



Guniyan Binba Conservation Park

Joint management plan
2020

Management plan 94



Conservation and Parks Commission
Department of Biodiversity, Conservation and Attractions



Department of Biodiversity, Conservation and Attractions

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Nagulagun-buru Saltwater Country by Martha Lee

Yawuru dedication

The Yawuru story is one of resilience and pride. We recognise all the old people who carried the stories from *Bugarrigarra*, walked our lands, fished, and hunted and survived from the water places.

Those who gave evidence in court and worked tirelessly to negotiate the Yawuru Native Title Global Agreement we acknowledge with pride. We owe the benefits of today to our senior people who have gone before us. In the face of policies and practices of successive governments who sought to destroy our culture and extinguish our traditional rights, Yawuru people across many generations continued to practice customary law, speak our language and draw on the wisdom and knowledge of our traditions and customs. The Yawuru people have managed our country, including our waters, and cared for our society from time immemorial.

The senior people are the heroes of the Yawuru story and it is because of them that the younger Yawuru people living today can feel the pride and strength of being part of the community of Yawuru native title holders. While we are many individuals with strong associations to family it is the connection to each other as a community that gives us the strength to carve out our future destiny in a modern world to achieve *mabu buru, mabu liyan, mabu ngarrangunil*.

by Patrick Dodson, Nyamba Buru Yawuru Chair, October 2013



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Summary

The *Guniyan Binba Conservation park joint management plan 2020 (the joint management plan)* has had several important precursors. In April 2006, the Federal Court of Australia determined Yawuru people to be the recognised native title holders for lands and waters around Broome.

Three years of negotiation with the State Government followed the determination, and in February 2010, two Indigenous land use agreements (ILUAs) were signed between Yawuru Registered Native Title Body Corporate (Yawuru RNTBC), the Government of Western Australia, and other parties. The agreements included the creation and joint management of the Yawuru conservation estate, which includes marine and terrestrial components.

This joint management plan is one of a suite of integrated and complementary conservation estate joint management plans that have been prepared in accordance with the ILUAs and the associated Joint Management Agreement. This joint management plan, prepared under the *Conservation and Land Management Act 1984* (CALM Act), will apply to Guniyan Binba Conservation Park¹, a component of the broader Yawuru conservation estate, an area which is to be managed for the purpose of conservation, recreation and traditional and customary Aboriginal use and enjoyment. This document has been prepared on behalf of the Conservation and Parks Commission of Western Australia, and Yawuru Park Council (Park Council), a body comprising representatives of Yawuru RNTBC, the Department of Biodiversity, Conservation and Attractions (DBCA or the department), and the Shire of Broome. All the joint management parties have collaborated on the development of the joint management plan which describes proposed management of Guniyan Binba Conservation Park.

Section 1 of the joint management plan introduces the management setting and highlights the relationship that Yawuru people have to their country. It also elaborates on the native title determination, relevant aspects of the ILUAs, joint management arrangements and the legislative context, including legal recognition of values of international and national significance. In this introductory section, the role of the *Yawuru cultural management plan*² as a key guiding document for the Yawuru conservation estate management plans is highlighted.

Sections 2 and 3 of the joint management plan explain requirements for assessing the effectiveness of management and set out the vision that has been identified for the broader Yawuru conservation estate, including Guniyan Binba Conservation Park.

¹ Reserve 51162, a Class A Section 5(1)(h) Reserve covering 2511 hectares

² The term 'Yawuru cultural management plan' is used throughout this document to refer to the Walyjala-jala buru jayida jarringgun buru nyamba Yawuru ngan-ga mirli mirli (Planning for the future: Yawuru cultural management plan) (Yawuru RNTBC 2011).

Sections 4, 5, 6 and 7 of the joint management plan describe key cultural, ecological and socio-economic values and management issues.

Recognition of Yawuru cultural values and context of the area is a dominant feature of this joint management plan. The cultural significance of Broome was recognised in an expert report to the Federal Court during native title deliberations, and said to be comparable to a Jerusalem, Mecca or Varanasi for a significant part of Aboriginal Australia (Sullivan cited in Yawuru RNTBC 2011).

Parts of Guniyan Binba Conservation Park are included within the West Kimberley National Heritage Area. The Willie Creek wetland complex, also partly within Guniyan Binba Conservation Park is recognised as a nationally important *billara* (wetland). Key values of Guniyan Binba Conservation Park include:

- Sandy *jani* (beaches) on which the flatback turtle, a threatened species, nests
- mangroves that provide a range of ecosystem services and important habitat for a diverse fauna assemblage
- tidal mudflats and freshwater *bilarra* that support threatened migratory *gamirda-gamirda* (shorebird) species subject to international agreements
- coastal recreation opportunities within proximity to Broome.

Management to conserve and enhance these values over the life of this joint management plan will primarily focus on implementing visitor information and education programs, and ensuring visitors are provided with well-defined sustainable pedestrian and vehicular access.

While management objectives and strategies are presented for each set of values identified in this joint management plan, key performance indicators (discussed further in Section 2) are only specified for those values and threats that have been identified as being of highest priority for management over the next 10 years, and include:

- a set of key Yawuru cultural values
- migratory *gamirda-gamirda*
- marine turtles
- mangroves and
- environmental weeds.



Coconut Wells tidal area. Photo – Shire of Broome.

1.0 Introduction and management context

This joint management plan describes proposed management for Guniyan Binba Conservation Park, one part of the Yawuru conservation estate that has recently been established around Broome (see Maps 1 and 2).

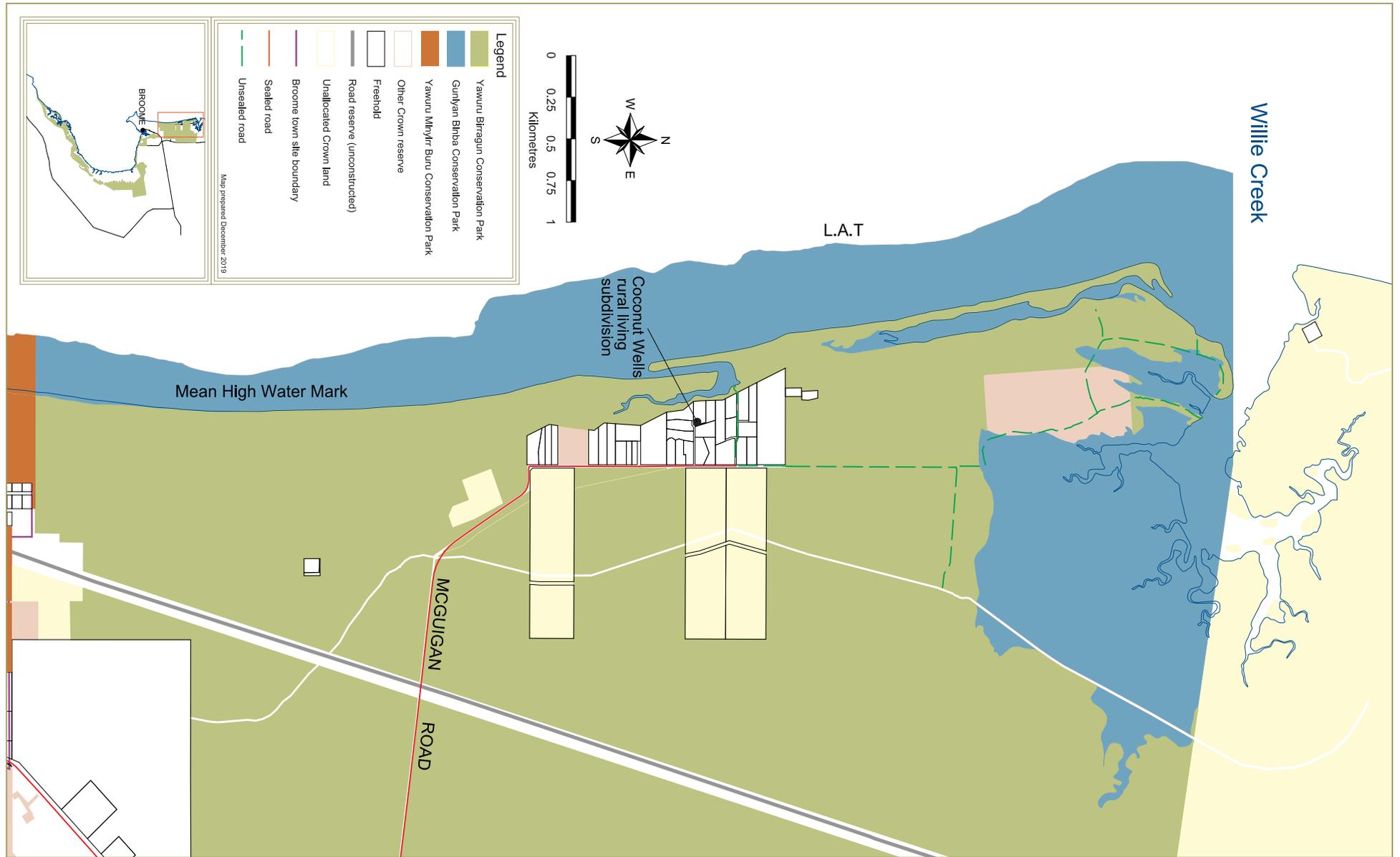
The conservation park comprises an intertidal area, located immediately north of the Broome town site, with the northern part of the reserve extending into Willie Creek. This joint management plan is one of a suite of management plans that apply to the Yawuru conservation estate (the different Yawuru conservation estate planning areas are shown in Map 3). The Yawuru conservation estate is managed by Yawuru RNTBC in partnership with several joint management partners. All the Yawuru conservation estate is jointly managed, although the management parties and arrangements vary across the conservation estate.

This joint management plan has been prepared in accordance with Part V Division 1 of the CALM Act on behalf of Yawuru RNTBC, the Conservation and Parks Commission and the Shire of Broome; the parties that jointly hold 'care, control and management' of Guniyan Binba Conservation Park.

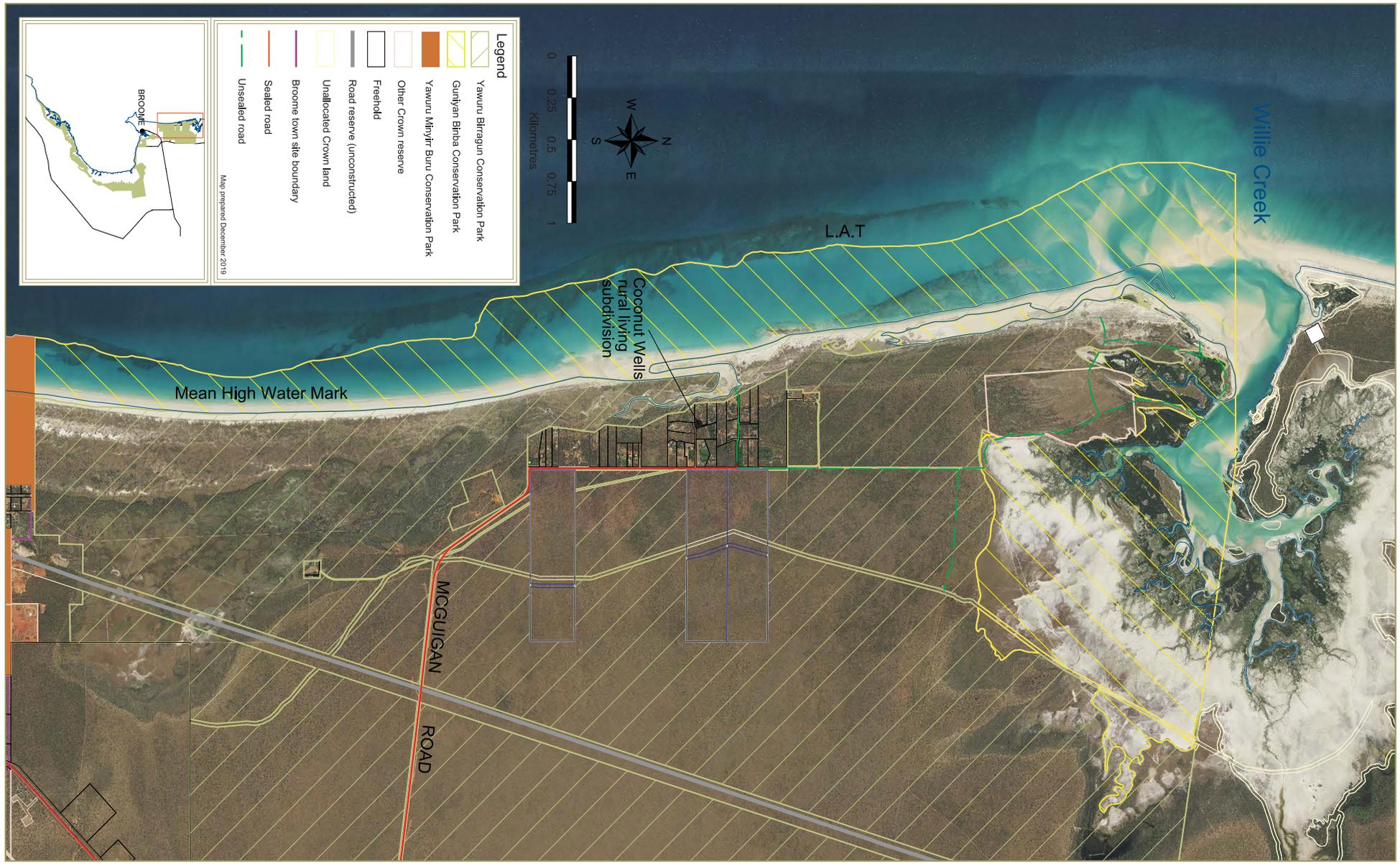
While different parts of the Yawuru conservation estate are subject to differing tenure and management arrangements, the values of the terrestrial and marine areas are intrinsically linked. Planning and management will be integrated, complementary and as seamless as possible across the various components of the conservation estate.

Some Yawuru names (e.g. for places, plants, and animals) are used throughout this joint management plan in italicised text. Yawuru names for places have been included throughout this joint management plan as well as official names; the Yawuru place names are however not official or formally recognised. It should be noted that Yawuru language can be spelt in alternative ways. A glossary of Yawuru language names used in this joint management plan is provided on page 64.



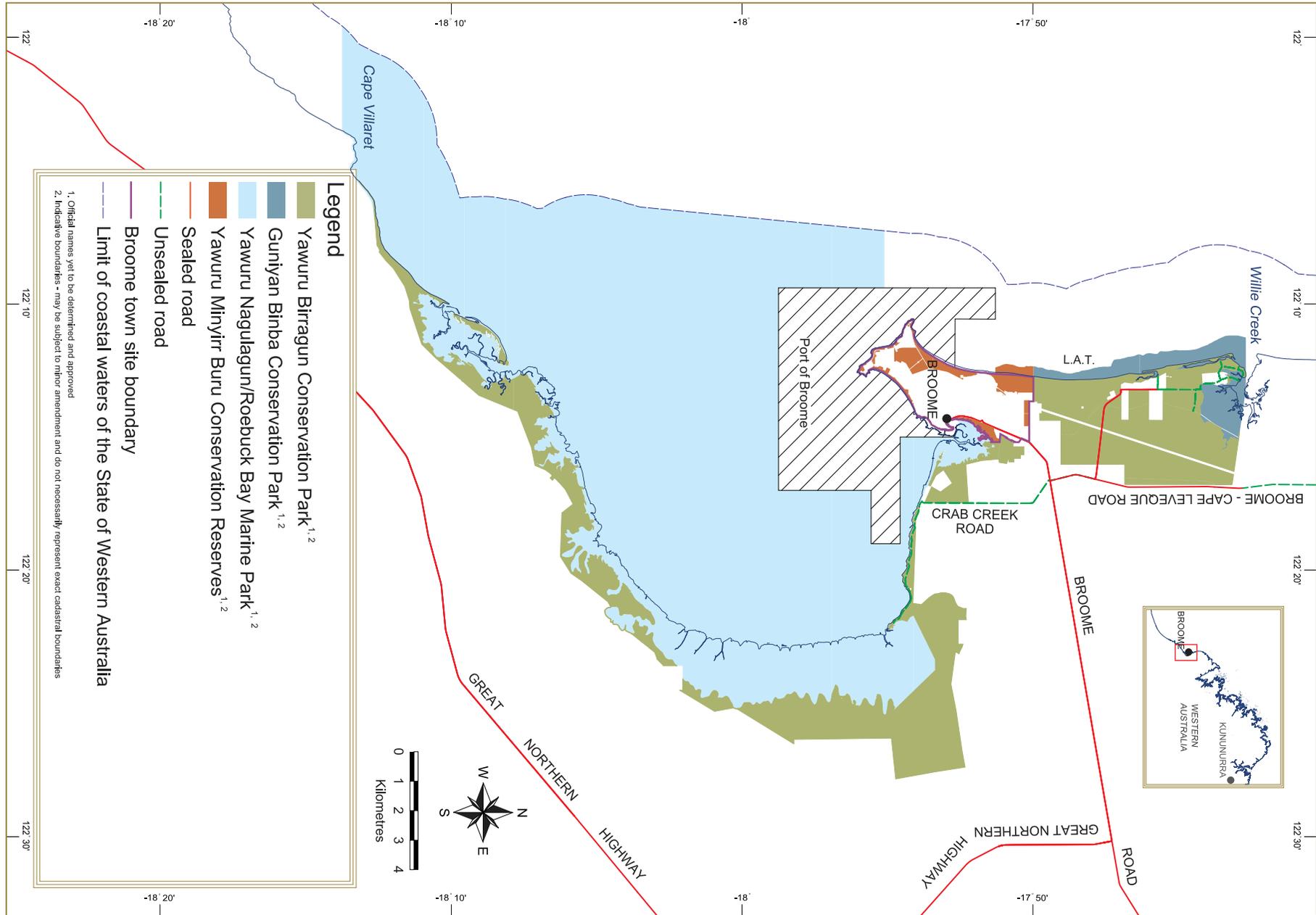


Map 1: Location of Guniyan Binba Conservation Park and surrounding tenure.



