



Lalang-garram / Horizontal Falls and North Lalang-garram marine parks

Joint management plan 2016

Management plan 88



Conservation and Parks Commission
Department of Parks and Wildlife



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This management plan was prepared by the Department of Parks and Wildlife's Planning Branch with the Dambimangari Aboriginal Corporation and other Dambimangari Traditional Owners.

NB: The spelling of some of the local Indigenous words for country and species of plants and animals are different in different Traditional Owner documents. This is primarily due to the fact that establishing a formal and consistent 'sounds for spelling' system for a language that did not have a written form takes time to develop and refine. This is a project that is being undertaken by Dambimangari Aboriginal Corporation and other Dambimangari Traditional Owners. The project will be finalised in the near future once sufficient work has been conducted with senior Traditional Owners. Within this document, spelling may therefore differ between quotes from previously published documents and this management plan which reflects current spelling.

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Waterfall flowing into *Ganbadba* (Talbot Bay). Photo – Kimberley Media

1 Introduction

1.1 A special place

The Lalang-garram / Horizontal Falls and North Lalang-garram marine parks lie within Dambimangari people's native title determination area along Western Australia's Kimberley coast (Maps 1 and 2). For thousands of years Dambimangari people have depended on and looked after their traditional land and saltwater country and the area remains one of the last relatively undamaged coastal areas left in the world (Halpern *et al.* 2008).

Our community has a strong vision for looking after our country. We want to make sure our traditional knowledge is alive and strong and that all plants, animals and cultural sites are looked after.

Leah Umbagai (Dambimangari Aboriginal Corporation 2012)

The parks have been established under the *Kimberley Science and Conservation Strategy*, the State Government's bold plan to conserve the region's natural and cultural values. The strategy provides for the creation of one of the world's largest networks of interconnected marine and terrestrial reserves, which will be jointly managed with Traditional Owners¹. Within this network, the Lalang-garram / Horizontal Falls Marine Park will protect world-renowned *Garaanngaddim* (the Horizontal Falls), one of the most significant tourist attractions along the Kimberley coast, and surrounding areas. The North Lalang-garram Marine Park will include the northern extent of Dambimangari saltwater country. Together with the Lalang-garram / Camden Sound and the North Kimberley marine parks, these marine parks make up the Great Kimberley Marine Park, covering about three million hectares (or 30,000km²) of Western Australian coastal waters from west of *Ganbadba* (Talbot Bay) to the

¹ Traditional Owners are Aboriginal people who belong to, have the right to speak for, and have spiritual responsibilities for the care of a certain place or places based on their own laws and customs. Traditional Owners are directly descended from the original inhabitants of the land and may also be the common law holders of native title for the country being discussed.

Northern Territory border. The *Kimberley Science and Conservation Strategy* will also achieve important social and economic outcomes by providing increased opportunities for Aboriginal involvement and employment in land and sea management, and by promoting nature and culture based tourism.

The diverse seascapes of the marine parks include islands with fringing *wooddooroo* (coral reefs), *jindim* (mangrove) lined creeks and bays, spectacular gorges along rivers and estuarine systems and *galaab* (sandy beaches). The marine parks lie in the traditional country of the Dambimangari people who have continuing rights and responsibilities for these areas. The parks also provide a stunning setting for visitors and the opportunity to learn about the continuing rich cultural heritage values of the area. Visitors can experience the awe-inspiring *Garaanngaddim* (Horizontal Falls), watch wildlife in the natural environment and fish for *iledda* (barramundi, *Lates calcarifer*) in *jindim* (mangrove) lined creeks. The marine parks are within the west Kimberley region, included in the Australian National Heritage list for nationally significant natural, Aboriginal and historical values (Department of Environment 2015).

Under traditional law, Dambimangari people have responsibility to look after country and keep it healthy. Every rock, plant, fish, river and beach is important to Dambimangari people (Dambimangari Aboriginal Corporation 2012). Everything is connected and tightly interlinked, and Dambimangari people consider the cultural and natural values of land and saltwater country to be one and the same. For Traditional Owners there is a rich body of oral narratives about the era when the land, the seas, the heavens and all within were created and named. This time is referred to as '*Lalai*', also called Dreaming, Dreamtime or Aboriginal Law in Kimberley Kriol. All of the land and sea country in the parks holds special significance.

Within Dambimangari country there are also significant cultural sites including rock art, burial sites, middens, stone arrangements, hunting places, water sources, camping areas and important mythological areas. These cultural sites are evidence of the very long historical connections to, and the use and occupation of the land and sea by the ancestors of today's Traditional Owners, who have continuing contemporary connections to these areas.

The creation of the class 'A' marine parks will provide security of tenure² and increase the protection of the area's cultural and natural values, enhancing opportunities for recreation, tourism, research and education. The parks are jointly managed by Dambimangari Traditional Owners and the Department of Parks and Wildlife (Parks and Wildlife).

Names of the parks

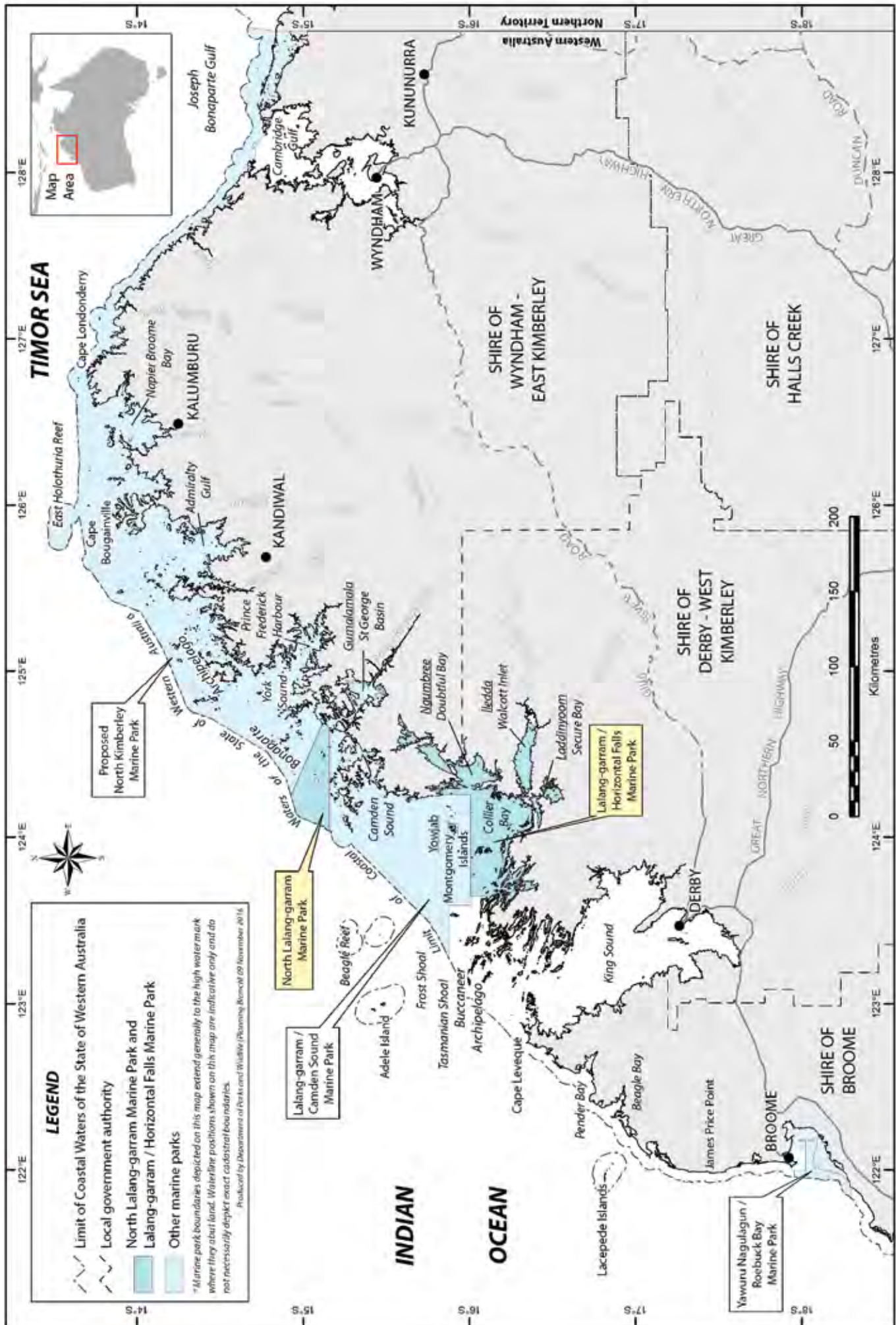
Senior Dambimangari woman, Mrs Janet Oobagooma, suggested that the marine parks include the name '*Lalang-garram*' which evokes the saltwater as a spiritual place as well as a place of natural abundance. *Lalang-garram* is the word in Worrorra (one of the Dambimangari native title group languages) that evokes 'the ocean' in its most general sense. The Dambimangari Traditional Owners chose this word to name the marine parks, including the existing Lalang-garram / Camden Sound Marine Park, for cultural reasons that respect the idea of 'saltwater', without meaning just one place or one part of their traditional country (DAC pers. comm. 2012, 2015).



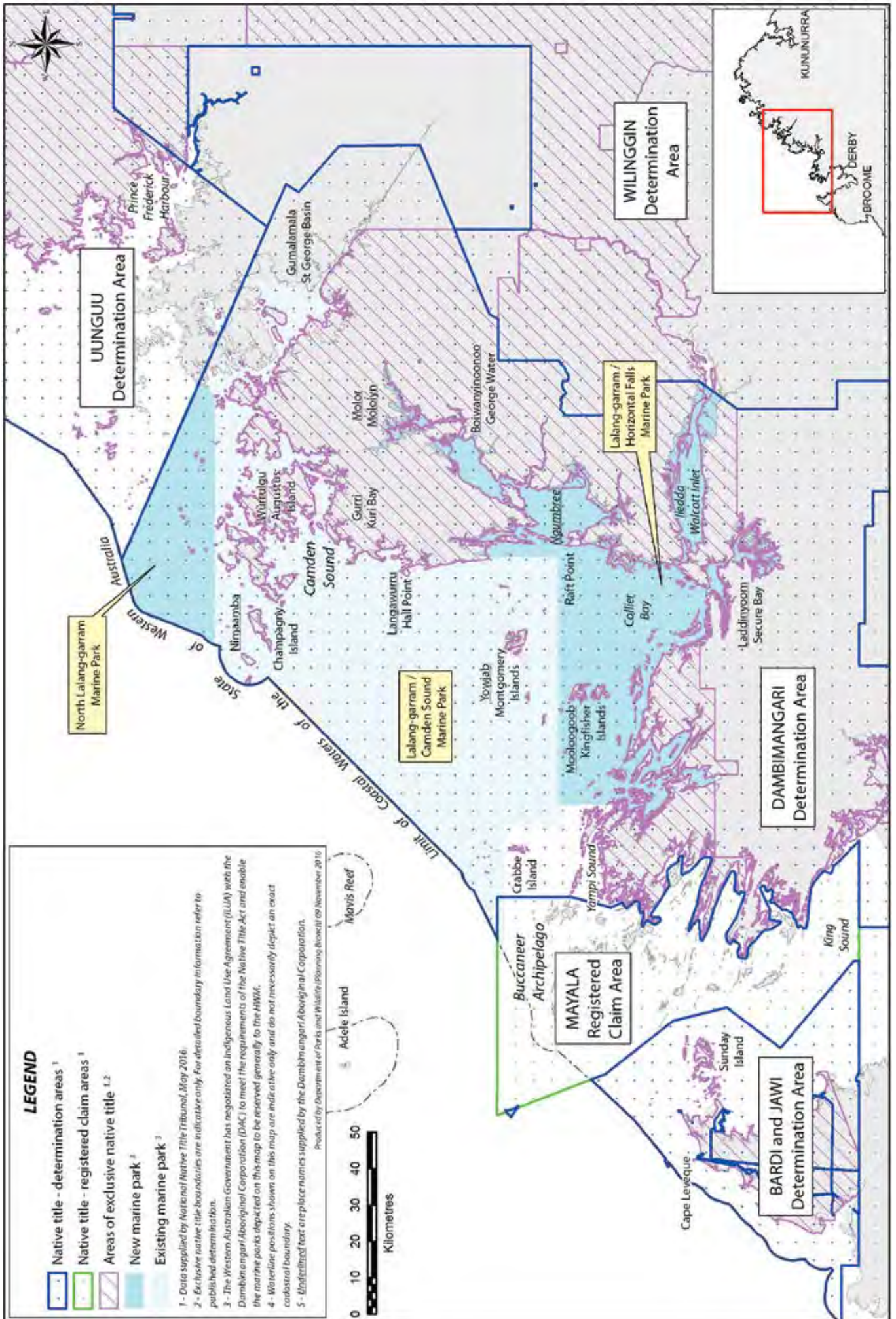
Goojoorm (Molema Island) is one of only about 20 of the 2600 or so islands along the Kimberley coast that are more than 1000ha in size. It is surrounded by the ecologically important Turtle Reef. Photo – Kimberley Media

² Security of tenure reflects the level of approval required to alter the area or purpose of a reserve. Changes to class 'A' parks require the agreement of both Houses of Parliament.

Map 1 Location of the Kimberley marine parks



Map 2 Native title claim and determination areas within and adjacent to the park



1.2 Overview

The Lalang-garram / Horizontal Falls Marine Park lies within the Dambimangari determination area and covers about 353,000ha from *Ganbadba* (Talbot Bay) in the west to *Iledda* (Walcott Inlet) and *Molor Molojiyn* (Glenelg River) in the east. The marine park provides protection to the remarkable Kimberley marine environment and enhances tourism opportunities around the internationally recognised *Garaanngaddim* (Horizontal Falls). The North Lalang-garram Marine Park lies within Dambimangari country between Lalang-garram / Camden Sound Marine Park and the North Kimberley Marine Park and covers about 110,000ha (Map 2).

Aboriginal Lands Trust (ALT) reserves 30674, 23079 and 15530, Yampi Sound Defence Training Area (Department of Defence reserve), unallocated Crown land and other Crown reserves (Map 3) surround the Lalang-garram / Horizontal Falls Marine Park. There is also a Crown Lease (Lot 16 on Plan 26300) on *Mooloogoob* (Kingfisher Island). The tenure surrounding the North Lalang-garram Marine Park includes ALT reserves 23079 and 21974, unallocated Crown land and the Prince Regent National Park (Map 4). The Dambimangari Indigenous Protected Area (IPA), included in the National Reserve System, covers much of the terrestrial areas adjacent to the marine parks³. All marine parks in Dambimangari sea country are also adjacent to the Kimberley Commonwealth Marine Reserve, with the Lalang-garram / Camden Sound and North Lalang-garram marine parks adjacent to Marine National Park zones.

Exclusive possession native title occurs above the high water mark around much of the coast and islands adjacent to the marine parks, and people wishing to visit these areas will need to obtain permission from Dambimangari Traditional Owners before their visit. Visitors to ALT reserves also need to obtain permission for entry from the ALT.

Most visitors to the marine parks arrive by boat or seaplane. The only road access in the area is the four-wheel drive Munja Track, which leads to the upper reaches of *Iledda* (Walcott Inlet). There are no major developments in the marine parks and commercial activities are currently limited to tourism, commercial fishing and pearling.

Whilst the Kimberley region is considered to be in good condition, pressures for the area include the potential impacts of climate change, fishing, some tourism activities and marine debris. Increases in commercial tourism and improvements in boating and remotely piloted aircraft (e.g. drone) technology will provide the opportunity for more visitors to access and appreciate the parks in the future. Recreational boating numbers have increased in the Kimberley in the last five years and this is likely to continue with the plans to bituminise the road to Cape Leveque on the Dampier Peninsula.

Whilst there is some understanding of current local pressures, there is limited knowledge of how global marine environmental pressures, particularly climate change and its flow on effects including sea level rise, increased sea surface temperatures, ocean acidification and coral bleaching (Department of Climate Change and Energy Efficiency, 2007) may affect the Kimberley region into the future. Research and monitoring programs have an important role to play in understanding marine park values, current and future pressures and the development of effective adaptive management responses. The establishment of the marine parks will help to provide increased resilience to future pressures and threats, maintain ecosystem health and productivity, protect cultural values and safeguard future opportunities for recreational and economic growth.

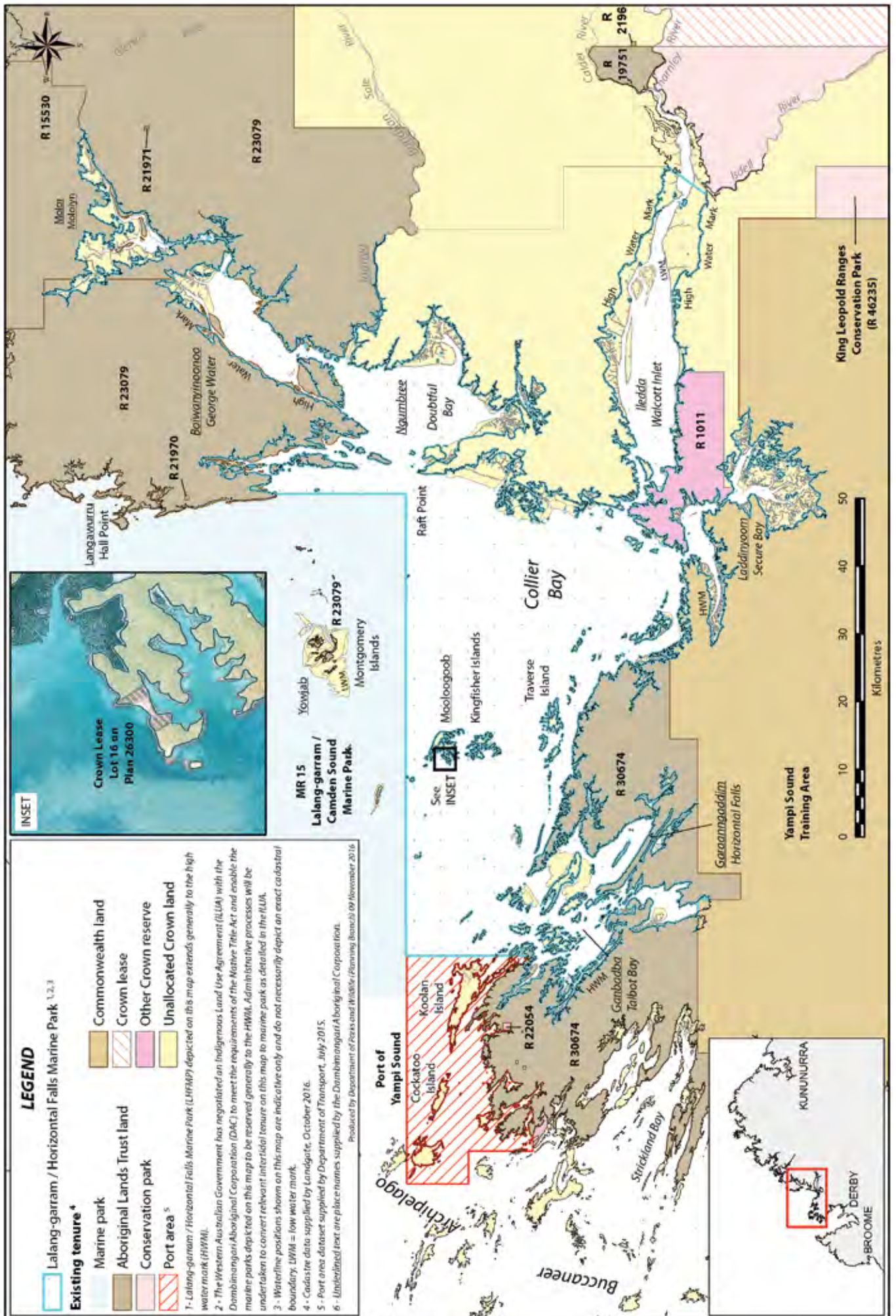
The Lalang-garram / Horizontal Falls and North Lalang-garram marine parks are gazetted as class 'A' marine parks and vested in the Conservation and Parks Commission (the Commission).

³ See www.dpnc.gov.au/indigenous-affairs/environment/indigenous-land-and-sea-management-projects.

