



Tiwi Islands Sea Country

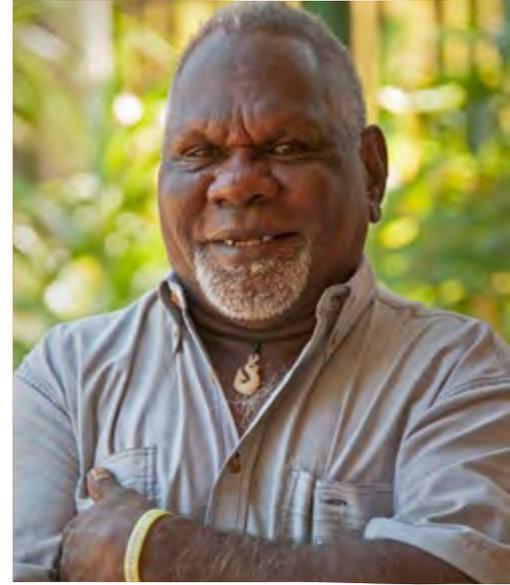
An information booklet supporting Tiwi people's aspirations for a Marine Indigenous Protected Area.





“Just as Tiwi traditional owners understood and cared for our land and sea when we used it for the traditions in the past, the new generations of Tiwi land managers need to understand and care for it now and into the future. To keep our country healthy, our people healthy and our culture strong, we need to bring together our knowledge of the past with new ways of doing things today. A Tiwi Marine IPA will help us to continue to look after our sea country and our culture for all the generations to come.”

— Gibson Farmer Illortaminni
Tiwi Land Council Chairman



This document is a compilation of key information for a prospective Tiwi Marine Indigenous Protected Area (IPA). It highlights the exceptional natural and cultural values of Tiwi Sea Country and emphasises the benefits of public investment in this Indigenous-led project. It also informs the Tiwi community and other stakeholders of the outstanding opportunity to protect Tiwi assets within a dedicated Marine IPA.

Information collated in this document will support an application to the Australian Government's Marine IPA grant round, which was announced in June 2021 as part of the \$100 million Ocean Leadership package.

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The Tiwi Islands



Location of the Tiwi Islands



Pottinga
(VERNON ISLANDS)

Arafura
Sea

Irrittu Island
Yuwurliipi
(Cape Gambier)

Yirripuringayi
(Buchanan Island)

BATHURST ISLAND

Wurrumiyanga

Paru

Wurrankuwu

Port Hurd

Yipinuwurra
(Cliff Island)

Apsley Strait

Port Melville

Piriangimpi

Milikapiti

MELVILLE ISLAND

Dundas Strait

Point
Jahleel

Pirripairiyi
(Seagull Island)

Imalu
(Cape Van Diemen)

Nodlaw
Island

Purrapinarli
(Karslake Island)

Pajuwapura
(Rocky Point)

Deception
Point

Harris
Island

Kanunga
Point

Cape
Helvetius

Jikilarruwu
(Cape
Fourcroy)

Tamparraimi
(Soldier Point)

Napier Bay

Cape
Keith

Conder
Point

Radford
Point

Purrapunarli
(Karslake
Peninsula)

Snake
Bay

Shark
Bay

Yapilika

Taracumbi Falls

Tiwi
College

Pickataramoor

Irrittu Island

Clarence Strait

Pottinga
(VERNON ISLANDS)

Pottinga
(VERNON ISLANDS)

QLD

NORTHERN
TERRITORY

WA

TIWI
ISLANDS

DARWIN



Summary

The Tiwi Island group in the Northern Territory includes Melville and Bathurst Islands – Australia’s second and fifth largest islands – the Vernon Islands and numerous small uninhabited islands. Together they cover approximately 8,000 square kilometres and are surrounded by diverse marine environments ranging from the vast limestone shoals of the Timor Sea to the turbid waters of Clarence Strait. The Tiwi Islands have more than a thousand kilometres of unspoiled shoreline with numerous bays, beaches, estuaries, inlets, islets, and reefs.

As proud Saltwater People, the Tiwi have a long maritime history and a sea-based culture extending over many thousands of years. This history includes trade and competition with mainland tribes, commerce with Macassans (Ganter 2018), conflict with Portuguese slavers and, from the early seventeenth century, cautious interactions

with Dutch and British colonists. Tiwi today seek to build on these foundations in establishing a Marine IPA, growing their maritime capacity, and further validating their role as Sea Country managers.

Planning for Stage 1 of the Tiwi IPA (terrestrial areas) highlighted the unity of land and sea within traditional estates. For Tiwi, these two environments are physically and figuratively indivisible, intertwined where tides and estuaries flow into and over the land. Cultural features, including Dreamings and sacred sites, reinforce this connectivity. Almost all of these cultural features come from, or reside in, the sea.

Yet Tiwi face many significant threats in maintaining the health of their Sea Country. Foremost of these is climate change, but poorly regulated fishing, unwanted visitation, pelagic debris, pollution from shipping and shipping facilities, run-off from land-based activities and introduced marine pests are concurrent and compounding risks.





Saltwater Country, Saltwater People

The Islands

The Tiwi Islands group is part of the Northern Territory and consists of two large, inhabited islands including Melville and Bathurst, originally called Ratuwati Yinjara (two islands), and numerous smaller uninhabited islands including Yirripurlingayi (Buchanan), Harris, Seagull, Purrapinarli (Karslake), Yipinuwurra (Cliff), Turiturina, Matingalia, Nodlaw, Muma (East Vernon), Warabatj (North West Vernon), Kulangana (South West Vernon). The Vernon Islands are known collectively as Potinga. Most of the smaller islands lie close to the Tiwi coastline however, Kulangana (South West Vernon Island), is less than five kilometres from the NT mainland coast. Melville Island is the largest island in the group and, at 5,788 square kilometres, is the second largest island off the Australian mainland after Tasmania. Bathurst Island is the fifth largest island in Australia. Bathurst and Melville Islands are separated by the Apsley Strait, which is approximately 70 kilometres long, and ranges in width from 600 metres to 6 kilometres.

The Tiwi People

Tiwi Traditional Owners have occupied their country for millennia. During the last Ice Age, the Tiwi Islands were connected to the mainland through what is now Coburg Peninsula in western Arnhem Land. Rapid sea level rises around 10,000 years ago separated their islands from the mainland and each other, as described in the Tiwi creation story of **Mudangkala**.

'... and then Mudangkala, the old blind woman arose from the ground carrying three babies in her arms. As she crawled in the darkness across the featureless landscape, seawater followed and filled the imprints made by her body. Eventually the pools became one and formed a channel. The old woman continued her journey overland and once again the moulded earth filled with the flow of water. Before she left, Mudangkala covered the islands with plants and filled the land and sea with living creatures. Finally, the land was prepared for her children and for the generations of children who followed.'

With an unbroken history of occupation and ownership of their island home Tiwi remain one of the most intact Aboriginal cultures in the world. Today the Tiwi Islands support a population of over 3000, of which more than 90 per cent identify as Tiwi.

Tiwi people traditionally considered themselves distinct from mainland First Nations, a perception reflected in their unique culture and language, and in the translation of **'Tiwi'** as **'we, the only people'**. Tiwi ambition for independent governance resulted in the formation of the Tiwi Land Council, a Commonwealth statutory body, and the Tiwi Islands Regional Council which provide strong regional authority.

