GOVERNMENT OF WESTERN AUSTRALIA

PLAN FOR OUR PARKS
SECURING 5 MILLION HECTARES OVER 5 YEARS

Mamang Maambakoort Marine Park

Joint Management Plan 2024

Management Plan 102

GOVERNMENT OF WESTERN AUSTRALIA

Conservation and Parks Commission
Department of **Biodiversity, Conservation and Attractions**

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This joint management plan was prepared by the Conservation and Parks Commission through the agency of the Department of Biodiversity, Conservation and Attractions (DBCA) in partnership with Wagyl Kaip Southern Noongar Traditional Owners.

Warning: This plan shows photographs of, mention names, and/or quotes Aboriginal people who may have passed away.

NB: The spelling of some of the traditional language words for Country and species of plants and animals may vary.

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Front cover images

Southern right whales with calf. Photo – Peter Nicholas/DBCA

Illustration – All illustrations reproduced throughout the plan were drawn by Follow the Dream students in Albany.

This document is available in alternative formats on request.

Welcome statement

Kaya Nyoondooka Wandju nicha Goreng Boodja wer Maambakoort
Hello and welcome here to Goreng Land and Sea Country in the Wagyl Kaip Southern Noongar region.

Ngalak Kaaditj moortung Koora, Yeyi, Benang
We acknowledge families of long ago, today and tomorrow, and acknowledge our visitors today.

Nicha Boodja, maambakoort, Mamang, Toort-baal kaat Kooradaminy
This land, ocean, our place of the whale and seal dreaming.

Nicha demanga, nyin ngorbarak
Waangelaniny maambakoort, Toort baal kat, Ngari, mamang
This place, the old people sit on the beach and sing to the ocean, singing to the seal, salmon, whale.
This is to calm the sea, bring in sea food, and most importantly letting Father Ocean and Mother Earth know our people are here.

Demanga wirrn, nidjak yeyi
The spirits of our Elders are still here today.

We, the Noongar people, are the Traditional Owners of South West Western Australia, and have been since before time immemorial. As the First People of South West Western Australia, we continue to practise the laws and customs of our culture. Through our culture, the Noongar people of the Wagyl Kaip Southern Noongar region continue to hold rights, responsibilities and obligations in relation to our people, traditional lands and waters that have never been ceded or extinguished. Australia is a signatory to the United Nations Declaration of Rights of Indigenous People (2009).

Tread softly; respect the ancient footprints of our ancestors.

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The Department of Biodiversity, Conservation and Attractions (DBCA) and the Wagyl Kaip Southern Noongar Aboriginal Corporation were greatly assisted in the preparation of the management plan by the considerable time and effort put into discussion and meetings by the Community Reference Committee for the Mamang Maambakoort Marine Park.

Many groups and individuals provided valuable input to the CRC through Sector Advisory Groups, out-of-session discussions and individual submissions.

During the course of reserve planning, staff from various agencies including the Department of Primary Industries and Regional Development (DPIRD); Department of Energy, Mines, Industry Regulation and Safety (DEMIRS); and local governments, also provided valuable information and guidance relating to their areas of responsibility.

Leafy seadragon. Courtesy of Peter Nicholas

1. Introduction

The Mamang Maambakoort Marine Park is located on the South Coast of Western Australia from Point Hood in the west to Mason Bay in the east (Map 1). It falls within the boundaries of the Wagyl Kaip Southern Noongar (WKSN) region, established through the South West Native Title Settlement, covering WKSN Sea Country up to the mean spring high tide mark. For thousands of years WKSN people have depended on and looked after their Sea Country.

The marine park contains a diverse array of marine habitats and communities, including seagrass, macroalgae and reef. The local area is renowned for its aggregation of whales and Point Ann offers one of the most spectacular locations for shore-based whale watching in Western Australia. The coast and sea are also utilised for a wide array of commercial activities and recreational pursuits, which are particularly popular near key access points and when favourable weather conditions permit.

This joint management plan outlines a contemporary management framework to conserve the values of the area. Importantly, the marine park will be jointly managed with the WKSN Aboriginal Corporation (WKSNAC) through a joint management body (JMB). The joint management arrangements will make this the first formal jointly managed reserve with WKSN people.

The establishment of the marine park will contribute to the conservation and enhancement of the outstanding cultural and ecological values of WKSN Sea Country. It will allow for multiple uses in recognition of the exceptional conservation status, economic value and potential of the area. It aims to find a balance between protecting the unique cultural and environmental values whilst supporting recreational and commercial uses for the benefit of present and future generations, as development and visitation to the area grows.

The establishment of the marine park was part of the Plan for Our Parks initiative, to create 5 million hectares of new national and marine reserves across Western Australia. The marine park adds a further 94,000 hectares (approximately) to Western Australia's marine reserve system and will contribute to the National Representative System of Marine Protected Areas.

The name for the marine park is 'Mamang Maambakoort', from the Noongar dialect. 'Mamang' translates to 'whale', honouring the importance of the whale throughout the marine park and its connection to the other marine parks on the South Coast. 'Maambakoort' translates to sea or ocean.

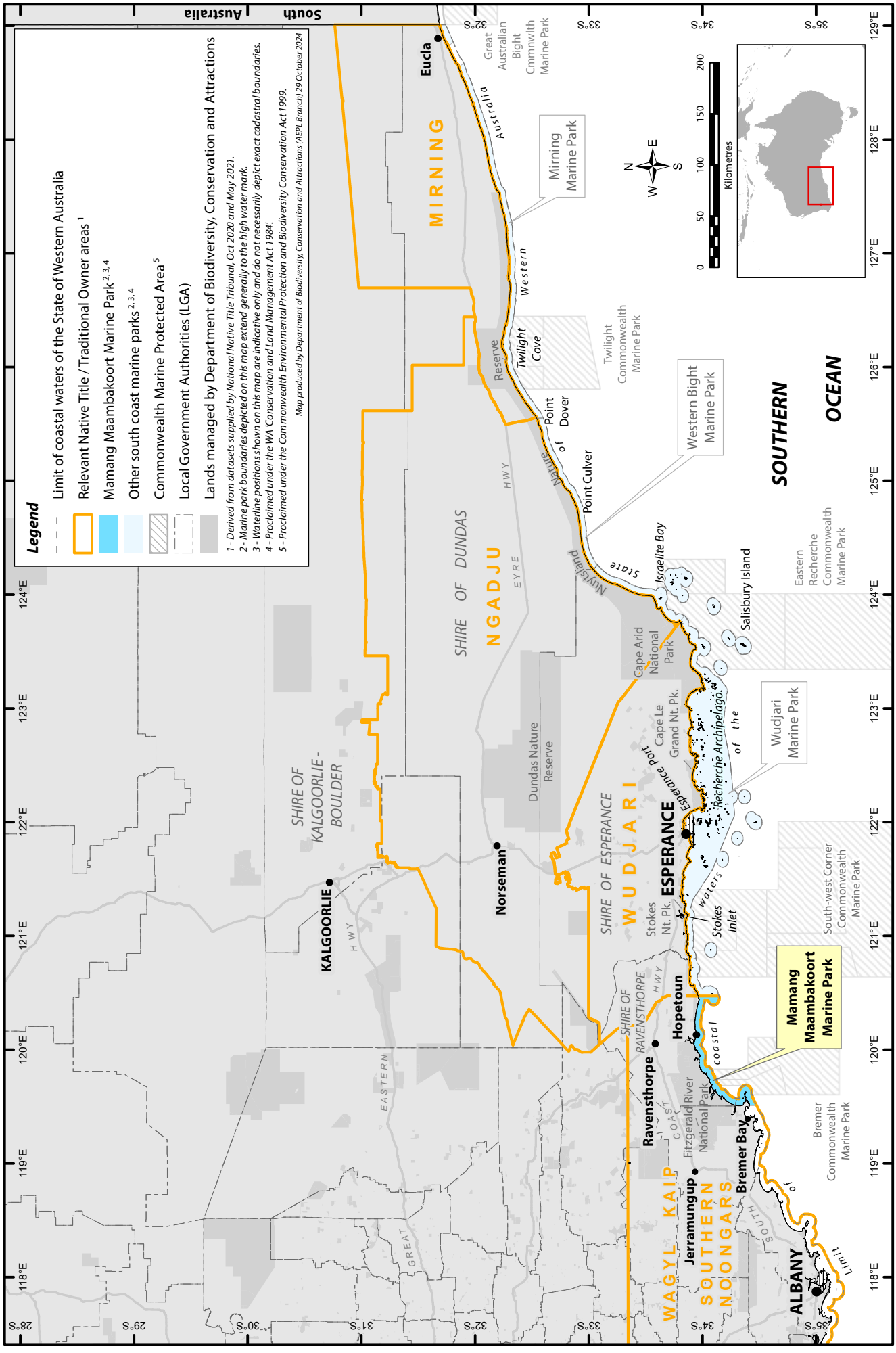
2 The management plan

2.1 Development of the plan

This joint management plan has been prepared by representative Traditional Owners from the WKSNAC and DBCA in consultation with DPIRD, with input from the South Coast community and stakeholders through a Community Reference Committee and sector advisory groups.

Many Traditional Owner families have contributed to this plan by waangkelanginy (all talking together); sharing kaartidjin (knowledge), concerns and aspirations; sharing language; allowing photographs and artwork to be incorporated into the plan; and by developing and prioritising management strategies. Decision making for the management arrangements in this plan has been underpinned by traditional knowledge in conjunction with the latest research on the area and information from the community and stakeholders.

This management plan has been prepared in conjunction with the joint management plans for the Wudjari Marine Park, the Mirning Marine Park and the management plan for the Western Bight Marine Park, to ensure consistency and complementarity of management arrangements across the neighbouring marine parks and Sea Countries.



Map 1 – Locality of Mamang Maambakoort Marine Park (including native title boundaries).

2.2 Purpose of the plan

This joint management plan outlines how Mamang Maambakoort Marine Park will be jointly managed by the WKSN people (represented by WKSNAC) and DBCA to preserve, enhance and promote Noongar culture and heritage, enhance nature conservation, and allow for ongoing sustainable recreational and commercial use.

The intended outcomes of the joint management plan are listed below.

- The establishment of the marine park as a Class A reserve over the State waters of WKSN region Maambakoort Boodja (Sea Country) to the high-water mark.
- The establishment of a joint management body (JMB) for the purposes of section 56A of the *Conservation and Land Management Act 1984* (CALM Act).
- The establishment of a joint management framework for the marine park between DBCA and WKSNAC in accordance with the requirements of a section 56A joint management agreement (JMA) under the CALM Act for WKSN people's Maambakoort Boodja.
- Promotion and support for the WKSN people to continue to exercise their Noongar traditional and customary rights, recognising their ongoing connection to and responsibility for Maambakoort Boodja.
- Preservation of Noongar culture and heritage values of the marine park.
- The establishment of a framework to allow for ongoing sustainable multiple use.
- Promotion and support to build the capacity of Noongar people and WKSNAC to progressively increase their skills and experience to take on greater responsibility for management of the marine park.
- The establishment of seven management programs (management framework, education and interpretation, public participation, patrol and enforcement, management intervention and visitor services, research, and monitoring) with prioritised strategies to help achieve management objectives for the marine park.
- A conservation framework built on a collaboration between traditional ecological knowledge and western science guided by a cultural governance structure to preserve the cultural and ecological functioning of Maambakoort Boodja and to manage existing and future pressures.
- Contribution to the fulfilment, support and promotion of Australia's responsibilities under several international conventions, including the Convention on Biological Diversity, the International Union for the Conservation of Nature's Protected Areas Program and the United Nations Declaration on the Rights of Indigenous Peoples.
- Contribution to the National Representative System of Marine Protected Areas.
- The continuation and enhancement of cultural, recreational and commercial uses for the rights, benefit and enjoyment of Noongar people, the community and visitors.

2.3 Vision

The vision statement represents the aspirations for the conservation and protection of the cultural and ecological values and sustainable use of the marine park and will provide guidance for ongoing management.

"Working together to care for our coastal and marine environment in ways that preserve, enhance, protect and celebrate all cultural, ecological and community values, and our knowledge, history and heritage for our families and future generations."

2.4 Strategic objectives

The strategic objectives of this plan support the goals of the WKSN people and the broader South Coast community and provide more specific direction for the long-term realisation of the vision for the marine park.

Connection with boodja

Respect and protect the Traditional Owners of the WKSN region's culture and conserve the cultural sites, values and heritage of Maambakoort Boodja.

Caring for boodja

Enhance, maintain and conserve Maambakoort Boodja, including its marine biodiversity and ecological integrity to ensure a moorditj Maambakoort Boodja (strong Sea Country) for all, forever.

Being on boodja

Provide equitable and sustainable opportunities to allow communities to connect to the marine park through recreation, utilise the marine environment as a source of income, promote the sustainable growth of these industries, and provide the ability for marine park users to provide food for themselves and the broader community.

Kaaditjiny (understanding)

Encourage and promote the sharing of knowledge between Traditional Owners, scientists, marine park users and the local community to guide, inform and adapt Maambakoort Boodja management.

3. Management setting

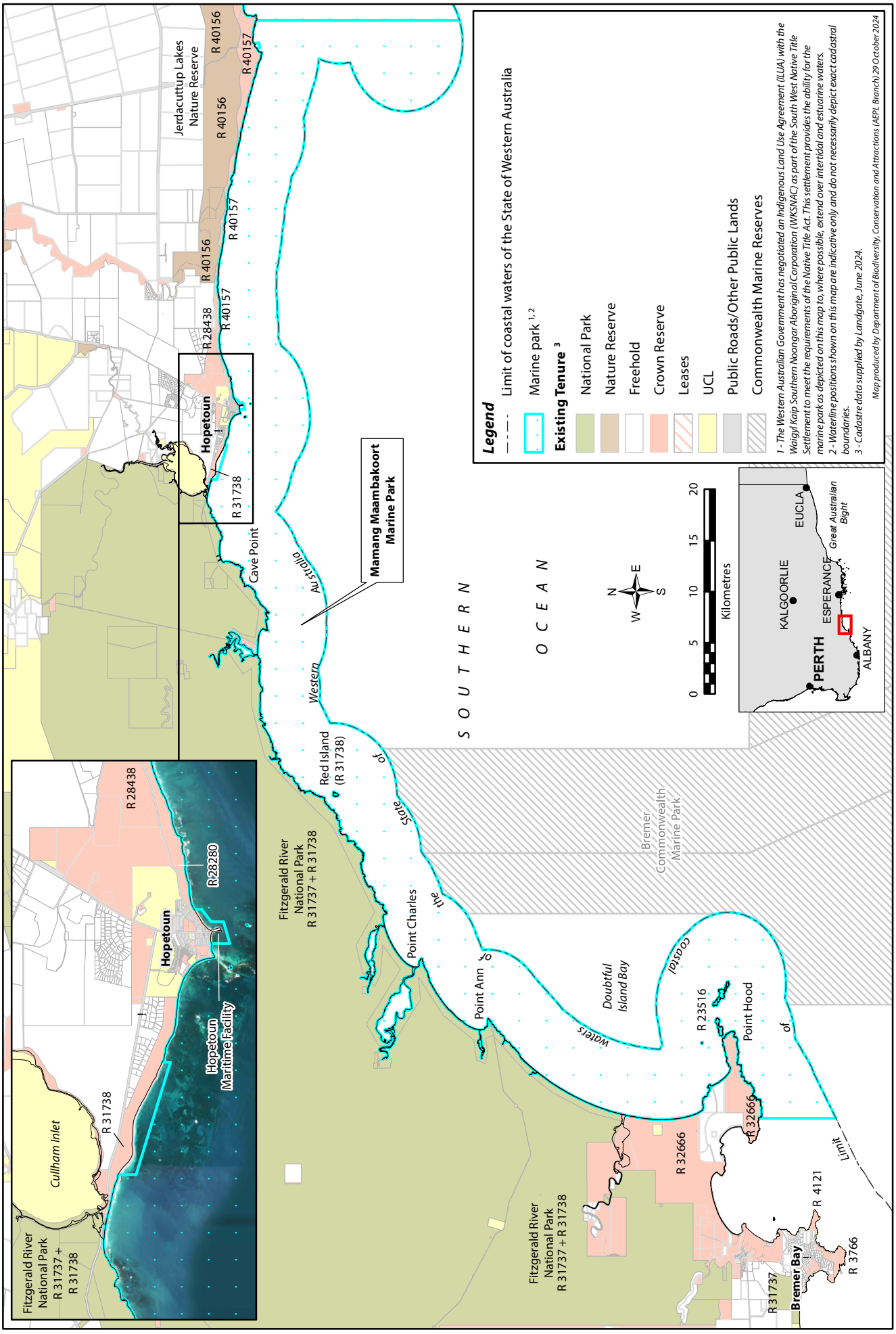
3.1 Definition of area and tenure

Lying in the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) South Coast mesoscale bioregion, Mamang Maambakoort Marine Park is in the Great Southern region of Western Australia and covers approximately 94,000 hectares of WKSN Sea Country adjacent to the Shires of Jerramungup and Ravensthorpe, including Hopetoun. The western boundary of the marine park is at Point Hood, some 10km east of Bremer Bay. The eastern boundary, lying 30km east of Hopetoun at Mason Bay, follows the WKSN boundary and borders the Wudjari Marine Park. The marine park extends to the limit of coastal waters of Western Australia and borders the Commonwealth Bremer Marine Park in some areas.

The marine park includes intertidal areas to the high-water mark and estuarine portions, subject to adjacent tenure. The outer boundary of the marine park and surrounding tenure is shown in Map 2.

It abuts the entire coastline of the Fitzgerald River National Park. Relatively inaccessible areas of the marine park link to the middle of the Fitzgerald River National Park, which is also relatively remote, providing a perfect opportunity to protect marine and coastal values without compromising the value and use of the area to humans. In addition, the national park, and the majority of the marine park sits within the Fitzgerald Biosphere Reserve (FBR), considered one of the richest places in the world for botanical diversity (Biosphere Implementation Group, 2015). Biosphere reserves are areas of terrestrial, marine and coastal ecosystems that are managed with the aim of balancing biodiversity conservation and the sustainable use of natural resources (DCCEEW, 2022). The FBR covers 1.53 million hectares of terrestrial and marine environments between Bremer Bay and Hopetoun and includes upland plains and the Barren Ranges, interspersed with rivers, creeks, wetland systems and estuaries.

The marine park is gazetted as a Class A marine park. Class A reservation provides the highest security of tenure, requiring the approval of Parliament to amend or cancel a reserve's purpose or significantly alter its boundary. However, the zoning scheme and management plan can be amended after a public consultation period with the approval of the Minister for Environment, Minister for Fisheries, and Minister for Mines and Petroleum.



Map 2 - Tenure within and adjaent to Mamang Maamabakoort Marine Park

3.2 Legislative context

The marine park will be managed in accordance with the provisions of the CALM Act, the *Fish Resources Management Act 1994* (FRM Act), the Conservation and Land Management Regulations 2002 (CALM Regulations), the *Biodiversity Conservation Act 2016* (BC Act), DBCA policy and other relevant legislation and cultural protocol mentioned in this plan.

The marine park helps to fulfil Australia's responsibilities and commitments under several international conventions, including the Convention on Biological Diversity, and will support the International Union for the Conservation of Nature's Protected Areas Program. The marine park also contributes to the National Representative System of Marine Protected Areas by conserving important marine ecosystems and protecting marine biodiversity through a comprehensive, adequate and representative system of marine reserves.

Developed and written in partnership with Noongar people through the WKSNAC and by basing planning and management on a central pillar of Noongar cultural relationship and responsibility for Maambakoort Boodja (Sea Country), the establishment of this jointly managed marine park addresses Noongar peoples' rights as stipulated in the United Nations Declaration on the Rights of Indigenous Peoples.

Within the marine park, continued customary activities such as fishing and hunting rights are ensured. The FRM Act recognises customary fishing rights, and the CALM Act and BC Act provide for customary activities to be undertaken.

3.3 South West Native Title Settlement

On 25 February 2021 the South West Native Title Settlement (SWNTS) took effect and is the largest and most comprehensive native title agreement in Australian history. The settlement is a negotiated agreement between State Government and Noongar people to improve economic, social and cultural outcomes for the Noongar community. Six Noongar regional corporations represent the rights and interests of each of the six agreement groups.

Through the SWNTS, the WKSN Indigenous Land Use Agreement (ILUA) commits DBCA to work in partnership with the WKSNAC to cooperatively and jointly manage Country. The ILUA provides, amongst other things, for the making of JMAs under section 56A of the CALM Act for particular areas of the conservation estate.

Joint management of the marine park will be additional to the commitment to a minimum of two jointly managed areas identified in the WKSN ILUA under the SWNTS. WKSNAC and DBCA will work together to implement this joint management plan that will include a joint management arrangement.

3.4 Joint management

In the context of reserves established under the CALM Act, joint management is a partnership between Traditional Owners and DBCA to work together to care for and manage a defined area of Country or Sea Country.

Joint management of the marine park is an ongoing and adaptive process which will require WKSNAC and DBCA to actively work together, share decision making and undertake management activities collaboratively. Joint management provides the structure to bring together appropriate resources, combine cultural and ecological knowledge, and implement and develop innovative landscape scale conservation practices to achieve the management objectives set out in this plan.

A JMA sets out how Traditional Owners and DBCA will come together to provide recommendations about how the conservation estate is managed, including how to protect cultural sites and values. The JMA enables the establishment of a JMB with representatives from WKSNAC and DBCA to manage the marine park in accordance with the agreement, joint management plan and the CALM Act. The JMB will oversee management of the marine park, make management decisions, provide strategic input into how management strategies are implemented, monitor implementation of the joint management plan and provide advice in accordance with the agreement and the CALM Act. DPIRD would be invited to present on fisheries management matters to the joint management body as required.

The marine park would not be jointly vested with WKSNAC when the park is established. This is because under the SWNTS, the landholding entity is the Noongar Boodja Trust. At the time of writing, joint vesting can only occur with Aboriginal bodies corporate under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* (CATSI Act) and the Noongar Boodja Trust is not a corporation under the CATSI Act. Traditional Owners of the WKSN region have expressed an interest in understanding if joint vesting is advantageous and how it could be allowable in the long term.

3.5 Connectivity and holistic management

The division of traditional versus contemporary values is subjective since many contemporary values stem from traditional ones. Strang (1997) described how items were valued differently: "a stone for example, may be many things: a tool, a weapon, an item of currency, an aesthetic object, a signpost, or all of the above". While this is a practical way of looking at the principle "each object in a human system nearly always plays a [more] complex role than is suggested merely by its use" (Strang, 1997). Both use and value need to be used to describe one's relationship with an area or resource.

Connectivity, in the context of a jointly managed marine park, represents as many things as the word suggests. It connects people and place. It connects land and sea. It connects cultures. It connects songlines. It connects species to other places.

"All our stories, our flora, our fauna, they just merge – there are no demarcations".

A holistic approach acknowledges that the ocean and land are interconnected, and this approach also needs to be taken when planning and managing marine parks and when prioritising research and monitoring requirements.

"Aboriginal culture is tied to boodja (Country) which includes the land, sky and sea and is viewed as holistic stewardship, represented in stories, subsistence practices and resource management" (Stocker et al., 2016). The health of Country and its people are intrinsically linked to the strength of culture, and if one element is missing the others can become physically and emotionally unwell.

This joint management plan has been guided by the values, aspirations and management objectives articulated by Traditional Owners of the WKSN region. It sets out a strategic approach and priorities for looking after and sustainably enjoying Maambakoort Boodja (Sea Country) for future generations. Many families are culturally connected to more than one marine park and opportunities for sharing have been built into management strategies. Celebration and recognition of traditional links and pathways that connect the people of the WKSN region to their brothers and sisters from other boodja (Country) was an important aspect for consideration.

"The whole coastline is culturally significant; we can't chop it up into sections".

A key consideration of marine park management is the linkage of the state marine park to the federal marine park to align areas of sanctuary between the two jurisdictions where possible. Bremer Marine Park lies offshore near Fitzgerald River National Park. It includes two zones—a national park zone (IUCN II) and special purpose zone Mining Exclusion (IUCN V1). It includes two key ecological features—the canyons (the 'Albany Canyon Group') and an adjacent shelf break; an ancient coastline between 90-120m and the Bremer Canyon. The ancient coastline and the Bremer Canyon (and the associated wildlife that it supports) were identified by Traditional Owners as critical cultural values for protection. These assets connect the core of the Fitzgerald River National Park through this marine park, and past the ancient coastline out to the Bremer Canyon. Traditional Owners are particularly interested in the 'old river'—the Bremer Canyon—and understanding how this links to the ancient cultural

corridors on the current shoreline. The Bremer Canyon has been identified as an area of deep significance in relation to both ancient songlines and environmental significance, with high species diversity, richness and ecosystem function and the famous resident killer whale (*Orcinus orca*) population. The Noongar community want to have an active role in ensuring special areas like this are given the level of protection and management they require. Other key cultural interconnections include the cultural corridors that extend inland through the river systems, the estuaries and out to sea.

Many threats to marine park values originate beyond the marine park boundary, for example, chemical pollution, salinity, nutrient load and marine plastics. Land management issues that directly impact Sea Country (erosion, runoff, coastal development, dieback, future mining) need to be addressed. Night wells—fresh water that can interact directly with the marine environment through moon influence and tidal movement—are examples of culturally significant places. These are holes in rock that were either formed by the water that has flowed over it for eons or chiselled out by Noongar people long ago. At night the water rises in the hole, but disappears during the day. There are also many coastal heritage sites and complexes of very high cultural significance to Traditional Owners adjacent to the marine park. These areas need protection, management and access. Coastal sites protect cultural assets, for example, iconic coastal plants such as the sea grape that grows on the foredune and the tjaltjraak (blue mallee) that indicates the ancient coastline and delineates some peoples' Country.

Collaborative operational plans will be developed to ensure efficient and effective delivery of a range of programs where there is shared agency responsibility or mutual interests, including education, interpretation and public participation, and patrols and enforcement. The use of formal and informal mechanisms for communication and engagement between park managers and key stakeholders will also be important throughout the life of the plan to ensure effective ongoing and adaptive management.

3.6 Noongar Recognition

The *Noongar (Koorah, Nitja, Boordahwan) (Past, Present, Future) Recognition Act 2016* recognises the Noongar people as the Traditional Owners of lands in the South West and Great Southern areas of Western Australia. Figure 1 details the Noongar recognition statement from the Act.

The Act recognises that Noongar people are the Traditional Owners of Noongar boodja (Country), have cultural responsibilities and rights in relation to their boodja and continue to have a living cultural, spiritual, familial and social relationship with boodja. Noongar is a large language group and smaller groups exist within the Noongar language area. The WKSN region refers to the Noongar dialect groups Ganeang, Goreng and Minang from the Great Southern area. Many people from this region also have kinship ties to other traditional lands.

The Wagyl Kaip Native Title claim was lodged in 1998. This was based on the 1996 Southern Noongar claim but with more ancestral families added. The WKSN claim for Native Title was made in September 2006. The WKSNAC was created in 2022.

Generally, when the term 'Noongar' is used in this plan it is referring to Noongar people of the WKSN region.

Oral quotes recorded during the development of this joint management plan have purposely not been attributed to any one person to promote a sense of shared ownership and responsibility in accordance with cultural protocols of consensus. Stories that have been contributed by collective peoples are attributed a reference.

Noongar recognition statement

Noonakoort moort nitja burranginge noongar boodja Noonakoort moort kwomba Djinunge nitja mungarrt — koorah Noonakoort moort yirra yarkinje kwomba noongar boodja Koorah — nitja — boordahwan Noonakoort moort yarkinje noongar boodja Nyidiung koorah barminje noonakoort moort Wierrnbirt domberrinje Noonakoort moort koort boodja Nitja gnulla moorditj karrl boodja

All our Noongar people stand here on Noongar land. Past, present and future. We stand strong on our land. The mungart tree symbolises our strength and survival. All of our people stand firm on our land. Our people are here to stay — we will always be

A. Since time immemorial, the Noongar people have inhabited lands in the south-west of the State; these lands the Noongar people call Noongar boodja (Noongar earth).
B. Under Noongar law and custom, the Noongar people are the Traditional Owners of, and have cultural responsibilities and rights in relation to, Noongar boodja.
C. The Noongar people continue to have a living cultural, spiritual, familial and social relationship with Noongar boodja.
D. The Noongar people have made, are making, and will continue to make, a significant and unique contribution to the heritage, cultural identity, community and economy of the State.

Figure 1 Excerpt from *Noongar (Koorah, Nitja, Boordahwan) (Past, Present, Future) Recognition Act 2016*.

3.7 The management plan

The structure of the plan has been developed after listening to Traditional Owners of the WKSN region and understanding the key and reoccurring themes from these discussions. These themes are represented in Figure 2.

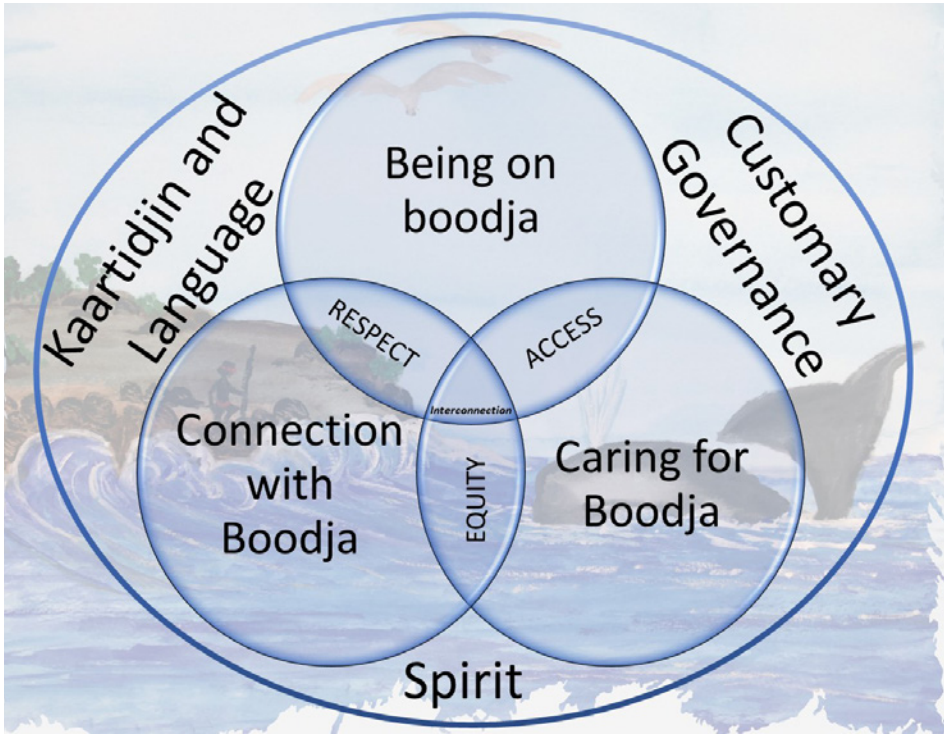


Figure 2 Key cultural marine park themes. Background image courtesy of Iris Woods.

