



REVIEW OF THE PROPOSED MANAGEMENT PLANS FOR MARINE PARKS IN THE BUCCANEER ARCHIPELAGO AND SURROUNDS

**Submission to the Western Australian
Government planning process**



**CENTRE FOR
CONSERVATION
GEOGRAPHY**

Strategic Tools and Conservation Innovation

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CENTRE FOR CONSERVATION GEOGRAPHY

The Centre for Conservation Geography (conservationgeography.org) is a research group established in June 2011 to provide expert technical support and advice to government and non-government decision-makers and stakeholders. We focus on applying world's best practice in decision support to planning for biodiversity conservation. Our main areas of expertise are marine and terrestrial protected area planning, including protected area performance assessment, cost-efficient conservation priority setting and planning for multiple objectives (e.g. carbon sequestration and biodiversity conservation).

Based in Australia, our goal is to build a multi-disciplinary team capable of providing support to conservation decisions across the world's ecoregions. We currently have projects in Australia, Canada, and the Southern Ocean.

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We acknowledge the Traditional Owners of the lands we live on and in the regions we research and write about. We pay respect to their elders past and present. We celebrate the enduring connections of Traditional Owners to their country and their deep knowledge of land and sea.

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EXECUTIVE SUMMARY

We, the Saltwater Peoples of the North Kimberley coast, want to be recognised as owners and managers of our lands, our sea and our islands and be consulted and engaged with in the right way... Our Country has been here for so long – it should be protected and respected... The country knows the scent of the Saltwater People. We are the ones to look after our Country, and our Country will take care of us.

North Kimberley Saltwater Country Plan, 2010 [1].

The Bardi Jawi, Mayala and Dambeemangarddee are the owners, managers, and custodians of their sea country. The proposed marine parks for the Buccaneer Archipelago and surrounds reference the Bardi Jawi Protected Area Management Plan 2013 – 2023, the Mayala Country Plan, and the Dambeemangarddee Healthy Country Plan 2012-2022 as primary sources to better understand the values, aspirations and management objectives of Traditional Owners. In putting forward this submission to the indicative joint management plans ('the plans') we attempt to provide comments and possible improvements to the plans that can further the visions of Traditional Owners for their management of their country.

Equally, under the Plan for our Parks initiative, a key priority of the Western Australian Government is to 'protect WA's unique natural environment and leave a positive environmental legacy for future generations' [2].

The 3 new marine parks proposed for the Buccaneer Archipelago and surrounds all have important roles to play in achieving these aspirations. They represent a major achievement by Traditional Owners and the Western Australian Government. The plans contain intelligent, thoughtful, and far-reaching proposals for the protection of key parts of the cultural and natural heritage of the Kimberley.

In this submission the Centre for Conservation Geography identifies major achievements of the plans and opportunities for improvement based on world's best practice for protected areas. With outstanding cultural and natural values and iconic tourism assets, the marine parks of the Buccaneer Archipelago and surrounds have the potential to become some of Western Australia's most important protected areas.

MAJOR ACHIEVEMENTS OF THE PLANS

The plans for the Buccaneer marine parks provide a strong basis for protecting the natural, cultural, and heritage values in the region, and improving the comprehensiveness, adequacy and representativeness of the Greater Kimberley Marine Park.

Co-design achievements

The plans recognise the region's rich culture and include large areas in proposed cultural zones. These are more numerous and much larger than other cultural zones in Western Australia's marine parks. They provide better protection for cultural heritage by excluding a greater number of destructive activities than equivalent zones in other Kimberley marine parks. This is a significant achievement.

In a first for Australia, the Buccaneer marine parks have been co-designed with the Traditional Owners. The co-design approach does a better job of recognising Traditional Owners as co-decision makers rather than stakeholders in the marine park planning process. This has led to better outcomes than previous planning processes in the Kimberley.

Under the proposed zoning plans, a large proportion of coastal habitat will be managed in cultural protection zones. These zones protect species and habitats from destructive practices such as gillnet fishing and mining, while recognising the cultural importance and values of the region and connection to sea country. These zones contain critical habitat, including:

- sawfish habitat in the Cygnet Bay zone
- seagrass habitat in the Pender Bay and Hunter Creek zones
- mangrove habitats in the Oobayal zone.

Best-practice management and sanctuary protection

The large (>100 km²) sanctuary zones are all excellent initiatives that provide conservation outcomes for the marine parks. In particular:

- the Pender Bay, Cygnet Bay and Twin Islands and Sunday Strait sanctuary zones in Bardi Jawi Marine Park
- the Yawalgi, Biidib, and Janawan sanctuary zones in Mayala Marine Park
- the Robinson River and Helpman Island sanctuary zone in Maiyalam Marine Park.

The proposed plans also contain intelligent proposals for smaller coastal sanctuary zones that will benefit recreational fishing values and increase protection for key coastal habitats – for example:

- the Gananguddee Eewuleg, Waddadam, Bullbull, Bordo, Yaloon, and Djee sanctuary zones in the Maiyalam Marine Park
- the Yoorroon and Oobayal sanctuary zones in the Mayala Marine Park.

The proposed marine parks deliver some major conservation outcomes, including:

- the first-ever sanctuary zone for the Canning bioregion – Pender Bay in Bardi Jawi Marine Park
- the first-ever sanctuary zones for the King Sound bioregion – Cygnet Bay in Bardi Jawi Marine Park, Janawan in Mayala Marine Park, and Robinson River and Helpman Island in Maiyalam Marine Park
- substantial protection for King Sound estuarine and coastal habitats, including biologically important feeding, pupping, and nursing sites for endangered sawfish and river sharks in the Robinson River and Helpman Island sanctuaries. This also includes the only known flatback turtle nesting site in the marine parks.
- relinquishment of parts of the Yampi Sound and Derby ports – this recognises the high cultural and conservation significance of these areas.
- substantial protection for the iconic island and coral reef habitats of the Buccaneer Archipelago and surrounds.

OPPORTUNITIES FOR IMPROVEMENT

As the highest priority, decision makers should seek to maintain the excellent network of cultural protection zones and sanctuary zones outlined in the plans for each marine park.

The Centre for Conservation Geography sees potential for improvements to (1) sanctuary zone design and (2) changes to restrict destructive activities within the marine parks.

1. Potential improvements to the sanctuary zone network

1a. Where feasible expand sanctuary zones to at least 100 km² in line with world's best practice.

For example, the excellently located Macleay Island sanctuary zone could be more effective if it was larger (see Map 1). Equally, the smaller Bullbull, Yoorroon, Bordo, Dijee and Oobayal sanctuary zones would be more effective with small extensions to make them a part of the larger Biidib sanctuary zone, while still optimising the adjacent recreational fishing values (see Map 1). In contrast, the Gananguddee Eewuleg, Waddaddam, and Yaloon sanctuary zones should not be increased on size criteria alone as having smaller sanctuary zones in these locations is important to maximise benefits to recreational fishing values.

1b. Increase sanctuary zone protection for the Canning bioregion.

The Pender Bay sanctuary zone in the Bardi Jawi Marine Park is the first marine sanctuary for the Canning bioregion. This is a major achievement. Its value could be increased by expanding the zone to increase protection for regionally under-protected key habitats like seagrass, dugong habitats, mangroves, flatback turtle critical habitats, estuaries, and biologically important areas for species like dolphins and humpback whales, including the high-density calving area off Pender Bay (see Map 1). In addition, or alternatively, a sanctuary zone in Bardi Jawi Marine Park between the Alarm Shoals, Hunter Creek and Iwany and Thomas Bay cultural protection zones would increase protection for key habitats (see Map 1).

1c. Increase sanctuary zone protection for the King Sound bioregion.

The Buccaneer marine parks will establish the first ever marine sanctuary protection for the King Sound bioregion. This is a major achievement. These could be expanded to increase protection for regionally under-protected key habitats like biologically important areas for sawfish and coastal dolphins, nearshore coastal habitats, and estuaries. In the Bardi Jawi Marine Park the excellent Cygnet Bay sanctuary zone could be expanded southwards to connect with the Cygnet Bay cultural protection zone (see Map 1). In the Mayala Marine Park the Janawan (Helpman Island) sanctuary zone could be expanded to the northwest (see Map 1).

1d. Resolve conflicts with recreational fishers over the Robinson River and Helpman Island sanctuary zone.

The recreational fishing values within the sanctuary zone are also highly accessible elsewhere in King Sound but if Traditional Owners and the Government deem it wise to provide recreational fishers with some access to a specific key area then a very small access zone (special purpose (recreation and conservation)) could be established, likely at one of the Saddle Hill Creeks, as this is

a valued fishing location along this coastline for recreational fishing (see Map 1). This has been done at Jooloom (Middle Island) in the Bardi Jawi marine park and has also been done at Montgomery Reef in the Lalang Garram Camden Sound marine park. It is important to keep the large sanctuary zone here, as it is one of the few large coastal estuary sanctuary zones within the Kimberley and is a key achievement of the proposed zoning plan, particularly for the protection of mangrove habitat and sawfish.

[1e. Progress towards a world class sanctuary network for the Kimberley.](#)

Sanctuary zone levels within the Kimberley as a whole are currently well below world class levels. World class marine parks like Ningaloo and the Great Barrier Reef contain at least some particularly big sanctuary zones, which are critical in raising the overall level of protection. Creating large sanctuaries within the marine parks of the Buccaneer Archipelago and surrounds could help move the overall Kimberley region towards a level of world class protection. Some options include:

- Bardi Jawi Marine Park: expanding the Twin Island and Sunday strait sanctuary zone northward to the boundary of the marine park (see Map 1).
- Mayala Marine Park: expanding the Yawalgi sanctuary zone northward to the boundary of the marine park and/or expanding the Janawan sanctuary zone into the deeper waters of King Sound (see Map 1).
- Maiyalam Marine Park: expanding the Robinson River and Helpman Island sanctuary zone into the deeper waters of King Sound (see Map 1).
- Adele Island, Mavis Reef and Beagle Reef: including these islands and reefs within the Kimberley sanctuary zone network is likely to be critical to achieving a world class level of protection.

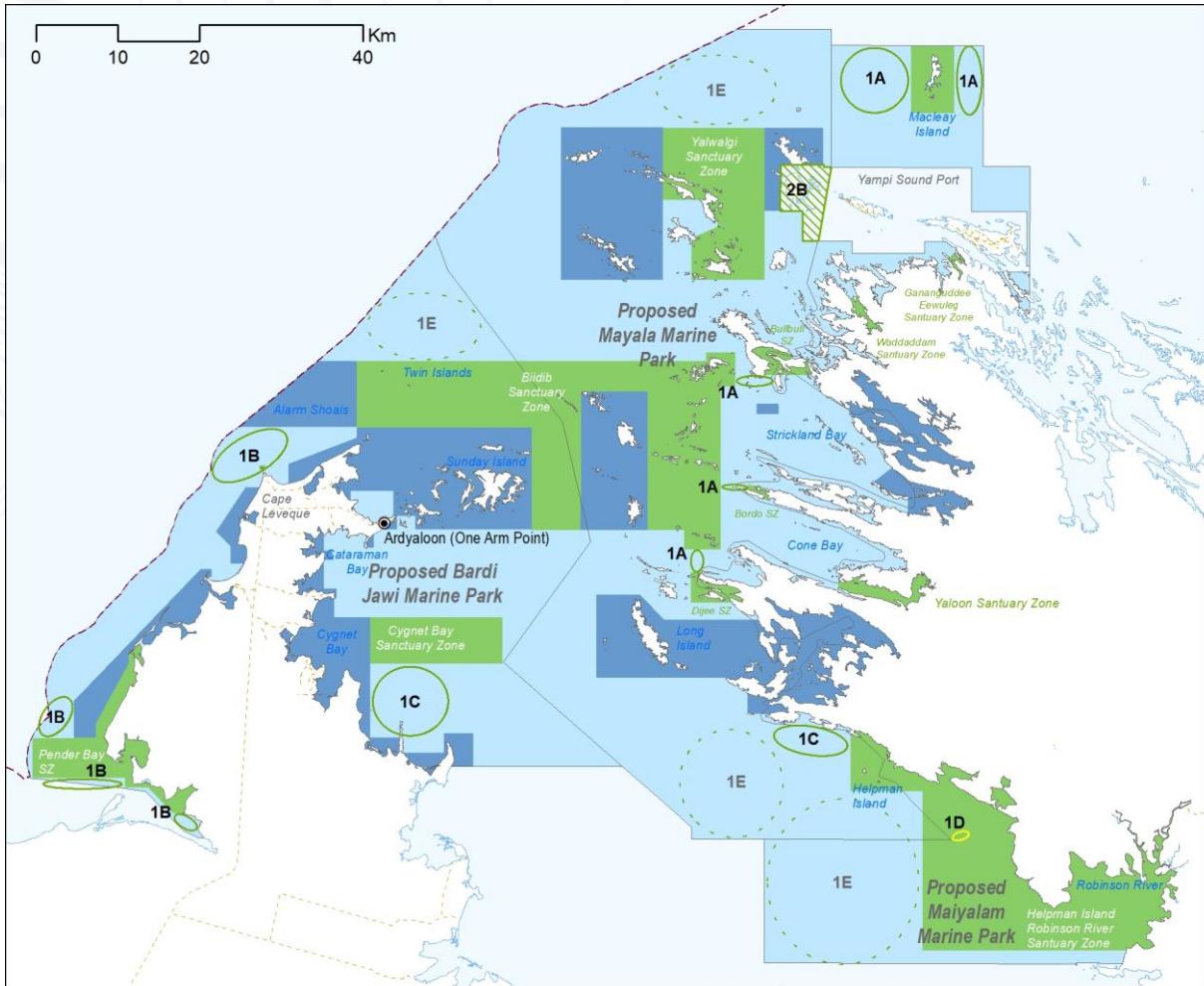
2. Potential improvements to restrict destructive activities

[2a. Permanently remove gillnetting and trawling from the Buccaneer marine parks.](#)

This area has already been closed to trawling and the marine parks plans should endorse that fisheries management decision. Both gillnetting and trawling are destructive fishing methods, inappropriate for the Buccaneer Archipelago and surrounds, particularly in habitats for threatened sawfish and coastal dolphin species. Wherever feasible, special purpose (recreation and conservation) zones should be used in place of general use zones to prevent negative impacts from gillnetting and trawling.

