Nganarr
Flying Fox – Black	Nimanburr
Northern Blossom-bat small	Larnba-larnba
Northern Nail Tail Wallaby	Garrabulu
Porcupine / Echidna	Jiribuga
Possum	Langgurr
Red Flying Fox	Ngalminya-minya
Whale	Yari
Wild Pig	Ngangilngangil

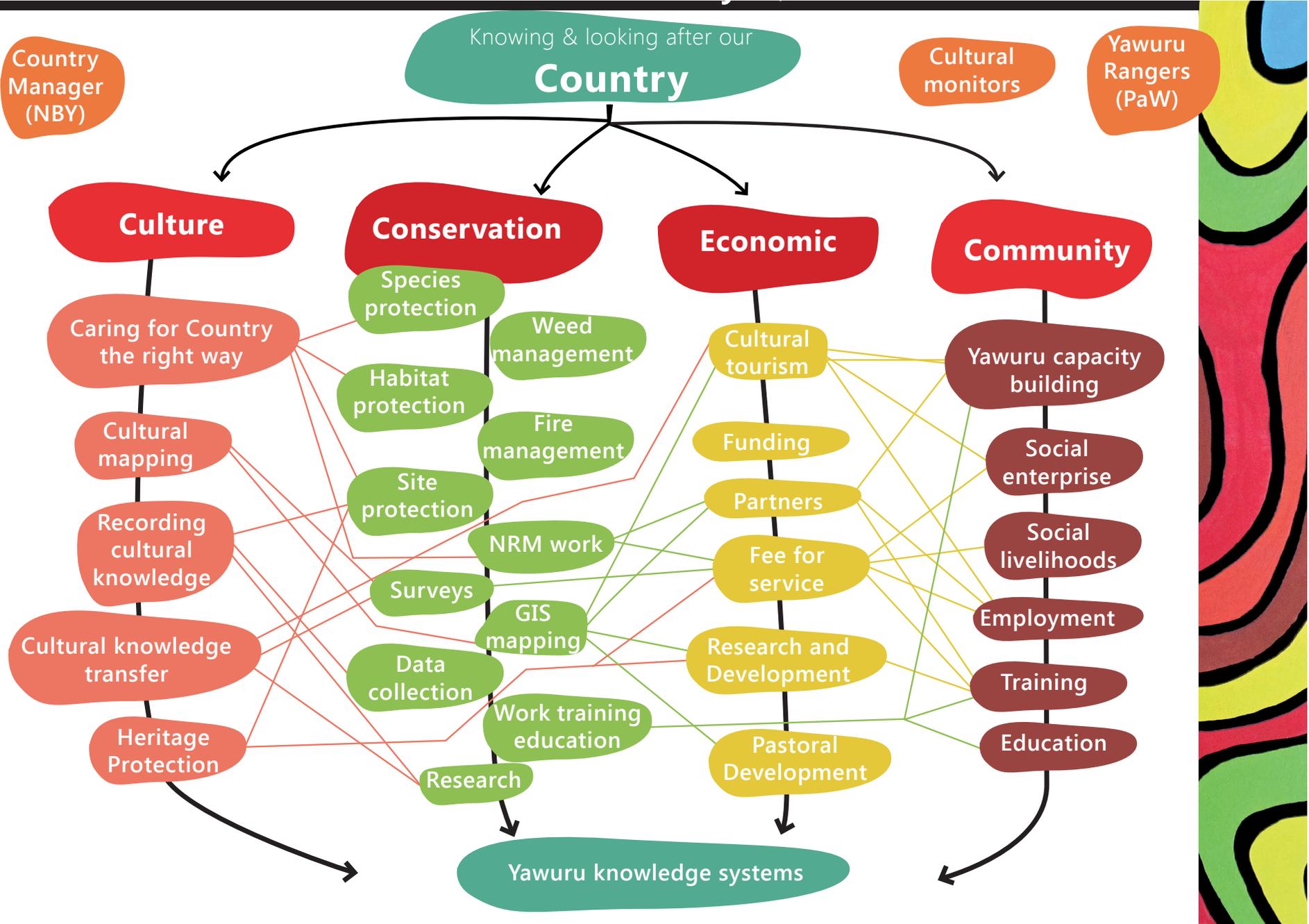


Reptiles	Yawuru Language
Big Goanna	Jarlangardi
Blue tongue Lizard	Ngalyag
Carpet Snake	Baninyburu
Crocodile fresh	Guwaniya
Crocodile salty	Linygurra
Dragon lizard	Janyju
Flatback turtle	Julmuru
Freshwater Turtle	Gularrabulu
Green Back Turtle	Gurlibil
Green Tree Snake	Guljuri
Hawksbill Turtle	Nilamilginy
King Brown	Wiril
Loggerhead Turtle	Minyjinyngurru
Mangrove snake Rock Python	Mawalanggarr
Rough tailed goanna	Birirmagarra
Sea snake	Wandanyjirr
Small-sized goanna	Gurabigi
Snake/insects/ any creepy crawly etc. generic	Jurru
Tata Lizard	Jarrbu
Thorny Devil	Jindigurr
Turtle Egg	Jimbu (egg)
Umbrella Lizard	Gulamana
