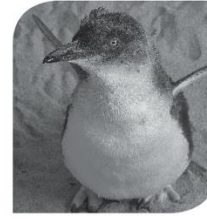




PLAN FOR OUR PARKS

SECURING 5 MILLION HECTARES OVER 5 YEARS



Proposed Mirning Marine Park

indicative joint management plan

2024



Conservation and Parks Commission
Department of Biodiversity, Conservation and Attractions



Department of Biodiversity, Conservation and Attractions
17 Dick Perry Avenue
KENSINGTON WA 6151
Phone (08) 9219 9000
dbca.wa.gov.au

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February 2024

ISBN 978-1-925978-85-8 (online)

This management plan was prepared by the Conservation and Parks Commission through the agency of the Department of Biodiversity, Conservation and Attractions (DBCA) in consultation with Traditional Owners.

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

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

Questions regarding this plan should be directed to:
Aboriginal Engagement, Planning and Lands Branch
Parks and Wildlife Service
Department of Biodiversity, Conservation and Attractions
Locked Bag 104
Bentley Delivery Centre WA 6983
Email: pscmp@dbca.wa.gov.au

The recommended reference for this publication is:

Department of Biodiversity, Conservation and Attractions (2024) *Proposed Mirning Marine Park indicative joint management plan 2024*. Department of Biodiversity, Conservation and Attractions, Perth.

This document is available in alternative formats on request.

Front cover photos

Main: Southern right whale mother and calf. *Photo – Birdseye Images*

Top left: Common dolphin. *Photo – Dave and Fiona Harvey*

Top right: Little penguin. *Photo – Samille Mitchell/DBCA*

Invitation to comment

This indicative joint management plan has been released for a four-month period to provide the public with an opportunity to comment on how the Mirning Marine Park is proposed to be managed over the next ten years.

To ensure your submission is as effective as possible:

- be clear and concise
- refer your points to the page numbers or specific sections in the plan
- say whether you agree or disagree with any or all of the management objectives, strategies and zones
- clearly state your reasons, particularly if you disagree
- give sources of information where possible
- suggest alternatives for those aspects of the plan with which you disagree.

The indicative joint management plan will be reviewed in light of the submissions, according to the criteria outlined below. A summary of public submissions will be made available along with the final management plan.

The indicative joint management plan may be amended if a submission:

- provides additional information of direct relevance to management
- indicates a change in (or clarifies) government legislation or management policy
- proposes strategies that would better achieve management objectives
- indicates omissions, inaccuracies or a lack of clarity.

The indicative joint management plan may not be amended if a submission:

- clearly supports proposals in the plan or makes general or neutral statements
- refers to issues beyond the scope of the plan
- refers to issues that are already noted within the plan or already considered during its preparation
- is one among several widely divergent viewpoints received on the topic but the approach in the plan is still considered the best option
- contributes options that are not feasible (generally due to conflict with legislation or government policy)
- is based on unclear or factually incorrect information.
- contains abusive or racist comments.

Submissions are welcome during the public comment period and can be made:

- online at dbca.wa.gov.au/haveyoursay
- or by writing to: Mirning Marine Park Plan Coordinator – Aboriginal Engagement, Planning and Land Unit, Department of Biodiversity, Conservation and Attractions, Planning Branch, Locked Bag 104, Bentley Delivery Centre, WA 6983.

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Acknowledgments

The Department of Biodiversity Conservation and Attractions (DBCA) and the Mirning Traditional Lands Aboriginal Corporation (MTLAC) 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 (CRC) for the proposed Mirning 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; Department of Mines, Industry Regulation and Safety; and local governments, also provided valuable information and guidance relating to their areas of responsibility.

1. Introduction

Located within Mirning sea Country, on the south coast of Western Australia, the proposed Mirning Marine Park is a place of exceptional cultural and ecological value (Map 1). Mirning Traditional Owners are among the world's oldest people, existing for generations over thousands of years, protecting the land and sea since time immemorial (Aboriginal Land Services, 2023).

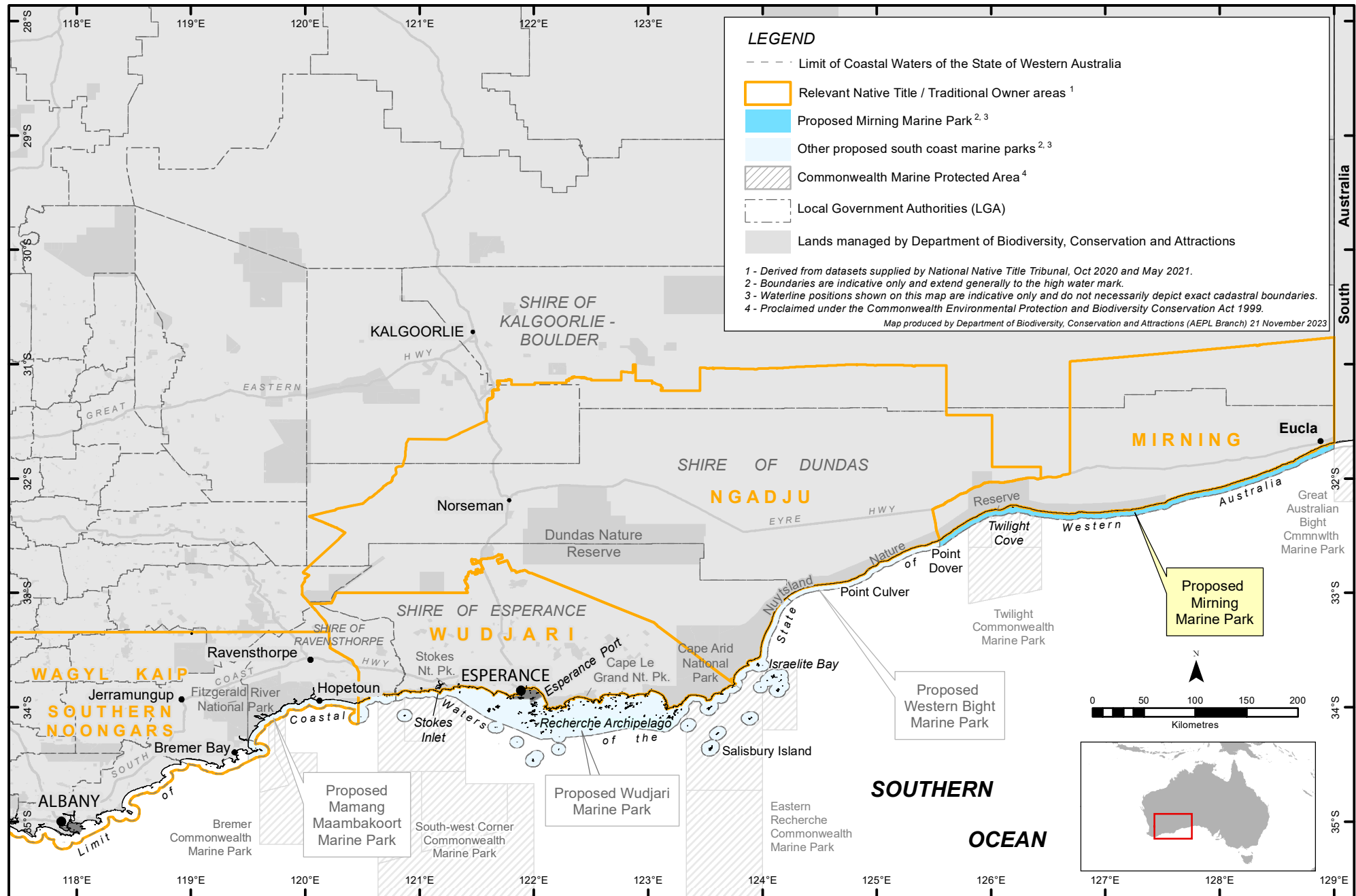
The proposed marine park contains a diverse array of marine habitats and communities including seagrass, macroalgae and reef communities, as well as important foraging and breeding areas for a variety of threatened species. Southern right whales use the sheltered bays for breeding and calving between June and October each year and Australian sea lions breed and forage in the area.