Saltwater Culture

Tiwi perceive life as beginning in the sea, entering, and sustaining the land through bays, estuaries and creek lines that punctuate the coast. **Winga**, the ocean, is deeply embedded in Tiwi culture pervading songs, dances, designs and all ceremonies. Dreamings too are closely associated with the sea. For instance, the tide coming in at Imalu (Cape Van Diemen) on Melville





Island is a dreaming for Tipakalipa and Wai'lapini descendants.

Through matrilineal descent all Tiwi are born into a kinship system similar to 'skin' groups of other Indigenous Australians. Each of these groups, known as **Imunga** are also associated with a totems (plant or animal) and sacred, restricted locations. In reverence their origins **Imunga** sites are invariably located in the sea or along the shoreline.

Connections to Sea Country are further evident in the traditional patterns of land ownership that persist today. Despite the Islands' vast interior, all Tiwi landowner groups include coastline in their customary estates. Though possums, wallabies, carpet snakes and other animals were abundant in the forested interior, the bounty of saltwater habitats was critical to Tiwi nutrition and wellbeing.

Mudflats and mangroves yielded mud mussels, welks, teredo worms and mud crabs, while barramundi, dugong, salmon, and rays could be speared amongst verdant seagrass meadows. At low-tide oysters, rays and a wide variety of reef fish were harvested from extensive intertidal reefs and the 'blue holes' forming natural fish traps within them. Fringed by shady jungles or Casuarina groves and often with freshwater seeps, beaches were also sustaining territory. Large fish could be taken along the shoreline, turtle eggs dug from nests, and trepang and pipis collected from the shallows. Access to such rich environments underpinned the robust health, cultural vibrance and populous nature of Tiwi society.

For much of the year sea travel was a convenience. People moved regularly between hunting camps, crossed between the Islands, mounted mainland raids, and deftly navigated to offshore islets for

seasonal harvests of seabird eggs. Up to 90 per cent of Tiwi food was taken in near-shore waters (Davis 1978), much of this being dugong and turtle hunted from bark canoes or rafts of timber and bast (plant fibre) cord. Early European visitors remarked on the Tiwi's seafaring ability and fine dugout canoes. These were, however, a relatively new technology borrowed from Macassan trepangers who visited the Islands from around 1600.

Macassan traders provided not only the design, but steel tools used to fashion these dugout canoes.

Sea Country Estates

Davis (1983) describes traditional Tiwi Sea Country estates beginning in deep open waters. Approaching land, Clan territories are typically delineated by deep-water channels, the course of which often aligns with features such as estuaries mouths or inlets. Following the course of these waterways, estate boundaries continue inland to the headwaters. Conveniently, shallower features such as reefs, shoals and sand bars almost never intersect estate boundaries, ensuring clear ownership and rights to their resources. These sea-floor features are well-known, named and classified by Tiwi.



Marine Management Today

Tiwi Ownership and Rights

The Tiwi People hold inalienable freehold title to their land and intertidal waters overlying it. These areas form the Tiwi Islands Aboriginal Land Trust (ALT). The seaward edge of which is defined as the Mean Low Tide Mark (MLTM). The exact extent





of Tiwi rights over Sea Country however remains open to interpretation as the MLTM contour is not a defined cadastre. Traditional Tiwi estates extend well beyond the ALT into deeper waters. In practice Tiwi view their responsibilities to Sea Country as a continuum, receding with distance from the land. Native title in the open seas, though not denied, remains ill-determined. Recent NT precedents (Crocker Island and Blue Mud Bay) suggests these rights would extend, at best, to non-exclusive possession.

Tiwi Marine Rangers

The Tiwi Land and Marine Rangers program operates under auspice of Tiwi Resources, a for-profit Aboriginal corporation established by the eight Tiwi Land Owning Groups; *Malawu, Mantiyupwi, Munupi, Marrikawuyanga, Jikilaruwu, Wurankuwu, Wulirankuwu* and *Yimpinari*. Tiwi Resources is focused on economic development on the islands for the benefit of Tiwi. Income generated supports poverty relief, education, cultural and ceremonial activities and improved land and sea management. The Tiwi Land and Marine Rangers, Ranger Coordinator and IPA Manager are all Tiwi Resources employees.

Established in 2001, the Tiwi Marine Ranger Program was the first Indigenous Marine Ranger Program in the Northern Territory. Rangers operate out of three depots – Wurrumiyanga on Bathurst Island, and Milikapiti and Pirlangimpi on Melville Island. Tiwi Marine Rangers have an active marine presence, undertaking NT Fisheries compliance, aquatic biosecurity surveys, coastal quarantine surveillance, ghost net and marine debris collection, crocodile management and climate change monitoring.

Under contract to both NT and Australian Government agencies the Marine Rangers support implementation of the NT Northern Biosecurity Strategy 2016–2022, Australia's National Invasive Ant Biosecurity Plan 2018–2028, NT Fisheries Division Strategic Plan 2019–2022, NT Coastal and Marine Management Strategy 2019–2029, and the National Indigenous Land and Sea Strategy 2019–2022.



Tiwi Sea Country

Waters surrounding the Tiwi and Vernon Islands are included in the Northwest IMCRA Transition Provincial Bioregion, and the nested Anson Beagle, Tiwi, and Van Diemen's Gulf Meso-scale Bioregions. Marine environments here are in close to pristine condition. An elaborate coastline flanked by extensive and species-rich mangrove forests boasts over 1000 km of remote beaches, bays, estuaries, and the exceptional Apsley Strait. The seabed here is a complex of sand and mudflats, reef systems, rocky shoals, seagrass, and algal beds, as well as deep holes and trenches. These tropical marine habitats support a great diversity of marine life, from whales and dolphins to dugong, marine turtles, crocodiles, shorebirds, seabirds, sea snakes, seahorses, and myriad fish species.

Environmental Diversity and Condition

Intertidal and subtidal habitats are diverse. They range from the best developed, most species-rich mangles in the Top End to extensive and significant coral reefs surrounding the Vernon Islands. Shoals and rocky platforms are common seafloor features while sheltered bays and estuaries characterise





the Islands' tidal interface. In contrast to much of the adjacent Arnhem coast, the tidal range is low and open mudflats rare. The islands, including the Vernon group, are separated from the mainland by valleys more than 50 metres in depth.

Though impacted by extreme sea temperatures in 2015-16 and early 2018, marine environments encircling the Tiwi and Vernon Islands remain in excellent health. Reefs here are highly resilient, uncompromised by pollution or siltation from sea or land-based activities. Similarly, sea grass beds, though affected by rising sea temperatures and

storm surge intensity, remain widespread and hardy. Due to prevailing winds and currents, marine debris occurs only at low levels along the Tiwi coast.

Known environmental risks extend to the potential for pollution from, or interactions with, maritime traffic out of Port of Melville near Pirlangimpi in the Apsley Strait. The threat of oil spills from the Port's fuel holding facility and the introduction of invasive marine pests via ballast water are acknowledged, as are similar risks at smaller facilities such as the barge landings at Wurrumiyanga on Bathurst Island and at Pirlangimpi and Milikapiti on Melville Island.