Map 2: Aerial image showing location of Guniyan Binba Conservation Park

1.0 Introduction and management context



Map 3: Yawuru conservation estate components

1.1 *Yawuru buru, Yawuru ngarrungunil* – Yawuru country, Yawuru people

For thousands of years Yawuru people have lived along the foreshore of Roebuck Bay, across the pindan plains, as far inland as the *Walgarr* (the Edgar Ranges) and along the fringes of the Great Sandy Desert. Yawuru country is land and sea moulded by the cycle of seasonal change, and it is a living cultural landscape with which Yawuru people have a dynamic and enduring relationship.

In Yawuru law everything comes from *Bugarrigarra*, the time when creative beings traversed the country, naming the landscape, defining the languages, and setting down rules and customs. Created and given form by *Bugarrigarra*, country is the source of spirit, culture, language, and it is where spirits return on death. From *Bugarrigarra* Yawuru people have responsibility to look after the country and to ensure that their traditions are passed on to future generations. Every time Yawuru people go out on country, hunting and fishing, they live culture – these activities are an expression of culture and enable Yawuru people to reconnect with country, spirit places, ancestors and *Bugarrigarra*.

The relationship of Yawuru people to country is at the heart of their cultural responsibilities and being. This is expressed through *liyan*. *Liyan* comes from Yawuru peoples' connection to country, ancestors, and Yawuru way of life. It reflects a sense of belonging to Yawuru society, and represents the feeling people hold, individually and collectively, particularly when Yawuru people are on their country.

'Liyan is about relationships—with country, family, community. It is what gives meaning to people's lives. Yawuru peoples' connection to country and joy of celebrating our culture and society is fundamental to having good liyan.'

Patrick Dodson (Yawuru RNTBC 2011)



1.0 Introduction and management context

Mabu liyan (good *liyan*) expresses Yawuru peoples' emotional strength, dignity, and pride. The guiding principle for good management of Yawuru country is that Yawuru people must maintain good, clear *liyan* with the country within the modern, ever-changing world. To ensure Yawuru people can keep *mabu liyan* they have to:

- visit country
- respect spirits abiding in country
- continue cultural traditions
- respect *Bugarrigarra*
- look after all the plants, animals and other resources that are part of country
- maintain and protect sacred places
- foster a relationship with country
- assume cultural responsibility as individuals and collectively for the future use and management of Yawuru country and
- achieve balance between keeping things as they are and developing the country.

Yawuru people want to generate an understanding of how they feel about and relate to country, with respect for *Bugarrigarra* and cultural traditions and practices, and how non-Yawuru people can respect this.

For countless generations Yawuru people managed country sustainably, relying on their intimate knowledge of the natural environment, and applying customary law and practices passed down from ancestors. Ancestors hold the collective communal wisdom and knowledge passed through families and Yawuru responsible leaders. This knowledge is passed on to their children when they go hunting, fishing, gathering, and camping, as Yawuru people have always done. Understanding the subtle changes in country and following the seasons is part of Yawuru cultural heritage and provides Yawuru people with a guide to where and how to harvest and look after the resources of country. Because Yawuru activities change in response to the annual cycle of the seasons, Yawuru people believe their way of living has minimal impact on the environment. They want to use this knowledge to guide and inform successful conservation and management of Yawuru land and sea.

In recent times Broome has undergone massive transformation as population, infrastructure, housing, and industry have expanded. Yawuru people, the native title holders of their country, are aware of the many challenges such changes present for managing country and, in a mutually respectful partnership with others, are well placed to meet them.

1.2 The Broome Community

Broome, located on the west coast of the Kimberley region, has a unique cultural and natural history. The Shire of Broome has a resident population of approximately 16,000, nine percent of whom are Indigenous (Australian Bureau of Statistics, 2019).

Broome has a strong, creative, and multicultural heritage descended from Asian pearling crews, European settlers, and other Aboriginal people from across the Kimberley region who have visited and settled in Yawuru country over many centuries.

In the mid-1800s, rich pearl shell beds in Roebuck Bay drove colonial settlement. The town site of Broome was gazetted on 21 November 1883 and it grew to be an international pearling capital. Over time the role of pearling as a backbone industry for the town has dwindled, however the cultured pearl industry is important for

tourism. Broome is a significant tourism destination, hosting nearly 270 000 visitors annually (Tourism Western Australia 2018). Visitation is very seasonal, with highest visitor numbers between May and October (Haeberlin Consulting, 2014). Broome is also an entry point to the Kimberley region for visitors from Australia and overseas.

Since the 1970s, Broome has become more accessible and has grown in population and general wealth. The port supports cruise ships and the beef export industry as well as operating as a base for the West Kimberley oil and gas industry. Broome is now the administrative and service centre for the Kimberley region and in tandem with industry growth, facilities and services for residents have also grown. Industries include health, education, administration, recreation, capital works, and services for the Aboriginal communities.

1.3 Native title determination and Indigenous land use agreements

With the High Court decision in *Mabo and Wik*, the Commonwealth Government introduced the *Commonwealth Native Title Act 1993* (Native Title Act).

Subsequently, Yawuru began a 12-year journey to lodge and determine their native title rights by way of court action and negotiations with the State Government. On 28 April 2006, the Federal Court of Australia determined Yawuru people to be the recognised native title holders of the lands and waters in and around Broome.

In February 2010, the Yawuru RNTBC, the Government of Western Australia, Shire of Broome and other relevant parties signed two ILUAs – the *Yawuru Prescribed Body Corporate Indigenous Land Use Agreement* and the *Yawuru Area Agreement Indigenous Land Use Agreement* (National Native Title Tribunal 2010a, 2010b). An ILUA is an agreement under the Native Title Act between a native title group and others about the use and management of land and waters. These resolved compensation issues and clarified that native title remained for the Yawuru people, as well as heritage issues about land required for the future development of Broome. The ILUAs provide for the establishment and joint management of the Yawuru conservation estate.

More information on native title, the Yawuru people's journey for native title determination and the ILUAs can be found on the website for the National Native Title Tribunal (National Native Title Tribunal 2010c) and in the *Yawuru cultural management plan*.

'History hasn't always been kind to Yawuru people. We had no say when our land, our home, was taken from us and we were pushed towards the edges. But we stayed strong and true to our culture. We can now take our rightful place in the Broome community.'

Gajai Frank Sebastian (Yawuru RNTBC 2011)



Dianne Appleby explains the cultural importance of Gundurung (mangroves) in Guniyan Binba Conservation Park. Photo – Kandy Curran.

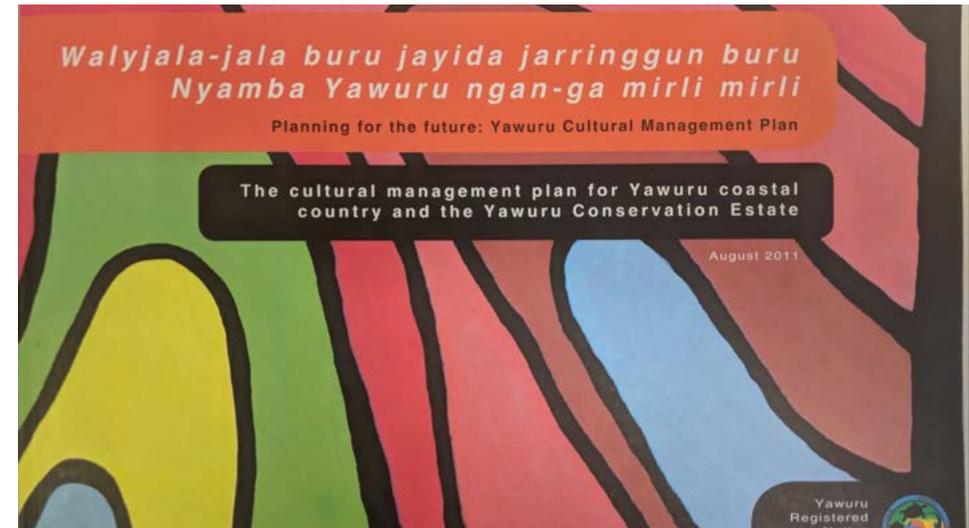
1.4 *Walyjala-jala buru jayida jarringgun buru nyamba Yawuru ngan-ga mirli mirli* (Planning for the future: Yawuru cultural management plan)

The *Yawuru cultural management plan* was developed by the Yawuru RNTBC, as agreed in the ILUAs, to provide a foundation document to guide planning and management of the Yawuru conservation estate.

The *Yawuru cultural management plan* addresses Yawuru customs, practices, and customary law, and provides detail on Yawuru policies, visions, and requirements to be considered during the development of management plans for the Yawuru conservation estate.

As a comprehensive articulation of the aspirations and responsibilities of Yawuru native title holders, the *Yawuru cultural management plan* is an authoritative information source for the various joint management partners and the wider community. The development of the *Yawuru cultural management plan* involved all facets of the Yawuru organisational system and it will remain a key document for the joint management of the Yawuru conservation estate.

The *Yawuru cultural management plan* was a primary information source for many of the culturally based concepts and values outlined in this joint management plan. Copies of the *Yawuru cultural management plan* may be obtained through Nyamba Buru Yawuru Ltd (contact details available at the end of this document).



The cultural management plan for Yawuru coastal country and the Yawuru Conservation Estate. Photo – DBCA.

1.5 Holistic management across Yawuru conservation estate

While this joint management plan is one of a suite of joint management plans that apply to the Yawuru conservation estate, the cultural, ecological, and socio-economic values of the Yawuru terrestrial and marine conservation reserves are implicitly linked. As such, a well-integrated management approach capable of protecting and managing the values in a culturally appropriate manner across the Yawuru conservation estate is required. Management objectives, strategies, performance measures and targets identified in this joint management plan will be complementary to those for the other Yawuru conservation estate management plans.

The various components of the Yawuru conservation estate are subject to varying tenure arrangements and therefore a suite of management plans will apply to the various components of the Yawuru conservation estate (shown on Map 3)³:

³ *Some names not yet official.

- *Guniyan Binba Conservation Park joint management plan (this plan)
- *Yawuru Birragun Conservation Park joint management plan 2016
- *Yawuru Minyirr Buru Conservation Park joint management plan 2018
- *Yawuru Nagulagun/Roebuck Bay Marine Park joint management plan 2016

These plans are all informed by the Yawuru cultural management plan.

1.6 Joint management arrangements for the Guniyan Binba Conservation Park

Guniyan Binba Conservation Park, a Class 'A' Section 5(1)(h) CALM Act reserve, has been placed under the joint care, control and management of Yawuru RNTBC, the Conservation and Parks Commission and the Shire of Broome.

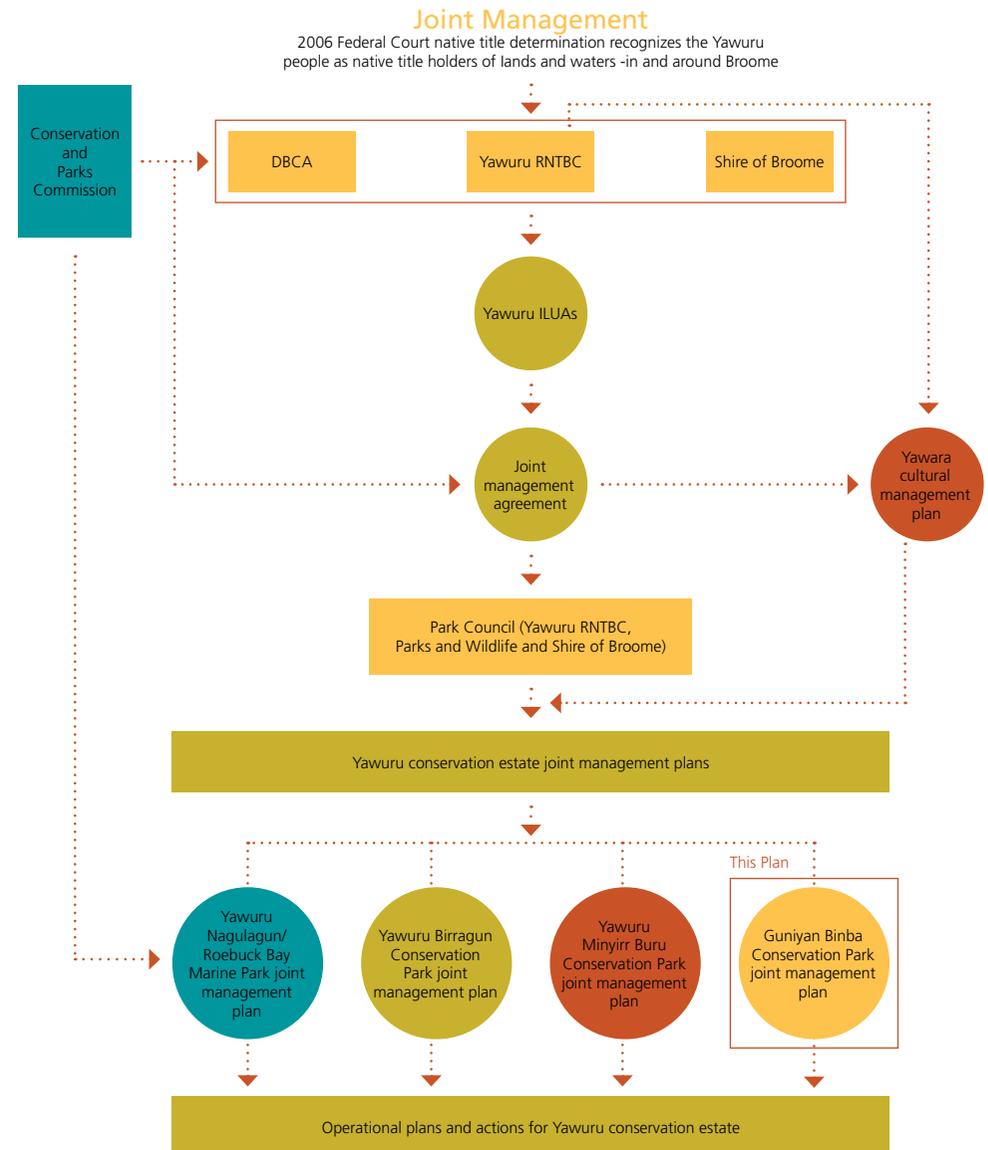
The landward boundary of Guniyan Binba Conservation Park is at the High Water Mark and the seaward boundary extends to Lowest Astronomical Tide. This reserve is managed for the purposes of 'conservation, recreation and traditional and customary Aboriginal use and enjoyment'. In addition, management plans for any CALM Act land, such as Guniyan Binba Conservation Park, have the objective of 'protecting and conserving the value of the land to the culture and heritage of Aboriginal persons...' (as described in section 56(2) of the CALM Act).

The Joint Management Agreement⁴, forming part of the ILUAs, describes various management arrangements for the Yawuru conservation estate including management principles, roles and responsibilities for each party, decision-making processes, and administrative functions. In accordance with the Joint Management Agreement, the Park Council has been established to facilitate joint management of the conservation estate. The Park Council comprises representative members from the Yawuru RNTBC, the department, and the Shire of Broome, with administration of the conservation estate having regard to the differing joint management arrangements and associated responsibilities. As relevant to the differing joint management arrangements, the Park Council's role (shared with the Conservation and Parks Commission of Western Australia) includes:

- preparation of management plans for the jointly managed areas, ensuring these are consistent with the vision and policies set out in the *Yawuru cultural management plan*
- strategic monitoring of implementation of the joint management plan(s) and
- assessment of the effectiveness of joint management.

Figure 1 depicts the joint management relationship.