The area is also highly regarded for its social and economic values. Commercial fishing has been undertaken in the area for generations, providing livelihoods and fresh fish for local communities. Recreational fishing, both from shore and boat, is also highly regarded. Visitation to the proposed marine park is limited to those after an adventure, as road access and amenities along the coast are limited.

This indicative joint management plan outlines a contemporary management framework to conserve the values of the area. Importantly, the proposed marine park will be jointly managed with Mirning Traditional Owners (represented by Mirning Traditional Lands Aboriginal Corporation (MTLAC) Registered Native Title Body Corporate (RNTBC)), through a joint management body (JMB). The proposed joint management arrangements will make for the first formal jointly managed reserve with Mirning people.

The proposed marine park will contribute to the conservation and enhancement of the outstanding cultural and ecological values of Mirning 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 grow.

The establishment of the proposed marine park is part of the Plan for Our Parks initiative which will create five million hectares of new national and marine reserves across Western Australia. The proposed marine park will add a further 208,900 hectares (approximately) to Western Australia's marine reserve system and will contribute to the National Representative System of Marine Protected Areas.



2. The management plan

2.1 Purpose of the plan

This indicative joint management plan details how the Mirning Marine Park will be managed by the JMB to enhance nature conservation, preserve and promote culture and heritage and allow for ongoing sustainable recreational and commercial use.

The main outcomes of this indicative joint management plan are listed below:

- The establishment of the proposed marine park as a Class A Reserve over the State waters of Mirning sea Country, to extend initially to the low-water mark, and broaden to the high-water mark in the future subject to adjacent terrestrial tenure and addressing native title requirements under the *Commonwealth Native Title Act 1993*.
- 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 proposed marine park between DBCA and MTLAC in accordance with the requirements of a Section 56A joint management agreement (JMA) under the CALM Act for Mirning Conservation Estate.
- Promotion and support for the continued exercise of Mirning native title rights, recognising their ongoing connection to, and responsibility for, sea Country.
- Preservation of Mirning culture and heritage values of the proposed marine park.
- The establishment of a framework to allow for ongoing sustainable shared use.
- Promotion and support to build the capacity of Mirning people and MTLAC RNTBC to progressively take on greater responsibility and accountability for management of the proposed 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 proposed marine park.
- A conservation framework built on a collaboration between Mirning traditional ecological knowledge and western science, guided by a cultural governance structure to ensure the preservation of cultural and ecological functioning of sea Country and to manage existing and future pressures.
- Contribution to the fulfilment, support and promotion of Australia's responsibilities under several international conventions such as 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 benefit and enjoyment of Mirning people, the community, and visitors.

2.2 Development of the plan

This management plan has been prepared by DBCA in consultation with MTLAC, the Department of Primary Industries and Regional Development (DPIRD), and the south coast community and stakeholders through a ministerially appointed Community Reference Committee and various sector advisory groups.

This indicative joint management plan has been prepared in conjunction with the indicative joint management plans for the proposed Mamang Maambakoort Marine Park and Wudjari Marine Park and the indicative management plan for the proposed Western Bight Marine

Park, to ensure consistency and complementarity of management arrangements across the neighbouring proposed marine parks and sea Countries.

2.3 Structure of the plan

This indicative joint management plan sets a vision for the area and identifies key ecological, cultural and socio-economic values and the pressures and potential pressures acting on them. It provides strategic direction and applies seven management programs to be implemented through management strategies. It is an outcome-based plan that provides a robust framework to support adaptive management which sets targets and performance measures to track progress against the stated management objectives over the life of the management plan. The key components of the management framework are shown in Figure 1.



Figure 1: Structure of the plan

The final management plan will guide management of the proposed marine park for 10 years, or until a new management plan is prepared under the *Conservation and Land Management Act 1984* (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.

While DBCA will have the primary responsibility until joint management arrangements are in place, DBCA will engage with MTLAC for coordinating and implementing the management of the proposed marine park in accordance with the management plan.

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

In the case of overlapping or bordering management responsibilities or mutual interests with other departments or organisations, collaborative operational plans and memoranda of understanding (MoUs) will be developed to ensure efficient and effective delivery of management arrangements e.g., with DPIRD and Parks Australia.

The key terms used in this plan are defined below.

Terminology	Description
Vision	The long-term aspiration for the proposed marine park.
Strategic objectives	The broad direction required to achieve the vision.
Values	The cultural, ecological, biocultural, social and 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	Identifies 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 infrastructure, 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	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 proposed 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 proposed 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	Joint management partners are 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. Where an agency or body is required to take a lead role in strategy implementation, their name (or acronym) is in bold.

2.4 Vision

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

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

2.5 Strategic objectives

The strategic objectives of this plan provide more specific direction for the long-term realisation of the vision for the proposed marine park.

Cultural values: Protect and conserve the cultural values and heritage of Mirning Traditional Owners.

Ecological values: Enhance, maintain and conserve marine biodiversity and ecological integrity.

Socio-economic values: Provide equitable and sustainable opportunities for recreational and commercial activities by allowing communities to safely utilise the marine environment as a source of income, food and enjoyment.

Research and monitoring: To encourage collaborative research and monitoring to guide, adapt and improve management.