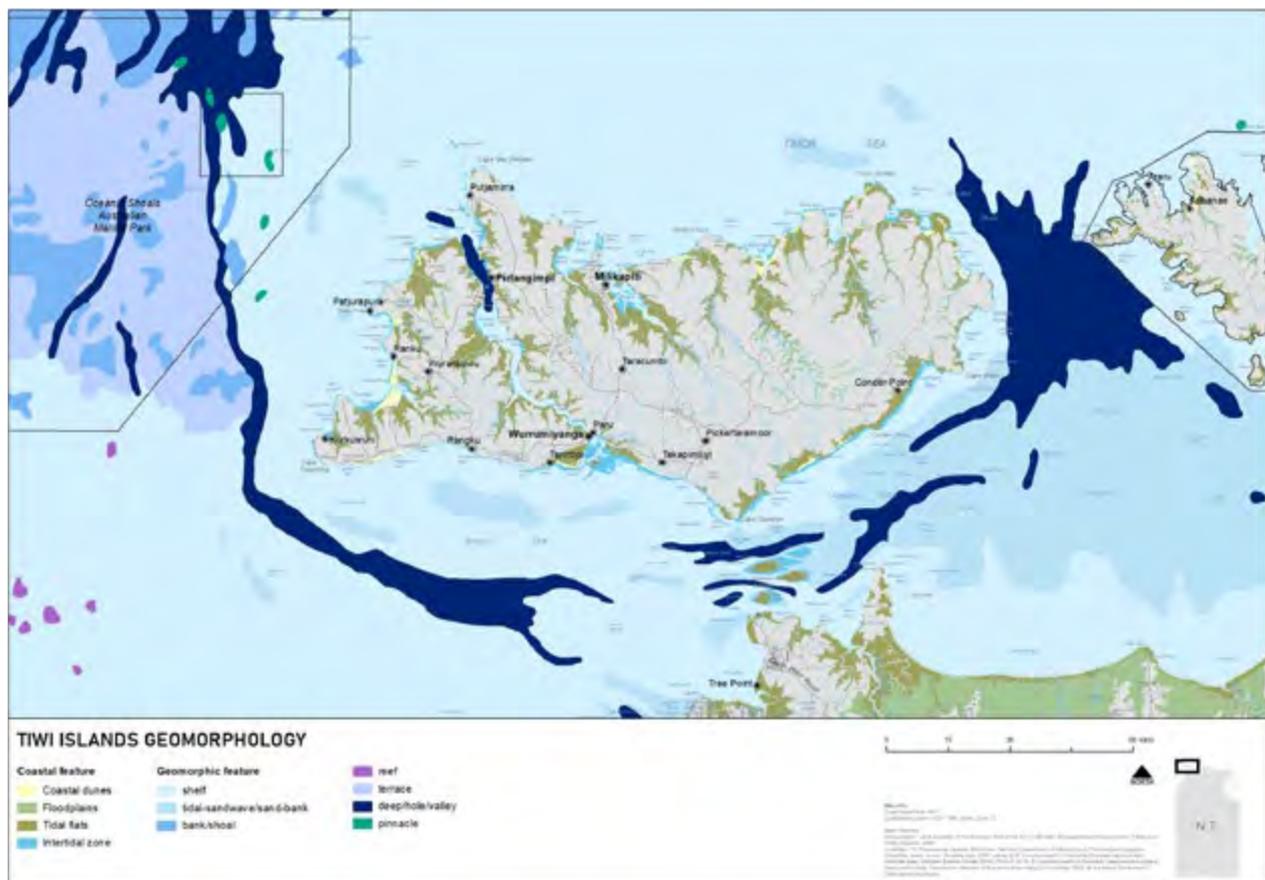


Figure 1: Tiwi Sea Country: Broadscale marine habitats



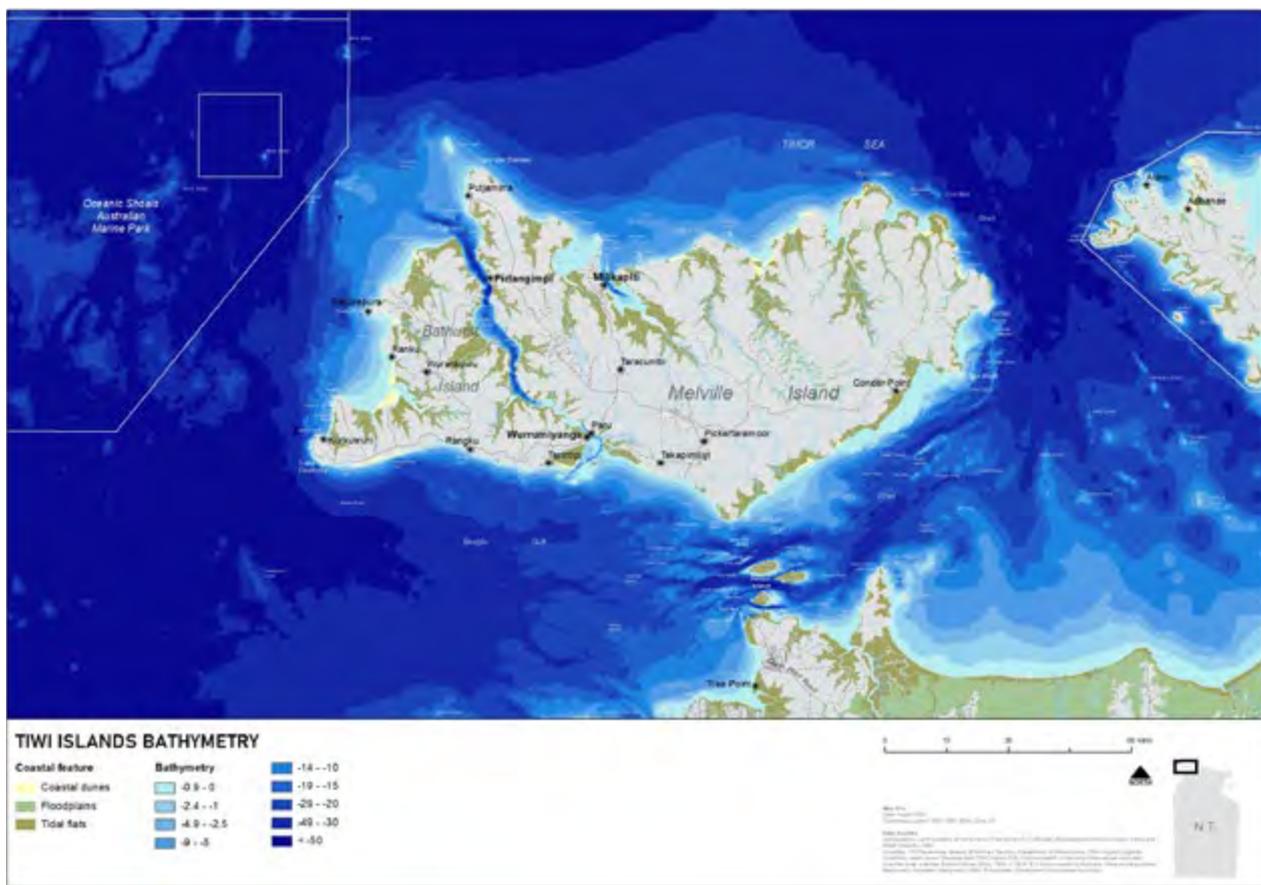


Figure 2: Sea depths surrounding the Tiwi Islands

Marine Values

Although approximately 650 species of birds, reptiles, mammals, and fish are recorded from the proposed Tiwi Marine IPA, it remains an under-surveyed and poorly known environment. A comparison of Tiwi's 190 recorded fish species against the approximately 420 species known from Darwin Harbour suggests that many fish species are yet to be recorded. Further studies in the region are likely to uncover many new species of marine fauna.