Figure 1: Joint management relationships



⁴ The Yawuru Joint Management Agreement is available at www.dbca.wa.gov.au/managementplans

1.7 Legislative context

This joint management plan has been prepared in accordance with Part V Division 1 of the CALM Act and the Joint Management Agreement. The joint management plan has been developed through collaboration of all the joint management parties and has been informed by the *Yawuru cultural management plan*.

It will guide management of Guniyan Binba Conservation Park for 10 years from the date of gazettal, or until it is replaced with a new plan. The joint management plan may be amended if necessary, in accordance with section 61 of the CALM Act, following decision of the Park Council.



Flat Rock, Willie Creek. Photo – Sarah Mullineux, DBCA.

The key pieces of legislation which apply to Guniyan Binba Conservation Park are the CALM Act and the *Biodiversity Conservation Act 2016* (Biodiversity Conservation Act). The CALM Act provides for the protection of native flora and fauna and Aboriginal culture and heritage on lands and waters to which the Act applies. The Biodiversity Conservation Act provides for the conservation and protection of native flora and fauna within Western Australia.

Management of Guniyan Binba Conservation Park considers the Yawuru native title rights to hunt and gather for personal, domestic, or non-commercial communal purposes in the conservation estate as recognised in the native title determination. The CALM Act, the Biodiversity Conservation Act, and associated regulations include provisions for Aboriginal people to take flora and fauna and undertake a range of other activities for Aboriginal customary purposes.

In the management of Guniyan Binba Conservation Park, a range of legislative requirements apply or could apply in addition to requirements of the legislation that is administered by the department. This includes, for example, legislation applicable to fisheries management (e.g. *Fish Resources Management Act 1994*), maritime transport, and heritage protection. Some specific requirements are highlighted in relevant sections throughout this joint management plan.

Guniyan Binba Conservation Park includes values that have been recognised as ‘matters of national environmental significance’ and therefore given additional protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Any matter that will have or is likely to have a significant impact on a matter of national environmental significance, requires assessment and approval under the EPBC Act. More specifically some of the relevant Guniyan Binba Conservation Park values are:

- areas included in the West Kimberley National Heritage Area (Figure 2)
- migratory species, particularly *gamirda-gamirda*
- values the subject of national or international agreements such as the Japan–Australia Migratory Birds Agreement, the China–Australia Migratory Birds Agreement, the Republic of Korea–Australia Migratory Birds Agreement or the Bonn Convention
- nationally threatened species and
- listed marine species (including *linyurra* [estuarine crocodiles], marine turtles, and birds).

Parts of Guniyan Binba Conservation Park included within the boundary of the West Kimberley National Heritage Area are shown in the figure below. The listed area includes the intertidal zone of the Dampier Coast where dinosaur tracks and associated fossils are exposed in the Broome Sandstone (see *Geology, geomorphology, and hydrology*). These tracks and fossils provide valuable insights into the ecology of the Mesozoic (DSEWPC 2011a). Broome Sandstone occurs in Guniyan Binba Conservation Park, although dinosaur tracks or fossils have yet to be found in exposed areas. Over time, with shifting sand and soil movements, dinosaur track ways and fossils may become exposed in the Broome Sandstone layer and will require adequate protection if exposed in the future.

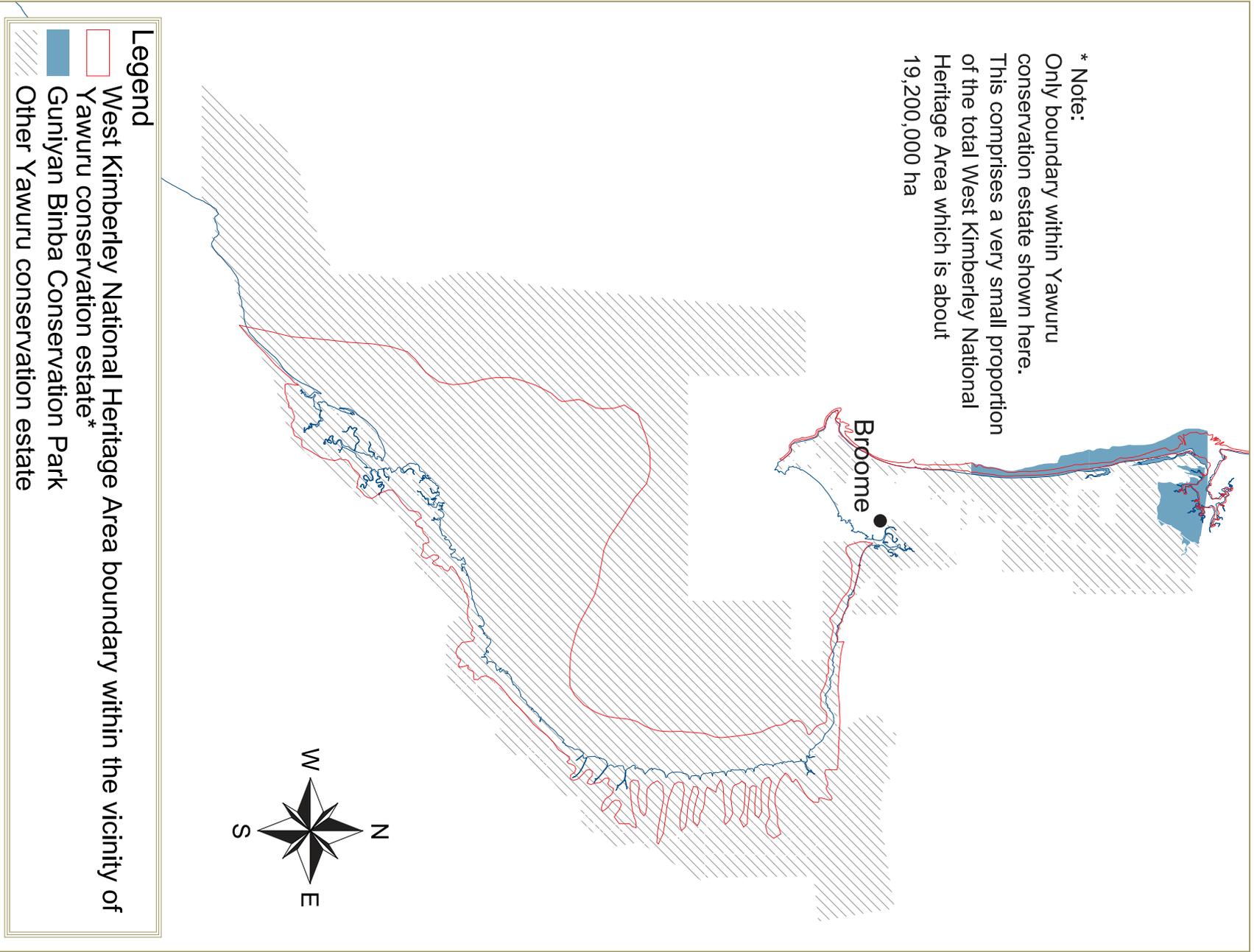


Figure 2: West Kimberley National Heritage Area boundaries near the Guniyan Binba Conservation Park

2.0 Performance assessment

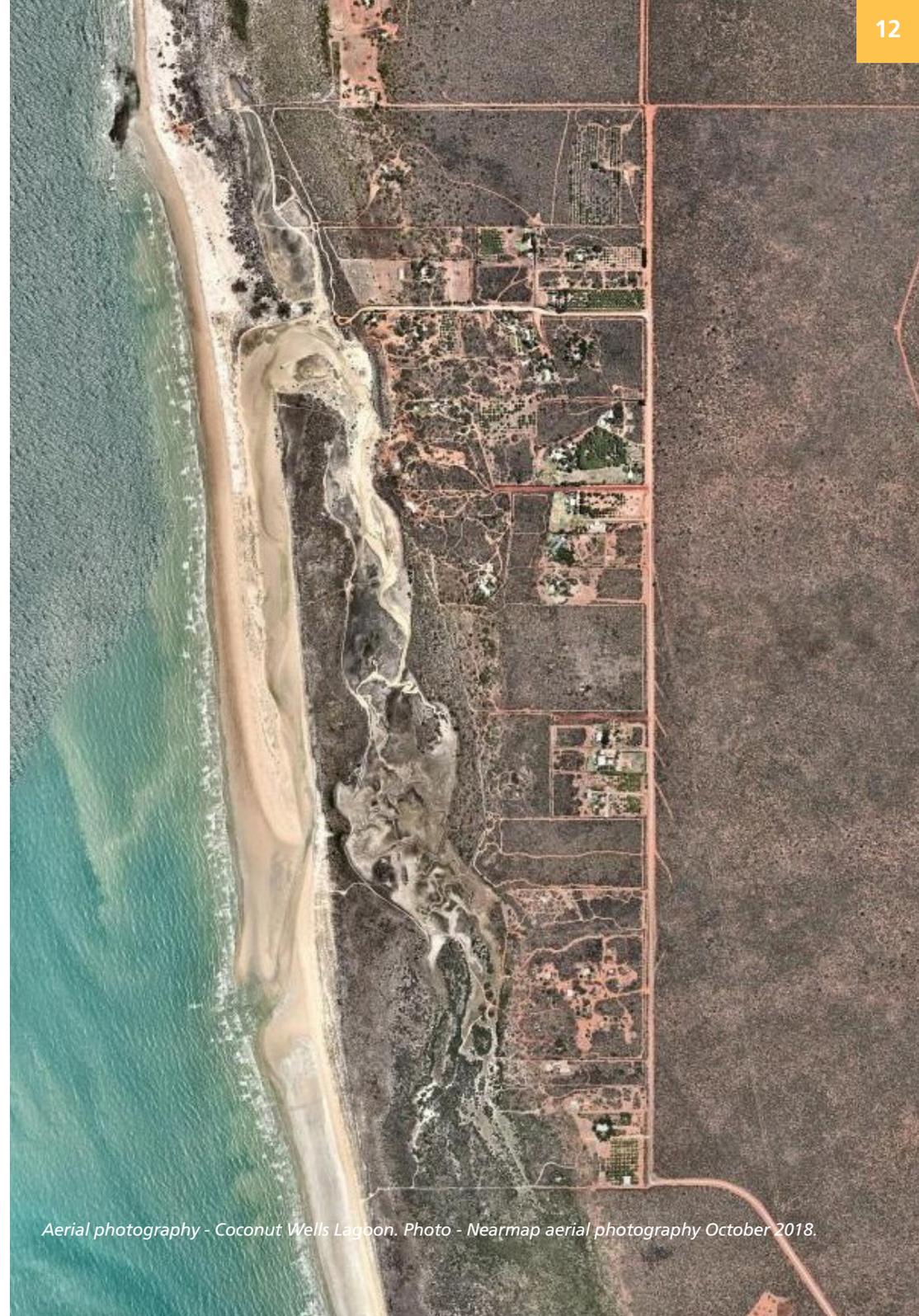
Mechanisms to assess the implementation and effectiveness of management are important components of an adaptive management framework and signal where approaches may need to be altered if management objectives are not being met. Sections 4, 5, 6 and 7 describe the main cultural, ecological, and socio-economic values of Guniyan Binba Conservation Park.

A set of Key Performance Indicators (KPIs), each comprising performance measures, targets, and reporting requirements, have been identified for some of these values. The KPIs presented throughout this joint management plan reflect those values that were identified during the planning process as being of highest priority for management. These, and/or other measurable outcomes will be used for performance assessment of this joint management plan.

As a newly created conservation reserve, description of baseline conditions will be important in this initial joint management plan, and this is reflected in that the plan includes KPIs that are focused on assessing achievement of management outputs (e.g. availability of baseline data and reports) as well as management outcomes (e.g. protection of a particular value). Protocols for measuring and reporting on KPIs (e.g. details of the data required, calculation methods and data presentation) will be identified in the research and monitoring program to be developed for the Yawuru conservation estate.

A portfolio will be maintained showing evidence of those areas where the joint management plan is being successful and those where changes are needed. The following are examples of evidence of implementation of this joint management plan that may be used for assessment purposes:

- specific, quantitative monitoring of significant assets
- series of photographs, mapping or other imagery which show whether spatial and temporal changes have occurred
- checklists
- surveys
- incident investigation reports or records and/or
- other written documents or forms.



Aerial photography - Coconut Wells Lagoon. Photo - Nearmap aerial photography October 2018.

3.0 Vision and goals

The vision for Guniyan Binba Conservation Park is:

Yawuru people and their partners working together with the wider community to restore, protect and maintain the cultural, natural and recreational values of Guniyan Binba Conservation Park for the enjoyment and benefit of present and future generations of Yawuru people and the wider population.

A set of strategic goals has been developed for Guniyan Binba Conservation Park. These recognise Yawuru people are the native title holders, the legally stipulated purposes for the reserve, and its values of international and national conservation significance. These strategic goals provide a link between the vision statement and the desired outcomes expressed through the objectives identified in this joint management plan.

The strategic goals for management of Guniyan Binba Conservation Park are to:

- uphold and respect Yawuru people's culture and knowledge of country
- provide for sustainable traditional and customary Aboriginal use and enjoyment
- protect and conserve the value of the land to the culture and heritage of Aboriginal persons
- conserve features recognised as being of special, international, and national conservation significance
- conserve biodiversity and maintain ecological integrity and
- provide for recreation that is consistent with the protection and conservation of the area's cultural and ecological values.



4.0 Joint management plan implementation

Day to day and on-ground management to implement this joint management plan for Guniyan Binba Conservation Park is carried out by the department, through the Yawuru joint management program and the Yawuru Rangers who are trained and employed by the department.

The joint management partners will strategically monitor implementation of the joint management plan through the Park Council as described in the joint management agreement.

This joint management plan describes proposed management of Guniyan Binba Conservation Park at a broad strategic level, for the next 10 years or until it is replaced with a new joint management plan. To help facilitate implementation of the joint management plan, linked, and collaboratively developed operational level plans and documents that detail more specific and frequently adapted guidance consistent with the joint management plan may also be developed, as necessary.

Management strategies in this joint management plan have been prioritised as high (H), medium (M) and low (L) to indicate their relative importance, although all are intended to be implemented over the life of the joint management plan. The prioritisation of strategies is based on the best available information at the time the joint management plan was developed and may change over time.



5.0 Yawuru cultural values

Information in this section has been obtained from the *Yawuru cultural management plan* and discussions with Yawuru representatives.

The values described in this section are those that Yawuru RNTBC identified in Section 2.3 of the *Yawuru cultural management plan* (Yawuru RNTBC 2011). Further details about Yawuru cultural values and concepts are available in the *Yawuru cultural management plan*.

Yawuru cultural values stem from the relationship between Yawuru people and Yawuru country. As with the country itself, these values arise from *Bugarrigarra*, which gave form to the land and seascape, determined law, and gave Yawuru people the responsibility for looking after Yawuru country.

The Broome area contains significant places for many Aboriginal people as recorded in the secret and sacred narratives, sometimes called 'songlines'. In Yawuru country the *Bugarrigarra* laid down three traditions of law which hold esoteric knowledge of country and guide customary practices. The Northern Tradition is allied with the northern areas and the people who live there, particularly the Bardi. The Southern Tradition is associated with the lands and peoples further south and inland including the Karajarri, Nyikina, Mangala and Nyangumarta. The third tradition arises in Broome itself and travels east toward the desert and Uluru in central Australia. Knowledge and practices of all traditions is shared with groups outside Yawuru country. The cultural significance of the area was recognised in an expert report to the Federal Court during the first Yawuru native title hearing:

'...the Broome region, in religious terms, [is] intensely crowded. It may not be an exaggeration, and may give some indication of its uniqueness, to say it is something of a Jerusalem, Mecca or Varanasi [for] a significant part of Aboriginal Australia'

Sullivan cited in Yawuru RNTBC 2011



5.1 Living cultural landscape

According to Yawuru law everything comes from *Bugarrigarra*, the creative epoch in which the world was given form and meaning.

During this time, ancestral beings travelled through country, naming places, and creating the features of the land, waters, and skies, introducing rules and rituals associated with particular areas, the regional languages, the seasons and their cycles. *Bugarrigarra* narratives form an intricate network of 'songlines' and 'dreaming' tracks, which traverse Yawuru country.

In this way *Yawuru buru*, or 'Yawuru country', means much more than just the physical land to which Yawuru people belong. *Buru* is the physical expression of *Bugarrigarra*, in which the features of Yawuru country were formed. As *Bugarrigarra* beings created and named places they endowed them with significance. The associated narratives and rituals recount their activities and link Yawuru people to particular areas of country for all time. These narratives ascribe metaphysical meaning to all aspects of physical reality, the landscape, under the ground, the sky, the water, the diverse plants and animals, and ecosystems.