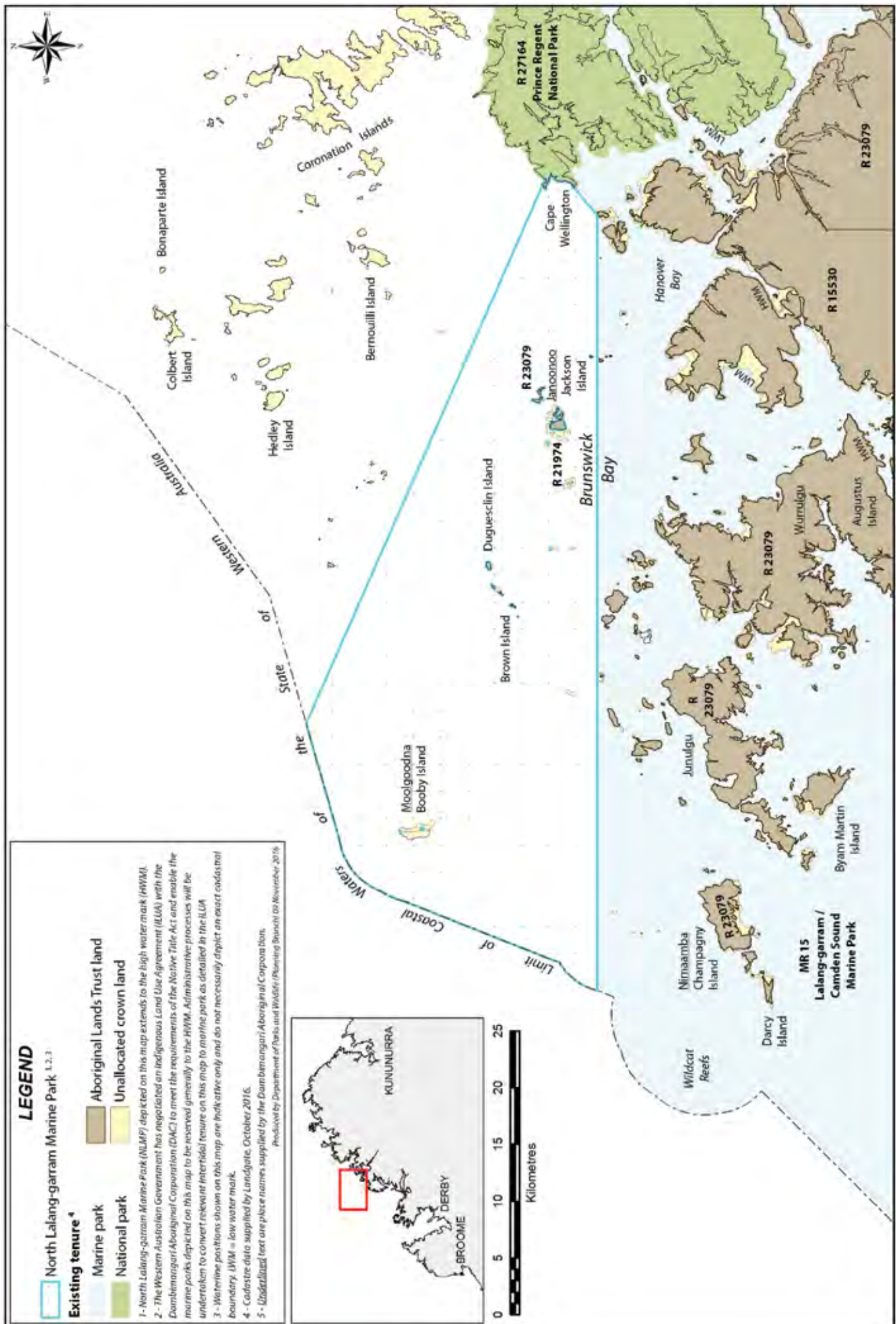


Lalang-garram / Horizontal Falls Marine Park. Photo – Roanna Goater

Map 3 Tenure within and adjacent to the Lalang-garram / Horizontal Falls Marine Park



Map 4 Tenure within and adjacent to the North Lalang-garram Marine Park



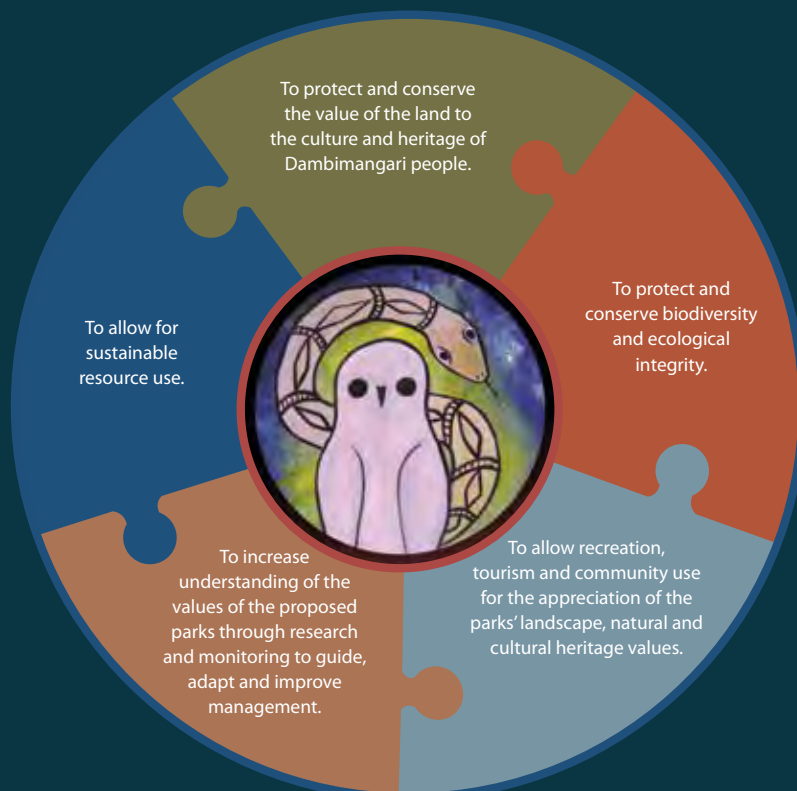


2 Vision and strategic objectives

Vision

The continuing rich cultural heritage and outstanding natural values of the marine parks will be jointly managed for conservation, visitor enjoyment and shared use with Dambimangari people.

The following strategic objectives provide broad direction for management.



McClarty Range and Horizontal Falls. Photo – Kimberley Media



Anemones, sponges and corals on Turtle Reef, Talbot Bay. Photo – Kimberley Media



3 Values

3.1 Dambimangari cultural and heritage values

Dambimangari Traditional Owners are saltwater people who, like their ancestors, continue to use both bush and sea resources within their country. The name Dambimangari comes from *dambima* meaning 'homelands' and *ngari* meaning 'belong to'. Dambimangari people follow the laws and beliefs of the *Woongudd*⁴ (the creator snake) and *Wanjina* (the creator ancestors) (Dambimangari Aboriginal Corporation 2012). *Wanjina* and *Woongudd* are among the most important of the creator beings that were present in Dambimangari country during *Lalai*, the beginning of time (Blundell and Woolgoodja 2005).

We believe all the land, sea, heaven and all living things were put there by *Wanjina* and *Wunggurr*. They made the law and rules by which we live. They set out the way we must look after Dambimangari culture, plants, animals, people and country to keep them healthy.

Dambimangari Aboriginal Corporation 2012

Dambimangari country covers an area of about 27,900km² between "*Ungarrang* at the bottom of Kimbolton to *Marlundum Arn Nowngoy* in the Prince Regent area" (Dambimangari Aboriginal Corporation 2012). The significance of the cultural heritage values in this region has been recognised as part of the West Kimberley National Heritage listing, protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Much of Dambimangari country is also included in the Dambimangari IPA.

Currently, there are few Dambimangari Traditional Owners who are able to live on their traditional lands. Today, many Dambimangari people live in the Mowanjum Community, south of Derby, within the Derby town itself, or in other places in Western Australia, including Perth (Dambimangari Aboriginal Corporation 2016). Prior to this, and post European settlement, many Dambimangari people lived in European built missions at Kunmunya from the 1920s and then at Wotjalum in the 1950s (Mowanjum Aboriginal Community and Mowanjum Artists Spirit of the Wandjina Aboriginal Corporation 2008).

In the last ten years, Dambimangari Traditional Owners have established a number of ongoing projects on their traditional lands, including the Dambimangari Ranger Program, Wanjina Tours and the Bush Art Gallery at Freshwater Cove, and a number of joint ventures and partnerships with industry, government and the scientific community.

Through the Dambimangari Aboriginal Corporation, Dambimangari Traditional Owners are also exploring new projects and opportunities based on their significant natural and cultural assets to help build a successful and sustainable future for Dambimangari People (Dambimangari Aboriginal Corporation 2016).

⁴ Within this document, spelling may differ between quotes from previously published documents and this management plan, which reflects current spelling. See the inside cover of this plan for more information.

Key Dambimangari cultural and heritage values are listed below. Dambimangari Traditional Owners and Parks and Wildlife have identified a range of the key cultural and natural values as high priority values, marked with an * asterisk.

- **Cultural connection, traditional knowledge and customary use:** Dambimangari Traditional Owners, particularly the elders, hold an extensive body of cultural and ecological knowledge that has been passed down over thousands of years. Dambimangari people have a deep spiritual connection to country through their continuing body of knowledge, and oral traditions of *Lalai*. Under traditional law they have an obligation to care for country and ensure their culture is passed on to future generations. They do this through customary activities which include hunting for food, visiting important cultural places, making medicines, keeping rock art fresh, passing on *Lalai* narratives, managing country through fire at the right time of year and engaging in artistic and ceremonial events.

Customary activities are an important part of both Dambimangari and wider Aboriginal culture. Access to and maintaining connection to country is integral to the culture and well-being of Traditional Owners (Dambimangari Traditional Owners, 2016). Through customary activities, Dambimangari people maintain their traditional relationships with their land and saltwater country, share knowledge, participate in traditional practices and access and look after significant places.

It is our cultural responsibility to visit all these important places regularly to check that they haven't been disturbed and are still healthy. We believe it gives happiness and comfort to our ancestors' spirits by visiting, working, protecting, and living on the land. It also reconnects us to that country. Living and breathing on country gives life and life is health.

Dambimangari Aboriginal Corporation 2012

To further help preserve Dambimangari culture and traditional knowledge, Dambimangari Traditional Owners are also working with elders and researchers to prepare language materials, cultural heritage maps, databases, family trees and other reference material so that future generations can maintain their cultural connections, and understand their country and ancestry (Dambimangari Aboriginal Corporation 2016).

- **Cultural laws and protocols:** Aboriginal people had a complex system of law long before the arrival of Europeans. For Dambimangari people, customary law and protocols are connected to *Lalai* and provide rules on how to interact with the land, kinship and community.

The values and beliefs from *Lalai* underpinned a way of life based on sustainable principles and practical rules for living – how to look after country, how to hunt and fish properly and how to behave with family members.

Dambimangari Aboriginal Corporation 2016

Dambimangari children learn about customary laws and protocols from their families and others in the Dambimangari community, and by observing customs and ceremonies, including traditional narratives, songs and dances. Cultural laws and protocols may relate to specific areas or sites, or different plants and animals. The laws and protocols may also be specific to an individual, family or clan group, and may also be different for men and women. In some cases, Dambimangari people may share information about cultural laws and protocols so marine park management can be complementary, and so visitors to the marine parks can do so in a culturally appropriate manner. For example, through marine park management there will be restrictions put in place for walking on intertidal coral reef systems.

- *** Cultural sites:** Cultural sites that are extremely important to Dambimangari people, such as rock art sites, stone arrangements, burial sites and important camping *galaab* (beaches), tell different narratives about creation and how the earth was formed. Visiting these sites helps Dambimangari Traditional Owners maintain connection to country and their ancestors (Dambimangari Aboriginal Corporation 2012). Not all sites of cultural importance in the marine parks have been recorded. Ongoing work by Dambimangari Traditional Owners has identified a number of sites across their land and sea country, including intertidal areas. Recording the location of sites allows them to be managed and maintained. All Aboriginal heritage sites, registered and unregistered, are protected under the *Aboriginal Heritage Act 1972*.

The cultural sites are places that tell us about creation, how the earth was formed. They hold the traditional knowledge passed down from generation to generation. Sitting, talking and experiencing those places makes us feel close to our ancestors. They are part of our heritage. Each place tells a different story about how the *Wunggurr* and *Wandjina* created the rocks, the rivers and the ocean. Our belief is that all things in our country were put there for a purpose by the *Wandjina*. Our country has significant cultural sites with rules and responsibilities about how to look after it.

Dambimangari Aboriginal Corporation 2012

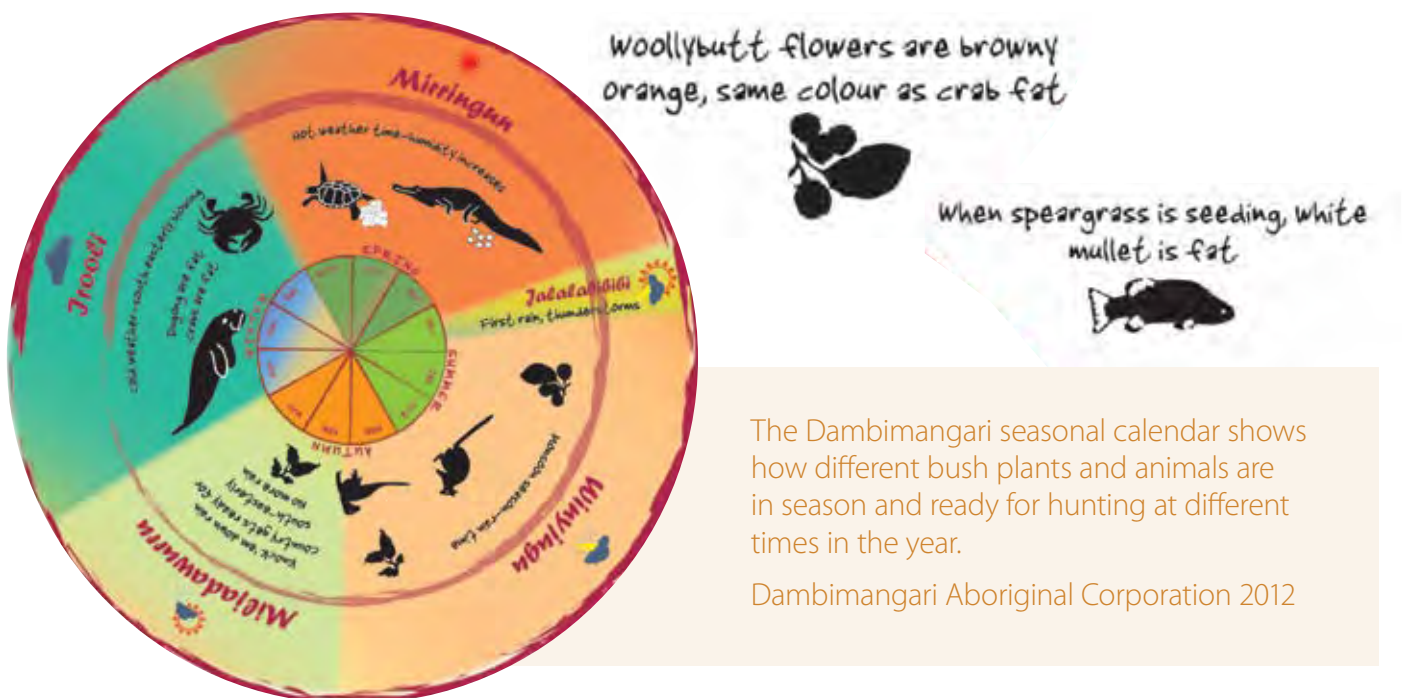
- **Habitats and communities, plants and animals:** Particular animals and habitats are culturally important to Dambimangari Traditional Owners, and many animals have their own songs and oral traditions. Some animals, such as the owl, emu, kangaroo, barramundi and rock cod have particular significance to Dambimangari people as sacred animals relating to *Lalai* (Blundell and Woolagoodja 2005).

Dambimangari country is a very special place. There are not many other places in the world where most of the animals remain as they were thousands of years ago. All the animals have their own songs and stories; some have their images in caves or in stone arrangements. The old people from long ago knew the songs and also created new ones from meeting their ancestors in their dreams.

Dambimangari Aboriginal Corporation 2012

A number of coastal and marine plants and animals have been important to Dambimangari people as a food resource for thousands of years. In the past, Dambimangari Traditional Owners travelled by mangrove rafts and dugout canoe to offshore islands to collect food. *Jaya* (saltwater fish), *jalawadda* (turtle), *walyn* or dugong (*Dugong dugong*), crabs and *marlinja* (oysters) continue to be important food sources for Dambimangari people. Dambimangari people are working to ensure the continuing health of their country and the sustainable use of resources (Dambimangari Aboriginal Corporation 2016).

The deep understanding and traditional ecological knowledge that Dambimangari people have of plants, animals, the seasons and landscape features can also greatly inform scientific research and conservation programs in Dambimangari country. In recent years Dambimangari Traditional Owners have worked in partnership with a range of organisations to conduct research and field surveys for a number of important marine species such as *jalawadda* (turtles), *walyn* (dugong) and *goiyoyi* or estuarine crocodile (*Crocodylus porosus*).



The Dambimangari seasonal calendar shows how different bush plants and animals are in season and ready for hunting at different times in the year.

Dambimangari Aboriginal Corporation 2012

In the *Dambimangari Healthy Country Plan 2012-2022* (Healthy Country Plan) Dambimangari people have identified the following management targets:

- cultural sites
- reefs, beaches and islands
- *jaya* (saltwater fish)
- *jurluwarra* (turtles) and *warliny* (dugong)
- *ngununbany* (whales) and *jigeedany* (dolphins)
- rivers, *argoom* (waterholes), waterfalls and wetlands (freshwater systems)
- culturally important native animals
- bush fruits and medicine plants
- right-way fire.



The key values identified for the marine parks complement the management targets for the Dambimangari IPA outlined in the Healthy Country Plan.

More information about Dambimangari Traditional Owners and visiting Dambimangari land and sea country can be found at www.dambimangari.com.au.

Stone arrangements

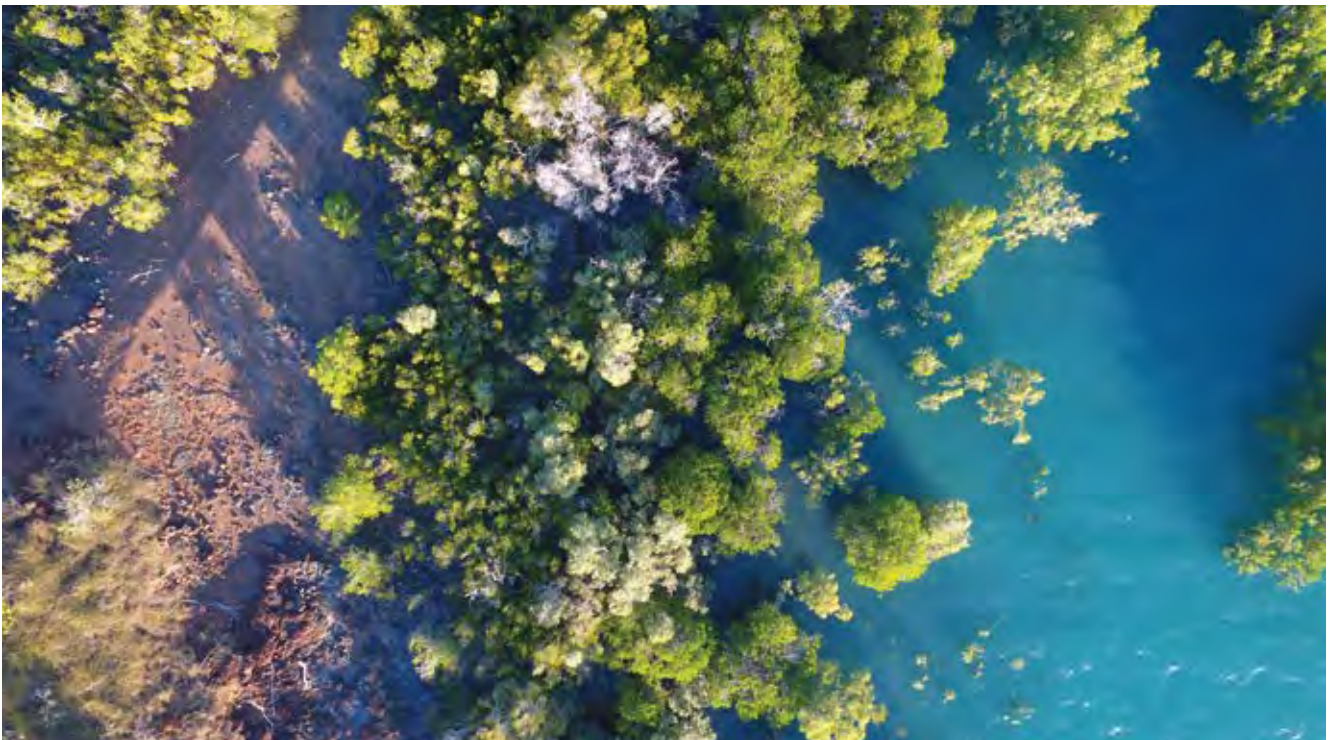
There are many stone arrangements of high cultural significance to Dambimangari people in and around the islands and mainland. Visitors must take care to not displace or move any rocks or stones when visiting the parks and Dambimangari country.