Amphibians	Yawuru Language
Brown frog	Wardal
Frogs generic term	Walag
Other	Yawuru Language
Sugar Bag	Girrbaju
All Grubs including	Witchetty Bina

Marine invertebrates	Yawuru Language
Baler Shells	Bin-ga
Big Pearl Shells	Guwan
Black Lip Creek Oyster	Janga
Blue manna crab	Wurndarra
Blue Ring Octopus	Walmirimi
Bomb Shells	Niny
Clams	Mangal
Cockles	Jirringiliny
Conch Shells	Mala
Crayfish	Gambirdijunu
Earth worm	Rumala
Fiddler crab	Wirrili-wirrili
Freshwater prawn	Jarramba
Hairy crab	Wulurungurr
Hairy Mussels	Bunyman
Hermit crab	Yirraman-ga
Large Octopus deep sea	Bagarnburru
Lerp	Gawajal
Little crab common on the beach, ghost crab.	Marndan
Little crab, found in cone shell in mangrove	Bangalu
Little Pearl Shells	Jaguli
Long Reef Oyster	Nibarda
Mangrove Worm	Gadimba
Mud Crab	Wanggaja
mussel, type of on the reef	Jinggarabarndi
Octopus	Walmiri
Pipi	Birrigabirriga
Saltwater Prawn	Jirinymal