Like all living things, Yawuru people are believed to arise from country. Certain places in Yawuru country have *rayi*, a life-giving essence that creates Yawuru spirit-children. This connection of a spirit-child to a specific place, its *bugarri*, is typically discovered through dreams or unusual events. Throughout life a Yawuru person remains connected to their *rayi* place, the place that gave them life.

Other metaphysical beings are known to be linked with certain places but can also move around and be unpredictable. *Jurru* are snake-like beings associated with saltwater and fresh water and protect Yawuru country.

'When we die our rayi return to that place in our country. When we visit places, we know the rayi of our ancestors are there, guiding us and looking after country, watching the behaviour of our people.'

(Yawuru RNTBC 2011).

Bugarrigarra is not detached from contemporary life. It continues to exist and is the spiritual force that shapes ongoing cultural values and practice, relationships, obligations, and responsibilities. Life since colonial times has contributed to the continuing evolution of the living cultural landscape that is Yawuru country. The influence of the pearling industry was particularly strong, bringing Aboriginal and Asian people together as indentured labour, living and working together and intermarrying. These events and other heritage areas such as burial sites, contemporary camping places, mission areas and places of work that shaped the lives of Yawuru people have become part of the story.

Guniyan Binba Conservation Park contains several important cultural sites and values. For example, there are *Bugarrigarra* sites associated with the northern tradition. The permanent water sources and their habitats have important cultural values. There are rock formations, stone implements and grinding stones associated with the Coconut Wells lagoon. Willie Creek is important for customary fishing, as are the reefs and along the *jani* within Guniyan Binba Conservation Park.

Guniyan Binba Conservation Park is a provisional name and has not been formally recognised. The Department's Nomenclature Committee recommends proposed names for parks and reserves to the Conservation and Parks Commission for endorsement prior to approval by WA's Geographic Names Committee and recording in the State's gazetteer of names. The name 'Guniyan Binba Conservation Park' will be recommended to the Conservation and Parks Commission and submitted to the Geographic Names Committee for approval.



Summary of management arrangements for living cultural landscape

<p>Management objectives</p>	<ol style="list-style-type: none"> 1. To ensure that activities within Guniyan Binba Conservation Park do not adversely affect opportunities for Yawuru people to have ongoing cultural connection and expression. 2. To promote increased understanding of Yawuru values and concepts of living cultural landscape. 3. To protect and conserve the value of Guniyan Binba Conservation Park to the culture and heritage of Yawuru people.
<p>Management strategies</p>	<ol style="list-style-type: none"> 1. Carry out or support cultural mapping projects that spatially and conceptually characterise Yawuru cultural values within Guniyan Binba Conservation Park. H 2. Ensure cultural heritage sites are protected. H 3. Assess human activities that may inhibit the protection of the area as part of a living cultural landscape and implement management strategies to address problems as necessary. H 4. Develop and implement education and interpretation programs to inform visitors to Guniyan Binba Conservation Park about the value of the area as a Yawuru living cultural landscape. H 5. Develop and implement methodology to assess Yawuru’s level of satisfaction that opportunities for ongoing cultural connection of Yawuru people are not significantly disrupted due to management activities (or a lack of) (e.g. questionnaire, survey). H 6. Complete the process for formally recognising the name Guniyan Binba Conservation Park. M
<p>Key performance indicators</p>	
<p>Performance measures</p>	<ol style="list-style-type: none"> 1. The Yawuru community’s level of satisfaction that opportunities for ongoing cultural connection of Yawuru people are not significantly disrupted due to management activities (or a lack of) in Guniyan Binba Conservation Park. 2. Yawuru people’s complaints relating to reduced opportunities for ongoing cultural connection because of management activities (or a lack of) in Guniyan Binba Conservation Park. 3. Information, education, and interpretation programs for Guniyan Binba Conservation Park incorporates, in a prominent place, material about Yawuru values and concepts of living cultural landscape.
<p>Targets</p>	<ol style="list-style-type: none"> 1. A high level of Yawuru community satisfaction that opportunities for ongoing cultural connection of Yawuru people are not significantly disrupted due to management activities (or a lack of). 2. The number of unresolved complaints from Yawuru people relating to reduced opportunities for ongoing cultural connection because of management activities (or a lack of) in Guniyan Binba Conservation Park per reporting period declines over the life of the joint management plan. 3. A high level of Yawuru community satisfaction that visitors have been provided with opportunities to increase their understanding about Yawuru values and concepts of living cultural landscape.
<p>Reporting requirements</p>	<p>Annually</p>

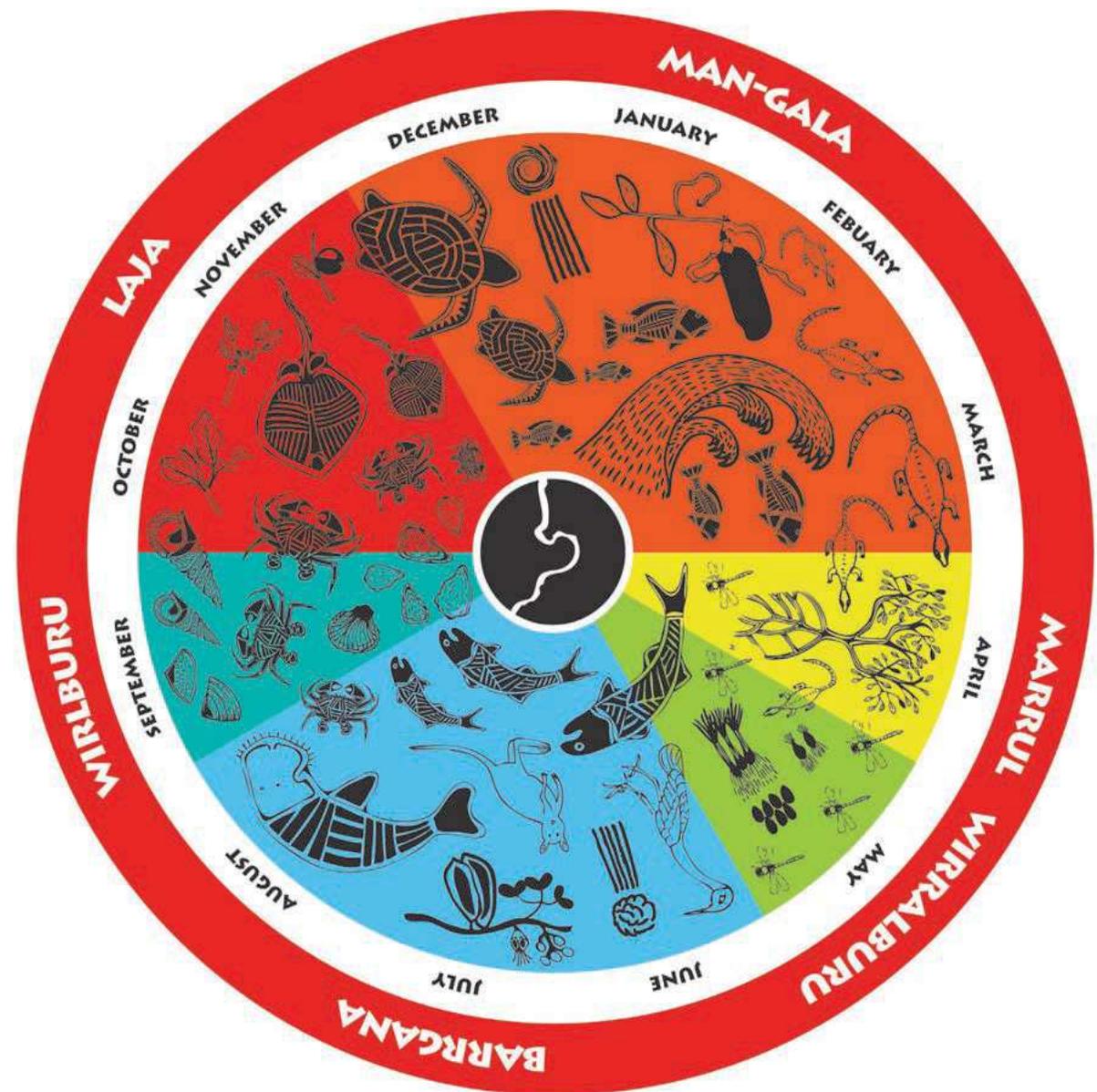
5.2 Traditional ecological knowledge

Like many Indigenous peoples across the globe, Yawuru people have a deep understanding of the flora, fauna, landscape features, seasons and cycles that make up their country, and changes to these that have occurred over time.

Developed over millennia, this knowledge is deeply embedded within Yawuru culture and is often expressed through the stories and law that govern the relationships between people and country. Having used this knowledge to not only live off the land, but to sustain this lifestyle for thousands of years, there is much for conservation science and land management to gain from traditional ecological knowledge.

As with other aspects of Yawuru life and resource harvesting, knowledge of resources is largely underpinned by the six Yawuru seasons and the life cycles of individual species (see Figure 3). Cultural rules and responsibilities established from this knowledge provide guidance on the use of country, such as what and when particular species should be harvested, how to tell when they are 'fat' or 'ready', who should not eat certain resources, and not wasting resources.

Figure 3: Yawuru seasons



Summary of management arrangements for traditional ecological knowledge

Management objective

1. To apply Yawuru traditional ecological knowledge and integrate it with conservation science and land management.

Management strategies

1. Document (e.g. in a database) the most important elements of Yawuru traditional ecological knowledge and investigate opportunities for integrating this with conservation science and land management. H
2. Develop processes and protocols for consulting and integrating Yawuru traditional ecological knowledge in the management of Yawuru conservation estate. H
3. Develop and implement education and interpretation programs to inform visitors to Guniyan Binba Conservation Park about Yawuru traditional ecological knowledge. H
4. Develop and implement methodology to assess the Yawuru community's level of satisfaction that traditional ecological knowledge is being consulted and adopted into management (e.g questionnaire, survey). H

Key performance indicators

Performance measures

1. Yawuru community's level of satisfaction that traditional ecological knowledge is being consulted and adopted into management of Guniyan Binba Conservation Park.
2. Documented evidence that traditional ecological knowledge about Guniyan Binba Conservation Park is consulted and adopted.
3. Information, education, and interpretation programs for Guniyan Binba Conservation Park incorporates, in a prominent place, material about Yawuru traditional ecological knowledge and how this has been integrated with conservation science and land management.

Targets

1. Yawuru community is satisfied that traditional ecological knowledge is being consulted and adopted into management of Guniyan Binba Conservation Park.
2. All documents relating to Guniyan Binba Conservation Park contain evidence that traditional ecological knowledge is being consulted and adopted.
3. Level of awareness of Yawuru traditional ecological knowledge among visitors to Guniyan Binba Conservation Park is high.

Reporting requirements

Annually.



5.3 Enjoyment of country and customary practices

Although Yawuru country extends more than a hundred kilometres inland, Yawuru people consider themselves to be saltwater people as they would travel and live along the coast, exploiting the resources of *nagulagun buru* – their sea country – according to seasons.

Therefore, the ability to have access to the coast and sea within the conservation estate for customary practices is particularly important.

As the recognised Yawuru native title holders, Yawuru people have the right to enjoy Yawuru country and maintain their customary practices.

Summary of management arrangements for enjoyment of country and customary practices

Management objectives	1. To recognise and support Yawuru community's right to continue customary practices and to benefit from their country consistent with the purpose for the conservation estate.	
Management strategies	1. Assess factors that may inhibit Yawuru community's rights to enjoy country or maintain their customary practices and implement management actions to address issues, as necessary.	H
	2. Develop and implement education and interpretation programs to inform visitors to Guniyan Binba Conservation Park about Yawuru community rights, as the recognised Yawuru native title holders, to enjoy Yawuru country and maintain their customary practices.	H
	3. Develop and implement methodology to assess the Yawuru community's level of satisfaction that they have been able to continue customary practices and benefit from country (e.g questionnaire, survey).	H

Key performance indicators

Performance measures	<ol style="list-style-type: none"> 1. Yawuru community's level of satisfaction that they can continue customary practices and benefit from country consistent with the purpose for Guniyan Binba Conservation Park. 2. Yawuru community's complaints relating to their ability to continue customary practices and benefit from country consistent with the purpose for Guniyan Binba Conservation Park. 3. Information, education, and interpretation programs for Guniyan Binba Conservation Park incorporates, in a prominent place, material about Yawuru community's rights to enjoy country, maintain customary practice and how this should be respected.
Targets	<ol style="list-style-type: none"> 1. A high level of Yawuru community satisfaction that they can continue customary practices and benefit from country consistent with the purpose of Guniyan Binba Conservation Park. 2. A decline in the number of unresolved complaints from the Yawuru community, per reporting period, relating to their ability to continue customary practices and benefit from country consistent with the purpose for Guniyan Binba Conservation Park. 3. Level of awareness of Yawuru community's rights to enjoy country, maintain customary practice and how this should be respected, is high or improving among visitors to Guniyan Binba Conservation Park.
Reporting requirements	Annually.

5.4 Responsibility for country

Yawuru customary law and responsibility for country is derived from *Bugarrigarra*. Through this Yawuru people maintain the right to 'speak for and look after' Yawuru country.

The relationship of Yawuru people to their country is dynamic and the country is animated and often unpredictable. The country itself, and the forces that lie within, must be respected and it is the responsibility of the Yawuru people to use its resources sustainably and ensure the protection of the country and family and others who visit. This goes to the heart of maintaining good *liyan* with the country. If Yawuru people or others do the wrong thing there will be serious consequences for Yawuru people and their families.

Central to this responsibility is looking after sacred and significant areas. To Yawuru people, significance refers to cultural heritage in the broadest terms and includes the intangible values of country and heritage. Such areas include:

- cultural (*Bugarrigarra*) areas (sites, tracks, areas), which may have cultural access restrictions
- registered sites
- areas next to cultural sites
- *rayi* sites (birth and origins – where child spirits arise from the country)
- burial sites
- seasonal hunting, fishing, and harvest areas for specific species
- traditional camping areas
- water sites

'The people, the land, and the Law are three aspects of the same thing. We have a duty to look after them all and looking after one means looking after the other two as well.'

Joseph Nipper Roe Ngulibardu (Yawuru RNTBC 2011)

- historical sites and
- archaeological sites.

A Yawuru Ranger Program that has been established as agreed within the ILUAs will help Yawuru people with fulfilling their responsibilities for country. Through the Yawuru Ranger Program, members of the Yawuru community are trained and employed by the department to patrol and undertake on-ground works in the Yawuru conservation estate.



Gundurungu is the fruit from the grey mangrove, *Avicennia marina*. It is soaked in mangrove mud for 3-7 days to remove toxins, then roasted and eaten. Photo – Kandy Curran.

Summary of management arrangements for responsibility for country

Management objective

1. To facilitate and maintain the opportunity for Yawuru people to carry out their roles and responsibilities as protectors and managers of their country and culture.

Management strategies

1. Continue to develop the Yawuru Ranger Program and authorisation of officers for enforcement activities. H
2. Establish additional agreed cultural protocols for the management of Guniyan Binba Conservation Park as required. H
3. Ensure management activities comply with and facilitate adherence to the agreed cultural protocols, consistent with the Yawuru cultural management plan. H
4. Develop and implement sustainable harvest strategies for vulnerable species subject to customary harvesting. H
5. Develop and implement education and interpretation programs to inform visitors to Guniyan Binba Conservation Park about significant Yawuru areas, culturally appropriate behaviours, and personal safety. H
6. Investigate opportunities to increase the number of Yawuru RNTBC members involved in management of Guniyan Binba Conservation Park. H
7. Develop and implement a methodology to assess Yawuru community's level of satisfaction that they have been able to undertake their role as protectors and managers of their country and culture in the context of jointly managed conservation estate (e.g. questionnaire, survey). H

Key performance indicators

Performance measures

1. Yawuru community's level of satisfaction that they can undertake their roles and responsibilities as protectors and managers of their country and culture, in the context of jointly managed conservation estate.
2. Yawuru people's complaints relating to their ability to undertake their roles and responsibilities as protectors and managers of their country and culture.
3. Information, education, and interpretation programs for Guniyan Binba Conservation Park incorporates, in a prominent place, material about Yawuru people's roles and responsibilities as protectors and managers of their country and culture.
4. Visitors to Guniyan Binba Conservation Park behave appropriately and safely around significant Yawuru areas.