Stone arrangement associated with a *Lalai* narrative. Photo – Kim Doohan and Joh Bornman/DAC

Stone arrangements are found in the intertidal areas of the marine parks and in adjacent lands. They are not always obvious to an untrained eye. Stone arrangements vary from individual stones to hundreds of stones over many tens of metres or in large piles; from small distinctive stones to geoglyphs in complex monumental formations and some are standing and others lie flat. Stone arrangements are part of the history of the Dambimangari Traditional Owners indicating resource use, fishing and hunting techniques, wind breaks, funerary and occupation sites as well as *Lalai* narratives. No stones should be removed or relocated from where they are found – you might be damaging an important historic monument.

Dambimangari Aboriginal Corporation pers. comm. 2015



Mangroves. Photo – Daniel Barrow/Parks and Wildlife

3.2 Natural values

Cultural and natural values in Dambimangari saltwater country are enmeshed in a rich tapestry of oral traditions and material manifestations of land and sea forms, rock art and stone arrangements. The Lalang-garram / Horizontal Falls Marine Park features dramatic, rugged ridges incised by steep valleys and a convoluted coastline of estuaries, bays and offshore islands. The well known *Garaangaddim* (Horizontal Falls) is a waterfall-like effect created when powerful tidal currents rush through two narrow coastal gorges. For the Dambimangari Traditional Owners the falls are one aspect of the manifest power of their sea country – the *Woongudd* (creator snake). Beneath the waves, the marine parks have a complex bathymetry, with depths changing quickly from channels to shoals (Wilson *et al.* 2011). The North Lalang-garram Marine Park has a rocky coastline about 4km in length and a number of islands fringed with *wooddooroo* (coral reefs).

The tropical monsoonal climate has distinctive wet and dry seasons. Dambimangari Traditional Owners further understand the seasons in terms of complex interactions between plants, animals, fish, tides and climatic conditions. For instance, when spinifex is flowering Dambimangari people know that the sea mullet are fat and good to eat. When the weather is cold the tides are 'slow and heavy'. The wet season rains create lush green growth and impressive waterfalls. Widespread river systems that feed into *Ileda* (Walcott Inlet) and *Ngumbree* (Doubtful Bay) flush large amounts of nutrients into the Lalang-garram / Horizontal Falls Marine Park and help sustain the abundant wildlife (Warren Barunga pers. comm. 2014, 2016). These land-derived nutrients are dispersed through large tides and strong currents of up to 3m per second. Nutrients are also brought into the marine parks from the deep ocean when tidal and open ocean dynamics interact to encourage upwelling. The variability in water movement and nutrient sources results in complex patterns of primary production within the marine parks (Hipsey *et al.* 2016).

The Lalang-garram / Horizontal Falls Marine Park experiences one of the largest tidal ranges in Australia, up to 11m (Short 2011). The large tides result in extensive intertidal areas with diverse ecosystems such as *wooddooroo* (coral reefs), *jindim* (mangroves) and mudflat communities (Waples 2007). For the Dambimangari Traditional Owners the intertidal area is an important part of their identification as saltwater people. The subtidal habitats and communities of the marine parks include diverse filter-feeding communities of sponges and hard and soft corals.

The intertidal and subtidal habitats of the marine parks provide critical foraging and nursery areas for a wide range of threatened, protected and culturally important species such as *walyn* (dugong), *jalawadda* (turtle), *goiyoiya* (estuarine crocodile), *ngununbany* (whale), *jigeedany* (dolphin) and migratory seabirds (Mustoe and Edmunds 2008). The marine parks also fall within an area of the Kimberley identified as the principal calving habitat for humpback whale group D, the largest humpback whale population in the world (Jenner *et al.* 2001; Costin and Sandes 2009).

Key natural values in the marine parks are listed below.

Habitats and communities⁵

- ★ **Jindim (mangroves) and galaw (saltmarshes)** are a source of nutrients to surrounding waters and provide important habitat and nursery areas for a wide range of species including commercially valuable fish and invertebrates (Bridgewater and Cresswell, 1999). The Lalang-garram / Horizontal Falls Marine Park contains extensive *jindim* and some of the largest mapped areas of *galaw* in the Kimberley Bioregion (Dyall *et al.* 2005; Cresswell and Semeniuk, 2011).
- ★ **Wooddooroo (coral reefs)** are important primary producers that provide food and habitat for a diversity of wildlife. The Kimberley has the richest coral fauna, in both species and genera, of any North West Shelf Bioregion (Wilson 2013). *Wooddooroo* fringe many of the islands in the marine parks. Turtle Reef in the Lalang-garram / Horizontal Falls Marine Park and *Moolgoodna* (Booby Island, previously White Island) in the North Lalang-garram Marine Park have been identified by the Western Australian Museum (WAM) as ecological hotspots (Bryce pers. comm. 2014).
- ★ **Joodam (seagrass beds) and lanjam (macroalgae)** play an important ecological role in coastal ecosystems; they are an important source of primary production and an important food source for many species (Orth *et al.* 2006; Masini *et al.* 2009). Dugongs and some sea turtles feed on seagrass leaves and roots (Orth *et al.* 2006). *Joodam* (seagrass beds) occur in between reef platforms in *Ganbadba* (Talbot Bay), but little is known about *lanjam* (macroalgae) in the marine parks.
- **The water column or pelagic habitat** is important for a variety of inshore and offshore (pelagic) species including sharks and other fish species and megafauna such as whales, dolphins, seabirds and turtles. The water column in the marine parks can reach depths to around 100m. The upper portion of the water column receives sunlight and therefore contributes to primary production.
- **Gamyammenjooweengadd (estuaries)** provide a link between land, freshwater habitats and the sea (Levin *et al.* 2001). They are important for filtering water flowing from the land, as spawning habitats, nesting sites, nursery grounds, feeding grounds and refuges from predators (Gillanders *et al.* 2011). There are many *Gamyammenjooweengadd* (estuaries) in the Lalang-garram / Horizontal Falls Marine Park, some of which include *Iledda* (Walcott Inlet), *Ngumbree* (Doubtful Bay), *Laddinyoom* (Secure Bay), *Boiwanyinoonoo* (George Water) and *Jaanya* (Sale River). All estuaries in the marine park are tide-dominated and categorised as 'near pristine' in the national estuaries database (Ozcoasts, Geoscience Australia 2013).
- **Geomorphology** consists of indented rocky shores; islands; unique coastal sediment and extensive reefs (Brocx and Semeniuk, 2011). The subtidal features of the Lalang-garram / Horizontal Falls Marine Park include canyons and a flood delta. Terraces, banks and shoals are features of the North Lalang-garram Marine Park. Some coastal geomorphological features in the Lalang-garram / Horizontal Falls Marine Park have become popular tourist attractions including *Garaangaddim* (Horizontal Falls), the folded cliffs at Cyclone Creek and the intrusive sill of Hart dolerite in *Laddinyoom* (Secure Bay) (Willing pers. comm. 2013).



Cascading into Dugong Bay, this waterfall flows during the wet and early dry season.
Photo – Kimberley Media

⁵ The spelling of some Traditional Owner names for natural values may have multiple versions. Some marine animals such as turtles may have different names based on their life stage (hatchlings vs adults).

- **Rocky shores, platforms and shoals** are important features of the Kimberley region. Rocky shores and wide intertidal rock platforms form a large proportion of the shoreline habitats of the marine parks. Rock platforms often support a veneer of corals, especially along the reef front. A mixed community of rocky shore and *wooddooroo* (coral reef) species is characteristic of fringing reefs in the Kimberley bioregion (Wilson 2013).
- **Galaab (sandy beaches)** are important foraging, nesting and breeding areas for birds, sea turtles and other wildlife (McLachlan 2006). The Kimberley region has the shortest beaches and smallest barrier system in the country (Short 2011). While not extensive in the marine parks, small isolated *galaab* (sandy beaches) occur on some islands such as *Mooloogoob* (Kingfisher) and Traverse islands. Information on the community assemblages of *galaab* in the marine parks is limited.
- **Subtidal filter-feeding communities** such as sponges and soft corals obtain nutrients from suspended detritus and plankton in the water column. They play an important ecological role by providing nursery or recruitment habitat, food for other organisms and in cycling nutrients (Keesing *et al.* 2011; Bell 2008). Filter-feeding communities occur in many areas within the marine parks including *Iledda* (Walcott Inlet), *Ganbadba* (Talbot Bay), *Mooloogoob* (Kingfisher Islands), *Moolgoodna* (Booby Island) and *Ngumbree* (Doubtful Bay).
- **Intertidal sand and mudflats** are extensive in the Lalang-garram / Horizontal Falls Marine Park. They are highly productive components of shelf ecosystems that recycle organic matter and nutrients through microbial activity. The tidal mudflats of *Iledda* (Walcott Inlet) are up to 5km wide and support a rich intertidal invertebrate community (Zell 2003).

Marine fauna, including species of special conservation interest

- ✳ **Jalawadda (marine turtle)** species in the Kimberley include *warli* or green turtles (*Chelonia mydas*), *galagarri* or flatback turtles (*Natator depressus*), *mungidi* or loggerhead turtles (*Caretta caretta*), *nowurralya* or hawksbill turtles (*Eretmochelys imbricata*), leatherback turtles (*Dermochelys coriacea*) and olive ridley turtles (*Lepidochelys olivacea*) (Masini *et al.* 2009). *Jalawadda* are an important food source for Dambimangari people.



Galagarri (flatback turtle) hatchling. Photo – Kellie Pendoley

Jurluwarra (saltwater turtle) and *warliny* (dugong) are important to Dambimangari people as an important food source. We have many traditional stories for *jurluwarra* and *warliny* and their cultural use is interwoven with our traditional lifestyles. Healthy saltwater country is important for them and we must work together to make sure that *jurluwarra* and *warliny* are plentiful for generations to come.

Dambimangari Aboriginal Corporation
2012

- ✳ **Walyn (dugong)** often aggregate in protected shallow bays and *jindim* (mangrove) channels. They primarily feed on *Halophila* seagrass and migrate depending on food availability. Australia is considered to be the core of the world's remaining population of dugongs (Marsh *et al.* 2002). It is estimated that there are around 12,000 dugongs in the north Kimberley (Bayliss pers. comm. 2016). Dugongs have been sighted throughout the Lalang-garram / Horizontal Falls Marine Park including in Talbot Bay, Collier Bay, around Kingfisher Island, Doubtful Bay and in Walcott Inlet (Bayliss pers. comm. 2016). *Walyn* are an important food in the traditional diets of Dambimangari people and *Ganbadba* (Talbot Bay) is a culturally significant area for dugongs (Dambimangari Aboriginal Corporation, pers. comm. 2014).
- ✳ **Jigedany (dolphins)** are common in the marine parks. Australian humpback dolphins (*Sousa sahulensis*) and *jigidan* or snubfin dolphins (*Orcaella heinsohni*) forage, breed and calve in *Ganbadba* (Talbot Bay) (WWF, 2009). *Jaanya* (Sale River) is a known location for snubfin dolphins.



Jigidan (snubfin dolphins). Photo – Alex Brown MUCRU/WWF-Australia

All year round we see many different *jigedany* (dolphins) hunting for fish and playing around. Often there are common dolphins and humpback dolphins in the blue open water. Closer to shore, in murky water near inlets and *jindim* (mangrove/mangal), you will find the shy snubfin dolphins foraging.

Dambimangari Aboriginal Corporation 2012

- ★ **Goiyoiya (estuarine crocodiles)** are apex predators and are important for maintaining the natural balance of wetland ecosystems. They are found throughout the parks in estuarine areas, nearshore waters, oceanic waters and on islands (Semeniuk *et al.* 2011). They are known to breed in the Lalang-garram / Horizontal Falls Marine Park (Willing pers. comm. 2013).
- ★ **Sharks and rays** are diverse in the Kimberley and include threatened and protected species such as sawfish and manta rays (*Manta birostris*). Four of the world's seven known species of sawfish are found in north-western Australia and are likely to be found in the Lalang-garram / Horizontal Falls Marine Park (Morgan *et al.* 2011).
- ★ **Jaya (finfish)** are likely to be diverse in the marine parks. Many species are targeted by commercial and recreational fishers, particularly *iledda* (barramundi) and *doolja* or mangrove jack (*Lutjanus argentimaculatus*).
- **Ngununbany (whales, both baleen and toothed)** are likely to be diverse in the marine parks. *Munumbanany* or humpback whales (*Megaptera novaeangliae*) migrate to the marine parks from their Antarctic feeding grounds to breed and give birth (Costin and Sandes 2009). They occur in large numbers in the marine parks between June and November each year (Costin and Sandes 2009).



Humpback whale and calf. Photo – Tim Willing



Stoke's sea snakes mating. Photo – Tim Willing



Black-tailed godwit. Photo – Rick Dawson



White-bellied sea-eagle. Photo – Rick Dawson

- **Sea snakes** in the Kimberley occupy three broad habitat types; shallow water coral reef and seagrass habitats, deep water soft bottom habitats away from reefs, and the surface of the open ocean. The Kimberley has the world's highest recorded diversity of sea snakes supporting more than one third of all known species, with at least three species found only in the region (Somaweera and Sanders 2015). Generally sea snakes in the Kimberley are considered critically endangered or endangered due to their small distributions (Somaweera and Sanders 2015).
- **Seabirds and shorebirds** are found in high numbers on the mudflats of *Iledda* (Walcott Inlet) and *Ngumbree* (Ruby Falls) in the Lalang-garram / Horizontal Falls Marine Park (Willing pers. comm. 2013). *Moolgoodna* (Booby Island) adjacent to the North Lalang-garram Marine Park is classified by BirdLife International as an Important Bird Area because it supports more than 1% of the world's population of brown boobies (*Sula leucogaster*), with up to 2000 breeding pairs. About 500 pairs of crested terns (*Thalasseus bergii*) also nest on the island (BirdLife International 2015). The waters surrounding *Moolgoodna* (Booby Island) are important foraging grounds for nesting seabirds, including the brown booby, which generally feeds on squid and a range of surface dwelling fish species, such as flying fish and anchovies (Department of the Environment 2016).



High priority values

The marine parks feature a broad range of cultural, natural, tourism and resource use values.

From these, cultural sites, *jindim* (mangroves) and *galaw* (saltmarshes), *wooddooroo* (coral reefs), *joodam* (seagrass beds) and *lanjam* (macroalgae), *jalawadda* (marine turtles), *walyn* (dugong), *jigeedany* (dolphins), *goiyoiya* (estuarine crocodiles), sharks and rays, and finfish have been identified as high priority values and a focus for research and monitoring programs based on their cultural, ecological and social importance. Monitoring the condition of the high priority natural values will provide valuable insights into the overall health of the broader ecosystems within the marine parks.

Tawny nurse shark. Photo - Todd Quartermaine/Parks and Wildlife

3.3 Recreation and tourism values

With their spectacular scenery, diverse wildlife and cultural values, the marine parks provide excellent opportunities for natural and cultural based tourism experiences and recreational activities. One of the major drawcards to the Kimberley is the world-renowned *Garaanngaddim* (Horizontal Falls), where tourists either ride the tidal currents by boat or view the impressive feature on scenic flights. Other popular sites in and around the marine parks include the picturesque *Jaanya* (Sale River), *Laddinyoom* (Secure Bay) and *Ngumbree* (Raft Point) where visitors view Aboriginal rock art⁶. The abundance of wildlife, including large numbers of humpback whales during the breeding season, is regarded by Dambimangari people as an indicator of a healthy marine environment and is also a significant attraction for visitors.



Garaanngaddim (Horizontal Falls) water rushing. Photo – Jim Sharp/Parks and Wildlife

Traditional Owners understand that travelling through falls has become a popular attraction for tourists, however, Traditional Owners used to go through when the tide was calm, neap tides. Today people want to go through when the tide is rushing – it is a dangerous place – *Mamaa*.

Dambimangari Aboriginal Corporation pers. comm. 2015

⁶The art site at Raft Point lies within Dambimangari people's exclusive possession native title area. Visitors must seek permission from Dambimangari Traditional Owners before their visit.



Recreational fishing. Photo – Carolyn Thomson-Dans/Parks and Wildlife

Residents of Derby and Broome travel by boat to the parks to enjoy the excellent fishing and beauty of the area. Overseas and interstate tourists are also visiting the parks in increasing numbers, as the Kimberley region grows in recognition and popularity as a tourism destination (Scherrer *et al.* 2008).

The most common form of tourism in the parks is the expedition cruise boat industry with multi-day tours operating in the dry season between Broome and Wyndham. Vessels range from small fishing and sight-seeing tour boats to large expedition cruise ships. A number of other remote accommodation options in and around the parks include coastal camps and houseboat style stays providing unique wilderness and cultural tourism products. The developing nature-based tourism industry provides opportunities to contribute to social, cultural, economic and environmental outcomes for the Kimberley. Between 2014 and 2015 the estimated average number of visitors per year to the Kimberley was 383,000, with 59% (227,000) from WA, 31% (129,500) from interstate and 9% (35,500) from overseas (Tourism Western Australia 2016a). It's estimated that almost half of these visitors (185,400) included holiday or leisure as a purpose for their visit (Tourism Western Australia 2016a). Total visitor spend in 2015 for Australia's North West was \$1.148 billion (Tourism Western Australia 2016b). One of the development priorities for tourism in the region is sealing the road from Broome to Cape Leveque (Main Roads Western Australia 2015).



The expedition cruise boat industry is the main form of tourism in the area. Photo – Sarah Bignell/Parks and Wildlife

Key visitor attractions include:

- **Nature-based recreation and tourism**, popular with visitors coming to the marine parks to enjoy wildlife watching, visit cultural sites and visit scenic sights such as waterfalls.
- **Recreational fishing**, popular in the Kimberley, and gaining recognition for the quality of sport and game fishing targeting *illeda* (barramundi) and *doolja* (mangrove jack). Recreational fishing is predominantly carried out from private and commercial operator vessels. Key recreational fishing areas include *Laddinyoom* (Secure Bay) and Little Three Ways in *Ngumbree* (Doubtful Bay).
- **Remote seascapes**, including reefs, rocky shores, cliffs and gorges along rivers and estuarine systems, mudflats, *jindim* (mangroves) and *galaab* (beaches) are a significant drawcard for visitors.



Kingfisher Island. Photo – Roanna Goater/Parks and Wildlife

- **Maritime and European heritage** in the Lalang-garram / Horizontal Falls Marine Park includes the mudflats of the *Molor Molojyn* (Glenelg River), where Charles Kingsford Smith was forced to make an emergency landing in the monoplane *Southern Cross* in March 1929. The incident was named 'Coffee Royal' after the mix of coffee and brandy the crew drank whilst waiting for eventual rescue by Traditional Owners from the Kunmunya Mission (Willing pers. comm. 2013). There is no wreckage associated with this landing, however, there is a monument relating to the landing in the adjacent Dambimangari IPA (within an ALT reserve). Visitors can request permission to access and view the monument from Dambimangari Traditional Owners and the ALT. No other maritime heritage sites or shipwrecks have been recorded in the marine parks.
- **Research opportunities** arise from the relatively undisturbed nature of the marine parks, their range of habitats and fauna and their rich cultural and maritime history. The Kimberley region is a unique environment for research and provides significant opportunities for international research partnerships.