[2b. Remove mining and mining exploration from the Buccaneer marine parks.](#)

The government should revoke the mining leases in marine waters surrounding Irvine and Bathurst islands, and reject the pending lease for Flora Island on the basis that mining is incompatible with protecting the high cultural and conservation values that the marine parks are established to protect [3]. If mining does not go ahead on Irvine Island the marine park boundaries should be expanded to include this area. Irvine Island, as the only remaining unmined outcropping of the Yampi member geological formation, has important conservation values [4]. The coral reefs between Irvine and Bathurst islands have a unique history and formation – with unusual and massive intertidal platforms of consolidated limestone – which they share with some of the other highest conservation value reefs in the region (the reefs of the Sunday Island complex, Montgomery Reef and Turtle Reef in Talbot Bay).

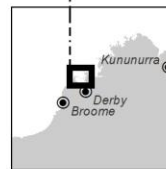


Current zoning

- Cultural protection zone
- General use zone
- Sanctuary zone
- State waters boundary

Opportunities for improvements to zoning

- Potential minor sanctuary zone additions
- Potential larger sanctuary zone additions
- Include in marine park as a sanctuary zone
- Possible Saddle Hill Creek recreational fishing access zone



Map Info:
 Date: May 2021
 Coordinate System: Map Grid of Australia, Zone 51
Data Sources:
 Proposed Marine Park: Boundaries supplied by Government of Western Australia, DBCA.

Map 1: Opportunities for improved zoning in the proposed Buccaneer marine parks.

1. INTRODUCTION

With over 1,000 islands fringed with coral reefs, some of the world's largest tidal ranges, white sandy beaches, and critical migratory passages for marine mammals, the Buccaneer Archipelago is a spectacularly beautiful area with highly abundant and diverse marine life. It is one of the last remaining refuges for many vulnerable and endangered species. The Traditional Owners of the region – the Bardi Jawi, Mayala, and Dambeemangarddee peoples – have cared for these values for millennia.

The area is among the least disturbed in the world, with no reports of extinction in the Kimberley region. The region is a stronghold for endangered elasmobranchs (sawfishes and river sharks) and other threatened species (dugongs, sea turtles and humpback dolphins), has the world's largest calving ground for humpback whales, features important habitats for seabirds and shorebirds, nesting sites for flatback and olive ridley turtles, mangrove communities of international significance, and unique coral aggregations. These natural heritage values are inextricably linked to the cultural heritage values of the Kimberley through the belief systems and management practices of the Traditional Owners.

Despite the global conservation significance of the Kimberley, the region is subject to several pressures, driven by increasing use of resources and human-driven environmental change. The recent sealing of the Dampier Peninsula Road is likely to further increase pressures on the region, by allowing access to Cape Leveque throughout the wet season. A marine park in the Buccaneer Archipelago and surrounds is critical for the protection of the threatened species, important habitats and cultural values in the area. As part of the Great Kimberley Marine Park, the proposed marine parks will contribute to protection of the Kimberley region, and are a step towards the Western Australian Government's commitments to comprehensive, adequate, and representative protection of the marine environment.

The 3 Traditional Owner groups in the Buccaneer area are allowing a protected area over their sea country, continuing their relationships of reciprocity and respect with their sea country [page 8]. The co-design of the Buccaneer marine parks is an opportunity to increase recognition of native title and utilise traditional and contemporary Indigenous forms of governance and management, benefitting both people and the marine environment of the Kimberley. The 3 Buccaneer marine parks are a significant initiative, ensuring stronger protection of the natural, cultural and heritage values of the Kimberley. The planning process is also a significant initiative – being the first to involve Traditional Owners as co-designers – and contributes to recognition of the rights of Traditional Owners.

THIS SUBMISSION

In this submission we identify the strengths of the proposed zoning plans and some potential improvements – to better achieve the specified management objectives, apply best-practice marine park design, and strengthen conservation outcomes. We do not comment on the cultural values or suggest any changes to the cultural zones, as we do not hold the necessary information to do so.

Where possible, we have used spatial data to support our submission. We acknowledge the limitations of the data in encompassing only some of the region's natural values. We have limited the analysis of species and habitats to reflect the objectives of the marine park – focusing only on the Kimberley coastal waters limit.

2. SANCTUARY PROTECTION

2.1. Critical planning principles

The use of sanctuary zones to build resilience and conserve ecosystems is well supported by decades of science. Sanctuary zones are critical for achieving significant measurable conservation benefits [5,6].

Conservation targets are generally best met in large (>100 km²) no-take areas [7–9]. These offer stronger protection relative to other zones, are effective in restoring and preserving biodiversity, increasing fish biomass, and contributing to ecosystem resilience [10,11]. Well-placed sanctuary zones provide resilience to climate change, a recognised threat to many of the biodiversity features for all 3 parks. While marine sanctuaries cannot provide immunity to climate change impacts, studies have shown that marine life in sanctuary zones are more resilient and recover faster from some of the impacts [10,12].

To meet international and national obligations, the Western Australian Government recognises the need for state reserve system to be comprehensive, adequate, and representative and acknowledges the benefits of larger sanctuaries – ‘a few very small reserves are not truly sustainable in the long term’ [13]. While large sanctuary zones are often preferable, they are not always feasible. Smaller sanctuaries can be used to protect key cultural heritage and conservation sites, maintain, and improve recreational fishing values in adjacent areas, and increase the diversity and quality of tourism experiences.

Marine sanctuaries can also benefit recreational fishers by protecting sites important for critical life stages (such as nursery sites), critical functions (such as feeding and spawning sites) and dispersal (dispersion centres for larvae and new recruits), as well as the number, diversity, and size of marine fish [14]. Spillover benefits are a major reason for high levels of support for marine sanctuaries by Australia’s recreational fishers [15]. A 2017 survey in 10 Australian marine protected areas found that 63% of recreational fishers supported highly protected zones and only 18% opposed them.

While other types of zones are not as effective for overall conservation outcomes, they are still important to meet, cultural, social, economic, political, or other objectives – as exemplified by the proposed cultural zones for the Buccaneer Marine Park.

MARINE PROTECTED AREA TARGETS AND BIODIVERSITY OBJECTIVES

A review of 144 studies in 2016 found that on average 37% high-level protection is needed to achieve goals such as protect biodiversity, provide connectivity, avoid species collapse and ensure sustainable fisheries [16]. Sanctuary zones should be used in conjunction with other management measures and tools to increase overall effectiveness of marine management [17]. On the basis of this and other evidence, the IUCN World Conservation Congress recently passed a resolution calling on nations to protect at least 30% of each marine habitat/bioregion in fully protected marine protected areas (sanctuaries) and at least 30% of the ocean – ‘to reverse existing adverse impacts, increase resilience to climate change, and sustain long-term ocean health’ [14,18,19]. The benefits of at least 30% sanctuary protection have been recognised in Australia already – as evidenced in sanctuary levels in Ningaloo Marine Park (33.4%) and the Great Barrier Reef Marine Park (33.2%) [20].

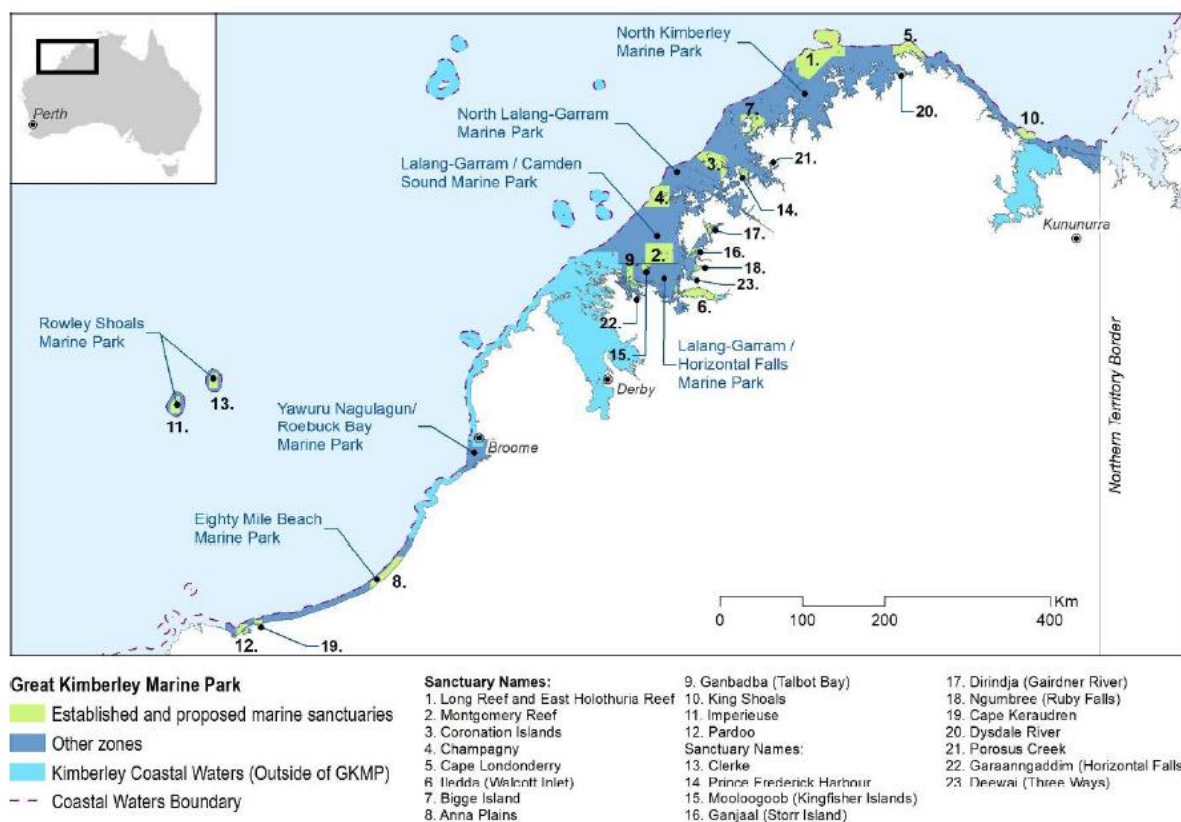
Coverage targets are important benchmarks for national and international conservation goals, but sanctuaries also need to be carefully designed and managed. A poorly designed marine protected area may meet percentage targets, but fall short of meeting conservation goals [21]. Marine zones are useful for managing specific, abatable threats – so placing a sanctuary zone in an area not at risk from such threats may bring little conservation benefit. One example of good sanctuary placement in the proposed zoning plans is the large Robinson River and Helpman Island sanctuary zone – this sanctuary will restrict gillnet fishing, a major threat to sawfish populations, whilst also protecting mangrove habitat, an important breeding ground for other fish.

2.2. Proposed levels of sanctuary protection in the Kimberley

The WA network is not yet comprehensive, adequate and representative as envisaged under the NRSMPA. Some MPRs [marine parks and reserves] have small sanctuary zones and there is a risk that these do not provide adequate protection for all representative habitats.

Office of the Auditor General Western Australia, 2016 [22].

Since 2009 the Western Australian Government has made substantial progress towards world-class protection for the Kimberley – increasing marine park coverage from less than 2% of coastal waters to 57%, and marine sanctuaries from less than 1% to more than 19% of the Kimberley coastal waters (this includes some areas not yet gazetted) (Map 2).



Map 2: Existing marine parks and sanctuary protection in the Great Kimberley Marine Park

This is an important achievement. However, the limited extent of sanctuary protection means that over 80% of the Kimberley remains largely unprotected and open to fishing and mining (Table 1). This level of protection is far from world class. The proposed marine parks in Buccaneer offer good opportunities to increase the levels of protection in the Kimberley to help meet world-class sanctuary protection. The 3 new parks would add 6,610 km² to Western Australia’s marine park network.

Table 1: Current Kimberley marine parks sanctuary protection

| Kimberley marine parks | Size (km ²) | Sanctuary zone (%) |
|---|-------------------------|--------------------|
| Lalang-garam/Horizontal Falls | 3,537 | 24 |
| North Lalang-garram | 1,098 | - |
| Lalang-garram/Camden Sound | 7,050 | 19 |
| North Kimberley | 18,412 | 18 |
| Rowely Shoals | 788 | 24 |
| Eighty Mile Beach | 1,686 | 22 |
| Roebuck Bay | 790 | - |
| Proposed Buccaneer Archipelago and surrounds marine parks | 6,610 | 21 |
| TOTAL | 39,971 | 19 |

THE CONTRIBUTION OF CULTURAL ZONES TO CONSERVATION

The proposed zoning plans designate 21% of this area as sanctuary zones, and 19% as cultural zones (Table 2). The cultural protection zones potentially offer a high level of conservation management but are unprecedented in their management function. The restrictions on commercial fishing (excluding trochus fishing) and recreational fishing (excluding fishing tours) within cultural zones is a significant step towards conservation outside sanctuary zones.

The combination of sanctuary zones and cultural protection zones in the Buccaneer marine parks will help the West Australian Government meet the policy goals that Labor articulated in its 2017 election platform – ‘a comprehensive marine sanctuaries network in the Kimberley, based on international best practice’. With the expansion of some sanctuaries, the Buccaneer marine parks could become exemplar co-designed and managed marine parks.

Table 2: Buccaneer marine parks proposed zoning

| Marine park name | Proposed general use zone (%) | Proposed cultural protection zone (%) | Proposed sanctuary zone (%) | % of Total |
|------------------|-------------------------------|---------------------------------------|-----------------------------|------------|
| Bardi Jawi | 16 | 8 | 7 | 31 |
| Mayala | 31 | 9 | 7 | 48 |
| Maiyalam | 12 | 2 | 7 | 21 |
| Total | 60 | 19 | 21 | 100 |

SANCTUARY PROTECTION FOR KEY HABITATS AND SPECIES

The existing marine parks in the Kimberley and the proposed zoning plans for the Buccaneer marine parks afford varying levels of protection to key species and habitats in sanctuary zones (sections 3–5). The proposed marine parks span 3 bioregions in the Kimberley – King Sound, Canning and Kimberley (see Map 3). Importantly, they include (a) the first marine park in the King Sound bioregion, covering 11% of the bioregion, of which 1% is sanctuary protection (Roebuck Bay Marine Park has no sanctuary zones).(b) an additional 10% of the Canning bioregion in a marine park, of which 2% is sanctuary protection, and (c) sanctuary protection for several critical habitats and species, specifically within the following zones:

- the Pender Bay, Cygnet Bay and Twin Islands and Sunday Strait sanctuary zones in the Bardi Jawi Marine Park
- the Yawalgi, Biidib, and Janawan sanctuary zones in the Mayala Marine Park
- the Robinson River and Helpman Island sanctuary zone in the Maiyalam Marine Park.