Targets

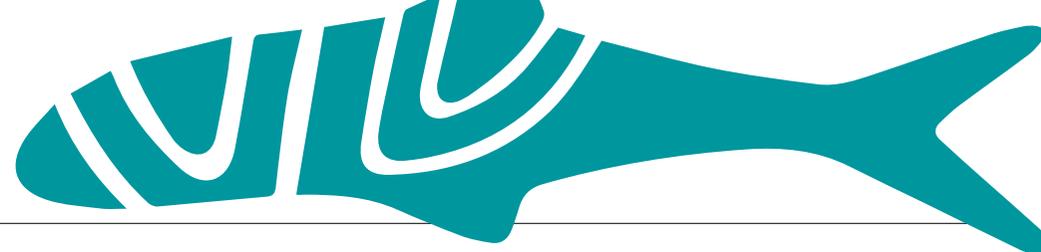
1. A high level of Yawuru community satisfaction that they that they can undertake their role as protectors and managers of their country and culture.
2. A decline in the number of unresolved complaints from the Yawuru community, per reporting period, relating to their ability to undertake their roles and responsibilities as protectors and managers of their country and culture per reporting period declines over the life of the joint management plan.
3. A high level of awareness among visitors to Guniyan Binba Conservation Park, of Yawuru peoples' roles and responsibilities as protectors and managers of their country and culture.
4. No reports of inappropriate or unsafe visitor behaviour.

Reporting requirements

Annually.



6.0 Ecological values



6.1 Geology, geomorphology and hydrology

The oldest outcropping rock in the area is the Broome Sandstone, a formation deposited in a shallow sea environment about 145 million years ago during the late Mesozoic era.

The Broome Sandstone contains numerous fossils, including those of extinct plants and the greatest variety of dinosaur footprints of any area in the world (DSEWPC 2011a; Kenneally et al. 1996). These provide valuable insights into the ecology of the Mesozoic era and are features contributing to formal recognition of national significance of the West Kimberley National Heritage Area (which includes Guniyan Binba Conservation Park) (DSEWPC 2011a).

Other exposed rocks in the area are younger Quaternary deposits. An extensive platform of Quaternary limestone with low cliffs is found from Coconut Wells through to Barred Creek beyond the northern boundary of the Yawuru conservation estate (Kenneally et al. 1996). The limestone is covered by sand dunes in places.

The shelly white sand *jani* and high dunes along Cable Beach have formed under a contemporary high energy depositional regime. Significant seasonal reworking of sediment and landform change is a natural occurrence in this highly dynamic coastal environment.

The embayment of Willie Creek is a dominant feature of the local geomorphology. Both Willie Creek and Coconut Wells are barred embayments. Deposits (initially of sand and then later changing to limestone) created a barrier near the mouth of Willie Creek earlier in the Holocene, establishing low energy conditions under which *galji* (fine carbonate mud) accumulated behind the barrier (Semenuik 2008). At Coconut Wells the barriers of sand and limestone have formed a linear lagoon parallel to the shore (Semenuik 2008). Detailed descriptions of the evolution and features of these wetland complexes (i.e. natural units or aggregates of wetland units) are available in reports by the Semenuik Research Group (2011) and Semenuik (2008)

Both marine water (e.g. tides, waves, currents) and freshwater (i.e. rainfall, creeks, groundwater seepages) features and dynamics are critical to the maintenance of

habitat in Guniyan Binba Conservation Park. Tidal ranges, which are very large and can reach up to 10 metres, are a major factor affecting the coastal environment. Surface freshwater flow to the coast is highly seasonal and associated with the heavy rainfall over *man-gala* (the wet summer). Because the landscape around Broome is mainly flat, surface water generally flows to the coast in sheets rather than in well-defined channels. Some small temporary streams do flow over *man-gala*, for example, into Willie Creek.

Groundwater seepages and surface water run-off are important drivers of the local ecology and are the 'living waters' and life source for the *jila* (permanent freshwater sources) that are of special cultural and spiritual significance to Yawuru people. 'Living waters' are manifestations of *Bugarrigarra*, the source of their names and the associated narratives that link water places geographically and in time (Yawuru RNTBC 2011).

There are several aquifers beneath the Broome area (Laws 1991) but it is the shallow aquifers, and principally the Broome Sandstone Aquifer, that are most directly relevant to management of Guniyan Binba Conservation Park values. The Broome Sandstone Aquifer is the primary water supply for the Broome town site, and for horticultural, pastoral, and other land use in the Broome surrounds. Broome's town water is obtained from the water reserve next to the Yawuru Birragun Conservation Park (Map 4a, *Yawuru Birragun Conservation Park Joint Management Plan 2016* [Department of Parks and Wildlife, 2016]).

Generally, groundwater flows to the south and the west because of the south-westerly dip of the Broome Sandstone (Vogwill 2003). Near the coast and extending several kilometres inland, a wedge of saltwater lies beneath the fresh water in the Broome Sandstone (Laws 1991). Fresh water also occurs in the coastal limestone and the coastal dunes. Depending on local conditions (such as the presence of mud, or variations in the topography of the Broome Sandstone), this water may be connected to or separate from the Broome Sandstone groundwater (Semenuik Research Group 2011). A small local aquifer within the coastal dunes to the north of Broome is a source of recharge for the Broome Sandstone and is used as a domestic-scale water source (Laws 1991).

6.0 Ecological values

The interaction of groundwater with landforms along the coast produces several unique freshwater seepages and *bilarra* in Guniyan Binba Conservation Park (Mathews, Semeniuk and Semeniuk 2011; Semeniuk Research Group 2011). These *bilarra* underpin and sustain many of the most significant cultural and ecological values of Guniyan Binba Conservation Park and the adjacent Yawuru Birragun Conservation Park. Many species inhabiting these areas have restricted distributions, occurring only in areas of surface or near-surface fresh water, and therefore, are particularly vulnerable to alterations in water availability or quality. Groundwater also flows on to the low tidal zone in areas, commonly creating brackish water microhabitats which support species such as white mangrove (*Avicennia marina*) or sedges (Mathews, Semeniuk and Semeniuk 2011).

During the wet season and following cyclones, stormwater from the Broome area drains into the valley that is formed by Buckley's Plain in the adjacent Yawuru Birragun Conservation Park and empties into *Ngunungurrukum*/Coconut Wells lagoon. The beach and the lagoon are also subject to tidal surge during spring king tides and cyclones. These extreme weather events and tides impact on the beaches and lagoons of Guniyan Binba Conservation Park, constantly changing the landscape. As a result of climate change and the expected increases in rainfall intensity associated with cyclones, the area will continue to be a dynamic and constantly changing environment.

For the purposes of this joint management plan, ecological values of Guniyan Binba Conservation Park are further discussed under two broad habitat groupings, that is, the *jani* (beach) habitats along the coast, and the *bilarra* habitats.

6.2 *Jani* (beaches) and intertidal flats

Shelly white sand *jani* are a significant component of Guniyan Binba Conservation Park. North of Coconut Wells the *jani* are adjacent to and sometimes overlie an extensive limestone platform (Kenneally *et al.* 1996).

Fauna associated with the *jani* of Guniyan Binba Conservation Park include various crabs (e.g. ghost crabs, sand bubbler crabs), bivalves and other invertebrates that live in the seabed sediments, and marine turtles. The *jani* is also important habitat for migratory bird species which are the subject of various international agreements (e.g. the Japan–Australia Migratory Birds Agreement, the China–Australia Migratory Birds Agreement and the Republic of Korea–Australia Migratory Birds Agreement).

5 Monitoring of nesting turtles also occurs in other parts of the Yawuru conservation estate; on beaches at the southern part of Roebuck Bay.

6.2.1 Marine turtle nesting habitat

The flatback turtle (*Natator depressus*) is known to nest on Cable Beach with some regularity.

The flatback turtle is a threatened species listed as 'rare or likely to become extinct' and 'vulnerable' under the Biodiversity Conservation Act and the EPBC Act respectively. The peak nesting period is from November to December and the peak hatching period is from February to March.

A program to monitor turtle nesting activity on Cable Beach has been conducted since 2006, although this has been largely focused on the more heavily used section of *jani* within the Broome town site and there has been little monitoring done in Guniyan Binba Conservation Park⁵. Monitoring of turtles in Guniyan Binba Conservation Park is also needed to obtain a useful record of turtle nesting activity, trends and success, and to better inform management decisions about the area. Because flatback turtles nest every one to five years, monitoring needs to be continued for several years to determine population trends.

Green turtles (*gurlibil*) (*Chelonia mydas*), also a threatened species, may very occasionally nest on the *jani* in the area, but monitoring to date indicates this is rare (Conservation Volunteers Australia recorded one green turtle nest on Cable Beach during the 2006—07 monitoring period).



The sand bubbler crab (*Scopimera inflata*) is a distinctive inhabitant of Cable Beach. It feeds at low tide, picking up grains of sand, removing small particles of food from the sand with its mouthparts and moulding the leftover sand into a small ball, which it then leaves behind on the *jani*. Photo – Nyamba Buru Yawuru Ltd.



Flatback turtles regularly nest on Cable Beach in November and December. Photo – Heather Beswick



Flatback turtle hatchlings emerge from eggs in February and March and make their way across the beach and into the water. Photo - Nyamba Buru Yawuru Ltd

6.2.2 *Gamirda-gamirda* (shorebird) habitat

The *jani*, sand spits and reefs of Guniyan Binba Conservation Park provide important habitat for migratory and resident *gamirda-gamirda*.

Migratory species visit the area between September and April either for breeding or to feed. About 14 species visit regularly, with more species visiting occasionally. Numbers vary from year to year, but up to 1000 individuals have been known to occur here, including the critically endangered curlew sandpiper (*Calidris ferruginea*), great knot (*Calidris tenuirostris*) and Eastern curlew (*Numenius madagascariensis*) (C. Hassall, pers. comm., 8 July 2019). Birds, especially large numbers of resident and migratory terns, roost on the *jani* and forage on the sand flats, reefs, and intertidal waters of Guniyan Binba Conservation Park. Little terns (*Stemula albigrons*) nest on the sand spit at the entrance to Willie Creek and the entrance to the Coconut Wells lagoon and Broome is one of the only places in Western Australia where this species breed (Collins and Jossop, 1997). Breeding is easily disturbed by human visitation. In addition, large flocks of sanderling (*Calidris alba*) feed on the *jani* between Cable Beach and Willie Creek. *Gamirda-gamirda* are also culturally important for Yawuru people.

Guniyan Binba Conservation Park also contains areas of intertidal mud flats that are exposed during low tides. Although nowhere near as extensive as those found

in Yawuru Nagulagun/Roebuck Bay Marine Park, the intertidal flats in Guniyan Binba Conservation Park provide habitat for a diverse range of invertebrates (crabs and other crustaceans, bivalves, gastropods, and marine worms). These support a range of migratory *gamirda-gamirda*. Maintaining the health of these intertidal flats is critical to maintaining their high biodiversity and the *gamirda-gamirda* populations they support.

6.2.3 Existing and potential pressures on ecological values associated with the *jani* and intertidal flats

Jani occur in naturally dynamic environments and are landforms that are subject to regular seasonal changes. Tropical cyclones or other severe weather events can result in dramatic, longer lasting changes.

The key management issues associated with ecological values of *jani* and intertidal flats are:

- inappropriate vehicle and pedestrian access affecting ecological values of the area and the adjacent Yawuru Birragun Conservation Park and
- potential for disturbance of turtles, *gamirda-gamirda* and other fauna for which *jani* provide important habitat.

6.0 Ecological values

Driving vehicles on Cable Beach, including parts of the *jani* within Guniyan Binba Conservation Park is a long-established part of recreational use in the area, and a recreational opportunity that is provided for under this joint management plan (see *Recreation and tourism values*). Most vehicles access the *jani* of Guniyan Binba Conservation Park via the beach at the southern boundary of the reserve. However, to get their vehicles onto the *jani*, people have also illegally created tracks through sensitive dune, limestone, and saltmarsh landforms of the adjacent areas, now part of Yawuru Birragun Conservation Park. This proliferation of informal four-wheel-drive vehicle and pedestrian tracks through environmentally and culturally sensitive areas is a significant management issue within the adjacent Yawuru Birragun Conservation Park. In addition, a small proportion of vehicles drive and park too high up the *jani*, causing damage to adjacent foredunes and vegetation.

Vehicles being driven on the *jani* of Guniyan Binba Conservation Park can also impact on fauna that this area provides habitat for, including marine turtles that nest on the *jani*, invertebrates that inhabit intertidal sediments and migratory *gamirda-gamirda* (Commonwealth of Australia, 2012, 2017, Foster-Smith *et al.* 2007, McFarlane 2008, 2009 and 2010, Randall *et al.* 2006). Vehicle access on *jani* during turtle nesting and hatching periods can directly result in death or injury of turtles, interfere with nesting or hatchling emergence success (e.g. through sand compaction) and impede movement of hatchlings to the sea (e.g. by creating deep ruts in which hatchlings can become entrapped). Turtle nesting success can also be affected by other human activities and it is important that beach users have access to information about how they can avoid disturbing turtles (e.g. turtle watching code of conduct, information about the impacts of artificial lights). Vehicle access to the *jani* is currently restricted between 8pm and 6am, from 1 October until 28 February, to protect nesting turtles. These restrictions will be maintained over the life of the joint management plan.

Turtle nests may also be subject to predation (e.g. by sand goannas, dogs, and cats), although more study is needed to explore the local prevalence and conservation implications of this issue. *Gamirda-gamirda* that use the *jani* can also be impacted by vehicles and visitor access. There can be direct impacts associated with vehicles driving over or visitors tramping nests, eggs and fledglings and indirect impacts which can lead to breeding failure, avoidance and abandonment of habitat, and energetic and physiological impacts related to disturbed feeding and roosting (Birdlife Australia 2013).



Yawuru Ranger Jason Richardson installs signage advising visitors not to drive on or disturb sand dunes near turtle nesting sites. Photo – DBCA.

6.3 *Bilarra* (wetlands)

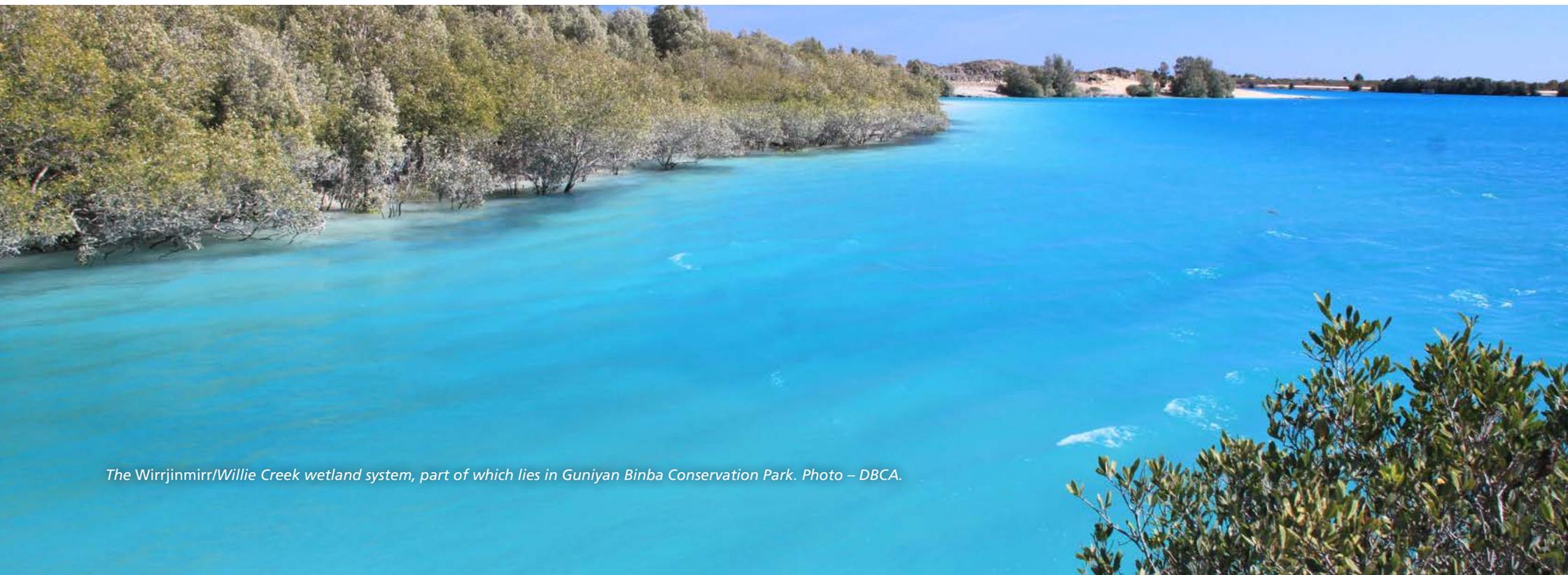
Several marine and freshwater *bilarra* underpin and sustain many of the most significant cultural and ecological values of Guniyan Binba Conservation Park. Many *bilarra* of cultural and ecological importance also occur outside the Yawuru conservation estate (for example, on adjacent pastoral station lands).

Bilarra hold spiritual value and have other special cultural significance for Yawuru people (Yawuru RNTBC 2011). For Yawuru people, the permanent freshwater places or *jila*, are life-sustaining 'living waters' given names and narratives through *Bugarrigarra* and are geographically and temporally linked.