3.4 Resource use

Commercial fishing and pearling are important to the region's economy. Commercial fisheries operating in the marine parks include the Kimberley Gillnet and Barramundi Managed Fishery, Kimberley Prawn Managed Fishery, the Mackerel Managed Fishery and a developing Mud Crab Fishery. The Kimberley Gillnet and Barramundi Managed Fishery operates in the nearshore and estuarine zones of the Lalang-garram / Horizontal Falls Marine Park and the Kimberley Prawn Managed Fishery trawls in a defined area of Collier Bay. In the North Lalang-garram Marine Park, the area fished by the Kimberley Prawn Managed Fishery is more extensive and the Mackerel Managed Fishery also operates around the reefs of the park. Other fisheries licensed to operate in the marine parks include the Northern Demersal Scalefish Fishery, the Marine Aquarium Fishery, the Specimen Shell Managed Fishery and the Beche de mer Fishery. The Joint Authority Northern Shark Fishery has been inactive since 2008.

Western Australia's pearling industry is one of Australia's most valuable, with the Kimberley one of the key regions for pearl oyster production in the State. Long before the arrival of Europeans, Aboriginal people along the west Kimberley coast collected large pearl shell (*Pinctada maxima*) for use in rituals, ceremonies and for trade. There is one pearling lease in the Lalang-garram / Horizontal Falls Marine Park in *Ganbadba* (Talbot Bay) on the northern side of *Garaanngaddim* (the Horizontal Falls).

Mineral exploration and development interests in the Kimberley have grown in recent years and contribute significantly to the State's economy. There are no current mineral or petroleum developments in the marine parks, although mineral exploration tenements cover a number of coastal areas and islands adjacent to the Lalang-garram / Horizontal Falls Marine Park which are rich in iron ore and copper⁷. There are two iron ore mines located on Koolan and Cockatoo islands to the west of the Lalang-garram / Horizontal Falls Marine Park.

⁷ The latest information on tenements can be found on the Tengraph database at www.dmp.wa.gov.au.



‘One of the greatest wonders of
the natural world’

Sir David Attenborough

Garaanngaddim (Horizontal Falls)

The impressive *Garaanngaddim* (Horizontal Falls) in the Buccaneer Archipelago is one of the major attractions of the Kimberley. *Garaanngaddim* is like no other; instead of flowing vertically the ‘waterfall’ is created when the massive tides in the area flow through two narrow gaps in the McLarty Range in *Ganbadba* (Talbot Bay). Water builds up on one side of the narrow cliff passages faster than it can flow through them, creating a height difference of up to 4m on a spring tide. Visitors come to experience the sheer power of the Kimberley tides or to view the water rushing through the rugged cliffs from the air. The area is culturally significant to Dambimangari people and features in their traditional Dreamtime narratives.

Horizontal Falls – *Garaanngaddim* – is one of the extremely important cultural sites for the Traditional Owners. It is a potentially dangerous place and has to be treated with respect and consideration to ensure safe passage of those who choose to enter.

Dambimangari Aboriginal Corporation pers. comm. 2015

Dambimangari Traditional Owners of *Garaanngaddim* (the Horizontal Falls) recognise that tourists enjoy the thrill of venturing through the falls when the tide is rushing, however, for the Traditional Owners the respectful time to travel through the falls is in neaps or during the calm water time. As senior Traditional Owners have explained, the rushing tide is ‘the *Woongudd* (Snake) itself’ and that travelling through the falls at full rushing tide is when ‘the *Woongudd* is travelling’. Traditional Owners say that it is both disrespectful and dangerous to travel when the falls are rushing and, further, “the *Woongudd* is damaged every time people drive through the gap”.

Dambimangari Aboriginal Corporation pers. comm. 2015



Dambimangari custodian and Parks and Wildlife employee Adrian Lane conducting mangrove monitoring work in Dambimangari sea country.
Photo – Daniel Barrow/Parks and Wildlife



Dambimangari Traditional Owner Adrian Lane and other Parks and Wildlife staff on country. Photo – Paul Bell

4 Management

This joint management plan has been prepared in partnership with Dambimangari people and with input from key stakeholders. It aims to conserve the values of the marine parks in the long term. It provides strategic direction through a summary of policies and guidelines, and operations to be undertaken in the parks. This management plan also provides guidance for

operational plans that provide more specific on-ground management direction. Performance assessment processes will also feed into adaptive management at both the strategic and operational planning level.

This plan takes into account the values, aspirations and management objectives articulated in a number of Traditional Owner documents such as the North Kimberley Saltwater Country Plan, the Healthy Country Plan, management programs under the IPA and the Indigenous ranger programs. The plan also aims to complement the management objectives of the jointly managed Lalang-garram / Camden Sound Marine Park, and other Kimberley marine parks.

The Commonwealth *Native Title Act 1993* (NT Act) provides a framework for the recognition and protection of rights and interests under traditional laws and customs. Dambimangari Traditional Owners have determined native title rights and interests based on strong and ongoing cultural connections over their land and saltwater country. This plan does not provide any additional restrictions on the exercise of Dambimangari people's native title rights save to the extent otherwise agreed by native title holders or in accordance with the *Conservation and Land Management Act 1984* (CALM Act) and *Conservation and Land Management Regulations 2002* (CALM Regulations). Determined native title rights within the marine parks include the right to enter, travel and remain on the land and waters; the right to hunt, fish, gather and use resources for personal, domestic and communal needs; the right to undertake cultural activities; and the right to take and use water. Within the marine parks, customary activities such as fishing and hunting are also provided for under the CALM Act and *Wildlife Conservation Act 1950* (Wildlife Conservation Act). The *Fish Resources Management Act 1994* (FRM Act) recognises



customary fishing activities and is subject to the NT Act where an Aboriginal person is experiencing or enjoying a native title right or interest for the purpose of satisfying personal, domestic or non-commercial communal needs.

The parks will be managed in accordance with the provisions of the CALM Act, Wildlife Conservation Act, Parks and Wildlife policy and other legislation mentioned throughout this plan⁸. Further, management of the marine parks will be supported by a collaborative management approach with agencies with statutory responsibilities within the parks. A five year review will be undertaken and if the management plan is to be amended, the proposed changes will be released for public comment. This plan will remain in force until a new plan is approved.

The creation of the parks helps fulfil Australia's responsibilities under several international conventions, such as the Convention on Biological Diversity, and contributes to the International Union for the Conservation of Nature's (IUCN) Protected Areas Program. The marine parks also contribute to the National Representative System of Marine Protected Areas (NRSMPA).

4.1 Joint management

Joint management with Dambimangari Traditional Owners will enhance the protection of cultural heritage and natural values, while allowing culturally appropriate opportunities for recreation and tourism. This joint management plan should be viewed as part of a larger management framework for the lands and waters within and around the parks.

Joint management is given effect under the CALM Act through a section 56A Joint Management Agreement (JMA) between Dambimangari people and Parks and Wildlife. The Western Australian Government has negotiated an ILUA with Dambimangari Aboriginal Corporation (DAC) to ensure the creation of the reserves meets the requirements of the NT Act. The ILUA enables the reservation of intertidal areas within the marine parks.

For formal joint management to occur, this joint management plan requires the Chief Executive Officer of Parks and Wildlife to jointly manage the parks. Formal joint management will commence once a JMA has been signed and attached to the plan. The JMA will establish a Joint Management Body (JMB) with representatives from DAC and Parks and Wildlife to manage the parks in accordance with the agreement and the CALM Act.

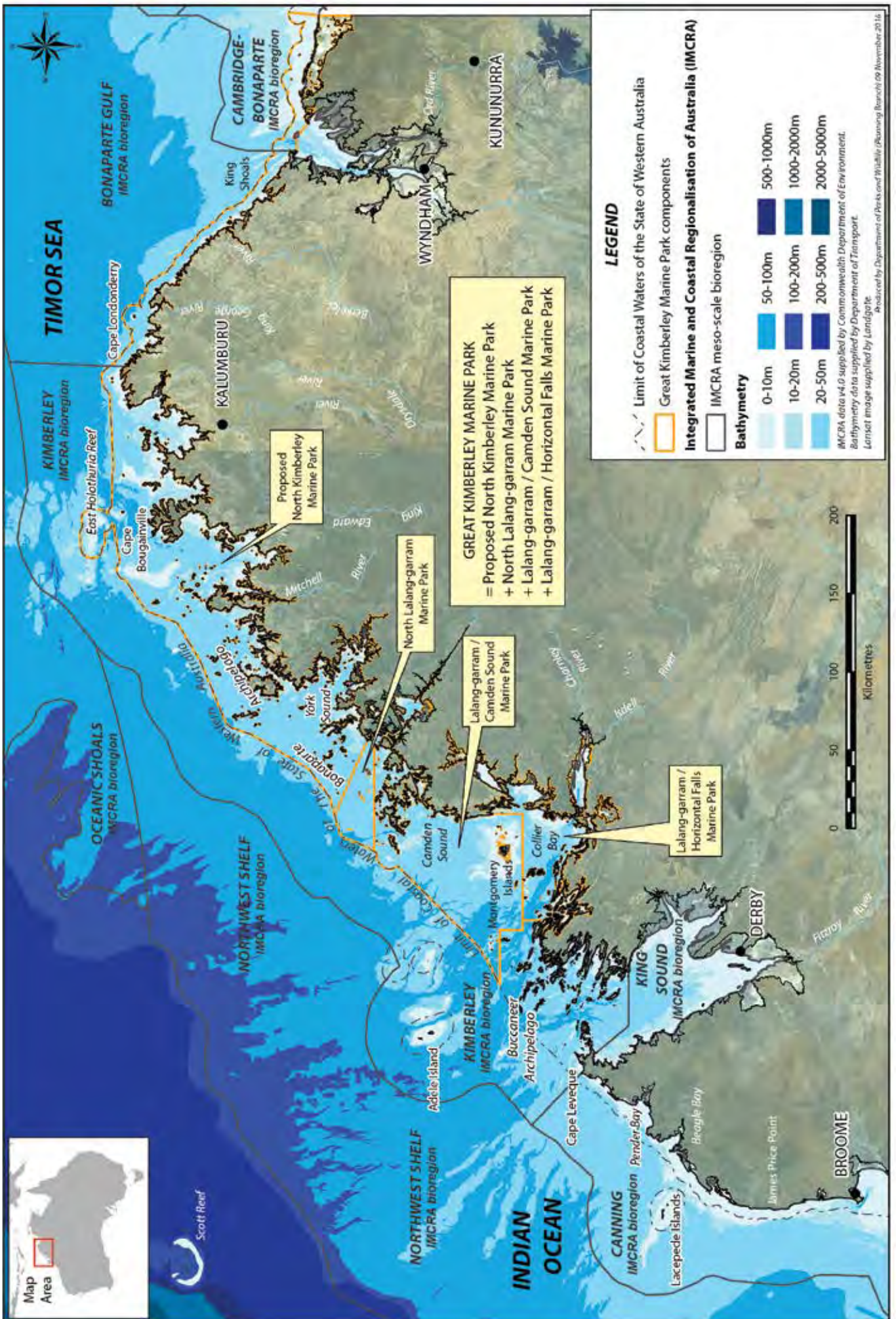
The JMB oversees management of the parks, makes management decisions, provides strategic input into how management strategies are implemented, monitors implementation of the plan and provides advice on management plan review. Operational responsibility will be coordinated by Parks and Wildlife, under the guidance of the JMB.



Parks and Wildlife staff conducting video surveys. Photo – Todd Quartermaine

⁸ Relevant legislation and policies can found on the Parks and Wildlife website at www.dpaw.wa.gov.au/about-us/36-policies-and-legislation.

Map 5 Marine Bioregions and the proposed Great Kimberley Marine Park





Mangroves in *Illedda* (Walcott Inlet). Photo – Todd Quartermaine/Parks and Wildlife

4.2 Zoning and permitted uses

Multiple use zoning and other management strategies work together to protect cultural and natural values while allowing recreation and tourism opportunities and sustainable commercial uses to continue. The CALM Act requires marine parks to be zoned as one or a combination of specific zones including sanctuary, recreation, special purpose or general use.⁹

Bioregional setting

The *Interim Marine and Coastal Regionalisation for Australia* (IMCRA) classifies Australia's coast and marine environment into 60 marine bioregions. Each bioregion is a distinct biogeographical unit that represents broad physical and biological differences in the coastal and marine environment across Australia. The national guidelines for establishing marine protected areas recommend that IMCRA bioregions form the basis for reserve design, with one or more examples of conservation features (e.g. habitats and ecosystems) found in each bioregion represented in highly protected zones (Australian and New Zealand Environment and Conservation Task Force on Marine Protected Areas, 1999). The Lalang-garram / Horizontal Falls and North Lalang-garram marine parks are located within the Kimberley Meso-scale Bioregion, which stretches from King Sound to Cape Londonderry. The Lalang-garram / Camden Sound and the western section of the North Kimberley marine parks are also located within the Kimberley Bioregion (Map 5).

Zoning design

To complement the bioregional framework, a network based approach was taken, to ensure the zoning schemes complement the outcomes of the Lalang-garram / Camden Sound Marine Park and take into consideration the remainder of the Kimberley Bioregion in the North Kimberley Marine Park.

The zoning scheme for Lalang-garram / Horizontal Falls Marine Park (Maps 6, 7, 8 & 9), includes:

- eight sanctuary zones covering approximately 86,000ha or 24% of the marine park
- three special purpose zones (recreation and conservation) covering approximately 27,000ha or 8% of the marine park
- general use as the remainder of the park, covering 240,500ha or 68% of the park.

⁹ For more information on zone types, go to www.dpaw.wa.gov.au/management/marine/marine-parks-and-reserves/71-know-your-zones



Coral reef at Turtle Reef in Talbot Bay. Photo – Kimberley Media

The North Lalang-garram Marine Park is 110,000ha and is zoned as general use (Map 10). Design of the zoning schemes has been guided by a set of principles which aim to provide for natural, cultural, recreation, tourism and other sustainable use values (see Appendix).

The zoning schemes are based on a comprehensive, adequate and representative (CAR) approach and also aim to protect ecologically and culturally important high priority values such as *jindim* (mangroves), *wooddooroo* (coral reefs), *jalawadda* (turtles) and *walyn* (dugongs), with consideration of the level of current and projected future pressures on these values. The zoning is designed to provide connectivity from upstream estuarine environments out to deeper water and offshore islands and provide complementarity to adjacent reserves.

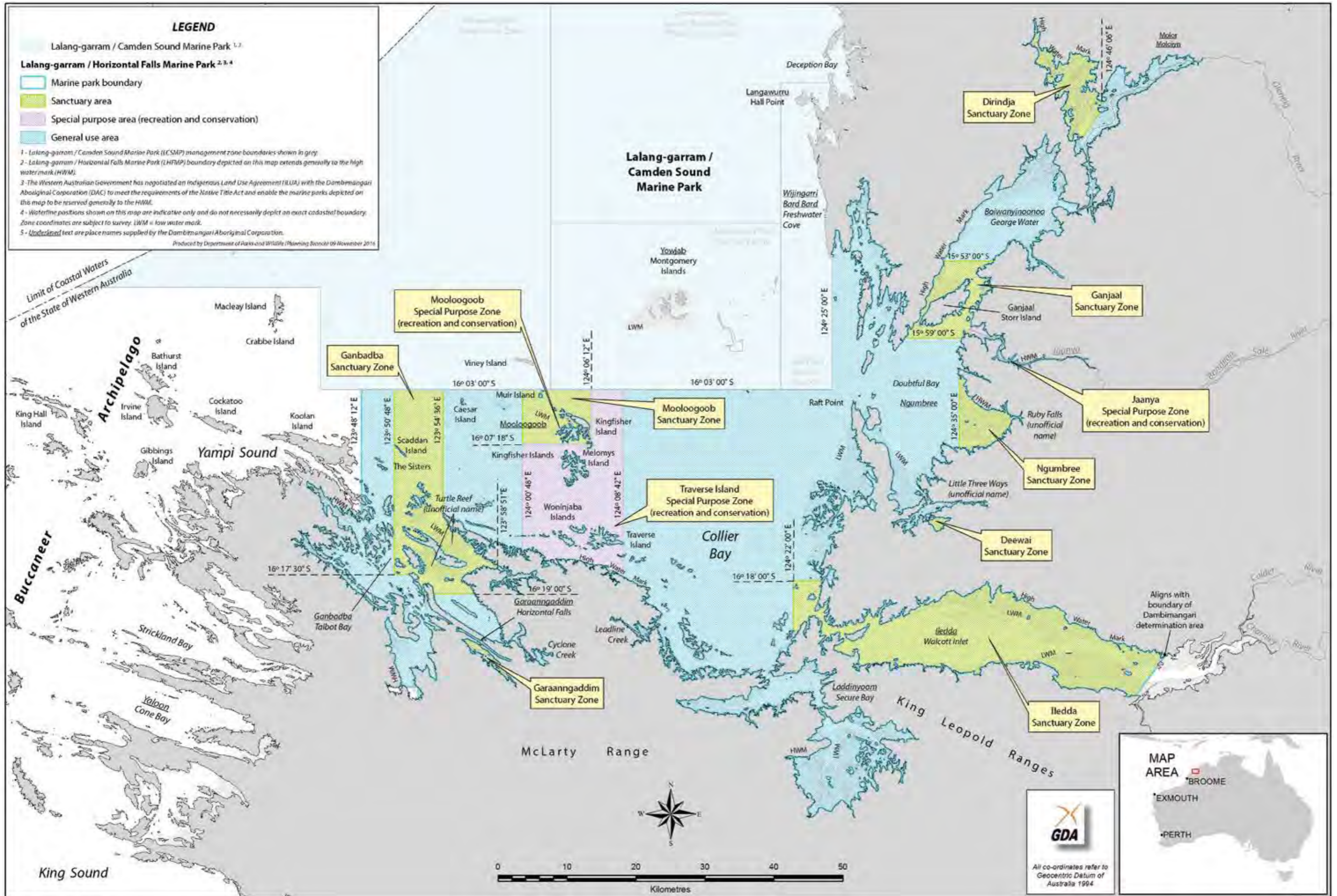
For Dambimangari people, many ecological or natural values also have particular cultural significance. The sanctuary zoning will protect and conserve Aboriginal cultural heritage values including culturally important *wooddooroo* (coral reefs), *galaab* (beaches) known to be important access points for turtle nesting, important nursery areas for finfish and other marine fauna in *jindim* (mangrove) and estuarine systems, and aggregation areas for culturally important marine fauna such as *jalawadda* (turtles), *walyn* (dugongs), *munumbanany* (whales) and *jigeedany* (dolphins). The inclusion of these areas in sanctuary zones will contribute to meeting Dambimangari aspirations to protect saltwater country and align with objectives and targets identified in the Dambimangari Healthy Country Plan. The zoning schemes also provide for ongoing customary uses such as fishing and hunting.