Each is well designed and well placed to deliver conservation outcomes. The proposed zoning plans could be improved to meet world class standards by expanding sanctuary zones in the following ways.

1a. Where feasible, expand sanctuary zones to at least 100 km² in line with world's best practice.

Macleay Island sanctuary zone could be more effective if it was larger. Equally, the smaller Bullbull, Yoorroon, Bordo, Dijee and Obayal sanctuary zones would be more effective with small extensions to make them a part of the larger Biidib sanctuary zone (see Map 1).

1b. Increase sanctuary zone protection for the Canning bioregion.

The Pender Bay sanctuary zones values could be increased by expanding the zone to increase protection for regionally under-protected key habitats like seagrass, dugong habitats, mangroves, flatback turtle critical habitats, estuaries, and biologically important areas for species like dolphins and humpback whales, including the high-density calving area off Pender Bay. In addition or alternatively, a sanctuary zone in Bardi Jawi Marine Park between the Alarm Shoals, Hunter Creek and Iwany and Thomas Bay cultural protection zones would increase protection for key habitats (see Map 1).

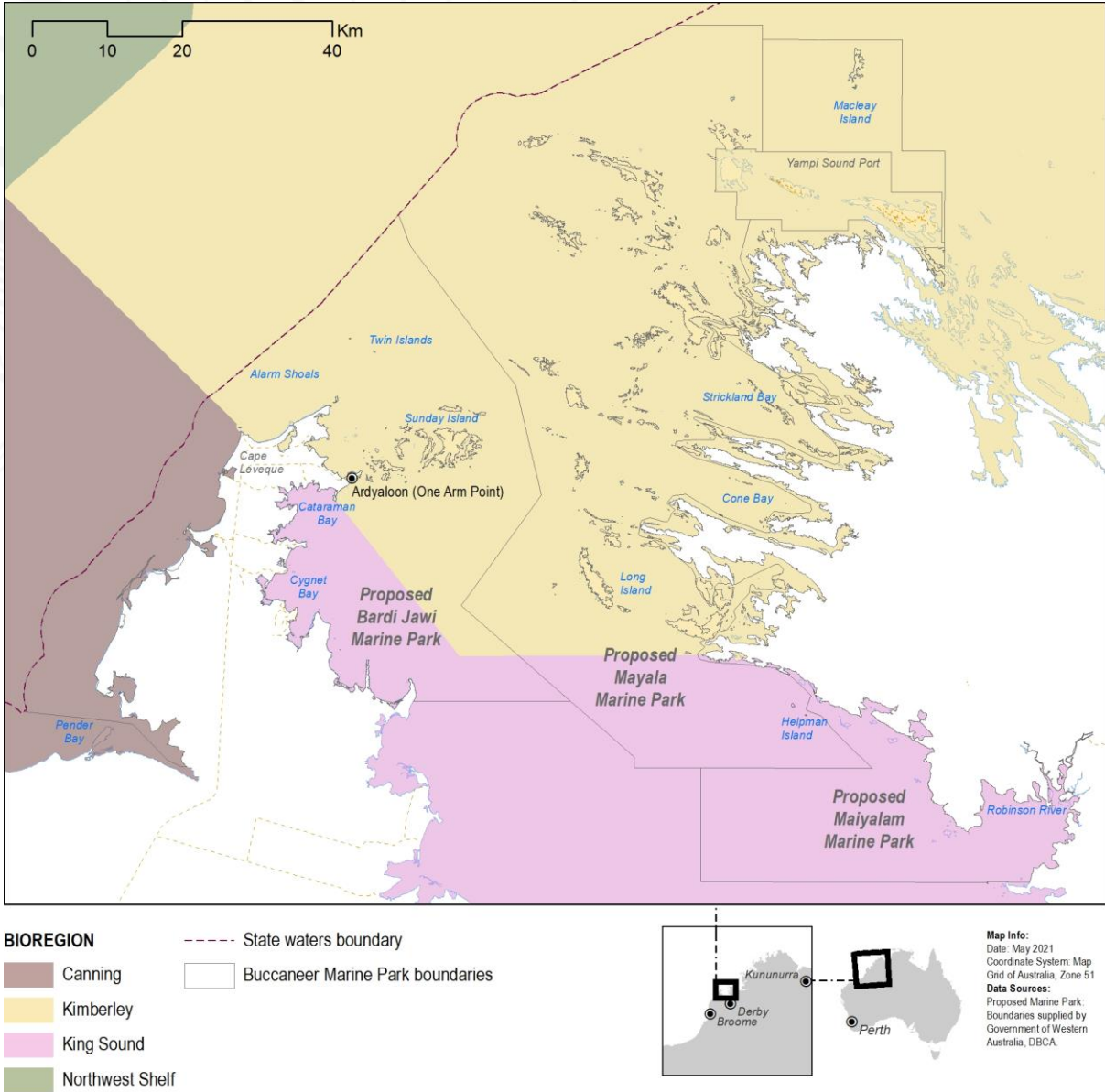
1c. Increase sanctuary zone protection for the King Sound bioregion.

The Buccaneer marine parks establish the first ever sanctuary protection for the King Sound bioregion. This is a major achievement. These could be expanded to increase protection for regionally under-protected key habitats like biologically important areas for sawfish and coastal dolphins, nearshore coastal habitats and estuaries. In the Bardi Jawi Marine Park the excellent Cygnet Bay sanctuary zone could be expanded southwards to connect with the Cygnet Bay cultural protection zone. In the Mayala Marine Park the Janawan sanctuary zone could be expanded (see Map 1).

1e. Progress towards a world class sanctuary network for the Kimberley

Sanctuary zone levels within the Kimberley are currently well below a world class level. World class marine parks like Ningaloo and the Great Barrier Reef contain at least some particularly big sanctuary zones, which are critical in raising the overall level of sanctuary zones to world class levels for the network. Some of the options within the Buccaneer Archipelago and surrounds marine parks to move towards levelling up sanctuary protection for the Kimberley region as a whole include:

- Bardi Jawi Marine Park: expanding the Twin Island and Sunday strait sanctuary zone northward to the boundary of the marine park.
- Mayala Marine Park: expanding the Yawalgi sanctuary zone northward to the boundary of the marine park and/or expanding the Janawan sanctuary zone into the deeper waters of King Sound.
- Maiyalam Marine Park: expanding the Robinson River and Helpman Island sanctuary zone into the deeper waters of King Sound.
- Adele Island, Mavis Reef, and Beagle Reef: including these islands and reefs within the Kimberley sanctuary zone network is likely to be critical to achieving a world class level of protection (see Map 1).



Map 3: Bioregional setting of the Buccaneer Archipelago and surrounds marine parks.

3. PROPOSED BARDI JAWI MARINE PARK INDICATIVE JOINT MANAGEMENT PLAN

3.1. Overview of achievements and proposed improvements

MAJOR ACHIEVEMENTS OF THE PROPOSED ZONING PLAN

The proposed plan for the Bardi Jawi Marine Park has the following strengths:

Best-practice management and sanctuary protection

- The plan emphasises the importance of building a strong knowledge base for biodiversity, key ecological processes, and pressures facing Bardi Jawi sea country [page 32].
- The plan recognises the impacts of anthropogenic climate change on the marine environment.
- The plan sets an adaptive management timeframe of 3–5 years for reporting on the targets set for each species and habitat. These targets include no significant declines in any of the habitats or species.
- The plan recognises the impacts of anthropogenic climate change on the marine environment.
- The large (100 km²) proposed Twin Islands, Sunday Strait and Biidib sanctuary zone protects key habitats for dugongs, coral reefs, and seagrass.
- The proposed Twin Islands sanctuary zone and the proposed Alarm Shoals and Hunter Creek cultural protection zones afford substantial protection to shoal reefs and fringing reefs.
- The size and connectivity of the large sanctuary zones and cultural protection zones in combination minimise risks from commercial fishing.

Joint management and co-design achievements

- In a first for Australia, the marine park has been co-designed by Traditional Owners, recognising their appropriate status as decision-makers rather than stakeholders.
- The plan recognises the region's rich culture by including 26% of the marine park in proposed cultural zones.
- The large cultural protection zone in Cygnet Bay, which a large portion of the sawfish habitat in the King Sound region. The zone prohibits gillnet fishing, which is the principle threat to sawfish.
- The Pender Bay and Hunter Creek cultural zones cover 6% of the mapped seagrass in the Canning bioregion and 65% of that in the Kimberley bioregion.

POTENTIAL IMPROVEMENTS TO SANCTUARY ZONING

The following changes to the sanctuary zones in Bardi Jawi sea country (summarised in Table 6) could strengthen protection for key habitats and species.

1. Potential improvements to the sanctuary zone network

1b. Increase sanctuary zone protection for the Canning bioregion.

The Pender Bay sanctuary zone in the Bardi Jawi Marine Park is the first ever marine sanctuary for the Canning bioregion (Map 4). Expanding the sanctuary zone could provide additional protection for:

- flatback turtle habitat; currently only 1% of the flatback turtle habitat in the Canning bioregion is included in a sanctuary zone under the proposed zoning
- Indo-Pacific Humpback Dolphin calving, breeding, and foraging biologically important habitat
- Australian Snubfin Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific/Spotted Bottlenose Dolphin biologically important habitat (calving, breeding, and foraging)
- dugong habitat (foraging)
- humpback whale habitat (calving, nursing, resting), and the Pender Bay high-density area
- biologically important habitats for several seabird species.

In addition, or alternatively, a sanctuary zone in the area between the Alarm Shoals, Hunter Creek & Iwany and Thomas Bay cultural protection zones (Map 4) could increase protected for key habitats within the Canning bioregion for:

- Humpback whale calving, nursing, resting, and high-density areas
- Critical habitat (nesting) for flatback turtles
- Critical habitat (nesting) for Olive Ridley turtles
- Biologically important habitat for all 3 dolphin species (as above)

1c. Increase sanctuary zone protection for the King Sound bioregion.

These marine parks establish the first ever marine sanctuary protection for the King Sound bioregion. Expanding the Cygnet bay sanctuary zone southwards to connect with the Cygnet Bay cultural protection zone (Map 4) could provide additional protection for:

- Dugong habitat (foraging)
- Australian Snubfin Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific/Spotted Bottlenose Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific Humpback Dolphin biologically important habitat (calving, breeding, and foraging)
- biologically important habitat area for dwarf sawfish (foraging, pupping, juvenile, and nursing) and freshwater sawfish (foraging and nursing).

1e. Improve progress towards a world class sanctuary network for the Kimberley

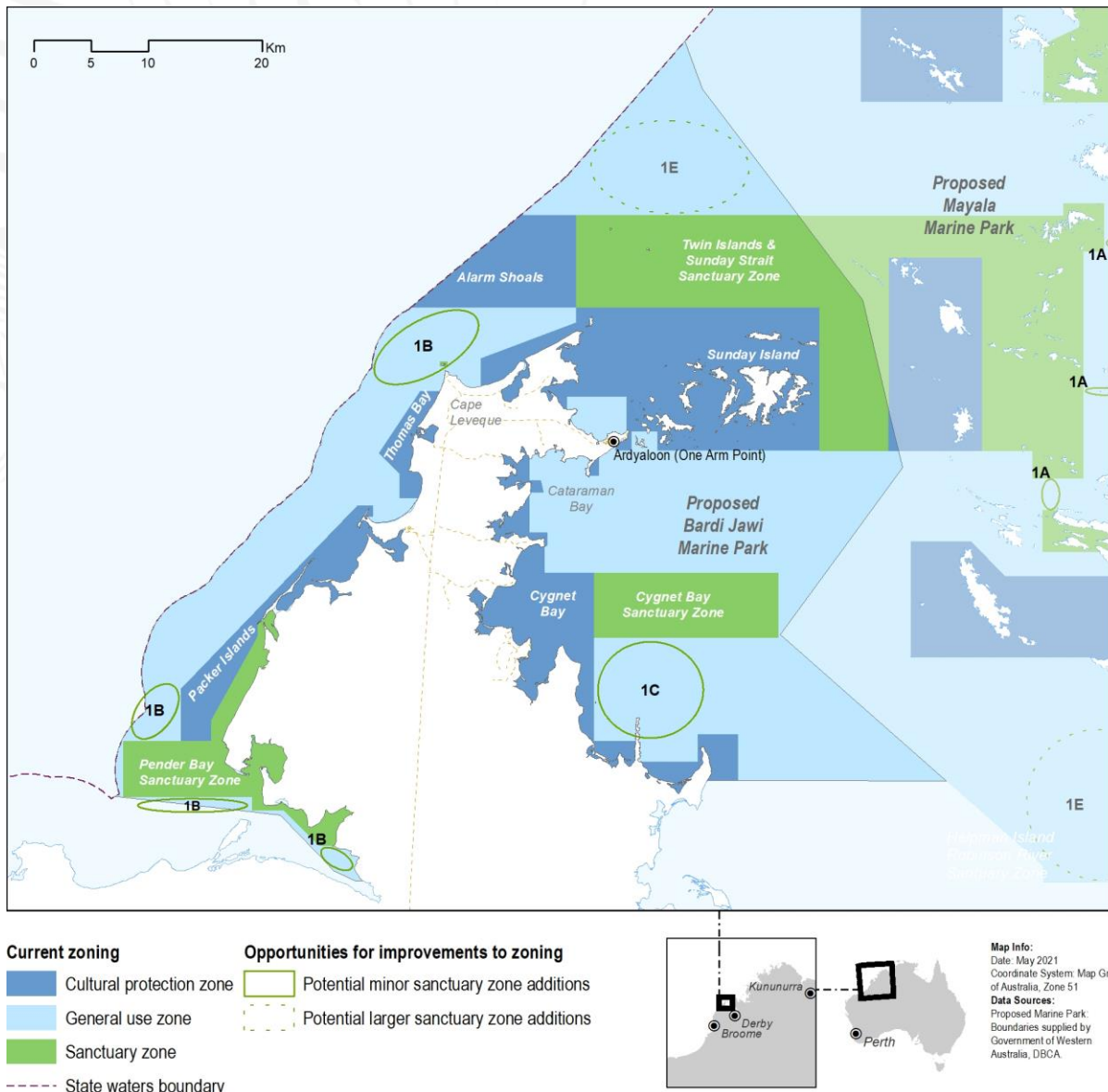
Sanctuary zone levels across the Kimberley are currently well below a world class level. Expanding the Twin Island and Sunday strait sanctuary zone northward to the boundary of the marine park (Map 4) would raise the overall level of sanctuary zones to world class levels for the network, and provide additional protection for:

- Australian Snubfin Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific/Spotted Bottlenose Dolphin biologically important habitat (calving, breeding, and foraging)
- dugong habitat (foraging)
- Indo-Pacific Humpback Dolphin biologically important habitat (calving, breeding, and foraging)
- important humpback whale habitat (calving, nursing, resting), and a high-density area. An expansion to the coastal water line would increase protection for key areas in the marine park by around 20%.