Traditionally, Yawuru people moved according to the seasons. Knowledge of the location, size and condition of water sources was essential for survival, as people traversed the country from inland to coast (Yawuru RNTBC 2011). Early European visitors made use of this knowledge, engaging Aboriginal people to show them the

location of 'native wells' to obtain fresh water for themselves and their stock (Yawuru RNTBC 2011). With the occupation of land for pastoral and other uses, Yawuru people have been prevented from accessing and protecting many of their *bilarra*. Many plants and animals only found in association with *bilarra* are of special cultural importance. Many cultural heritage sites and cultural values occur in the *bilarra*.

There are several *bilarra* in Guniyan Binba Conservation Park. A general discussion of the major *bilarra* areas within Guniyan Binba Conservation Park is provided in this section of the joint management plan. Detailed descriptions of the evolution and features of wetland complexes (i.e. natural units or aggregates of wetland units) within Guniyan Binba Conservation Park and the adjacent Yawuru Birragun Conservation Park are available in reports by the Semeniuk Research Group (2011) and Semeniuk (2008). The different ways in which fresh water enters and forms the unique array of *bilarra* in the coastal zone is described by the Semeniuk Research Group (2011) and Mathews, Semeniuk and Semeniuk (2011).



The Wirrinmirr/Willie Creek wetland system, part of which lies in Guniyan Binba Conservation Park. Photo – DBCA.



The Wirrjinmirr/Willie Creek wetland system, part of which lies in the Guniyan Binba Conservation Park. Photo - DBCA.



Soils where mangroves grow often have low oxygen levels. Therefore, instead of absorbing oxygen through roots, Gundurung use pneumatophores to absorb oxygen from the air. Photo – Kandy Curran.

6.3.1 The Wirrjinmirr/Willie Creek wetlands system

Guniyan Binba Conservation Park includes part of the *Wirrjinmirr/Willie Creek* wetland complex, a *bilarra* system that is included in the *Directory of important wetlands in Australia* (DSEWPC 2011b).

Parts of this wetland complex also fall within the adjacent Yawuru Birragun Conservation Park and the northern part lies outside the boundary of the Yawuru conservation estate. Several law grounds, *Bugarrigarra* sites, historic living areas and many archaeological sites which provide evidence of traditional habitation occur in the area. *Wirrjinmirr/Willie Creek* is at the northern boundary of Yawuru country and much of the coastline surrounding this area marks the travels of the creative beings of the tradition of law allied with people whose traditional connections are to the north of Yawuru Country. (i.e. the Northern Tradition).

A detailed description of the evolution and features of Willie Creek is available in reports by the Semeniuk Research Group (2011) and Semeniuk (2008). Elements of the *Wirrjinmirr/Willie Creek* wetland complex within Guniyan Binba Conservation Park include intertidal sand and mudflats, mangroves, and salt flats.

Linygurra (estuarine crocodiles, *Crocodylus porosus*) are occasionally seen at Willie Creek, and in tidal creeks and mangroves elsewhere in the Yawuru conservation estate. Broome is at the historical southern extent of the distribution of *linygurra* in Western Australia (Australian Museum 2010), although confirmed sightings are now regularly recorded from the Pilbara further south. The *linygurra* is specially protected under the Biodiversity Conservation Act.



Flame-backed fiddler crabs (*Uca flammula*) are commonly found in sandy and muddy mangroves of the Guniyan Binba Conservation Park. Both males and females are bright red, but the males have one large claw which they wave in the air to attract females and to warn off other males. Photo – Kandy Curran.

Gundurung (mangroves)

Gundurung comprise trees and shrubs from a variety of plant families that have a range of adaptations for survival in the highly dynamic intertidal zone.

A pattern or zonation can be seen in the way that species are distributed throughout larger stands of *gundurung*. This is reflective of small differences in environmental conditions such as salinity, frequency of inundation, substrate characteristics, and differences in the adaptations and environmental tolerances of various species. Zonation is evident in the *gundurung* at Wirrijinmirr/Willie Creek as described by Semeniuk (1983).

Gundurung provide a range of ecosystem services and important habitat for diverse marine and terrestrial fauna. They provide a source of nutrients and organic matter to surrounding waters and help to buffer wave action, decreasing susceptibility to erosion and increasing shore stability (McKenzie *et al.* 2009; Pedretti and Paling 2000). They are a nursery and breeding area for some fish and crustaceans (Pedretti and Paling 2000).

The *gundurung* provide important habitat for bats and birds. Several bird species recorded as occurring in the area are virtually confined to mangroves (Johnstone 1990). Within and around the Yawuru conservation estate these are likely to include the mangrove golden whistler (*Pachycephala melanura*), broad-billed flycatcher (*Myiagra ruficollis*), white-breasted whistler (*Pachycephala lanioides*), mangrove gerygone (*Gerygone levigaster*), the dusky gerygone (*Gerygone tenebrosa*) and the mangrove grey fantail (*Rhipidura phasiana*) (Johnstone 1990, C. Hassall, pers. comm., 8 July 2019, B. Greatwich, pers. comm., 28 October 2019). Other bird species regularly use mangroves to feed, nest or shelter; these include the straited heron (*Butorides striata*), white-breasted woodswallow (*Artamus leucorhynchus*), little bronze cuckoo (*Chrysococcyx minutillus*), lemon-bellied flycatcher (*Microeca tormenti*), yellow white-eye (*Zosterops luteus*), red headed honeyeater (*Myzomela erythrocephala*), and rainbow bee-eater (*Merops ornatus*). The brown honeyeater (*Lichmera indistincta*) and rufous-throated honeyeater (*Conopophila rufogularis*) use the mangroves when they are in flower (Johnstone 1990, J. Lewis, pers. comm. 17 June 2019). Three species of *gamirda-gamirda* use mangroves for roosting, the whimbrel (*Numenius phaeopus*), grey-tailed tattler (*Tringa brevipes*) and terek sandpiper (*Xenus cinereus*), all other species roost on sand, salt marsh or rocks. Many mangrove birds have disjunct distributions because of large breaks in the mangrove vegetation (Johnstone 1990). Mangroves are also important for *gamirda-gamirda* that use this habitat for roosting during high spring tides (Bennelongia 2009), and species such as brahminy kites (*Haliastur indus*) and black-necked storks

(*Ephippiorhynchus asiaticus*) nest in dense mangroves (Johnstone 1990). Some bat species recorded from the area include Gould's wattled bat (*Chalinolobus goudii*), the yellow-bellied sheath-tail bat (*Saccolaimus flaviventris*), the hoary wattled bat (*Chalinolobus nigrogriseus*) and the little broad-nosed bat (*Scotorepens greyii*).

Salt flats

Bare salt pans occur behind the stands of *gundurung*.

The salt pans are formed through high evaporation rates during the dry season leaving the sediment extremely saline and essentially uninhabitable by vegetation, although some highly salt-tolerant algae may be present (Adam 2009; Connolly and Lee 2007; Oldmeadow 2007). *Bundu* (saltmarsh of samphire flats and saline grasslands) which border the salt flats, occur in areas straddling or above the high tide mark and are therefore very infrequently inundated by tides. When these salt flats become inundated during high tides or from rainfall, they are used by many *gamirda-gamirda* and water birds. Large numbers of terns forage on the salt flats when these are flooded.

6.3.2 Nimalaica/Nimalarragun wetland

The Nimalaica/Nimalarragun wetland, an almost permanent freshwater *bilarra* surrounded by seasonally inundated swamp, lies mostly in the adjacent Yawuru Birragun Conservation Park, but parts of the inundation zone lie within Guniyan Binba Conservation Park.

The *bilarra* and overflow system are one of the most significant freshwater wetland systems in the local Broome region, receiving freshwater seepage from groundwater and seasonal streams (C. Hassall, pers. comm., 8 July 2019). Freshwater from the *bilarra* also overflows into Willie Creek. It provides a refuge for species during dry conditions and sustains several flora and fauna species not widespread on the Dampier Peninsula. As well as supporting several resident mammals, reptiles, frogs and fin fish, the *bilarra* also provides important bird habitat, with over 170 species being recorded, 18 of these migratory. In certain conditions, the endangered Australian painted snipe (*Rostratula australis*) can be found in this *bilarra* and reed beds provide habitat for rail and crane species that are not common elsewhere in the region.

In 2018, an invertebrate survey was carried out by the department and at least 157 species were recorded, with 27 widely distributed across Australia. However, many have only been collected one or two times in other locations or are undescribed in Australia, reflecting the limited survey work of aquatic invertebrates in the inland Kimberley. Some species were also found to be unique to *Nimalarragun* and other

6.0 Ecological values

mound springs in the Kimberley, although further sampling is recommended to confirm this (Pinder *et al.* 2019).

Nimalarragun supports woodlands of *Melaleuca alsophila* and associated woodlands on the margins with an upper storey of *Melaleuca alsophila*, an intermediate layer of vines and a ground layer of ferns and sedges (Semenuk Research Group 2011). The *bilarra* is listed on the Directory of Important Wetlands in Australia and the department's 'Priority ecological community' list as the Priority 4 (P4) 'Nimalaica clay pan' ecological community. The area immediately to the east of the main water body includes an area of spring vegetation with organic soils. *Bilarra* plants recorded here include fringing *cajuput* (*Melaleuca cajuputi*); the evergreen tree (*Timonius timon*); *rirrwal* or white dragon tree (*Sesbania formosa*); rushes and sedgeland with *Schoenoplectus subulatus*; *bilgin*, the water chestnuts (*Eleocharis spiralis* and *E. sundacia*); and black mangrove (*Lumnitzera racemosa*). The restricted Cable Beach Ghost Gum, *Corymbia paractia* occurs as scattered trees on the fringes of the *bilarra* (DSEWPC 2011b; Mathews, Semenuk and Semenuk 2011, Semenuk Research Group 2011, M. Lyons pers. comm. 16 October 2019)

As part of the Willie Creek listing in the Directory of Important Wetlands in Australia database (DSEWPC 2011b), the *Nimalarragun* wetland is noted for:

- being an important bird and fish breeding and refuge area
- supporting flora species near the southern end of their core ranges, for example, frogmouth (*Philydrum lanuginosum*) and mangrove fern (*Acrostichum speciosum*)
- supporting flora species not known from elsewhere on the Dampier Peninsula (e.g. the free floating aquatic plant *Ceratophyllum demersum* var. *demersum*; the herb *Heliotropium curassavicum* and an annual sedge *Schoenus falcatus*)
- being the most southerly, near-coastal locality known for *jarmirdany* or screw palm (*Pandanus spiralis*)
- a partially submerged forest of tall *Melaleuca cadjeput* trees that are notable for their cable-like aerial roots, which is unusual in this species (Kenneally *et al.* 1996)
- supporting an abundance of the freshwater herring or bony bream (*Nematolosa erebi*) and the freshwater eel (*Anguilla bicolor*)⁶
- supporting aquatic invertebrate communities with a composition probably unique to such *bilarra* along the Dampier peninsula coast.

⁶ In Australia, *Anguilla bicolor* is only known from the Kimberley region, where it is not common (it is widespread in the tropical waters of the Indo-West Pacific) (Allen, Midgley & Allen 2002).

6.3.3 Ngunungurrukum/Coconut Wells lagoon

The wetland complex at *Ngunungurrukum /Coconut Wells* consists of a lagoon (within Guniyan Binba Conservation Park) and saltmarsh (Buckley's Plain, within Yawuru Birragun Conservation Park), behind a barrier of sand and limestone located between Coconut Wells and the Cable Beach.

The lagoon is a locally significant location for birds, with 105 species being recorded here, including 16 migratory species.

6.3.4 Existing and potential pressures to ecological values associated with *Bilarra* (wetlands)

Pressures can arise from activities or developments that could result in direct physical disturbance of the tidal wetland system or in disturbance to the ecological processes that maintain it.

Natural events such as cyclones and storms can cause dramatic short-term changes to mangroves. Of disturbances arising from human activity, the most significant pressures stem from any activities or developments that would substantially change the normal hydrological and sedimentary regimes operating within the wetland system.

Changes to hydrology

The hydrological values described above underpin and support ecological and cultural values of the Yawuru conservation estate, both terrestrial and marine.

Potential pressures on the values described above are:

- over-abstraction of groundwater
- gaps in knowledge of the ecological water requirements of groundwater-dependent species and communities
- pollutants and excess nutrients in surface and groundwater
- any activity or development which has the potential to significantly change the natural water regimes.

To make sure that the values of Guniyan Binba Conservation Park are not affected by abstraction of groundwater, water removal needs to be at a level that does not:

6.0 Ecological values

- significantly change the amount or quality of water available for flora and fauna, particularly for species that are fully or highly groundwater-dependent
- cause saltwater intrusion into naturally less saline areas or
- change natural drainage flows and patterns.

There is currently little need for abstracting groundwater from Guniyan Binba Conservation Park for conservation reserve management purposes, and it is expected that this will continue to be the case over the life of this joint management plan. Many of the ecological values are groundwater-dependent and may therefore be vulnerable to changes in regional groundwater, a resource which is subject to increasing and competing demands and already showing signs that limits of sustainable abstraction may have been reached (Searle 2012). Over-abstraction of groundwater from the Broome Water Reserve is the likely cause of an increase in groundwater salinity along the coast, and at depths of about 100m below ground further inland (Searle 2012). The Broome Water Reserve Water Source Protection Plan (Department of Water 2012) outlines the licensed abstraction amounts and a water quality monitoring program.

There is a need to increase understanding of the water requirements and regimes that are needed to sustain groundwater-dependent ecosystems and species and to maintain *bilarra* in a healthy condition. Regional water resource management plans include several strategies aimed at addressing this situation (Department of Water 2010a, 2010b, Searle 2012).

In the absence of appropriate risk avoidance and mitigation measures, certain activities on adjacent lands and waters and/or within Guniyan Binba Conservation Park have the potential to adversely affect water quality in the conservation estate, both terrestrial and marine. Maintaining groundwater and surface water quality is an issue that requires collaborative and cross tenure management approaches, and several government agencies have responsibilities in this area.

Both marine and freshwater dynamics are important in sustaining mangrove communities. Freshwater inflows into the high intertidal zone have a strong influence on the distribution and diversity of mangroves, so species occurring in these areas can be especially sensitive to changes in the normal freshwater regimes (Gillanders 2007; Semeniuk 1983). Surface and subsurface freshwater inputs are important, serving to dilute the hypersaline salt flats and establish conditions that are more suitable to the growth of certain mangroves (Semeniuk 1983). Where subsurface seepages continue throughout wet and dry seasons, as is often the case around Broome, this can be a particularly influential factor in the distribution of mangroves (Semeniuk 1983).

As *Nimalarragun* is fed by freshwater seepage from groundwater and surface flow during the cyclone season, this wetland complex and its associated mound spring vegetation is highly vulnerable to changes in hydrology, particularly those that may restrict the flow of freshwater into the system (Mathews *et al.* 2011).

Anoxic, sulfide rich, low pH sediments found in wetland areas are associated with potential acid sulfate soils. These are soils which, when disturbed or subjected to prolonged drying and aeration, have the potential to generate increased acidity and mobilise heavy metals which may be harmful to flora, fauna, and human health. *Nimalarragun* is not known to be notably affected by pollutants.

Introduced animals

Introduced animals have the potential to seriously affect ecosystems by predation of or competition with native species, alteration of habitat and introduction of disease.

Introduced animals can degrade cultural values by adversely affecting native species that are culturally important, or by degrading cultural sites or the environment. Several species of introduced predators and herbivores occur within the Yawuru conservation estate. Feral cats, foxes, dogs, cattle, and horses are currently considered to present the most significant threat to the values of Guniyan Binba Conservation Park. The management of these species is also an issue in the adjacent Yawuru Birragun Conservation Park. Consequently, pest animal management in Guniyan Binba Conservation Park will be complementary to management in other Yawuru conservation reserves.

Priorities for management include pest species declared under the *Biosecurity and Agriculture Management Act 2007* (BAM Act), which are subject to legislative requirements for control, and those that have the potential to significantly affect threatened or priority species or important habitats.

Feral cats, foxes and dogs have dramatic effects on Western Australia's native fauna. Control of feral predators in Guniyan Binba Conservation Park is important but complicated in areas where domestic dogs and cats can easily enter from adjacent residential areas. Effective control of feral predators in these areas will require a concurrent program to encourage responsible pet ownership and reduce the number of unwanted pets being bred. *The Dog Act 1976*, and the *Cat Act 2011*, both administered by local government, provide for the registration, identification and control of dogs and cats and cat sterilisation where applicable. A new cat bait to be trialled in the Kimberley could possibly be considered to help with cat control in the Yawuru conservation estate over the life of the joint management plans, but this will be subject to outcomes of the trial and risk assessments.