This joint management plan outlines a vision for Maambakoort Boodja (Sea Country) and describes the values of the marine environment that are regarded as important or useful to the Noongar people and the wider community and therefore important to manage. The plan describes the interconnecting aspects of Country, culture and people, cultural values, ecological values and socio-economic values. Many cultural elements have touch points on most values listed under ecological and socio-economic sections of the plan as well.

The plan details pressures and threats acting on each value if any are known. It provides strategic direction through its objectives and applies seven management programs to be implemented through management strategies (see sections 4-10). The key components of the management framework are shown in Figure 3. Management strategies are outcome based and flexible, allowing for adaptive management that is capable of meeting new and emerging management objectives as identified by the JMB.

Although the structure of the plan shows an approach that represents a vision being developed first, then strategic objectives and so on, the site specific and direct knowledge and experiences of Traditional Owners and the general community drives the plan's overall vision. Key management objectives for Sea Country help inform the vision and strategic objectives. Knowing nadjil (why, what for) begins with seeing and understanding boodja, which informs priorities and allows Noongar people to think and plan for management of Maambakoort Boodja (Sea Country) and to merge old science with western science to improve management.

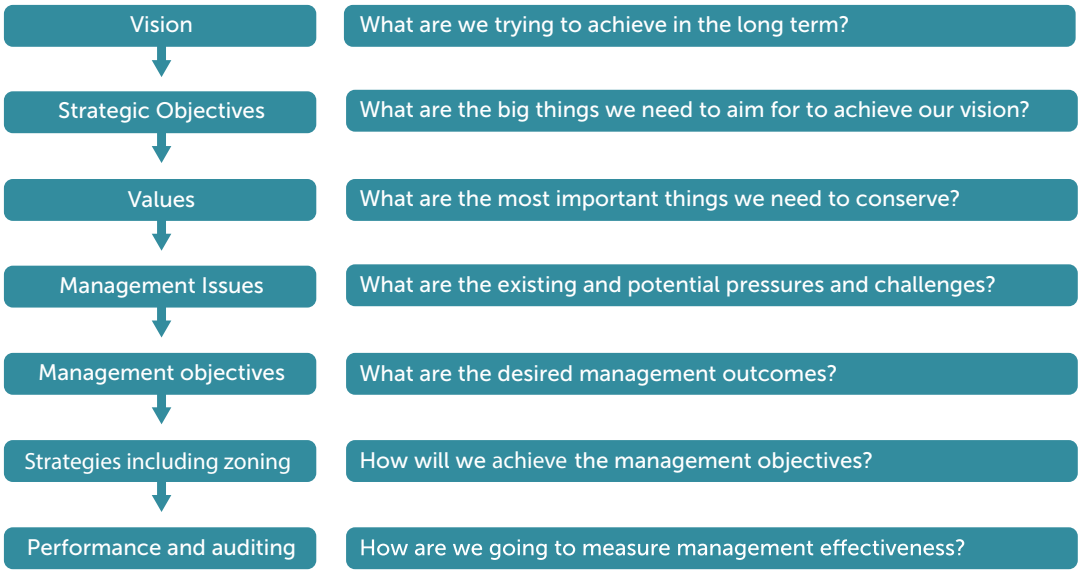


Figure 3 Structure of the plan

The joint management plan guides management of the marine park for 10 years, or until a new joint management plan is prepared under the CALM Act. Any amendments required during the life of the plan require a statutory public comment period and approvals from the Minister for Environment, Minister for Fisheries and Minister for Mines and Petroleum.

The DBCA Esperance district and WKSNAC joint management partners through the JMB have the primary responsibility for coordinating the management of the marine park by applying prioritised management strategies across seven management programs.

DPIRD is the lead agency responsible for leading, coordinating and undertaking management strategies relating to the State's fish and aquatic resources.

The key terms used in this plan are defined below.

Terminology	Description
Vision	The long-term aspiration for the marine park.
Strategic objectives	The broad direction required to achieve the vision.
Values	The cultural, ecological, and socio-economic features and activities which are important to the area.
Pressures	Anything which affects or has the potential to affect the condition of a value. Pressures can be anthropogenic or natural.
Management objectives	Identify what the primary aims of management will be.
Management strategies	Provide direction on how the management objectives will be achieved. The prioritisation of the management strategies is based on the best available information and may change during the life of the plan.
Management programs	The seven categories across which management occurs (management frameworks, education and interpretation, public participation, patrol and enforcement, management intervention and visitor services, research and monitoring). This ensures a coordinated and prioritised approach is taken to implement strategies. The management programs are consistent across all marine parks in the State and are the basis for budgeting and annual reporting.
Key performance indicators (KPIs)	Assigned to key values to measure overall management effectiveness. These key values reflect the highest conservation and management priorities and form an important part of the audit process (see section 10). Each KPI has three components: performance measures, targets and reporting requirements.
Performance measures	Performance measures are indicators of management effectiveness in achieving the marine park's objectives and targets.
Management targets	The long-term targets provide specific benchmarks to assess the success or otherwise of management strategies within the life of the plan. For the purposes of this management plan, 'significant change' refers to a statistically significant change beyond the limits of natural variability. Specific limits for each ecological value will be determined as long-term monitoring datasets further develop.
Monitoring	Monitoring will be carried out to assess the condition of values in the marine park, with the most significant values being prioritised for monitoring. If the condition of a value has significantly decreased as a result of human activities in the area, adaptive management will be carried out.
Responsibilities	DBCA is the lead for all strategies. Where other organisations are required to support implementation of a management strategy, their name is listed in brackets next to the strategy. When an agency is listed as a support the agency will be engaged, with the level of involvement to be determined once the project is in development. Where an agency or body is required to take a lead role in strategy implementation, their name (or acronym) is in bold.

4. Connection with boodja (cultural values)

Strategic objective: Respect and protect the Traditional Owners of the WKSN region's culture and conserve the cultural sites, values and heritage of Maambakoort Boodja (Sea Country).

4.1 Traditional Owners and Country

"This southern Maambakoort Boodja commands respect. Maambakoort can be moorditj (strong) and karang (angry) and should be left alone. It needs kaaditjiny (understanding) to enable safe use and journey. You must take the time to introduce yourself and dwongk-kaditj (hear, understand). See the waarip (wave, sea, depression between two waves), listen to baboor (sound of water and movement), understand the weiran/weirn (spirit)."

"Throw a stone or sand in the water and call out to introduce yourself to the sea. Doesn't have to be in language, but just to show you are there".

Cultural practices, ethnographic record and archaeological evidence all support the high cultural value that this land, sea and coastline hold to Noongar people. It is important for non-Aboriginal people to understand that Noongar associations with the sea are not just recent but ancient, and not just practical but also spiritual.

The Maambakoort Boodja (Sea Country) of the WKSN region is a vital component to community identity. The connection between people and place provides a sense of belonging, of association, of knowing. The ability to continue using, enjoying, connecting to, and nurturing this Sea Country is a very important aspect of Noongar culture.

The area of the marine park is a cultural landscape comprised of interconnected Noongar cultural places and is spiritually alive. The broader Land and Sea Country contains many special heritage places. Sea Country tends to be men's responsibility; Noongar men are responsible for hunting resources from the sea and bringing them back to their families. Men still access Country for fishing today in Noongar culture. The marine park also has a number of estuaries scattered along its length. Estuaries are home to a diverse range of plants and animals and internationally recognised as important to migratory birds. Estuaries and the way they connect Land and Sea Country are extremely important to Noongar people. Estuaries link through the river systems and many ancient cultural corridors and tend to be rich in archaeological artefacts, providing evidence of use and value over thousands of years. They supported and still support much of the customary resource collection and use. Estuaries tend to be women's business and providing opportunities to be on Country for women's business helps protect family, place, and culture.

The Noongar seasonal calendar includes six different seasons in a yearly cycle that Elders talk about moving back and forth like a wheel until the season kicks in properly. Boodja (Country) provides cues for Sea Country and when to visit and for what and vice versa. Traditional Owners have expressed a desire for non-Aboriginal people to better understand the Noongar seasons to allow them to understand Country better: "You knew the salmon was running when in March you'd see a cloudy, smoky sky and that is when the salmon are ready" (SCRIPT, 2004).

4.2 Spirit and connection (KPI)

Boodja (Country) is where the heart is. Some people say karlup (home or heart Country). Some people say moort boodja (family run). It is not just nature, it's boodjara (belonging to Country); it's not just about camping, it's living; it's not just about fishing, it's nourishment. It is life, home, food and culture. Reiterated through most research relating to 'healthy Country healthy people' is that engaging in on-Country activities, such as cultural and natural resource management, also has positive outcomes for human health and wellbeing (Luckert et al., 2007; Henderson et al., 2004; Johnston et al., no date).

Noongar culture is based on a strong spiritual connection to Country, and as such is a cultural religion, as evidenced by ancient songlines along the coast and with their connection to Piblemen Country to the west and Wudjari Country to the east. Noongar people speak their own language and have their own lore and customs. Lore describes creation stories, ceremonies, rituals for hunting and gathering when food is abundant and in season. People's connection to the spirits and the land's connection to the spirits are of equal importance. All components of the seascapes hold Noongar spiritual connection, associated values and meanings, which need to be incorporated into joint management planning and decision making. For thousands of years Noongar people have resided on and had cultural connection to boodja. Everything in this vast seascape has meaning and purpose.

"Spirituality is the key—everything is related to each other—the Country, ourselves, stories are all connected."

"Spirituality is our cultural religious belief—everything is related to each other."

"Spirits in the trees, spirits in the winds, spirits around our camps."

The management arrangements in the marine park must both acknowledge and respect this spirit and peoples' connection to Sea Country and caring for culture. Part of this connection is maintained through access, which enables the continued practice of culture on Country, as to maintain culture it needs to be practiced and shared. There is a strong belief that if you do the wrong thing by boodja you will be tormented. Access to boodja (Country) is linked to the mental and physical wellbeing of Traditional Owners. Access is covered in more detail in section 4.4: Access and supporting customary use.

Respect of connection and spirit begins with an awareness of whose Country we stand on and how to acknowledge the Country and Traditional Owners appropriately. Welcomes to Country, acknowledgements of Country and introductions to Country relate strongly to management strategies in other sections of this plan. Welcome to Country statements and ceremonies are an acknowledgement and recognition of the rights of the Noongar people to Noongar land.

"This acknowledgement pays respect to the traditional custodians, ancestors and continuing cultural, spiritual and religious practices of Noongar people." (SWALSC)

"We need to acknowledge the land, because it acknowledges us."

An Acknowledgment of Country is a way that non-Aboriginal people can show respect for Noongar heritage and the ongoing relationship of Traditional Owners with the land. Some Traditional Owners also have specific ways of introducing themselves and visitors to Country. Many Noongar people throw a handful of sand into the water, some people put their 'scent' on the sand or part of Country before it is thrown into the water. Others use their voice to introduce or reintroduce themselves after periods of absence. Some people still use Noongar language for this introduction. Many will wait for the sea to calm before staying.

"Our grandmother used to introduce us to Country ... when we visited the sea, it was always from granny that introduced us to the sea. We are attached to Country."

Traditional Owners have rights to speak for boodja (Country) and certain families may have cultural authority to speak for different areas. Authority to speak for Country and being a knowledge holder are sometimes different but both aspects—cultural authority and knowledge—are required for protection of cultural values and sites.

Joint management itself is an act of acknowledgment of the connection that the Traditional Owners of the WKSN region have had, still have, and will continue to have with Maambakoort Boodja (Sea Country).

"It gave me a sense of confidence and empowerment of what we can gain from this [joint marine park management planning] process."

Management strategies to address the pressures on this value are interspersed throughout the plan and focus on aspects of education, customary governance, promotion of Noongar language, monitoring of cultural values and visitor safety. Other specific management strategies are described below.

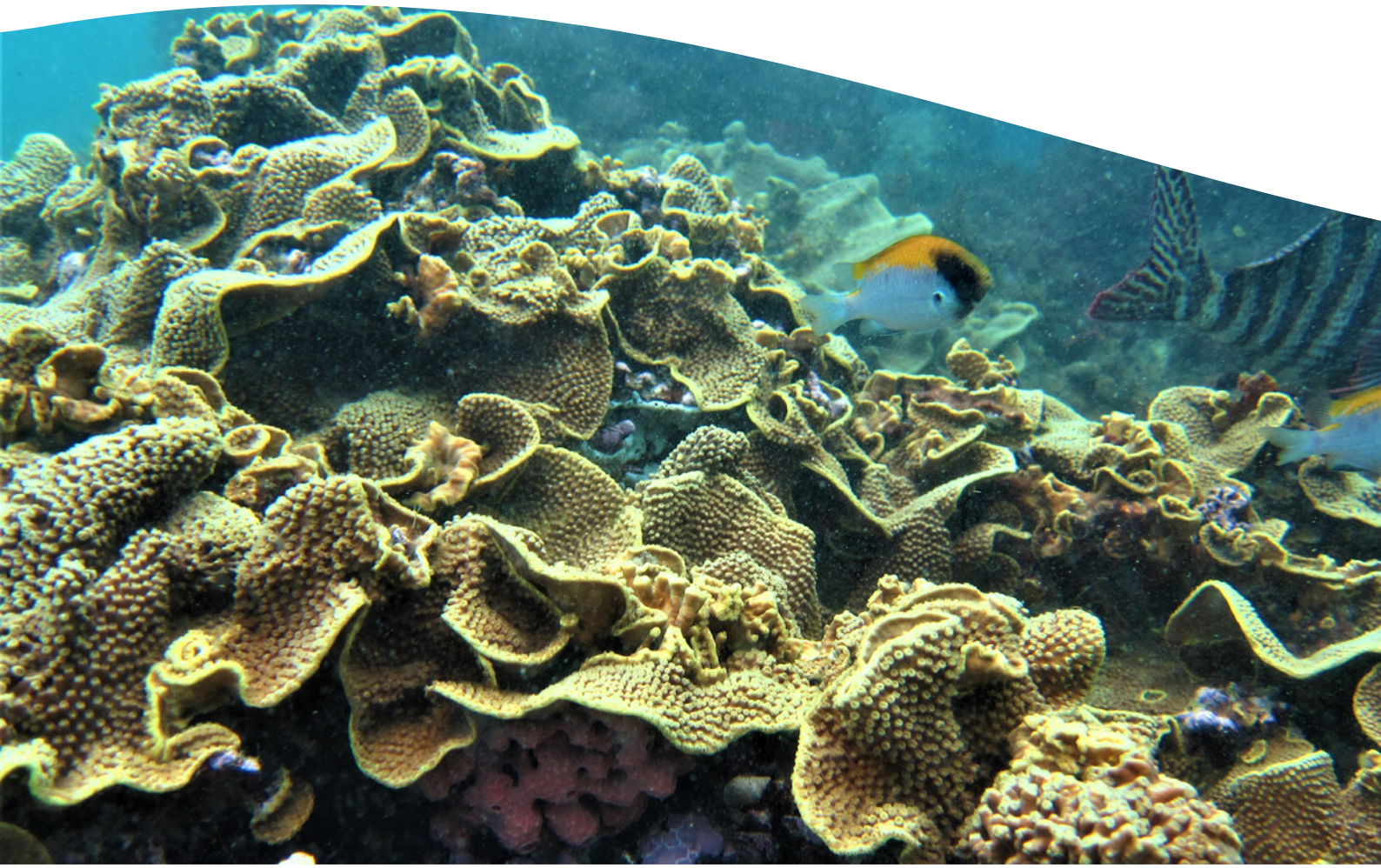
Summary of management arrangements for spirit and connection			
Requirements	• Respect and celebration of Traditional Owner links with their Maambakoort Boodja (Sea Country). • Traditional Owners access and use of Maambakoort Boodja (Sea Country). • Equitable involvement of Traditional Owners in marine park management. • Resourcing for initiatives associated with conserving, protecting and promoting spirit and connection to Maambakoort Boodja (Sea Country) and the adjoining lands and rivers.		
Pressures	• Lack of information about connection to Maambakoort Boodja (Sea Country). • Inability to access Maambakoort Boodja (Sea Country). • Ignorance and/or disrespectful visitor behaviour.		
Management objectives	To respect and promote WKSN region peoples' relationship and connection to Maambakoort Boodja and how it is integral to marine park planning and management.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Develop and implement a cultural framework to ensure marine park management is consistent with cultural lores and protocols.	Management framework	H
	2. Support for WKSN region people's continued connection to Sea Country through on-Country trips relevant to marine park management.	Management framework	Ongoing
	3. Develop and implement a cultural communication and interpretation plan including but not limited to: • design and develop welcome statement/s at key entry points • design and adopt co-badging for the marine park.	Education and interpretation	H
	4. Design and conduct research and monitoring programs to ensure cultural values are protected.	Research and Monitoring	Ongoing
	5. Design and implement a monitoring and evaluation program, to track the progress of culturally specific management strategies.	Monitoring	Ongoing
	6. Develop and implement local Noongar cultural awareness and place-based induction training for all marine park managers. [DPIRD]	Education and interpretation	H
	7. Ensure lease and license processes incorporate a Noongar cultural values assessment.	Management framework	As required
Performance measures	WKSN Traditional Owners' level of satisfaction that their connection to Sea Country has been respected and promoted.		
Target	WKSN Traditional Owners are satisfied that their connection to Sea Country has been respected and promoted.		
Reporting	Annually or as requested.		

4.3 Language (KPI)

Noongar language and dialects are spoken across the Noongar nation. Consisting of 14 different dialects, Noongar is an oral language and thus the spelling of it is variable. The main difference between the Noongar language groups is pronunciation. Of course, some words are only known in certain areas due to the geographic distribution of places and species. Connection to boodja (Country) is passed on through language, stories, art, song and dance. Language is not just a form of communication—it immediately identifies someone and reinforces identity.

Noongar language is very descriptive and place names usually describe a key feature of a landscape, enabling easy recognition and navigation. Knowing the Noongar language, particularly place names, can provide visitors with a sense of place and provide a new understanding of a local area. Some Noongar names are not used by the general public. One reason for this is that Noongar place names vary between clans and even families. "In accepting non-Aboriginal mapping conventions, it must be recognised that there is the risk of making our understanding of Noongar sites too simple and open to possible misinterpretation" (WRC, no date). The best way to approach Aboriginal mapping problems is to allow the community to define categories in accordance with their language and traditions.

Recording and using Noongar language within the marine park helps to keep culture alive and creates enhanced visitor experiences for all.



Bremer Bay corals. Courtesy of Claire Ross

Summary of management arrangements for language			
Requirements	• Recognition and use of Noongar language. • Using culturally appropriate language. • Understanding cultural concepts (for example, Country).		
Pressures	• Limited recognition and use of Noongar names for places. • Lack of language transfer to younger generation. • Inability to access Country to practice culture. • Lack of Elder guidance for development and approval of interpretation.		
Management objectives	To ensure that documentation and use of Noongar language in marine park management is guided by Traditional Owners.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Develop approval processes and protocols for Noongar language use. **[WKSNAC]**	Management framework	Ongoing
	2. If desired by Traditional Owners, work with WKSNAC to progress name changes formally through the nomenclature committee and Landgate to update area and landmark names relevant to marine Noongar names.	Management framework	Ongoing
	3. Undertake and/or support research that documents Noongar language and oral histories relating to marine park values.	Research	H
	4. Resource Noongar language training for marine park employees.	Education and interpretation	Ongoing
	5. Utilise Noongar language (when known) in marine park promotional and educational materials, including original place names.	Education and interpretation	Ongoing
	6. Maintain and use Noongar language in oral discussions, where appropriate, with marine park users.	Education and interpretation	Ongoing
	7. Share Noongar stories and artwork in association with language, where appropriate.	Education and interpretation	Ongoing
	8. Develop welcome to Country in Noongar language and share at marine park entry areas and in promotional material.	Education and interpretation	H
Performance measures	WKSN Traditional Owners' level of satisfaction that Noongar language is being appropriately documented and promoted during marine park management.		
Target	WKSN Traditional Owners are satisfied that Noongar language is being appropriately documented and promoted during marine park management.		
Reporting	Annually or as requested.		

4.4 Access and supporting customary use (KPI)

Customary rights provide the right to access Country and resources for Aboriginal people. This access also enshrines the ability to maintain and protect culture, as this protection relies on access to Country. Colonisation resulted in limiting access to Country. Reasonable steps towards making amends for the impacts of these limits have only occurred in recent history—through native title outcomes, changes to customary activities regulations and, in Noongar Country, by returning freehold and other land estate to the Noongar community through the Noongar Land Estate.

Changes in legislation have been made to allow Aboriginal people to carry out customary activities on-Country within the lands and waters managed by DBCA. Section 103A of the CALM Act and section 182 of the BC Act provide the defence for Aboriginal People to take flora and fauna for an Aboriginal customary purpose in accordance with regulations. Aboriginal customary purposes mean preparing or consuming food customarily eaten by Aboriginal people; preparing or using medicine customarily used by Aboriginal people; engaging in artistic, ceremonial or other cultural activities undertaken by Aboriginal people; or other activities incidental to those purposes. Part 10 of the CALM Regulations 2002, regulation 131 of the Forest Management Regulations 1993 and regulation 63 of the Biodiversity Conservation Regulations restrict and exclude the operation of these defences in certain circumstances where there are real and significant risks to public safety, the protection of flora and fauna and other values, uses or users of the reserve.

In recognition of the United Nations Declaration on the Rights of Indigenous Peoples and the Commonwealth *Native Title Act 1993*, the State has a responsibly to recognise and give effect to customary fishing and prioritise it when planning for aquatic resource allocation. Amendments have been made to the FRM Act, which now provides the 'head powers' required to define and protect customary fishing rights, and the capacity to regulate customary fishing to ensure sustainability of fish stocks.

Procuring and preparing cultural plants, animals, bush tucker, medicines, ochre and other materials is a key component of being connected to boodja (land) and culture. Some WKSN region community members are active in collecting resources to maintain culture and to feed the family, and this allows Noongar people to maintain detailed knowledge of the changes in resources over seasons and the longer term.

Traditional management of Sea Country has been occurring for as long as management of land, including ceremonies to nurture the wellbeing of particular places, species and habitats. Ceremonies conducted on the South Coast include those for conjuring species into fish traps and other rituals that target fish species such as ngari (salmon). Practical approaches, which are similar to contemporary fisheries management, include controlling access to resources through seasonal exploitation, placing restrictions on age and gender of species that can be taken, detailing the reproductive conditions of species that can be caught, restricting the use and distribution of resources to certain people, restrictions through totemic significance, and also prohibition of entry to certain sacred areas. In Noongar boodja (Country), most neighbouring tribes have to ask permission to use resources in an area that is not their own, and this was especially evident when visiting neighbouring tribes for gatherings. Only the local tribe would gather resources to provide for the visitors. Western Australian customary fishing rights factor this aspect into customary

fishing rules today. Customary fishing can only take place in an area where the person has a connection recognised by Traditional Owners or their permission.

"We hold ourselves to account on cultural lore."

Fishing is a key way that Traditional Owners of the WKSN region continue an intimate connection with the sea. Fishing is a life and culturally sustaining activity and is a key pursuit to be maintained and facilitated along the entire coastline and within the estuaries. Sharing with family and looking after Elders who cannot go fishing anymore is a vital component of the Noongar way of life. The act of fishing connects people to the sea, maintains healthy communities and alleviates economic hardship.

Noongar customary protocol teaches the right way and the wrong way to fish, hunt and collect other resources. Right way fishing ensures that only enough fish are taken to feed the family, and that the first fish caught is returned to the ocean, in order to keep the wirin (spirits) happy. Some of the key target species for local Traditional Owners include groper, dhufish, snapper, salmon, herring, bream, mullet, abalone, prawns, periwinkles and crabs.

"Only take what you need for the family."

"We did not have fishing nets, lines, or other means to catch the nguri, instead our Elders would whistle to the porpoises (now called dolphins)."
"These dolphins just seem to appear on hearing the call and would chase the salmon right up to the beach."

"We as kids would wade out waist deep and form a human chain like a chain barrier and hand-grab a salmon."

"We would be lucky to catch a couple which was enough for a couple of meals."

"We were not frightened as the aim was to grab a feed for the family, it was a job to be done."

Collecting and catching seafood is central to how coastal Noongar communities connect with Sea Country. Being able to reliably catch fish is crucial to ensuring that connections to Sea Country remain strong. Anecdotal evidence about how easy it is to catch a feed and the catch rate are a key indicator of how Noongar people perceive the health of Sea Country.

Customary access is not just about the physical accessibility of a site but also about the confidence with which Noongar people can conduct these activities. Feeling confident to be on Country to practice customary activities without being questioned is important. There is a common concern among Traditional Owners about the lack of understanding of customary activity rights. Currently, many Traditional Owners do not feel confident in their own customary rights, which are rooted in sustainable resource use and sharing a feed with family.

Summary of management arrangements for access and supporting customary use			
Requirements	• Healthy Sea Country that supports diverse and abundant resources. • Recognition by all marine park users and visitors that Noongar people, practising customary activities on boodja is necessary for cultural, social and personal wellbeing. • Noongar people are confident to practice their customary rights on Sea Country. • Opportunities to access Sea Country. • Sharing of resources in a culturally appropriate manner.		
Pressures	• Inability to safely access Country. • Increased visitation. • Localised commercial and recreational impacts on key cultural resources. • Climate change (refer to section 8).		
Management objectives	• To ensure Noongar people of the WKSN region are confident to undertake customary practices. • To educate the broader community about the rights of Traditional Owners to access and use Sea Country and its resources.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Co-design local customary fishing arrangements consistent with a state-wide customary fishing management framework. **[DPIRD]**	Management framework	H
	2. Develop a process to determine how (and who) to give authority to exercise customary fishing and harvesting within the marine park. [WKSNAC, DPIRD]	Management framework	H
	3. Develop an education program to ensure that marine park users understand WKSN peoples' customary access, activity and fishing rights. [DPIRD]	Education and interpretation	H
	4. Identify opportunities to undertake collaborative fisheries research focused on culturally important species. **[DPIRD]**	Research	Ongoing
	5. Identify opportunities to provide specific training for Noongar people to build the skills required to assist DPIRD with compliance and education activities on the South Coast. **[DPIRD]**	Education and interpretation	H
	6. Develop an education program for WKSN Noongar people to ensure they understand their customary rights within the marine park. **[DPIRD]**	Education and interpretation	H
	7. Develop and implement an education program for DBCA and DPIRD staff to increase knowledge about customary access and rights. [DPIRD]	Education and interpretation	H
	8. Monitor, promote and enforce compliance with fisheries and marine park legislation, including illegal fishing activities from identified groups. **[DPIRD]**	Patrol and enforcement	Ongoing
Performance measures	WKSN Traditional Owners' level of satisfaction that they have been able to continue customary practices within the marine park.		
Target	WKSN Traditional Owners are satisfied that they have been able to continue customary practices within the marine park.		
Reporting	Annually or as required.		

4.5 Caring for cultural places (KPI)

Cultural places provide a link to traditional Indigenous lifestyles and beliefs, while enabling the connection and continuity of Noongar identity and spirituality. These places are part of the Great Southern region's cultural landscape, a mosaic of land and sea which has been cared for and altered across thousands of years by Indigenous communities. By following the process set out by the Burra Charter (Australia ICOMOS, 2013) for the management of culturally significant places, the marine park is able to shape our management policies around Noongar knowledge, values and the care of the cultural landscape.

This allows for the protection of the diverse range of cultural places within and adjacent to the marine park, including burial sites, birthing sites, artefacts, fish traps, night wells, grinding patches, grooves, middens, quarries, hunting places and waterholes. Management of these places should use the best available knowledge, skills and methods, and include ongoing technical and community input into decisions and actions. Noongar people are the primary source of information on the value of their heritage, and the active participation of Noongar people in identification, assessment and management is integral to the effective protection of heritage values in the marine park. Of course, as part of a living culture, these sites may also be continually used by Noongar people.

Connecting to the marine park, cultural landscapes and corridors are where Noongar People travel, live and maintain traditional practices. These start from far inland, travel near the rivers and estuaries, move beyond the current shoreline and link current cultural sites to ancient ones. Within the marine park, islands are a primary cultural corridor, described as 'the knees' of the Country by Elders. They connect Traditional Owners today to the Old Country before the sea level rose. The major islands within the marine park include Middle Doubtful Island, Doubtful Island and Red Islet. These islands all have freshwater sources and can be a major source of traditional foods.

"There were many water sources along the South Coast which were found in locations where certain reeds and grasses grew. We would look for the grasses and maybe notice where kangaroos may have scratched the ground and would dig further with sticks or big shells and allow the water to seep in to fill enough for us to get what amount we needed. We would grab some smaller grasses and line the muddy well and this would make the water clear for us to drink. There are many freshwater streams still flowing into the ocean that are still used today by us. There are also many fresh water 'springs' along the South Coast that we cared for in the past that provided our access to water."

Certain cultural corridors also hold significance, due to past traumatic events. Culham Inlet and Phillips River hold the blood of Noongar ancestors, after a series of violent massacres in 1880 in the area known to as Kukenarup (Cocanarup).

Knowledge around cultural corridors and other cultural places can also be gendered. There are many special places around Noongar boodja (Country) that are important to Noongar men and women for ceremonial purposes, including customs and rituals for the passage into manhood and womanhood. These special places and stories cannot be specifically described in this document as they are sacred.