2. Potential improvements to restrict destructive activities

2a. Permanently remove gillnetting and trawling from the Buccaneer marine parks.

This area has already been closed to trawling and the marine parks plans should endorse that fisheries management decision. Both gillnetting and trawling are destructive fishing methods and inappropriate for the Buccaneer Archipelago and surrounds, particularly in habitats for threatened sawfish and coastal dolphin species.



Map 4: Potential improvements to the proposed zoning plan for Bardi Jawi Marine Park.

3.2. Key habitats in Bardi Jawi Marine Park

MARRGOORR (CORAL) AND MARNANY (REEF) COMMUNITIES

Around 6% of the greater Kimberley region's reefs exist in Bardi Jawi sea country. They are primarily fringing reefs around the islands, with shoal and patch reefs uncommon. The Sunday Island group contain substantial areas of fringing reef and one of the few examples of a shoal reef (Otway Shoal). The reefs around Sunday Island contain unique massive intertidal platforms of consolidated limestone. As acknowledged in the plan, coral reef ecosystems require more research, as species and coverage estimates of coral reefs in the region are likely to be far greater than currently thought [23]. Many of the coral reef areas within the Bardi Jawi sea country are culturally significant for customary fishing and hunting purposes, supporting culturally significant species, and other cultural beliefs and practices.

The Kimberley's corals are some of the most robust and resilient in the world, surviving extreme environmental conditions, including murky water, extreme tides, long exposure out of water, and high winds. But they are not immune to pressures faced by coral reefs around the world, with coral bleaching occurring in 2016 and again in 2020 [24]. Strict protection is needed to strengthen their resilience throughout the Kimberley, as coral reef ecosystems are an important habitat supporting a multitude of species.

Protection under the proposed zoning plan

Sanctuary coverage for mapped coral reefs in the Kimberley is quite high, with around 48% in sanctuary zones, all within the Kimberley bioregion (Table 3). The majority of reefs, and all 4 reef types, are in the Kimberley bioregion. The King Sound and Canning bioregions both have minimal coral reef areas, which are dominated by fringing reefs.

The proposed zoning plan will protect 17% of the coral reef area in Bardi Jawi sea country in a sanctuary zone. This includes 3% of the reef area in the Kimberley bioregion.

The proposed plan has the following strengths:

- The Twin Strait and Sunday Island large sanctuary zone (>100 km²) covers the unusual massive intertidal platforms of consolidated limestone, which have a unique history and formation.
- The sanctuary zones include both shoal and fringing reefs.
- The sanctuary provides additional protection for shoal reefs, which are currently underrepresented in sanctuary zones in the Kimberley.

The proposed zoning plan provides important coverage for coral reefs in sanctuary and cultural zones in Bardi Jawi Marine Park, contributing to the existing protection afforded to these ecosystems in the Kimberley. In particular, the marine park affords a good level of protection to the shoal reefs at the park boundaries and increases the representativeness and adequacy of coral reefs protected in the King Sound bioregion.

Under the proposed zoning plan, the majority of patch reefs in the marine park are managed in cultural zones (83%) particularly the Hunter Creek and Iwany cultural protection zone (in the Kimberley bioregion, this is >1% of the patch reef area in the bioregion). Providing sanctuary

protection for patch reefs, currently not included in any sanctuary zones under the proposed zoning plan, would ensure that every reef type has sanctuary protection, improving the representativeness the Kimberley marine parks.

Table 3: Coral reef protection in the Kimberley bioregions and the proposed Bardi Jawi marine park

| Bioergion | Habitat | Existing protection in Kimberley sanctuaries (%) | Bardi Jawi Marine Park proposed zones | | |
|-----------|----------------|--|---|---|--|
| | | | Increased bioregional protection by sanctuaries (%) | Percent of habitat within marine park boundary in sanctuaries | Percent of habitat within marine park boundary in cultural zones |
| Kimberley | Shoal reefs | 25 | 23 | 37 | 62 |
| Kimberley | Patch reefs | 23 | 0 | 0 | 83 |
| Kimberley | Fringing reefs | 25 | <1 | 7 | 70 |

To help achieve the conservation objectives of ‘no significant decline in diversity or total coral cover’ and ‘no change in community composition or colony size as a result of human activity’ [page 34], potential improvements to the proposed zoning plan include the following:

1e. Improve progress towards a world class sanctuary network for the Kimberley

Extend the Twin Strait and Sunday Island sanctuary zone north to cover all of Ferret Reef and south to include the small patch reef in the general use zone (Map 4). It is world’s best practice to include a whole reef in a sanctuary zone rather than just fragments.

NOOMOOL (SEAGRASS)

Seagrass provides food, refuge and nurseries for numerous vertebrate and invertebrate species, including marine turtle species and dugongs. The diversity of seagrass in the Kimberley region is potentially among the highest in the world, with 12 species documented.

The extensive Sunday Island seagrass habitat in Bardi Jawi sea country is very important, with 8 species of seagrass recorded. There are also large, mapped seagrass beds on the western side of the Dampier Peninsula, in the Canning bioregion [page 37]. The proposed marine park encompasses 6% of the Canning, 91% of the Kimberley, and 100% of the King Sound mapped seagrass habitat.

Protection under the proposed zoning plan

Currently, very little mapped seagrass has sanctuary protection in the Kimberley region. The Canning, Kimberley, King Sound, and Eighty Mile Beach bioregions have mapped seagrass in marine parks, but none in a sanctuary zone. The Canning bioregion has 63% of the Kimberly region’s mapped seagrass extent. Leaving such a critical habitat without representation in sanctuary

zones undermines the capacity of the Kimberley marine parks to adequately protect the diversity of marine life and the credibility of current zoning schemes. It is important to recognise there may be deficiencies in the mapped seagrass data, and it is likely there is seagrass within the marine park boundaries that has not been mapped.

The proposed zoning plan has the following strengths:

- The Bardi Jawi Marine Park would be the first park in the Kimberley with a sanctuary zone encompassing mapped seagrass habitat.
- The Pender Bay sanctuary zone would be the first in the Canning bioregion to protect mapped seagrass, covering around 1% of the bioregion's seagrass extent.
- The Packer Islands cultural zone will provide important management for 6% of the mapped seagrass extent in the Canning bioregion
- The Hunter Creek and Iwany cultural zone will provide important management for around 65% of the mapped seagrass extent of the Kimberley bioregion.

The proposed zoning plan protects 2% of the mapped seagrass habitat in Bardi Jawi sea country in the Pender Bay sanctuary zone. This will be the first sanctuary protection for seagrass in the Kimberley, and in the Canning bioregion, which is a significant contribution to the Greater Kimberley Marine Park. The Packer Islands and Hunter Creek cultural protection zones cover substantial areas of seagrass – 38% of the mapped seagrass extent in the marine park and 15% of its extent in the Canning bioregion – making a valuable contribution to seagrass management in the Kimberley

3.3. Key species in Bardi Jawi Marine Park

GOORLIL (MARINE TURTLES)

The Bardi Jawi Marine Park covers critical habitat mapped for olive ridley and flatback turtles. This includes inter-nesting habitat for flatback turtles nesting on the Lacepede Islands and inter-nesting habitat for olive ridley turtles nesting at Cape Leveque. Just 5% of critical habitat for the flatback and olive ridley turtles in the Kimberley is protected in sanctuaries.

Protection under the proposed zoning plan

The proposed zoning plan for Bardi Jawi Marine Park includes important protection for critical habitat of both turtle species (flatback and olive ridley) adding to existing Kimberley wide protection.

The proposed zoning plan has the following strengths:

- The Pender Bay sanctuary zone encompasses 57% of critical inter-nesting habitat for flatback turtles, which nest further down the coast. All known flatback turtle nesting areas are in Australia, highlighting the importance of this sanctuary zone.
- The Twin islands sanctuary zone provides important protection for turtles nesting at Cape Leveque, the only mapped olive ridley nesting site in Bardi Jawi sea country. This sanctuary zone covers 10% of the mapped inter-nesting habitat.
- The Alarm Shoals and Thomas Bay cultural protection zones offer conservation benefits for olive ridley inter-nesting habitat. Olive ridley turtles are at risk of accidental capture in trawl nets and gillnets, both of which are excluded from this zone.

However, protecting key habitats could be increased, with just 10% of olive ridley inter-nesting habitat in Bardi Jawi sea country covered by a proposed sanctuary zone (Twin islands sanctuary zone).

To help achieve the conservation objectives of 'no significant decline in the diversity, abundance, and species size structure, or community composition of sea turtles' [page 51], potential improvements to the proposed zoning plan could include:

1a. Where feasible, expand sanctuary zones to at least 100 km² in line with world's best practice.

Expand the Pender Bay sanctuary zone to the marine park's southern and western boundaries to include more of the Lacepede islands inter-nesting buffer area, which is critical habitat for flatback turtles (Map 4).

1e. Progress towards a world class sanctuary network for the Kimberley

Expand the Twin Island sanctuary zone north-west to include more olive ridley turtle nesting habitat (Map 4).

2a. Permanently remove gillnetting and trawling from the Buccaneer Archipelago and surrounds marine parks.

This will help prevent accidental bycatch of marine turtles in the marine park.

SAWFISH

Sawfish are among the world's most endangered fishes and the Kimberley is a global hotspot for 4 of the world's 5 species, particularly in the estuaries and river mouths [25].

In Bardi Jawi sea country, sawfish inhabit the entire eastern coastline of the inshore western Dampier Archipelago, with mapped habitat from One Arm Point to south beyond the marine park boundary. Dwarf sawfish use the area for pupping and nursing and as juvenile habitat, and freshwater sawfish for foraging and nursing.

Protection under the proposed zoning plan

The current protection of sawfish in the Kimberley region is highly inadequate. Just 7% of biologically important areas for freshwater sawfish, X% green sawfish and 7% for dwarf sawfish are currently protected in sanctuaries (Eighty Mile Beach and Lalang-Garram/Camden Sound marine parks) (Table 4). This is a very low level of protection given that 60% of the mapped important habitats is encompassed by marine parks.

Fishing pressures, particularly from gillnets and trawlers are the primary cause of the declines in sawfish numbers in Australia, and populations trends show sawfish as decreasing, with fragmented populations and a continuing decline in habitat and number of mature individuals [26,27]. The Kimberley gillnet fishery operates in important sawfish habitats.

The proposed zoning plan for Bardi Jawi sea country does not include any sawfish habitat in sanctuary zones (Table 4). This is a critical gap for representativeness in the Kimberley. The large cultural protection zones at Cygnet bay will prevent gillnet fishing in around 27% of dwarf sawfish

habitat (foraging, pupping, nursing, juvenile), 3% of freshwater sawfish habitat (nursing and foraging) and 25% of green sawfish habitat (pupping and foraging) within the park.

Table 4: Sawfish protection in the Kimberley and the proposed Bardi Jawi Marine Park

| Species | Habitat location | Bardi Jawi Marine Park | | |
|--------------------|---|--|---|--|
| | | Increased total location protection by sanctuaries (%) | Percent of habitat within marine park boundary in sanctuaries | Percent of habitat within marine park boundary in cultural zones |
| Dwarf Sawfish | Pupping, nursing, Foraging, juvenile, foraging- King Sound (inshore waters) | 0 | 0 | 27 |
| Freshwater Sawfish | Nursing and foraging- King Sound tidal tributaries | 0 | 0 | 3 |
| Green sawfish | Pupping and foraging- Cape Leveque | 0 | 0 | 25 |

To help achieve the conservation objectives of ‘no significant decline in the diversity, abundance, and species size structure, or community composition of sawfish’ [page 49], potential improvements to the proposed zoning plan could include the following:

1c. Increase sanctuary zone protection for the King Sound bioregion.

Extend the Cygnet Bay sanctuary zone south to connect to the Cygnet Bay cultural zone (Map 4). This is a biologically important area for dwarf sawfish (foraging, pupping, juvenile, and nursing), freshwater sawfish (foraging and nursing) and green sawfish (pupping, foraging).

The proposed extension could also extend north to One Arm Point. While it is of high conservation value, its proximity to Ardyaloon could lead to conflicts between users of the marine park, making the proposed Cygnet Bay expansion a more preferable option for increasing sanctuary protection for sawfish in the bioregion.

2a. Permanently remove gillnetting and trawling from marine parks in the Buccaneer Archipelago and surrounds.

Both of these destructive fishing methods are inappropriate for marine parks.

ODORR (DUGONGS)

Of the 3 proposed parks, Bardi Jawi is the only one with mapped dugong habitat. Dugongs use the area as an important foraging habitat.

Protection under the proposed zoning plan

Current levels of dugong protection in the Kimberley are low, with less than 1% of their known habitat fully protected in sanctuary zones. The Canning bioregion encompasses 94% of the Kimberley region's biologically important area for dugongs, due to its extensive seagrass meadows. It is the only bioregion with a marine park encompassing dugong habitat, but none is in a sanctuary zone.

The proposed zoning plan has the following strengths:

- The Pender Bay sanctuary zone would be the first in the Canning bioregion to include dugong habitat, improving overall protection and representativeness for dugongs.
- There are larger areas of dugong foraging habitat in cultural protection zones in Pender Bay, Thomas Bay, Cape Leveque Island, Alarm Shoals, and Hunter Creek. These zones cover 14% of the mapped habitat in the marine park and provide significant protection to the species from commercial and recreational fishing.