6.0 Ecological values

In Guniyan Binba Conservation Park the effects of cattle are most obvious in sensitive *bilarra* areas where they commonly congregate to escape the heat and access water. Cattle trample and compact the surface and vegetation, introduce, and spread weeds, and alter water quality through the concentration of nutrients (Semeniuk Research Group 2011). Pinder *et al.* (2019) reported that nutrient and chlorophyll levels recorded suggest enrichment of *Nimalarragun* from historical cattle use of the *bilarra* and catchment area. In addition to feral cattle, a proportion of cattle within the Yawuru conservation estate may be stock that has strayed from adjacent pastoral areas. The managers of Roebuck Plains Station undertake measures to reduce any negative impacts that cattle operation activities may have on the Yawuru conservation estate.

Feral horses are present in Guniyan Binba Conservation Park and parts of the adjacent Yawuru Birragun Conservation Park. These horses are thought to have originated from Waterbank Station and were released into the wild when the Station was sold to the State Government. Like cattle, horses also trample sensitive *bilarra* vegetation, introduce, and spread weeds and impact water quality. Management of these horses will consider the need protect sensitive *bilarra* and vegetation values.

Weeds

Weeds have the potential to degrade culturally significant and environmentally sensitive areas by out-competing native species, changing vegetation structure, changing habitat for fauna, and increasing the intensity of bushfires.

To help set priorities for weed management, the department initiated an updated assessment of weeds in each departmental region. The first stage of this assessment used available knowledge to identify weed species considered to be of high impact, rapidly invasive and still at a population size that was feasible to eradicate or control. Through the Kimberley Region species-led invasive plant prioritisation process, 37 introduced plants known to occur in the region have been identified as high ecological impact species (Department of Biodiversity, Conservation and Attractions, 2019a), and of these, the following have been recorded from within or near Guniyan Binba Conservation Park (Department of Biodiversity, Conservation and Attractions, 2019b):

- bellyache bush (*Jatropha gossypifolia*)
- buffel grass (*Cenchrus ciliaris*)
- coral vine (*Antigonon leptopus*)

- neem (*Azadirachta indica*)
- stinking passionflower or wild passionfruit (*Passiflora foetida*)
- *Merremia dissecta* and
- Parkinsonia (*Parkinsonia aculeata*).

Eradication of weeds is feasible if the infestation is small and the commitment to control can be continued until all weeds are destroyed and the soil-stored seed is exhausted. Containment and slowing the rate of spread are alternative strategies to be considered if eradication is not feasible.

Several species included in the Kimberley Region environmental weed list are declared pests under the *Biosecurity and Agriculture Management Act 2007* (BAM Act), and these are subject to legislative requirements for control. Of the declared pests on the Regional environmental weed list only bellyache bush has been formally recorded near Guniyan Binba Conservation Park.

The second stage of the department's regional weed assessments will identify high value assets and the weed infestations that pose a threat to those assets. This will provide site-based weed prioritisation and give guidance on where control measures will have the greatest benefit. In addition, management of weeds within Guniyan Binba Conservation Park will be considered in the context of any local priorities that may not be reflected in Regional weed assessments. For example, rubberbush (*Calotropis procera*) is present but not yet widespread in the Broome area, and as there is still a high feasibility of gaining control of this invasive species in the conservation estate it is therefore a local weed management priority. In addition, the *bilarra* are of particularly high conservation and cultural value and therefore assessment and management of weeds with the potential to significantly affect *bilarra* values will be important.

Summary of management arrangements for ecological values

Management objectives

1. To ensure the ecological processes (e.g. geomorphic and hydrological) that sustain habitats in Guniyan Binba Conservation Park are not significantly adversely affected by human activity.
2. To ensure turtles, birds and other fauna are not significantly adversely affected by human activity in Guniyan Binba Conservation Park.
3. To ensure the Nimalaica/*Nimalarragun* clay pan P4 ecological community is not adversely affected by human activity in Guniyan Binba Conservation Park and that the hydrologic regime that sustains the community is maintained.
4. To maintain the condition, extent, and species composition of mangroves within Guniyan Binba Conservation Park.
5. To increase understanding of, and to maintain or improve, the condition and ecological function of *bilarra* in Guniyan Binba Conservation Park.

Management strategies

1. Carry out research, monitoring and mapping to improve understanding of the ecological values of the area, and to collect baseline data to facilitate future assessments of management effectiveness (e.g. a turtle monitoring program, bird counts, monitoring of mangrove diversity and extent, any monitoring required in accordance with approved recovery plans and a wetland mapping monitoring program). H
2. Provide information for visitors to help raise awareness about fauna that are sensitive to disturbance and promote a code of conduct that minimises this (e.g. turtle and bird watching codes of conduct). H
3. Maintain access restrictions to provide seasonal protection to turtles and their nests and minimise disturbance of migratory *gamirda-gamirda*. M
4. Based on monitoring outcomes, determine the need for further access restrictions if necessary, to protect flora, fauna and ecological communities and implement as required (e.g. establish temporary control areas under section 62 of the CALM Act where necessary to provide seasonal protection to turtles or nesting/roosting/foraging *gamirda-gamirda*). M
5. Avoid significant disturbances of potential acid sulfate soils. M
6. Evaluate the threat presented by weeds and introduced animals to the values of Guniyan Binba Conservation Park and develop and implement introduced animal and weed control plans, that:
 - implement control measures for high priority species and new infestations and populations
 - monitor and evaluate the extent and effects of weeds and introduced animals
 - measure the effectiveness of control measures
 - are complementary to those for other reserves in the Yawuru conservation estate and
 - place a high priority on high risk species and areas.
 H
7. Consider measures to exclude introduced fauna from sensitive areas (e.g. temporary or permanent fences) if necessary and feasible. M
8. Engage and collaborate with stakeholders, government agencies, landholders and research organisations to implement management strategies, fill knowledge gaps associated with ecological values and address impacts beyond the boundaries of the conservation estate associated with introduced animal and weed control and integrated catchment and groundwater management. H

Key performance indicators

Performance measures

1. Availability of data on marine turtle and conservation significant *gamirda-gamirda* nesting within Guniyan Binba Conservation Park (e.g. numbers and locations of nests, false crawls, disturbances).
2. Level of disturbance of marine turtles and conservation significant *gamirda-gamirda* within Guniyan Binba Conservation Park (e.g. by vehicles, feral predators).
3. Mangrove species diversity, composition, spatial extent, and canopy cover (%)
4. Availability of baseline data and report on the values and condition of *bilarra*.
5. Condition of *bilarra*.⁷
6. Availability of baseline data and a report documenting environmental weed species at priority locations within Guniyan Binba Conservation Park.

7 (Condition of *bilarra* relates to water quality and quantity measures, species richness, species composition and abundance, and vegetation or habitat structure and extent.

Targets

1. A series of annual turtle and *gamirda-gamirda* (shorebird) monitoring reports (including records of disturbance) are available for Guniyan Binba Conservation Park over the life of this joint management plan.
2. No significant disturbance of marine turtles or conservation significant *gamirda-gamirda* within Guniyan Binba Conservation Park.
3. No loss of mangrove species diversity, composition, spatial extent, or canopy cover (%) because of human activity in Guniyan Binba Conservation Park.
4. Wetland mapping and a report documenting baseline values and condition of *bilarra* in Guniyan Binba Conservation Park is completed by 2021.
5. No decline in the condition of *bilarra* in Guniyan Binba Conservation Park (attributable to management activities or lack of appropriate management activities) over the life of this joint plan.
6. Baseline data and a report documenting environmental weed species at priority locations within Guniyan Binba Conservation Park is available by 2021.

Reporting requirements

1. Review progress every two years.



7.0 History and heritage values

7.1 History

7.1.1 Aboriginal occupation and custodianship

The Yawuru conservation estate is part of country that Yawuru people have been a part of for thousands of years before the arrival of the early European explorers. Archaeological records from the area include numerous middens and artefacts that provide evidence of Aboriginal peoples' long occupation. A range of other types of Aboriginal heritage sites also occur in the area.

Historically, Aboriginal people would regularly camp throughout the dunes which provide an array of important bush tucker and other resources. The explorer Phillip King charting the west coast of the Dampier Peninsula in 1821 noted:

"...the smoke of the fires have been noticed at intervals of every four to five miles along the shore, from which it may be inferred that this part of the coast is very populous" (quoted in Kenneally *et al.* 1996).

The *Wirrjinmirr*/Willie Creek area is at the northern boundary of Yawuru country and the Guniyan Binba Conservation Park and much of the coastline surrounding this area marks the travels of the creative beings of the tradition of law allied with people whose traditional connections are to the north of Yawuru Country.

Cooking on fires on the beach is an Aboriginal customary tradition that continues: 'People always cook their fish or crab on the beach, day or night. We cook the whole fish on the coals. We don't waste anything. We still want to be able to take our families fishing and cook our fish and shellfish on the beach.'

Neilo McKenzie (Yawuru RNTBC 2011)

(i.e. the Northern Tradition). The *Wirrjinmirr* area is associated with law grounds, *Bugarrigarra* sites, ceremonial sites, historic living areas and *jila*.

Some Yawuru people and their families worked and lived on the various pastoral leases the area was previously managed under (e.g. Waterbank Station).

The *Yawuru cultural management plan* identifies various cultural values associated with *gundurung* (mangroves). They are an important source of *mayi* (food) including fish, *gundurung* fruit which is collected at the end of *marrul* (April—May), crabs, oysters, mangrove shellfish and fruit bats (Yawuru RNTBC 2011).

More discussion of Yawuru cultural values including heritage values is provided in *Yawuru cultural values*.



Shrubby samphire (Tectocornia spp.) is found growing on samphire flats and saline grasslands behind stands of gundurung and is a good bush food. Photo – Kandy Curran.

7.1.2 European explorers

Europeans began exploring the coastline in the 1600s.

Some of the first explorers to the region included the Dutch mariner Abel Tasman in 1644, and Englishman William Dampier, initially as a buccaneer aboard the *Cygnet* in 1688 and later aboard the *Roebuck* (after which Roebuck Bay was named) (Green 1981; Kenneally *et al.* 1996). Later European visitors included the Frenchmen Nicholas Baudin and Louis de Freycinet in 1801–02, who gave French names to several places along the Kimberley coast (DSEWPC 2011c).

7.1.3 Pearling

The Broome area is synonymous with pearling and this has been a major foundation of the area's heritage values.

Well before the arrival of European pearlers Yawuru people had a long tradition of harvesting pearl shell. This was carved with decorative designs and worn on ceremonial occasions or used for trading with other Aboriginal groups (Yawuru RNTBC 2011). During the 1870s, European pearlers who had been operating out of Cossack and Roebourne travelled north to Broome in search of new pearling beds to exploit for mother-of-pearl. By the first decade of the twentieth century, Broome was producing most of the world's supply of mother-of-pearl and was recognised as the pearling capital of the world (DSEWPC 2011c). In the 1960s the cultured pearl farming industry developed which was and continues to be a major contributor of pearls to the world market (DSEWPC 2011c).

Guniyan Binba Conservation Park may contain maritime archaeology values. The pearling lugger *Tommy* is reported to have been wrecked two miles north of Willie Creek and, to date, has not been located. There is potential for other unknown unlocated colonial-era pearling shipwrecks and sites both above and below the low water mark, and in mangrove inlets. These areas offered protection during the cyclone season for pearling fleets, so there is a possibility that wreck material may be found in the area. Areas of foreshore in the vicinity of historical pearling camps elsewhere in the Northwest and Kimberley are known to have maritime archaeological potential, demonstrating, domestic, industrial, and maritime aspects of pearling activity. As well as shipwrecks, typical historic maritime relics can include mooring chains, windlasses, and stone ballast mounds.

Aboriginal people have been an integral part of Broome's pearling story, with many having been kidnapped for forced labour on the luggers and on shore when the industry was first established (Green 1981; Yawuru RNTBC 2011). As the pearling industry developed, Asian men (from Japan, China, Philippines, Malaysia

and Indonesia) were brought to Broome to work in the industry as indentured labour, and Broome became unique in Australia for being a predominantly Asian town during the late nineteenth to mid-twentieth centuries (DSEWPC 2011c). In the semi-permanent pearling lugger 'lay-up' camps, including at Willie Creek, Asian workers interacted and developed relationships with Aboriginal people who supplied water and wood for the pearling vessels, and a fascinating cultural and racial fusion emerged (Yawuru RNTBC 2011).

7.1.4 Pastoral history

During the 1860s settlers from the south began to explore the region for locations to raise sheep and cattle.

These early pastoral endeavours failed in the face of sustained Aboriginal resistance and harsh environmental conditions. The area was not colonised by pastoralists until the late 1890s (DSEWPC 2011c). Conflict between Aboriginal people and the European pastoralists was common throughout the early days of the pastoral industry. Hostilities gradually declined as pastoralists began to take advantage of an Aboriginal workforce to help run their stations, and as Aboriginal people adapted to the new circumstances so that they could live on or near their traditional country, fulfil their custodial duties and maintain their traditional way of life as much as was possible (DSEWPC 2011c).

The areas adjacent to Guniyan Binba Conservation Park (and now part of Yawuru Birragun Conservation Park) were previously part of Hill Pastoral Station, which later became Waterbank Pastoral Station. Government purchased the station in 1996 for alternative land uses. Some Yawuru people were born, grew up and worked on the local pastoral stations, but, as occurred elsewhere throughout the State, they were forced to leave or walked off the stations in the late 1960s and early 1970s when station owners were required to pay Aboriginal workers equal wages (Yawuru RNTBC 2011). Station work and life features strongly in the memories of many Yawuru people and is a very important part of Yawuru heritage and contemporary identity.

7.1.5 Communications history

A telegraph cable, laid between Java and Broome in 1889, came ashore at what was to become known as Cable Beach.

The cable linked Broome with England (via Singapore, India, Aden, Egypt, Malta, and Gibraltar) and was also connected to the Australian Overland Telegraph Line from the south. The telegraph cable functioned until 1914 when the operations were transferred to Cottesloe in Perth.

7.2 Heritage legislation

The heritage significance of some sites within Guniyan Binba Conservation Park has been formally recognised through registration under heritage protection legislation.

Many Yawuru cultural heritage sites, including a number within or adjacent to Guniyan Binba Conservation Park, are now formally recognised on the register of sites maintained under the *Aboriginal Heritage Act 1972*. However, registered sites do not represent a comprehensive record of the actual sites in the area. Under the *Aboriginal Heritage Act 1972*, Aboriginal heritage sites and objects are protected whether they have been entered on the register or not, and it is an offence to alter a site or object without prior approval.

Changes to the CALM Act in 2012 included that CALM Act management plans must have the objective of ‘protecting and conserving the value of the land to the culture and heritage of Aboriginal persons’ (as described in section 56(2) of the CALM Act).

Guniyan Binba Conservation Park is included within the boundary of the West Kimberley National Heritage Area – see 1.7 *Legislative context* for further information.

There are currently no sites within Guniyan Binba Conservation Park listed on the *State Register of Heritage Places* established under the *Heritage of Western Australia Act 1990*.

On 1 July 2019, the Commonwealth *Historic Shipwrecks Act 1976* was replaced by the *Underwater Cultural Heritage Act 2018* which automatically protects all historic shipwrecks and associated relics over 75 years old below the low water mark, in Australian waters. The State *Maritime Archaeology Act 1973* automatically protects all pre-1900 historic shipwrecks relics and other maritime related structures above the low water mark and in inland State waters.

7.3 Existing and potential pressures on history and heritage values

Potential cultural heritage management issues for Guniyan Binba Conservation Park largely arise from poor understanding and appreciation of the area’s history and heritage values.

Information, interpretation, and education initiatives are an important part of cultural heritage conservation, and such initiatives are critical to managing cultural heritage values of Guniyan Binba Conservation Park.

Summary of management arrangements for history and heritage values		
Management objectives	1. To conserve non-Aboriginal heritage values.	
Management strategies	1. Identify important non-Aboriginal heritage sites.	H
	2. Provide materials and opportunities (e.g. interpretive signage, brochures and other media, tour products) for visitors to enhance their understanding and appreciation of the cultural heritage and historical context of the area.	H
	3. Ensure that Yawuru people have a primary and active role in the conservation and communication of their cultural heritage, and that Yawuru intellectual property is recognised.	H
	4. Assess factors that may diminish or have adverse effects on cultural heritage sites or the value of Guniyan Binba Conservation Park to the culture and heritage of Aboriginal people and implement management actions to address these as necessary.	H
	5. Ensure management activities are consistent with Yawuru cultural protocols.	H

8.0 Recreation and tourism values

Broome and surrounds, including Guniyan Binba Conservation Park, offer visitors and those who have chosen to live there, a range of highly valued opportunities for nature-based recreation and cultural tourism.