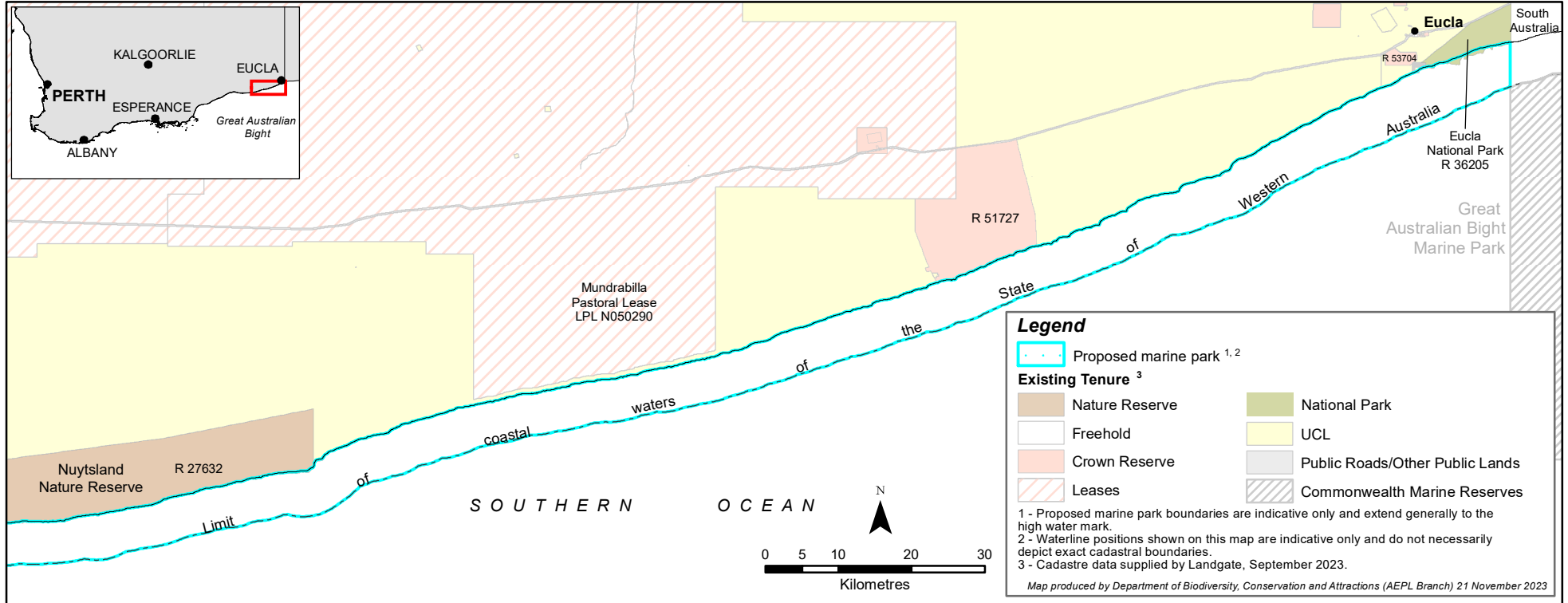
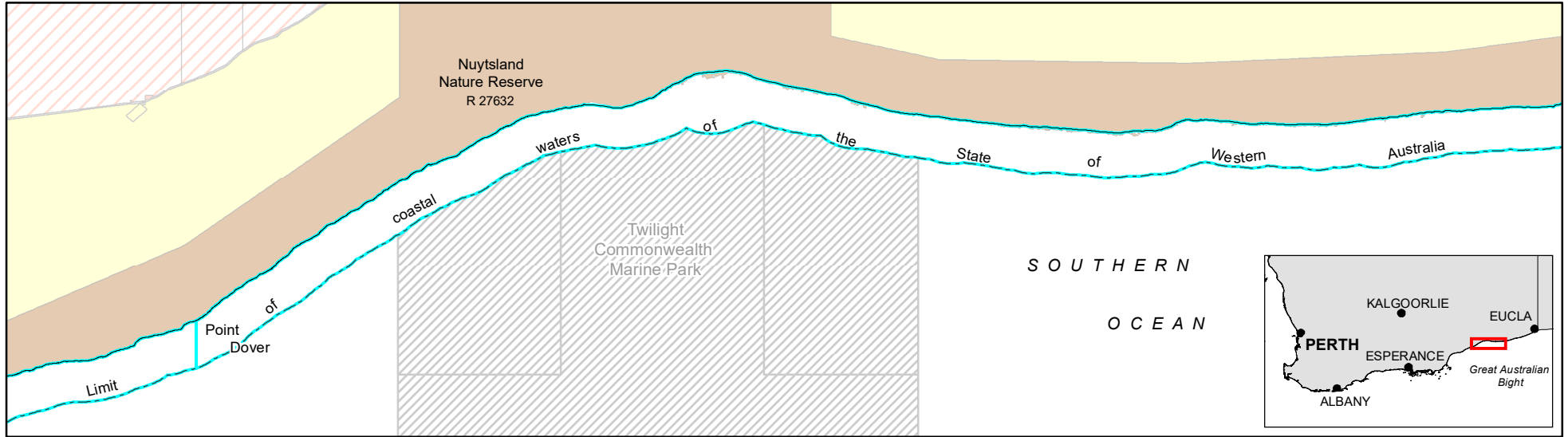
3. Management setting

3.1 Definition of area and tenure

Lying in the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Eucla mesoscale bioregion, the proposed Mirning Marine Park is located in the Goldfields-Esperance region of Western Australia. It covers approximately 208,900 hectares (ha) adjacent to the Shire of Dundas in Mirning Country. The western boundary of the proposed marine park will be confirmed following discussion between Mirning Traditional Lands Aboriginal Corporation (MTLAC) and Ngadju Native Title Aboriginal Corporation. The eastern boundary lies at the Western Australia/South Australia border. The southern boundary of the proposed marine park is aligned with the limit of coastal waters of Western Australia.

The indicative joint management plan sets the framework for the proposed marine park to include intertidal areas to the high-water mark in the future, subject to adjacent terrestrial tenure and addressing native title requirements under the Commonwealth *Native Title Act 1993*. The initial reservation of the proposed marine park would not include the intertidal area, extending only to the low-water mark. Subject to adjacent tenure, and if an Indigenous Land Use Agreement can be reached between the State and MTLAC, future reservation actions can reserve the park to the high-water mark. Adjacent conservation estate includes Nuytsland Nature Reserve and the Commonwealth Twilight Cove Marine Park. The outer boundary for the proposed marine park and surrounding tenure is shown in Map 2.

It is intended that the proposed marine park will be gazetted as a Class A marine park and will be vested in the Conservation and Parks Commission (Commission). 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.



3.2 Legislative context

The proposed 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.

The proposed marine park will help 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 (IUCN) Protected Areas Program. The proposed marine park will also contribute to Australia's 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.

3.3 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 sea or land Country.

Subject to approval by Cabinet, DBCA is committed to entering into a joint management agreement (JMA) with MTLAC for the proposed marine park, inclusive of an associated benefits package for implementation.

Joint management of the proposed marine park is an ongoing and adaptive process which will require MTLAC 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 level 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 joint management body (JMB) with representatives from MTLAC and DBCA to manage the proposed marine park in accordance with the agreement, final joint management plan and the CALM Act.

The JMB will oversee management of the proposed 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.

4. Caring for culture

Strategic objective: Protect and conserve the cultural values and heritage of Mirning Traditional Owners.

“The ongoing connection between the Mirning people and our land and sea Country was first laid down through the Tjukapa (lore) and songlines during creation, thousands of years ago.” (Les Schultz, March 2023).

Mirning Traditional Owners have been practising their culture for thousands of years and this is recognised through native title rights determined in 2017. For Mirning Traditional Owners, Mirning land and sea Country is a sacred place full of energy, life and healing that they have cared for since ancient times. Mirning Elders share stories of the land from long before the last sea-level rise through to the present day. Being connected to, and being on Country, is culturally significant for the Mirning people.

DBCA and MTLAC will jointly manage the proposed marine park and formalise this partnership via a joint management agreement.

There are likely to be many cultural sites in and around the proposed marine park. All Aboriginal heritage sites, registered and unregistered, are protected under the *Aboriginal Cultural Heritage Act 1972* and it is an offence to alter an Aboriginal site unless permission is granted in accordance with the Act.