Marine Mammals

Marine megafauna is abundant in the southeast Timor Sea, particularly in proximity to the Tiwi and Vernon Islands where bays, estuaries and seagrass beds support resident populations of dugong and three species of coastal dolphin. A further four species of dolphin are regular or migratory visitors to these waters, another six recorded as rare visitors or vagrants. Whales are also well-represented with five species recorded from the area, including Sperm and Humpback Whales.



Resident or regular migratory

Common Name	Scientific Name
Australian Snubfin Dolphin	<i>Orcaella heinsohni</i>
Indo-pacific Humpback Dolphin	<i>Sousa plumbea</i>
Australian Humpback Dolphin	<i>Sousa sahalensis</i>
False Killer-whale	<i>Pseudorca crassidens</i>
Indian-Ocean Bottlenosed Dolphin	<i>Tursiops aduncus</i>
Dwarf Spinner Dolphin	<i>Stenella longirostris roseiventris</i>
Australian Bottlenose Dolphin	<i>Tursiops truncatus</i>

Visitors or rare vagrants

Common Name	Scientific Name
Spinner Dolphin	<i>Stenella longirostris</i>
Pantropical Spotted Dolphin	<i>Stenella attenuate</i>
Risso's Dolphin	<i>Grampus griseous</i>
Melon-headed Whale	<i>Peponocephala electra</i>
Killer Whale	<i>Orcinus orca</i>
Short-finned Pilot Whale	<i>Globicephala macrohynchus</i>

Marine Reptiles

The Tiwi Islands provide important sanctuary for sea turtles with many crucial nesting and internesting areas identified for Green, Pacific Ridley and Flatback Turtles. Five species of sea turtle regularly occur on the islands including Loggerhead, Pacific Ridley, Hawksbill, Flatback and Green Turtles. DAWE modelling also predicts the presence of the Leatherback Turtle.

At least 10 species of sea snake and one species of marine file snake are recorded within the proposed MIPA. Saltwater crocodiles are abundant in the Islands' extensive tidal waterways with significant nesting areas in upstream freshwater wetlands. Mangrove Monitors (*Varanus indicus*), rare elsewhere in the NT, are common in the mangroves along the northern Tiwi coastline.

Sea Birds and Intertidal Birds

Twenty-four long-range migratory wader species, 13 colonial sea bird species and three species of coastal raptor have been recorded in the proposed Tiwi Marine IPA. Intertidal areas such as beaches, mangroves and saline wetlands are also important

habitat for rare sedentary species such as the Beach Stone-curlew, Chestnut Rail and Great-billed Heron. In addition, the Islands' extensive mangrove forests host an unusually large suite (14 species) of specialist birds including the Mangrove Robin, Mangrove Gerygone, Mangrove Golden Whistler, Broad-billed Flycatcher, Collared Kingfisher, and Black Butcherbird. Tidal flats here have occasionally attracted vagrant species including Eastern Yellow Wagtail, White-browed Crake, and Spotted Whistling Duck.

A record number of 12,000 Great Knots, more than one per cent of the global population, have been recorded on the Tiwi Islands as well as Red-necked Stints, Greater and Lesser Sand Plovers, and Bar-tailed Godwits. Pirripatiriyi (Seagull Island), off the north-western tip of Melville Island, supports a breeding colony of about 60,000 Crested Tern (*Sterna bergii*), the largest known colony in the world. Three colonies of Little Terns on the islands are considered of national significance. Seven important shorebird records are identified from the islands including high counts of mixed wader species and counts of other species that are regionally important.





Threatened Species

A total of 17 species recorded from within the proposed Tiwi Marine IPA are listed under the EPBC Act as Threatened. This includes members of the following groups.

Sea birds

A high number of eight sea birds listed as threatened under Territory or Commonwealth legislation are recorded from the Tiwi Islands. All are additionally listed as Migratory Species under the Commonwealth EPBC Act, and subject to bilateral migratory bird agreements with Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA).

Marine Species

A total of nine marine species listed as Threatened under the EPBC Act occur in the waters surrounding the Tiwi and Vernon Islands. These include the Loggerhead Turtle (Endangered), Pacific Ridley Turtle (Endangered), Hawksbill Turtle (Vulnerable), Flatback Turtle (Vulnerable), Green Turtle (Vulnerable), Humpback Whale (Vulnerable), Whale Shark (Vulnerable), Freshwater Sawfish (Vulnerable) and Hammerhead Shark (Conservation Dependent).

DAWE modelling additionally predicts the presence of a further six threatened marine species, including the Great White Shark (Vulnerable), Dwarf Sawfish (Vulnerable), Green Sawfish (Vulnerable), Speartooth Shark (Critical), Northern River Shark (Endangered) and Leatherback Turtle (Endangered).

Migratory Species

A total of 10 Migratory Marine Species, listed under the EPBC Act and subject to international conservation agreements, have been recorded from waters surrounding the Tiwi Islands.

Fish, Shellfish, Corals, and Sponges

Though poorly documented Tiwi Sea Country is known for its diverse marine fauna. Records within the proposed MIPA include 525 ray-finned fish species, 18 species of cartilaginous fish, 66 species of coral, 572 molluscs, and 36 sponge species.

Marine Worms

Polychaetes (Bristle Worms) range in size from microscopic forms that live between intertidal sand-grains to subtidal giants over a metre long. Almost every part of the Tiwi Islands below the highest tide level is suitable polychaete habitat: about 70 species are known to live in the mangrove mudflats, while approximately 500 species live below the intertidal zone on soft, muddy bottoms, rocky and coral reefs, and seagrass beds. Polychaetes are an important food resource for fish and wading birds, including significant migratory species.



A New Marine Indigenous Protected Area

Size and Location

Situated in the Timor Sea, the Tiwi Islands are separated from mainland Northern Territory by the Beagle Gulf and Clarence Strait. The Tiwi People are also Traditional Owners of the Vernon Islands and Knights Reef which lie between Melville Island's southernmost point, Cape Gambier, and Gunn Point on the NT mainland. Waters surrounding both the Tiwi and Vernon Islands are under consideration by Tiwi as a future Marine Indigenous Protected Area.





The extent of Sea Country traditionally used or controlled by Tiwi is described in a detailed report appending a Sea Closure application (Davis 1983). This ultimately unsuccessful application made under the Aboriginal Land Rights (Northern Territory) Act 1976 sought a two km 'close seas' buffer surrounding Melville and Bathurst Islands.

For the purposes of this preliminary plan, Sea Country to be considered for inclusion in a Tiwi MIPA is described as intertidal and subtidal waters out to three nautical miles (approximately 5.6 km) from of the Islands' mean high water mark. To the north of the Bathurst and Melville Islands this equates with the limit of Northern Territory Coastal Waters.

Note: Other legal and non-legal boundaries with relevance to a future MIPA appear in Figure 3. and are discussed in Appendix B.