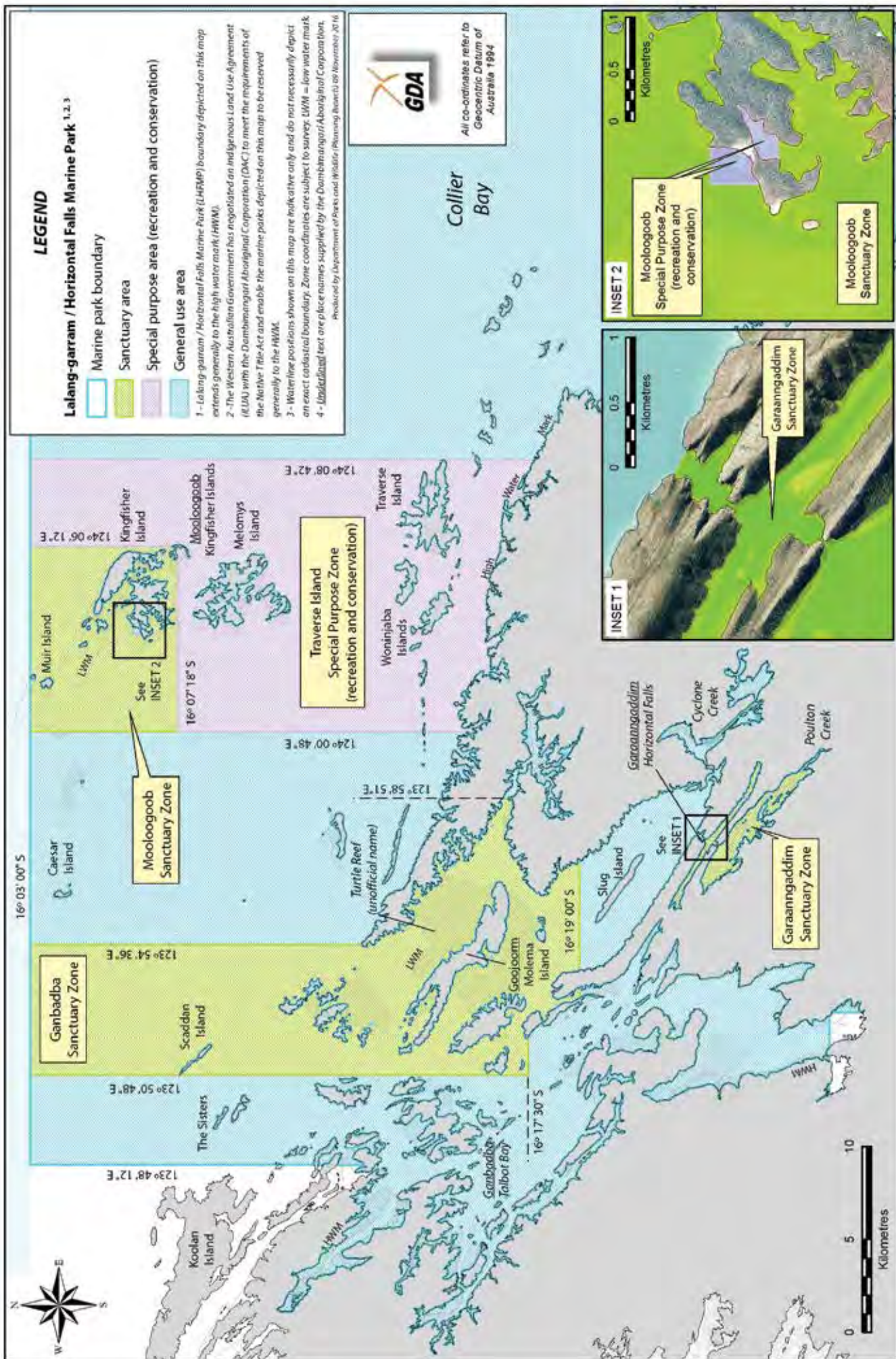
The zoning schemes recognise and allow for recreation and tourism and allow for ongoing sustainable use by considering the needs of other park users such as commercial and recreational fishers. The inclusion of sanctuary zones in the Lalang-garram / Horizontal Falls Marine Park creates important opportunities for education, research and monitoring. By comparing sanctuary zones (as benchmarks) to other areas with similar habitats/ecosystems that allow extractive use a better understanding can be gained of local and regional pressures on the marine environment over time.

Where possible, the zoning schemes are designed to be easy for users to understand and comply with e.g. creating zones with straight line boundaries which align with degrees of longitude and latitude and/or aligning boundaries with prominent features on the coast or islands.

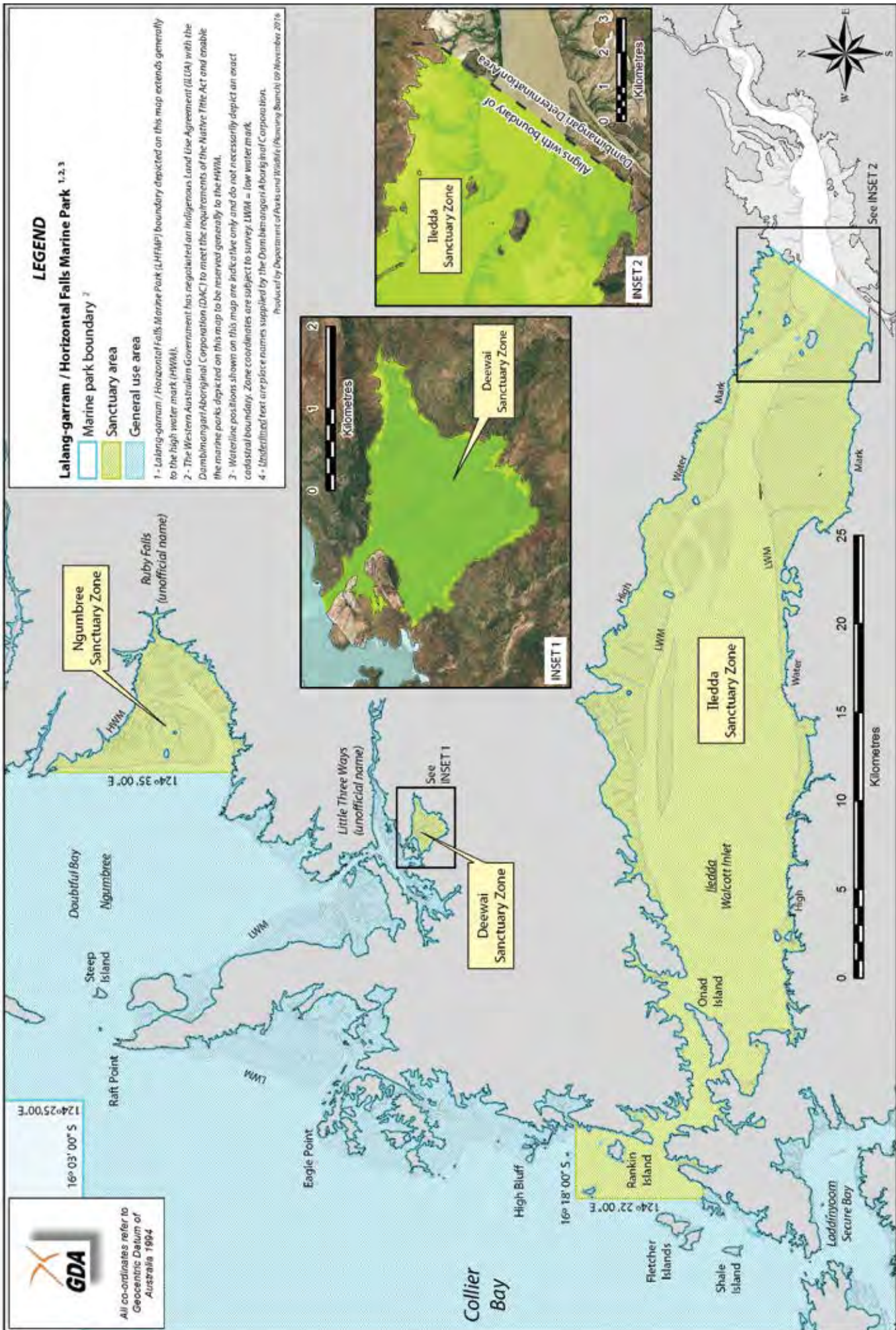
Ultimately the zoning schemes aim to ensure the parks will be managed to maintain ecosystem function and increase ecosystem resilience. The sanctuary zones play a central role in this, by creating 'no take' areas to support the healthy functioning of the complex ecosystems that make up the parks.

Map 6 Zoning for the Lalang-garram / Horizontal Falls Marine Park

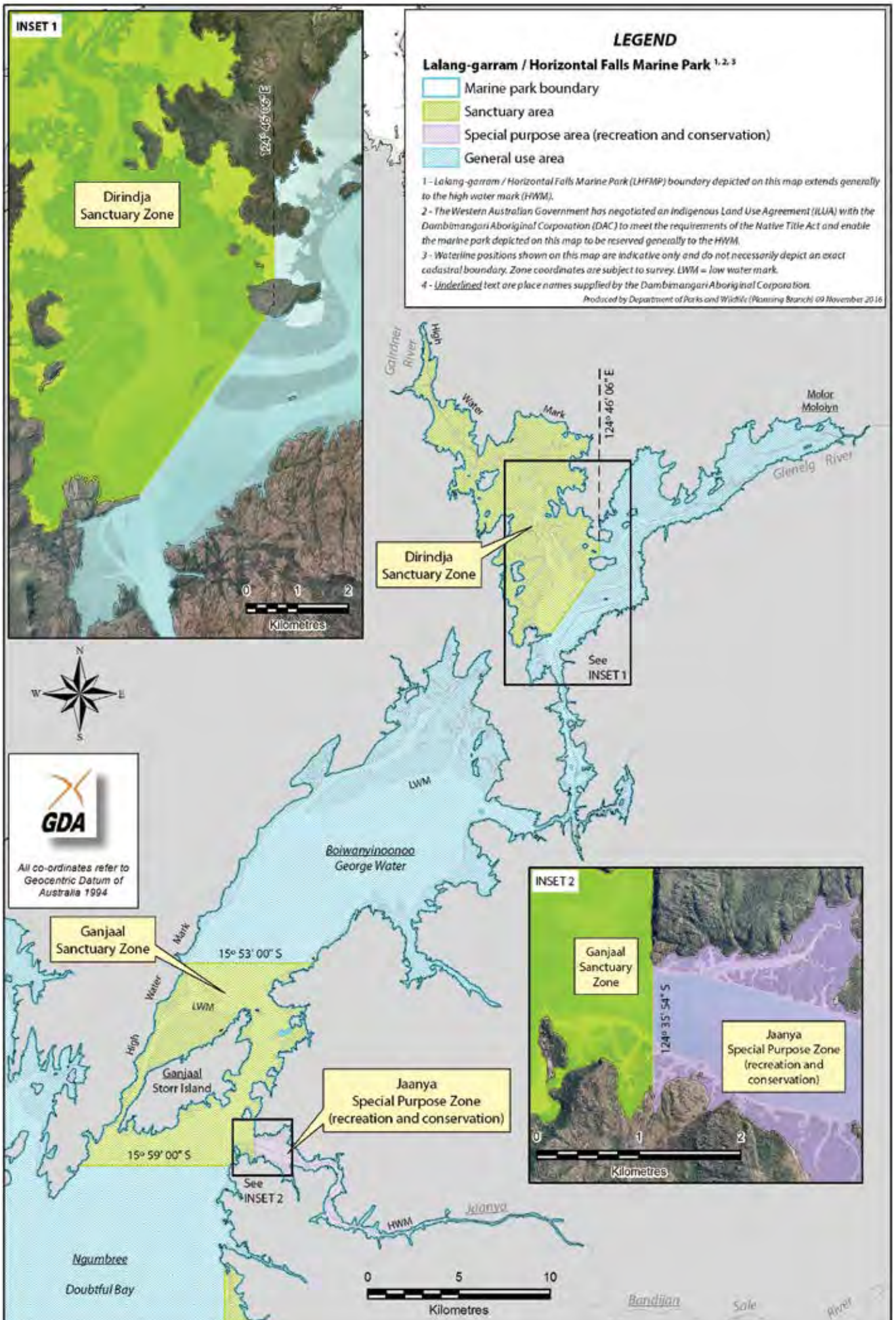




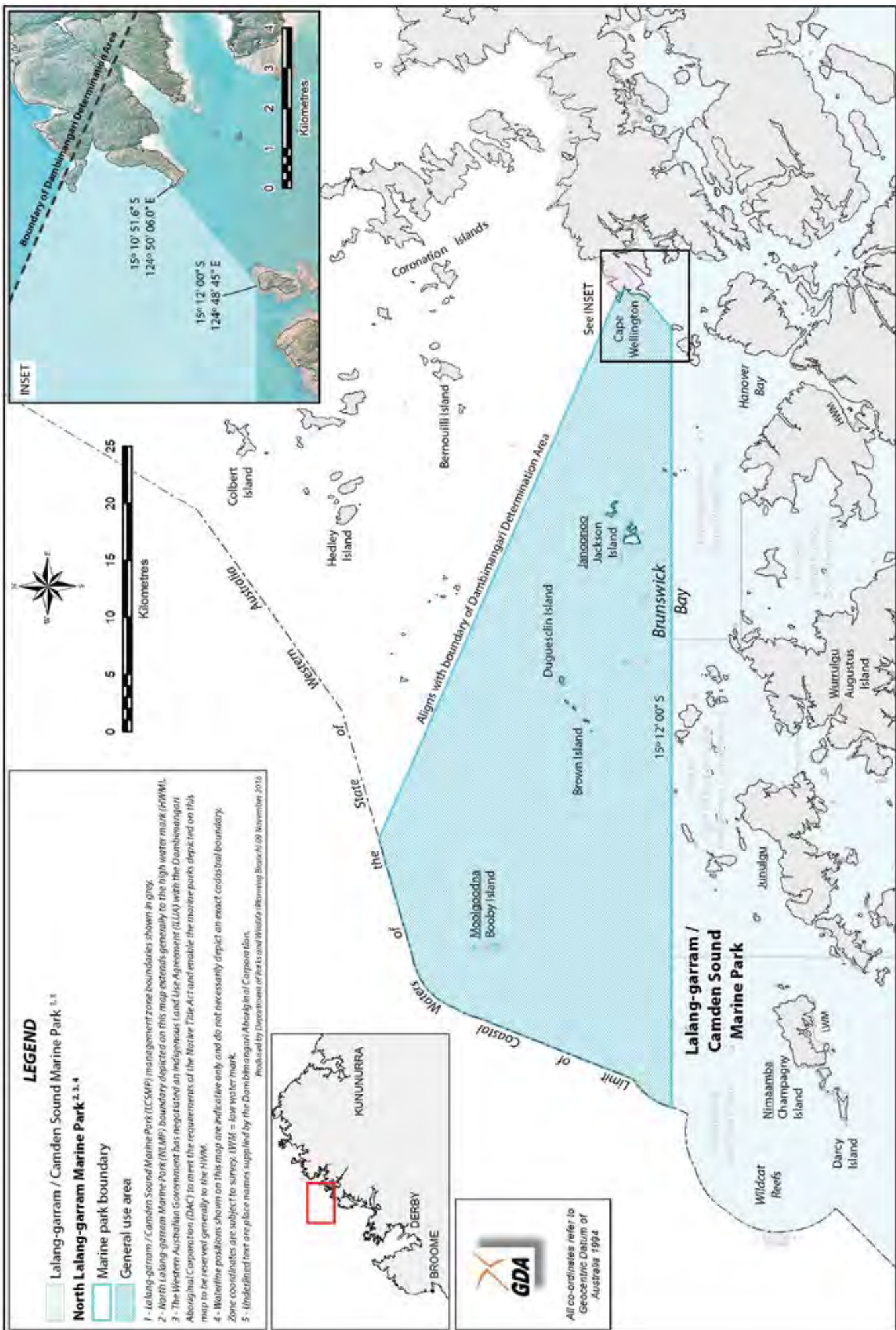
Map 8 Zoning for the Lalang-garram / Horizontal Falls Marine Park – south-east



Map 9 Zoning for the Lalang-garram / Horizontal Falls Marine Park – north-east



Map 10 Zoning for the North Lalang-garram Marine Park



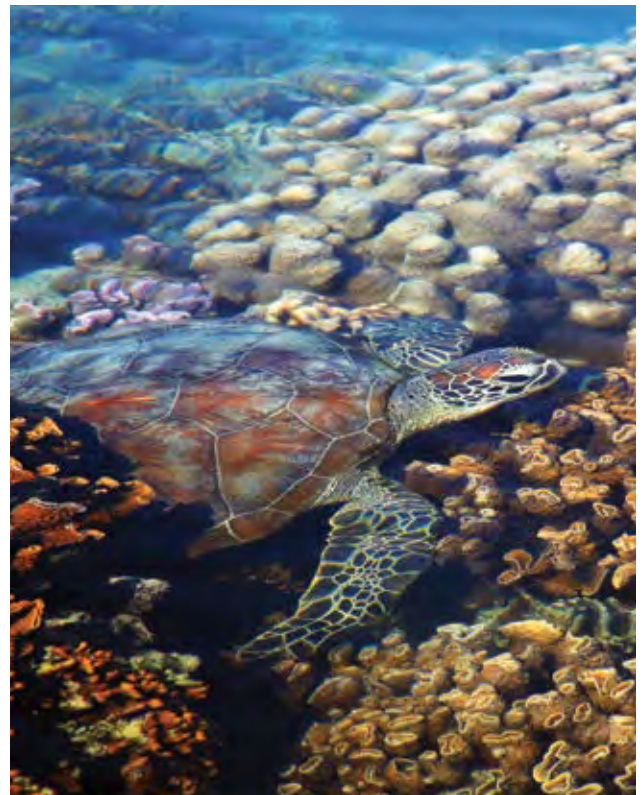


Turtle Reef, Talbot Bay. Photo – Landgate

Lalang-garram / Horizontal Falls Marine Park Sanctuary Zones

Ganbadba Sanctuary Zone Talbot Bay

Ganbadba Sanctuary Zone (21,270ha or 6% of the marine park) protects features of the Buccaneer Archipelago and representative examples of habitats from deep subtidal (50 – 100m) to shallow (<10m) intertidal habitats including *jindim* (mangrove communities), fringing *wooddooroo* (coral reefs) and *joodam* (seagrass beds) in *Ganbadba* (Talbot Bay). This zone supports a rich diversity of fauna and species of special conservation interest such as turtles, dugongs and dolphins. Australian humpback and snubfin dolphins forage, breed and calve in *Ganbadba* (WWF, 2009). Ganbadba Sanctuary Zone includes the ecologically important and geomorphologically unique Turtle Reef, a terracing algal reef over 25km², which has a diverse coral community, rhodolith beds and seagrass patches (Wilson *et al.* 2011; Kordi *et al.* 2016). It is intended that reef walking will not be permitted on Turtle Reef. The zone also protects part of an unusual shelf canyon which is not found extensively elsewhere in the Kimberley Bioregion. Many reefs, beaches and islands in *Ganbadba* are culturally important to Dambimangari people and are inhabited by culturally important animals such as turtles and dugongs (Dambimangari Aboriginal Corporation 2012). Ganbadba Sanctuary Zone provides for conservation, recreation and tourism in an area valued by the public for its aesthetic qualities, appealing physical landscape and recreational opportunities (Strickland-Munro *et al.* 2014).



A *warli* (green turtle) on Turtle Reef in Ganbadba (Talbot Bay). Photo – Kimberley Media



Garaangaddim (Horizontal Falls)/Poulton Creek. Photo – Kimberley Media

Garaangaddim Sanctuary Zone Horizontal Falls/Poulton Creek

Garaangaddim Sanctuary Zone (1040ha or 0.3% of the marine park) protects the shallow (0-10m) bay behind *Garaangaddim* (Horizontal Falls) and includes representative areas of *jindim* (mangrove communities), which are ecologically and culturally important nursery areas, and shallow filter-feeding communities including sponges and soft corals. The area is culturally significant to Dambimangari people and features in their oral traditions for the creation of *Garaangaddim*. Garaangaddim Sanctuary Zone provides for conservation, recreation and tourism in an area valued for its tourism, aesthetic qualities and appealing physical landscape (Strickland-Munro *et al.* 2014).

Mooloogoob Sanctuary Zone Kingfisher Island/Muir Island

Mooloogoob Sanctuary Zone (6850ha or 1.9% of the marine park) extends from Kingfisher Island, the northern island of *Mooloogoob* (the Kingfisher Islands group) to Muir Island in the north-west of the zone. The zone protects offshore island forming habitats including an ecologically and culturally significant fringing platform coral reef system extending between Kingfisher and Muir islands. The reef systems surrounding the islands also include macroalgae, and soft corals and other filter-feeding communities. It is intended that reef walking will not be permitted on intertidal reefs in this zone. The waters surrounding the islands are ecologically and culturally important for turtles and dugongs, and humpback whales can be spotted in the area during the calving season between June and November (Costin and Sandes, 2009). The intertidal areas include *galaab* (sandy beaches) which are important access points for turtles nesting in adjacent supratidal areas and one of the most diverse mangrove communities on islands surveyed in the Kimberley, with 10 species recorded (Wilson, 2013). *Jindim* (mangroves) on the island provide important habitat for a variety of wildlife such as the collared kingfisher (*Todiramphus chloris sordidus*) (Johnstone pers. comm. 2015). The intertidal area surrounding the islands is highly significant to Dambimangari people with many culturally important sites. The zone also provides complementarity to the Montgomery Reef Sanctuary Zone in Lang-garram / Camden Sound Marine Park.