As the marine park is the first in the Canning bioregion to offer sanctuary protection, there is a unique opportunity to increase the protection of dugongs, as the current level of protection within sanctuary zones in the marine park sits at 14%.

To help achieve the conservation objectives of 'no significant decline in the abundance and distribution of dugongs' [page 51], potential improvements to the proposed zoning plan include the following:

1b. Increase sanctuary zone protection for the Canning bioregion.

The value of the Pender Bay sanctuary zone for protection for dugong habitat could be increased by expanding the (Map 4). In addition, or alternatively, an additional sanctuary zone between the Alarm Shoals, Hunter Creek and Iwany and Thomas Bay cultural protection zones would increase protection for dugong habitats.

MIINIMBI (WHALES) AND BAYALBARR (DOLPHINS)

The Kimberley is host to over 30,000 humpback whales on their migration every winter, the largest breeding population in Australia [29]. The Dampier Peninsula in Bardi Jawi sea country is a biologically important area for calving, nursing, and resting, with a high-density population found here seasonally. There are also 3 coastal dolphin species in the area – the snubfin dolphin, Australian humpback dolphin and Pacific bottlenose dolphin – and the majority of the Bardi Jawi marine park is mapped as biologically important areas for these species.

Protection under the proposed zoning plan

Humpback whale habitat is primarily in Commonwealth waters (71%), to where they migrate bi-yearly. In the coastal waters of the Kimberley, only 5% of humpback whale habitat is currently protected in sanctuary zones (Table 5). For coastal dolphins, just 9% of their biologically important habitat in the Kimberley region is currently protected in sanctuary zones.

Coastal dolphins are at high risk of incidental capture, with the Kimberley gillnet fishery operating in important dolphin habitats. While Pender Bay is the only coastal sanctuary zone in the proposed

park, the cultural protection zones, which also ban gillnetting, substantially increase protection from incidental capture.

The proposed zoning plan has the following strengths:

- The Twin Islands, Cygnet Bay, and Pender Bay sanctuary zones would protect 24% of the biologically important humpback whale habitat (for foraging, calving, migration, nursing and resting) in Bardi Jawi sea country (Table 5).
- The sanctuary zones would protect large areas of biologically important habitat for the snubfin, Australian humpback, and Pacific bottlenose dolphins.
- The extensive cultural protection zones along the coast, including at Pender Bay and Cygnet Bay, would protect the 3 dolphin species from commercial fishing and most recreational fishing.

Table 5: Whale and dolphin sanctuary coverage and proposed marine park coverage

| Species BIAs | Existing protection in Kimberley sanctuary zones (%) | Bardi Jawi Marine Park | |
|---------------------------------|--|---|--|
| | | Percent of habitat within marine park boundary in sanctuaries | Percent of habitat within marine park boundary in cultural zones |
| Humpback whale | 5 | 24 | 25 |
| Snubfin dolphin | 7 | 19 | 26 |
| Australian humpback dolphin | 6 | 27 | 23 |
| Indo-Pacific bottlenose dolphin | 7 | 20 | 26 |

To help achieve the conservation objectives of ‘no significant decline in diversity and abundance, or changes in species distribution’ of humpback whales and the three coastal dolphins [page 53], potential improvements to the zoning plan include the following:

1b. Increase sanctuary zone protection for the Canning bioregion.

Humpback whale and coastal dolphin habitat protection could be improved with expanding the Pender Bay sanctuary zone. In addition, an additional sanctuary zone between the Alarm Shoals, Hunter Creek and Iwany and Thomas Bay cultural protection zones would increase protection for humpback whale and dolphin habitats (Map 4).

2a. Permanently remove gillnetting and trawling from marine parks in the Buccaneer Archipelago and surrounds.

Both of these destructive fishing methods are inappropriate for marine parks.

Table 6: Summary of potential improvements for the proposed Bardi Jawi Marine Park.

| Potential improvement | Location | Rationale |
|--|---|---|
| 1b. Increase sanctuary zone protection for the Canning bioregion. | Expanding the Pender Bay sanctuary zone | Humpback whale high density calving, nursing, migration, resting area species |
| | | Australian Snubfin Dolphin calving, breeding, and foraging important habitat |
| | | Indo-Pacific Humpback Dolphin calving, breeding, and foraging important habitat |
| | | Indo-Pacific/Spotted Bottlenose Dolphin calving, breeding, and foraging important habitat |
| | | Seabird important habitat |
| | | Canning bioregion representation |
| | | Seagrass habitat |
| | | Dugong foraging habitat |
| 1b. Increase sanctuary zone protection for the Canning bioregion. | Create an additional sanctuary zone in the Bardi Jawi marine park in the area between the Alarm Shoals, Hunter Creek & Iwany and Thomas Bay cultural protection zones | Humpback whale calving, nursing, resting, and high-density areas |
| | | Critical habitat for flatback turtles |
| | | Critical nesting habitat for Olive Ridley turtles |
| | | Indo-Pacific Humpback Dolphin calving, breeding, and foraging important habitat |
| | | Australian Snubfin Dolphin calving, breeding, and foraging important habitat |
| 1c. Increase sanctuary zone protection for the King Sound bioregion. | Extend the Cygnet bay sanctuary zone | Indo-Pacific/Spotted Bottlenose Dolphin calving, breeding, and foraging important habitat |
| | | biologically important area for dwarf sawfish foraging, pupping, juvenile, and nursing |
| | | foraging and nursing for the freshwater sawfish |
| | | biologically important habitat all 3 dolphin species |

| Potential improvement | Location | Rationale |
|---|--|--|
| 1e. Progress towards a world class sanctuary network for the Kimberley | Expand the Twin Island and Sunday strait sanctuary zone northward to the boundary of the marine park | biologically important habitat all 3 dolphin species |
| | | Humpback whale calving, nursing, resting, and high-density areas |
| | | olive ridley turtle nesting habitat |
| | | Coral reef habitat |
| 2b. Remove mining and mining exploration from the Buccaneer marine parks. | Entire marine park | Destructive and not in line with best practice management |

4. PROPOSED MAYALA MARINE PARK INDICATIVE JOINT MANAGEMENT PLAN

4.1. Overview of achievements and proposed improvements

MAJOR ACHIEVEMENTS OF THE PROPOSED ZONING PLAN

The proposed plan for the Mayala Marine Park has the following strengths:

Best-practice management and sanctuary protection

- The plan includes intelligent, forward-thinking proposals for smaller coastal sanctuary zones (Yoorroon and Oobayal) that will maximise recreational fishing values while also providing increased protection for key coastal habitats.
- The plan sets an adaptive management timeframe of 3–5 years for reporting on the targets set for each species and habitat. These targets include no significant declines in any of the habitats or species.
- The plan recognises the impacts of anthropogenic climate change on the marine environment.
- The Janawan sanctuary zone will protect key habitat for:
 - flatback turtle nesting on Helpman Island, the only nesting site in the sea country
 - dwarf sawfish (pupping, nursing, juveniles)
 - freshwater sawfish (foraging, nursing)
 - all 3 dolphin species (calving, breeding, foraging)
- The large (275 km²) proposed Biidib sanctuary zone is complementary to the proposed Twin Islands sanctuary zone (Bardi Jawi sea country) and will protect:
 - significant fringing and planer coral reefs
 - all 3 dolphin species (calving, breeding, foraging)
 - humpback whale habitat (migration, nursing, calving, resting)

Joint management and co-design achievements

- In a first for Australia, this marine park has been co-designed by Traditional Owners, recognising their appropriate status as decision-makers rather than stakeholders.
- The plan recognises the region's rich culture and heritage and includes 19% of the proposed marine park in cultural zones.

POTENTIAL IMPROVEMENTS TO THE SANCTUARY ZONES IN THE MARINE PARK

The following recommended changes to the sanctuary zones in Mayala sea country (summarised in Table 9) would strengthen protection for key habitats and species.

1a. Where feasible, expand sanctuary zones to at least 100 km² in line with world's best practice.

The small Yoorroon, Oobayal and Bordo (Maiyalam marine park) sanctuary zones could be more effective with small extensions to make them a part of the larger Biidib sanctuary zone while still optimising adjacent recreational fishing values (Map 5). This would increase protection for fringing coral reefs, and protect corridors and calving, breeding and foraging habitats for the 3 coastal dolphin species.

1c. Increase sanctuary zone protection for the King Sound bioregion.

The value of the Janawan (Helpman Island) sanctuary zone could be increased by expanding the zone to the northwest (Map 5) to include additional protection for:

- habitats for the endangered dwarf sawfish (pupping, nursing, juveniles) and the critically endangered freshwater sawfish (foraging, nursing), almost doubling the proposed protection (in Mayala marine park)
- Australian Snubfin Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific/Spotted Bottlenose Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific Humpback Dolphin biologically important habitat (calving, breeding, and foraging)
- the flatback turtles nesting site on Helpman Island
- Dugong habitat (foraging)

1e. Progress towards a world class sanctuary network for the Kimberley

The Yawalgi sanctuary zone could be expanded northward to the boundary of the marine park and/or expanding the Janawan sanctuary zone into the deeper waters of King Sound to help in expanding the sanctuary zones and in raising the overall level of sanctuary zones to world class levels for the network (Map 5). This would increase protection for:

- humpback whale high density calving habitat, one of only three locations mapped in the Kimberley (Yawalgi sanctuary expansion)
- Australian Snubfin Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific/Spotted Bottlenose Dolphin biologically important habitat (calving, breeding, and foraging)
- Indo-Pacific Humpback Dolphin biologically important habitat (calving, breeding, and foraging)
- deeper water habitat of the King Sound bioregion, currently underrepresented in sanctuary zones (Janawan sanctuary expansion)

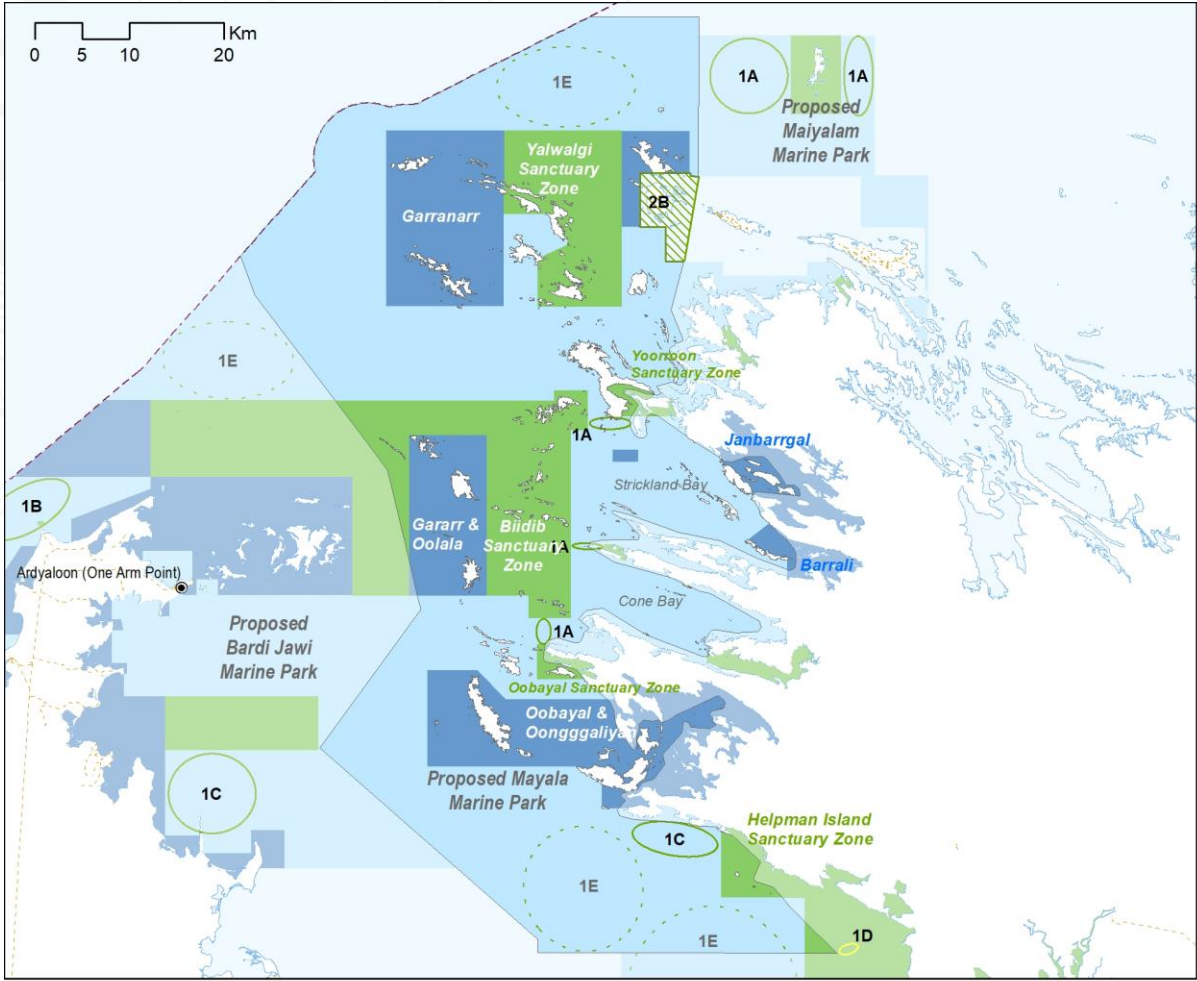
2. Potential improvements to restrict destructive activities

2a. Permanently remove gillnetting and trawling from the Buccaneer marine parks.

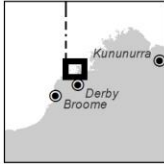
Both gillnetting and trawling are destructive fishing methods and inappropriate for the Buccaneer Archipelago and surrounds, particularly in habitats for threatened sawfish and coastal dolphin species.

2b. Remove mining and mining exploration from the Buccaneer marine parks.