If management actions may disturb an Aboriginal site, an assessment is required before the operation proceeds. DBCA will work with the Department of Planning, Lands and Heritage (DPLH) and MTLAC to ensure Aboriginal sites are not damaged. DBCA will comply with the State Government’s cultural heritage due diligence guidelines when actions are proposed.

While the indicative joint management plan focuses primarily on the marine environment, the interconnectedness of the land and sea is fundamental to how the Mirning people care for Country. For Mirning people everything is connected (community, culture, Country and heritage). To advise proposed management arrangements in the indicative joint management plan, the management of cultural values are addressed in this section under the following themes:

- relationship to Country (living cultural landscape)
- caring for Country
- Tjukapa (lore and knowledge) and language
- being on Country and customary activities
- customary governance – see section 9.1 (Aboriginal Land Services, 2023).

4.1 Relationship to Country living cultural landscapes

Summary of management arrangements for relationship to Country living cultural landscapes	
Requirements	<ul style="list-style-type: none">• Incorporation of Mirning spiritual connection, associated values and meanings relating to the proposed marine park land and sea scapes into management planning and decision making.• Recognition of the cultural landscape as a living entity, being the product of change, dynamic patterns and evolving interrelationships between past ecosystems, history and cultures.

	<ul style="list-style-type: none"> Resourcing for initiatives associated with conserving, protecting and promoting relationship to Country and living cultural landscapes
Pressures	<ul style="list-style-type: none"> Limited access to Country to undertake customary management activities due to existing legislation and tenure. Artificial State and Federal government management boundaries for land and waters dividing the cultural landscape and impacting on holistic management. Lack of knowledge and understanding of the spiritual connection between Traditional Owners and Country, language and heritage, within the broader community. Cultural values and landscapes face a range of threats including commercial and recreational fishing and uncontrolled access.
Management objectives	To uphold and champion local Traditional Owners' relationship with and connection to Country as integral to the management of the proposed marine park.
Management strategies	<ol style="list-style-type: none"> Ensure that local Mirning spiritual connection, cultural values, knowledge and lore is embedded in management decision making. Support MTLAC to prepare and deliver cultural awareness training to local businesses, including commercial tour operators. Ensure that information provided on Aboriginal culture and heritage is appropriate, is in accordance with indigenous cultural intellectual property, and is approved by the MTLAC prior to public release. Ensure that Traditional Owners have a primary and active role in communication about their culture and heritage. Where appropriate, ensure management arrangements (and research and monitoring activities) are consistent with cultural lores and protocols. Support on- Country trips by younger and older generations of Traditional Owners to maintain connection to country and support cross-generational exchange of cultural information and knowledge. Develop and distribute community education materials to the public, including commercial operators, about cultural awareness and Mirning connection to Country.
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.	
Performance measures	To be determined in consultation with Traditional Owners and the MTLAC.
Target	
Reporting	

4.2 Caring for Country

Summary of management arrangements for caring for Country	
Requirements	<ul style="list-style-type: none"> Marine park management guided by the cultural values and aspirations of local Mirning people. Involvement of local Mirning people in all levels of management plan implementation—from on-Country implementation to governance. Sustainable management of cultural, land, sea and natural resources by Traditional Owners.
Pressures	<ul style="list-style-type: none"> Lack of Mirning people presence on Country. Illegal fishing. Climate change – coastal erosion. Unsustainable fishing practices.

Management objectives	Establish effective, meaningful and collaborative partnerships with Traditional Owners to protect heritage values, conserve biodiversity and enhance the resilience of the land and sea Country values associated with the proposed marine park.
Management strategies	<ol style="list-style-type: none"> 1. Support and develop learning and career pathways for Mirning people to look after their land and sea Country in a positive and effective way. 2. Develop interpretive signage and other educational materials featuring Mirning language and perspectives relating to Caring for the proposed marine park. 3. Establish collaborative partnerships with neighbouring land and sea managers (e.g., pastoralists, local government, other Traditional Owner groups etc) to better manage values and threats. 4. Leverage funding to undertake investigations/surveys to identify and record culturally important areas over Mirning Sea Country with a focus on the coastal areas south of Madura and identify sites that require additional protection and management. 5. Support Traditional Owners to access, identify, protect and maintain cultural heritage sites in the park (in particular identified high priority, highly significant and/or sensitive sites). 6. Develop and implement tools to measure and monitor the condition of culturally significant sites, including the effects of visitor and management activities, and implement management actions to address issues where required.
Performance measures	To be determined in consultation with Traditional Owners and the MTLAC.
Target	
Reporting	

4.3 Tjukapa (lore and knowledge) and language

Summary of management arrangements for Tjukapa (lore and knowledge) and language	
Requirements	<ul style="list-style-type: none"> • Embedding of Tjukapa and language through all levels of marine park management. • Involvement of Mirning people in all levels of management plan implementation.
Pressures	<ul style="list-style-type: none"> • Lack of knowledge and understanding for the spiritual connection between Traditional Owners and Country within the broader community. • Limited value placed on traditional ecological knowledge by contemporary western science.
Management objectives	For traditional and contemporary cultural knowledge and language to be central to and to guide the implementation of the management plan.
Management strategies	<ol style="list-style-type: none"> 1. Embed language and cultural knowledge into all aspects of marine park interpretation and education initiatives. 2. Provide opportunities for co-creation of tools that promote and support inclusion of Traditional Owner knowledge in marine park decision-making. 3. Develop interpretive signage and other educational materials featuring Mirning language and perspectives on how to enjoy the marine environment in a way that maintains ecological balance. 4. Manage and protect cultural values within the proposed marine park.

	Include Traditional Owner language and place names in management plans, parks, zoning, interpretive material and signage etc.
Performance measures	To be determined in consultation with Traditional Owners and the MTLAC.
Target	
Reporting	