Kingfisher Island. Photo – Carolyn Thomson-Dans/Parks and Wildlife



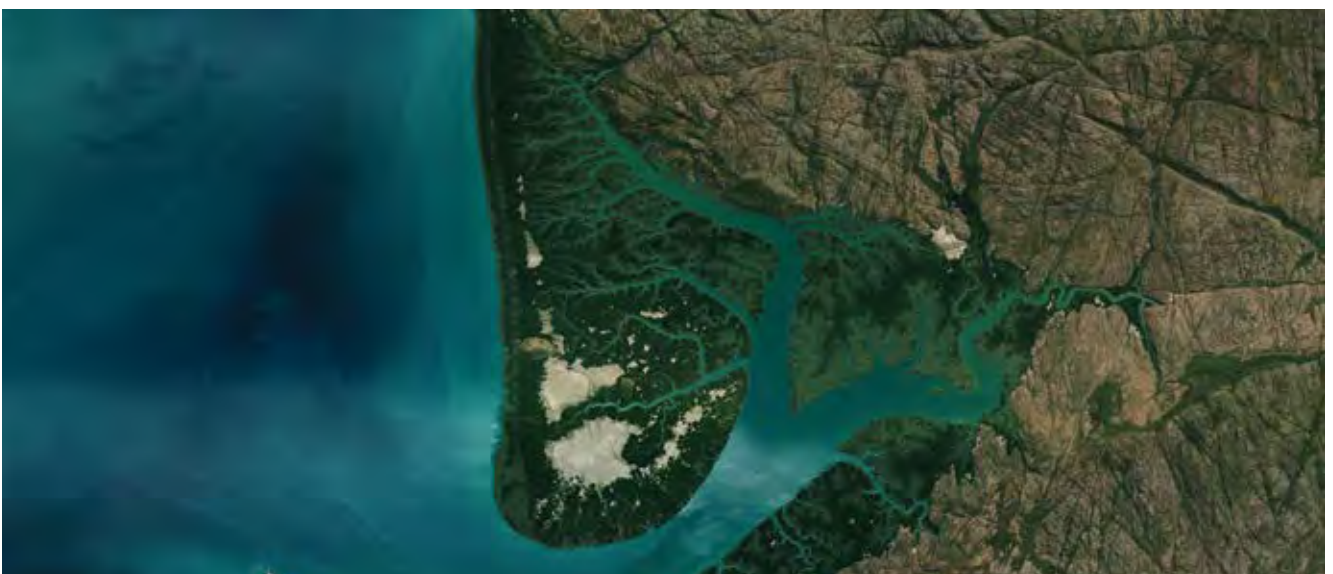
Iledda (Walcott Inlet). Photo – Landgate

Iledda Sanctuary Zone Walcott Inlet

Iledda Sanctuary Zone (39,790ha or 11.3% of the marine park) encompasses the largest mapped tidal delta in the Kimberley Bioregion. The zone in *Iledda* (Walcott Inlet) includes representative examples of *jindim* (mangrove) and *galaw* (saltmarsh communities), intertidal mudflats and subtidal filter-feeding communities. It includes part of a unique flood delta and an inshore deep water (50-100m) channel. The *Iledda* saltmarsh system is the largest mapped in the Kimberley (Dyall *et al.* 2005) and covers approximately 7900ha. The inlet's extensive intertidal mudflats are up to 5km wide and support a large number of migratory waterbirds including whimbrels (*Numenius phaeopus*) and grey-tailed tattlers (*Tringa brevipes*) (Willing pers. comm. 2013). Dambimangari people know that *Iledda* is important for whales, dolphins including snubfin dolphins, dugongs and turtles. The turbid coastal waters of the inlet are also likely to provide favourable habitat for sawfish. *Iledda* is a culturally important area for mud crabs and an important breeding area for *iledda* (barramundi). Iledda Sanctuary Zone provides for conservation, recreation and tourism.

Iledda is used in Dambimangari language for both barramundi and for Walcott Inlet, as the name for the inlet is derived from events in *Lalai* that involve the barramundi. There are many cultural connections to *Iledda* and oral narratives for the whole area.

Dambimangari Traditional Owners, pers. comm. 2014, 2016.



Ruby Falls. Photo – Landgate

Ngumbree Sanctuary Zone Doubtful Bay/Ruby Falls

Ngumbree Sanctuary Zone (4270ha or 1.2% of the marine park) protects representative areas of shallow (0-10m) habitats, including one of the most significant *jindim* (mangrove) and intertidal sand and mudflat communities in the Lalang-garram / Horizontal Falls Marine Park. The zone, located in *Ngumbree* (Doubtful Bay) includes mudflat habitats which are an important feeding area for migratory waders, and manta rays are commonly seen in the area (Willing pers. comm. 2013, 2016). The area is culturally significant to the Dambimangari people and there are oral narratives associated with sites within the mangrove system. Dambimangari people know that the area is important as a nursery for mud crabs and for snubfin dolphins that travel into the smaller creek systems within the estuary to eat fish (Dambimangari Aboriginal Corporation pers. comm. 2016). The zone provides for conservation, recreation and tourism in an area popular with commercial operators because of its natural features and access to the adjacent popular swimming hole at Ruby Falls.

Ganjaal Sanctuary Zone Storr Island/Doubtful Bay/George Water

Ganjaal Sanctuary Zone (6210ha or 1.8% of the marine park) protects the waters in *Ngumbree* (Doubtful Bay) and *Boiwanyinoonoo* (George Water) surrounding Storr Island. *Ganjaal* is the name for Storr Island and the area where *Jaanya* (the Sale River) enters *Ngumbree* (Doubtful Bay). The zone includes representative areas of shallow to deeper water habitats including fringing *wooddooroo* (coral reefs), subtidal filter-feeding communities, estuary channels and tidal sandflats. The zone contains a number of sites important to Dambimangari people including culturally important platform reefs and extensive sandflat habitats. *Ngumbree* and *Boiwanyinoonoo* are known as highly productive parts of Dambimangari saltwater country receiving freshwater inputs and nutrients from the land and are known as important nursery areas for prawns and fish.

Dirindja Sanctuary Zone Gairdner River

Dirindja is the name for the area of *Molor Moloyn* (Gairdner River) within the sanctuary zone which relates to the mangrove and intertidal areas. Dirindja Sanctuary Zone (6130ha or 1.7% of the park) provides representative examples of *jindim* (mangrove), *galaw* (saltmarsh/saltflats) and intertidal mudflat communities, and is an important breeding area for *goiyoiya* (estuarine crocodiles) (Dambimangari Aboriginal Corporation pers. comm. 2016). *Molor Moloyn* (Gairdner River), adjacent to ALT Reserve 23079 and part of the Dambimangari IPA, is particularly important to Dambimangari people and is an important nursery area for fish such as *ileda* (barramundi) and mud crabs (Dambimangari Traditional Owners, pers. comm. 2014, 2016).

Deewai Sanctuary Zone Lower section of Three Ways

Deewai Sanctuary Zone (370ha or 0.1% of the marine park) protects an ecologically and culturally significant area of dense, shallow *jindim* (mangrove) habitat. Dambimangari people know the area as an important nursery area for fish and breeding area for birds. Important cultural resources such as 'sugar bag' or wild honey can be found in the hollows of some *jindim* trees. Dambimangari people have also identified the *jindim* in this area as an important refuge for fauna including snakes and possums.



Deewai. Photo – Landgate



Traverse Islands. Photo – Kimberley Media

Lalang-garram / Horizontal Falls Marine Park special purpose zones

Traverse Island Special Purpose Zone (recreation and conservation) Traverse Island, Woninjaba Islands/Melomys Island

Traverse Island Special Purpose Zone (recreation and conservation) extends from the coast to Mooloogoob Sanctuary Zone, with the eastern side of the zone extending to the southern border of Lalang-garram / Camden Sound Marine Park. The zone, which is 26,140ha or 7.4% of the marine park, includes Traverse Island, the Woninjaba Islands and Melomys Island, the southern island of *Mooloogoob* (the Kingfisher Islands group). The zone includes a transect from the coast to offshore, encompassing habitats at different depths, from *jindim* (mangrove communities) and fringing *wooddooroo* (coral reef) communities to deep water channels and deep subtidal habitats. The Traverse and Woninjaba islands include *galaab* (sandy beaches) important for turtle (Whiting pers. comm. 2015) and seabird nesting. The coastal area around the mainland and Melomys Island contains culturally important sites and reefs and beaches which are associated with the events of *Lalai* (Dambimangari Aboriginal Corporation 2012). The conservation purpose of this special purpose zone is to protect ecologically and culturally important marine ecosystems, including *jindim* (mangrove), *wooddooroo* (coral reef) and intertidal communities, whilst continuing to allow for recreational and tourism activities. Commercial gillnet fishing, prawn trawling and ground-disturbing mineral and petroleum exploration and development are considered to be incompatible with the conservation purpose of this zone.

Mooloogoob Special Purpose Zone (recreation and conservation) Kingfisher Island

The Mooloogoob Special Purpose Zone (recreation and conservation) is located on the south-west corner of *Mooloogoob* (Kingfisher Island) within the Mooloogoob Sanctuary Zone, adjacent to Crown Lease Lot 16 on Plan 26300. The zone, which is 20ha or 0.01% of the marine park includes shallow (<10m) intertidal habitats including *jindim* (mangrove communities) and a culturally important *galaab* (sandy beach) which is a known access point for nesting turtles. The conservation purpose of this special purpose zone is to protect ecologically and culturally important marine ecosystems, such as *jindim* (mangrove communities), whilst continuing to allow for recreational and tourism activities. Planning is currently underway for the development of tourist accommodation facilities in the adjacent Crown Lease area. Commercial gillnet fishing, prawn trawling and ground-disturbing mineral and petroleum exploration and development are considered to be incompatible with the conservation purpose of this zone.

Jaanya Special Purpose Zone (recreation and conservation) Sale River

The Jaanya Special Purpose Zone (recreation and conservation), which is 1000ha or 0.3% of the marine park, includes shallow water habitats including intertidal flats, *jindim* (mangroves) and tidal sands. Species of special conservation interest such as snubfin dolphins reside in *Jaanya* (Sale River) (Willing pers. comm. 2013). The river contains culturally important sites and the whole river system has particular cultural significance to Dambimangari people (Dambimangari Aboriginal Corporation 2012). The scenic *Jaanya* is also known as an important location among commercial tourism operators for wildlife spotting (Scherrer *et al.* 2008). The conservation purpose of this special purpose zone (recreation and conservation) is to protect ecologically and culturally important marine and intertidal ecosystems, including habitat for snubfin dolphins, whilst also allowing for recreation and tourism activities. Commercial gillnet fishing, prawn trawling and ground-disturbing mineral and petroleum exploration and development are considered to be incompatible with the conservation purpose of this zone.

Lalang-garram Horizontal Falls and North Lalang-garram marine park general use zones

All areas in the marine parks not included in sanctuary or special purpose zones are zoned as general use which is 240,500ha or 68% of the Lalang-garram / Horizontal Falls Marine Park and 110,000ha or 100% of North Lalang-garram Marine Park. The whole of the North Lalang-garram Marine Park is general use as part of a network-based approach taking into account the zoning schemes for the Lalang-garram / Camden Sound, Lalang-garram / Horizontal Falls, and North Kimberley marine parks. Management of general use areas is provided for through mechanisms under the CALM Act and CALM Regulations, as well as the implementation of management strategies. The general use areas provide for biodiversity conservation and a range of activities including recreational and commercial fishing. Within the Lalang-garram / Horizontal Falls Marine Park the zoning scheme provides for key fishing areas in southern and western *Ganbadba* (Talbot Bay), Leadline Creek, *Laddinyoom* (Secure Bay), Collier Bay and *Ngumbree* (Doubtful Bay). There are also continued opportunities for fishing in *Molor Molojiyn* (Glenelg River), Little Three Ways and around the *Mooloogoob* (Kingfisher) and Traverse islands. Recreational and commercial fishing are permitted throughout the North Lalang-garram Marine Park.



Southern Talbot Bay. Photo – Sarah Bignell/Parks and Wildlife



Dambimangari Traditional Owners have known about the significance of sustainable use of marine resources since time immemorial; within the proposed North Lalang-garram Marine Park is an island and surrounding reef and exposed rock that form part of the narrative and cultural practices associated with honouring the spirits of the sea and thanking them for delivering fish to them for food and seeking the replenishment of marine species.

Dambimangari Aboriginal Corporation pers. comm. 2015

Permitted uses

Table 1 summarises the range of permitted activities across the zone types in the Lalang-garram / Horizontal Falls and North Lalang-garram marine parks. Many activities are also regulated under complementary legislation and regulations, for example, regulations regarding wildlife interactions, the disposal of sullage, and size and bag limits for recreational fishing. Commercial businesses operating within marine parks and reserves require a licence issued by Parks and Wildlife which carries specific conditions.

The implementation of this joint management plan may require management actions such as temporal closures, speed restrictions and a mooring and anchoring plan. Development of these actions will aim to manage the permitted activities whilst meeting the management objectives.

An activity marked as 'assess' indicates an assessment is required by the appropriate agencies in accordance with relevant legislation and the management objectives and targets in this plan.

Table 1 Summary of permitted uses for the Lalang-garram / Horizontal Falls and North Lalang-garram marine parks

Activity	Sanctuary Zones [a]	Special Purpose Zones (recreation and conservation)	General Use Zones
Customary			
Customary activities (e.g. hunting and fishing)	Yes [b]	Yes [b]	Yes [b]
Commercial			
Commercial gillnet fishing	No	No	Yes
Commercial prawn trawl fishing	No	No	Yes [c]
Commercial fishing (other than gillnet and prawn trawl)	No	Yes	Yes
Pearling and associated activities	No	Assess	Yes
Aquaculture	No	Assess	Yes
Scenic flights (charter)	Yes	Yes	Yes
Ground-disturbing mineral and petroleum exploration and development [d]	No	No	Assess
Non-ground-disturbing air-borne and ship-borne geophysical surveys [e]	Assess	Assess	Assess
Ship loading and other mining related infrastructure (e.g. ship loading docks, cabling or pipelines)	Assess [f]	Assess [f]	Assess
General marine infrastructure (e.g. groynes, jetties)	No	Assess	Assess
Artificial structures (e.g. artificial reefs)	No	Assess	Assess
Dredging and dredge spoil dumping	No	Assess [g]	Assess
Commercial tour operators – fishing	No	Yes	Yes
Commercial tour operators – non-extractive (e.g. wildlife viewing)	Yes	Yes	Yes
Wildlife/fish feeding [h]	No	No	No
Recreational			
Boating (motorised and non-motorised)	Yes	Yes	Yes
Nature appreciation and wildlife viewing	Yes	Yes	Yes
Shore and boat fishing	No	Yes	Yes
Other use			
Vessel transit	Yes	Yes	Yes
Navigation aids	Yes	Yes	Yes
Research and monitoring	Yes	Yes	Yes
Anchoring (soft bottom only)	Yes	Yes	Yes
Sea plane, helicopter and remotely piloted aircraft (drone) launching and landing [i]	Assess	Assess	Assess
Vessel sewage discharge	No	Yes [j]	Yes [j]

Permitted activities provisions

- [a] Seasonal restrictions to vessels such as speed limits may apply in some areas (e.g. Ganbadba Sanctuary Zone) during dugong calving season.
- [b] Customary take is confined to Traditional Owners, subject to the rights and interests provided by the Native Title Act and/or Indigenous Land Use Agreements (ILUAs), or where Traditional Owners have provided consent to another Aboriginal person or group.
- [c] Prawn trawling is restricted in some areas through permanent inshore closures managed by the Department of Fisheries (DoF). The Collier Bay closure restricts prawn trawling within George Water, Doubtful Bay, Walcott Inlet, Secure Bay and the southern extent of Collier Bay (Fletcher, 2014).
- [d] Ground-disturbing mineral and petroleum exploration and development activities include any activity that disturbs the seabed and/or subsoil within the marine park (e.g. drilling).
- [e] Geophysical surveys such as aero-magnetics will be assessed by the Department of Mines and Petroleum.
- [f] Ship loading and other mining related infrastructure such as cabling and pipelines will only be assessed for the Ganbadba Sanctuary Zone, Traverse Island Special Purpose Zone (recreation and conservation) and general use areas. Should mining infrastructure be approved, consideration may be given to either amending the boundaries of the zone or excising the area from the marine park. Mining infrastructure is not permitted in any other sanctuary or special purpose zones.
- [g] Activities permitted if activity is shown to be compatible with the specified purpose of the zone. Only small scale dredging for the purpose of public access and safety will be considered.
- [h] Commercial operators seeking to conduct wildlife or fish feeding activities will require lawful authority under their commercial operator's licence provided by Parks and Wildlife and will need to comply with regulations under the *Fish Resources Management Act 1994* (FRM Act).
- [i] Lawful authority must be obtained to launch, land or touchdown in an aircraft on CALM Act lands and waters.
- [j] Impacts will be monitored and managed in accordance with applicable legislation.

4.3 Management strategies

Management strategies aim to support the strategic and management objectives of the marine parks, and are complemented by a set of performance measures and targets. The management strategies have been developed to address management challenges such as current and future pressures on marine park values, data deficiencies and safety concerns.

Operational plans will be developed which prioritise management strategies and determine timeframes for their implementation. Operational responsibility for implementing the management strategies will primarily be coordinated by the Parks and Wildlife West Kimberley District Office under the guidance of the JMB. Where other agencies are listed in brackets after the strategy they may also be required to provide support, as necessary, to implement the action within the scope of their statutory responsibilities. Where an agency or body is required to take a lead role in strategy implementation, their name (or acronym) is in bold. For all other strategies, Parks and Wildlife is the lead agency.

A Memorandum of Understanding (MoU) has been developed between the Minister for Environment and the Minister for Fisheries to establish principles of cooperation and integration between Parks and Wildlife and DoF in the management of the State's marine parks and reserves. Collaborative operational plans will be developed to ensure efficient and effective delivery of a range of programs where there is shared agency responsibility or mutual interest, including education, compliance, research and monitoring.

Connection to country – cultural and heritage values

Saltwater tribes have a responsibility to care for the country of their ancestors. They are linked to the land and their ancestors through their belief systems and have a collective system of land ownership.

North Kimberley Saltwater Country Steering Committee 2010



Dambimangari Ranger on country with a flatback turtle hatchling. Photo – Daniel Barrow/Parks and Wildlife

Strategic objective: to protect and conserve the value of the land to the culture and heritage of Dambimangari people

Cultural connection, traditional knowledge and customary use; cultural laws and protocols; habitats and communities, plants and animals

Dambimangari people are strongly connected to saltwater country through their law, culture and the spirits that created country. This connection is an important part of their everyday existence. Under traditional law Dambimangari people must look after plants, animals, people and country to ensure they are healthy (Dambimangari Aboriginal Corporation 2012).

For Dambimangari people, undertaking customary activities on their traditional lands is central to maintaining the culture and heritage of the land. Customary activities are permitted in the marine parks and include fishing and hunting for food and preparing medicine. These activities enable the maintenance of traditional relationships with the land and water; sharing of knowledge; engagement in traditional practices; and accessing and looking after places of significance.

Management objective: To uphold Traditional Owner connection to country including spiritual and cultural values and customary use

Key management challenges

- Ensuring traditional knowledge informs adaptive management.
- Ensuring activities in the marine parks do not significantly affect the rights of Dambimangari Traditional Owners to have ongoing cultural connection to country.

Management considerations

- Observe cultural and heritage values, cultural knowledge and cultural laws and protocols (where appropriate) in decision making.
- Management of the marine parks will complement the Healthy Country Plan.
- The maintenance of knowledge transfer within the Dambimangari community.
- The CALM Act provides for the protection and conservation of the value of the land (and sea) to the culture and heritage of Aboriginal people and enables joint management of conservation estate with traditional custodians.
- The CALM Act and Wildlife Conservation Act also enables Aboriginal people to continue to carry out customary activities including the right to hunt, fish, gather and use resources for personal, domestic and communal needs. Customary activities are managed in accordance with Parks and Wildlife Policy No. 86 *Aboriginal customary activities* and DoF's customary fishing policy. (http://www.fish.wa.gov.au/Documents/customary_fishing/customary_fishing_policy.pdf).