The *Aboriginal Cultural Heritage Act 2021* deals with, amongst other aspects, the management of activities that may harm Aboriginal cultural heritage. Therefore, management strategies within this joint management plan focus on identification, enhancement, providing access for Noongar people, physical protection of sites and education, where appropriate.

Summary of management arrangements for caring for cultural places			
Requirements	• Recognition and respect of WKSN Traditional Owners' right to speak for and look after Country. • Respect for cultural places by all visitors. • Culturally appropriate visitation. • Opportunity for Traditional Owners to access cultural sites to continue their use and to manage and protect sites. • Acceptance of the separation of specific men's and women's cultural business.		
Pressures	• Inability to safely access Country. • Increased visitation.		
Management objectives	• To facilitate the opportunity for WKSN Traditional Owners to care for boodja (Country) and keep it moorditj (strong). • To identify, manage and protect sites of cultural significance.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Work with adjacent landowners to ensure coastal development proposals consider if and how they impact marine park values. [LGAs]	Management intervention and visitor services	As required
	2. Conduct an audit and create a database of all cultural sites, where appropriate, within the marine park to establish a program of works to actively protect and manage these sites.	Management framework	H
	3. Identify men's and women's business sites and support access restrictions if requested.	Management framework	As required
	4. Undertake further research into underwater cultural landscapes to identify and confirm features and associated ethnographic information for protection particularly in estuaries, around islands, land connections to offshore canyons and current and old river systems.	Research	M
	5. Develop and implement tools to measure and monitor impacts on cultural sites and implement strategies to address issues where possible and appropriate.	Monitoring	H
	6. Support WKSNAC to teach their younger generations about sites and site management within the marine park.	Management framework	Ongoing
	7. Facilitate and resource appropriate Elder mentoring and guidance for Noongar employees when they are working at cultural places.	Management framework	H
	8. Support WKSNAC to pursue registration of Cheadanup, St Mary Inlet and Hamersley Inlet and cultural sites under the Indigenous Protected Areas Program.	Management framework	H
Performance measures	JMB level of satisfaction that they have been able to undertake their role to assess, protect and improve cultural heritage sites and values associated with these sites.		
Target	JMB are satisfied that they have been able to undertake their role to assess, protect and improve cultural heritage sites and values associated with these sites.		
Reporting	Annual or as required.		

5. Caring for boodja (ecological and biocultural values)

Strategic objective: Enhance, maintain and conserve Maambakoort Boodja (Sea Country) including its marine biodiversity and ecological integrity to ensure a moorditj Maambakoort Boodja (strong Sea Country) for all, forever.

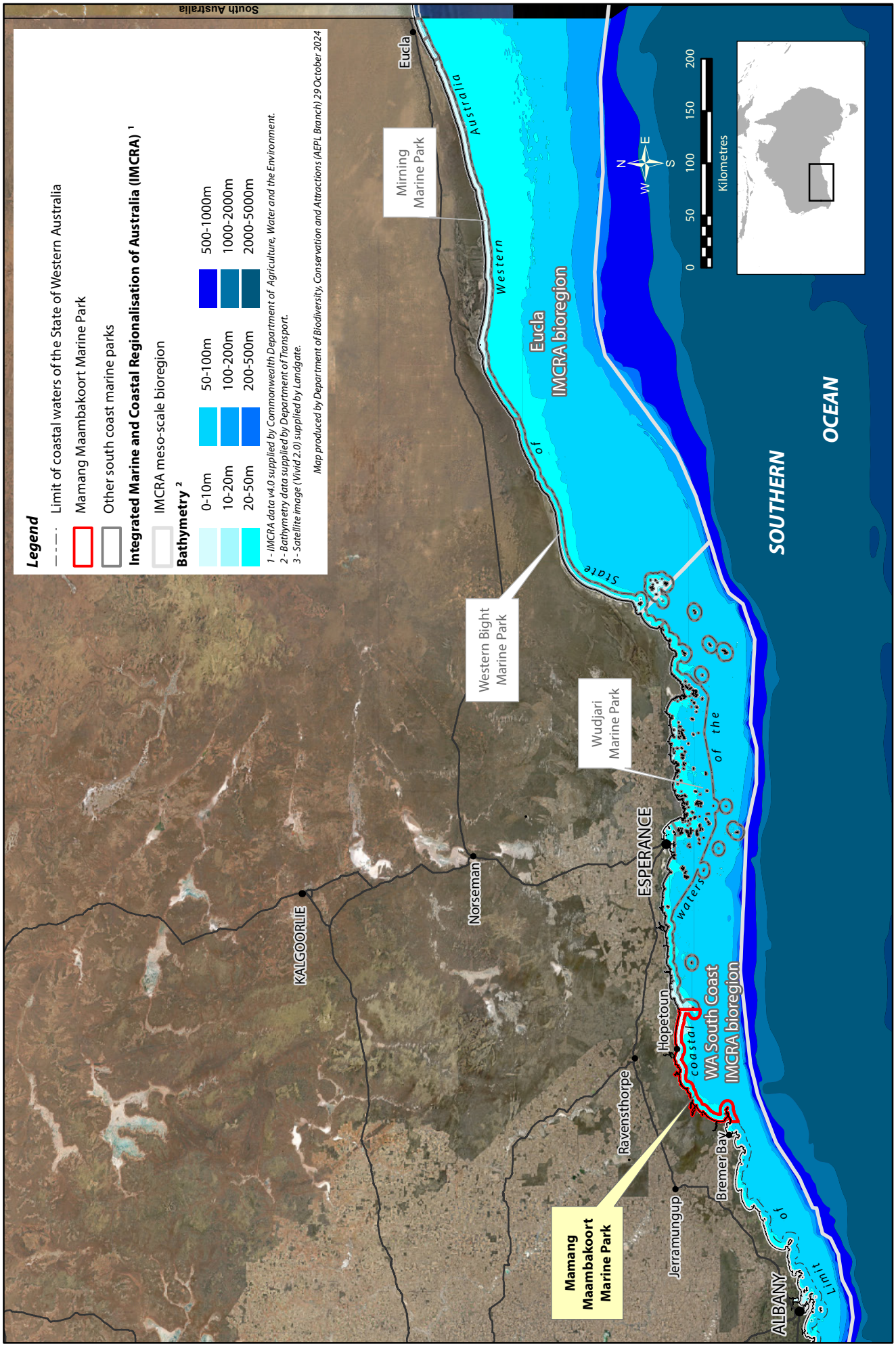
Ecological values are the physical, geological, chemical and biological characteristics of an area. These values can be significant in terms of their biodiversity (representativeness, rareness or uniqueness) and ecosystem integrity roles. Ecological values can also have social significance, because many social values are functionally dependent on the maintenance of ecological values.

The IMCRA is a framework developed for classifying Australia's marine environment into ecological bioregions at a scale useful for regional planning. These bioregions are used as the basis for the development of a National Representative System of Marine Protected Areas (NRSMPA). The marine park is within the Western Australian South Coast IMCRA bioregion and the Eucla IMCRA bioregion (Map 3).

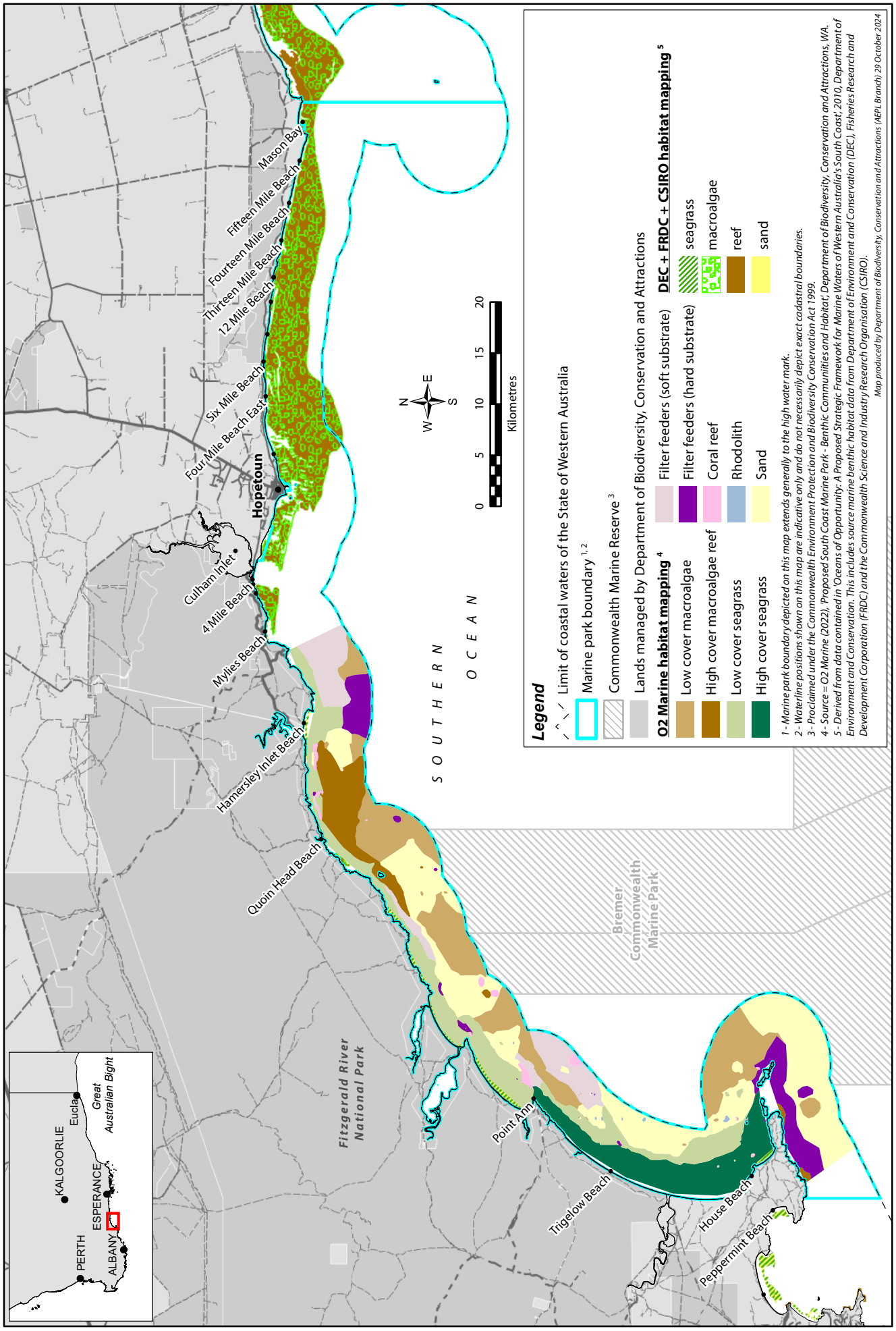
The marine park is framed by sandy beaches backed by dunes between high headlands. Swell and surf is generally heavy, but is reduced where headlands and islands offer offshore protection (Map 4). The marine flora and fauna have a remarkable richness, diversity and uniqueness (Sutton and Day, 2021). The marine benthic habitats of the marine park are diverse. Nearshore habitat is dominated by seagrass, except for the high-cover macroalgae reefs near to and east of Hopetoun. Point Hood and the Doubtful Islands have a complex array of habitats; offshore areas are dominated by sand interspersed with macroalgae and some filter feeding communities, with some smaller areas of habitats such as coral and rhodolith (Wellington, 2022). Much of the foreshore is vegetated (where it abuts the national park and the coastal reserves east of Hopetoun), although dryland cropping and broadacre farming, as well as small developed pockets, also occur. The coastline features many inlets, which are only open to the coast intermittently. The marine environment is characterised by a complex bathymetry (Map 3).

Cultural and ecological values are interconnected and can be surrogates for one another when one aspect is not well understood. Separating land and sea, catchments and estuaries, whales and their habitats, differs from the interconnected way that ecosystems function, and how WKSN Traditional Owners view the natural world. Despite this, for ease of developing clear management objectives and strategies, the 'caring for boodja' section of this joint management plan has been divided into individual values. The main purpose for this division is to allow for transparent and accountable management, audit and review. The values encompass physical, geological, chemical and biological characteristics, all of which are explicitly intertwined with cultural values.

As described in section 3, all areas within this marine park and adjoining lands are valued and used from a cultural perspective and all are interconnected. A focus of managing ecological values is to establish effective, meaningful and collaborative partnerships with Traditional Owners to protect heritage values, conserve biodiversity and enhance the resilience of the marine park and the Land and Sea Country it sits within.



Map 3 - Marine bioregions, bathymetry and Mamang Maamabakoort Marine Park.



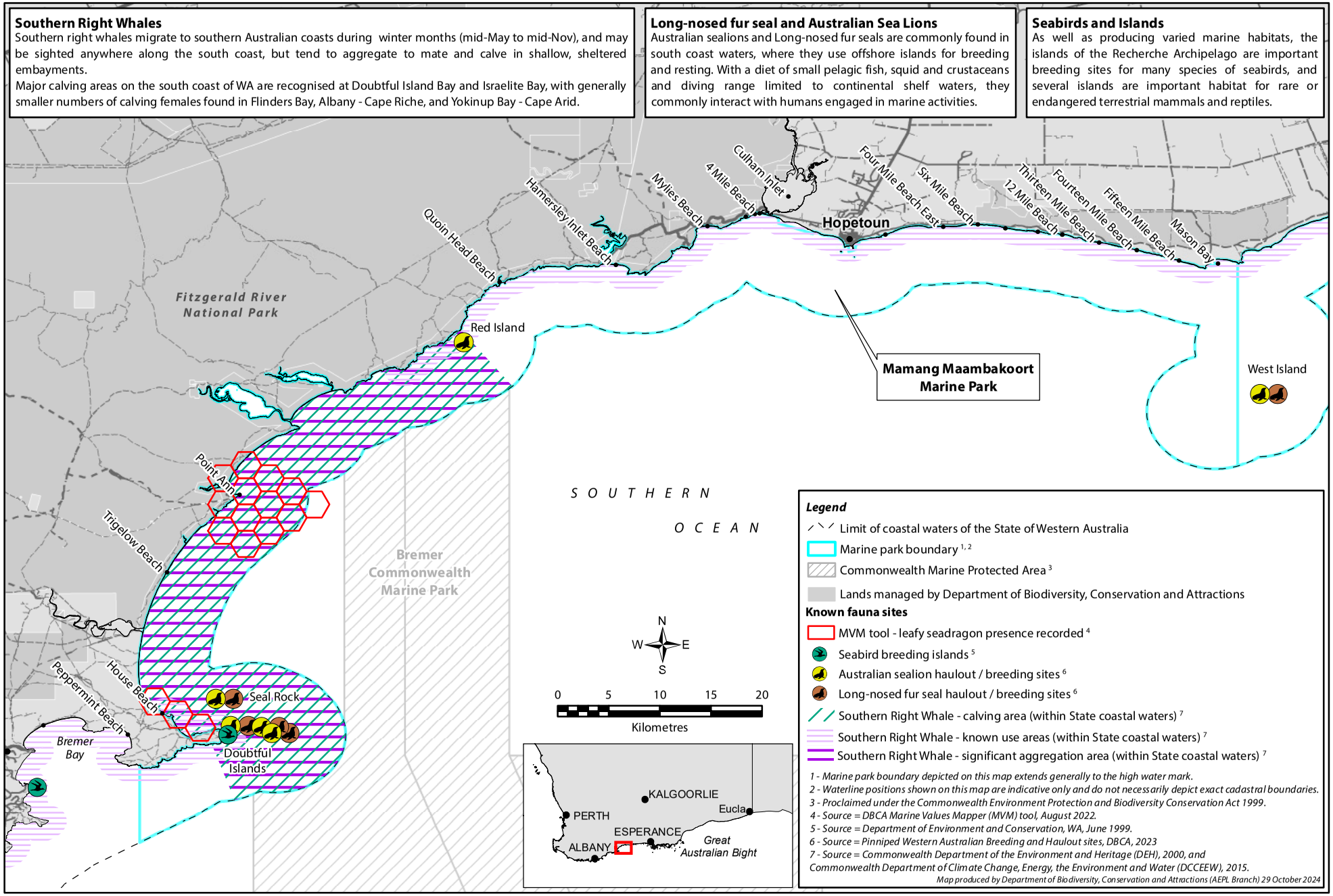
Map 4 – Known marine habitats within and adjacent to Mamang Mambakoort Marine Park.

Map 5 – Known marine fauna within and adjacent to Mamang Maambakoort Marine Park.

Southern Right Whales
Southern right whales migrate to southern Australian coasts during winter months (mid-May to mid-Nov), and may be sighted anywhere along the south coast, but tend to aggregate to mate and calve in shallow, sheltered embayments.
Major calving areas on the south coast of WA are recognised at Doubtful Island Bay and Israelite Bay, with generally smaller numbers of calving females found in Flinders Bay, Albany - Cape Riche, and Yokinup Bay - Cape Arid.

Long-nosed fur seal and Australian Sea Lions
Australian sealions and Long-nosed fur seals are commonly found in south coast waters, where they use offshore islands for breeding and resting. With a diet of small pelagic fish, squid and crustaceans and diving range limited to continental shelf waters, they commonly interact with humans engaged in marine activities.

Seabirds and Islands
As well as producing varied marine habitats, the islands of the Recherche Archipelago are important breeding sites for many species of seabirds, and several islands are important habitat for rare or endangered terrestrial mammals and reptiles.



5.1 Geomorphology

"The whole of our culture is based on the landscape as a spiritual entity."
"The landscape tells stories."

WKSN people's knowledge is encoded into the landscape, within its unique landforms (Cumming & Lullfitz, 2022). The landscape and seascape define boundaries. The rivers, estuaries and mountain ranges and their influence on plant communities help to guide people on Country and through other people's Country. Landform and seascape features are also integral to being able to navigate Country safely. Some major landscape features are linked to songlines that are still known today. When viewed from a particular angle, East Mount Barren looks like the head and shoulders of a giant, looking down at smaller stone figures. This is the brother who has turned his head to see his dogs, transformed into seals in the story that tells of a songline 'Toort Baal Kaat'. The last line of the cultural story reads "Yey, maam toort baalap boya nyininy kalyakoorl. Now, man dog they rock sitting/being forever" (Scott & Nelly, 2002).

The geomorphology of the South Coast consists of a repeating pattern of long, curved sandy beaches backed by dunes located between high granitic, doleritic or metasedimentary headlands (Sanderson et al., 2000). The striking Barren Ranges are composed of metasedimentary rocks. The most exposed parts of headlands facing south and south-west are either fronted by wave-swept steep slopes or cliffs. The south-eastern sides of the headlands, adjacent to the next wide bay and beach, are exposed to lesser wave action and tend to have granite or gneiss boulder fields along the shore (CALM, 1994; Sanderson et al., 2000). Granitic rock forms the high, steep sea cliffs and the Doubtful Islands. South of Point Hood and Doubtful Islands, the sea floor slopes steeply to 50m within one kilometre of the shore, in contrast to Doubtful Islands Bay where the slope is gentle to 50m, 10–15km offshore.

The marine park has a generally moderate to high energy coastline with heavy swells. The shoreline provides a variety of habitats for marine flora and fauna, including granite and gneiss headlands, boulder fields, pools on the sheltered sides of headlands, limestone intertidal rock platforms and reefs (CALM, 1994; Sanderson et al., 2000). The beaches along the open coast are exposed to heavy surf and are generally coarse sands. Intertidal sand flats occur in sheltered corners and are not extensive (CALM, 1994). Wherever offshore structures protect the shore from the direct effects of swell, sheltered sandy beaches have developed in association with cuspate forelands (a triangular extension of the shoreline formed by longshore drift) and tombolos (Sanderson et al., 2000). The beaches provide important habitat for macroinvertebrate assemblages and shorebirds.

"The beaches are our place of introduction to the sea.
Beach sand is thrown into the sea to introduce ourselves.
Letting Father Ocean know we are there."

There is limited information to assess the condition of the geomorphology, but it is assumed to be relatively good. A significant portion of the South Coast lies within national parks and nature reserves, which has reduced development pressures. There is localised disturbance from coastal development within and around the region's main coastal towns. Beach ecosystems are likely to be impacted by decreased rainfall, warmer temperatures and increasing wind caused by climate change. Increasing severity of winter storms is also likely to negatively affect the natural processes in beach communities. Use of four-wheel drives, trail bikes and all-terrain vehicles can exacerbate erosion of fragile coastal areas.

Proposed developments likely to have a significant impact on the environment are referred to the Environmental Protection Authority and may be subject to the environmental impact assessment (EIA) requirements of the *Environmental Protection Act 1986* (EP Act). Boat harbours are usually managed by the Department of Transport (DoT), with boat ramps administered by local authorities.

Little Boondadup. Courtesy of Peter Van Schoubroeck

Summary of management arrangements for geomorphology			
Current status	The geomorphology of the marine park is generally undisturbed. However, parts of the coastline have been altered by small coastal developments.		
Pressures	• Physical disturbance (such as trampling/4WD access). • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Construction of general marine infrastructure (such as navigation markers and jetties). • Potential ground-disturbing mining exploration/development.		
Current major pressure	Climate change		
Management objectives	To ensure that the geomorphology of the marine park is not significantly affected by human activities.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take the lead role, their name is in bold.	1. Develop a program to identify, document and manage cultural sites at high risk of loss due to erosion forces. 2. Educate users about the ecological importance of the marine park geomorphology and appropriate access to protect sensitive coastal landforms. 3. Monitor the condition of geomorphology and the pressures acting on it within the marine park. 4. Ensure advice relating to coastal and offshore development activities in the area with the potential to disturb the geomorphology of the marine park is provided to the relevant statutory authority as part of environmental impact assessment and approvals processes. 5. Ensure effective management of commercial and recreational access and use of coastal landforms adjacent to the reserves through liaison with coastal land managers.	Management framework Education and interpretation Monitoring Management framework Management framework	H H M As required H
Performance measures	Indicators to be developed but may include: • area of coastal disturbance. • area of seabed disturbance.		
Target	• No significant change of seabed structural complexity as a result of human activity in the park, except for approved development sites • No significant change in coastal and island landform structure as a result of human activity, except for approved development sites.		
Reporting	5-10 years		

5.2 Moorditj Kaip (Water and sediment quality) (KPI)

High water quality in the marine park is essential to maintain healthy ecosystems and support unique species that depend on the clear waters of the South Coast. Water quality is strongly influenced by oceanographic processes that involve transport, dispersal and mixing of sediment, nutrients, biota and pollutants. There is little exchange and/or flushing between sea and estuarine systems as the majority of estuary sandbars remain closed to the open ocean all year around. There is extremely low flow from rainfall, therefore freshwater input into the marine environment is low and intermittent (SCRMPWG, 2010).

The clear waters of the marine park are generally considered to be in excellent condition and provide for a healthy ecosystem. However, Traditional Owners have identified a variety of threats potentially causing harm to the clean waters of the South Coast marine environment now and in the future, including chemicals and nutrients from farming, rubbish (in particular marine plastics), salinity, boat fuel, degradation of the estuaries and coastal development. Water is an effective transport medium, meaning the marine park can potentially be impacted by influences from vast distances away.

Estuarine waters included in the marine park have more variable water and sediment quality than the oceanic waters. There has been extensive agricultural clearing in the upper catchments of the Hamersley and Fitzgerald inlets and soil erosion and sediment movement have been observed. The catchment of Wellstead Inlet shows significant areas of degraded land, and symptoms of eutrophication. Algal blooms have been observed in the Wellstead and Fitzgerald inlets (Bancroft et al., 1997). Over the past 20 years, nine fish kills have been documented in South Coast estuaries within the marine park. Where known, causal factors for these kills included low dissolved oxygen, sometimes associated with a rainfall event, algal blooms and high salinity. The catchments of rivers and creeks that have been cleared for agriculture all show signs of salinity stress and erosion, therefore it could be assumed that their coastal inlets are receiving increased loads of nutrients and silt. However, the extent of this pollution is largely unknown as many were highly saline prior to development (SCRMPWG, 2010). Best practice sustainable agriculture has been a proven approach to reducing these risks as demonstrated through successful DPIRD and DWER collaborative programs such as Healthy Estuaries WA and uPTake (DWER, 2022).

Sewage discharge from vessels has the potential to increase nutrient levels and to cause health problems due to elevated bacterial levels. The impact of sewage discharge from vessels will vary considerably from place to place and seasonally as a consequence of environmental factors (such as water circulation) and human usage patterns (such as number of vessels). The *Strategy for Management of Sewage Discharge from Vessels into the Marine Environment* (DoT, 2009) outlines guidelines for marine sewage discharge in Western Australian waters.

In the reserves, the following sewage discharge scheme is recommended to be applied, however, during the life of the management plan, it may be amended if considered necessary:

- sanctuary zones and special purpose zones will be 'zone 1' (no discharge areas)
- waters in general use zones within 500m seaward of the low-water mark will be 'zone 2' (discharge only using approved treatment systems).
- waters in general use zones from 500m seaward of the low water mark will be 'zone 3' (open discharge areas).

Development and infrastructure proposals with the potential to impact on sediment and water quality in Western Australia are subject to assessment under the EP Act. The EPA can set conditions for sediment quality, which are subsequently regulated by DWER.

Summary of management arrangements for water and sediment quality	
Current status	Water and sediment quality within the marine park is generally believed to be in excellent condition. Some localised areas, including estuaries, may have lower water and/or sediment quality.
Pressures	• Introduction of nutrients and toxicants from wastewater, storm water and aquaculture. • Vessel discharge (such as sewage, ballast water). • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Construction of general marine infrastructure (such as navigation markers, jetties). • Potential sand mining, dredging and other sand bypassing works. • Eutrophication from agricultural land clearing and loss of riparian buffer zones in estuarine areas. • Major pollution events (such as chemical or oil spills).
Current major pressure	• Climate change. • Marine debris/litter.
Management objectives	To ensure the water and sediment quality of the marine park is not significantly impacted by human activities.

		Management program	Priority
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take the lead role, their name is in bold.	1. Facilitate long-term management by accumulating spatial and temporal information on impacts on water quality of various activities.	Research	H
	2. Establish a collaborative approach, with adjacent land managers and relevant authorities, in seeking to minimise catchment and urban-based inputs that have the potential to affect the marine park's water quality (such as marine debris, nutrients and stormwater).	Management framework	H
	3. Educate users about regulations on boat sewage disposal and enforce controls on the discharge of sewage from vessels in the marine park.	Education and interpretation	H
	4. As part of on-Country work, patrol the shoreline and waters of the marine park for marine debris and remove and record as necessary, and seek support of partners and marine park users to do the same. [DPIRD]	Management intervention and visitor services	Ongoing
	5. Support and/or promote research to establish the origin of litter, litter surveys, beach clean-ups and other waste minimisation strategies for marine debris/plastic within the marine park.	Research	H
	6. Undertake and/or support research on water and sediment quality in the marine park, including establishing baselines for water and sediment quality, and understanding natural variability and share this information with terrestrial land managers.	Research	H
	7. Work with relevant departments, users of the marine park and stakeholders to address sources of marine debris in the marine park.	Management framework	H
	8. Monitor the condition of water and sediment quality within the marine park, including in major estuaries and share this information with terrestrial land managers.	Monitoring	H
Performance measures	Indicators to be developed but may include: • sea temperature • nutrient concentration • toxicant concentration • pathogen concentration • marine debris mass.		
Target	• No significant increase in oceanic waters in nutrient, toxicant and pathogen concentrations. • Decrease in nutrient and toxicant concentration in estuarine waters. • Decrease in marine debris/litter throughout the park.		
Reporting	3-5 years		

5.3 Estuarine, saltmarsh and mudflat communities

The marine park encompasses estuaries that, together with the estuaries in the other marine parks on the South Coast, are markedly different from those in the rest of the state. They are normally closed estuaries, rather than seasonally or permanently open. This marine park includes four estuaries:

- Saint Mary Inlet
- Fitzgerald Inlet
- Dempster Inlet
- Hamersley Inlet

Fitzgerald and Dempster inlets are listed as nationally important wetlands.

The estuaries of the South Coast of Western Australia formed around 7,000 years ago and remained tidally dominant systems until around 4,000 years ago. Estuaries are now wave-dominated, rather than tide-dominated estuary systems (SCRMPWG, 2010).

The South Coast region's estuaries and catchments are highly heterogeneous systems, experiencing extreme seasonal variation in rainfall, runoff, river flow, tidal regime, river discharge, and entrance sandbars. Seasonal fluctuations are characterised by differences in environmental characteristics of estuary basins, with freshwater estuarine systems in winter and brackish to hypersaline in summer/autumn.

Estuaries are biologically diverse and productive ecosystems. They provide an abundance of fish, worms, crabs and molluscs and areas for migratory birds to rest and refuel during their long journeys. Estuaries function as nursery areas for a wide range of species.

Estuaries are a focus for Noongar women's business. Aboriginal women used creeks and inlets so frequently that they apparently started "distracting the sailors". The *Aborigines Act 1905* made it an offense for any female Aboriginal, between sunset and sunrise, to be found within two miles of any creek or inlet used by pearlers or other sea boats. Providing opportunities to be on Country for women's business helps to redress some of this past discrimination and protect culture.

"We would often hand catch fish in the estuaries. Often fish would lay in the edges of warm water in the estuaries. Using tree branches with lots of leaves, we would sneak up to the fish resting and either pin them down or make a trap with the tree branches. We would also make fish-traps by placing upright strong sticks in a zig-zag position in the tidal water of estuaries. Then using a creeper that we called 'wallerark' we would create a net-like structure that allowed the tide to both flow in and out. When it flowed out the smaller fish could escape, and we would have caught the larger fish."

All estuaries in this marine park are a focus of past and continued Noongar use and value and therefore are home to many of the special cultural places. Most of the estuaries in the marine park would have had fish traps in them in the past (pers comms, WKSN Elders). Hamersley Inlet has a natural outcrop of limestone jutting into the water, with smaller limestone blocks placed in the foreground to complete a circular shape that functioned as a fish trap.

A significant concern identified by WKSN Traditional Owners is that some recreational fishers disregard bag and size limits, which could be addressed by improved education, signage and focused compliance.