4.4 Being on Country and customary use

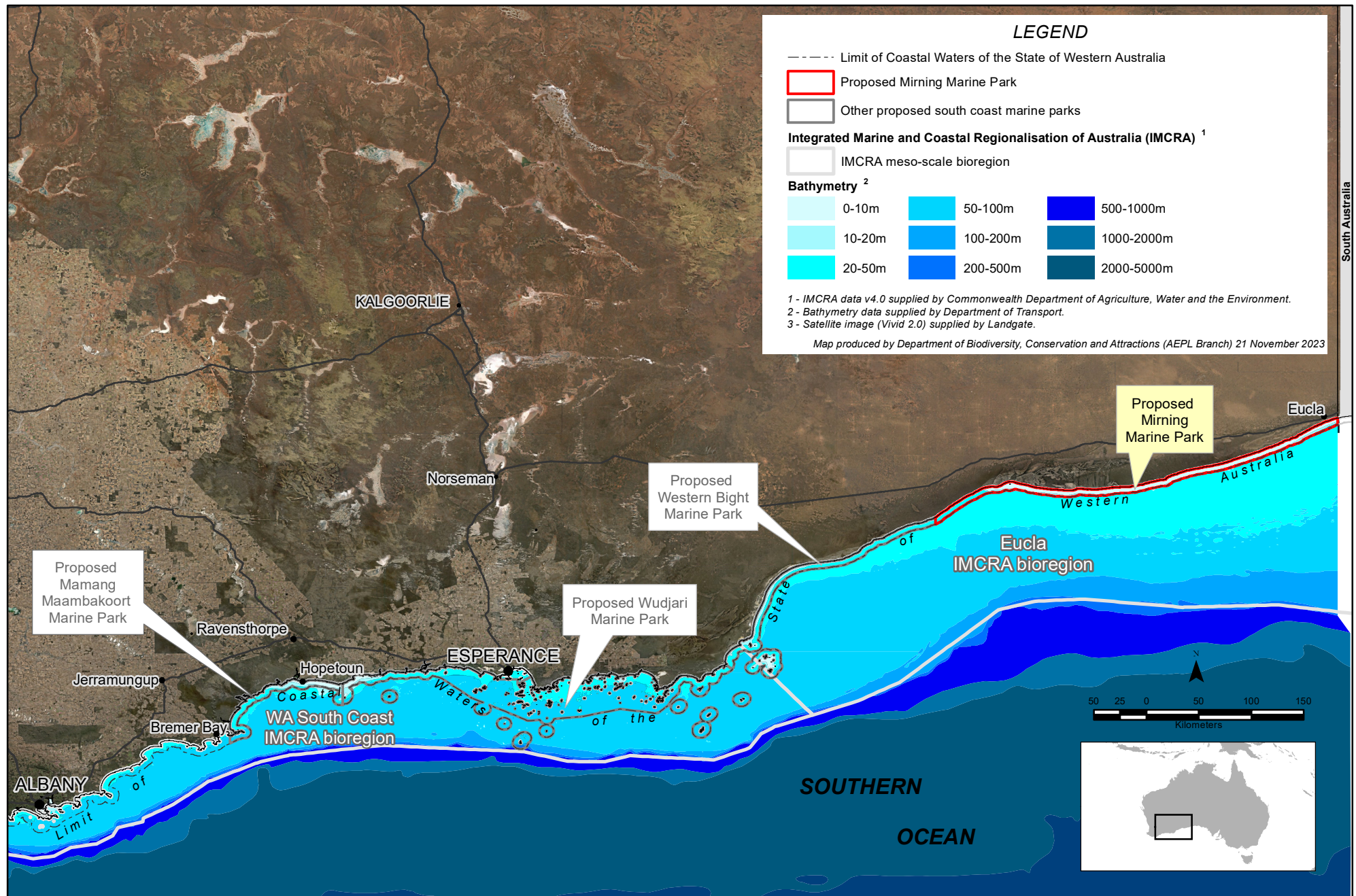
Summary of management arrangements for being on Country and customary use	
Requirements	Community understanding of and respect for the benefits of Mirning people practising culture on Country in the proposed marine park area.
Pressures	<ul style="list-style-type: none"> Limited opportunities to undertake customary management activities on Country. Lack of government officers' understanding of customary rights, in particular customary fishing. Lack of knowledge and understanding for customary activities within the broader community. Inadequate involvement of Mirning people in decision making regarding coastal management issues. Inadequate resourcing to manage Country.
Management objectives	For Mirning people to be empowered to undertake customary activities on Country; and to educate the broader community about the cultural values of and customary rights in the proposed marine park.
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.	<ol style="list-style-type: none"> Ensure that special purpose zones (cultural protection) are established and maintained in a culturally appropriate way. Establish a caring for Country program that ensures there are Mirning rangers on land and sea Country to manage and protect cultural and ecological values of the proposed marine park. Design and implement, in collaboration with Traditional Owners, a monitoring program to assess the effectiveness of zoning and other management strategies for protection of cultural and ecological values. Develop education materials regarding Mirning culture to positively foster growing community pride in Mirning culture and customary access rights. Support Mirning Traditional Owners to continue to carry out customary activities, including customary fishing in the proposed marine park. [DPIRD]
Performance measures	To be determined in consultation with Traditional Owners and the MTLAC.
Target	
Reporting	

5. Caring for Country

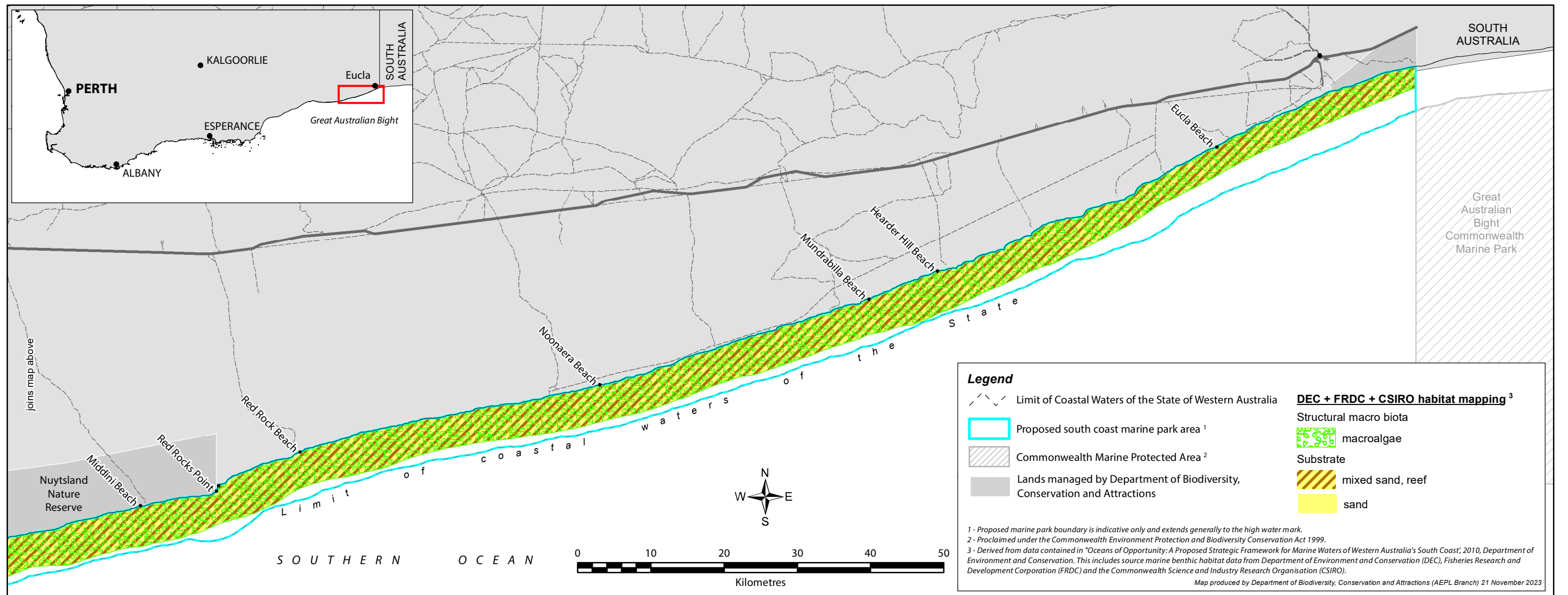
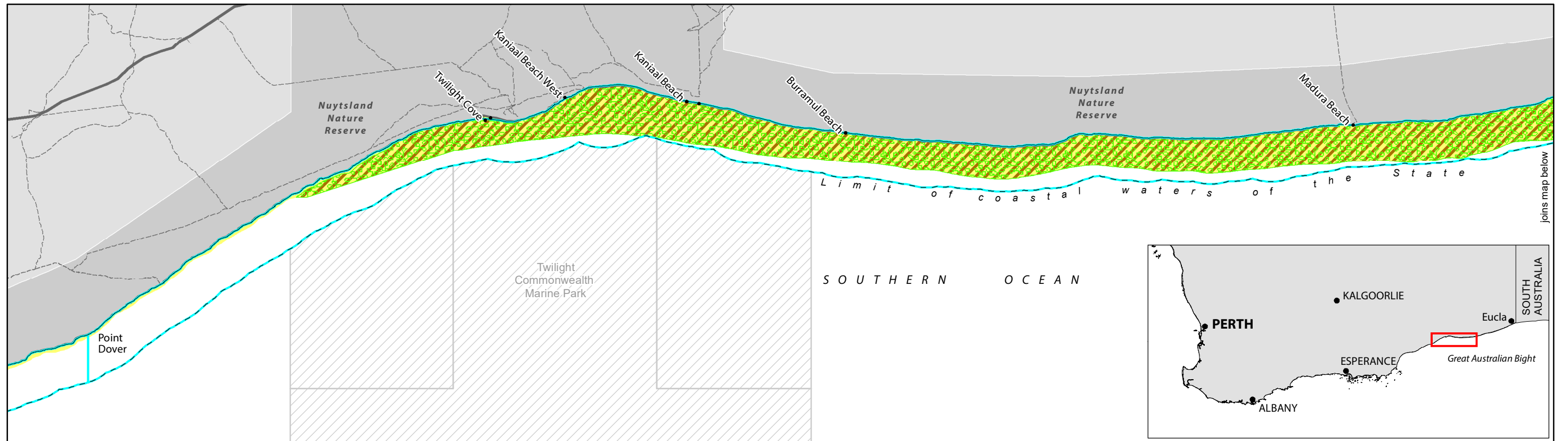
Strategic objective: Enhance, maintain and conserve marine biodiversity and ecological integrity.