Aims

Tiwi goals in establishing a Marine IPA are multi-faceted. They include demonstrating authority over country for which they are traditional Aboriginal owners, expanding economic opportunities, and ensuring sound management of marine resources on which the community relies. Building a governance framework dedicated to supporting their islands' unique culture and environment is also a high priority. Tiwi believe they can achieve this by

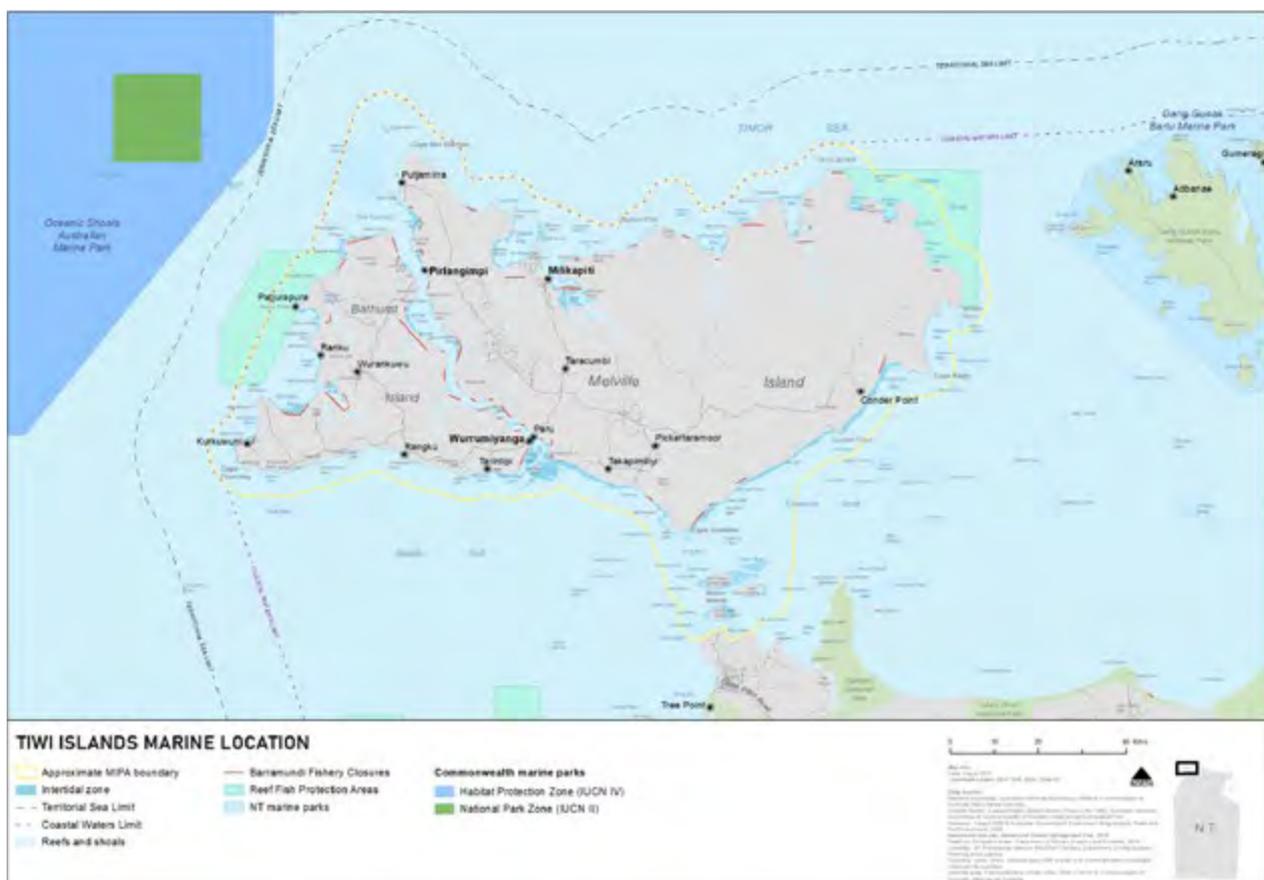


Figure 3: Tiwi Marine IPA proposal – relevant jurisdictional boundaries



establishing integrated marine and terrestrial IPAs, underpinned by strategic planning, capable ranger teams, culturally authoritative governance, and strong diverse partnerships.

Rights to Manage

Under an IPA framework Tiwi seek to manage all their traditional Sea Country. In subtidal areas Tiwi are looking to establish **management by effective means**. This could involve exchanging public access to their intertidal zone for increased authority in the open seas beyond. They hope to reinforce their role as marine managers through contracts for service provision in fisheries compliance, biosecurity, search and rescue, and border surveillance.

Future Governance

As the peak body representing Tiwi Traditional Owners, and the administrative authority for the Tiwi Islands Land Trust, governance responsibility for a Tiwi Islands MIPA would ultimately rest with the Tiwi Land Council. However, general oversight would be divested to the existing Tiwi Islands IPA Committee, with support from the IPA's yet-to-be-established Expert Advisory Group. The IPA Committee consists of two representatives from each of the eight Tiwi landowner groups, plus two nominated Senior Cultural Advisors.

Partnerships

The Tiwi Islands IPA Expert Advisory Group will be built on long-standing partnerships with academic researchers and institutions committed to supporting collaborative Tiwi initiatives. It will be a subset of the Tiwi Islands Science Reference Committee (SRC) with Australian Government

representatives (NIAA). For the purposes of the Tiwi MIPA, Advisory Group membership would be broadened to include representatives of key stakeholder groups such as the recreational and commercial fishing sectors, the tourism industry, and the Northern Territory Government.

Stakeholders

Tiwi hold exclusive rights only to intertidal waters, their rights within subtidal areas are shared with a range of public stakeholders. These stakeholder groups must be consulted and consent to Tiwi establishing a Marine IPA over subtidal areas. Stakeholder agreement often centres on the proposed management regime, and how it will affect stakeholder interests. The principal stakeholders in Tiwi Sea Country are the NT Seafood Council, the Amateur Fishermen's Association of the Northern Territory (AFANT), the Northern Territory Guided Fishing Industry Association (NTGFIA), and the Northern Territory Government.



Adjacent Conservation Areas

Oceanic Shoals Marine Park

Lying within Australia's North Marine Region, waters surrounding the Tiwi and Vernon Islands are classified as part of the Northwest Transition (IMCRA Provincial Bioregion). The nearest marine reserve is the Oceanic Shoals Marine Park which, at its closest, is under 15 nautical miles north-west of Bathurst Island. At 71,743 square kilometres, it is the largest of the eight Marine Parks within





the North Marine Parks Network. Oceanic Shoals is a multi-zoned reserve including as its highest protection core a small IUCN Category II National Park protecting a limestone shoal complex of acute conservation value. A large expression of this ecosystem also occurs in Tiwi Sea Country off northern Bathurst Island. These relatively shallow marine habitats support rich marine biodiversity and are significant for sea snake diversity and as interesting areas for sea turtles.

Fishing-free Zones

Temporary Reef Protection Areas exclude recreational and commercial fishing from large areas adjacent to the Tiwi Islands. Additionally, intertidal areas across the northern half of the islands and the eastern coast of Melville Island are subject to a general exclusion of commercial and recreational fishing, other than Tiwi-owned tour companies and paying permit holders.



Figure 4: Tiwi and Vernon Islands fishing access zones



Issues and opportunities

Climate Change

A 2010 climate change assessment for the Tiwi Islands predicted major increases over the next 50 years in mean maximum and mean minimum temperatures, sea levels, sea surface temperatures, storm surge and cyclone intensity, with concomitant decreases in annual rainfall, relative humidity, and ocean current strength. The report outlined the high level of associated risk to Tiwi natural and cultural environments. Key issues identified included saltwater intrusion to freshwater systems, decreasing availability of customary foods, and the deterioration of coral reef habitats and flow-on effects.