Coastal areas on the South Coast, particularly near the mouths of estuaries, contain complex ecosystems made up of sedges, mudflats and salt-adapted vegetation known as saltmarsh. They are associated with cultural corridors, and important to WKSN Traditional Owners as areas for activity and connection. A dense number of cultural features, such as fish traps, exist in close association with these ecosystems. Coastal saltmarsh vegetation is recognised nationally and globally as an ecosystem of high ecological value that is increasingly under threat from agriculture, urban and rural developments, changes to drainage and water quality, and weed invasion (DoPW 2016). These habitats occur generally between the elevation of the mean high tide and the mean spring tide and often occur in association with estuaries.

"Many of the estuaries form large mudflats for most of the year when they are closed off from the ocean. They fill up first nearest to the river outflows."

Fitzgerald Inlet features extensive areas of a nationally threatened saltmarsh ecological community (Turner & Booth, 2021). This community consists mainly of salt-tolerant vegetation (halophytes) including grasses, herbs, reeds, sedges and shrubs. Succulent herbs and grasses generally dominate, vegetation is generally <0.5m tall except for some reeds and sedges. There is typically a high degree of endemism at the species level.

In most instances, the catchments of the South Coast have undergone significant changes due to increased urban and agricultural practices (SCRMPWG, 2010). This has resulted in increased risk of adjacent streams, inlets, estuaries and coastal marine habitats being subjected to the adverse effects of salinity, sedimentation and eutrophication (Hodgkin & Clark, 1989).

Summary of management arrangements for estuarine, saltmarsh and mudflat communities			
Current status	• The majority of estuaries along the South Coast are in altered states with increased levels of salinity, sedimentation and eutrophication. • The condition of saltmarshes and mudflats is largely unknown, however, it is likely they have been impacted by clearing, which reduces water and sediment quality.		
Pressures	• Physical disturbance (such as trampling, 4WD access). • Discharge of toxicants and physical and chemical stressors (such as sediment and nutrients from inlet outflow). • Marine debris/litter. • Construction of general marine infrastructure (such as navigation markers and jetties). • Potential ground-disturbing mining exploration/development. • Major pollution events (such as a chemical or oil spill).		
Current major pressure	• Climate change.		
Management objectives	To ensure coastal and estuarine communities in the marine park are not significantly impacted by human activities.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take the lead role, their name is in bold.	1. Develop a comprehensive program that includes assessment, monitoring, education and management of traditional fish traps within estuaries throughout the marine park. [DPIRD]	Management framework	M
	2. Determine if there are opportunities to reinstate areas for private customary women's business in one or more estuaries at certain times of year.	Management intervention and visitor services	As required
	3. In partnership with WKSNAC, submit cultural sites within estuaries for Indigenous Protected Area (IPA) protection, if deemed appropriate.	Management framework	H
	4. Undertake and/or support research to better understand sedimentation processes associated with estuaries and the pressures acting on them.	Research	H
	5. Establish a collaborative approach with neighbouring land and water managers to address human activities with the potential to significantly impact estuarine communities in the marine park. [DPIRD]	Management framework	H
	6. Monitor the condition of estuarine communities and the pressures acting on them within the marine park. [DPIRD]	Monitoring	H
	7. Liaise with terrestrial land managers to ensure any identified impacts to vegetation along rivers and streams are managed.	Management framework	H
	8. Educate users of the important ecological role of estuarine communities and the potential impacts that human activities have on these communities. [DPIRD]	Education and interpretation	H
	9. Ensure that infrastructure developments are constructed to minimise physical impacts to estuaries.	Management framework	As required
Performance measures	Indicators to be developed but may include: • area of saltmarsh vegetation • nutrient water and sediment concentration • toxicant water and sediment concentration.		
Target	• No significant decline in total cover of saltmarsh vegetation as a result of human activity in the marine park. • Decrease in nutrient and toxicant concentration in estuarine waters.		
Reporting	2 -3 years		

5.4 Seagrass communities (KPI)

Seagrass communities are important benthic primary producers which provide many ecosystem services, including supporting biological productivity, carbon sequestration, fisheries, improving water quality and stabilising sandbanks (Nordlund et al., 2016). Seagrasses are influenced by changes in environmental conditions associated with water movement, nutrient availability, light and temperature (Bearham et al., 2013; Lee et al., 2007). In the marine park, they are important for providing structurally complex habitat for a diverse range of fish and invertebrates.

Seagrasses in the marine park are highly diverse and include endemic and rare deep-water species. Seagrass species within the marine park include *Posidonia sinuosa, P. australis, P. denhartogii, P. coriacea, P. ostenfeldii, P. kirkmanii, Amphibolis griffithii, A. antarctica, Halophila* spp. and *Zostera tasmanica* (Kendrick et al., 2005). Of approximately 72 seagrass species known worldwide, almost a third are restricted to southern Australia (Short et al., 2011; Carruthers et al., 2007). On the south-west coast of Australia, approximately half of the 19 seagrass species found there are endemic to the area (Carruthers et al., 2007; Kendrick et al., 2005; Kuo & McComb, 1989). Due to the exceptionally clear water of the South Coast, seagrasses can grow to depths below 40m (Kirkman & Kuo, 1990; Kilminster et al., 2018), with evidence of sparse *Halophila* spp., *Zostera tasmanica* and *P. ostenfeldii* complex growing in deep (42m) protected areas adjoining islands (Kendrick et al., 2005). Seagrass meadows growing in temperate zones, such as the South Coast, may also act as thermal refugia populations for species impacted by marine heatwaves and rising seawater temperatures further north.

Doubtful Islands Bay through to Red Islet has extensive perennial meadows (SWASS, 1996). Between Groper Bluff and Starvation Boat Harbour, Colman (1998) identified nine species of seagrass in this area (Bancroft & Davidson, 2000).

Traditional Owners noted the seagrass meadows in front of Gordon Inlet were of particular cultural interest and were interested in understanding why it persisted so close to the opening of the mouth. One of the most important cultural values of seagrass was its use to make mattresses.

"That was the first, most important job for all the kids when we had to sleep near the beach. We would get told to go and collect all the seagrass you can find on the beach. We used seagrasses as mattresses. If there wasn't any on the beach we just had to sleep on the bushes."

While no seagrass species is listed as Threatened in Western Australia, there is one listed priority ecological community—*Posidonia australis* complex seagrass meadows [Priority 3(i)] (Threatened Species Scientific Committee, 2013). The priority ecological community consists of the assemblage of flora, fauna and micro-organisms associated with the seagrass meadows (dominated by *Posidonia australis*).

Seagrasses (and macroalgae, see section 5.5) that detach from reefs often accumulate on the shore, seabed and water surface where it is known as wrack. When wrack is washed onto shorelines, it supports the structure and function of ecologically significant sandy beaches and surf zones by stabilising dynamic coastlines, supporting coastal food webs and nutrient breakdown flowing back into the surf zone (Hyndes et al. 2022). Wrack contains large invertebrate communities on which surf zone fish and birds prey (Muhling & Ryan, 2002). Consequently, the removal of wrack from the marine park will be strictly managed and only considered where public access or safety is significantly impeded.

Seagrasses are susceptible to increased nutrient levels, which can increase epiphytic loads on seagrass leaves and/or increased phytoplankton in the water column that reduces the amount of light available for photosynthesis. Other potential threats to seagrasses in the marine park include climate change (extreme climatic events, gradual warming), unregulated anchoring and the construction of marine and coastal infrastructure.

Seagrasses are protected throughout the State under the BC Act and the FRM Act. Development proposals that may impact seagrass communities are subject to an environmental impact assessment under the requirements of the EP Act.

Summary of management arrangements for seagrass communities			
Current status	Seagrasses are generally in good condition within the marine park.		
Pressures	• Unregulated mooring and anchoring that causes scouring in seagrass dominated areas. • Construction of general marine infrastructure (such as navigation markers and jetties). • Commercial and recreational fishing (such as damage to habitat). • Potential ground-disturbing mining exploration/development. • Discharge of toxicants and physical and chemical stressors (such as sediment and nutrients from inlet outflow). • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Sewage discharge from vessels. • Major pollution events (such as a chemical or oil spill). • Potential sand mining, dredging and other sand bypassing works.		
Current major pressure	Climate change.		
Management objectives	• To ensure seagrass communities are not significantly impacted by human activities. • To improve understanding of the seagrass communities in the marine park to facilitate long-term management.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take the lead role, their name is in bold.	1. Monitor the condition of seagrass communities and the pressures acting on them within the marine park and take remedial action if required.	Monitoring	H
	2. Undertake and/or support research to characterise the diversity, density, abundance and distribution of seagrass communities in the marine park.	Research	H
	3. Educate users of the important ecological role of seagrass communities and the potential impacts of human activities, particularly vessel mooring on these communities. [DPIRD, DOT]	Education and interpretation	H
	4. Liaise with adjacent landowners and regulatory authorities to provide authorisation for wrack removal where required for public access or safety.	Management intervention and visitor services	As required
	5. Investigate blue carbon opportunities, in collaboration with Traditional Owners in the marine park (see section 8 – Climate Change).	Research	H
Performance measures	Indicators to be developed but may include: • percent cover • community composition		
Target	• No significant decline in total cover as a result of human activity. • No significant change in community composition as a result of human activity.		
Reporting	3-5 years		

5.5 Macroalgae and rhodolith communities (KPI)

The southern coast of Australia has one of the highest levels of species richness and endemism of macroalgae in the world. Approximately 1,000 species of benthic macroalgae have been identified in the region, of which 62 percent are endemic to the South Coast (Entwisle & Huisman, 1998; Kerswell, 2006; McClatchie et al., 2006; Phillips, 2001; Wormersley, 1990).

Macroalgal assemblages are host to a rich flora and fauna community and serve as valuable habitats for recreational and commercial fishing, diving, and tourism activities (Schiel, 1994). The distribution and abundance of macroalgae species on the South Coast is not recorded in detail, however, a broad picture has been formed. Golden kelp (*Ecklonia radiata*), which often forms dense beds in shallow coastal waters, is the dominant algae species along the South Coast (CALM 1994; McClatchie et al., 2006). Other common brown algae include *Cystoceira, Scytothallia, Cystophora* and *Hormosira banksii.* Conspicuous green algae include various species of *Caulerpa*, while red algae are represented by several cool temperate species (CALM, 1994). The Leeuwin and Capes currents strongly influence the distribution of macroalgae along the south-western and southern coasts of Australia (McClatchie et al., 2006).

The high level of species richness and endemism of macroalgae found is believed to occur on rocky reefs and intertidal reefs, with unique characteristics based on the vertical zonation and variability of environmental conditions (Bessey et al., 2018; Entwisle & Huisman, 1998; Kerswell, 2006; McClatchie et al., 2006; Phillips, 2001; Womersley, 1990).

High cover macroalgal areas are predominantly associated with low and moderate relief areas and consolidated (rock) substrate. Often these rock patches are surrounded by more complex habitat, including areas of gravel and rhodolith with lower coverage of macroalgae or seagrass. High cover macroalgal reef areas are dominated by erect, coarse branching algae (such as *Phyllospora*, *Scytothalia,* and *Sargassum* species) and larger canopy-forming brown algae such as golden kelp (Wellington, 2022).

Low cover macroalgae areas are frequently associated with areas of mixed unconsolidated underwater surfaces such as sand mixed with gravel, shell grit/shell hash and rhodolith (Wellington, 2022). The dominant macroalgae are low profile red and brown erect fine branching algae, which are interspersed with occasional filter feeding invertebrate communities. Low cover macroalgae are found in areas of large bedforms (>10cm), where a range of materials settles in the swales or troughs between them.

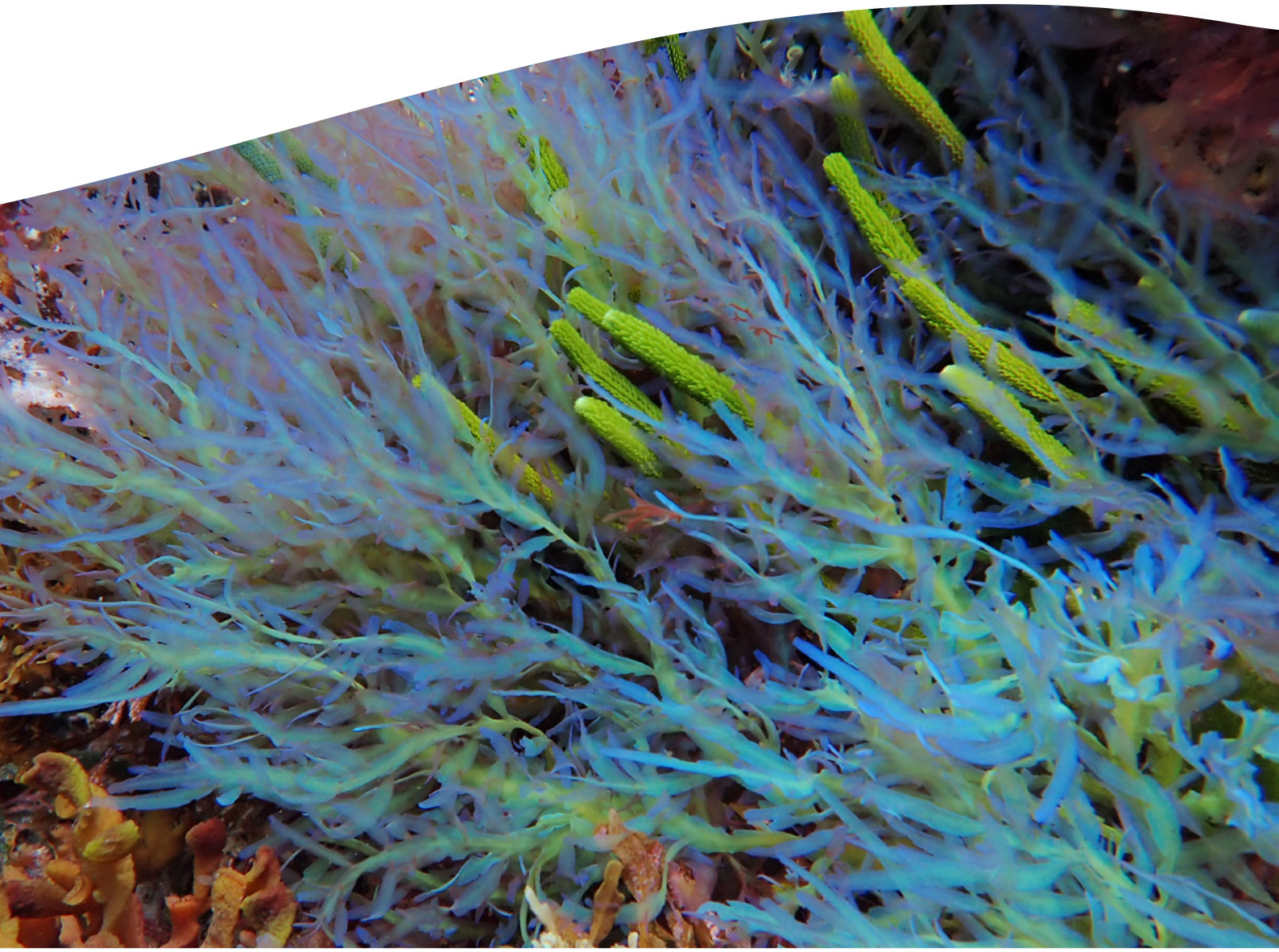
Rhodoliths are unattached, benthic algal nodules of various sizes and origins that are predominantly formed by crustose coralline red algae developing calcium carbonate within their cell walls (Foster, 2001). Rhodolith beds are a unique substrate and functional habitat which support a high biodiversity of associated organisms, including macroalgae, filter-feeders, crustaceans, molluscs and fish (Kendrick et al., 2005).

Only two rhodolith species have been identified in Western Australia, namely *Lithophyllum stictaeforme* and *Neogoniolithon brassica-florida* (Harvey et al., 2017). Rhodoliths were identified in low density between Point Hood and Cave Point (Harvey et al., 2017) and did not form the primary substrate in those locations. Benthic habitat surveys in the marine park are limited and it is likely that rhodolith beds are distributed more widely (Wellington, 2022).

Crustaceans, polychaetes and molluscs are the most common animal species found in rhodolith beds, however, very limited research has been conducted on invertebrate faunal composition in Australia.

Macroalgae and rhodolith communities are susceptible to several impacts including heatwaves and warming ocean temperatures and ocean acidification due to climate change. They can also be impacted by physical disturbance, such as from anchoring, hydrodynamic forces (such as swell), infrastructure and some fishing methods (Burnett et al., 2022).

Macroalgae and rhodoliths are protected throughout the State under the BC Act and the FRM Act. In addition, development proposals that may impact on macroalgal communities are subject to an environmental impact assessment by the EPA.



Various seaweeds including *Caulerpa*. Courtesy of Albert Passaradona

Summary of management arrangements for macroalgae and rhodolith communities			
Current status	Macroalgae and rhodolith communities are generally in good condition within the marine park.		
Pressures	• Unregulated mooring and anchoring that cause scouring in macroalgal dominated areas. • Construction of general marine infrastructure (such as navigation markers and jetties). • Commercial and recreational fishing (such as damage to habitat). • Potential ground-disturbing mining exploration/development. • Discharge of toxicants and physical and chemical stressors (i.e., sediment and nutrients from inlet outflow). • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Sewage discharge from vessels. • Major pollution events (such as a chemical or oil spill). • Potential sand mining, dredging and other sand bypassing works.		
Current major pressure	Climate change		
Management objectives	To ensure the diversity, cover and condition of macroalgae and rhodolith communities are not significantly impacted by human activity in the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Undertake and/or support research to characterise the diversity, community composition and condition of macroalgae and rhodolith communities in the marine park. 2. Monitor the condition, diversity and cover of macroalgae and rhodolith communities and the pressures acting on them within the marine park and take remedial action if required. 3. Educate marine park users about the ecological importance of the marine park's macroalgae and rhodolith communities and the potential detrimental impacts of physical disturbance on these communities.	Research Monitoring Education and interpretation	H H M
Performance measures	Indicators to be developed but may include: • percent cover • community composition • macroalgae density (canopy forming species).		
Target	• No significant decline in cover of macroalgae and rhodoliths as a result of human activity. • No significant decline in density of macroalgae as a result of human activity. • No significant change in community composition of macroalgae and rhodoliths as a result of human activity.		
Reporting	3-5 years		

5.6 Subtidal soft-sediment communities

Soft-sediment habitats typically occur in sheltered areas where sediments formed by the erosion of cliff faces, limestone and skeletal fossil fragments in sedimentary rocks build up due to the high energy of the South Coast (Sutton & Day, 2021).

Soft-sediment environments within the marine park are known to host distinct infauna and epifauna communities (Sutton & Day, 2021), however, there is little information available on the condition of these communities within the marine park. Some species important to commercial and recreational fishing, such as the southern saucer scallop (*Ylistrum balloti*), tend to occur in pockets of high abundance within soft-sediment environments (Sutton and Day, 2021).

In some places, deep sands cover ancient cultural corridors, particularly between the shore and the deep canyons offshore from Point Hood. Traditional Owners are interested in understanding more about these ancient corridors and connecting them to the current corridors in the sea, on the land and further inland.

Threats to subtidal soft-sediment communities include climate change, unregulated mooring and anchoring, the construction of marine infrastructure, commercial fishing (particularly bottom trawling) and nutrient and toxicant input. Due to the low level of industrial and coastal development in the marine park and limited size and restrictions on the South Coast Trawl Fishery it is likely that these communities are in relatively undisturbed condition (SCRMPWG, 2010).

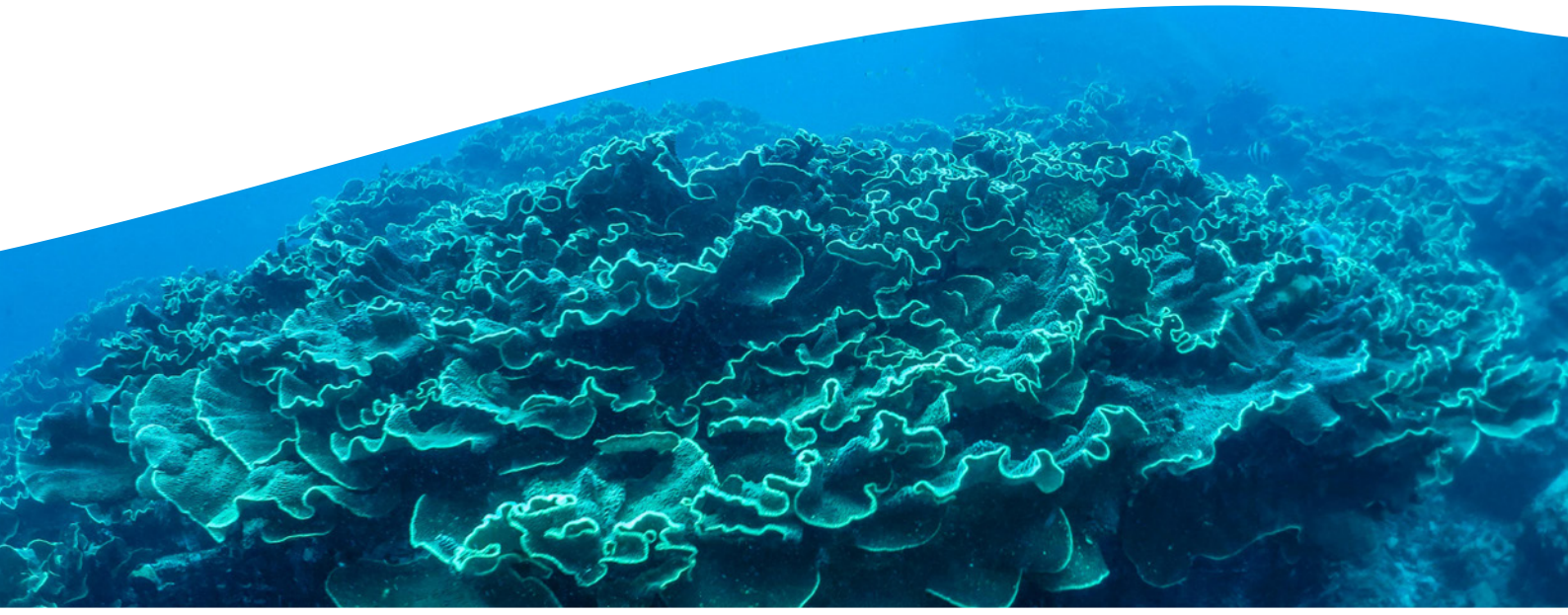
Summary of management arrangements for subtidal soft-sediment communities			
Current status	Limited information is available, however subtidal soft-sediment communities within the marine park are generally believed to be in good condition.		
Pressures	• Construction of general marine infrastructure (such as navigation markers and jetties). • Climate change. • Potential ground-disturbing mining exploration/development. • Discharge of toxicants and physical and chemical stressors (such as sediment and nutrients from inlet outflow). • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Sewage discharge from vessels. • Major pollution events (such as a chemical or oil spill). • Potential sand mining, dredging and other sand bypassing works. • Commercial and recreational fishing (such as damage to habitat).		
Current major pressure	None currently identified.		
Management objectives	To ensure the species diversity and biomass of subtidal soft-sediment communities within the marine park are not significantly impacted by human activities.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Undertake and/or support research to better characterise the flora, fauna and distribution of subtidal soft-sediment communities within the marine park. 2. Monitor the condition of subtidal soft-sediment communities and the pressures acting on them within the marine park. [DPIRD] 3. Educate users about the important ecological role of subtidal soft-sediment communities and the potential impacts that human activities have on these communities.	Research Monitoring Education and interpretation	H M L
Performance measures	Indicators to be developed but my include: • diversity • species abundance.		
Target	No significant decline in diversity or species abundance as a result of human activity.		
Reporting	3-5 years		

5.7 Filter feeder communities

Filter feeding communities are composed mainly of sponges, bryozoans, sea squirts and sea anemones. Limited information exists on filter feeder communities found on the South Coast, except for those within the Recherche Archipelago. Large expanses of filter feeding communities on hard underwater surfaces have been mapped around Point Hood and to the south of the Doubtful Islands. Filter feeders occur in soft sediment areas offshore from Point Ann and offshore between Hamersley Inlet and Cave Point. A qualitative description of the benthic habitat around Cave Point describes a large overhang that has sponges, ascidians, bryozoans, gorgonians and other soft corals (Bancroft & Davidson, 2000). Forty species of sponges have been identified (Wellington, 2022), which provide habitat that supports many organisms including commercially targeted fish, crustacean and mollusc species. One of the most diverse groups of filter feeders are sponges, which can occur in dense local populations across southern Australia known as 'sponge gardens'.

Coral fauna diminishes rapidly south of Rottnest Island with some species flourishing in a few suitable habitats along the South Coast of Western Australia, which is influenced by the warm waters of the Leeuwin Current (Veron & Marsh, 1988). Of the seven hard coral species found along the South Coast, *Turbinaria reniformis* is thought to be the most abundant species at Bremer Bay (Ross et al., 2018). In the South Coast region, coral communities are generally found in moderately sheltered waters (Ross et al., 2018). Hard corals occur sporadically, but do not form coral reefs (Wells et al., 2005). Veron & Marsh (1988) reported seven species from four genera that occur along the South Coast, including *Coscinaraea mcneilli, Coscinaraea marshae, Plesiastrea versipora, Scolymia australis* and three species of *Turbinaria*. James et al. (1994) identified a further four ahermatypic (non-reef-building) coral species including *Scolymia australis*, *Monomyces radiatus*, *Flabellum pavoninum* and a species of *Caryophillia* from a single dredge that scoured the seafloor between 180-250m deep.

One of the largest and most accessible expanses of mapped coral in the marine park is located beyond the seagrass beds just offshore from Point Ann. This area is a favoured local diving location (Sutton & Day 2021).



Turbinaria corals in Mamang Maambakoort Marine Park. Courtesy of Claire Ross

Globally, filter feeder communities are susceptible to several threats, including heatwaves and warming ocean temperatures due to climate change, hydrodynamic forces, some fishing methods, unregulated anchoring and the construction of marine infrastructure. Due to the low level of industrial and coastal development in the marine park and management of the South Coast Trawl Fishery it is likely that these communities are relatively undisturbed (SCRMPWG, 2010).

Summary of management arrangements for filter feeder communities			
Current status	Limited information is available on filter feeder communities, but they are generally believed to be in good condition throughout the marine park.		
Pressures	• Commercial fishing (such as bottom trawling). • Unregulated anchoring. • Climate change. • Discharge of toxicants and physical and chemical stressors (such as sediment and nutrients from inlet outflow). • Potential sand mining, dredging and other sand bypassing works. • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Construction of general marine infrastructure (such as navigation markers and jetties). • Potential ground-disturbing mining exploration/development. • Pests/disease. • Major pollution events (such as a chemical or oil spill).		
Current major pressure	None currently identified.		
Management objectives	• To ensure that filter feeder communities within the marine park are not significantly impacted by human activities. • To improve understanding of the distribution and diversity of filter feeder communities in the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Undertake and/or support research to characterise the distribution, diversity, community composition and condition of filter feeder communities in the marine park. 2. Monitor the condition of filter feeder communities and the pressures acting on them within the marine park. 3. Educate marine park users about the ecological importance of the marine park's filter feeder communities and the potential detrimental impacts of physical disturbance (such as anchoring) on these communities.	Research Monitoring Education and interpretation	H M L
Performance measures	Indicators to be developed but may include: • diversity • total cover • community composition • introduced species.		
Target	• No significant decline in diversity or total cover as a result of human activity. • No significant change in community composition as a result of human activity. • No significant change in the abundance of introduced species as a result of human activity.		
Reporting	3-5 years		

5.8 Invertebrates

Mobile marine invertebrates are animals such as sea urchins, sea stars, sea cucumbers, crabs, lobsters, octopus, abalone, jellyfish, and assorted worms and brachiopods. Invertebrates have important functions within the ecosystem as a food source for other invertebrates, fish and migratory birds, as well as in nutrient cycling. Invertebrates can be found across a wide variety of habitats and depths in the marine park, including intertidal platforms, subtidal marine soft sediments (infauna and epifauna), subtidal estuarine soft sediments, subtidal reefs and pelagic zone.

Invertebrate communities in the marine park exhibit high levels of endemism and consist of both tropical and temperate species. The relatively high levels of endemism and biodiversity in southern Australian waters can be attributed to the continent's long period of geological isolation (>65 million years), the unusually large width of the continental shelf, and the characteristically low nutrient status (McClatchie et al., 2006; Poore, 1995). The presence and distribution of invertebrates within the marine park is influenced by the type of underwater surface, depth, availability of food and the temperature gradient produced by the Leeuwin Current.

Data from multiple surveys of invertebrate occurrence, abundance and distribution suggest that there are approximately 347 species of temperate Australian echinoderms across the South Coast from Albany to Eucla and 115 species of decapod crustaceans between Cape Naturaliste and the South Australian border. Between Groper Bluff and Starvation Boat Harbour, Colman (1998) found 39 species of echinoderms, 34 species of molluscs and 32 species of arthropods. Poore (1995) estimated that approximately 95 percent of molluscs in the South Coast region are thought to be endemic to the region.

There is little information available on the occurrence, abundance and distribution of crustacean species within the marine park. Intertidal and shallow-water crustaceans, such as Cirripedia (Lepadomorpha, Balanamorpha) have shown different characteristics to those in north-western areas of Australia and exhibit high levels of endemism (Jones, 1991).

Some invertebrate species formed and continue to be a major component of subsistence activities for Traditional Owners from the WKSN region that in turn link to community identity, health and wellbeing. The process of procuring these species as a food source is also part of family and community life. Young people were given the task of collecting some of these species to demonstrate maturity and responsibility.

Commercial and recreational fisheries target species including the southern rock lobster (*Jasus edwardsii*), southern saucer scallop (*Ylistrum balloti*), greenlip abalone (*Haliotis laevigata*), brownlip abalone (*H. conicopora*), Roe's abalone (*H. roeii*) and a variety of specimen shells. Pressures on invertebrates in the marine park include bioprospecting, fisheries bycatch and siltation, and pollution at the mouths of some inlets.

There is little knowledge on the condition of sessile invertebrate communities within the marine park. With an increase in activities within ports and new port and marina facility developments on the South Coast, the number of introduced species within Australian waters is likely to increase, which is a potential pressure to invertebrate communities (Jones, 2012).