Broome is the largest town in the Kimberley Region and is expected to accommodate the most significant amount of the region's anticipated population growth over the next 20 years (Western Australian Planning Commission 2015). Consequently, the number of residents engaging in recreational activities in the Yawuru conservation estate is likely to increase over the life of this joint management plan. Broome is a popular tourist destination and commonly used as a gateway for visitors wanting to explore the wider Kimberley area, and a sustained or increased level of visitation to Guniyan Binba Conservation Park by tourists is also likely. Visitation data for the broader Yawuru conservation estate is currently insufficient to provide a good picture of visitor use numbers and patterns, however it is likely that visitation to Guniyan Binba Conservation Park would mirror fluctuations in the local population cycle, with a significant increase in visitation through the dry season. The Willie Creek Pearl Farm tourist operation, a popular attraction for visitors to Broome is located at Willie Creek but is outside of the boundaries of the Guniyan Binba Conservation Park.

People visiting Guniyan Binba Conservation Park engage in a variety of activities including fishing, swimming, walking, nature appreciation, picnicking and spending time with family and friends. Many tourists and residents take their dogs into the area. The *jani* of Guniyan Binba Conservation Park are also occasionally used by people on horses. *Wirrjinmirr* Willie Creek, which has numerous cultural values associated with it and is an area used for customary fishing, is also used by the broader community mainly for recreational fishing and sightseeing.

Driving on the *jani* around Broome, both in town and in Guniyan Binba Conservation Park, is a popular recreation activity for many visitors. Many residents and tourists value the opportunity to drive their vehicles on the *jani*, for the recreational four-wheel-driving experience and because it provides convenient access for popular activities such as sunset picnics or fishing off the *jani*. The ability to drive on the *jani* also allows access to more isolated areas that people would be less likely to use if they were unable to take their cars. People also sometimes drive onto Guniyan Binba Conservation Park beach to launch and retrieve small recreational boats.⁸

⁸ There is also a boat ramp on the Northern side of Willie Creek (outside of the conservation estate).

There is limited use of Guniyan Binba Conservation Park for commercial tours. Currently, Willie Creek Pearls operates boat tours within Willie Creek from their pearl farm on the northern banks. Existing tour operators and those proposing to undertake commercial tourism activities within Guniyan Binba Conservation Park will require a licence issued under the CALM Act and must abide by specified conditions. Commercial operators may also require additional licences and approvals in accordance with other State legislation and local government laws, depending on the activities undertaken and the areas used. Allowing commercial tourism enterprises within conservation reserves can help to extend the range of services, facilities, and experiences available for visitors. However, commercial tourism activities must be compatible with the purpose of the reserve.

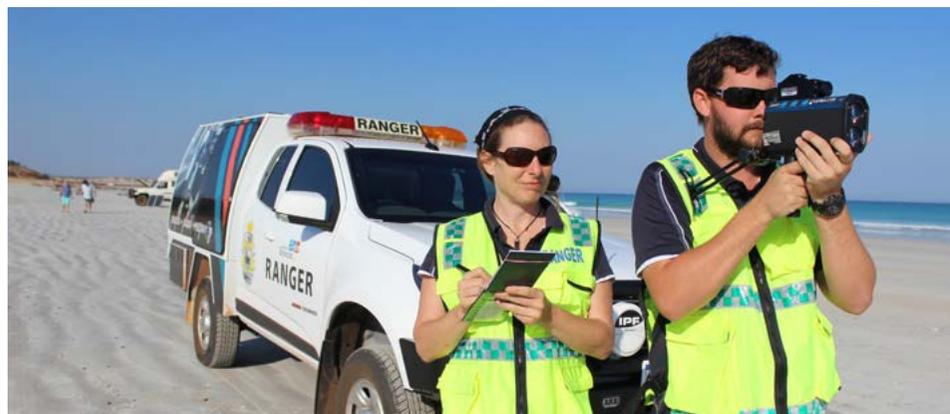
While reserve and management arrangements differ across the Yawuru conservation estate, the areas are implicitly linked, and it is essential that management is well-integrated across the whole of Yawuru conservation estate. To this end, a whole of Yawuru conservation estate approach is also used for recreation planning purposes. Recreation and tourism management provisions in this joint management plan have been developed to consider and complement those in other Yawuru conservation estate management plans, and vice versa.



8.1 Recreation and tourism management issues

The main recreation and tourism management issues for Guniyan Binba Conservation Park arise from:

- potential impacts of vehicle access and visitor activities on ecological (especially turtles, migratory *gamirda-gamirda* and *bilarra*), cultural and social values of the area
- littering and
- potentially conflicting activities and/or user groups, particularly on the beach areas closer to town (e.g. this area is shared by people in vehicles, launching boats, riding horses, walking, and exercising dogs).



Shire of Broome rangers, Jane Gillmore and Ben Coles check that beach users are driving safely. Photo – Shire of Broome.

8.1.2 Vehicles

Most vehicles access Guniyan Binba Conservation Park via the *jani* at the southern boundary of the reserve through Shire of Broome managed lands and then along the *jani* within Yawuru Minyirr Buru Conservation Park.

A few people drive onto the *jani* via Yawuru Birragun Conservation Park, often by informal and inappropriately located tracks and trails. The proliferation of access tracks into Guniyan Binba Conservation Park and their proposed rationalisation

is an issue which is addressed in the *Yawuru Birragun Conservation Park joint management plan 2016*. Within Guniyan Binba Conservation Park vehicles are most common in parts of the *jani* closer to town and near Coconut Wells. The number of vehicles on the *jani* within Guniyan Binba Conservation Park increases considerably during the dry season, but numbers are nevertheless low compared to the numbers of cars regularly seen on the *jani* within closer proximity to town⁹. In recognition of historical recreational uses, the low numbers of vehicles on Guniyan Binba Conservation Park beaches, and that vehicles continue to be permitted on the *jani* at the southern boundary of the reserve, roadworthy and licensed vehicles (i.e. licensed under the *Road Traffic Act 1974*) will be permitted within areas of the *jani* designated under the *Conservation and Land Management Regulations 2002* (CALM Regulations) within Guniyan Binba Conservation Park. Recreation planning and development within the adjacent Yawuru Birragun Conservation Park will also consider sustainable, appropriate vehicle and pedestrian access into Guniyan Binba Conservation Park (in conjunction with complementary recreation site developments e.g. near Willie Creek and Coconut Wells).

There are a range of issues associated with vehicle access on the *jani* that will require active monitoring and management. The driving of vehicles on the *jani* has the potential to adversely affect ecological and cultural values (as discussed in previous sections), cause a range of safety management issues, and diminish the recreational amenity of the area for non-vehicle-based users. The impacts of vehicle access on the ecological and cultural values will be monitored and it will be important that future vehicle management is based on this monitoring data and assessed periodically, as needed, over the life of this joint management plan.

Current access restrictions that apply to Guniyan Binba Conservation Park to provide seasonal protection to turtles and their nests will be maintained. Based on the monitoring of vehicle impacts, the need for further vehicle access restrictions will be determined, and implemented if necessary, to protect flora and fauna (e.g. establishing temporary control areas under section 62 of the CALM Act to provide seasonal protection to nesting *gamirda-gamirda* and turtles). Access restrictions may also be required to protect visitor safety, for example due to the presence of *linyurra* or Irukandji jellyfish or following cyclones.

The primary access and egress point for vehicles into Guniyan Binba Conservation Park will continue to be via the *jani* at the southern boundary of the park unless a suitable alternative access point can be found and agreed upon by all the relevant parties. In addition, pedestrian and vehicle access between Yawuru Birragun

⁹ A motor vehicle survey which was conducted during the peak tourist period in 2006 recorded about 900 vehicles across the day for the beaches close to town. On average, about a third of vehicles accessed the beach in the afternoon to view the sunset and set up for picnics and barbeques (Cable Beach Motor Vehicle Management Advisory Committee 2007).

8.0 Recreation and tourism values

Conservation Park and Guniyan Binba Conservation Park will be defined at select locations. These access routes will generally be associated with recreation sites within (or yet to be developed within) Yawuru Birragun Conservation Park, in the vicinity of Coconut Wells and Willie Creek. However, the vehicle access routes between Yawuru Birragun Conservation Park and Guniyan Binba Conservation Park are intended to support low-level use rather than to replace the current primary vehicle access (i.e. via the *jani* within Yawuru Minyirr Buru Conservation Park).

Vehicles accessing *bilarra*, particularly the salt pans behind mangrove areas in the vicinity of the *Wirrinmirr*/Willie Creek wetland, can also have an impact on these fragile environments. Wheel ruts and tracks from vehicle access can remain in samphire flats for decades.

8.1.3 Horses and dogs

People have been permitted to take dogs and horses onto specified parts of Cable Beach near the town site of Broome for many years.

Residents and tourists also take their dogs onto the *jani* within Guniyan Binba Conservation Park. However, the overall level of use is significantly lower and fewer dogs are seen in Guniyan Binba Conservation Park compared with the *jani* 'in-town'. Similarly, the *jani* of Guniyan Binba Conservation Park are only occasionally accessed by people on horses as this also mostly occurs on the town site *jani* under permits issued and managed by the Shire of Broome. In recognition of the history of people taking dogs and sometimes horses into Guniyan Binba Conservation Park, visitors will continue to be permitted to do so, in accordance with a designation made under the CALM Regulations.

People bringing dogs or horses into Guniyan Binba Conservation Park will need to remain within the relevant designated area and observe any specified conditions (e.g. ensure the animal is controlled and faeces removed). This will help with managing potential conflicts between differing user groups and activities and minimise potential impacts on ecological values.

8.1.4 Litter

Litter left behind by visitors or washed up on the *jani* is a management problem within Guniyan Binba Conservation Park.

Littering affects the visual amenity, can cause injury to fauna and be a source of environmental pollution. Information which raises visitor awareness of these effects may help with managing this problem and is an important component of a multi-faceted approach to litter management in the broader Yawuru conservation estate.

¹⁰ Including, for example, turtle and bird watching code of conduct and information about the impacts of artificial lights.

8.1.5 Information, education, and interpretation

Until recently, much of the Yawuru conservation estate has been unallocated Crown land, and limited interpretation, information and education services have been made available for visitors.

Provision of information and interpretation material is important to improve the experience of visitors, promote awareness and understanding of natural and cultural values, and to gain support for the protection and management of these. Some communication topics and themes relevant to Guniyan Binba Conservation Park are:

- the specific cultural and natural values of the area including:
 - Yawuru cultural and heritage values and the tripartite joint management arrangements
 - the relevant national heritage values
- behaviours and measures to avoid disturbance of flatback turtles and migratory *gamirda-gamirda* during nesting season¹⁰, or other fauna sensitive to disturbance
- relevant safety matters, such as appropriate conduct for driving vehicles on the *jani* and *linygurra* and Irukandji jellyfish risk awareness.



Beach closures are occasionally required due to the presence of linygurra on Cable Beach. Shire ranger Narelle Graue installs temporary signage advising of a linygurra sighting. Photo – Shire of Broome.

Summary of management arrangements for recreation and tourism

Management objective	<ol style="list-style-type: none"> 1. To provide visitors with a range of opportunities for recreation and tourism in Guniyan Binba Conservation Park while ensuring these are consistent with and complementary to conservation of the cultural and ecological values. 	
Management strategies	<ol style="list-style-type: none"> 1. Provide information, interpretation, and education to help improve visitors' experience and appreciation of the cultural, natural, and historical values, and promote behaviour sensitive to the conservation of these values. 2. Designate areas under the CALM Regulations within Guniyan Binba Conservation Park where visitors can drive licensed vehicles onto the <i>jani</i> for recreational purposes (and to launch and retrieve vessels from the <i>jani</i>). 3. Prepare and distribute information to visitors about acceptable conduct within the Guniyan Binba Conservation Park including the responsible driving of vehicles within the park. 4. Consolidate and formalise vehicle and pedestrian access locations, and close surplus access ways, with agreement from the Park Council. 5. Carry out research and monitoring to evaluate visitation levels and patterns, and what, if any, effects recreation and tourism activities are having on key values and implement additional or alternative management measures if necessary. 6. Designate Guniyan Binba Conservation Park as an area where horses and dogs are permitted in accordance with the CALM Regulations and continue to support dog and horse access within Guniyan Binba Conservation Park subject to appropriate ongoing management arrangements and monitoring and review of these arrangements. 7. Carry out regular visitor risk assessments and implement measures to mitigate safety issues as considered necessary. 8. Implement litter management measures (including education, enforcement, and clean-up components) to minimise littering and the effects of littering on the values of Guniyan Binba Conservation Park 9. Provide for commercial tourism activities that are compatible with the purpose and management of Guniyan Binba Conservation Park and appropriately licensed (e.g. licence issued pursuant to the CALM Regulations, and other relevant legislation if necessary). 10. Determine and develop appropriate management protocols for assessment, licencing and management of commercial activities and events. 	<p>M</p> <p>H</p> <p>H</p> <p>H</p> <p>H</p> <p>H</p> <p>H</p> <p>H</p> <p>H</p> <p>H</p>





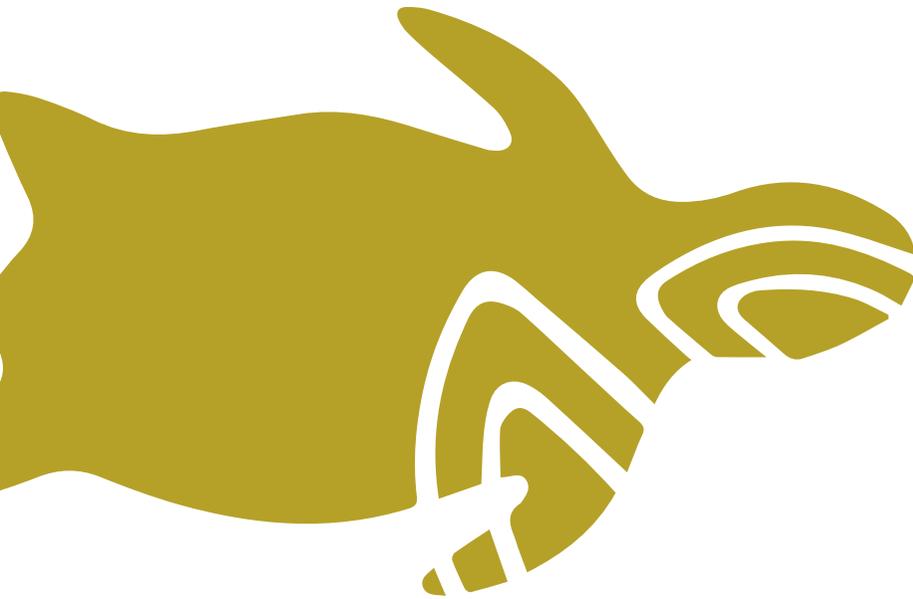
A female flatback turtle returns to the ocean after laying her eggs. Photo – Nyamba Buru Yawuru Ltd.

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Acronyms and abbreviations

Acronym	Unabbreviated term
CALM Act	<i>Conservation and Land Management Act 1984</i>
The department	Department of Biodiversity, Conservation and Attractions
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
ILUA	Indigenous land use agreement
KPI	Key performance indicator
Native Title Act	Commonwealth <i>Native Title Act 1993</i>
Biodiversity Conservation Act	<i>Biodiversity Conservation Act 2016</i>
Yawuru RNTBC	Yawuru Registered Native Title Body Corporate



Yawuru language glossary

Source: Yawuru cultural management plan (Yawuru RNTBC 2011)

Yawuru word	Meaning
<i>Bugarri</i>	Dream; totem associated with a child
<i>Bugarrigarra</i>	The Dreaming; Dreamtime; history before time began; derived from bugarri=dream and garra=more than one
<i>bundu</i>	Saltmarsh (saline grasslands, samphire, mudflats)
<i>buru</i>	One's country; traditional country; land/earth/dirt/ground; can also mean time/place/season
<i>galji</i>	The fine grained soft carbonate mud that occurs around Broome
<i>gurlibil</i>	Turtle (green back)
<i>gundurung</i>	Mangrove; and also in particular the light green leaf mangrove <i>Avicennia marina</i>
<i>jani</i>	Beach
<i>jila</i>	'living water'; permanent fresh water sources
<i>jurru</i>	Mystical being; serpent like figure; snake
<i>linygurra</i>	Estuarine crocodile
<i>liyan</i>	Feelings that express emotional strength, dignity and pride
<i>Mabu</i>	Good; healthy; strong
<i>Man-gala</i>	Yawuru season: December to March; wet season
<i>Marrul</i>	Yawuru season: April to May
<i>mayi</i>	Bush foods; bush fruit
<i>nagula</i>	Ocean; sea country
<i>rayi</i>	Spiritual essence; spirit being; child-spirit
<i>Wilburu</i>	Yawuru season; warming up season: September to October
<i>Wirralburu</i>	Yawuru season: May
<i>Wirrjinmirr</i>	Willie Creek



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Conservation and Parks Commission
Department of Biodiversity, Conservation and Attractions