APPENDIX FOUR - CONCEPT DIAGRAM OF THE YAWURU CULTURAL CONSERVATION ECONOMY



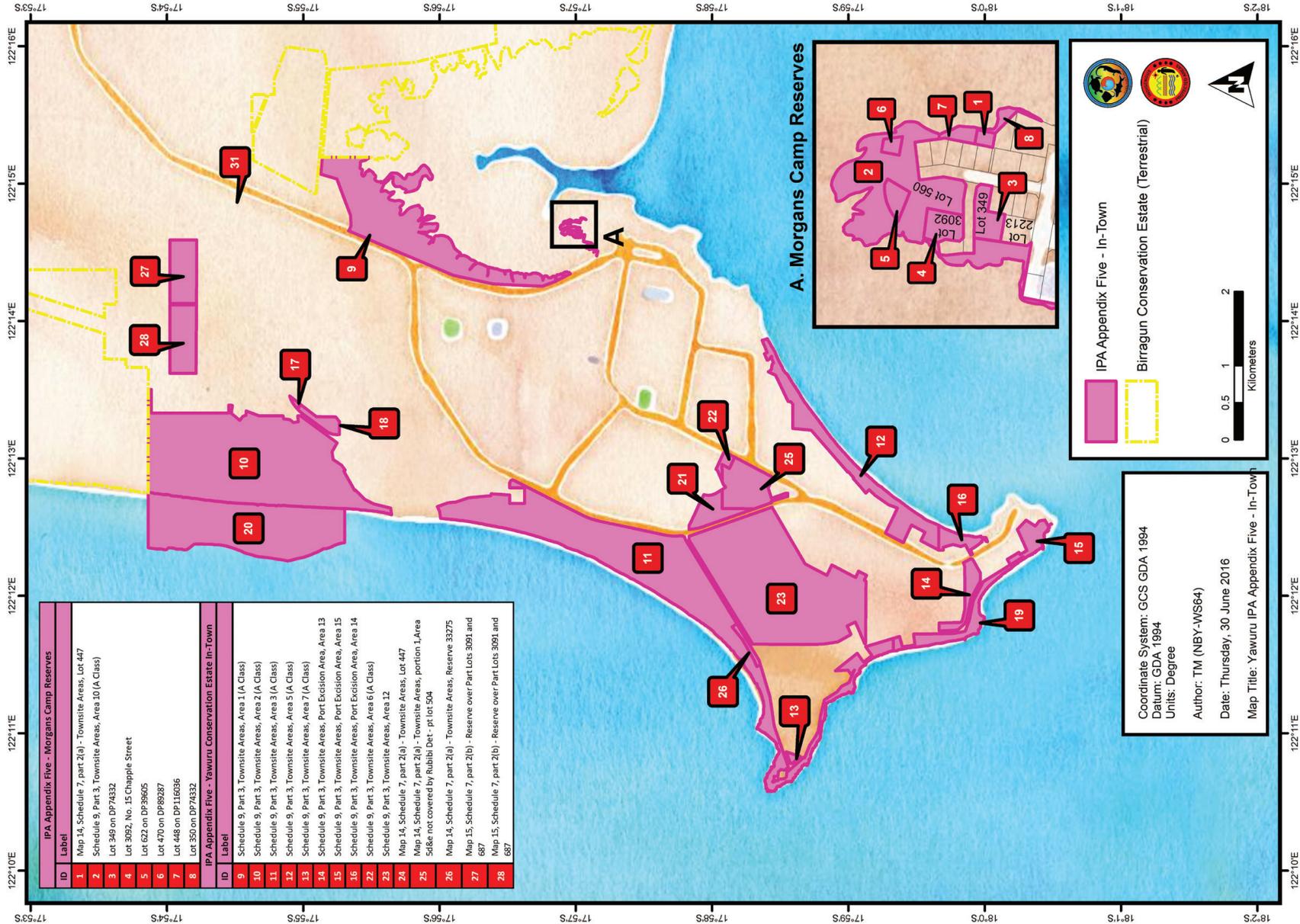
APPENDIX 5

This section contains a table and a series of maps showing areas that will be incorporated into the Yawuru IPA as Stage 2. These areas are those agreed in principle by relevant partners but the process for formal support has not been completed.