The government should revoke the mining leases in marine waters surrounding Irvine and Bathurst islands, and reject the pending lease for Flora Island on the basis that mining is incompatible with protecting the high cultural and conservation values that the marine parks are established to protect [3]. If mining does not go ahead on Irvine Island the marine park boundaries should be expanded to include this area (Map 5). Irvine Island, as the only remaining unmined outcropping of the Yampi member geological formation, has important conservation values [4]. The coral reefs between Irvine and Bathurst islands have a unique history and formation – with unusual and massive intertidal platforms of consolidated limestone – which they share with some of the other highest conservation value reefs in the region (the reefs of the Sunday Island complex, Montgomery Reef and Turtle Reef in Talbot Bay).



- | Current zoning | Opportunities for improvements to zoning |
|--|---|
| Cultural protection zone | Potential minor sanctuary zone additions |
| General use zone | Potential larger sanctuary zone additions |
| Sanctuary zone | Include in marine park as a sanctuary zone |
| State waters boundary | Possible Saddle Hill Creek recreational fishing access zone |



Map Info:
 Date: May 2021
 Coordinate System: Map Grid of Australia, Zone 51
 Data Sources:
 Proposed Marine Park: Boundaries supplied by Government of Western Australia, DBCA

Map 5: Potential improvements to the proposed zoning plan for Mayala Marine Park.

4.2. Key habitats in Mayala sea country

MARRGOORR (CORAL) AND MARNANY (REEF) COMMUNITIES

Mayala sea country is punctuated with numerous islands, most surrounded by fringing reefs, which, due to the extreme tides, are intertidal reef platforms. There are also patch and planer reefs. Despite their uniqueness, the reefs here are understudied, even at a coarse habitat level. Nonetheless, the research to date shows the region has some of the richest coral diversity in the world [page 32].

The coral reefs between Irvine and Bathurst islands have a unique history and formation – with unusual and massive intertidal platforms of consolidated limestone – which they share with some of the other highest conservation value reefs in the region.

Protection under the proposed zoning plan

Around 6% of the Kimberley’s mapped coral reef area is in Mayala sea country. The proposed zoning plan has the following strengths:

- The sanctuary zones would encompass 32% of the reef area in the Mayala Marine Park, primarily fringing reefs (with 30% protection), and one of just two large planer reefs (Biidib sanctuary zone) (Table 7). This represents around 2% of reefs in the Kimberley bioregion
- The cultural protection zones would encompass 43% of the reef area in the marine park, particularly in Oobayal and Oonggaliyan, Gararr and Oolala, Marnany Angana Wijiwarra, and Wanganiny zones. This represents around 2% of reefs in the Kimberley bioregion
- The Marnany Angana Wijiwarra cultural protection zone covers the largest of just 5 mapped patch reefs in Mayala sea country.

The overall level of protection proposed for coral reefs in the zoning plan is highly commendably high. The protection and representation of reefs could be improved by extending sanctuary zoning to include patch reefs, which currently have no sanctuary protection.

Table 7: Coral reef protection in the Kimberley bioregion and the proposed Mayala marine park

| Bioregion | Habitat | Existing protection in Kimberley sanctuaries (%) | Mayala Marine Park | | |
|-----------|----------------|--|---|---|--|
| | | | Increased bioregional protection by sanctuaries (%) | Percent of habitat within marine park boundary in sanctuaries | Percent of habitat within marine park boundary in cultural zones |
| Kimberley | Fringing reefs | 25 | 3 | 30 | 43 |
| Kimberley | Patch reefs | 23 | 0 | 0 | 55 |
| Kimberley | Planar reefs | 72 | <1 | 75 | 25 |

To help achieve the specified conservation objectives of 'no significant decline in diversity or total coral cover' and 'no change in community composition or colony size as a result of human activity' [page 34], potential improvements to the proposed zoning plan could include the following:

1a. Where feasible expand sanctuary zones to at least 100 km² in line with world's best practice.

The small Yoorroon, Oobayal and Boordo (Maiyalam seacountry) sanctuary zones would protect a greater number of coral reefs, particularly fringing reefs, by small extensions to make them a part of the larger Biidib sanctuary zone (Map 5).

4.3. Key species in Mayala sea country

GOORLIL (MARINE TURTLES)

Helpman Island includes a high-density rookery for flatback turtles, the only known turtle nesting site in this sea country. We commend the proposed establishment of a sanctuary zone for this area, which will offer conservation protection for the species, particularly from gillnet fishing.

Protection under the proposed zoning plan

The proposed zoning plan has the following strength:

- The Janawan sanctuary zone encompasses the critical nesting habitat for flatback turtles on Helpman Island. This is a significant sanctuary zone, providing a protected buffer for nesting flatbacks, which only nest in Australia.

The protection of flatback turtles may be increased with an increase to the Jawan sanctuary zone to the northeast (see 1C on Map 5).

SAWFISH

In Mayala sea country, freshwater and dwarf sawfish are concentrated in the Fitzroy River mouth, the May and Robinson river tidal tributaries and around Helpman Island. The Fitzroy river is the last remaining stronghold for sawfish, who've disappeared in 70% of their global range [30]. Mayala sea country overlaps 3% of the known sawfish habitat in King Sound bioregion.

Protection under the proposed zoning plan

The proposed zoning plan has the following strength:

- The sanctuary zone at Helpman island covers 40% of the known habitat for sawfish in Mayala sea country (Table 8) – a significant boost for protection of known habitat in the marine park.

This sanctuary zone in conjunction with the Maiyalam sanctuary zone (Robinson River and Helpman Island) will strengthen the protection of sawfish for the Kimberley, which are at high risk due to the cumulative effects of fisheries, particularly, the gillnet fishery. Currently, there is no proposed cultural protection zone intersecting mapped sawfish habitat in the sea country. The Robinson River and Helpman Island sanctuary zone will increase protection for both Freshwater and Dwarf Sawfish across the Kimberley from less than 5% to over 8 and 7% respectively.

Table 8: Sawfish protection in King Sound and the proposed Mayala marine park

| Species | Habitat location | Mayala Marine Park | | |
|--------------------|--|--|---|--|
| | | Increased total location protection by sanctuaries (%) | Percent of habitat within marine park boundary in sanctuaries | Percent of habitat within marine park boundary in cultural zones |
| Dwarf Sawfish | Pupping, nursing, juvenile - Fitzroy River Mouth, May & Robinson River - tidal tributaries | 0 | 40 | 0 |
| Freshwater Sawfish | Foraging and nursing – King Sound tidal tributaries | 0 | 40 | 0 |

To help achieve the conservation objectives of ‘no significant decline in the diversity, abundance, and species size structure, or community composition of sawfish’ [page 49], potential improvements to the proposed zoning plan could include the following:

1c. Increase sanctuary zone protection for the King Sound bioregion.

If possible, further expanding the boundaries of the Jawan (Helpman Island) sanctuary zone to increase protection for regionally under protected key habitats for sawfish within the King Sound bioregion (Map 5).

2a. Permanently remove gillnetting and trawling from the Buccaneer marine parks.

This area has already been closed to trawling and the marine parks plan should endorse that fisheries management decision. Both of these destructive fishing methods are inappropriate for marine parks.

WHALE SHARKS

Whale sharks migrate primarily in Commonwealth waters but are known to forage in Mayala sea country.

Protection under the proposed zoning plan

Most (93%) of the whale shark habitat mapped in coastal waters of the Kimberley is in the Kimberley bioregion, and <1% of this is in a sanctuary zone. Mayala sea country has around 11% of the mapped whale shark habitat in the Kimberley region, all within the Kimberley bioregion. 2% of this is included in the sanctuary zones, and a further 1% is protected in the Garranarr cultural protection zone.

MIINIMBI (WHALES)

Mayala sea country contains significant habitat for humpback whales.

Protection under the proposed zoning plan

Only 5% of humpback whale habitat in Kimberley coastal waters is currently protected in sanctuaries. The proposed zoning plan has the following strength:

- The Yawalgi sanctuary zone would protect about 17% of the mapped humpback whale habitat in Mayala sea country (Table 9), with additional protection afforded in the Garranarr cultural protection zone and Wanganiny cultural protection zone.

Sanctuary zone levels within the Kimberley as a whole are currently well below world class levels. Whale shark and Humpback whale habitat included in sanctuary zones would be increased with the suggested improvement for the expansion of The Yawalgi sanctuary zone (see 1e).

Table 9: Summary of potential improvements for the proposed Mayala Marine Park.

| Potential improvement | Location | Rationale |
|---|--|---|
| 1a. Where possible and relevant, expand sanctuary zones to at least 100 km ² in line with world's best practice. | The small Yoorroon, Bordo, and Oobayal sanctuary zones could be more effective with small extensions to make them a part of the larger Biidib sanctuary zone | Fringing reefs |
| | | Indo-Pacific/Spotted Bottlenose Dolphin calving, breeding, and foraging |
| | | Australian Snubfin Dolphin calving, breeding, and foraging |
| | | Indo-Pacific Humpback Dolphin calving, breeding, and foraging |
| 1c. Increase sanctuary zone protection for the King Sound bioregion. | Janawan sanctuary zone | Dwarf sawfish pupping, nursing, juveniles |
| | | Freshwater sawfish foraging and nursing |
| | | Australian Snubfin Dolphin calving, breeding, and foraging |
| | | Indo-Pacific Humpback Dolphin calving, breeding, and foraging |
| | | Indo-Pacific/Spotted Bottlenose Dolphin calving, breeding, and foraging |
| | | Flatback turtle nesting site |
| 1e. Progress towards a world class sanctuary network for the Kimberley | Extension of Yawalgi sanctuary zone north to the boundary of the park | Humpack whale high density calving and nursing |
| | | Whale shark foraging |
| | Extension of the Jalwan (Helpman Island) sanctuary zone | Australian Snubfin Dolphin calving, breeding, and foraging |
| | | Indo-Pacific Humpback Dolphin calving, breeding, and foraging |

| Potential improvement | Location | Rationale |
|--|--|---|
| | | Indo-Pacific/Spotted Bottlenose Dolphin calving, breeding, and foraging |
| | | Deeper bathomes of the King Sound bioregion |
| 2a. Permanently remove gillnetting and trawling from the Buccaneer marine parks. | Entire park | These activities are destructive to the values of the marine park |
| 2b. Remove mining and mining exploration from marine parks in the Buccaneer Archipelago and surrounds. | Waters surrounding Irvine and Bathurst Islands | Fringing coral reefs |
| | | Australian snubfin dolphin habitat (calving, breeding, foraging) |
| | | Indo-Pacific humpback dolphin habitat (calving, breeding, foraging) |
| | | Indo-Pacific/spotted bottlenose dolphin habitat (calving, breeding, foraging) |
| | | Humpback whale habitat (migration, nursing, calving, resting). |

5. PROPOSED MAIYALAM MARINE PARK INDICATIVE JOINT MANAGEMENT PLAN

5.1. Overview of achievements and proposed improvements

MAJOR ACHIEVEMENTS OF THE PROPOSED ZONING PLAN

The proposed plan for the Maiyalam Marine Park has the following strengths:

Best-practice management and sanctuary protection

- The Robinson River and Helpman Island sanctuary zone protects 9% of the King Sound bioregion and improves protection for:
 - dwarf sawfish habitat (pupping, nursing, juveniles)
 - freshwater sawfish habitat (foraging, nursing)
 - Australian snubfin dolphin habitat (calving, breeding, foraging)
 - Indo-Pacific humpback dolphin habitat (calving, breeding, foraging)
 - Indo-Pacific/spotted bottlenose dolphin habitat (calving, breeding, foraging).
- The plan includes intelligent, forward-thinking proposals for smaller coastal sanctuary zones (Waddaddam, Bullbull, and Ganguddee Eweuleg) that will benefit recreational fishing values while also providing increased protection for key coastal habitats.
- The plan sets an adaptive management timeframe of 3–5 years for reporting on the targets set for each species and habitat. These targets include no significant declines in any of the habitats or species.
- The plan recognises the impacts of anthropogenic climate change on the marine environment.

Joint management and co-design achievements

- In a first for Australia, this marine park has been co-designed by Traditional Owners, recognising their appropriate status as decision-makers rather than stakeholders.
- The plan recognises the region's rich culture by including 10% of the marine park in proposed cultural zones. This doubles the existing area zoned for cultural protection in Dambeemangarddee sea country.

POTENTIAL IMPROVEMENTS TO SANCTUARY ZONING

The following changes (summarised in Table 12) could strengthen protection of key habitats and species.

1a. [Where feasible, expand sanctuary zones to at least 100 km² in line with world's best practice.](#)

The Macleay Island sanctuary zone (41km²) could be more effective if it were expanded (Map 6) to provide additional protection for:

- Gibbings Reef, a patch reef, a habitat currently under-represented in sanctuary zones in the Kimberley region
- whale shark habitat (foraging): Macleay Island is one of the few known whale shark habitats in coastal water in the Kimberley region
- humpback whale habitats (migration, nursing, calving, resting).