Since 2010, the pace of climate change and the extent of its impacts have accelerated. Sea levels in northern Australia have been rising by about 10 mm each year. This is much greater than the sea level rise in southern Australia, and two to three times greater than the global average. Observed temperature increases have also outstripped predictions. It is now estimated that within a decade Darwin will move from an average of 11 days a year over 35 degrees to more than 40 days a year over 35 degrees (CSIRO, Dec 2019). Tropical storms, including cyclones, are becoming more intense (on average stronger wind speeds, heavier rainfall), and in turn will drive greater storm surges.

Traditional Owners are only too aware of these changes and their associated impacts. *"We've seen the changes, the sea is higher, the cliff edges in Milikapiti falling down."* *"We see the water levels have been rising, creeks flood much further in on high tides, it's now all changing, it's bad."*

Opportunities

Tiwi Rangers need to continue their work with researchers to determine and mitigate the effects of climate change on marine turtles, whose nests are vulnerable to both elevated temperatures and sea levels. Scientific partnerships are also needed to build a better understanding of the impact of increasing sea surface temperatures and acidity (a function of dissolved CO₂) on the regions' coral reefs. New and more targeted research is also required to assess the risks of climate change more accurately and inform adaptation. MIPA governance could be pivotal in alerting the broader Tiwi community to climate change concerns and encouraging timely action.

Quarantine

The Tiwi Islands' large size, isolation from the mainland, habitat diversity and sustained Indigenous management provide a conservation haven for native species declining elsewhere in Australia. The Tiwi Islands are also home to several endemic species, as well as hosting plants and animals more typical of wet tropics of New Guinea, Indonesia, and Far North Queensland. Though little known, the surrounding marine environment is likely to be similarly exceptional due to its central location between continental Australia, and the Papuan and Indonesian Archipelagos.

In parallel with the Torres Strait, the Tiwi Islands is a key frontier for the entry of weeds, pests and diseases to Australia and its waters. In collaboration with the Northern Australian Quarantine Strategy (NAQS), Tiwi Rangers undertake regular monitoring for serious pathogens including swine fevers, avian influenzas, rabies, bluetongue viruses, Japanese encephalitis, transmissible gastroenteritis, screw worm, canine ehrlichiosis, trichinella, foot-and-





mouth disease and Nipah virus. Many of these are zoonotic diseases with the potential to pass from wildlife to people. Monitoring is also undertaken for exotic species such as black-lipped mussels, tramp ant and vector mosquitoes.

Opportunities

Preventing the introduction of a wide range of weeds and exotic pest-species to the Islands or surrounding waters is a key management goal. Effective quarantine protocols are vitally important in this regard.

Quarantine primarily relies on policing freight and vessels moving between the islands and the mainland. Tiwi Marine Rangers require greater physical capacity and prosecution powers to effectively patrol, intercept and inspect the large number of private watercraft accessing the Islands' southern coastline. Inspection of commercial shipping to Port Melville and raising community awareness about the importance of quarantine are also key areas requiring additional ranger resources.

Recreational Fishing Access

In July 2014 in the wake of the Blue Mud Bay native title determination, the NT Government negotiated a 20-year agreement with the TLC to secure public access to intertidal areas throughout the southern half of the Tiwi Islands, inclusive of the Vernon Islands and Apsley Strait (refer to Figure 4). Although this agreement increased Tiwi Marine Rangers' management obligations, no additional funding for surveillance or compliance was provided. As a result, Tiwi Marine Rangers have limited capacity to meet current management demands of public and commercial access to upwards of 70 per cent of the Tiwi coastline.

Moreover, visitation and commercial pressures are predicted to significantly increase. Proximity to Darwin, an abundance of prized fish species, a vast natural coastline and revival of the NT Barramundi fishery make this area a prime destination for private recreational anglers, tour groups and commercial operators.

Opportunities

Tiwi are not averse to structured access to their coast for recreational fishing. However, the existing agreement allows or encourages access to some culturally restricted areas. Review of the exiting access zoning could occur as part of the MIPA planning and consultation process.

Future management of public access to intertidal areas could become a function of the MIPA management committee. This would allow for a more adaptive arrangement and an improved balance between Tiwi and visitor expectations.

The introduction of free, on-line permits should be considered for areas currently zoned as open access as a means of:

- regulating access to the coast and intertidal waters;
- guaranteeing adequate resources to manage visitation and compliance; and
- legally binding permit holders to established terms and conditions.

The requirement of permits and section 19 agreements for commercial fishing in all Tiwi intertidal waters could be considered a means of monitoring and, where necessary, regulating resource-use in Tiwi Sea Country.



Renegotiation of the public access agreement should be considered as a means of:

- ensuring adequate funding of visitor management;
- prompting regular NT Water Police and NT Fisheries patrols in the area; and
- realising the NT Government's commitment to training for Tiwi Marine Rangers in compliance and enforcement.

Commercial Fisheries

Six commercial fisheries exist in or adjacent to Tiwi Sea Country. Barramundi Fishery is significant; it employs gillnets and occurs close to the shore, including in the intertidal zone. Take includes Barramundi and other species of commercial value such as King Threadfin, Black Jewfish, Blacktip Shark, Blue Threadfin and Queenfish. Coastal Line Fishery occurs within the proposed Marine IPA but seldom within the intertidal zone. The fishery targets Black Jewfish and Golden Snapper, as well as emperors, cods and other snappers using multi-hook lines and fish traps. Black Jewfish are considered overfished in the NT (FRDC 2021). Coastal Net Fishery primarily targets mullet, but by-product includes Blue Threadfin, sharks, Queenfish, Garfish, Snapper (*Lutjanus* sp.) and Whiting. The proposed Tiwi Marine IPA overlaps with the Darwin region fishery. The Demersal Fishery occurs from 15 nautical miles off-shore and is primarily based on trawl-netting targeting a wide range of deep-sea or bottom-dwelling species. The Offshore Net and Line Fishery is a quota managed fishery operating from the low water mark out to the boundary of the Australian fishing zone. Pelagic nets and long-lines are used, with Black-tipped

Shark a primary target. With nets up to 2 km long the bycatch is large. Threatened or protected species recorded as regularly caught and killed in pelagic nets and longlines include: six species of Dolphin, Loggerhead Turtle, Flatback Turtle, Olive Ridley Turtle, Green Turtle, Giant Manta Ray, Green Sawfish, Largetooth Sawfish, Narrow Sawfish, Dwarf Sawfish, and several species of River Shark.

Aquaculture development potential has been highlighted in the Apsley and Clarence Straits, as well as in Snake Bay, Gordon Bay, and the remote Jessie and Johnson Rivers. A wide range of species are considered options for commercial farming, including Barramundi, Trepang, Mud Crab, Prawns, Oysters, and Clams.

Opportunities

Temporary Reef Fish Protection Areas excluding all commercial and recreation fishing exist along the west coast of Bathurst Island and northeast coast of Melville Island. These zones have been established to conserve significant populations of commercially valuable species such as Golden Snapper and Black Jewfish. Reef Fish Protection Areas could be legislated as permanent and expanded to include other important areas of reef and deep holes.

Notwithstanding exceptions granted by the TLC, Tiwi Traditional Owners may exert control over commercial fishing in the intertidal zone, as licenced operators are required to hold both a permit to enter and remain on Aboriginal Land and a section 19 agreement authorising their commercial activity within the Land Trust. How and when Tiwi choose to use these rights could form part of the Marine IPA planning process. One option would be re-set fishing closures on river and creek





mouths further out at the seaward boundary of the land trust – the Mean Low Tide Mark.