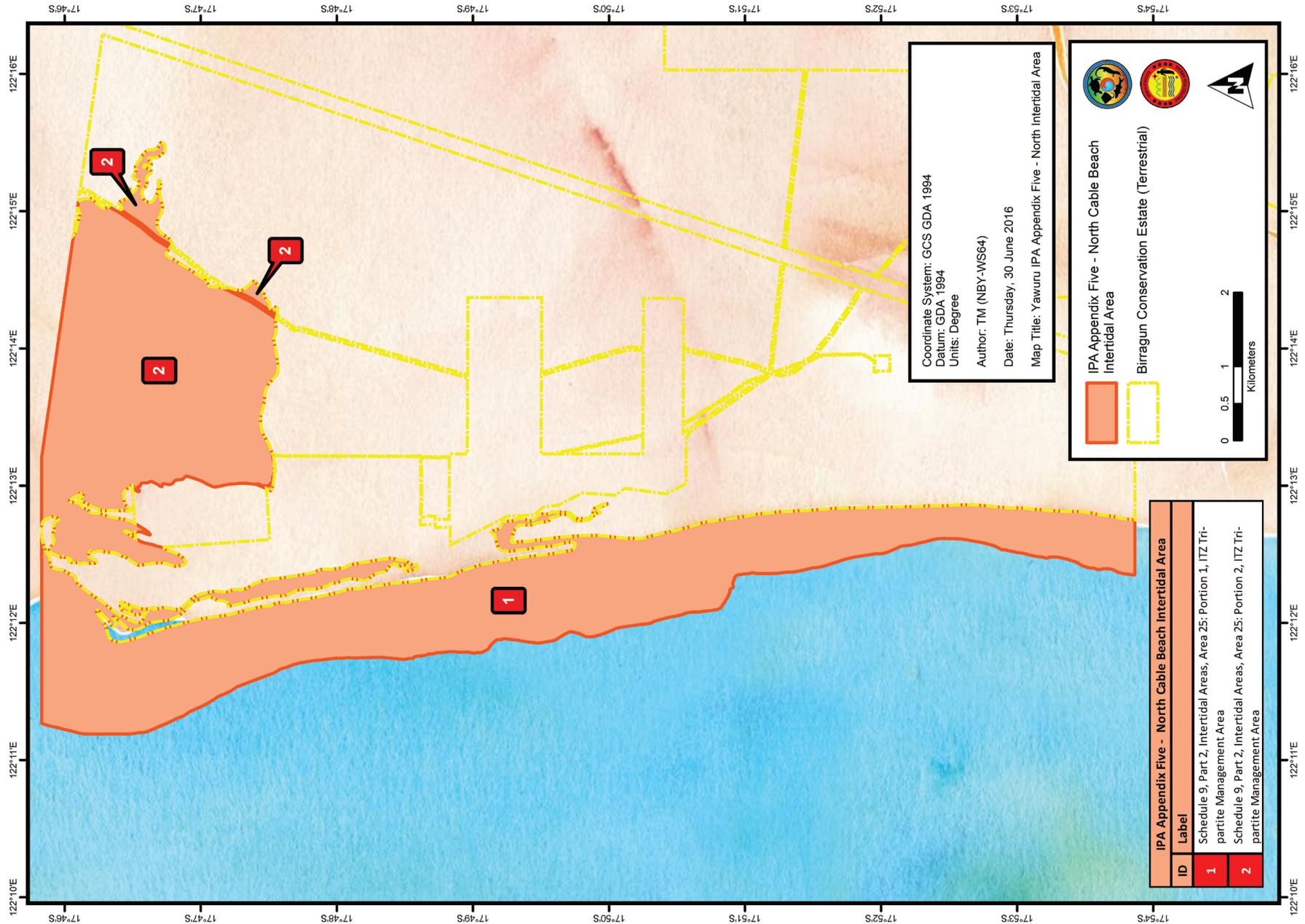
Size of Yawuru Stage 2 IPA

	ha	km ²
Size of the whole IPA =	210,779.76	2,107.79
Zone 1 - IUCN Category IV	107,871.89	1,078.72
Zone 1 - IUCN Category VI	32,776.56	327.77
Zone 2 - IUCN Category VI	70,130.71	701.31
Zone 1 Total	140,648.45	1,406.48
Zone 2 - Total	70,130.71	701.31
Zone 1 within Roebuck Plains PL =	38,234.37	382.34
Zone 2 within Roebuck Plains PL =	70,130.71	701.31
Total within RP PL =	108,365.08	1,083.65