DPIRD is responsible for managing the recreational and commercial take of invertebrate species under the FRM Act. DPIRD's management occurs across bioregions, zones within bioregions, at a resource level and in some cases at a smaller scale where fisheries operate within restricted areas. Noting the scale of management may not be at the marine park scale (Newman et al. [2023] notes a bioregional scale for most fisheries in Western Australia), populations of some species in a reserve could become locally depleted even when the fishery and resource is being managed at a sustainable level.

Invertebrates also form part of the marine environment's overall biodiversity and are therefore managed by DBCA under the CALM Act as one of the numerous ecological values within the marine park.

Summary of management arrangements for invertebrates			
Current status	Limited information is available on the condition of invertebrates within the marine park, however, they are generally believed to be in good condition.		
Pressures	• Climate change. • Pests/disease. • Discharge of toxicants and nutrients from storm water. • Vessel discharge (such as sewage and ballast water). • Physical disturbance (such as trampling). • Aquaculture (such as habitat exclusion, discharges). • Habitat degradation. • Potential ground-disturbing mining exploration/development. • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Potential sand mining, dredging and other sand bypassing works. • Illegal fishing.		
Current major pressure	Commercial and recreational fishing for targeted species.		
Management objectives	• To ensure non-targeted species are not significantly impacted by human activities within the marine park. • To manage targeted invertebrate species for ecological sustainability.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. See section 9.3 – Zoning. 2. See section 6.3 – Recreational fishing. 3. See section 6.4 – Commercial fishing.		
	4. Undertake and/or support research to characterise the diversity, abundance, distribution and habitat requirements of invertebrates within the marine park. [DPIRD for targeted species]	Research	H
	5. Monitor the condition of invertebrates and the pressures acting on them within the marine park and take remedial action if required. [DPIRD for targeted species]	Monitoring	H
	6. Educate users of the reserves about the ecological importance of invertebrates and ways to minimise disturbance to them, and relevant fisheries regulations that apply. [DPIRD]	Education and interpretation	M
	7. Undertake and/or support research to characterise the sustainability of targeted invertebrate species and the consequences of their removal. [DPIRD]	Research	H
	8. Provide updates to marine park managers in relation to management of recreational and commercial fisheries, including reviews and amendments where relevant to the marine park. **[DPIRD]**	Management framework	H

Performance measures	Indicators to be developed but may include: • diversity • target species abundance • community composition.
Target	**Sanctuary zones** • No significant decline in diversity and abundance as a result of human activity. • No significant change in community composition as a result of human activity. **General use and special purpose zones** • No significant decline in species diversity as a result of human activity. • No significant change in community composition as a result of human activity. • No significant change in target species abundance beyond ecologically sustainable levels as a result of human activity (to be determined in consultation with DPIRD).
Reporting	3-5 years

Red biscuit sea star. Courtesy of Claire Ross

5.9 Djildjit (finfish), sharks and rays (KPI)

Fish communities of south-western Australia boast a remarkable diversity, with many endemic species (Hutchins, 2001; Thomson-Dans et al., 2003). This region is considered a hotspot for the discovery of species new to science (Stiller et al., 2015). The effect of the Leeuwin Current extends the range of many subtropical fish species into temperate areas of the southern coastline of Australia (Kendrick et al., 2009). It also provides a means to disperse eggs and larvae of subtropical species to the South Coast, creating a mix of subtropical and temperate endemic fish in the region, the latter of which includes two distinct assemblages along the South Coast (Goldsworthy et al., 2020).

Totemic relationships differ extensively over Australia and even throughout Noongar boodja. Some WKSN families have a different totem, usually two, that they hold in particularly high regard. Many of these totems are fish. These totemic relationships can extend to the management of some marine species and certain environments by totemic family or clan members. Totem species help to form part of kinship and cultural connection and are embedded in songs, stories, events and ceremony.

Some particular finfish are associated with special ceremonies. Fish and fishing in Noongar culture are tied to men's business. For example, the blue groper is associated with a boy's initiation practice that is place based and is not permitted to be described any further within this document. Over long periods of time Elders have observed a significant decline in the very large blue groper, which Noongar would always put back if caught.

Shark and ray species that occur in the marine park include the Port Jackson shark (*Heterodontus portusjacksoni*), blackspot catshark (*Aulohalaelurus labiosus*), wobbegong (*Orectolobus* spp.), white shark (*Carcharodon carcharias*), grey nurse shark (*Carcharias taurus*), smooth stingray (*Bathytoshia brevicaudata*), southern eagle ray (*Myliobatis tenuicaudatus*) and western stingaree (*Trygonoptera mucosa*).

The white shark is listed as Vulnerable under both the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) and BC Act and is protected under the FRM Act. Most of the South Coast of Western Australia is recognised as a biologically important area for white sharks. The Fitzgerald Biosphere Reserve area is identified as a biologically important area for white sharks and for foraging (DSEWPaC, 2011).

Three species of seadragon endemic to Australia are found along the South Coast, including the leafy seadragon (*Phycodurus eques*), weedy seadragon (*Phyllopteryx taeniolatus*) and ruby seadragon (*Phyllopteryx dewysea*). Leafy and weedy seadragons are protected under the FRM Act (DPIRD, 2021). The ruby seadragon was only described as a new species in 2015 and little is known about its distribution.

The primary pressures on finfish, sharks and rays are extraction by commercial and recreational fishing (targeted removal and bycatch). Other threats include climate change, marine debris, introduction of marine pests and habitat damage.

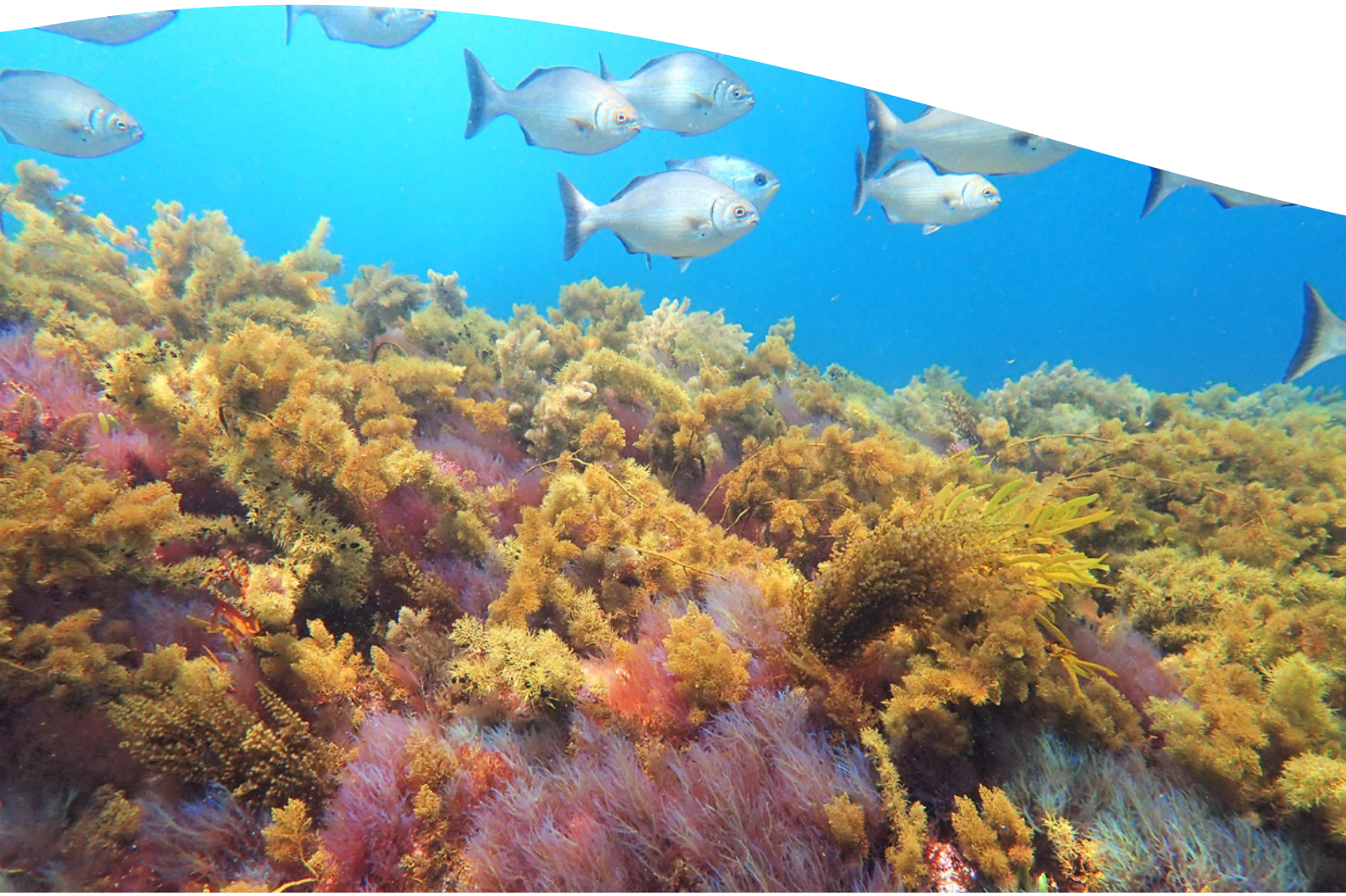
DPIRD is responsible for the management of the recreational and commercial take of finfish, shark and ray species under the FRM Act. DPIRD's management occurs across bioregions, zones within bioregions, at a resource level and in some cases at a smaller scale where fisheries operate within restricted areas. Noting the scale of management may not be

at the marine park scale (Newman et al. [2023] notes a bioregional scale for most fisheries in Western Australia), populations of some species in a reserve could become locally depleted even when the fishery and resource is being managed at a sustainable level.

Finfish, sharks and rays also form part of the overall biodiversity and are therefore managed by DBCA under the CALM Act as one of the numerous ecological values within the marine park.

Summary of management arrangements for finfish, sharks and rays			
Current status	Finfish, sharks and rays are generally considered to be in relatively good condition within the marine park.		
Pressures	• Climate change. • Marine debris (such as entanglement, ingestion). • Introduction of marine pests. • Feeding. • Mooring and anchoring—habitat damage. • Toxicants (such as marina or vessel discharge, untreated wastewater or stormwater). • Potential sand mining, dredging and other sand bypassing works. • Vessel discharge (such as sewage). • Large scale coastal developments such as groynes, marinas and ports (both current and future projects). • Aquaculture (such as habitat exclusion, entanglements, discharges). • Vessel noise and strike. • Major pollution events (such as oil spills).		
Current major pressure	Recreational and commercial fishing (direct removal and bycatch).		
Management objectives	• To ensure non-targeted species are not significantly impacted by human activities within the marine park. • To manage targeted species for ecological sustainability.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. See section 9.3 – Zoning. 2. See section 6.3 – Recreational fishing. 3. See section 6.4 – Commercial fishing. 4. Identify knowledge gaps and undertake and/or promote research programs to characterise finfish, shark and ray diversity, abundance, biomass and behaviour within the marine park, and conduct research to understand the ecological role of targeted finfish species and the consequences of their removal. [DPIRD for targeted species] 5. Undertake research on seadragons, investigating their behaviour, population numbers, ecological relationships, and threats. 6. Monitor the biodiversity, current fish health and abundance of finfish, sharks and rays and the pressures acting on them in the marine park. [DPIRD for targeted species] 7. Educate users about recreational fishing rules, the ecological importance of finfish, sharks and rays and responsible fishing behaviour. [DPIRD] 8. Provide updates to marine park managers in relation to management of recreational and commercial fisheries, including reviews and amendments where relevant to the marine park. **[DPIRD]**	Research Research Monitoring Education and interpretation Management framework	H H H H H

Performance measures	Indicators to be developed but may include: • diversity • species abundance • species size distribution • community composition.
Target	**Parkwide** • No significant loss in diversity or abundance of protected species as a result of human activity. **Sanctuary zones** • No significant decline in diversity, species abundance or species size distribution as a result of human activity. • No significant change in community composition as a result of human activity. **General use and special purpose zones** • No significant decline in abundance of non-targeted species or species diversity as a result of human activities. • No significant change in community composition as a result of human activity. • No significant change in target species abundance or target species biomass beyond ecologically sustainable levels as a result of human activity (to be determined in consultation with DPIRD).
Reporting	3-5 years



Sargassum, other seaweeds and buffalo bream. Courtesy of Albert Passarrodona

5.10 Seabirds and shorebirds (KPI)

Seabirds generally forage at sea for the greater part of their lives, whereas shorebirds commonly feed by wading in shallow water along the shore. The sandy beaches, intertidal reef platforms and rocky outcrops of the marine park provide important feeding, roosting and nesting habitats for seabirds and shorebirds. At least 43 shorebird and seabird species are found along the South Coast (Pringle, 1987). Both resident and migratory shorebirds are widely spread along the coastline. Favoured areas are the western ends of the bays, where wrack accumulates and provides shelter, tidally exposed reefs and the parts of beaches adjacent to the small creeks that run through the sand hills.

Proximity to shallow estuaries, bays and reefs, which provide breeding and nursery areas, is vital for some seabirds. Shorebirds like fairy tern (*Sternula nereis nereis*) and hooded plover, and seabirds like oystercatchers and red-capped dotterel (*Charadrius ruficapillus*) nest on beaches. Inshore seabirds mostly use the islands which are free from predators, making island refuges particularly important. The south-western population of approximately 18,376 to 35,906 pairs of flesh-footed shearwaters (*Ardenna carneipes*) (listed as Vulnerable under the BC Act), nests off islands between Cape Leeuwin and the South Australian border (Lavers & Bond, 2016). Rocky points are also important breeding habitat for species such as crested (*Thalasseus bergii*) and fairy terns. The little penguin (*Eudyptula novaehollandiae*), which is endemic to southern Australia and New Zealand (McClatchie et al., 2006), is found at Doubtful Island in the marine park, but population numbers are not known.

Seabirds and shorebirds are important to Traditional Owners of the WKSN region, particularly as indicators of the health of the marine environment (Paleczny, 2015). When certain seabirds are present and behaving in a particular way they indicate what seafood is available to eat, where and when. Seabirds direct people around seasonality of Sea Country and when not to eat certain species. Their presence and abundance can also indicate the condition of the prey that they eat, particularly fish. Seabirds and protecting their breeding and resting habitats are woman's business.

The decline in some species of seabirds and shorebirds is caused by a variety of factors including overfishing of their food species, entanglement in fishing gear, plastic pollution, introduction of non-native predators to seabird colonies, destruction and changes to seabird habitat, and environmental and ecological changes caused by climate change. Some seabirds are highly dependent on specific prey species (Gaughan & Santoro, 2020) or on predatory fish driving bait fish to the surface. There is concern that declines in the number of predatory fish may have implications for seabird prey availability (Commonwealth of Australia, 2012). Species such as oystercatchers and red-capped dotterel, which nest in open areas above the high tide line, are the most vulnerable to beach user impacts such as four-wheel driving. Coastal beach areas have supported hooded plovers in the past, but pedestrian and/or vehicle use on the beaches may have impacted hooded plover use (DoPW, 2016).

In July 2021, DPIRD convened an ecological risk assessment (ERA) of the fisheries that access the Small Pelagic Scalefish Resource (Blazeski et al., 2021). The ERA considered the potential ecological impacts of the West Coast Purse Seine Fishery, South Coast Purse Seine Fishery, purse seine development zones (PSDZ) and recreational fishers who catch small pelagic scalefish. A medium/high risk was given to flesh-footed shearwaters due to the potential interaction with purse seine nets and uncertainty associated with

population modelling and fishery-dependent data. Mitigation measures and management of interactions with the flesh-footed shearwater are now managed through a voluntary Code of Practice in the South Coast Purse Seine Managed Fishery.

The national *Threat Abatement Plan for the incidental catch of seabirds during oceanic longline fishing operations* (2018) has been developed and implemented (Commonwealth of Australia, 2018). All seabird species and their eggs are protected under State and Federal Government legislation.

Management of birds such as little penguins is mainly concerned with controlling introduced predators such as dogs, cats and foxes, protecting nesting habitat and minimising various kinds of human disturbance including tourism (Dann et al., 1996).

Little penguin. Photo – Samille Mitchell/DBCA

Summary of management arrangements for seabirds and shorebirds			
Current status	Several seabird and shorebird species known to occur on the South Coast are listed as Threatened or are declining.		
Pressures	• Entanglement in and ingestion of marine debris. • Climate change (increasing water temperatures affecting prey availability, sea level rise affecting habitat). • Introduction of non-native predators to seabird colonies. • Disturbance to feeding, roosting and nesting activity by people, vehicles, vessels, low flying aircraft including Remotely Pilot Aircraft (drones). • Commercial fishing (such as bycatch, prey availability). • Infrastructure development. • Major pollution events (such as oil spills). • Large scale coastal developments (loss or degradation of habitat). • Removal of sea wrack from beaches (important for foraging birds).		
Current major pressure	None currently identified.		
Management objectives	To ensure that the abundance and diversity of seabirds and shorebirds in the marine park are not significantly impacted by human activity.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Undertake and/or support research to characterise bird diversity, abundance, natural variability, movement patterns and critical habitats within the marine park.	Research	H
	2. Monitor human impacts to seabird and shorebird breeding and feeding habitat and regulate if required.	Monitoring	H
	3. Design and implement an education and interpretation program that increases public awareness of the national and international significance of waterbird populations and informs visitors about how human activities can impact birds.	Education and interpretation	M
	4. Undertake research on shearwater behaviour, population numbers, ecological relationships, threats, and their capacity to act as bio-indicators.	Research	L
	5. Assess the potential impacts of human activities on seabird and shorebird populations in the marine park and implement an appropriate seabird and shorebird monitoring program.	Research	H
	6. Ensure that management of migratory shorebirds in the marine park supports relevant international agreements.	Management framework	H
	7. Liaise with land managers to undertake complementary management actions on adjacent land and terrestrial reserves to manage potential detrimental impacts on seabirds and shorebirds.	Management intervention and visitor services	As required
Performance measures	Indicators to be developed may include: • abundance • diversity • breeding success.		
Target	• No significant loss of the diversity or abundance of seabird and shorebird species as a result of human activity. • No significant decline in breeding success of key seabird and shorebird species beyond the limits of natural variation due to human activities in the park.		
Reporting	3-5 years		

5.11 Pinnipeds (KPI)

Two species of pinniped, the Australian sea lion (*Neophoca cinerea*) and long-nosed fur seal (*Arctocephalus forsteri*) use the South Coast islands to breed and haul out (CALM, 1994).

The long-nosed fur seal has a population of 50,000 in New Zealand and its outlying islands, with >15,000 long-nosed fur seals in Western Australia (Campbell et al., 2014). The long-nosed fur seal is listed as Other Protected Fauna under the BC Act.

The Australian sea lion is endemic to Australia and listed as Endangered under the EPBC Act and BC Act 2016. Although specific details on Australian sea lion population status and trends along the South Coast are poorly known, recently the overall population is stated to be declining, with an estimate of several thousand mature individuals, approximately 10 percent of which form one of the meta populations living along the South Coast of Western Australia (Goldsworthy et al., 2021; Goldsworthy & Page, 2009; Angelakis, 2023).

Abbott (1979) stated that Middle Doubtful Island had one of the largest fur seal populations in the south-west, found around its rocky shores, and ecologically segregated from the island's Australian sea lions, which ascend as far as the summit.

Middle Doubtful Island and Red Islet are known Australian sea lion breeding colonies within the marine park, with another breeding site at West Island, just east of the marine park boundary. The Australian sea lion forages widely, frequently more than 30km from known haul-out or breeding sites and even to the continental shelf (Goldsworthy et al., 2014), so is likely to be foraging throughout almost the entire Mamang Maambakoort Marine Park.

Genetic studies show extreme population sub-structuring of mitochondrial DNA lineages (maternally inherited) among Australian sea lions, even for those separated by short distances (Campbell et al., 2008; Lowther & Goldsworthy, 2012; Lowther et al., 2012). Given this high level of genetic subdivision between breeding colonies, individual colonies are considered subpopulations in this species (Campbell et al., 2008; Ahonen et al, 2016; Lowther et al., 2012). Thus, each breeding colony is vital to the persistence of the species. Current threats include habitat and prey availability, fisheries bycatch, entanglement in demersal gillnets and marine debris, displaced or disturbed habitats and introduced diseases (DoPW, 2016; Hamer et al., 2013; Osterrieder et al., 2017; Shaughnessy et al., 2013). Tourism interactions can also disturb sea lions (Lovasz et al., 2008).

Entanglement in fishing gear is one of the greatest threats to Australian sea lions and can result in injury or death (Campbell et al., 2008; Hesp et al., 2012). To help mitigate these risks, in June 2018 DPIRD implemented fisheries management changes to create a network of 33 Australian sea lion gillnet exclusion zones through the known range of Western Australian sea lion colonies (Watt et al., 2021). Waters within the zones are closed to gillnet fishing by commercial demersal gillnet and demersal longline operators to reduce interaction between nets and sea lions. These zones range from 6-33km in radius around known breeding colonies and cover 17,300km^2 around Western Australia (Watt et al., 2021).

Sea lion exclusion devices are also a legislative requirement for commercial rock lobster fishers, within a specified zone, to reduce the risk of Australian sea lions drowning in pots. Studies have shown these devices effectively mitigate interactions (How et al., 2023).

Summary of management arrangements for pinnipeds			
Current status	• Australian sea lion numbers do not appear to be recovering in terms of population size and are listed as Endangered under the BC Act, EPBC Act and the IUCN red list. • Long-nosed fur seals in Western Australia appear to be stable or increasing in range.		
Pressures	• Commercial fishing (for example, bycatch, prey availability). • Marine debris (ingestion, entanglement). • Discharge of toxicants and nutrients (such as from wastewater and storm water). • Disturbance (such as wildlife watching and interactions). • Vessel strike. • Large scale coastal developments. • Aquaculture (such as habitat exclusion, entanglements). • Major pollution event (such as an oil or chemical spill). • Provisioning (causing a change in behaviour). • Illegal culling (direct killing). • Disease and pathogens such as tuberculosis (*Mycobacterium pinnipedii*) and Q fever (*Coxiella burnetii*).		
Current major pressures	Climate change.		
Management objectives	To ensure the abundance of pinnipeds is not impacted by human activity in the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Undertake and/or support research and monitoring projects on pinnipeds where they contribute to management effectiveness (DPIRD).	Research and Monitoring	H
	2. Educate users of the marine park about pinnipeds and the potential detrimental impacts of human activities (such as feeding and discarding of offal and bait, disturbance, marine debris, fishing gear) on the marine park's pinnipeds, and regulations for pinniped interactions under the BC Act.	Education and interpretation	H
	3. Implement an 8-knot speed limit within 500m of pinniped breeding and haul-out sites. **[DoT]**	Management intervention and visitor services	H
	4. Conduct targeted compliance within gillnet exclusion zones around sea lion colonies. [DPIRD]	Patrol and enforcement	H
	5. Investigate sources of injury and causes of mortality of pinnipeds and maintain records of them in the marine park.	Monitoring	Ongoing
	6. Assess and respond to pinniped entanglements in collaboration with other agencies, considering capacity and circumstances as appropriate.	Management intervention and visitor services	H
	7. Undertake complementary management actions in the terrestrial reserves such as restricting visitor access to haul-out and pupping areas, if required.	Management intervention and visitor services	As required
Performance measures	Indicators to be developed but may include: • number of reported pinniped injuries and deaths • number of Australian sea lion pups at breeding sites and adults at haul-out sites over the course of a breeding cycle.		
Target	• No significant increase in the number of reported pinniped injuries or deaths. • No significant decline in the number of pinnipeds at haul-out or pupping sites and islands within the marine park.		
Reporting	3-5 years		

5.12 Mamangs and kwilenas (whales and dolphins) (KPI)

Humpback (*Megaptera novaeangliae*) and southern right (*Eubalaena australis*) whales are the most common whale species found within the marine park. Both species have distinct breeding populations on the South Coast of Australia that have annual migration paths within the marine park.

The humpback whale breeding population of Western Australia (Southern Hemisphere Group IV) is one of the world's only heavily exploited whale populations to recover post whaling (Bejder et al., 2015), with last estimates of more than 30,000 (Hedley et al., 2011; Salgado-Kent et al., 2012). Humpback whales are frequently seen as they pass along the South Coast to and from their summer feeding grounds in Antarctica to breeding and calving grounds in the north of Western Australia between May and November each year.

Female southern right whales use sheltered bays on the South Coast as birthing and nursery areas, and cows and calves are often seen close to the shore from August to November (CALM, 1994). Southern right whales frequent Doubtful Island Bay and around Point Ann including for calving, often in high numbers (DSEWPaC, 2011). Doubtful Island Bay is recognised as a large aggregation area for southern right whales (Smith et al., 2023) and is believed to be one of the most important areas along the South Coast (Colman, 1998).

The humpback whale is listed as Vulnerable under the EPBC Act and Conservation Dependent under the BC Act. It is an offence to kill, capture, injure, harass, chase or herd any species of whale, dolphin or porpoise. Humpback populations have increased from their once perilously low numbers at a rate of 10 percent per annum since commercial whaling ended in Western Australian waters in 1963. The southern right whale is listed as Endangered under the EPBC Act and Vulnerable under the BC Act. Current estimates of the south-western Australian subpopulation are approximately 2,500 individuals, with the population increasing at a rate of ~5.3 percent annually (Smith et al., 2023), and the South Coast is the stronghold of the Australian population, given the 'eastern' population is estimated at approximately 268 (CI 146-650) breeding females (Stamation et al. 2020).

An old story told to a linguist in Albany in 1931 has been revived by local Elders in a Noongar language book titled *Mamang*. The story is centred on the Sea Country of this marine park. It tells of a Noongar man who jumps inside a whale and travels deep into the ocean. He travelled in the whale singing his father's song until the whale finally brought him home.

Chendenup (Point Ann) is one of the most rewarding places to whale watch along the entire South Coast. Only operators licensed by DBCA are allowed to run commercial whale watching tours in Western Australia's marine parks. Whale protection, particularly areas where calves feed and rest, have been prioritised within this marine park utilising a special purpose zone. It is important to follow whale watching rules to ensure whales are protected and continue to visit our coastline.

"Another mother and calf swims in and the resting mum moves her calf a bit further along... just like parking cars."

Common dolphins (*Delphinus delphis*) are predominantly offshore inhabitants and one of the world's most abundant dolphin species. They are commonly seen throughout the South Coast region. Within Western Australian waters there are no estimates of population size or information on specific calving areas or reproductive cycle for this species.

Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) typically occupy coastal waters <20m deep. This species is known to have a low reproductive rate, with prolonged maternal investment and a long interbirth interval of about three to six years, and relatively high calf mortality (Connor et al., 2000; Wells & Scott, 2000).

"There are special places where the old people would sing the dolphins in. The old people used to go and catch ngari (salmon) to feed a whole tribe. A special clever man would light a fire on the beach and blow the smoke out to sea and then start singing to the dolphins. The dolphins would then circle around the big school of ngari (salmon) and bring them right in to the beach and then the whole tribe could catch the fish and of course they would leave some for the dolphins."

Threats to whales and dolphins include entanglement in marine debris and set fishing gear, climate change, overfishing reducing prey availability, habitat loss from coastal construction, disturbance, noise and vessel strike. Bottlenose and common dolphins can also be caught as bycatch in trawl, gillnet, purse seine and trap fisheries (Kemper & Gibbs, 2001; Kemper et al., 2003; Jaiteh et al., 2013; Jaiteh et al., 2014; Waples & Raudino, 2018).

The Australian Fisheries Management Authority initiated a bycatch action plan for several fisheries in 2001 to reduce bycatch of dolphins and other marine animals (Ross, 2006).

DPIRD assesses fishing-related threats to species and ecosystems, identifies and implements a range of management actions to mitigate impacts, and undertakes ongoing monitoring to review the effectiveness of measures put in place (How et al., 2021).

Summary of management arrangements for mamang and kwilena	
Current status	• The humpback whale population that uses the marine park as part of its range is believed to be part of the largest breeding population in the world and has been downlisted to Conservation Dependent under the BC Act, as the population is beginning to recover from whaling impacts. • The southern right whale is listed as Vulnerable under the BC Act and, while slowly recovering, population estimates are still low. • Little is known about the size or health of other cetacean species within the marine park, but they are assumed to be in a stable condition.

Pressures	• Marine debris (such as ingestion, entanglement). • Climate change (such as increasing water temperatures). • Discharge of toxicants and nutrients (such as from storm water). • Disturbance (such as wildlife watching and interactions, noise from vessel traffic). • Vessel strike. • Potential mining exploration/development (such as seismic surveys). • Large scale coastal developments (such as habitat loss and/or modification, disturbance). • Major pollution events (such as oil and chemical spills). • Commercial fishery, including aquaculture (entanglement, bycatch and prey depletion).		
Current major pressure	None currently identified.		
Management objectives	To ensure that cetaceans are not significantly impacted by human activity in the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Undertake and/or support research characterising cetacean diversity, abundance, natural variability and habitat use within the marine park.	Research	H
	2. Undertake monitoring to: • assess the condition of cetaceans and the pressures acting on them within the marine park • monitor the effectiveness of any management responses to address pressures and issues involving cetaceans within the marine park • develop and maintain records on the incidence of entanglement, vessel strike, strandings or mortalities of cetaceans in the marine park.	Monitoring	H
	3. Assess and respond to entanglements, injuries and mortality events in collaboration with other agencies, considering capacity and circumstances as appropriate.	Management intervention and visitor services	As required
	4. Educate marine park users and commercial tour operators about cetaceans, the potential detrimental impacts of human activities on the marine park's cetaceans, responsible marine mammal viewing, and regulations relating to marine mammals under the BC Act.	Education and interpretation	H
	5. Enforce marine mammal interaction regulations in place under the BC Act.	Patrol and enforcement	Ongoing
	6. Investigate the extent and significance of interactions between commercial and recreational fishing and cetaceans and address as required. **[DPIRD]**	Research	M
Performance measures	Indicators to be developed but may include: • diversity • species local abundance • species local distribution.		
Target	• No significant decline in diversity or species local abundance as a result of human activity. • No significant change to species local distribution as a result of human activity.		
Reporting	10 years		

6. Being on boodja (social-economic values)

Strategic objective: Provide equitable and sustainable opportunities to allow communities to connect to the marine park through recreation, utilise the marine environment as a source of income, promote the sustainable growth of these industries, and ensure marine park users are able to provide food for themselves and the broader community.