Careful consideration of aquaculture proposals is vital considering their potential to degrade natural systems of high value to Tiwi. Fish, shellfish, and other customary resources remain a significant factor in local economies. The dollar value of these resources in terms of import substitution is likely to be high.

Port Melville

Port Melville is located south of Barlow Point on Melville Island, 63 nautical miles north of Darwin NT. Shipping access is via the northern entrance to Apsley Strait. The port opened in 2014 primarily for the export of Tiwi timber products, but also includes a 30 million litre storage facility providing bulk fuels to large vessels. Future use of the port and fuel facility may increase significantly if the Barossa Offshore development eventuates. This large Santos-owned, Timor Sea oil and gas proposal lies 100 km north of the Tiwi Islands and includes a seabed pipeline traversing within 6 km of Bathurst Islands' west coast.

Opportunities

There is scope for improved environmental safety and quarantine operations by Marine Rangers at Port Melville. This could include expert vessel guides for the safe passage of ships in the Apsley Strait, regular monitoring and reporting of invasive marine species associated with biofouling or ballast water, monitoring of marine megafauna within the area, and supporting risk assessments for climate change impacts or potentially polluting activities. With improved capacity there may also be opportunities for Marine Ranger involvement in

both environmental disaster response and marine search and rescue out of Port Melville.

Importantly, large-scale commercial developments impacting Tiwi Sea Country or requiring expansion of Island infrastructure such as Port Melville could be required to contribute to environmental off-sets. These could be realised through investment in higher-grade conservation zones within Tiwi marine or terrestrial IPAs.

Marine Ranger Capacity

The requirements for the effective management of Tiwi Sea Country far exceed the current capacity of Marine Rangers. Infrastructure and equipment fall short of basic requirements and the significant geographic separation of the three ranger bases hampers coordination and strategic operations across the marine estate.

Opportunities

Marine IPA support from NIAA would transform the Tiwi Marine Ranger group in three important ways; it would provide for critical infrastructure improvements, a dedicated marine operations coordinator, and strategic planning for on-going management of Sea Country. These improvements would in turn allow Tiwi Marine Rangers to realise many of the opportunities outlined.

The MIPA management structure would include both a Marine Ranger Coordinator and overall IPA Manager. The Ranger Coordinator would be Island-based, and their role would encompass day-to-day supervision of ranger staff, operations, and equipment, including liaison between the three ranger bases. The Marine IPA Manager would operate at a higher managerial level, with responsibilities for overall project health and



coordination, including reporting, monitoring and evaluation, governance support and stakeholder engagement. For efficiency, this position would be Darwin-based.

Support for a Tiwi Marine IPA would come from multiple sources. NIAA grant funding would be augmented with existing ranger position funding, revenue from the Tiwi Islands coastal access agreement and government fee-for service contracts. MIPA status may help secure further or improved agency contracts for marine management.



Conclusion

Tiwi People's aspirations for healthy Sea Country and economic independence, in concert with their inalienable ownership of their Islands, provides an exceptional opportunity for marine conservation. With support from other marine stakeholders and the assistance of their rangers, Tiwi Traditional Owners seek to create a new Australian Marine IPA, protecting their cultural heritage and ensuring sustainability of marine natural resources.

Complimented by their adjoining terrestrial IPA, a Tiwi Marine IPA would vastly increase protection for some of north Australia's richest marine and intertidal biomes. Protecting this area is of particular value given that similar marine environments along the mainland NT coast are under increasing development pressure, notably through the large-scale industrialisation of Darwin Harbour.



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Terms and abbreviations used in this document

TLC – Tiwi Land Council: Tiwi statutory body responsible for administration of the Aboriginal Land Rights (Northern Territory) Act 1976.

AAPA – Aboriginal Areas Protection Authority: independent statutory body responsible for overseeing the protection of Aboriginal sacred sites on land and sea across the NT.

ALRA – Aboriginal Land Rights (Northern Territory) Act 1976: Commonwealth legislation administered by the TLC.

ALT – Aboriginal Land Trust: inalienable Aboriginal freehold land granted under provisions of the ALRA.

DAWE – Department of Agriculture, Water, and the Environment: Australia Government.

EPBCA – Environment Protection and Biodiversity Conservation Act 1999; Commonwealth Legislation relating to the protection of the environment and the conservation of biodiversity.

MIPA – Marine Indigenous Protected Area (Sea Country IPA).

NIAA – National Indigenous Australians Agency: Australia Government agency with Department of Prime Minister and Cabinet.

IMCRA – Integrated Marine and Coastal Regionalisation of Australia





Appendix A

Biodiversity Values of the Tiwi Islands Marine IPA

Table 1: Threatened Species occurring in the proposed Tiwi Islands Marine IPA, national and regional conservation status.