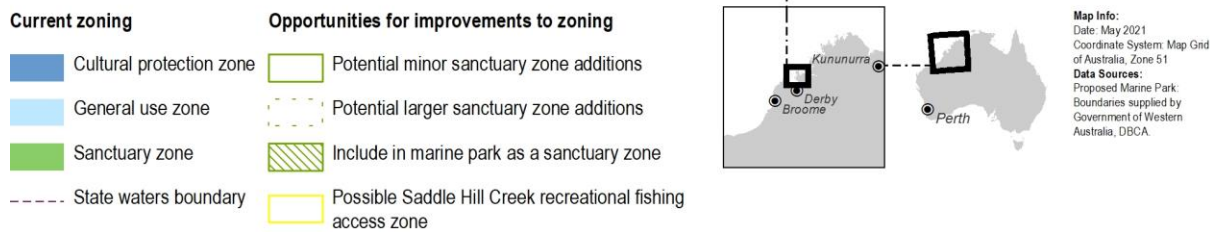
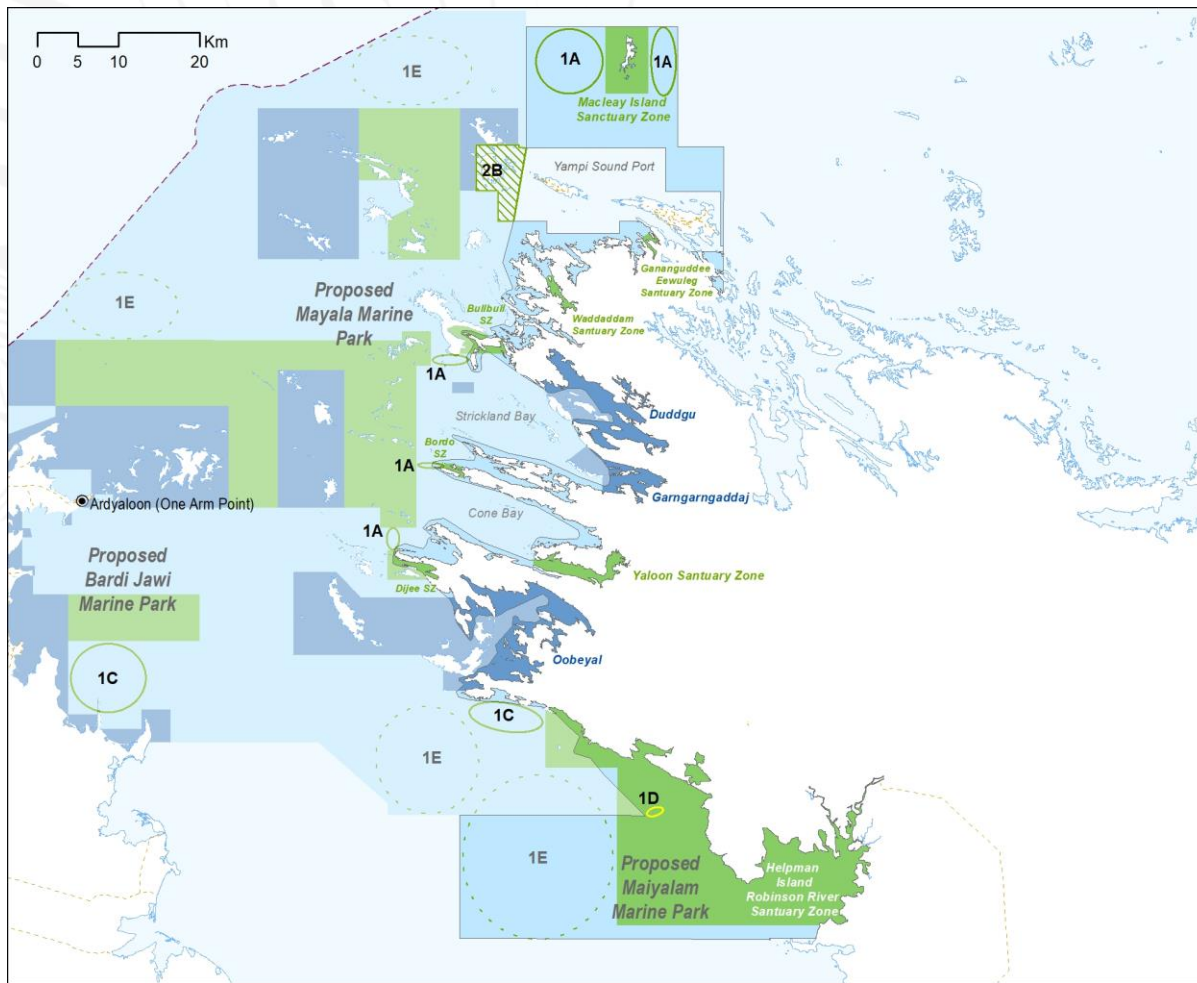
1d. [Resolve conflicts with recreational fishers over the Robinson River and Helpman Island sanctuary zone.](#)

The recreational fishing values within the sanctuary zone are also highly accessible elsewhere in King Sound but if Traditional Owners and the Government deem it wise to provide recreational fishers with some access to a specific key area then a very small access zone (special purpose (recreation and conservation)) could be established, likely at one of the Saddle Hill Creeks, as this is a valued fishing location along this coastline for recreational fishing. This has been done at Jooloom (Middle Island) in the Bardi Jawi marine park and has also been done at Montgomery Reef in the Lalang Garram / Camden Sound marine park. It is important to keep the large sanctuary zone here, as it is one of the few large coastal estuary sanctuary zones within the Kimberley, and is a key achievement of the proposed zoning plan, particularly for the protection of mangrove and sawfish habitats.

2. Potential improvements to restrict destructive activities

2a. [Permanently remove gillnetting and trawling from the Buccaneer marine parks.](#)

This area has already been closed to trawling. Both gillnetting and trawling are destructive fishing methods and inappropriate for the Buccaneer Archipelago and surrounds, particularly in habitats for threatened sawfish and coastal dolphin species.



Map 6: Potential improvements to the proposed zoning plan for Maiyalam Marine Park.

5.2. Key habitats in Miyalam Marine Park

WADDAROO (CORAL AND REEF COMMUNITIES)

Dambeemangardee sea country is rich in corals, with around 36% of the Kimberley bioregion’s reef area, including fringing and patch reefs. Dambeemangardee sea country has existing sanctuary protection for coral reefs in Lalang-garram / Camden Sound Marine Park - Montgomery Reef. This is already a famous tourist attraction, providing evidence of the potential tourism benefits of fully protected reefs.

Protection under the proposed zoning plan

The proposed zoning plan has the following strengths:

- The proposed sanctuary zones will protect 29% of the coral reef area in Maiyalam Marine Park – representing an additional 5% of coral reefs in Dambeemangardee sea country and around 1% of the Kimberley bioregion’s coral reef area.
- The cultural zones proposed at Oobeeyal and Duddgu, both contain significant fringing reef area, removing risk from most fishing activities.

Patch reefs in the Kimberley are under-represented in marine sanctuaries. The proposed zoning plan offers sanctuary protection to 12% of the patch reef area in Maiyalam Marine Park, an important contribution to regional protection of this reef type.

Table 10: Coral reef protection in the Kimberley and the proposed Maiyalam Marine Park

| Bioregion | Habitat | Existing protection in Kimberley sanctuaries (%) | Maiyalam Marine Park | | |
|-----------|----------------|--|---|---|--|
| | | | Increased bioregional protection by sanctuaries (%) | Percent of habitat within marine park boundary in sanctuaries | Percent of habitat within marine park boundary in cultural zones |
| Kimberley | Fringing reefs | 25 | 1 | 29 | 6 |
| Kimberley | Patch reefs | 23 | <1 | 12 | 7 |

To help achieve the conservation objectives of ‘no significant decline in diversity or total coral cover’ and ‘no change in community composition or colony size as a result of human activity’ [page 34], potential improvements to the proposed zoning plan could include the following:

1a. Where feasible expand sanctuary zones to at least 100 km² in line with world's best practice.

Expanding the Macleay Island sanctuary zone east to the marine park boundary to include Gibbings Reef could increase sanctuary protection for patch reefs in the marine park (Map 6).

JINDIRM (MANGROVE) AND GALOW (SALTMARSH) COMMUNITIES

Maiyalam sea country contains the majority of mapped mangrove and saltmarsh habitat in the Kimberley bioregion.

Protection under the proposed zoning plan

Currently, almost no mapped saltmarsh and mangrove habitats are protected in sanctuary zones in the Kimberley (note mapping to date has been limited).

The proposed zoning plan has the following strength:

- The proposed sanctuary zones would protect 61% of mapped saltmarsh habitat in the Maiyalam Marine Park. This is a good step towards increasing the representativeness and adequacy of sanctuary zones in the Kimberley.

Most of the remaining mangrove and saltmarsh habitats are encompassed within the proposed special use zone (39% of saltmarsh and 82% of mangrove habitat). There may be opportunities to increase sanctuary protection for mangroves in other bays or inlets, but CCG does not have data to identify these opportunities.

5.3. Protection of key species

SAWFISH

Dambeemangarddee sea country contains a large area of known critical habitat for the dwarf and freshwater sawfishes, concentrated in the Fitzroy River mouth, May and Robinson river tidal tributaries and around Helpman Island. Some of this occurs in the port exclusion zone of Derby Port, indicating the conservation importance of the decision to relinquish parts of the port area, a significant conservation achievement of the proposed marine park.

Protection under the proposed zoning plan

Current protection of sawfish is highly inadequate in the Kimberley region, with just 4% sanctuary protection for freshwater sawfish habitats and 5% for dwarf sawfish. This means that major fishing threats still operate across much of their habitat, even in marine parks.

The proposed zoning plan has the following strength:

- The Robinson River and Helpman Island sanctuary zone sanctuary would encompass around 47% of the sawfish habitat in the marine park. This would make a significant contribution to protection of sawfish habitat in the marine park and the Kimberley region. The sanctuary zone covers 10% of the King Sounds sawfish habitat. There is no intersection with cultural protection zones.

However, it important to ensure that the Derby port area overlapping the significant Robinson Helpman Island sanctuary zone is included in the marine park. This would contribute significant sanctuary protection to sawfish and reduce the threat of gillnetting.

Table 11: Sawfish protection in King Sound and the proposed Maiyalam Marine Park

| Species | Habitat location | Maiyalam Marine Park | | |
|--------------------|--|--|---|--|
| | | Increased total location protection by sanctuaries (%) | Percent of habitat within marine park boundary in sanctuaries | Percent of habitat within marine park boundary in cultural zones |
| Dwarf Sawfish | Pupping, nursing, juvenile - Fitzroy River Mouth, May & Robinson River - tidal tributaries | 11 | 90 | 0 |
| Freshwater Sawfish | Foraging and nursing – King Sound tidal tributaries | 10 | 90 | 0 |

1d. Resolve conflicts with recreational fishers over the Robinson River and Helpman Island sanctuary zone.

The Robinson River and Helpman Island sanctuary zone intersects with known recreational fishing locations. To help resolve potential conflicts while maintaining a high level of sanctuary protection, a small recreational fishing zone could be considered, likely at one of the Saddle Hill Creeks, to provide recreational fishers with some access to the area (see 1d on Map 6). Potential expansion of the Sanctuary zone to meet the sea country boundaries south and west would further the protection of sawfish in the sea country (see 1c on Map 6.), as would the permanent removal of gillnetting in the marine park (see 2a on Map 6).

WHALE SHARKS

Whale sharks are known to forage in Dambeemangarddee sea country. Only 2% of their habitat in the Kimberly lies in coastal waters, and none of this is in a sanctuary zone (47% lies within marine parks – Lalang-garram / Camden Sound, North Kimberley, and North Lalang-garram). The majority (93%) of whale shark habitat is in the Kimberley bioregion.

Protection under the proposed zoning plan

The marine park overlaps 6% of the whale shark habitat (migration) in the Kimberley bioregion. Currently, 9% of the whale shark foraging habitat in the proposed marine park is included in a sanctuary zone – equivalent to 1% of the habitat area in the Kimberley bioregion.

NGUNUBANGE (WHALES)

The proposed Maiyalam Marine Park has 12% of the mapped humpback whale habitat in the proposed Buccaneer marine parks, equivalent to 2% of the Kimberley region’s known habitat for humpback whales.

Protection under the proposed zoning plan

11% of the humpback whale habitat (resting, nursing, calving) in Maiyalam Marine Park would be protected in a sanctuary zone (Macleay Island)

1a. Where feasible, expand sanctuary zones to at least 100 km² in line with world’s best practice.

Whale shark and Humpback whale habitat included in sanctuary zones would be increased with the suggested improvements for sanctuary expansion at Macleay island (see 1a on Map 6)

Table 12: Summary of potential improvements for the proposed Maiyalam Marine Park.

| Potential improvement | Location | Rationale |
|---|--|--|
| 1a. Where possible and relevant, expand sanctuary zones to at least 100 km ² in line with world’s best practice. | Macleay Island sanctuary zone | reef area including fringing and patch reef |
| | | Whale shark migration habitat |
| | | Seabird habitat |
| | | Humpback whale migration, nursing, calving, and resting habitat |
| 1c. Increase sanctuary zone protection for the King Sound bioregion. | Robinson River and Helpman Island sanctuary zone | Dwarf sawfish pupping, nursing, juveniles |
| | | Freshwater sawfish foraging and nursing |
| | | Indo-Pacific/Spotted Bottlenose Dolphin calving, breeding, and foraging |
| | | Australian Snubfin Dolphin calving, breeding, and foraging |
| | | Indo-Pacific Humpback Dolphin calving, breeding, and foraging |
| 1d. Resolve conflicts with recreational fishers over the Robinson River and Helpman Island sanctuary zone. | Saddle creek | Provide recreational fishing benefits, whilst not significantly reducing the size of an important sanctuary zone |

6. CURRENT HUMAN USES

Only human uses compatible with the primary objectives to protect the cultural and natural heritage of the proposed marine parks should be permitted. The purpose of each plan is to enhance nature conservation, preserve and promote culture and heritage, and support and provide for compatible recreational and commercial use for future generations [page 1]. Mining, mining exploration, trawling and gillnet fishing are incompatible with the purpose.

6.1. Recreational fishing

Fishing is a favorite pastime in Western Australia, and the Kimberley region offers good fishing opportunities for both locals and tourists. Provided high levels of protection exist and as long as recreational fishing is well designed, monitored, managed and enforced, it can provide economic and social benefits for the region without significantly damaging natural values in some locations in a marine park, through local use and tourism opportunities. The cultural protection and sanctuary zones contribute significantly to conservation by protecting a large percentage of the Buccaneer area from almost all recreational and commercial fishing (excluding fishing tours in cultural protection zones).

We recommend transforming general use areas into a special purpose zone (recreation and conservation) to protect the marine parks and the values (including recreational fishing) from mining, seismic testing and commercial trawling and gillnetting while allowing for recreational and community use – this is in line with best practice marine park management, as these commercial activities are destructive and do not align with the conservation objectives of the marine park. Recreational fishers will benefit from a reduction in competing uses.

There is also benefits for recreational fishers in having adjacent sanctuary zones, with fish abundance increased by spill-over effects. One of the goals of the zoning plans should be to maintain and enhance community use and recreational fishing values through an intelligent mix of sanctuary zones, cultural zones and special purpose (recreation and conservation) zones.

To help achieve the conservation objectives of marine parks while also supporting compatible uses, potential improvements to the proposed zoning plan could include establishing a small recreational fishing access zone to resolve conflicts while still protecting the important habitat (*see 1d*) and banning trawling and gillnetting in the marine parks (*see 2a*).

6.2. Commercial fishing

Certain commercial fishing methods threaten the natural values of the Kimberley, with impacts on tourism and local users [31]. Recreational fishers, scientists, conservationists, and other stakeholders have raised concerns about gillnetting in Derby due to impacts on threatened species, the sustainability of fish stocks, and cultural values [32].