6.1 Traditional Owner economic development (KPI)

In a changing society where work is a large focus of life, there is a desire and obligation to develop and maintain opportunities for Traditional Owners and their future generations to live and work on Country. There are also measurable social and health related benefits to Traditional Owners working and living on their own Country.

The creation of the marine park will provide direct employment and fee-for-service work for Noongar people. An early focus of management will be facilitating the culturally safe employment of Noongar people to assist in managing the marine park, identifying and developing secure long-term employment opportunities, and identifying the variety of roles that could be available to Noongar people relating to marine park management. This could include roles as marine park rangers, and in research and monitoring, administration, management and fisheries compliance.

Gazettal of the marine park may also create business opportunities relating to cultural tourism and education. Unlocking economic development opportunities for Noongar people in fishing, aquaculture and fishing-based tourism is a significant area for Noongar people to share in and add value to. Non-culturally-specific fee-for-service work may also become available due to the creation of the marine park. The JMB can help identify these types of opportunities for Noongar people and businesses and link them to agencies that can support their development.

Summary of management arrangements for Traditional Owner economic development opportunities			
Requirements	• High environmental and aesthetic quality. • Strong customary governance and cultural leadership.		
Management objectives	• To enable Traditional Owners to achieve economic benefits consistent with the purpose of the marine park. • To support WKSN people to be able to live back on Country due to the increased availability of long term, culturally appropriate job opportunities.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Develop mechanisms to empower WKSN JMB members to support the recruitment and retainment of Noongar staff.	Management framework	H
	2. Seek to increase Noongar employment, particularly of WKSN people, through creation of identified positions for the marine park.	Management framework	H
	3. Seek to employ WKSN people in a range of roles relating to the marine park, including science pathways, scholarships, training, cadetships, administration and planning.	Management framework	H
	4. Identify long term funding opportunities for employment in marine park management for Noongar people.	Management framework	Ongoing
	5. Actively pursue linkages to other organisations and stakeholders to create opportunities for the Noongar community to create business development and employment relating to the marine park, including philanthropic sponsorship.	Management framework	Ongoing
	6. Develop tailored pathways, training, education and mentoring to enable Noongar people to fulfil positions of employment relating to the management of the marine park, including DPIRD positions. [DPIRD]	Management framework	Ongoing
	7. Investigate blue carbon opportunities, in collaboration with Traditional Owners in the marine park (see section 8 – Climate Change).	Research	H

6.2 Visitation, nature-based tourism and on-Country awareness

Tourism has become one of the most important economic sectors in the South Coast region (SCRMPWG, 2010). Patterns of recreational activity are mostly influenced by season and holiday periods, weather, access and proximity to population centres.

It is estimated that 40 percent of domestic tourists visiting the South Coast engage in some form of marine activity due to its clean water, lack of crowds and idyllic coastal scenery. Much of the nature-based tourism in the marine park is focused on observing species such as southern right and humpback whales, Australian sea lions, and common and leafy seadragons. Recreational diving, surfing, sailing, boating, water skiing, jet skiing (DoPW, 2016), island visits, windsurfing, beachgoing, swimming, coastal walks and four-wheel driving are popular. Increasing numbers of visitors are arriving on cruise ships (SCRMPWG, 2010).

While beaches adjacent to the marine park are popular for four-wheel driving, this reduces further away from key access points. Kayaking takes place in the sheltered waters of Doubtful Island Bay, just north of Point Hood, and some of the larger estuaries. Point Hood is also highly valued for swimming, snorkelling, walking and nature appreciation. The sheltered bay north of Point Ann and the mouth of St Mary Inlet is a key visitation point. Point Ann and Four Mile campground in Fitzgerald River National Park have well-developed visitor facilities. Hamersley Inlet, adjacent to the marine park, is also popular for camping. Many sought-after and easily accessible campsites and access points are dotted along the coast east of Hopetoun adjacent to the marine park within shire reserves.

Charter boats operating on the South Coast offer a range of tourism opportunities including whale watching and other wildlife observations, visiting islands to view seals, sea lions, seabirds and heritage sites, and private functions. Diving and snorkelling charters focusing on local reefs and wrecks run from Albany, Bremer Bay and Esperance and sightseeing charters based on coastal scenery, islands, harbours and estuaries are available in most South Coast towns (SCRMPWG, 2010). However, integration of tourism to bring together cultural and ecological elements is currently lacking.

Marine nature-based tourism can make an important contribution to protecting the region's ecosystem by fostering a greater understanding of the environment. However, unless carefully managed, visitation can also cause environmental damage. Increased visitation can lead to increased litter and marine debris, overfishing, damage to coastal areas adjacent to the marine park, and disturbance of seabirds, shorebirds and marine plants and animals.

Management of tourism in the marine park will focus on protecting marine park values (the values on which commercial nature-based marine tourism depend) and maintenance of a viable tourism product.

DBCA has a responsibility to protect and conserve the value of the land to the culture and heritage of Aboriginal people from any material adverse effect. Tourism operators need to be aware of these legislative provisions and that some Aboriginal sites have particularly high cultural value or sensitivity and may be restricted or subject to specific cultural protocols or entry conditions. Information about the Aboriginal heritage for a particular area can be obtained through consultation with Traditional Owners.

The CALM Act and CALM Regulations require commercial businesses operating in marine parks and reserves to have a commercial operations licence and abide by the conditions outlined in the department's *Commercial Operator Handbook – Marine*, which provides specific information for commercial businesses operating in a marine park or reserve.

On-Country awareness (visitor safety)

Cultural safety is created by fostering an environment where respect, knowledge and experience are shared amongst visitors to ensure shared safety in all aspects—physically, mentally and spiritually. Respect of Maambakoort Boodja (Sea Country) and how to safety use and enjoy it also links to physically protecting all ecological values.

"Number one, respect Country for a start and leave it how you found it."

"It's how you look after Country, how you leave it, how you prepare food, how you practice culture... there's a belief that if you do it wrong you will be tormented."

"The spirits will follow you home [if you do something wrong]."

"You must respect the ocean and never turn your back on it."

"We are not single focused, we are multi focused. You get a feeling from a place that tells you whether you are allowed to be there or not. You take physical cues from the landscape which provides you with cultural safety information."

Some examples of Noongar cultural safety messaging may include learning how to see the false horizon that preludes a king wave, ensuring Country is treated respectfully and visitors take the time to introduce themselves, ensuring visitors are back home before dark, sharing knowledge about when to target particular species in abundance, and learning cultural protocols about how food is caught and prepared.

Other aspects identified by WKSN people to ensure visitor safety on Country include ensuring a Noongar ranger (guided by Elders) is present on Country to support cultural safety; conducting monitoring and reporting of safety risks (physical and cultural); understanding incidents at sea and on shore near the marine park; and establishing good communication, training and protocols to plan for and respond to emergency situations.

Visitor risk management is an important focus for DBCA and the WKSN people. Traditional Owners are concerned for the safety and wellbeing of visitors to their Country. Frequent large swells and inaccessibility for emergency response at some locations pose significant risks to visitors; particularly those who are inexperienced or unprepared. As visitation to the marine park is likely to increase, an ongoing visitor risk management program will be undertaken to identify potential hazards and actions to minimise these.

Risks to visitors are managed under the framework of DBCA's Policy Statement No. 53 – Visitor risk management (VRM) policy. Other departments and organisations which have a shared responsibility for visitor safety in the marine park include:

- DoT, who are responsible for installing and maintaining navigation aids and other boating safety measures in all State waters. DBCA's policy No. 59 provides direction on the control and management of moorings within marine parks and reserves.
- The Australian Maritime Safety Authority (AMSA), who are responsible for ensuring domestic commercial vessels comply with the requirements of the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012.*

Summary of management arrangements for visitation, nature-based tourism and on-Country awareness (visitor safety)			
Requirements	• Recognition of Noongar culture. • Learning together respectfully. • Avoidance or minimisation of the risk of visitor injury. • Opportunities for safe access to the marine park. • High water quality. • Clean beaches and coastal areas. • High aesthetic quality of the marine environment. • Provision of undisturbed areas for nature appreciation. • Appropriate infrastructure and activities. • Equitable access to the natural values in appropriate zones.		
Management objectives	• To ensure that tourism activities and recreational use are managed in a manner consistent with the maintenance of the marine park's values. • Maintain the ecological values of the marine park important for nature-based tourism and recreation. • To provide safe and enjoyable visitor experiences consistent with the marine park values by minimising risks and encouraging appropriate visitor behaviour. • To manage activities in a manner that minimises conflict between marine park users.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Educate marine park users of the risks in the marine park.	Education and interpretation	H
	2. In collaboration with WKSNAC, develop a visitor management plan, including cultural safety principles to inform messaging.	Management framework	H
	3. Develop local, culturally appropriate training resources as led by Elders. Ensure an ongoing role and presence of Noongar rangers, supported by Elders, throughout the marine park to guide and teach visitors and users about cultural safety.	Education and interpretation	H
	4. Ensure promotion and marketing of the marine park is consistent with WKSN people's aspirations and cultural protocols.	Education and interpretation	H
	5. Develop protocols for visitors and educate users about appropriate cultural behaviour and any restrictions in place for the protection of cultural values and sites.	Management intervention and visitor services	Ongoing
	6. Conduct periodic visitor risk assessment in the marine park and mitigate identified issues. [AMSA, DoT, DPIRD]	Education and interpretation	H

	7. Conduct visitor surveys to gather data on use of the marine park including visitor numbers, locations and anchoring points to understand potential impact and direct monitoring programs. [DoT]	Research	H
	8. Maintain a quantitative and qualitative spatial database of human use in the marine park. Work with relevant agencies and industry bodies to adapt and improve existing mapping programs or apps reflecting marine park risks and management arrangements including zoning. [DoT]	Management intervention and visitor services	Ongoing
	9. Develop a framework for JMB to conduct regular reviews of compliance of commercial tourism license holders within the marine park according to the conditions set out in the DBCA *Commercial Operator Handbook*.	Management intervention and visitor services	Ongoing
	10. If deemed necessary, JMB to work with commercial license holders to embed locally specific conditions into licences to protect cultural values of the marine park. Include land based commercial license holders that may also be impacting on marine park values.	Management intervention and visitor services	H
	11. Work with WKSN people and commercial operators to promote culturally appropriate visitation and facilitate the establishment of high-quality commercial tourism operations that: • increase visitor enjoyment and safety, including the provision of visitor facilities if required • demonstrate a commitment to protect and promote the park's cultural, natural, recreational and tourism values • ensure tour operator staff and tourists respect and adhere to WKSN protocols where developed for visitation on land and sea, and all Noongar cultural information that is being shared via commercial tourism operators has been assessed and approved by WKSNAC. • conduct operations according to DBCA policy and licence conditions [Tourism WA] • foster community stewardship of the marine park.	Management intervention and visitor services Education and interpretation	As required H
	12. Educate marine park users about appropriate remotely piloted aircraft (drone) use.		
Performance measures	• Visitor satisfaction (experiences and expectations) as determined by human use monitoring. • Number of visitor safety incidents reported to DBCA and/or the JMB.		
Targets	• Visitor satisfaction is 85 percent or above within 5 years. • No significant increase in the total number of serious visitor safety incidents per capita compared to baseline levels.		
Reporting	Annually		

6.3 Recreational fishing

Recreational fishing is of great importance to the Western Australian community and to South Coast residents and visitors and generates significant economic activity in regional centres. The annual economic contribution to Western Australia from recreational fishing is estimated to be between $1.1 billion (Moore et al., 2023) and $2.4 billion, including approximately $146.6 million in the Goldfields–Esperance region (McLeod & Lindner, 2018). The South Coast offers a diverse array of recreational fishing experiences, and many South Coast recreational fishers also seek a 'fresh feed' or 'fresh seafood'. Thus, continued access for the community to undertake recreational fishing is important for food security, ensuring the community's access to healthy and affordable food.

Other primary motives for recreational fishing include to relax and unwind, to be outdoors, for solitude, or to be with family and friends, highlighting the important social and mental health benefits recreational fishing provides.

The main species targeted by beach and rock fishers on the South Coast include Western Australian salmon (*Arripis truttaceus*), Australian herring (*Arripis georgianus*), whiting (*Sillaginidae* spp.) and silver trevally (*Pseudocaranx* spp.). Common species targeted by boat-based fishers include pink snapper (*Chrysophrys auratus*), queen snapper (*Nemadactylus valenciennesi*), bight redfish (*Centroberyx gerrardi*) and King George whiting (*Sillaginodes punctata*); with mullet (*Muglidae* spp.) and black bream (*Ancanthopagrus butcheri*) targeted in rivers and estuaries (Newman et al., 2021).

The potential pressures associated with recreational fishing in the marine park include bycatch of unwanted non-target species, overfishing of targeted species, and associated impacts on other ecological values (i.e., from litter, discarded/broken off fishing gear, and disturbance of sensitive habitats).

Sanctuary zones, which prohibit extractive activities including recreational fishing, will be used to ensure ecologically important and representative areas of ecosystems are protected from a variety of pressures including recreational fishing.

DPIRD is responsible for managing target fish stocks for sustainability, with fisheries rules continuing to apply both within and outside the marine park. Fish stocks are managed through a wide range of management tools, including size and bag limits, gear restrictions, licences and closed seasons.

Commercial tour operators offering recreational fishing who wish to operate in the marine park require a licence from DBCA under the CALM Act and must adhere to the rules, provisions and regulations outlined by DPIRD and the FRM Act.

The JMB will work with DPIRD to ensure the continued sustainability of recreational fishing practices in the marine park. Traditional Owners over time have observed different groups taking undersized fish, exceeding bag limits and using illegal fishing gear. Traditional Owners feel strongly that more needs to be done to educate users and to increase the compliance presence within the marine park, particularly for specific user groups to ensure that there are fish stocks for future generations. Ongoing education initiatives will seek to explore cultural ways of catching fish, following seasonal and adaptive protocols, methods of processing a fish that utilises it more fully, and localised impacts, and being responsible with waste.

Summary of management arrangements for recreational fishing			
Requirements	• Maintenance of key habitats (such as nursery and spawning areas). • High water quality. • Equitable and safe access to fishing grounds in appropriate zones. • Maintenance of targeted fish stocks. • Appropriate provision and placement of infrastructure and facilities.		
Management objectives	• To ensure that, in collaboration with the community and DPIRD, recreational fishing in the marine park is managed in a manner that is consistent with maintaining the marine park's values. • To maintain ecological values of the marine park that support recreational fishing. • To work collaboratively (with agencies, stakeholders and the community) to maintain and promote safe and enjoyable recreational fishing opportunities in the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold	1. See Section 9.3 – Zoning.		
	2. Educate recreational fishers on customary fishing and rights of Traditional Owners. **[DPIRD]**	Education and interpretation	H
	3. DPIRD to conduct and/or support research to determine if ecosystem effects from recreational fishing occur in the marine park and undertake adaptive management actions if required. **[DPIRD]**	Research	H
	4. Implement safety signage in dangerous areas in/around Maambakoort Boodja, focusing on dangers of rock fishing. [LGA]	Education and interpretation	H
	5. Engage with local recreational fishing groups to promote responsible fishing behaviour, including education on rules on fishing in the marine park. **[DPIRD]**	Education and interpretation	Ongoing
	6. Monitor recreational fishing catch and effort in the marine park. **[DPIRD]**	Monitoring	Ongoing
	7. Review existing fisheries management and seek to amend if there are sustainability concerns. **[DPIRD]**	Monitoring	Ongoing
	8. Provide updates to the JMB in relation to fisheries management and monitoring. **[DPIRD]**	Management framework	H
	9. Assess possible displacement of fishing effort, changes in fishery dynamics (exploitation patterns) and other impacts that may be influenced by restrictions on fishing access in the marine park to ensure ongoing efficacy of stock assessment data-inputs and examine potential management responses. **[DPIRD]**	Research	H

6.4 Commercial fishing

Commercial fishing is recognised as an important social and economic contributor to Western Australia's regional communities, generating more than half a billion dollars of income directly into the State economy. It also supplies locally caught, fresh and sustainable seafood to Western Australian communities, employment training and career opportunities for regional youth, and contributes to the diversity and resilience of local economies. Community access to fish is a key value of the marine park for its importance in food security as a healthy, sustainable and affordable food source.

Western Australia's commercial fishing industry is based on a mix of products and markets, with many products that have traditionally accessed overseas markets transitioning in recent years to focus on increased local supply to support community access to sustainable seafood. This is particularly important for food security in regional towns where cafes, restaurants, fish and chip shops and tourism businesses need to be able to access Western Australian caught fish to make their business viable.

Commercial fishing in Western Australia is managed by DPIRD under the FRM Act using an ecosystem-based fisheries management approach. DPIRD's management of all commercial fishing is underpinned by scientific research, with 98 percent of Western Australia's aquatic resources currently being sustainably managed. Commercial fishing is managed through a wide range of fisheries management tools, including gear restrictions, licences, spatial closures, temporal closures, quota allocations and/or bag and size limits. Twelve commercial fisheries operate in the region (see Appendix 2 for details).

Further information about each of these fisheries and status assessments are publicly available in DPIRD's annual *Status Reports of the Fisheries and Aquatic Resources of Western Australia: The State of the Fisheries.*

Various aquaculture leases exist across the South Coast; however, none lie in the marine park.

Approximately 80 percent of the combined South Coast marine parks are available for commercial fishing. Sanctuary zones, which prohibit extractive activities, will be used to ensure ecologically important and representative areas of ecosystems are protected from a variety of pressures including commercial fishing.

The JMB will work with DPIRD to ensure the continued sustainability of commercial fishing practices in the marine park. Unsustainable fishing practices can result in bycatch, habitat damage, ecosystem impacts, altered food web dynamics and a decline in stocks.

Summary of management arrangements for commercial fishing			
Requirements	• Maintenance of commercially targeted fish stocks. • Equitable access to fishing grounds. • Appropriate provision and placement of infrastructure and facilities.		
Management objectives	To ensure that, in collaboration with industry and DPIRD, commercial fishing in the marine park is managed in a manner that is consistent with maintaining the values of the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. See section 9.3 – Zoning.		
	2. Work with commercial fishers through peak bodies to ensure operations are conducted in a Noongar culturally sensitive manner. **[DPIRD, WKSNAC]**	Management framework	H
	3. Identify opportunities to provide specific training opportunities to joint management partners to build the skills required to assist with DPIRD compliance and education activities. **[DPIRD]**	Management framework	H
	4. Monitor commercial fishing catch and effort in the marine park to inform periodic reviews of its management of commercial fisheries and aquatic resources. **[DPIRD]**	Monitoring	H
	5. Monitor commercial fishing in special purpose (cultural protection) zones to ensure that there are no impacts on cultural values of the zones **[DPIRD]**.	Monitoring	H
	6. Investigate the extent and significance of interactions between commercial fishing and threatened, endangered or protected species and address as required. **[DPIRD]**	Research	H
	7. Conduct research to determine if ecosystem effects from commercial fishing occur in the marine park and undertake adaptive management actions if required. [DPIRD]	Research	H
	8. Provide updates to the JMB in relation to fisheries management and monitoring. **[DPIRD]**	Management framework	Ongoing
	9. Ensure that any future aquaculture authorisations are consistent with the management plan and include appropriate monitoring programs, lighting, navigational marking and site utilisation conditions. [DPIRD and DoT]	Management framework	As required
	10. Carry out an updated viability assessment for sustainable and non-polluting aquaculture in the marine park in appropriate zones, focusing on shellfish and desirable finfish species, and cognisant of biosecurity risks. **[DPIRD]**	Research	L
	11. Assess possible displacement of fishing effort, changes in fishery dynamics (exploitation patterns) and other impacts that may be influenced by restrictions on fishing access in the marine park to ensure ongoing efficacy of stock assessment data-inputs and examine potential management responses. **[DPIRD]**	Research	L

6.5 Industry, mining, development proposals, shipping, mooring and anchoring

The CALM Act specifies that mining and petroleum exploration and production is permitted in a marine park general use zone if it is compatible with the specified purpose of that zone. The environmental and cultural impacts of mining and petroleum exploration or production proposals within or adjacent to the marine park will be subject to evaluation through the normal assessment and approvals process under Western Australian and Commonwealth legislation. Mineral, petroleum and pipeline activities are regulated by DEMIRS under the *Mining Act 1978*, *Offshore Minerals Act 2003*, *Petroleum and Geothermal Energy Resources Act 1967*, *Petroleum (Submerged Lands) Act 1982* and *Petroleum Pipelines Act 1969*. Projects of state significance may be administered by the Department of Jobs, Tourism, Science and Innovation under project specific agreement acts.

Exploration and development proposals that may cause significant impact on key biodiversity values should be referred to the EPA for environmental impact assessment under the EP Act. Applications to explore or mine within parks vested in the Conservation and Parks Commission (CPC) may also be referred to the Minister for Environment as required under environmental, mining and petroleum legislation. Exploration and development that may have a significant impact on matters of national environmental significance may also require approval under the EPBC Act.

The oil and gas industry uses seismic surveys to explore for natural resources. Marine seismic surveys can increase background noise levels while they are in progress and have the potential to impact marine wildlife by disrupting communication, navigation, and foraging habits. Some marine species such as whales may temporarily move away from the affected area. Any seismic survey in the marine park will be subject to evaluation as part of the applicable State and Commonwealth government approvals processes.

First Quantum Minerals (FQM) holds miscellaneous licences which are not subject to the marine park footprint. These licences include extensive infrastructure, namely, seawater intake systems, a seawater transfer station, a seawater pipeline and a powerline which is associated with the Ravensthorpe Nickel Operation.

Management of moorings and anchoring is a key aspect of managing increasing vessel use in Western Australia's marine parks. With an expected increase in commercial and recreational vessels visiting and operating on the South Coast, it is expected that mooring and anchoring activities will increase over time.

The marine park allows for mooring and anchoring activities, however, if not installed and maintained correctly, moorings may cause irreversible damage to the surrounding habitat and pose a risk to marine park users and property. Refer to the department's Policy Statement 59: Mooring policy for further information regarding the management of moorings within marine parks. If required, a mooring and anchoring plan may be developed for the marine park.

Summary of management arrangements for industry, mining, development proposals, shipping, mooring and anchoring			
Requirements	• Equitable access in appropriate zones. • Appropriate infrastructure and facilities.		
Management objectives	To ensure that shipping and industry, including mining, development and associated activities are managed in a manner consistent with the objectives of the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Provide advice on the assessment, setting of conditions, and monitoring and reporting requirements for mineral, petroleum and renewable energy activities consistent with the management objectives and management targets for values in the marine park.	Management framework	As required
	2. Provide formal advice to the CPC and the EPA relating to mineral, petroleum and renewable energy activities in and adjacent to the marine park. [DPIRD, DWER, DEMIRS]	Management framework	As required
	3. Develop a mooring plan, with appropriate consultation on ecological and social impacts and suitable capacities. [DoT]	Management framework	As required
	4. Refer or recommend the referral of exploration or development proposals, that may impact significantly on the values of the park, to the EPA for consideration under the EP Act or to the Commonwealth Department of Climate Change, Energy, the Environment and Water for assessment under the EPBC Act.	Management framework	As required
	5. Ensure that license conditions of approved industry activities include appropriate Noongar cultural and environmental performance measures, desired trends, short-term and long-term management targets, and monitoring and reporting requirements. **[DWER]**	Management framework	As required
	6. Assess the viability and applicability of project proposals on Sea Country from both scientific and cultural perspectives.	Management framework	As required

6.6 Maritime heritage

According to the Australasian Underwater Cultural Heritage Database there are two known shipwrecks within the marine park waters; *Pirra*, a lighter-type vessel wrecked in 1907 and the *Leata*, an unknown vessel type, wrecked in 1917. All shipwrecks over 75 years old are protected under the Commonwealth *Underwater Cultural Heritage Act 2018*. The Western Australian Museum (WAM) is responsible for management of historic shipwrecks.

Management of maritime heritage within the marine park will focus on educating visitors, identifying new historic maritime sites and monitoring.

Summary of management arrangements for maritime heritage			
Requirements	• Protection of known maritime heritage and historic sites. • Recording and assessment of historic sites. • Recognition and appreciation of maritime heritage values.		
Management objectives	To ensure that, in collaboration with the WAM, human activity does not significantly affect historic sites or shipwrecks in the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take the lead role, their name is in bold.	1. In collaboration with Traditional Owners identify and describe maritime history sites with shared experiences with the Noongar community to ensure this information is documented and shared (where appropriate).	Research	H
	2. Provide interpretive information to enhance visitor enjoyment of, and, where appropriate, to mitigate or stop impacts on maritime heritage values in the marine park, including information about regulations under the *Maritime Archaeology Act 1973* and *Underwater Cultural Heritage Act 2018*.	Education and interpretation	L
	3. Liaise with the Heritage Council of Western Australia, WAM, local government and other relevant organisations regarding the appropriate protection, conservation and management of maritime heritage sites.	Management framework	M
	4. Encourage research on maritime heritage, with appropriate permits, including recording oral histories to facilitate long-term management. **[WAM].**	Management framework	M
	5. Liaise with other stakeholders to improve the identification, protection, conservation and, where necessary, restoration of maritime heritage.	Management framework	M

7. Kaaditjiny (understanding)

Strategic objective: Encourage and promote the sharing of knowledge between Traditional Owners, scientists, marine park users and the local community to guide, inform and adapt Maambakoort Boodja (Sea Country) management.

Improving western knowledge by recognising and incorporating Traditional Owner kaartidjin (knowledge) with robust research and monitoring helps Country (boodja) get or stay strong (moorditj). Research and monitoring done following cultural protocols can improve understanding of the threats faced by marine values and drive practical and effective efforts on the ground to alleviate these threats. Research on Maambakoort Boodja (Sea Country) does not always need to have conservation outcomes. Research and monitoring focused solely on cultural outcomes are key to the implementation of this marine park joint management plan.

7.1 Sharing kaartidjin (knowledge)

WKSN people's kaartidjin (knowledge) is kept alive and passed on through language, song, dance, art, story, through being on boodja, hunting and harvesting, and other cultural practices.

"We are still practising culture physically on Country."

Transfer of knowledge through telling, seeing and doing is an integral component of Noongar culture. Intergenerational knowledge transfer through being immersed in cultural activities can provide links to the past for generations of Noongar families and should be valued and facilitated in the marine park management. Opportunities for knowledge transfer during research, monitoring and education activities in the marine park will enable younger generations of Noongar people to become moorditj (strong) leaders and knowledge holders of the future.

"Cultural expectations were not a daily conversation traditionally. We just lived it."

Experience and observations over generations provide qualitative information that can be shared and utilised to describe trends in ecological processes and communities. Monitoring changes on Country ensures issues are identified quickly and provides data over time. For example, anecdotal evidence from Traditional Owners during the marine park planning process identified that some vulnerable and significant cultural sites were being inappropriately accessed and used, pressures that had been previously undocumented.

Kaartidjin must have economic benefits for Traditional Owners in terms of product use and development, and use in knowledge-based businesses such as ecotourism.

Sharing knowledge cannot be one-sided. If researchers and marine park users are enjoying the benefits of cultural knowledge it is appropriate that there is two-way sharing of knowledge with the Noongar community.

Kaartidjin includes biological information that is passed from generation to generation. Traditional ecological knowledge has been described as "the sum of the data and ideas acquired by a human group on its environment as a result of the group's use and occupation of a region over very many generations" (GWPRO, 1994). It is a collective term, and its features include aspects of collective rights; the interdependence between knowledge, land, and other aspects of culture; oral transmission of knowledge; and cultural rules regarding secrecy and sacredness that govern the management of knowledge. Cultural data that is collected needs to be used for the collective benefit of Traditional Owners. Traditional Owners should hold the responsibility to share and to control cultural data, and the wellbeing of Traditional Owners should be the primary concern at all times during data collection (Carroll et al., 2020). Protection of traditional ecological and cultural knowledge needs to be at the forefront of any research and monitoring program. Cultural knowledge should never be published or disseminated without the explicit consent of the individual or groups who provided it. Kaartidjin holders should be appropriately recognised for the knowledge, expertise and efforts they provide to research and management activities. This includes co-authorship in publications.

Kaartidjin also needs to be shared more broadly, where appropriate. Passing knowledge on to the younger generations of Noongar people and educating the broader community about Noongar culture and its importance to all as a part of our shared culture is vital. Sharing cultural knowledge ensures marine park users are not lacking general awareness and fosters respect. Many visitors to natural places yearn for a deeper understanding of place that can only be provided by Traditional Owners.

"Telling the history of places and truth-telling around what has happened in the past, through signage, more conversations and other ways of providing information."

This marine park provides an opportunity to expand and continue to grow and change culture as it is a continuing culture which is adapting and learning constantly.

Summary of management arrangements for kaartidjin (knowledge)			
Requirements	• Cultural kaartidjin is embedded at all levels of marine park management. • Noongar people are involved in all levels of marine park management. • Time and interest are taken to build relationships which underpin positive experiences in knowledge sharing. • Maintenance of knowledge transfer within the WKSN community through language, song, dance, art, story, through being on boodja, hunting and harvesting, and other cultural practices. • Increased willingness of general public to learn about Noongar culture. • Increased understanding of Noongar connection to Maambakoort Boodja.		
Pressures	• Lack of information about Noongar connection to Maambakoort Boodja available to general public. • Ignorance and/or disrespectful visitor behaviour. • Inability to access Country to continue practice of culture, which allows continued learning and sharing with younger generations.		
Management objectives	• To embed traditional and contemporary Noongar kaartidjin in the design and implementation of marine park research and monitoring. • To promote two-way sharing to enable respect and understanding.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. In partnership, develop adequate structures to protect cultural and intellectual property shared during marine park management.	Management framework	H
	2. Provide support for on-Country trips to facilitate knowledge transfer to the younger generation from Elders and active marine park managers.	Management framework	Ongoing
	3. Design and use a cultural knowledge database/ system of recording for all digital information such as photographs, GIS, voice recordings and written information, to be held by WKSNAC.	Management framework	H
	4. Create opportunities for co-authorship of technical reports and papers about the marine park.	Management framework	Ongoing
	5. Ensure Noongar marine park employees are trained in key survey techniques to enable succession planning to be built into marine science capabilities.	Education and interpretation	H

7.2 Research and education

The diversity of marine habitats, flora and fauna, combined with the range of human activities which occur in the marine park, provide excellent opportunities for research and monitoring. Developing an increased understanding of the cultural, ecological and social values of the marine park is critical to effective management. The joint management arrangements for the marine park will rely significantly on the capacity of western science and Noongar knowledge to work together.