Ecological values are the physical, geological, chemical and biological characteristics of an area. These values are significant in terms of their biodiversity (representativeness, rareness, or uniqueness) and ecosystem integrity roles. Ecological values also have a social significance because many social values are functionally dependent on the maintenance of ecological values. Set out below is information on specific ecological values, and the objectives, strategies and targets for managing them. These specific strategies complement the overarching strategies that apply to many of the proposed marine park's values, particularly in the case of education and interpretation, research and monitoring.

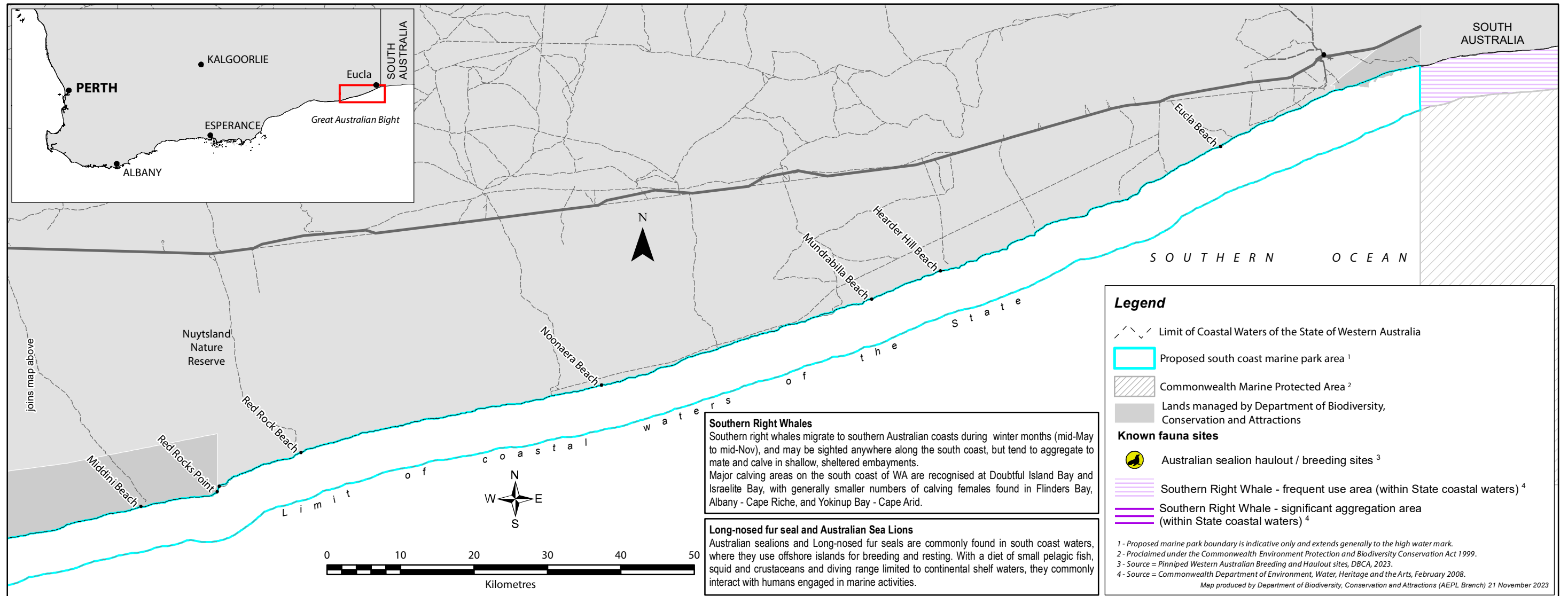
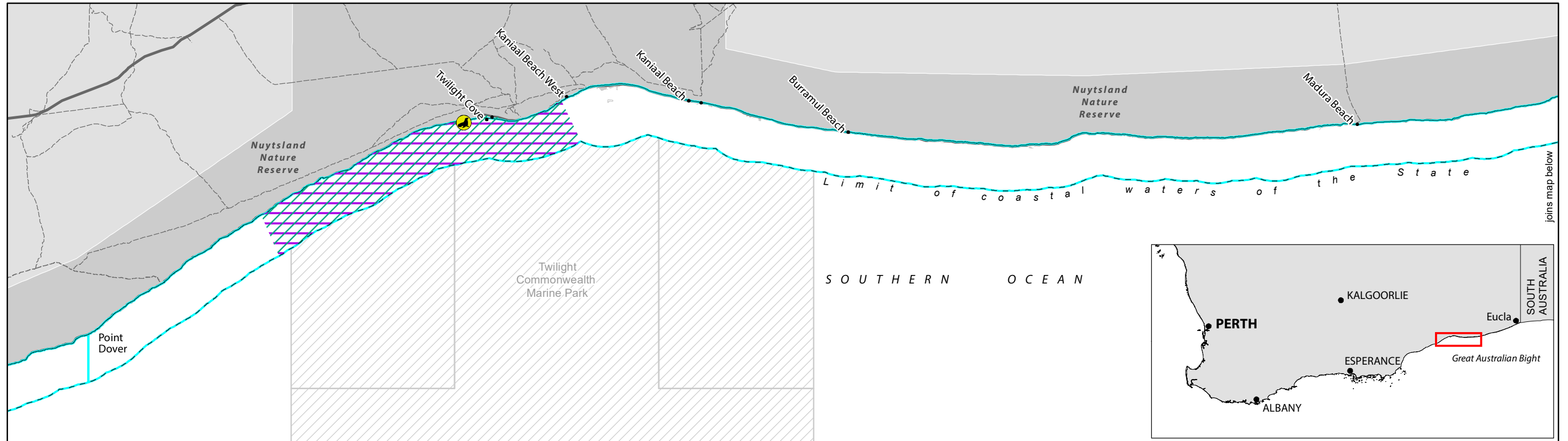
The IMCRA is a framework developed for classifying Australia's marine environment into ecological bioregions at a scale useful for regional planning. These bioregions are used as the basis for the development of a National Representative System of Marine Protected Areas (NRSMPA). The proposed marine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



South Australia



Map 4 – Known marine habitats within and adjacent to the proposed Mirning Marine Park.