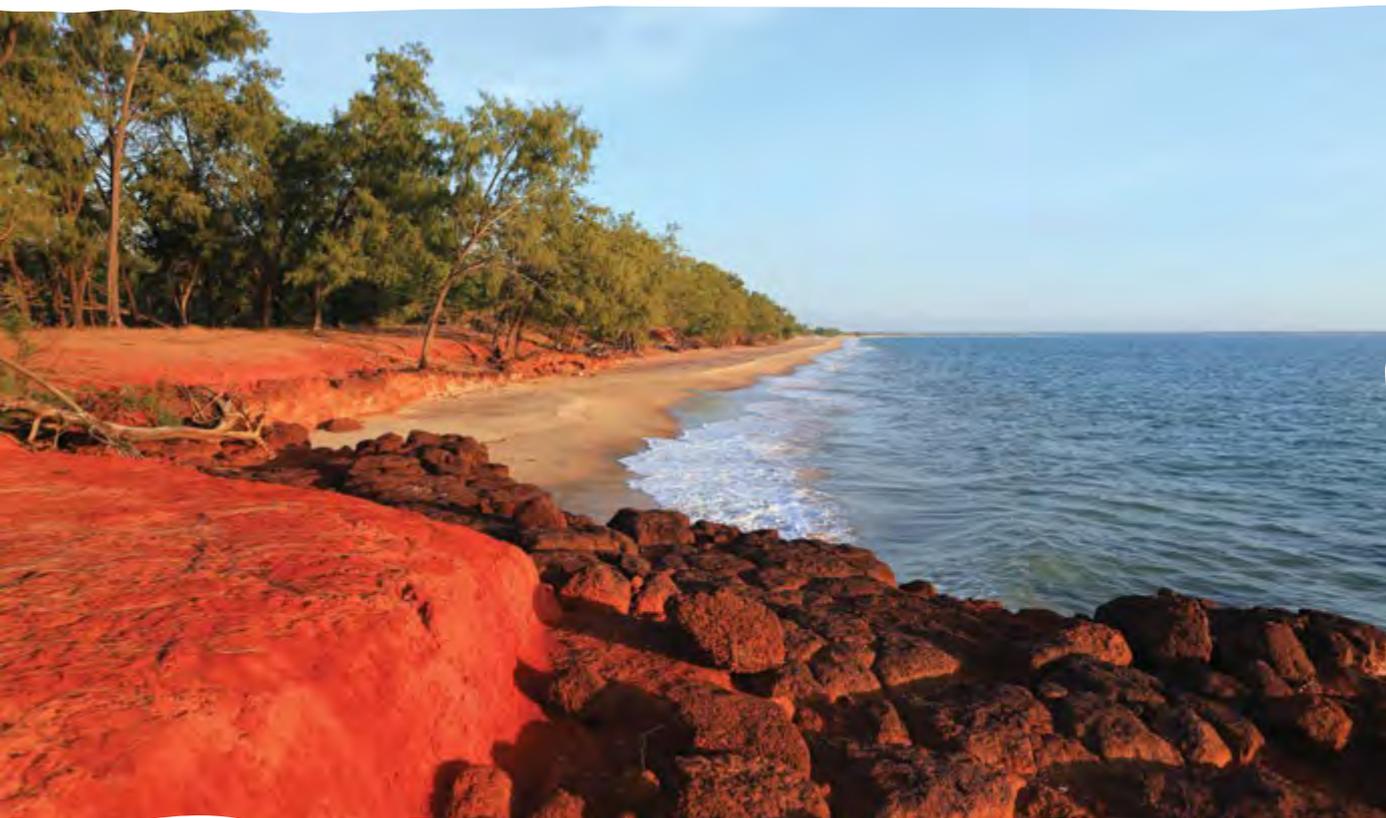
Common Name	Species Name	EPBC Status	NT Status
Great Knot	<i>Calidris tenuirostris</i>	Critically Endangered	Vulnerable
Curlw Sandpiper	<i>Calidris ferruginea</i>	Critically Endangered	Vulnerable
Eastern curlew	<i>Numenius madagascariensis</i>	Critically Endangered	Vulnerable
Red Knot	<i>Calidris canutus</i>	Endangered	Vulnerable
Loggerhead turtle	<i>Caretta caretta</i>	Endangered	Vulnerable
Lesser Sand Plover	<i>Charadrius mongolus</i>	Endangered	Vulnerable
Pacific Ridley	<i>Lepidochelys olivacea</i>	Endangered	Vulnerable
Greater Sand Plover	<i>Charadrius leschenaultii</i>	Vulnerable	Vulnerable
Hawksbill turtle	<i>Eretmochelys imbricata</i>	Vulnerable	Vulnerable
Bar-tailed Godwit	<i>Limosa lapponica</i>	Vulnerable	Vulnerable
Asiatic Dowitcher	<i>Limnodromus semipalmatus</i>	Not listed nationally	Vulnerable
Green Turtle	<i>Chelonia mydas</i>	Vulnerable	Not listed
Humpback Whale	<i>Megaptera novaeangliae</i>	Vulnerable	Not listed
Flatback Turtle	<i>Natator depressus</i>	Vulnerable	Not listed
False Water-rat	<i>Xeromys myoides</i>	Vulnerable	Not listed
Whale Shark	<i>Rhincodon typus</i>	Vulnerable	Not listed
Freshwater Sawfish	<i>Pristis pristis</i>	Vulnerable	Not listed
Hammerhead Shark	<i>Sphyrna lewini</i>	Conservation Dependent	Not listed





Table 2: EPBC Act listed Migratory Species occurring in the proposed Tiwi Islands Marine IPA

Mammals		Reptiles	
Blue Whale	<i>Balaenoptera musculus</i>	Saltwater Crocodile	<i>Crocodylus porosus</i>
Humpback Whale	<i>Megaptera novaeangliae</i>	Green Turtle	<i>Chelonia mydas</i>
Dugong	<i>Dugong dugon</i>	Flatback Turtle	<i>Natator depressus</i>
Australian Snubfin Dolphin	<i>Orcaella heinsohni</i>	Pacific Ridley Turtle	<i>Lepidochelys olivacea</i>
Indo-Pacific Bottlenose Dolphin	<i>Tursiops aduncus</i>	Hawksbill Turtle	<i>Eretmochelys imbricata</i>





Appendix B

Maritime Boundaries

Please also refer to Figure 3. Tiwi Marine IPA proposal - relevant jurisdictional boundaries.

- **Intertidal Zones** extend from the mean high-water mark to the mean low tide mark (MLTM) and include tidal waters travelling over land, such as the course of estuaries. In the Northern Territory, where this zone adjoins Aboriginal land, ownership of the seabed and water column are vested with the Land Trust, giving Aboriginal Traditional Owners rights to exclusive use. Although management of fisheries and other resources in this zone is vested with NT Government, access for these activities remains a prerogative of Traditional Owners. The MLTM is not precisely mapped and, in fact, is changing due to sea level rise. As such the precise extent of the intertidal zone is ill-defined, along with the seaward boundary of Aboriginal Land.
- **Subtidal Zone.** Subtidal areas are always submerged, in contrast to intertidal areas that are exposed during low tide. This zone extends into the ocean's deep waters.
- **Territorial Sea Baseline** is used to calculate the outer limits of Australia's maritime boundaries. It nominally corresponds with the [Lowest Astronomical Tide \(LAT\)](#)¹, except where straight lines between points are used to enclose river mouths, bays, islands groups and or deeply indented coastline. In some ways the TSB represents a legislative boundary between State/Territory and Commonwealth jurisdictions. It also has relevance to international law as a definition of 'interior waters'.
- **Coastal Waters (NT Waters).** This zone extends up to 3 nautical miles seaward of the territorial sea baseline. The water column and the subjacent seabed within this zone are vested with the Northern Territory, giving the NT government responsibility for the

¹ Lowest Astronomical Tide (LAT) is the lowest level to which sea level can be predicted to fall under normal meteorological conditions (Geoscience Australia, 2021).





management of offshore resources such as fisheries and petroleum. (Note: the TSB used to determine Coastal Waters does disregard low tide elevations greater than 3M from the coastline or islands.)

- **Territorial Sea** (Australian Waters) is a belt of water up to 12 nautical miles out from the territorial sea baseline. Australia's sovereignty extends to the territorial sea, its seabed and subsoil, and to the air space above it. This sovereignty is exercised in accordance with international law as reflected in the Convention though foreign ships have a right of innocent passage through this zone.
- **Contiguous Zone** extends out to 24 nautical miles from the territorial sea baseline. In this zone, Australia exercises control as necessary to prevent or punish infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea.
- **Fisheries Closure Lines.** Barriers legislated under NT Fisheries Act to exclude commercial fishing in river and creek mouths.
- **Fish Protection Areas.** These are usually temporary exclusion zones for commercial and recreation fishing. Often associated with key habitat such as reef, shoals, or trenches their purpose is to protect economically important fish stock. Two Reef Fish Protection Areas exist adjacent to the Tiwi Islands.
- **AAPA Recorded / Registered Sacred Sites.** Under Northern Territory Sacred Sites legislation marine sites are often assigned boundaries acting as buffer zones. As a result, site registration is an important means by which Traditional Owners can limit access or activities that endanger sea country features of cultural importance.



Disclaimer

Views and ideas expressed in this document are drawn from participatory (terrestrial) IPA planning with Tiwi Traditional Aboriginal Owners, IPA Staff, and the authors' experience in developing Indigenous Protected Areas in the north Australian context. However, as planning and consultations specific to Sea Country are yet to occur, the views and opinions contained within cannot be assumed to be those of all Tiwi Traditional Owners nor the Tiwi Land Council. Though every effort has been made to ensure the veracity of material presented here, no responsibility is accepted for resultant errors contained herein or any damages or loss associated with the any use of such information.