Gillnet fishing is one of the most destructive commercial fishing methods [33]. It occurs in the habitats of several threatened species, including sawfish, marine turtles, the northern river shark, and Australian snubfin dolphin. The populations of some of these species are so low that even a low

rate of bycatch is unacceptable, highlighting the incompatibility of the fishing method with the objectives outlined in each marine park proposal for these species [34].

Allowing the Kimberley Gillnet Barramundi Managed Fishery to operate in the Buccaneer marine parks is inconsistent with the conservation targets in the zoning plans and with the parks' primary purposes of enhancing nature conservation, preserving, and promoting culture and heritage, and supporting and providing for compatible recreational and commercial use for future generations [page 1]. Removing the commercial fishery is likely to have benefits for tourism and local fishers—with recreational fishing benefiting from greater barramundi abundance.

The commercial value of Barramundi catch in 2014 (44 tonnes) was low, worth less than \$1 million dollars [35]. The catch for 2015-7 was 50 tonnes. The number of people employed in the fishery is declining. In 2013, 6 vessels were active in the fishery, employing about 16 people [36]. In 2018, 4 vessels were active, employing an estimated 9 people [37]. The Western Australian Government did a license buy-back during the implementation of the Roebuck Bay Marine Park, with 2 licenses purchased for an undisclosed amount.

Barramundi is an important source of fresh fish for both the domestic and international market. Shifting the commercial fishery to aquaculture is more sustainable option which still provides economic benefits to the local community. The value of the Kimberley's aquaculture industry exceeds that of the fishing industry by an order of magnitude, and much of it operates within the proposed park area [38]. For example, the Cone Bay Ocean Barramundi Project, a Barramundi sea cage farm produces 3000 tonnes of barramundi annually [39].

This area has already been closed to trawling and the marine parks plans should endorse that fisheries management decision as well as Permanently remove gillnetting and trawling from the Buccaneer Archipelago and surrounds marine parks (see 2a).

6.3. Mining and seismic testing

The proposed marine parks intersect with mining tenements, including on Flora, Irvine and Bathurst islands, which are rich in iron ore. There is a mining lease on and around Irvine Island, an exploration licence granted for Bathurst Island, with exploration likely to begin in the next 12 months [page 72], and a pending exploration licence for Flora Island.

The natural values of Flora, Irvine, and Bathurst islands warrant world-class protection. They are surrounded by fringing reefs, waters rich in marine life, and a biologically important area for humpback whale nursing, calving, migration and resting. There are over 16 km² of fringing coral reefs surrounding Irvine and Bathurst Islands. The reefs between these Islands and those of the Sunday Island complex contain unusual massive intertidal platforms of consolidated limestone, which have a unique history and formation, deserving sanctuary protection. Irvine Island is the only remaining unmined outcropping of the Yampi member geological formation and has important conservation values. Bathurst Island has a unique flora [4]. The proposed Mayala Marine Park plan recognises that the waters surrounding Irvine Island are of exceptional cultural and ecological significance [page 13].

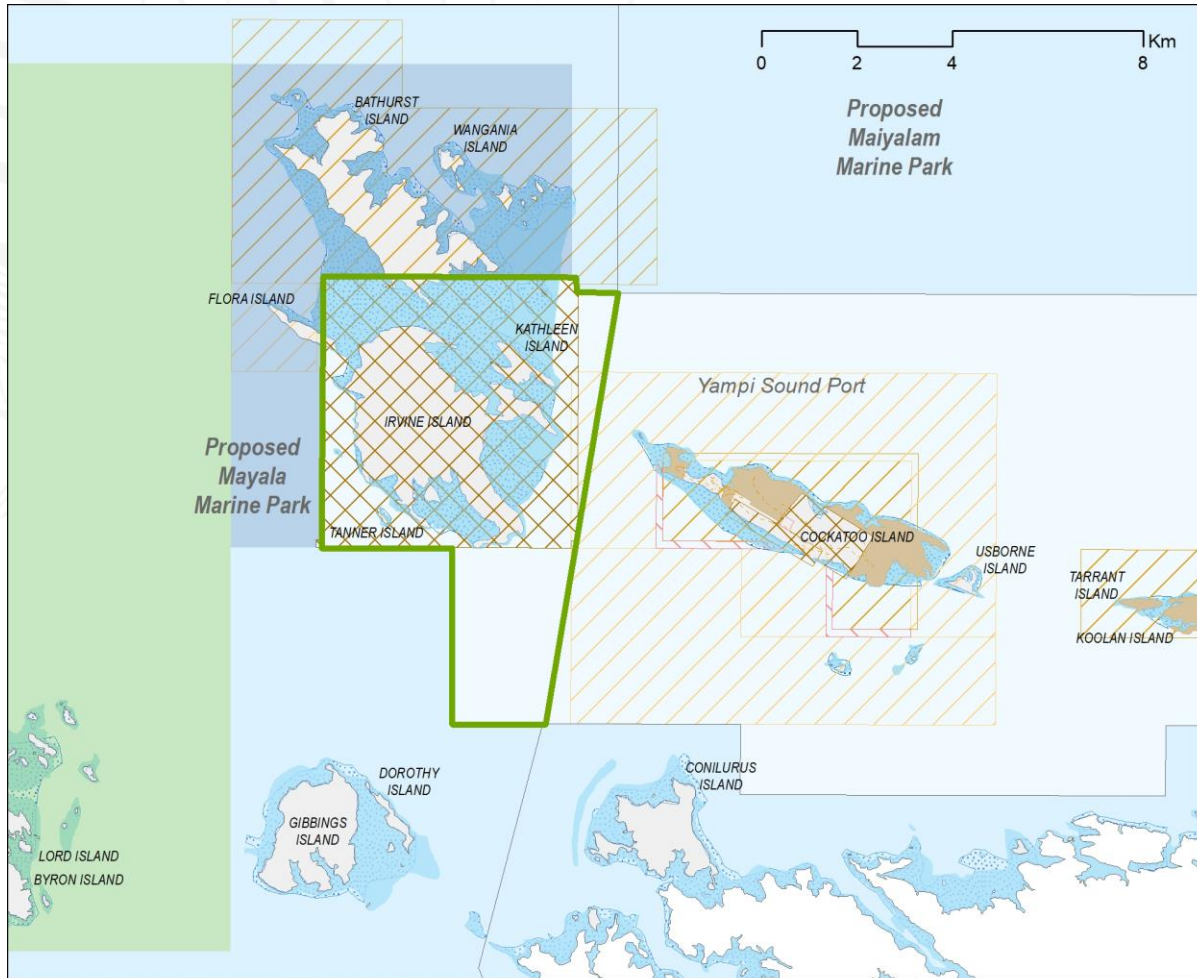
The Mayala Marine Park plan also recognises the threat of mining to water quality [page 41] and geomorphology [page 43]. To allow an activity recognised as a threat to the natural values of the proposed marine park is inconsistent with conservation and will likely compromise achievement of the objectives outlined in the marine park plan.

Seismic testing – used to find oil and gas – has deleterious effects on marine life. It can impede communication, navigation and foraging, damage fish with air bladders, impact hearing, and cause animals to migrate from the area [40,41]. Allowing seismic testing in Kimberley waters is inconsistent with the conservation objectives of the Greater Kimberley Marine Park and those in the proposed plans for the Buccaneer marine parks. It should not be permitted in the coastal waters of the Kimberley.

To help achieve the conservation objectives of the proposed marine parks, potential improvements to the proposed zoning plan could include the following:

2b. Remove mining and mining exploration from the Buccaneer marine parks.

The government should revoke the mining leases in marine waters surrounding Irvine and Bathurst islands, and reject the pending lease for Flora Island on the basis that mining is incompatible with protecting the high cultural and conservation values that the marine parks are established to protect. If mining does not go ahead on Irvine Island, the island should be included in the marine park.



Current zoning

- Cultural protection zone
- General use zone
- Sanctuary zone

Opportunities for improvements to zoning

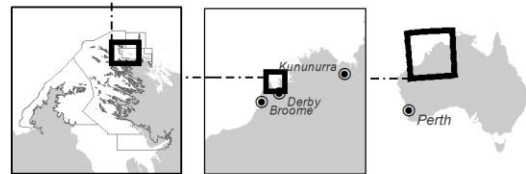
- Include in marine park as a sanctuary zone

Key habitats

- Intertidal
- Fringing reef

Mining Tenements (status)

- EXPLORATION LICENCE (LIVE)
- EXPLORATION LICENCE (PENDING)
- MINING LEASE (LIVE)
- PROSPECTING LICENCE (PENDING)
- TEMPORARY RESERVE (LIVE)



Map Info:
 Date: May 2021
 Coordinate System: Map Grid of Australia, Zone 51
Data Sources:
 Proposed Marine Park: Boundaries supplied by Government of Western Australia, DBCA.
 Reefs: Western Australian Marine Science Institution (WAMSI)
 Mining tenements: Department of Mines, Industry Regulation and Safety, Government of Western Australia.

Map 7. Proposed area around Bathurst, Flora and Irvine Island to be included in marine park as a sanctuary zone.

7. ADELE ISLAND, MAVIS REEF AND BEAGLE REEFS

Adele Island, Mavis reef, and Beagle reefs are biologically important areas and warrant a large sanctuary zone. As these were not included in the zoning plans for the Buccaneer marine parks, the area should be a high priority for future protection as large sanctuary zones within the Greater Kimberley Marine Park. Adele Island has been long recognised for its unique conservation values, including by multiple listings on the Register of the National Estate. The area is of high conservation importance for the following reasons (not exhaustive):

- Reefs: Unusual planar reefs rich in species at Mavis, Beagle and Adele reefs; Adele Reef is one of the largest and most mature on the Sahul Shelf, unique in Australia, with mixed assemblages of rhodoliths and coralliths.
- Seabirds: Highly significant for seabirds; Adele Island is a key biodiversity area for supporting 3–9% of the world's breeding population of lesser frigatebirds and brown boobies and a biologically important area for brown booby, red-footed booby, greater frigatebird, lesser frigatebird, little tern and lesser crested tern. It is one of the most important nesting sites in the Kimberley.
- Shorebirds: the area is globally significant for shorebirds, including several threatened species, and species for which the island has supported more than 1% of the estimated total flyway population.
- Humpback whales: Biologically important area for nursing, calving, migration and resting.
- Green turtle: Up to 43% of mapped critical nesting habitat is centred on Adele Island.
- Olive ridley turtle: Critical habitat is centred on Adele Island.
- Whale sharks: Whale sharks are known to migrate in this area.

These exceptional conservation values warrant sanctuary protection.

[1e. Progress towards a world class sanctuary network for the Kimberley](#)

Sanctuary zone levels within the Kimberley as a whole are currently well below a world class level. Including Adele Island, Mavis Reef and Beagle Reef within the Kimberley sanctuary zone network is likely to be critical to achieving a world class level of protection.

8. CO-DESIGN & JOINT MANAGEMENT

The parks of the Great Kimberley Marine Park have been the first marine parks in Western Australia to be jointly managed by the state government and Traditional Owner groups. This is a major achievement, realised after many years of advocacy and negotiation, with the potential to bring many local, regional, and national conservation, cultural, social, and economic benefits. The Buccaneer marine parks have set another important precedent as the first co-designed marine parks in Australia – a good step towards recognising the rights and status of Traditional Owners as decision-makers over their sea country.

There is no one model for successful joint management. Its effectiveness for the Buccaneer marine parks will rely on strengthening relationships and adequate investment from the state government. It is also critical to ensure that joint management is treated as a process, with continual engagement and adaptation to ensure best-practice management is implemented in an adaptive management framework. It is important to learn from existing joint management arrangements in the Great Kimberley Marine Park and others elsewhere.

The experience with joint management across Australia has shown that establishing arrangements that work optimally for both partners is not at all straightforward due to the different cultures, capacities, powers, rights, and expectations of the partners. This means that joint arrangements should be regarded, particularly in their early stages, as works in progress, to be regularly reviewed and improved. Once joint management agreements have been negotiated, 'there is the risk of insufficient attention to improvement once the initial establishment momentum is lost' [42].

Although joint management arrangements inevitably involve some compromise on aspirations for autonomy, arrangements could be developed that foster Indigenous-led conservation and Traditional Owner autonomy over day-to-day park management (in an agreed management framework). One precedent for this is the Errk Oykangand National Park in far north Queensland, for which a wide range of park services, funded by the state government, have been delegated to an Aboriginal land management agency [43]. Such arrangements could be negotiated with Aboriginal corporations with strong ranger teams in the Kimberley. The extent to which joint management arrangements enable operational management by the Traditional Owners will be critical determinants of the success of Kimberley's marine parks [44].

Traditional Owner groups have amply demonstrated through Indigenous protected areas their capacity for effective autonomous management of reserves, including in the Kimberley. There has been a long history of Indigenous rangers working on sea country in the Kimberley and elsewhere. Capacity and experience vary widely between groups, but some are already advanced in many management functions and in a good position to increase their capacity. For example, the Bardi Jawi rangers were Australia's first volunteer marine rescue group, and undertake monitoring of seagrass and threatened species, and work in research partnerships with the Australian Institute of Marine Science [45–47].

Successful joint management is characterised by real partnerships grounded in free, prior, informed consent. When successful, joint management can help create lasting benefits for Traditional Owners, governments, and the wider community, including:

- improved conservation outcomes
- improved, increased, active and equitable engagement in caring for Country

- long-term social, cultural, health, employment, and economic benefits for Traditional Owners
- more targeted and effective strategies toward Closing the Gap through greater access to sea Country [48].

There is considerable potential for joint management arrangements to do more in identifying and striving to achieve the aspirations of Traditional Owners beyond those to manage and protect the natural and cultural values of their sea country. The extent to which joint management achieves the aspirations of Traditional Owners will be specific to each group. However, aspirations in common undoubtedly include strong protection of their cultural heritage. The co-design of the Buccaneer marine parks puts the Traditional Owners and state government partners in an unprecedented strong position to achieve high-quality joint management.

The Buccaneer Traditional Owners have embraced their co-design responsibilities. As reflected in media stories, they have been excited about seeing native title put into practice [49], and that they are being heard throughout the whole planning process [50].

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