Map 5 – Known marine fauna within and adjacent to the proposed Mirning Marine Park.

5.1 Geomorphology

Oceanographic processes play a major part in shaping the geomorphology of the coast, and together with the morphology of the seabed, contribute to influencing the distribution of biota. For example, exposure to wave energy appears to determine the distribution of unconsolidated substrate and is the most useful regional scale predictor of rhodolith and seagrass habitats (Ryan et al., 2007).

The coastal geomorphology of the proposed marine park transitions from limestone cliff and mixed sand and reef dominant areas in the west to sandy shores, with large areas of deposited sea wrack, in the east. The impressive Baxter Cliffs feature at the western extent of the proposed marine park, reach 80 m high and extend almost 200 kms along the coast from Point Culver (within the Western Bight Marine Park) to Twilight Cove.

The beaches along the open coast of the proposed marine park are exposed to heavy surf and generally consist of coarse sands. Ecological communities on sandy beaches rely primarily on marine-based nutrient sources (McLachlan & Brown, 2006). Wrack is prominent on many beaches within the proposed marine park and provides important nutrients to the generally low-productivity habitats of sandy beaches (Ince et al., 2007).

Beaches are highly valued for all coastal recreational activities and are significant features to the lifestyle of people on the south coast, including those that visit for holidays.

Environmental impacts on the geologic/geomorphic values of the south coast are understood to be minimal and include localised disturbance from coastal development within and surrounding the main coastal towns in the region. Threats to the geomorphology of the proposed marine park include climate change (causing increased storms and erosion), marine debris, physical disturbance from recreational activities such as four-wheel driving and coastal development. Proposed developments likely to have a significant impact on the environment are referred to the Environmental Protection Authority (EPA) and may be subject to the environmental impact assessment requirements of the *Environmental Protection Act 1986* (EP Act).

Summary of management arrangements for geomorphology	
Current status	The geomorphology of the proposed marine park is generally undisturbed.
Pressures	<ul style="list-style-type: none"> Physical disturbance (e.g., trampling/4WD access). Marine debris. Large scale coastal developments such as groynes, marinas and ports. Construction of general marine infrastructure (e.g., navigation markers, jetties). Ground disturbing mining exploration/development.
Current major pressure	Climate change
Management objectives	To ensure that the geomorphology of the proposed marine park is not significantly affected by human activities.
Management strategies	<ol style="list-style-type: none"> Educate users about the ecological importance of the proposed marine park's geomorphology and appropriate access to protect sensitive coastal landforms. Undertake and/or support research to characterise the geomorphologic features and processes in the proposed marine park.
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.	<ol style="list-style-type: none"> 3. Monitor the condition of geomorphology and the pressures acting on it within the proposed marine park. 4. Ensure that advice relating to coastal and offshore development activities in the area that have the potential to disturb the geomorphology of the proposed 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.
Performance measures	Indicators to be developed but may include: <ul style="list-style-type: none"> • area of coastal disturbance • area of seabed disturbance.
Target	<ul style="list-style-type: none"> • No change of seabed structural complexity as a result of human activity in the park except for in approved development sites. • No change in coastal landform structure as a result of human activity in the park except for in approved development sites.
Reporting	5-10 years

5.2 Water and sediment quality (KPI)

Water quality in the proposed marine park is essential to maintain healthy ecosystems and support unique species that depend on the clear waters of the south coast. Water quality in the proposed marine park is strongly influenced by oceanographic processes including water temperature, currents, wind and wave action. There is extremely low flow from rainfall, resulting in very low and intermittent freshwater input into the marine environment (SCRMPWG, 2010).

There are potential risks to water quality in the south coast region from ship-sourced pollution incidents (i.e., oil spills) and operational related impacts (i.e., product spill and the release of anti-fouling biocides).

Potential sources of marine pollution and other pressures on water quality in the proposed Mirning Marine Park include:

- marine debris and litter
- ship-sourced pollution incidents (i.e., oil spills) and operational related impacts (i.e., product spill and the release of anti-fouling biocides)
- wastewater from aquaculture projects which can potentially contain contaminants, pathogens and/or high levels of nutrients if not managed appropriately (noting there are no existing or proposed aquaculture projects within the proposed marine park)
- dredging and dredge spoil disposal
- habitat degradation due to coastal developments.

Water quality in the proposed marine park is believed to be relatively unaffected by marine pollution.

Sewage discharge from vessels has the potential to increase nutrient levels and to cause health problems for direct contact recreational activities 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 parameters (e.g., water circulation) and

human usage patterns (e.g., number of vessels). *The Strategy for Management of Sewage Discharge from Vessels into the Marine Environment* (Department of Transport, 2009) outlines guidelines for marine sewage discharge in Western Australian waters.

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

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

Development and infrastructure proposals that have 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 and DPIRD.

Summary of management arrangements for water and sediment quality	
Current status	Water and sediment quality within the proposed marine park are believed to be in a generally excellent condition.
Pressures	<ul style="list-style-type: none"> • Introduction of nutrients and toxicants from wastewater and from potential aquaculture operations. • Sewage and ballast water discharge from vessels. • Large scale coastal developments such as groynes, marinas and ports. • Construction of general marine infrastructure (e.g., navigation markers, jetties). • Sand mining dredging and other sand bypassing works. • Major pollution event (e.g., chemical or oil spills).
Current major pressure	<ul style="list-style-type: none"> • Climate change. • Marine debris/litter.
Management objectives	To ensure the water and sediment quality of the proposed marine park is not significantly impacted by marine debris and human activities.
Management strategies	<ol style="list-style-type: none"> 1. Facilitate long-term management by accumulating spatial and temporal information on impacts to water quality from various activities in the reserves. 2. Establish a collaborative approach with adjacent land managers and relevant authorities in seeking to minimise marine debris inputs that have the potential to affect the proposed marine park's water quality. 3. Educate users about regulations on boat sewage disposal and enforce controls on the discharge of sewage from vessels in the proposed marine park. 4. As part of on-Country work, patrol the shoreline and waters of the proposed marine park for marine debris and remove and record as necessary, and seek support of partners and marine park users to do the same. 5. Develop an education campaign to encourage visitors to care for and clean the proposed marine park, keeping all rubbish with them, and cleaning up litter when they can.
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.	