Research strategies specific to values of the marine park are detailed in sections 4-6. Generic management objectives, strategies and targets for the research program are summarised in the table below.

The sanctuary zones enable scientists to undertake research on the recovery/maintenance of marine ecosystems over time when pressures (with the exception of climate change) are removed. All zones provide opportunities for social research on use patterns and community perceptions.

Research and monitoring can empower community members to become stewards for the marine park by providing information and deepening understanding. It can help to promote affinity and respect for marine life, and thus better compliance with rules and regulations. The marine park is adjacent to Hopetoun, and close to Bremer Bay and nearby larger population centres such as Albany and Esperance, providing an excellent opportunity for community stewardship programs.

Comprehensive research programs should be designed to fill knowledge gaps relevant to management. External organisations undertaking research in the marine park need to obtain a licence, so DBCA can:

- maintain an understanding of research effort
- direct research effort, where necessary, so it is relevant to management
- collaborate with researchers where possible
- share research outcomes with others.

Additional permits or special permission may also be required from DBCA to take flora and fauna, and from DPIRD to carry out research on fish (as defined in the FRM Act) in the marine park. In culturally sensitive areas, Noongar people may deem it appropriate for advisers to accompany researchers whilst undertaking their work.

Summary of management arrangements for research and education	
Requirements	• Equitable access to the full range of research and educational opportunities in appropriate zones. • Access to representative sites covering the range of major human activity in the marine park. • Access to representative sites free of major human influences.
Management objectives	• To obtain increased understanding of the biodiversity, biocultural and cultural values, as well as key ecological processes and socio-economic uses within the marine park to inform management. • To promote research that improves knowledge of the values of the marine park and effectiveness of current management strategies to inform future management decisions. • To maximise the integration of conservation science with traditional ecological knowledge in all aspects of research in the marine park. • To promote and facilitate the use of the park for education.

		Management program	Priority
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Encourage and promote involvement of Noongar people in research projects. [DPIRD]	Research	H
	2. Ensure new knowledge from research is communicated to the Noongar community by developing and implementing a communication framework.	Research	H
	3. Identify and communicate high priority research projects which address key knowledge gaps to appropriate external organisations and funding bodies.	Research	H
	4. Develop and implement protocols (where possible utilising or adapting existing protocols) to ensure research is culturally appropriate, commences only with appropriate permissions and that information shared by Traditional Owners is used in a culturally appropriate manner. [DPIRD]	Research	H
	5. Develop scientific and research protocols and partnership agreement frameworks to support genuine scientific and research partnerships [DPIRD].	Research	H
	6. Facilitate or support research in the marine park conducted by external organisations and research institutes by providing assistance or guidance where possible. [DPIRD]	Research	As required
	7. Ensure granting and renewal of permits relating to scientific research is consistent with the management plan, associated guidelines and protocols [DPIRD].	Research	As required
	8. Support the interpretation or reinterpretation of research data by Noongar people to provide a local cultural perspective.	Research	H
	9. Develop an education and interpretation plan which communicates: • the importance of the marine park's values • the purposes of management zones and regulations • appropriate behaviour to reduce human impacts and ensure public safety • WKSN Traditional Owner customary rights and visitor protocols on sea and land • consideration of all education and interpretation strategies listed in the joint management plan.	Education and interpretation	H

Performance measures	• Research plans have been developed and approved by the JMB. • Research activities, as detailed in the plan, have been implemented.
Targets	• Preparation and implementation of a research plan. • Ongoing and completed research projects.
Reporting	To be determined.

7.3 Monitoring

Long-term monitoring of the conditions of the values of the marine environment and the pressures that impact the values is essential to understand natural variation, to evaluate management effectiveness and inform an adaptive management approach. Monitoring enables the detection of detrimental impacts and can determine trigger points for corrective management action before cultural, ecological or social values of a marine park become significantly degraded. Where changes have occurred and remediation is required, a monitoring program should measure the rate of recovery of an affected area or value. Detecting human induced changes requires an understanding of what is 'natural' as a benchmark and this information should be progressively established by ongoing monitoring across spatial zone types that limit human activities, and via the research program.

DBCA, in collaboration with joint management partners around the State, is progressively implementing the DBCA Marine Monitoring Program, a systematic program in the State's marine parks and reserves, designed to improve understanding of management effectiveness, and to inform future research, monitoring and decision making.

Monitoring of the marine park will focus on determining trends in key ecological, cultural and social values within a 'condition-pressure-management-response' framework that measures the 'health' of values against defined management targets. The listed performance measures for the key cultural, ecological and social values of the marine park are used as indicators of management effectiveness and will guide monitoring priorities.

In addition to joint management partners, other organisations involved in monitoring include DPIRD for targeted species (fish, abalone, rock lobster) as defined in the FRM Act, universities and community groups.

Summary of management arrangements for monitoring			
Requirements	• Equitable access to the full range of monitoring opportunities in appropriate zones. • Access to representative sites covering the range of major human activity in the marine park. • Access to representative sites free of major human influences.		
Management objectives	To monitor key cultural, ecological and social values in the marine park within a condition-pressure-management response framework, to provide a basis to assess, adapt and improve management.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Prepare a monitoring plan which considers existing information and the strategies and priorities listed in this joint management plan and/or emerging priorities nominated by the JMB.	Monitoring	H
	2. Facilitate knowledge transfer and uptake of research and monitoring findings to adaptive marine park management, planning and policy and, where relevant, report on conservation achievements and challenges. [DPIRD]	Monitoring	Ongoing
	3. Design and implement monitoring programs to assess the effectiveness of zoning and other management arrangements in protecting cultural values.	Monitoring	H
	4. Develop a cultural value monitoring framework (and data storage and access process) to guide these activities in a joint management context, with respect to cultural lore and governance.	Monitoring	H
	5. Investigate opportunities and develop a process to integrate traditional ecological knowledge into monitoring, where appropriate.	Monitoring	H
	6. Provide necessary information and support for assessments of the management plan implementation by the CPC. [DPIRD]	Monitoring	H
Performance measures	The development and implementation of a prioritised monitoring program.		
Targets	• Preparation and implementation of a monitoring plan. • Ongoing and completed monitoring projects. • Number of values, including KPIs, currently being monitored.		
Reporting	To be determined.		

8. Climate change

Climate change refers to changes in weather patterns (i.e., temperature, rainfall) and associated changes in oceans, land surfaces and ice sheets, over a period of decades or longer (CSIRO & BoM, 2015; Australian Academy of Science, 2020). The effects of ocean warming and sea level rise due to climate change are currently impacting the marine environment globally and climate change is considered to be one of the greatest threats to marine life (IPCC, 2022). The ecological impact of climate change effects, including increased temperatures and frequency of episodic events such as heatwaves, can range from species shifting their geographic ranges, seasonal activities and migration patterns, a decrease in ocean productivity, altered habitats and greater incidence of disease or mortality (Hoegh-Guldberg & Bruno, 2010). This can in turn affect cultural and social values by changing the ecological health of the marine resources upon which customary, recreational and commercial activities rely. The possible impacts from climate change are many and varied. Sea level rise and coastal erosion, for example, can impact seabirds which nest on beaches, like the hooded plover and fairy tern. Burial sites and other cultural sites along the coast may be lost. Ocean warming is occurring not only in shallow ecosystems but in environments exceeding 2,000m deep in the Southern Ocean (IPCC, 2022). Within the marine park, coral species are likely to be the most vulnerable to ocean warming, being extremely stressed at just 1.5 degrees increase in water temperature (IPCC, 2022).

Oceans uptake more carbon in response to the increasing concentrations of greenhouse gas, which can lead to ocean acidification. Acidification can impact the growth of shells, slow embryo development (Auzoux-Bordenave et al.,2020) and even impact sound waves in the ocean (Brewer & Hester, 2009). Climate change can also reduce oxygen content in the ocean and make it harder for marine species to survive, especially those in shallow and estuarine communities. Sea level rise can create saline intrusion into freshwater systems both by surface and groundwater. Changes in sea surface temperatures and currents are a concern if they result in shifting key species that are valued and/or used in the waters.

Traditional Owners have observed direct impacts of climate on valuable and vulnerable cultural sites. Some sites are being eroded or lost due to high storm surge and erosion. For example, near Dempster Inlet, beach erosion has recently covered a freshwater hole that has been used by Noongar people for many generations. By 2050, southern Australia is expected to lose between 35-50m of sandy coastline (IPCC, 2022).

Climate change, in particular sea level rises, shapes and defines lost connections to Country for Noongar people. Sea level rises have inundated ancient cultural corridors. For example, there are ancient tree stumps in the ocean offshore from Dempster Inlet. The old coastline is valued by Traditional Owners, as are the islands—both above and underwater—which are described as the 'knees' of the Country. Underwater archaeological sites within this marine park are largely unknown due to lack of research. Songlines and oral stories can guide archaeological research, as some of these stories link ancient landforms to present ones.

Impacts from climate change on key cultural species is also a concern, for example, the possible impact of acidification on krill—a key food source for mamang (whales)—and on the formation of shells for important shell food resources.

Establishing marine protected areas can contribute to maintaining climate change resilience and rebuilding ecological and social resilience (IUCN, 2017). Protection of coastal carbon habitats such as seagrass and kelp can help to ensure carbon is not released as a result of the loss and degradation of those areas, while maintaining the carbon pathways in the fauna associated with these critical habitats. Although marine protected areas can contribute to reducing local stressors and build ecological resilience to change, the protection they provide against the broadscale impacts of climate change are less known.

There is interest in understanding the value of marine communities such as seagrass and macroalgae in carbon sequestration, which may be beneficial in any future blue carbon market. Although it is perceived that an adequate methodology (which has been robustly tested in regard to blue carbon sequestration and credits) within the marine park is not in place yet, research into ensuring that this option is future proofed is important.

"We must ensure Noongars gain benefits from the emerging opportunities of blue carbon credits."

Research and monitoring programs contribute to our understanding of the effects of climate change, and the development of effective adaptive management responses.

One of the main challenges affecting climate change is the limited resources for monitoring. Noongar involvement in monitoring aspects of climate change will assist in identifying impacts and mitigation strategies. Tangible and local Noongar knowledge and evidence around how climate change—through sea level rise and erosion, ocean warming, ocean acidification, deoxygenation and saline intrusion of aquifers—affects cultural and ecological uses and values is invaluable for managing values.

Southern right whale. Photo – Dan Paris ©DBCA

Summary of management arrangements for climate change			
Management objectives	To increase understanding of the effects of climate change on the values of the marine park and increase the resilience of values to climate change.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Investigate blue carbon opportunities, in collaboration with Traditional Owners in the marine park.	Research	H
	2. Identify cultural sites within and adjacent to the marine park that may be at higher risk from the impacts of climate change and implement a monitoring program.	Research and Monitoring	H
	3. Monitor water temperatures particularly near to vulnerable habitats such as coral and within estuaries.	Monitoring	H
	4. Support and integrate international and national climate change initiatives, where relevant, into marine park research and adaptive management.	Management framework	As required
	5. Ensure that impacts of climate change are considered in monitoring programs for the marine park KPIs.	Monitoring	H
	6. Assess areas, habitats and species which are most at risk from the effects of climate change and increase their resilience by reducing other pressures where possible. [DPIRD]	Research	H
	7. Support or provide necessary information to contribute to climate forecast models to help predict the impacts of climate change on the values of the marine park.	Research	As required
	8. Educate marine park users of the impacts of climate change on marine park values, including the cumulative impact of other threats on values already vulnerable due to climate change, and encourage them to reduce their carbon emissions where possible.	Education and interpretation	L

9. Plan implementation and operation

Sections 4 to 8 outlined the management objectives, strategies, performance measures and targets required to achieve the strategic objectives for the marine park. To successfully implement these strategies a number of supporting management strategies are required to effectively administer the park, support overall management and ensure compliance with management arrangements. The implementation of all strategies is ultimately subject to resource availability.

9.1 Customary governance

Culturally appropriate administrative frameworks, management structures and communication methods are vital for historic issues of misalignment of traditional Noongar lore and common law to be overcome for future joint management.

"Cultural obligations may look different now, but they still exist."

To successfully 'walk together', genuine and respectful partnerships between Traditional Owners and DBCA need to be fostered. Honest communication, across all governance frameworks, will ensure the highest chance of successfully protecting the ecological and cultural values of the marine environment. Principles of accountability, transparency, respect and equality should guide the working of the JMB.

Good customary governance requires that Traditional Owners have all the information they require to make an informed set of decisions and recommendations under the principle of free prior and informed consent as defined in the United Nations Declaration on the Rights of Indigenous People – Article 32. Ensuring a culturally appropriate and safe JMB environment where Traditional Owners can feel confident to raise concerns around needing more information before making recommendations is vital.

Strong cultural governance means that Elders must have oversight on matters relating to the health of their boodja (Country). Elders need to be empowered to guide rangers and other knowledge holders. How decisions are being made and how Elders are enabled to provide direction and assistance needs to be determined in more detail in partnership with the WKSNAC, their Cultural Advice Committee and the JMB. Developing a framework for this advice and cultural guidance seeking will be a priority management strategy focus. The WKSNAC's Cultural Advice Committee (CAC) is made up of representatives who consider matters relevant to culture and make decisions to promote and protect WKSN cultural interests. Matters that may be decided by the committee of particular relevance to the marine park include determining how cultural knowledge should be recorded, when and how it is shared with others, and determining how Noongar cultural protocols and practices should be acknowledged, valued, honoured and respected, including through welcome to Country practices. The CAC provides a contemporary structure to ensure customary governance and will guide the JMB on cultural decisions.

"Go back to the old way of making decisions, to manage the conversation to ensure that Noongar consensus is reached on management."

Customary governance enables Elders to ensure their cultural obligations are fulfilled in relation to caring for Country and sharing knowledge with their young ones. Not being able to fulfil these obligations can be a large burden to bear and directly affects the health of Elders and community and the health of boodja (Country). Customary governance can start as simply listening and talking with Elders on key aspects of marine park management and having mechanisms to do this. The principle of 'ask first' (AHC, 2002) describes the first and simplest step that people need to take and goes a long way to ensuring that everyone has a voice. Although Elders share much wisdom and knowledge, this sharing also has to be two-way to ensure they can make informed decisions. Sometimes Elders will need to seek the advice and expertise of others to solve problems and come to a decision. The customary governance structure should enable these specific knowledge holders in the community to assist Elders in the protection of cultural values and sites within the marine park.

Summary of management arrangements for customary governance			
Management objectives	To ensure marine park management decision-making respects Noongar customary governance and cultural protocols.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Develop and maintain an understanding about the delegation of authority from the WKSNAC to the JMB and vice versa, in relation to advice given to external parties and marine park management decisions, consistent with the joint management plan.	Management framework	H
	2. Develop a process which guides the approach regarding when the JMB is required to seek cultural guidance and/or endorsement from the WKSN CAC.	Management framework	H
	3. Develop an agreed regular reporting framework from the JMB to WKSNAC and the Noongar community.	Management framework	H
	4. Develop and implement a WKSN Elder mentor program for Noongar marine park staff.	Management framework	H
	5. Ensure resourcing for appropriate and ongoing consultation with Traditional Owners to ensure marine park management can be guided in a culturally appropriate manner.	Management framework	Ongoing
	6. Investigate opportunities for cross-sector collaboration for improved management outcomes (for example, interaction between the management of State and Federal waters).	Management framework	Ongoing
	7. Conduct governance training with all new JMB members.	Education and interpretation	As required
	8. Ensure a local cultural induction program for new DBCA staff and JMB members is approved by WKSNAC.	Management framework	H
	9. Facilitate regional annual meetings and seek and support collaborative projects between the JMBs from the adjacent marine parks on the South Coast.	Management framework	As required
Performance measures	To be determined by JMB		
Target	To be determined by JMB		
Reporting	To be determined by JMB		

9.2 Administration and governance

The following strategies will ensure appropriate arrangements are in place to effectively implement and operate the marine park in a collaborative setting.

Summary of management arrangements for administration and governance			
Management objectives	To ensure the marine park has appropriate legal, administrative, financial, operational and human resource frameworks in place so that it is effectively jointly managed in a collaborative setting.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Ensure the objectives detailed in the JMA are applied to all management activities in the marine park.	Management framework	H
	2. Implement all statutory notices required to support implementation of the management plan within 12 months of marine park gazettal.	Management framework	H
	3. Collaborate with and provide advice to agencies, stakeholders and adjacent land managers, where necessary, to ensure the protection of the marine park values and complementary management of adjacent reserves.	Management framework	H
	4. Develop governance tools to support effective and efficient decision-making by the JMB, including terms of references, code of conduct and conflict resolution policy.	Management framework	H
	5. Secure and maintain appropriate funding for staff structures, operational equipment, including vessels, and infrastructure to adequately implement the management plan. [DPIRD]	Management framework	H
	6. Consider third party proposals for the establishment of a marine research station, including laboratories and living quarters.	Management framework	As required
	7. Investigate the possibility of developing an information sharing platform for all agencies involved in managing the marine park to share their data (such as a data dashboard).	Management framework	L
	8. Develop annual work plans.	Management framework	H
	9. Develop collaborative operational plans for implementation of relevant strategies in the plan. [DPIRD]	Management framework	H
	10. Work with the WKSNAC to develop commercial tour operator licence conditions to ensure activities are compatible with the purpose of protecting the lands and waters to the culture and heritage values of Traditional Owners.	Management framework	H
	11. In accordance with DPIRD's responsibilities under the FRM Act, develop a framework for DPIRD's involvement in the joint management of the marine park including mechanisms for DPIRD to attend JMB meetings where required [DPIRD].	Management framework	H
	12. Develop a communications plan and protocol to aid communication of the joint management plan to the Noongar community and support WKSNAC and JMB in the implementation of the plan.	Management framework	H

	13. Ensure cultural safety protocols are observed by joint management partners, including by developing health and safety plans and protocol for all management and research operations conducted on Maambakoort Boodja, which incorporates cultural safety provisions.	Management framework	H
	14. Pursue external funding and partnership opportunities to implement strategies in the joint management plan.	Management framework	H
	15. Develop and implement a monitoring and evaluation framework to assess joint management effectiveness for the marine park.	Monitoring	H
	16. Assess impacts on marine park values and manage appropriately as required (such as speed limits and/or additional measures to protect threatened species, ecological communities, and natural features or for safety reasons). [DoT]	Monitoring	H

9.3 Zoning and permitted activities

The implementation of an appropriate zoning scheme is an important strategy for the conservation of marine biodiversity, for increased recognition and protection of culturally significant areas and customary practices, and the management of human use in the marine park. Importantly, the application of the zoning scheme should not be viewed in isolation but as one tool in a suite of complementary management tools available to marine park joint management partners to achieve desired ecological, cultural and social outcomes.

9.3.1 Zoning design

The national guidelines for establishing marine protected areas recommend that IMCRA bioregions form the basis for reserve design, with one or more examples of conservation features (such as habitats and ecosystems) found in each bioregion represented in highly protected zones (ANZECC, 1999).

To complement the bioregional framework, a network-based approach was taken to ensure the zoning scheme complements other marine parks in the South Coast bioregion, which were developed concurrently.

The zoning scheme for the combined Mamang Maambakoort, Wudjari, Western Bight and Mirning marine parks is comprised of:

- 29 sanctuary zones covering approximately 261,730 hectares or 20 percent of the parks.
- Nine special purpose zones (cultural protection) covering approximately 52,460 hectares or four percent of the parks.
- Three special purpose zones (whale conservation) covering approximately 75,180 hectares or six percent of the parks.
- Two special purpose zones (wildlife conservation) covering approximately 3,710 hectares or less than one percent of the parks.
- General use in the remainder of the parks, covering approximately 899,970 hectares or 70 percent of the parks.

Maps 6-8 show the zoning scheme for the Mamang Maambakoort Marine Park. A summary of the activities permitted in each zone is presented in Table 1.

Design of the zoning scheme was guided by a set of principles which aim to provide for ecological, cultural, recreational, tourism and other sustainable use values (see Appendix 1).

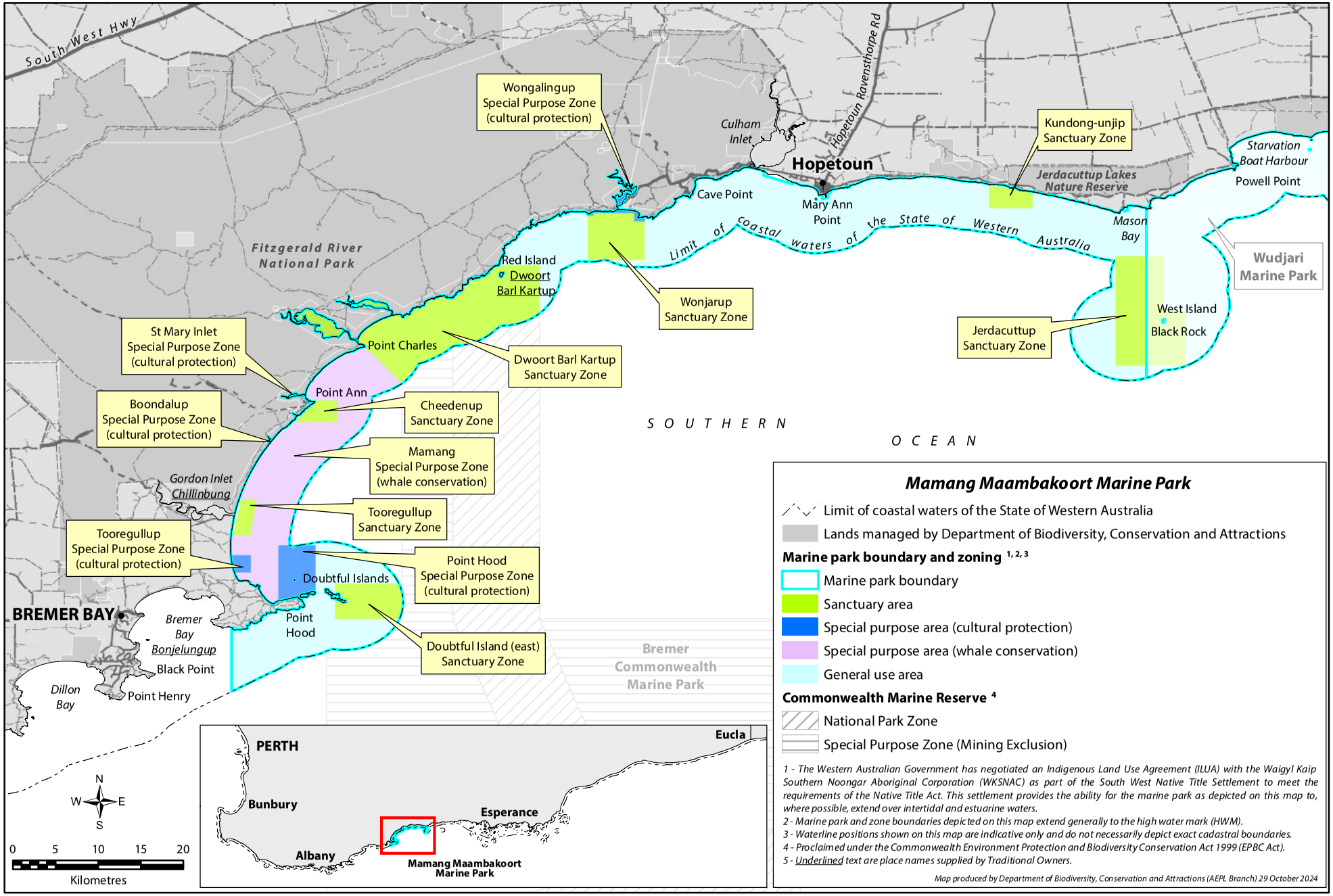
The zoning scheme is based on a comprehensive, adequate and representative (CAR) approach. It will protect ecologically and culturally important values and considers the level of current and projected future pressures on these values. The zoning will provide connectivity from estuarine environments out to deeper waters and offshore islands and provide complementarity to adjacent reserves.

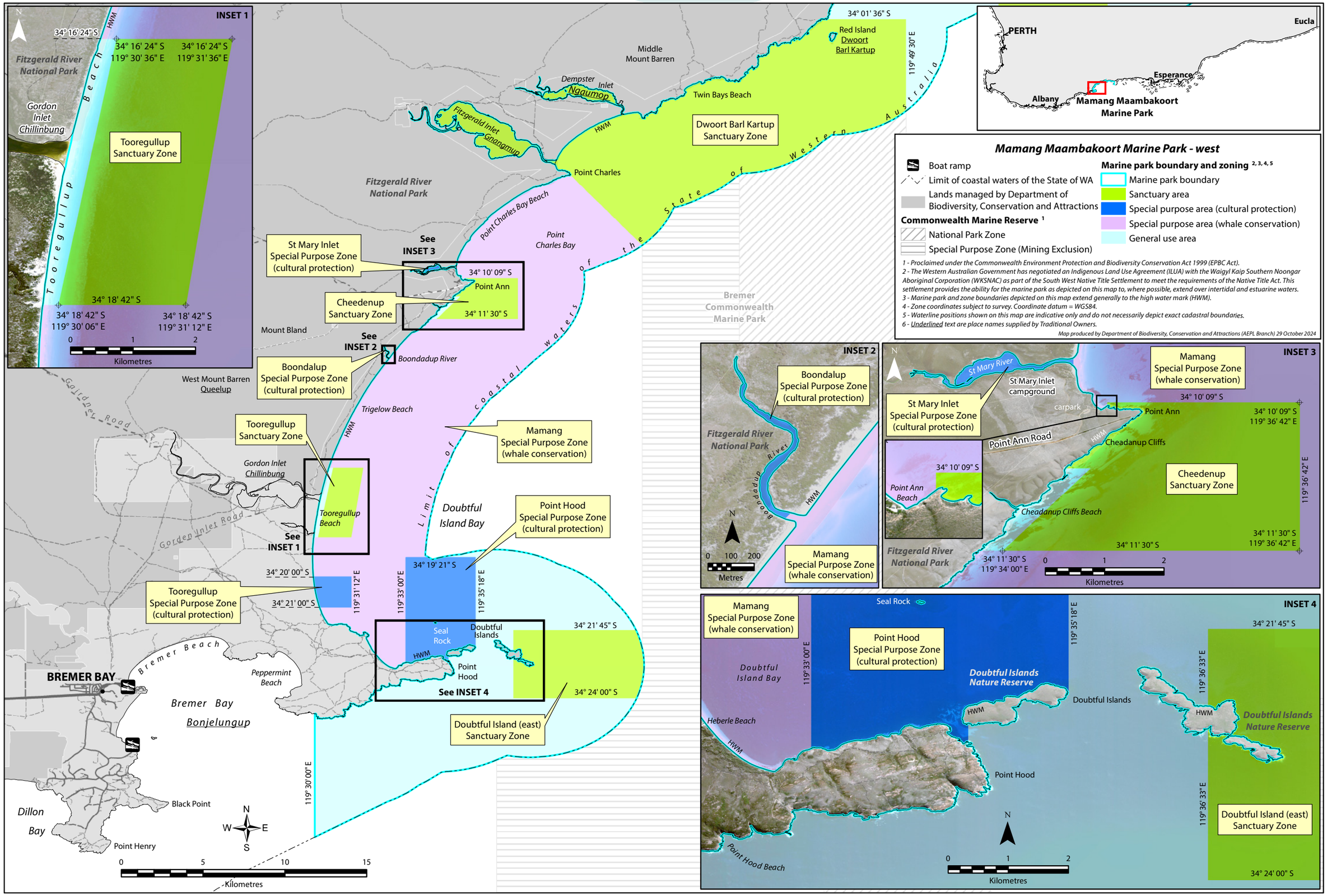
The zoning scheme recognises and allows for recreation and tourism and allows for ongoing sustainable use by considering the needs of park users, including commercial and recreational fishers. Where possible, the zoning scheme has been designed to be easy for users to understand and comply with, for example, creating zones with straight line boundaries which align with degrees of longitude and latitude and/or aligning boundaries with prominent features on the coast or islands.

Ultimately the zoning scheme aims to ensure the marine park is managed to maintain ecosystem function and increase ecosystem resilience.