APPENDIX 5 - MAPS OF STAGE 2 IPA

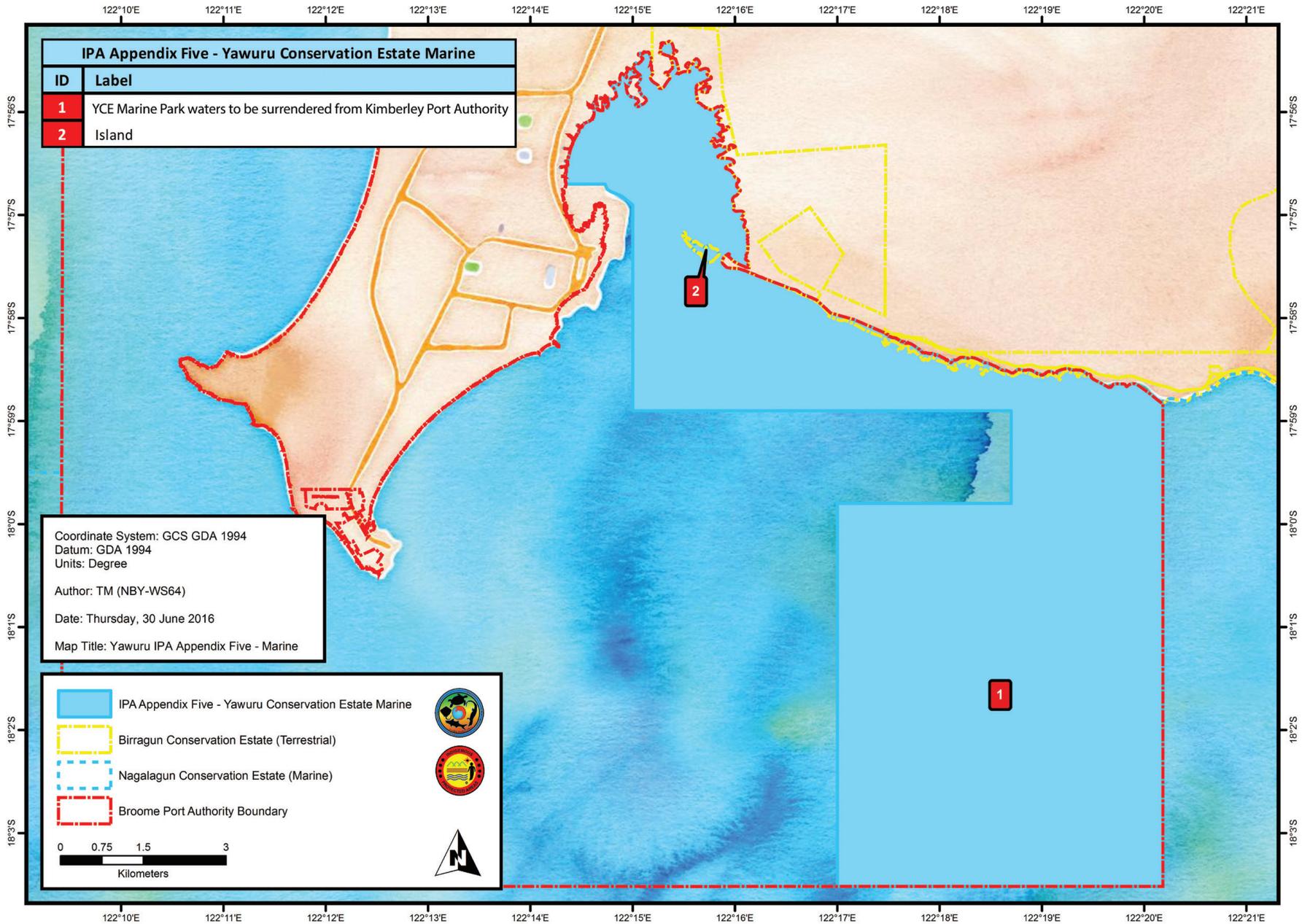


APPENDIX 5 - MAPS OF STAGE 2 IPA

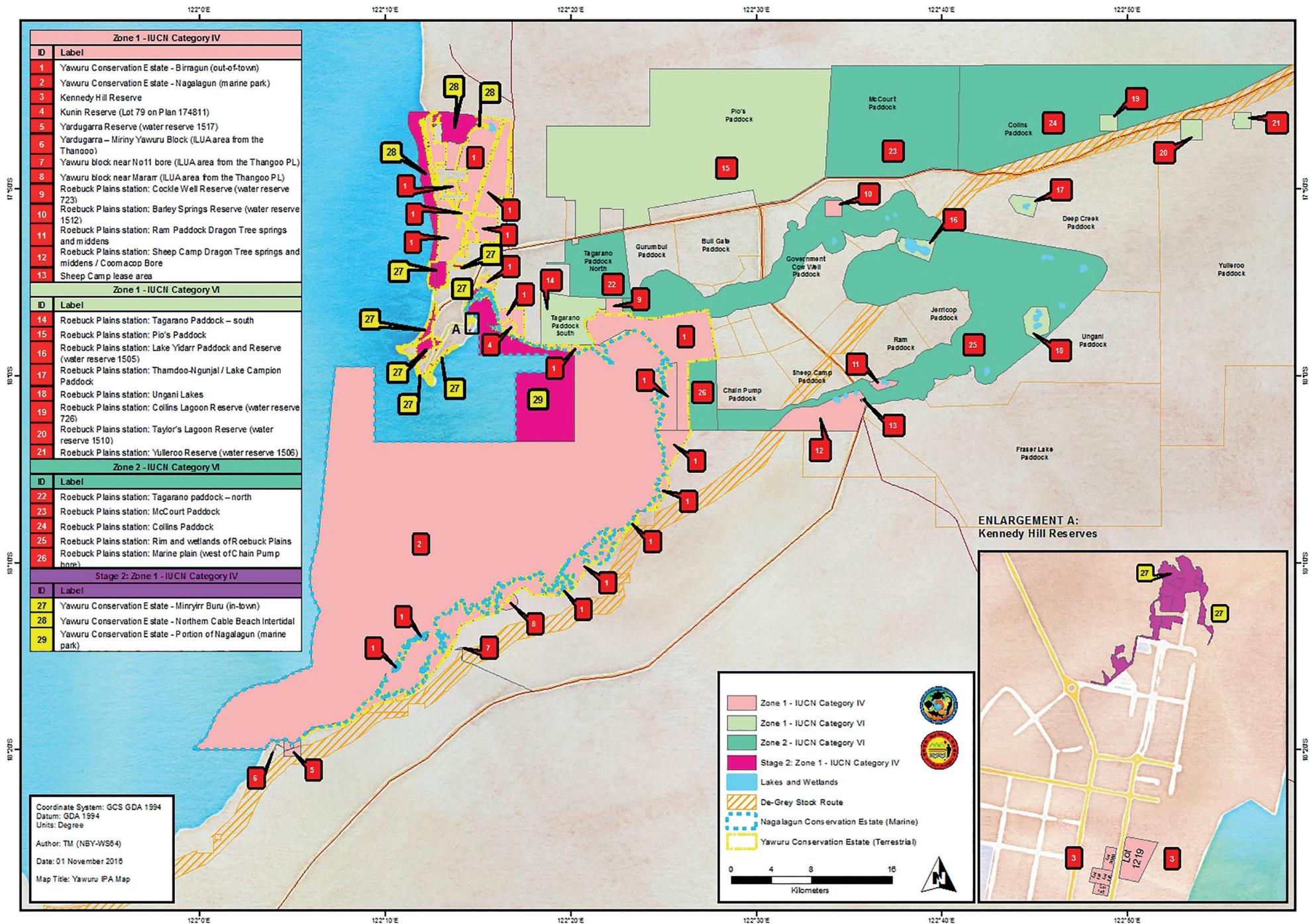