Management strategies

1. Develop and implement cultural awareness communication tools, emphasising the importance of cultural and heritage values for both Traditional Owners and the wider community.
2. Undertake a five-year review of the adequacy of management arrangements, including the zoning scheme, for the marine parks.
3. Develop cultural awareness training material and implement training for government employees and/or contractors working in the parks.
4. Support Dambimangari people to undertake cultural planning to record the culture and heritage values of the parks and inform management.
5. Support Dambimangari people to visit their saltwater country with younger generations to support cross-generational exchange of information and maintain connection to country within the Dambimangari community.
6. Support and undertake research to better understand Dambimangari traditional knowledge applicable to the marine parks.
7. Where appropriate, ensure marine park management is consistent with cultural laws and protocols.
8. Support Dambimangari people to continue to carry out customary activities, including customary fishing and hunting, in the marine parks. [DoF]
9. Support Dambimangari people to develop and apply longer term management targets and performance measures for Aboriginal culture and heritage values.
10. Design and implement monitoring programs to assess the effectiveness of the zoning scheme and management arrangements for protection of cultural heritage values (see *Research and Monitoring*).
11. Support Dambimangari people to manage sustainable populations of marine wildlife (e.g. turtles, dugongs, sharks, rays etc). [DOF – in relation to sharks and rays].
12. Continue to support the Dambimangari Ranger Group and help train and mentor new rangers.
13. Identify opportunities to provide employment, business and training for Dambimangari people on country to help maintain connection to country.

Key performance indicator

Cultural connection, traditional knowledge and customary use; cultural laws and protocols

Target	Interim targets ¹⁰ : <ol style="list-style-type: none"> 1. Dambimangari Traditional Owners are satisfied that they have been able to maintain connection to country and undertake their role as protectors and managers of country and culture in the context of the jointly managed marine parks. 2. Dambimangari Traditional Owners are satisfied that traditional ecological knowledge is integrated into management of the marine parks. 3. Dambimangari Traditional Owners are satisfied that they have been able to continue customary practices and benefit from country consistent with the purpose of the proposed marine parks.
Performance measure	Interim performance measures ¹⁰ : <ol style="list-style-type: none"> 1. Dambimangari Traditional Owner level of satisfaction that they have been able to maintain connection to country and undertake their role as protectors and managers of country and culture in the context of the jointly managed marine parks. 2. Dambimangari Traditional Owner level of satisfaction that traditional ecological knowledge is integrated into management of the marine parks. 3. Dambimangari Traditional Owner level of satisfaction that they have been able to continue customary practices and benefit from country consistent with the purpose of the proposed marine parks.
Reporting	Every two years

¹⁰ Interim targets and performance measures will be reviewed and longer term targets and measures developed with Dambimangari Traditional Owners.



Dambimangari Ranger Edmund Jungine and Parks and Wildlife senior marine ranger Daniel Barrow measuring the shell of a green turtle.
Photo – Parks and Wildlife

Our rangers have to look after country both ways – the traditional way as our ancestors taught us and the western way. Our rangers need our traditional knowledge to know when to look for particular animals on country and to find their way around country.

Dambimangari Aboriginal Corporation 2012

Cultural sites

For Dambimangari people, whose traditional saltwater country encompasses the marine parks, the land and sea as a whole holds cultural significance. Some cultural sites are more readily identifiable within Dambimangari country and include rock art sites, hunting places, stone arrangements, important camping *galaab* (beaches) and ancient occupation sites. Many of these sites require protection while in some cases cultural sites offer a signature experience to visitors to the marine parks.

When we say cultural sites, we are talking about *Wandjina* and *Wunggurr* sites, our rock art sites, stone arrangements, burial sites and important camping beaches where our old people rested when they were travelling through saltwater country.

Dambimangari Aboriginal Corporation 2012



Stone arrangement. Photo – Kim Doohan/John Bornman and DAC

Management objective: To uphold Traditional Owner connection to country including spiritual and cultural values and customary use

Key management challenges

- Maintaining the quality of cultural and heritage sites to ensure they are not degraded by high visitation, accidental damage or vandalism.
- Ensuring culturally appropriate visitation. A lack of awareness and understanding of cultural etiquette can result in culturally inappropriate behaviour such as building of stone arrangements.
- Ensuring information shared by the tourism industry and others is culturally appropriate and factually correct. This includes the taking and sharing of photographs.

Management considerations

- All Aboriginal sites whether registered or not are protected under the *Aboriginal Heritage Act 1972* and it is an offence to alter an Aboriginal site unless permission is granted in accordance with the Act.
- Much of the access to adjacent exclusive native title areas or ALT reserves is through the marine parks, and this should be considered during development of communication material and when setting commercial operator licence conditions. Visitors will need to seek permission from Traditional Owners and/or the ALT prior to entering adjacent exclusive native title areas.

Management strategies

1. Develop and implement tools to measure and monitor effects of visitor and management activities on cultural heritage values and sites and implement strategies to address issues where appropriate.
2. In collaboration with Dambimangari Traditional Owners, apply commercial operator licence conditions to ensure culturally sensitive and appropriate visitation to cultural heritage sites.
3. Regulate access to sites that Traditional Owners consider unsuitable for visitation (through commercial operator licences, by regulation or other mechanisms as relevant), including restrictions on foot access to intertidal reefs (e.g. Kingfisher Islands, Talbot Bay).
4. Work with Dambimangari people and commercial operators to promote culturally appropriate visitation.
5. Where culturally appropriate, ensure visitors are aware of cultural laws and protocols.

Key performance indicators

Culturally significant sites

Target	Interim targets ¹⁰ : 1. No new signs of physical disturbance to specified sites and areas within three years of the release of the plan. 2. All sites and areas which have cultural and gender access restrictions are communicated and observed.
Performance measure	Interim performance measure ¹⁰ : Condition of culturally significant sites
Reporting	Annually

Caring for country – natural values

Strategic objective: to protect and conserve biodiversity and ecological integrity

Habitats and communities

Protecting and conserving habitats is important to maintain biodiversity and ecological integrity. Habitats in the marine parks include both geomorphic habitats such as mudflats and biological habitats such as *jindim* (mangroves). The diverse range of habitats in the marine parks play an important role in the functioning of marine ecosystems including primary production, nutrient cycling, maintaining water quality, as nursery areas, and as food and shelter for a wide range of marine animals. Many habitats and communities in the marine parks are culturally important to Dambimangari people.

Management objective : To protect and conserve ecologically important habitats and communities

Key management challenges

- Improving baseline information on marine ecosystems, habitats and communities, biodiversity and the human-induced pressures on them.
- Understanding, and where possible adapting to, the potential impacts of climate change on habitats and communities. For example increased sea surface temperature, coral bleaching events, sea level rise, ocean acidification, changes in rainfall and weather patterns (e.g. storm events), changes in oceanography (e.g. wave size and ocean currents) and changes in distributions of marine species (Department of Climate Change and Energy Efficiency, 2007).
- Planning for and mitigating potential risks from:
 - marine pests (introduced or native)
 - increased nutrients e.g. sewage discharge and land based run-off
 - pollution, including major events (e.g. oil spills), chronic pollution and toxicants (e.g. anti-fouling agents, diesel or other chemicals and bilge water) and industrial waste.
- Mitigating impacts of physical disturbance from vessels (e.g. anchoring, propeller scour, wake/wash) and people or animals (e.g. trampling and reef walking).
- Minimising the potential impacts of recreational and commercial fishing and pearling activities (see *Visitor attractions* and *Commercial fishing and pearling* sections for related management strategies).
- Minimising the potential impacts of any development or mining related infrastructure in and around the marine parks (see *Mineral exploration and development* section for related management strategies).

Management considerations

- Ecologically important habitats are protected by one or a combination of the Wildlife Conservation Act, FRM Act, EPBC Act and *Environmental Protection Act 1968* (EP Act).
- Any environmental impact assessments for proposed developments within or near the marine parks will generally be referred to Parks and Wildlife, the Commission and JMB for advice.
- The *National Climate Change Adaptation Framework* aims to support decision makers across all scales to understand and incorporate climate change into policy and management decisions.
- The Australian Quarantine and Inspection Service has requirements for the handling and treatment of ballast water in ships entering Australian waters to reduce the risk of introducing marine pests (Department of Agriculture, Fisheries and Forestry, 2011).
- The *National Water Quality Management Strategy* provides a nationally consistent approach for water quality management, implemented in WA through a state implementation framework. Development and infrastructure proposals with the potential to significantly affect water quality may be subject to assessment and/or regulation under the EP Act.
- In 2014 the Environmental Protection Authority (EPA) drafted an *Environmental Assessment Guideline for Protecting the Quality of Western Australia's Marine Environment*.

Management strategies

1. Implement the zoning scheme for the marine parks (refer to *Zoning and permitted uses*). [DoF]
2. Undertake a five-year review of the adequacy of management arrangements, including the zoning scheme, for the marine parks.
3. Prepare and implement a coordinated and prioritised research plan (taking into consideration research being conducted through the Western Australian Marine Science Institution or WAMSI) [DoF].
4. As part of the research plan, conduct research to improve knowledge and understanding of habitats and communities in the marine parks which will include:
 - habitat mapping, biological surveys, marine fauna ecology and associated biodiversity assessments. [WAM, DoF – in relation to important habitat for fish, sharks and rays]
 - understanding key ecological processes, such as connectivity and terrestrial-marine linkages.
 - assessing the extent of human usage and potential impacts on biodiversity
 - ecological implications and potential adaptations to climate change
 - establishing baselines and monitoring water and sediment quality, particularly in high visitation areas.
5. Ensure outcomes from the research plan are used to prepare and implement a coordinated and prioritised long-term monitoring plan to measure the condition of the marine parks' ecological values in relation to pressures and management actions (see *Research and monitoring* section for more details). [DoF]
6. Regulate foot access to intertidal areas considered unsuitable for visitation e.g. intertidal coral reefs (through commercial operator licences, by regulation or other mechanisms as relevant).
7. Where possible, work with neighbouring land and water managers to reduce environmental impacts on marine park values such as regulating sewage discharge.
8. Support international and national climate change initiatives and where possible develop regional and local level adaptive management responses for the protection of park values, informed by research and monitoring outcomes.
9. Develop and implement a marine pest early warning and monitoring program [DoF].

Key performance indicators	
Wooddooroo (coral reef) communities	
Target	No change in <i>wooddooroo</i> (coral reef) community composition or loss of cover relative to baseline levels due to human activities in the marine parks.
Performance measure	1. Community composition 2. Live coral cover
Reporting	Every two years
Jindim (mangrove) and galaw (saltmarsh) communities	
Target	No change in community composition or loss of extent and density of <i>jindim</i> (mangrove) and <i>galaw</i> (saltmarsh) communities as a result of human activities in the marine parks.
Performance measure	1. Community composition 2. Extent 3. Density
Reporting	Every five years
Joodam (seagrass) and lanjam (macroalgae) communities	
Target	No loss of distribution or community composition of <i>joodam</i> (seagrass) and <i>lanjam</i> (macroalgae) relative to baseline levels due to human activities in the marine parks.
Performance measure	1. Community composition 2. Distribution.
Reporting	Every five years

Marine fauna including species of special conservation interest

Species of special conservation interest include species that are protected under State or Commonwealth legislation, species listed as having special conservation status (e.g. threatened or vulnerable) and/or species which are extracted for human use. Many marine animals such as whales and turtles are a drawcard for visitors to the marine parks and are culturally significant to Dambimangari people.

Rubbish in the sea is a big threat and many *jurluwarra* may mistakenly eat a plastic bag thinking it is a jellyfish. *Jurluwarra* may get caught in ghost nets and drown. We need to develop a monitoring program for *jurluwarra* to see how they are affected by climate change. They feed on reefs and seagrass meadows which are very sensitive to changes in the environment...we must make sure that our saltwater country is not polluted to ensure *munumbanay* and *jigeedany* stay healthy. Visitors to our country must be reminded to be responsible and not leave their rubbish behind.

Dambimangari Aboriginal Corporation 2012.



Indo-Pacific bottlenose dolphin. Photo – Simon Allen

Management objective: To protect marine fauna including species of special conservation interest

Key management challenges

- Improving baseline data on marine wildlife.
- Minimising disturbance to marine mammals and other wildlife (e.g. through wildlife watching, light pollution impacting turtles and noise).
- Minimising physical injury and fatalities to marine mammals and other wildlife (e.g. from boat strike, by-catch or deliberate harm).
- Reducing litter and marine debris to reduce likelihood of ingestion and entanglement.
- Understanding, and where possible adapting to, the potential impacts of climate change on marine fauna including species of conservation interest.
- Minimising the potential impacts of recreational and commercial fishing and pearling activities (see *Visitor attractions* and *Commercial fishing and pearling* sections for related management strategies).
- Planning for and mitigating the potential risk of pollution including major pollution events (e.g. oil spills) and chronic pollution and toxicants (e.g. anti-fouling agents, diesel or other chemicals and bilge water) (see *Habitats and Communities* section for related management strategies).
- Minimising the potential impacts of any development or mining related infrastructure in and around the marine parks (see *Mineral exploration and development* section for related management strategies).

Management considerations

- Many species of marine fauna are protected by one or a combination of the Wildlife Conservation Act, FRM Act, EPBC Act and EP Act.
- Management strategies should be consistent with and support international, bilateral and regional agreements including those for seabirds, shorebirds and other migratory species, dugongs, turtles, and trade in endangered species.
- The *Western Australian Oiled Wildlife Response Plan* sets out the minimum standard required for an oiled wildlife response in Western Australian State waters.
- Management of the marine parks should be consistent with existing policies, regulations and guidelines relating to wildlife interactions (e.g. fisheries regulations prohibiting shark tourism activities).
- Relevant instruments and conservation initiatives for high priority values include *WA Marine Turtle Strategic Conservation Plan 2014-2021*, *National Plan of Action for the Conservation and Management of Sharks 2012 Shark-plan 2* and *Recovery Plan for Sawfish and River Sharks*.

Management strategies

1. Consider the need for temporary restrictions e.g. speed limits and/or additional measures where necessary to protect threatened species, ecological communities or a natural feature. [DoT]
2. As part of the research plan conduct research and integrate indigenous knowledge to improve knowledge and understanding of:
 - the abundance, distribution and natural variability (spatial and temporal patterns) of marine fauna including threatened and protected species
 - potential disturbance to threatened, vulnerable and migratory species in the marine park (including from feral animals)
 - how climate change may impact on marine fauna including threatened, vulnerable and migratory species. [DoF in relation to protected fish, sharks and rays]
3. Ensure park users, including commercial operators, are aware of and comply with relevant legislation for the protection of marine mammal and other wildlife interaction policies and guidelines.
4. Where required, provide support in the development and implementation of Parks and Wildlife's maritime incident response plans, which support the *State Emergency Management Plan for Marine Oil Pollution*. [DoT]
5. Support community based monitoring programs of marine fauna in the marine parks.
6. Ensure records are kept of any stranded marine fauna.
7. As part of on-country work, patrol the shoreline and waters of the marine park for litter and marine debris and remove and record as necessary.
8. Investigate mechanisms to work with commercial operators engaged in wildlife viewing to collect basic information e.g. position and behaviour to assist with research and monitoring.

Key performance indicator

Jalawadda (turtles)

Target	No loss of abundance of nesting <i>jalawadda</i> (turtles) or breeding success as a result of human activities or feral animal predation in the marine parks ¹¹ .
Performance measure	Abundance
Reporting	Every five years

Walyn (dugongs)

Target	No loss of <i>walyn</i> (dugong) abundance and health as a result of human activities in the marine parks ¹¹ .
Performance measure	1. Abundance 2. Number of injuries and mortalities (e.g. due to boat strike)
Reporting	Every five years

¹¹ Excludes loss as a result of sustainable customary take.

Key performance indicator	
Sharks and rays	
Target	No loss in presence and abundance of species of conservation concern (e.g. sawfish) as a result of human activities in the marine parks.
Performance measure	1. Presence and abundance of species of conservation concern
Reporting	Every five years
Jigeedany (dolphins)	
Target	No loss of <i>jigeedany</i> (dolphin) abundance and diversity as a result of human activities in the marine parks.
Performance measure	1. Abundance 2. Diversity
Reporting	Every five years
Goiyoiya (estuarine crocodiles)	
Target	No loss in abundance of <i>goiyoiya</i> (estuarine crocodiles) as a result of human activities in the marine parks.
Performance measure	1. Abundance
Reporting	Every five years
Jaya (finfish)	
Target	All zones – No loss of <i>jaya</i> (finfish) diversity as a result of human activities in the marine parks. Sanctuary zones – No change in distribution, loss of abundance or change in size composition of <i>jaya</i> (finfish) species relative to baseline levels due to human activities in the marine park ¹¹ . Special purpose zones (recreation and conservation) and general use zones ; 1. No loss of non-targeted <i>jaya</i> (finfish) abundance as a result of human activities within the marine park. 2. Management targets for targeted <i>jaya</i> (finfish) species to be determined in consultation with DoF (in its role as the lead agency for managing fisheries), the community and stakeholders.
Performance measure	1. Community composition 2. Abundance
Reporting	Every five years

People on country – recreation and tourism values

Strategic objective: To allow recreation, tourism and community use for the appreciation of the parks' landscape, natural and cultural heritage values

Visitor attractions – nature based recreation and tourism; cultural heritage, recreational fishing; remote seascapes; maritime and European heritage

Recreation and tourism allows people to experience the parks, develop an appreciation of their values and support conservation outcomes. Currently people either visit the area independently by private vessel or through tourism and other commercial operators on vessels or seaplanes. Visitation to the Kimberley has increased significantly in the past 10 years and is predicted to continue to increase with the continued development of the expedition cruise industry and the sealing of the road to Cape Leveque. People generally visit the parks to appreciate the remote seascapes, watch wildlife and to enjoy sport and game fishing. The major attraction is the spectacular *Garaanngaddim* (Horizontal Falls) which offers a unique experience whether viewed from the air or on board a vessel.



Boating in Cyclone Creek. Photo – Parks and Wildlife

Management objective: To ensure that recreation and tourism activities are compatible with the outstanding cultural and natural values

Key management challenges

- Ensuring tourism activities do not adversely affect cultural, natural and other commercial, recreational and tourism values.
- Maintaining the quality of the recreational fishing experience.
- Maintaining the area's remote seascapes.
- Ensuring that park users understand the permission requirements for accessing exclusive native title areas adjacent to, but accessed through the marine parks. This includes operators of commercial and recreational vessels, helicopters, airplanes and the use of remotely piloted aircraft (drones).

Management considerations

- Recreational fishing in the marine parks will continue to be managed by DoF through licencing and bag and size limits. DoF has released a code of conduct for recreational fishing in the Kimberley region.
- The CALM Act and CALM Regulations require commercial businesses operating in marine parks and reserves to have a commercial operations licence.
- Commercial operators must abide by the conditions outlined in the Commercial Operator Handbook.
- Recreation and tourism are managed in accordance with Parks and Wildlife Policy No. 18 – *Recreation, tourism and visitor services*.
- Cultural heritage sites are protected under the *Heritage of Western Australia Act 1990* and cultural values listed in the National Heritage Listing are protected under the EPBC Act.
- Relevant legislation, policies and guidelines supporting the equitable participation of people with disabilities.
- Shipwrecks are either protected under the *Historic Shipwrecks Act 1976* or *Maritime Archaeology Act 1973*.
- Parks and Wildlife Policy No. 34 *Visual resource management on lands and waters managed by CALM* helps to ensure that uses and activities are planned and implemented so as to complement rather than detract from the inherent visual qualities of the environment.