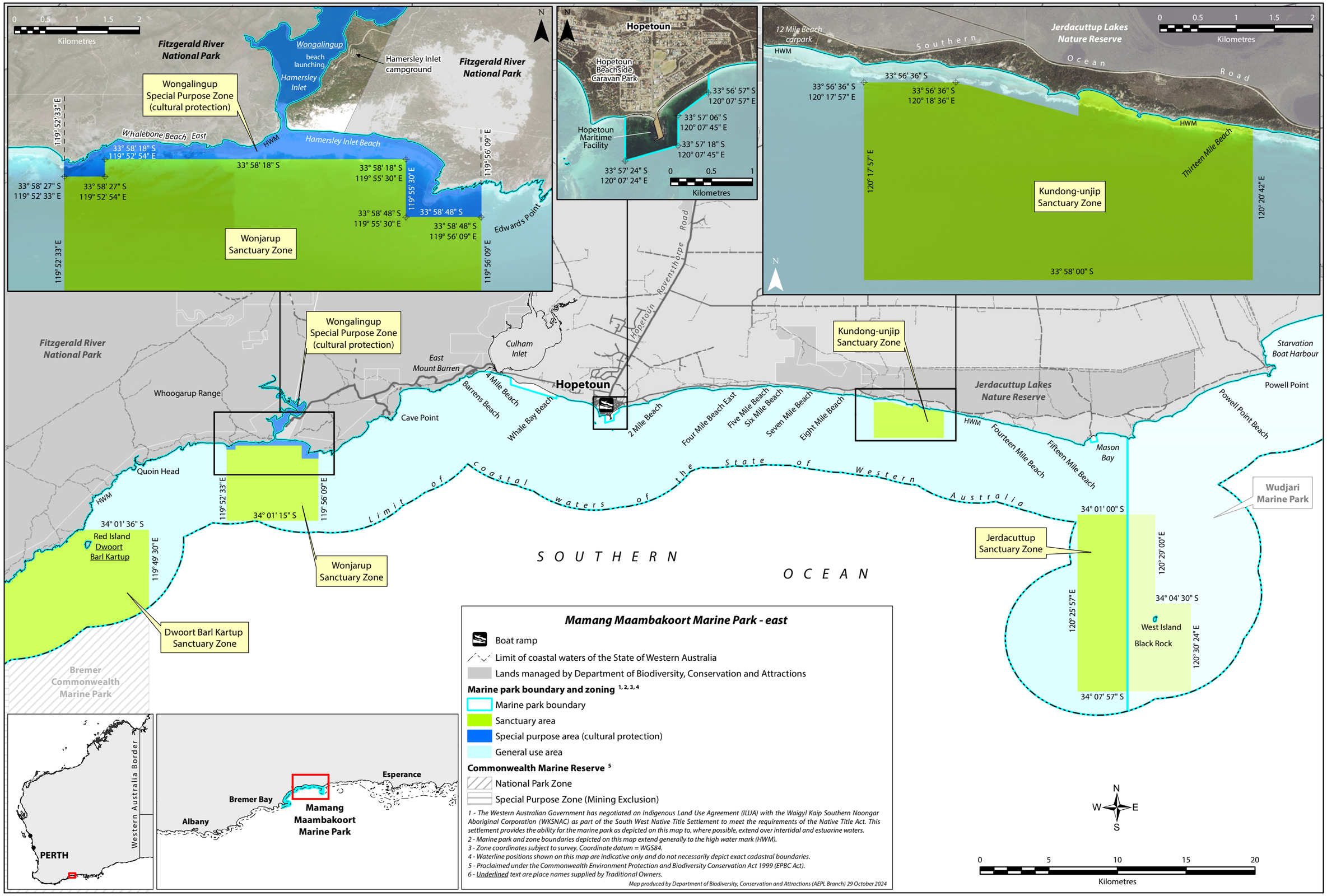
Southern right whales close to shore. Courtesy of Peter Van Schoubroeck

Map 6 – Zoning for Mamang Maambakoort Marine Park - overview





Map 7 – Zoning for Mamang Maambakoort Marine Park - west.



Map 8 – Zoning for Mamang Maambakoort Marine Park - east.

9.3.2 Sanctuary zones

The sanctuary zones play a central role in protecting areas of critical habitat to maintain the healthy functioning of the complex ecosystems that make up the marine park. Sanctuary zones protect critical habitat and act as benchmarks to compare to other areas with similar habitats and ecosystems that are subject to extractive use. This allows managers to gain a better understanding of local and regional pressures on the marine environment over time. As such, sanctuary zones provide important opportunities for education, research and monitoring.

Doubtful Island (east) Sanctuary Zone

The Doubtful Island (east) Sanctuary Zone (approximately 2,664 hectares) protects representative examples of marine habitat, including macroalgal reef, temperate coral communities, soft substrate and filter feeding communities of the South Coast bioregion. The Doubtful Island (east) Sanctuary Zone includes deeper water habitats ranging from 0–60 m and will also protect species of special conservation significance. Australia sea lions and long-nosed fur seals use Doubtful Islands and the surrounding waters for breeding, pupping and foraging and little penguins and flesh-footed shearwaters also breed and forage in the area. The islands, referred to as the 'knees' by WKSN people, are of particular cultural significance due to their connection with old Country and sea level changes. The Doubtful Island (east) Sanctuary Zone complements the Bremer Marine Park in Commonwealth waters, the Fitzgerald Biosphere and the Doubtful Islands terrestrial reserve.

Tooregullup Sanctuary Zone

The Tooregullup Sanctuary Zone (approximately 685 hectares) protects representative examples of marine habitats, including shallow water soft sediment communities and unique seagrass communities of the South Coast bioregion. The sanctuary zone is situated just outside of an estuarine environment and protects important habitats for breeding and foraging seabirds and shorebirds. The Tooregullup Sanctuary Zone also protects part of the southern right whale aggregation area and foraging areas for seals, sea lions and little penguins. This zone also helps to protect the value of the land to the culture and heritage of Wagyl Kaip Southern Noongars by protecting important cultural sites from extractive activities. The Tooregullup Sanctuary Zone complements the Fitzgerald Biosphere and Fitzgerald River National Park.

Cheedenup Sanctuary Zone

The Cheedenup Sanctuary Zone (approximately 790 hectares) has the highest diversity of mapped habitats in the marine park and protects representative examples of seagrass, macroalgal reef, temperate coral communities, nearshore and offshore soft-sediment and filter feeding communities of the South Coast bioregion. Leafy seadragons, which are found around Point Ann, are protected along with foraging and breeding areas for little penguins, Cape Barren geese (*Cereopsis novaehollandiae grisea*) and Australian sea lions. The area contains culturally significant sites which are protected for continued customary use. The sanctuary zone complements the Fitzgerald Biosphere Reserve and Fitzgerald River National Park.

Dwoort Barl Kartup Sanctuary Zone

The Dwoort Barl Kartup Sanctuary Zone (approximately 12,331 hectares) has a range of shoreline types from hard and steeply sloping, to soft and low gradient shorelines, with depths in the offshore part of the zone reaching 50 m. The zone protects representative examples of marine habitats including seagrass, macroalgal reef, temperate coral communities, filter feeding and nearshore and offshore soft-sediment communities of the South Coast bioregion. It is the only zone protecting representative estuarine habitats, with the inclusion of the Fitzgerald and Dempster inlets. Habitat for leafy seadragons, and foraging and breeding areas for little penguins, Cape Barren geese and Australian sea lions are protected in this zone. The sanctuary zone protects a large portion of the southern right whale aggregation area, which is used for breeding and calving. WKSN people have always known how important this area is to southern right whales through traditional knowledge passed down through generations. This zone lies between Fitzgerald River National Park, which protects terrestrial flora and fauna, and Bremer Marine Park in Commonwealth waters, thereby protecting connecting terrestrial, estuarine, inshore and offshore habitats. This zone also contributes to protecting the value of the land to the culture and heritage of WKSN people by protecting important cultural sites from extractive activities.

Wonjarup Sanctuary Zone

The Wonjarup Sanctuary Zone (approximately 2,916 hectares) includes a hard and steeply sloping shoreline, with depths in the offshore part of the zone reaching 40m. The zone protects representative examples of marine habitats including macroalgal reef communities, seagrass communities, filter feeding communities, temperate coral communities and nearshore and offshore soft-sediment communities of the South Coast bioregion. Some species which have been recorded in this area, including seadragons, are genetically different to those recorded further west. The Wonjarup Sanctuary Zone protects a high diversity of fish. Research has shown this is a transition area for fish assemblages from the east and west. A high number of cultural sites are known in this area, many of which are registered. These include, but are not limited to, gnamma holes, artefacts, fish traps and quarries. This sanctuary zone therefore contributes to the protection of the cultural and biocultural values in an area which has high customary use.

Kundong-unjip Sanctuary Zone

The Kundong-unjip Sanctuary Zone (approximately 991 hectares) is characterised by granite bedrock overlain by younger limestones. The waters are generally shallow reaching a maximum depth of 10 m. The sanctuary zone protects a unique lagoon habitat of the South Coast bioregion. It contains important macroalgal limestone reef communities and is an important shellfish breeding area, including abalone. Foraging areas for the Australian sea lion are also protected in this zone. The lagoon habitat provides a safe area for younger and older generations of WKSN people to carry out customary activities and provides for recreational diving and snorkelling. The location of this sanctuary zone next to Jerdacuttup Lakes Nature Reserve (a nationally significant wetland) and the Fitzgerald Biosphere Reserve provides complementarity to these important conservation areas.

Jerdacuttup Sanctuary Zone

Jerdacuttup Sanctuary Zone (approximately 7,398 hectares in total) stretches across both the Mamang Maambakoort Marine Park (approximately 3,884 hectares) and Wudjari Marine Park (approximately 3,514 hectares). The sanctuary zone protects representative examples of seagrass, low profile macroalgal limestone reef and soft-sediment communities, and pelagic habitat of the South Coast bioregion across a range of exposures and depths to around 70 m. The sanctuary zone protects a variety of ecologically important areas including breeding, pupping and foraging areas for Australian sea lions and long-nosed fur seals. It also protects species, such as seadragons, which are genetically distinct from others recorded further west. Cultural values, such as artefacts of high cultural significance, are also protected from extractive activities.

9.3.3 Special purpose zones (cultural protection)

Protection of cultural and heritage values requires protection of environmental values, as there is often a high level of interdependence and correlation between them. Together with the sanctuary zones, the special purpose zones (cultural protection) play an important role in protecting the value of WKSN Country. Located over culturally sensitive geographical areas and features, the conservation purpose of the special purpose zones (cultural protection) is to protect and conserve the values of the land and waters to the culture and heritage of WKSN people. These areas may contain tangible values such as seasonal camping areas, areas important for customary food and other resources and culturally significant features such as fish traps. They may also contain intangible values such as those related to lore, ceremony and oral histories.

There are no restrictions on current commercial and recreational fishing activities in these zones.

Name	Area (hectares) approximately
Point Hood Special Purpose Zone (cultural protection)	2,091
Tooregullup Special Purpose Zone (cultural protection)	330
St. Mary Inlet	31
Boondalup River	2
Wongalingup Special Purpose Zone (cultural protection)	459

9.3.4 Special purpose zone (whale conservation)

The Mamang Special Purpose Zone (whale conservation) (approximately 15,088 hectares) provides management measures to enhance protection of an area of the marine park used by southern right whales for breeding and calving. The conservation purpose of this zone is to conserve sheltered bays of high ecological importance to southern right whales.

9.3.5 General use zones

All areas in the marine park outside sanctuary or special purpose zones are zoned as general use (approximately 51,732 hectares). Management of general use zones is provided for through mechanisms under the CALM Act and CALM Regulations, as well as the implementation of management strategies. The general use areas provide for a higher level of scrutiny over development activities and allow a range of uses including recreational and commercial fishing and aquaculture.

9.3.6 Permitted uses

The permitted uses table (Table 1) summarises the range of permitted activities in the different zone types in the marine park. Users should be aware that many of the listed activities are also regulated under complementary legislation and regulations, such as those regarding wildlife interactions, the disposal of sullage, and size and bag limits for recreational fishing. In accordance with the CALM Act, a licence is required to carry out some activities (such as commercial tourism and research) in State marine parks.

The implementation of the management plan may include management actions such as temporary closures. Development of such management actions will aim to limit the impacts on the permitted activities whilst meeting the management objectives. An activity marked as 'assess' indicates an assessment is required by the appropriate agencies (which may include the Aboriginal corporation and/or the JMB) in accordance with relevant legislation and the management objectives and targets in this plan. Any changes to the permitted activities and uses will require a statutory two-month public comment period and approvals from the Minister for Environment, Minister for Fisheries and Minister for Mines and Petroleum.

Table 1 Summary of permitted uses for the Mamang Maambakoort Marine Park.

Activity	Sanctuary zones [a][b]	Special purpose zones (cultural protection) [a][b]	Special purpose zones (whale conservation) [a][b]	General use zones
Customary				
Customary activities (such as sustainable harvesting and fishing)	Yes [c]	Yes [c]	Yes [c]	Yes [c]
Commercial fishing and aquaculture [d]				
Commercial abalone fishing	No	Yes	Yes	Yes
Commercial crustacean fishing	No	Yes	Yes	Yes
Commercial estuarine fishing	No	Yes	Yes	Yes
Commercial line and trap fishing	No	Yes	Yes	Yes
Commercial nearshore net fishing	No	Yes	Yes	Yes
Commercial purse seine fishing	No	Yes	Yes	Yes
Commercial salmon fishing	No	Yes	Yes	Yes
Commercial demersal longline (shark) fishing	No	Yes	Yes	Yes
Commercial demersal gillnet (shark) fishing	No	Yes	Yes	Yes
Commercial trawl fishing (scallop)	No	Yes	Yes	Yes
Commercial octopus fishing	No	Yes	Yes	Yes
Commercial specimen shell fishing	No	Yes	Yes	Yes
Commercial marine aquarium fishing	No	Yes	Yes	Yes
Commercial fishing (other)	No	Assess	Assess	Yes
Aquaculture	No	Assess	No	Yes

Activity	Sanctuary zones [a][b]	Special purpose zones (cultural protection) [a][b]	Special purpose zones (whale conservation) [a][b]	General use zones
Commercial - other				
Ground-disturbing mining and petroleum exploration and development [e]	No	No	No	Assess
Non-ground-disturbing activities including geophysical surveys, geological mapping, sampling and geochemical surveys [f]	No	No	No	Assess
Ship loading and other mining related infrastructure (such as ship loading docks, cabling or pipelines)	No	No	No	Assess
General marine infrastructure (such as groynes, jetties and boat launching facilities)	No	Assess	Assess	Assess
Artificial structures	No	Assess [g]	No	Assess
Dredging and dredge spoil dumping	No	Assess [h]	Assess [h]	Assess
Scenic flights (charter) [d]	Yes	Yes	Yes	Yes
Commercial tour operators – fishing [d]	No	Yes	Yes	Yes
Commercial tour operators – non-extractive (such as wildlife viewing) [d]	Yes	Assess [g]	Assess [g]	Yes
Commercial use of remotely piloted aircraft (drones) [i]	Assess	Assess	Assess	Assess
Commercial (other) [d]	Assess	Assess	Assess	Assess
Wildlife/fish feeding	No	No	No	No
Recreational				
Boating (motorised and non-motorised)	Yes	Yes	Yes	Yes
Nature appreciation and wildlife viewing	Yes	Yes	Yes	Yes
Recreational fishing [d- from a boat]	No	Yes	Yes	Yes
Remotely piloted aircraft (drones) launching and landing [i]	Yes	Yes	Yes	Yes
Recreational live specimen shell collecting	No	No	No	Yes

Activity	Sanctuary zones [a][b]	Special purpose zones (cultural protection) [a][b]	Special purpose zones (whale conservation) [a][b]	General use zones
Other use				
Access	Yes	Yes	Yes	Yes
Vessel transit	Yes	Yes	Yes	Yes
Navigation aids	Yes	Yes	Yes	Yes
Research and monitoring [d]	Yes [j]	Assess [g]	Yes	Yes
Anchoring (soft sediment only) [k]	Yes	Yes	Yes	Yes
Mooring	Assess	Assess	Assess	Yes
Seaplane and helicopter launching and landing [l]	Assess	Assess	Assess	Assess
Vessel sewage discharge and de-ballasting	No	No	No	Yes [m]

Permitted activities provisions

[a] Access may be restricted, in specific areas within a sanctuary or special purpose zone if deemed necessary to protect cultural or ecological values. Existing shipping channels will be maintained.
[b] Seasonal restrictions to vessels such as speed limits may apply in some areas.
[c] Customary take is confined to WKSN Traditional Owners, or where Traditional Owners have provided consent to another Aboriginal person or group.
[d] Licence or permit required under the *Conservation and Land Management Act 1984* and/or *Fish Resources Management Act 1994* and related regulations.
[e] Ground-disturbing mining and petroleum exploration and development activities include any activity that disturbs the land, seabed and/or subsoil within the marine park (such as drilling).
[f] Geophysical surveys will be assessed by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS).
[g] Any new proposals to also be referred to the JMB.
[h] Activities permitted if activity is shown to be compatible with the specified purpose of the zone. Only small-scale dredging for the purpose of public access and safety will be considered.
[i] Recreational use of RPAs must comply with Civil Aviation Safety Authority (CASA) rules as well as legal requirements under the CALM Act, BC Act, and the Bushfires Act 1954 and related regulations.
[j] Non-extractive/destructive research and monitoring activities only.
[k] Except where restrictions have been put in place for the protection of ecological and/or cultural values.
[l] Lawful authority must be obtained to launch, land or touchdown in an aircraft on CALM Act lands and waters.
[m] Only in gazetted sewage discharge areas.
- Consideration will be given where existing permissions relating to animal exercise areas are in effect.
'Assess' is denoted where matters require statutory assessment and approval according to other regulatory processes; or where an activity is to be assessed against the primary conservation purpose of a zone.

9.4 Community stewardship and compliance

Education and public participation will increase public awareness and understanding of the values and management issues in the marine park. Increased understanding helps to ensure appropriate behaviour and develop a sense of community stewardship and lead to better protection and management of the park. While most users comply with management arrangements when they understand why they are being implemented, it is important to monitor compliance and mitigate inappropriate or illegal behaviour. It will also be important for users of the marine park to play self-regulatory and peer surveillance roles.

Summary of management arrangements for community stewardship and compliance			
Management objectives	To enhance community understanding of and support for the marine park and achieve a high level of compliance with regulations, permitted uses and other management arrangements within the marine park.		
		Management program	**Priority**
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.	1. Install zone markers and educational signage for the marine park where appropriate. [DPIRD for signage]	Education and interpretation	H
	2. Develop and implement a collaborative patrol and enforcement program. [DPIRD]	Patrol and enforcement	H
	3. Develop and implement a public participation plan for the marine park, which encourages community involvement in management through a range of opportunities, including in education, research and monitoring.	Public participation	H
	4. Develop an education and interpretation plan which communicates: • the importance of the marine park's values • the purposes of management zones and regulations • appropriate behaviour to reduce human impacts and ensure public safety • WKSN Traditional Owner customary rights and visitor protocols on sea and land • consideration of all education and interpretation strategies listed in the joint management plan.	Education and interpretation	H
	5. Maintain a database of compliance statistics and adapt management to address issues as required [DPIRD].	Patrol and enforcement	H
	6. Facilitate cross-authorisation of enforcement officers as appropriate under relevant legislation [DoT, DPIRD].	Management framework	H
	7. Monitor, promote and enforce compliance with fisheries and marine park legislation, including illegal fishing activities from identified groups. **[DPIRD]**	Patrol and enforcement	H
Performance measures	To be determined.		
Target	To be determined.		

10. Assessing management effectiveness

Progress in implementing the joint management plan and in assessing management effectiveness against stated objectives will be regularly reviewed through a formal process consisting of annual management effectiveness reports, and periodic and ten-year reviews of the joint management plan.

10.1 Annual reviews

The prioritised management strategies outlined in the joint management plan will be implemented by the joint management partners, primarily through the collaboration of DBCA's Esperance district and Marine Science Program, Traditional Owners of the WKSN region, rangers and other specialist branches guided by the JMB. The JMB with the assistance from these partners and DPIRD will prepare an annual review of the implementation of the joint management plan for consideration by the WKSNAC and the CPC. Key parts of the annual review will include:

- progress in implementing joint management plan strategies
- assessment of the condition of values, the pressures acting on values, management response and management effectiveness
- identifying issues affecting implementation
- resource allocation.

As part of the annual review process, WKSNAC will also provide an update to the Noongar community on the implementation of the joint management plan and condition of Maambakoort Boodja (Sea Country).

10.2 Periodic assessments

The CPC has a statutory responsibility to periodically assess the implementation and effectiveness of joint management plans. The JMB and DBCA will provide information from monitoring and other operational programs to the CPC to enable an assessment of the plan's implementation.

10.3 Revision of the joint management plan

The joint management plan will guide joint management of the marine park for 10 years, or until a statutory revision is undertaken and a new joint management plan is prepared. If such a revision does not occur by the end of the plan's specified lifespan, the plan will remain in force in its original form unless it is revoked by the Minister for Environment or a new co-designed plan is approved. Full public consultation will occur at the time of revision, and endorsement of a revised joint management plan will be sought from the JMB and CPC. Approval of the Minister for Environment following concurrence from the Minister for Mines and Petroleum and Minister for Fisheries is also required.

Summary of management arrangements for assessing management effectiveness			
Management objectives	To assess and evaluate management effectiveness.		
		Management program	**Priority**
Management strategies	1. Develop and implement a management effectiveness reporting process that is suitable in a joint management setting and consistent with DBCA and CPC policy and ensure results are reported back to the WKSN community. [CPC]	Management framework	H
	2. Develop and implement a monitoring and evaluation framework to assess joint management effectiveness for the marine park.	Management framework	H

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Appendix 1 – Design principles

Comprehensiveness: The full range of ecosystems, habitats and communities present within and across each bioregion are represented within the network.

Adequacy: The network includes enough of each component of biodiversity (enough of each habitat) to maintain a healthy functioning marine ecosystem.

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

Precautionary principle: Lack of scientific certainty should not be used as a reason for postponing measures to protect the marine environment. A precautionary approach is a proactive (rather than reactive) approach designed to protect areas that are currently in relatively good condition, helping to ensure they stay that way into the future. Where biodiversity data is limited, a precautionary approach uses surrogates (e.g., mapped and unmapped habitats, geomorphology or other physical or environmental gradients) for biodiversity.

Ecological importance, vulnerability and resilience: Biologically and ecologically important areas play an essential role in sustaining populations and maintaining ecosystem function. Likewise, the inclusion of natural areas, with a higher degree of integrity and resilience, as well as areas with vulnerable habitats or vulnerable life stages will help protect and sustain marine environments. Ecologically important features may include known nursery, foraging, breeding and calving areas; areas that are unique, unusual or highly productive; and areas that are important for or where known aggregations occur of rare, threatened or protected species.

Connectivity: Connectivity refers to the way components of a marine ecosystem are connected through tides, currents and the behaviour of plants and animals (DEH 2009). Key considerations for connectivity may include: dispersal ranges for different marine organisms; distances between and within marine parks and sanctuary zones; benthic-pelagic linkages; connections between catchments to the coast to deep water environments; physical oceanography, such as tides and currents; and foraging areas and migratory pathways for a range of marine animals.

Protect and conserve Aboriginal culture and heritage: The protection of cultural and heritage values including:

- conserving culturally significant sites and areas important for culturally significant species
- respecting and providing for ongoing connection to Country and culture, including customary activities
- where culturally appropriate, providing consistency with cultural laws, lore and protocols, including cultural management arrangements
- where culturally appropriate, contributing to raising awareness of Aboriginal culture and heritage values
- respecting current and future aspirations and arrangements for Sea Country, including opportunities for economic development, training and management.

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

- consider the full diversity of marine uses, including economic use, social use and ecosystem services
- have complementarity
- promote opportunities for recreation and appreciation of the marine environment
- provide for natural and maritime heritage values
- provide for education and research
- be designed so that it is easy for users to identify, understand and comply with zoning and management arrangements.

Appendix 2 – Commercial fisheries operating on the South Coast

The South Coast Crustacean Managed Fishery (SCCMF)
The SCCMF extends from Augusta to the South Australian border. This multi-species, effort-controlled pot-based fishery targets southern rock lobster (*Jasus edwardsii*), western rock lobster (*Panulirus cygnus*) and deep-sea species such as giant crab (*Pseudocarcinus gigas*), crystal crab (*Chaceon albus*) and champagne crab (*Hypothalassia acerba*). This fishery is managed through limited entry as well as size limits and ITQ (Individually Transferable Quota). (How and Baudains, State of the Fisheries Report 2020/21).

Abalone Managed Fishery
Abalone species targeted by commercial abalone divers are greenlip (*Haliotis laevigata*), brownlip (*H. conicopora*) or Roe's (*Haliotis roei)* abalone on the southwest and South Coast of Western Australia. The abalone fishery is a dive fishery that operates in the shallow coastal waters off the coast, with the abalone collected by hand. This fishery is managed through Total Allowable Commercial Catches, meaning it is a quota-based fishery (Strain, Fabris and Jones, Status of the Fisheries Report 2020/21).

The South Coast Estuarine Managed Fishery (SCEMF)
This fishery operates within the South Coast bioregion in 13 estuaries between Cape Beaufort on the south-west and the South Australian border. It targets estuarine fish species and blue swimmer crabs (*Portunus armatus*) via gill netting, purpose-designed crab traps and haul netting. This fishery is managed through input controls (restrictions on the number, length and mesh size of nets used, and the number of crab traps used), size limits and temporal closures (Duffy, Harris, and Blay, State of the Fisheries Report 2020/21).

The South Coast Salmon Managed Fishery (SCSMF)
This fishery operates between Cape Beaufort on the southwest and the South Australian border using beach seine nets to target Western Australian salmon (*Arripis truttaceus*). This fishery is managed through input controls (restrictions on the type, length and mesh size of nets) and size limits (Duffy, Harris and Blay, Status of the Fisheries Report 2020/21).

The South Coast Purse Seine Managed Fishery (SCPSMF)
The SCPSMF operates between Cape Leeuwin and the South Australian border, catching pilchards (*Sardinops sagax*) and other small pelagic fish with purse seine nets, and is managed through limited entry (with a restricted number of licences issued) and Total Allowable Commercial Catches (it is a quota-based fishery). Other input controls include restrictions on the number, length and mesh size of nets, and size limits. There are five management zones for this fishery – King George Sound (Zone 1); Greater Albany (Zone 2); Bremer Bay and Esperance (Zones 3 and 4); and Augusta (Zone 5) (Norriss and Blazeski, Status of the Fisheries Report 2020/21).

The South Coast Demersal Gillnet and Demersal Long Line Managed Fishery (SDGDLF)
This fishery operates between 33°S on the south-west to the South Australian border. Demersal gillnets are used to target primarily sharks, with scalefish as a by-product, or operators can use demersal longline. The main targeted species include gummy (*Mustelus antarcticus*), dusky (*Carcharhinus obscurus*), whiskery (*Furgaleus macki*), and sandbar (*C. plumbeus)* sharks. This fishery is managed through the use of input controls with restrictions of the number, length, drop and mesh size of nets, and the size of hooks on longlines. There are also other controls in the form of limited effort and size limits (Braccini and Watt, Status of the Fisheries Report 2020/21).

The South Coast Line and Fish Trap Managed Fishery (SCLFTMF)
The SCLFTMF operates between Black Point in the south-west and the South Australia border (excluding the waters of the South Coast Estuarine Fishery). The fishery is divided across four licence classes – Class A (line and hook); Class B (line and jig for squid); and Class C and D (fish trap in oceanic waters and King George Sound). This fishery is managed through limited entry (with a restricted number of licences issued) and input controls with restrictions of the number of lines and hooks, jigs and traps used, as well as size limits (Duffy, Harris, and Blay, State of the Fisheries Report 2020/21).

The South Coast Nearshore Net Managed Fishery (SCNNMF)
Operators are licenced to fish by net in the SCNNMF between Black Point and the South Australian border. They target scalefish (excluding Western Australian salmon and small pelagic fish) and squid (*Sepioteuthis australis*) using beach seine, haul and gill nets. The fishery is managed through limited entry (with a restricted number of licences issued) and input controls (restrictions on the number, length and mesh size of nets), and size limits (Duffy, Harris, and Blay, State of the Fisheries Report 2020/21).

Octopus Interim Managed Fishery (OIMF)

The OIMF is a state-wide fishery that targets the western rock octopus (*Octopus djinda*), using trigger traps or unbaited, passive shelter pots. Commercial octopus catch is harvested from three different fisheries, however, most of the commercial catch comes from the OIMF. This fishery is managed through input controls with restrictions of the number of pots or traps permitted (Newman, Wise, Santoro, and Gaughan, State of the Fisheries Report 2020/21).

Specimen Shell Managed Fishery (SSMF)

Shell licence holders can operate throughout Western Australia. About 200 species of specimen shell are collected each year, using a variety of methods. The main methods are by hand, by wading along coastal beaches or, in some instances, by use of remotely operated underwater vehicles. While the fishery covers the entire Western Australian coastline, some concentration of effort occurs in areas adjacent to population centres such as Broome, Exmouth, Shark Bay, Geraldton, Perth, Mandurah, the Capes area, Albany and Esperance. This fishery is managed via limited entry (with a restricted number of licences issued) and input controls such as restrictions on the gear used as well as closed areas (Hart, Bruce, and Steele, State of the Fisheries Report 2020/21).

Marine Aquarium Fish Managed Fishery (MAFMF)

The MAFMF operates in all State waters between the Northern Territory border and South Australian border. The fishery is typically more active in waters south of Broome with higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Dampier and Broome. The MAFMF resource potentially includes more than 1,500 species of marine aquarium fish and uses small nets or hand collection techniques. Operators in the MAFMF are also permitted to take coral, live rock, algae, seagrass and invertebrates (Newman, Bruce and Bissell, State of the Fisheries Report 2020/21).

The South Coast Trawl Fishery (SCTF)

The SCTF targets saucer scallops (*Ylistrum balloti,* formerly *Amusium balloti*) using otter trawl nets on the South Coast of Western Australia from 115° 30′ E to 125° E east of Augusta to east of Israelite Bay. Key fishing areas include Bremer Bay (Doubtful Islands), the Recherche Archipelago and Israelite Bay. This fishery is managed through limited entry (with a restricted number of licences issued) and input controls with restrictions of the length and mesh size of nets used, as well as seasonal closures. The nets used must also have bycatch reduction devices incorporated, in the form of a grid (Kangas, Wilkin, Breheny, Cavalli, Grounds and Brown, State of the Fisheries Report 2020/21).

Appendix 3 – Noongar language glossary

Noongar language	Meaning
General	
boodja	Country/earth/sand
maambakoort	sea/ocean (or associated with the ocean)
Maambakoort Boodja	Sea Country
karang	angry
moorditj	strong
kaaditjiny	understanding
dwongk-kaditj	hear, understand
waarip	wave, sea, depression between two waves
weiran/weirn	spirit
baboor	sound of water and movement
kaartidjin	knowledge
kaarlak / karlup	home or heart Country
moort boodja	family run
boodjara	belonging to Country
moorditj kaip / Kayep	strong water (clean water)
nyoodan	sand hills
waangkelanginy	all talking together
Animals	
djildjit	fish
toortbaalkaat	seal (lit. 'dog his head')
kwoor	wallaby
wetj	emu
kwoka	quokka
mamang	whale
ngari	salmon
Places	
Cheadanup	Point Ann
Kukenarup	Cocanarup
Toorigullup	Trigalow Beach
Queelup	West Mount Barren
Wonjarup	Hamersley Inlet
Wheejarup Range	Whoogarup Range
Kotchen-ungup Range	Eyre Range