Northern Intertidal Conservation Estate

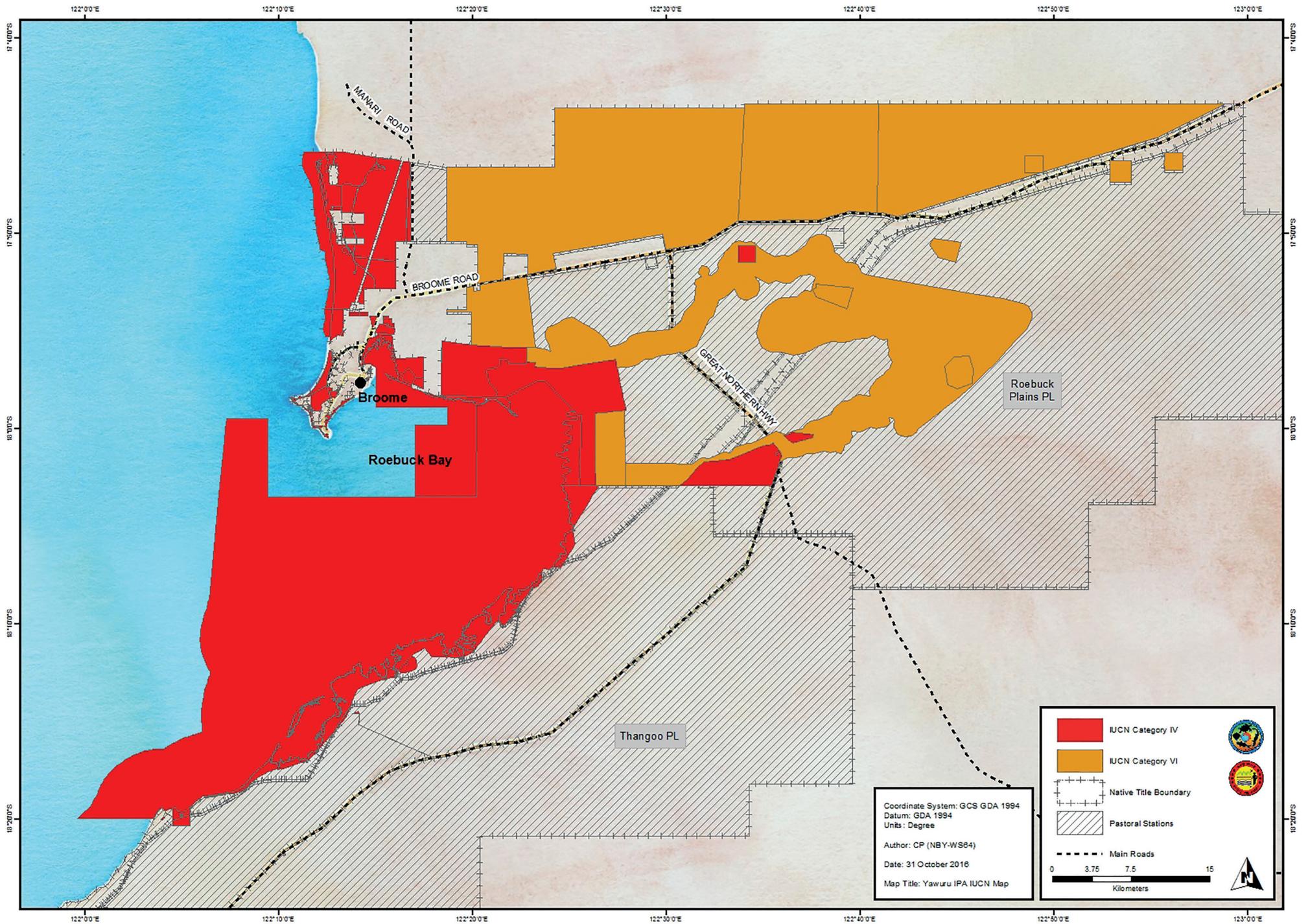
APPENDIX 5 - MAPS OF STAGE 2 IPA



Portion of Nagalagun Roebuck Bay Marine Park



Stage 2 IPA Map (areas shaded in purple)



Stage 2 IPA Map showing IUCN categories

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