Management strategies

1. Promote opportunities for sustainable recreation and tourism, including the provision of visitor facilities if required.
2. Educate recreational fishers on the zoning scheme and any restrictions that may apply to their activities in the marine parks. **[DoF]**
3. Conduct research and monitoring to determine if ecosystem effects from recreational fishing occur in the marine parks and undertake adaptive management actions if required. **[DoF]**
4. Investigate whether populations of recreationally targeted species are sustainable in the marine parks and undertake adaptive management actions if required. **[DoF]**
5. Monitor recreational fishing catch and effort in the marine parks and report the results to Parks and Wildlife and the Commission for the periodic reviews of the implementation of the management plan. **[DoF]**
6. Provide information to enhance visitor enjoyment of, and reduce impacts on, European heritage and other maritime sites if required.
7. Consider the quality of the remote seascapes of the marine parks in site planning and assessment of development proposals.



Expedition cruise boat tourism in Dambimangari sea country. Photo – Parks and Wildlife

Key performance indicator

Nature based recreation and tourism

Target	Visitor satisfaction is 85% or above.
Performance measure	Visitor satisfaction (e.g. experiences and expectations) as determined by the Visitor Monitoring Program ¹² .
Reporting	Every five years

¹² See parks.dpaw.wa.gov.au/for-business/dpaw-visitor-monitoring-program for more information.

Visitor safety

The remoteness of the parks, the strong tides and the chance of tropical cyclones pose risks to visitors who may be inexperienced in or unprepared for such conditions. *Garaanngaddim* (the Horizontal Falls) can create treacherous conditions dangerous to navigate. Boats have overturned and people have had to be rescued when trying to ride the falls on insufficient vessels or when unfamiliar with the conditions. In the peak tourism season the large number of vessels and seaplanes which visit the confined area at any one time creates an additional navigational hazard. Seaplanes require calm water to land, and wake and wash from vessels can create unsafe conditions.



Garaanngaddim (the Horizontal Falls). Photo – Cathy Zwick

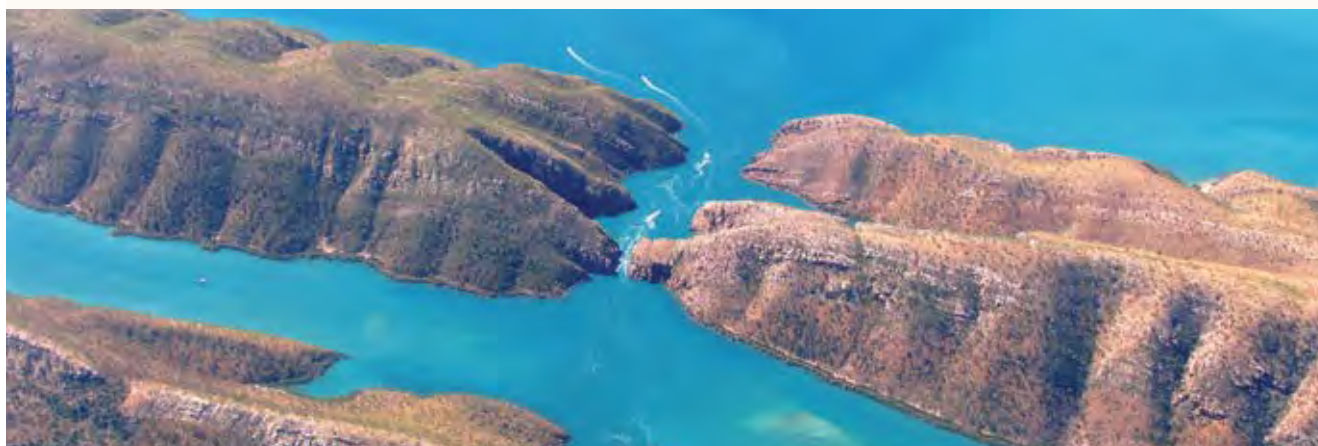
Dambimangari country sees many visitors each year. A visitor is anyone who is not a Dambimangari Traditional Owner. Visitors may be tourists, locals fishing along the coastline, mining people, government workers and many more. Dambimangari Traditional Owners often don't know them and the country does not know them either. We are responsible for the safety of visitors and bear the consequences of accidents and disturbance of our cultural sites. When visitors come, we talk to country to introduce them and smoke them to keep bad spirits away.

Dambimangari Aboriginal Corporation 2012

Dambimangari people welcome visitors to their traditional country, including visiting the *Garaanngaddim* (Horizontal Falls), however, it is part of Dambimangari traditional cultural laws and protocols not to travel through the falls when the tides are rushing through. To help promote safe and culturally appropriate visitation, Dambimangari Traditional Owners have developed a code of conduct for visitors to Dambimangari country (www.dambimangari.com.au/code-conduct).

This is the *Woongudd* (snake) itself... Dambimangari people recognise that the area is important for tourists, but for Traditional Owners the respectful time to travel through the falls is in neap tides – calm water time.

Dambimangari Aboriginal Corporation pers. comm. 2015



Garaanngaddim (the Horizontal Falls) from the air. Photo – Tim Willing

Management objective: To minimise risks to visitors, and encourage appropriate visitor behaviour

Key management challenges

- Ensuring visitors are aware of the risks in the marine parks e.g. the presence of *goiyoia* (estuarine crocodiles) and navigational risks.
- Ensuring the safety of visitors to the marine parks especially in high risk areas such as around *Garaanngaddim* (Horizontal Falls).

Management considerations

- Parks and Wildlife and Dambimangari Traditional Owners have a shared concern for visitor safety. Under traditional law, Dambimangari are responsible for the safety and wellbeing of visitors to their country.
- Risks to visitors are managed under Parks and Wildlife policy No 53 *Visitor Risk Management*.
- Parks and Wildlife Policy No. 59 provides direction on the control and management of moorings within marine parks and reserves.
- The Australian Maritime Safety Authority (AMSA) is responsible for ensuring domestic commercial vessels comply with the requirements of the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012*.
- DoT is responsible for installing and maintaining navigation aids and other boating safety measures.

Management strategies

1. Prepare educational and interpretive material to:
 - increase visitor enjoyment and safety
 - reduce impacts on sites
 - ensure visitors are aware of cultural laws and protocols
 - encourage appropriate behaviour including compliance with the zoning scheme.
2. Conduct periodic visitor risk assessments in the marine parks as required and mitigate identified issues. [AMSA, DoT, DoF]
3. Ensure maritime safety guidelines are followed. [AMSA, DoT]
4. Investigate the need for additional mechanisms to ensure the safety of seaplanes and vessels operating within the marine parks. [AMSA, DoT]
5. Work with stakeholders to maintain ongoing, safe access for visitors to *Garaanngaddim* (the Horizontal Falls). [DoF, DoT]
6. Assess the need for a mooring and anchoring plan and prepare and implement if necessary.
7. Ensure that monitoring programs (see *Research and monitoring*) assess the effectiveness of the parks' management arrangements for visitor safety and adapt management strategies as required.

Key performance indicator

Nature based recreation and tourism

Target	The total number of serious visitor safety incidents ¹³ per capita decreases compared to baseline levels.
Performance measure	Number of visitor safety incidents reported to Parks and Wildlife and/or the JMB.
Reporting	Every five years

¹³ Serious incidents are those requiring medical treatment.

Education and interpretation

Education and interpretation programs will increase understanding of the values of the marine parks, leading to responsible use and enhanced protection. As most visitors arrive aboard commercial vessels or planes, there is an opportunity to deliver key messages via commercial operators. While most visitors to marine parks comply with management regulations when they understand why strategies are in place, managers need to monitor the level of compliance and take action where necessary regarding inappropriate or illegal behaviour.

Management objective: To increase community understanding and appreciation of the marine parks' values and support for management arrangements

Key management challenges

- Ensuring up to date educational material is accessible to a wide range of visitors.
- Maximising compliance, self-regulation and voluntary peer surveillance, given that the area's remoteness and limited access reduces opportunities for patrols.

Management considerations

- Education and compliance programs will be collaboratively established with DoF.
- An adequate level of 'on water' presence by authorised officers, Dambimangari Rangers and DoF officers will be necessary.

Management strategies

1. Develop a communication program which includes:
 - educational and interpretive information on ecological and cultural values
 - the zoning and other management arrangements
 - the condition of the parks
 - safety and any relevant regulations, policies and guidelines relating to management. [DoF]
2. Implement the communication plan through educational and interpretive materials and presentations to the community, commercial operators, recreational clubs and businesses with an interest in the marine parks. [DoF]
3. Develop and implement a collaborative education and compliance program to maximise compliance with the management plan and to encourage tour operators, visitors on private vessels and commercial fishing, pearling and mining operators to report any inappropriate or unlawful activity. [DoF]
4. Facilitate cross-authorisation of enforcement officers as appropriate. [DoF, DoT]
5. Monitor compliance statistics and adapt management strategies to address any non-compliance issues. [DoF]



Mangrove survey in Dambimangari sea country. Photo – Daniel Barrow/Parks and Wildlife

Using resources on country

Strategic objective: To allow for sustainable resource use

Commercial fishing and pearling

Commercial fishing is an important and economically significant industry in the marine parks and provides employment opportunities and fresh fish to regional towns. Key fisheries operating in the marine parks include the Kimberley Gillnet and Barramundi Fishery, and Kimberley Prawn Managed Fishery. The Mackerel Managed Fishery also operates in the North Lalang-garram Marine Park. There is a pearling lease in the Lalang-garram / Horizontal Falls Marine Park in *Ganbadba* (Talbot Bay) on the northern side of the *Garaanngaddim* (Horizontal Falls).



Barramundi. Photo – Department of Fisheries

Management objective: To recognise and allow for commercial fishing and pearling operations whilst maintaining the cultural and natural values of the marine parks

Key management challenges

- Ensuring commercial fishers are aware of and comply with zoning and management arrangements.
- Improving baseline information on any potential trophic and/or ecosystem effects caused through commercial fishing in the marine parks.
- Ensuring that fishers conduct commercial fishing activities in a culturally sensitive manner.
- Improving baseline information on potential by-catch of non-target species through commercial fishing activities in the marine parks.
- Improving baseline information on commercial fishing interactions with marine mammals and other fauna.

Management considerations

- Commercial fishing and the pearling industry is managed and regulated by DoF under the FRM Act and *Pearling Act 1990*.
- Commercial fishing is permitted in general use zones. Commercial fishing can occur in special purpose zones with the exception of commercial prawn trawling and gillnetting.
- The pearling lease in front of *Garaanngaddim* (the Horizontal Falls) is a non-exclusive use area. Other users can move through the lease provided they do not interfere with pearling gear or pearl oysters.

Management strategies

1. Educate commercial fishers on the zoning scheme and any restrictions that may apply to their activities in the marine parks. [DoF]
2. Work with commercial fishers through peak stakeholder bodies to ensure commercial fishing activities are conducted in a culturally sensitive manner. [DoF]
3. Conduct research and monitoring to determine if ecosystem effects from commercial fishing occur in the marine parks and undertake adaptive management actions if required. [DoF]
4. Monitor commercial fishing catch and effort in the marine parks to inform periodic reviews of the implementation of the management plan. [DoF]
5. Investigate the extent and significance of interactions between commercial fishing and marine mammals and other protected species and address as required. [DoF]
6. Work with the pearling industry to ensure continued access through the *Garaanngaddim* (Horizontal Falls) for recreational and commercial vessels. [DoF, DoT]

Mineral exploration and development

Some islands and coastal areas adjacent to the Lalang-garram / Horizontal Falls Marine Park are rich in mineral deposits such as iron-ore and copper. Mining tenements (live and pending) overlay parts of the marine park surrounding these areas. There are iron-ore mines on Koolan and Cockatoo islands, outside the Lalang-garram / Horizontal Falls Marine Park.

Management objective: To ensure industry and associated activities are managed in a manner consistent with the objectives of the marine parks

Key management challenges

- Ensuring that mineral exploration and developments in the area are assessed and managed in recognition of marine park values.

Management considerations

- Mineral, petroleum and pipeline activities are regulated by the Department of Mines and Petroleum (DMP) under the *Mining Act 1978*, *Offshore Minerals Act 2003*, the *Petroleum and Geothermal Energy Resources Act 1967* and *Petroleum Pipelines Act 1969*.
- Environmental risks associated with shipping and ports are managed through a range of state and national legislation, and international agreements.
- DoT and Department of Planning are responsible for planning and development of coastal infrastructure, while port authorities are autonomous bodies operating under the *Port Authorities Act 1999*. This act requires port authorities to protect the environment of the port, and minimise the impact of port activities on that environment.
- During the life of the management plan there may be proposals to install or construct infrastructure associated with mining, pearling, tourism or public recreation. Mining, industrial and development proposals, including exploration activities may be subject to an environmental impact assessment by the Environmental Protection Authority under the EP Act.

Management strategies

1. Provide formal advice to the Commission and EPA for the environmental assessment of proposed mineral, petroleum and pipeline activities in and adjacent to the marine park. [DMP, DoF, Office of the Environmental Protection Authority (OEPA)]
2. Provide advice on the assessment, setting of conditions, and monitoring and reporting requirements for mineral, petroleum and pipeline activities consistent with management objectives and management targets for values of the marine parks. [DMP, OEPA]
3. Where mining, petroleum and pipeline activities have been approved, allow access for mining, petroleum and pipeline activities (e.g. ship loading facilities) within the Ganbadba Sanctuary Zone, Traverse Island Special Purpose Zone (recreation and conservation) and general use zones where required. [DMP, DoT]

Understanding country – research and monitoring

Strategic objective: to increase understanding of the values of the parks through research and monitoring to guide, adapt and improve management

Research and monitoring

The marine parks offer excellent opportunities for ecological, anthropological and archaeological research. Cultural understanding and scientific knowledge of values are required to ensure the marine parks are effectively managed. Long term monitoring of the condition of the marine environment and the pressures that impact that condition is also essential to evaluate management effectiveness and inform an adaptive management approach. Parks and Wildlife is progressively implementing the Western Australian Marine Monitoring Program (WAMMP), a systematic marine monitoring program in the State’s marine parks and reserves, to improve understanding of management effectiveness, and to inform future research, monitoring and decision making.



Parks and Wildlife and Dambimangari Rangers installing base and datalogger of WAMSI weather station in Dambimangari country. Photo – Michael Hourn/Parks and Wildlife

Management objective: To successfully implement coordinated research and monitoring plans

Key management challenges

- Integrating traditional ecological knowledge and contemporary scientific knowledge and research methods and ensuring research is carried out in a culturally appropriate manner.
- Ensuring research findings contribute to improved management outcomes.

Management considerations

- Research partnerships between scientists and Dambimangari Traditional Owners should be accompanied by a research agreement.
- WAMSI's Kimberley Marine Research Program will provide scientific information to support the effective management of marine environments in the Kimberley, including marine parks.
- All research undertaken within a marine park requires an appropriate research permit and approvals which are issued under the CALM Act, Wildlife Conservation Act, FRM Act, EPBC Act and/or the *WA Animal Welfare Act 2003*.
- Research within the parks needs to take into account Indigenous Cultural Intellectual Property and World Intellectual Property Organisation principles.

Management strategies

1. Develop and implement protocols to ensure research is culturally appropriate and that information shared by Dambimangari Traditional Owners is used in a culturally appropriate manner.
2. Investigate opportunities and develop a process to integrate Dambimangari traditional ecological knowledge with contemporary research and monitoring, where appropriate.
3. Develop a research plan for the marine parks (see *Natural values* for details). [DoF]
4. Develop and implement a coordinated and prioritised monitoring program for the marine parks that:
 - assesses the effectiveness of the zoning scheme and management arrangements for protection of the parks' values, with a focus on condition, pressure and response indicators and metrics for high priority values
 - assesses the nature, level and potential impacts of pressures (from human activities and external pressures such as climate change), including the provision of early warning of critical changes in pressures on park values
 - provides a better understanding of the dynamic nature of undisturbed marine ecosystems as reference points for comparisons with altered environments
 - uses traditional ecological knowledge and where possible provides capacity building and employment opportunities for Traditional Owners
 - meets Commission requirements for assessing the implementation of the management plan. [DoF]
5. Facilitate knowledge transfer and uptake of research and monitoring findings to adaptive marine park management, planning and policy, and where relevant report on conservation achievements and challenges. [DoF]
6. Identify and communicate high priority research and monitoring projects which address key knowledge gaps to appropriate external organisations and funding bodies.
7. Facilitate or support research and monitoring in the park, including projects by external organisations, by providing assistance where possible. [DoF]
8. Ensure granting and renewal of permits relating to scientific research is consistent with the management plan. [DoF]
9. Provide necessary information and support for assessments of management plan implementation by the Commission. [DoF]
10. Liaise with industry, other government agencies and non-government organisations to access information held on ecological research and monitoring in the area.
11. Provide research, training and monitoring opportunities to rangers and other staff as relevant.

Key performance indicator

Research and monitoring

Performance measure	Research and monitoring plans have been developed and approved by the JMB, and research and monitoring activities, as detailed in each relevant plan, have been implemented.
Target	<ol style="list-style-type: none"> 1. Preparation and implementation of research and monitoring plans 2. Number of current and completed research and monitoring projects 3. Number of values, including high priority values, currently being monitored
Reporting	To be determined

4.4 Performance assessment

Monitoring, evaluation and reporting will investigate the effectiveness of management strategies, determine the progress towards achieving the objectives and targets and identify opportunities for improvement. The WAMMP will assist in understanding the trends in key ecological, cultural and social values, with a focus on high priority values. The WAMMP works within a 'condition-pressure-management' response framework that measures the health of values against management targets. Where required, interim management targets will be developed or further refined to reflect meaningful short-term steps in achieving the longer term management targets and objectives. In addition, the Parks and Wildlife Visitor Monitoring Program collects information and undertakes visitor surveys to assess visitor needs and satisfaction with recreation and tourism facilities and services provided by Parks and Wildlife.

The delivery of the monitoring program will be undertaken by Parks and Wildlife in collaboration with joint management partners, Aboriginal ranger groups, DoF for fisheries related aspects, and other research organisations or community groups where appropriate.

The Commission is the statutory body responsible for periodic assessment of this joint management plan. The Commission will measure the success of this plan in accordance with section 19(1)(g)(iii) of the CALM Act. The JMB, DAC and Parks and Wildlife will provide information from monitoring and other operational programs to the Commission to enable an assessment of the plan's implementation. Monitoring by the Commission will also be informed by healthy country assessments under the Healthy Country Plan. This outcome-based approach provides a robust framework to support adaptive marine park management.



Rocky beach at Walcott Inlet. Photo – Parks and Wildlife



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Appendix: Design principles

Comprehensiveness: The full range of ecosystems and communities (e.g. all of the different habitat types) are represented within the network.

Adequacy: The network includes enough of each component of biodiversity (e.g. enough of each particular habitat type) to allow populations, species and communities associated with each component to remain healthy.

Representativeness: Biodiversity features should be represented across their natural range and variability, for example habitats and communities should be represented across a range of depths and across different wave exposures.

Ecological importance: The protection of ecologically important features such as known nursery, foraging, breeding and calving areas; areas that are unique, unusual or highly productive; and areas that are important for or where known aggregations occur of rare, threatened or protected species.

Connectivity and complementarity: Connectivity includes the way tides, currents and the behaviour of plants and animals combine to connect neighbouring and more widely separated ecosystems in the marine environment (DEH 2009). Complementarity assists with connectivity by connecting protected areas. Complementarity can help increase management effectiveness and provide ecosystem linkages between the land and sea (DEH 2008).

Protect and conserve Aboriginal cultural heritage: The protection of cultural heritage values can involve:

- the protection of culturally important sites or areas such as reefs, beaches and mangrove communities. Important sites may also include important dreaming sites, fish traps, intertidal stone arrangements, increase sites, ceremonial sites and others.
- the protection of areas important for culturally significant species such as turtles, dugongs, whales and dolphins
- providing for ongoing customary activities such as fishing and hunting
- providing consistency (where culturally appropriate) with cultural laws and protocols through zoning and other management arrangements.

Provide for ongoing ecologically sustainable use: the zoning scheme should:

- consider the existing use of the marine environment and the current management arrangements in place
- promote opportunities for recreation and appreciation of the marine environment
- promote opportunities for education and research
- provide for cultural, natural and maritime heritage values
- be designed so that it is easy for users to understand and comply with zoning and management arrangements.

Ngumbree, proposed Lalang-garram / Horizontal Falls Marine Park. Photo – Sarah Bignell/Parks and Wildlife