	<ol style="list-style-type: none"> 6. 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 proposed marine park. 7. Educate recreational fishers on responsible fishing behaviours, including ways to minimise gear loss and appropriate rubbish disposal. [DPIRD] 8. Undertake and/or support research on water and sediment quality in the proposed marine park, including establishing baselines for water and sediment quality, and understanding natural variability. 9. Monitor the condition of water and sediment quality within the proposed marine park. 10. Work with relevant departments, users of the proposed marine park and stakeholders to address sources of marine debris in the proposed marine park.
Performance measures	<p>Indicators to be developed but may include:</p> <ul style="list-style-type: none"> • sea temperature • nutrient concentration • toxicant concentration • pathogen concentration • marine debris mass.
Target	<ul style="list-style-type: none"> • No significant increase in nutrient, toxicant and pathogen concentrations. • Decrease in marine debris/litter throughout the park.
Reporting	3-5 years

5.3 Seagrass communities

Seagrass communities are important benthic primary producers that provide many ecosystem services, including supporting biological productivity, carbon sequestration, fisheries, improving water quality and stabilising sandbanks (Nordlund et al., 2016). In the proposed marine park, they are important for providing structurally complex habitat for a diverse range of finfish and invertebrates (Unsworth & Cullen-Unsworth, 2014). 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).

Of the ~72 seagrass species known worldwide, almost one-third are restricted to southern Australia (Short et al., 2011; Carruthers et al., 2007). Seagrass species within the proposed marine park include *Posidonia sinuosa*, *P. australis*, *P. denhartogii*, *P. coriacea*, *P. ostenfeldii*, *P. kirkmami*, *Amphibolis griffithii*, *A. antarctica*, *Halophila spp.* and *Zostera tasmanica* (Kendrick et al., 2005). Seagrass diversity in the temperate southwest of Australia is the highest of any temperate region in the world, which reflects the diversity of habitats within the region (i.e., coastal embayments) (McClatchie et al., 2006). Due to the exceptionally clear water on the south coast, seagrasses can grow at depths of over 40m (Kirkman & Kuo, 1990; Kilminster et al. 2018), with evidence of sparse *Halophila spp.*, *Zostera tasmanica* and *P. ostenfeldii* complex growing in deep (42 m) protected areas adjoining islands (Kendrick et al., 2005).

Information about seagrasses and other marine flora communities within the proposed marine park is limited, however inspections of aerial photographs indicates that there are extensive seagrass beds off the beach which are protected by coastal limestone reefs. While

no seagrass species are 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* complex).

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

Seagrass (and macroalgae, see section 5.4) that detach from reefs often accumulate on the seabed and water surface where it is known as wrack. This wrack is often washed onto the shorelines and plays an important role in stabilising the beaches. It is also ecologically significant as it contains large numbers of invertebrates which are prey for surf zone fishes and birds (Muhling & Ryan, 2002). Consequently, the removal of wrack from the proposed marine park will be strictly managed and only considered where public access or safety is significantly impeded.

Summary of management arrangements for seagrass communities	
Current status	Seagrasses are generally in a good condition within the proposed marine park.
Pressures	<ul style="list-style-type: none"> • Unregulated mooring and anchoring that cause scouring in seagrass dominated areas. • Construction of general marine infrastructure (e.g., navigation markers and jetties). • Commercial and recreational fishing (e.g., damage to habitat). • Ground-disturbing mining exploration/development. • Discharge of toxicants and physical and chemical stressors (i.e., sediment and nutrients from outflows). • Large scale coastal developments such as groynes, marinas and ports • Sewage discharge from vessels. • Pests/disease. • Major pollution event (e.g., chemical or oil spill). • Sand mining, dredging and other sand bypassing works.
Current major pressure	Climate change
Management objectives	<ul style="list-style-type: none"> • To ensure seagrass communities are not significantly impacted by human activities. • To gain an increased understanding of the seagrass communities in the proposed marine park to facilitate long-term management.
Management strategies	<ol style="list-style-type: none"> 1. Monitor the condition of seagrass communities and the pressures acting on them within the proposed marine park and take remedial action if required. 2. Undertake and/or support research to characterise the diversity, density, abundance and distribution of seagrass communities in the proposed marine park. 3. Educate users of the important ecological role of seagrass communities and the potential impacts of human activities, particularly vessel mooring, and nutrient and pollution inputs on these communities, and the biodiversity values of wrack. [DPIRD]
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.	4. Liaise with adjacent landowners and regulatory authorities for requests relating to wrack removal where required for public access or safety. Provide an authorisation where appropriate.
Performance measures	Indicators to be developed but may include: <ul style="list-style-type: none"> • percent cover • community composition • shoot density • canopy height.
Target	<ul style="list-style-type: none"> • No significant decline in total cover, shoot density or canopy height as a result of human activity. • No significant change in community composition as a result of human activity.
Reporting	3-5 years

5.4 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, with around 1,000 species of benthic macroalgae 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).

The distribution and abundance of macroalgae species on the south coast is not recorded in detail, however a broad picture has been formed for the south coast. The golden kelp *Ecklonia radiata*, which often forms as dense beds in the shallow sublittoral zone, is the dominant alga 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 the red algae are represented by many cool temperate species (CALM, 1994). The Leeuwin and Capes currents strongly influence the distribution of macroalgae along the southwestern and southern coasts of Australia (McClatchie et al., 2006).

Rhodoliths are unattached, marine, benthic algal nodules of various sizes, and origins that are predominantly accreted by crustose coralline red algae precipitating 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-feeding communities and fish (Kendrick et al., 2005). Although little is known about offshore habitats in this area, extensive, dense rhodolith beds are likely to occur on the West Roe Terrace, which runs from just east of the South Australian border and Israelite Bay (James et al., 2001).

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 (e.g., 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.

Summary of management arrangements for macroalgae and rhodolith communities	
Current status	Macroalgae and rhodolith communities are generally in a good condition within the proposed marine park.
Pressures	<ul style="list-style-type: none"> • Unregulated mooring and anchoring that cause scouring. • Construction of general marine infrastructure (e.g., navigation markers and jetties). • Commercial and recreational fishing (e.g., damage to habitat). • Ground disturbing mining exploration/development. • Discharge of toxicants and physical and chemical stressors (i.e., sediment and nutrients from outflows). • Large scale coastal developments such as groynes, marinas and ports • Sewage discharge from vessels. • Pests/disease. • Major pollution event (e.g., chemical or oil spill). • 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 proposed marine park.
Management strategies	<ol style="list-style-type: none"> 1. Monitor the condition, diversity and cover of macroalgae and rhodolith communities and the pressures acting on them within the proposed marine park and take remedial action if required. 2. Educate marine park users about the ecological importance of the proposed marine park's macroalgae and rhodolith communities and the potential detrimental impacts of physical disturbance on these communities. 3. Undertake and/or support research to characterise the diversity, community composition, condition and extent of macroalgae and rhodolith communities in the proposed marine park. Support research to increase resilience of these communities.
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.	
Performance measures	Indicators to be developed but may include: <ul style="list-style-type: none"> • percent cover • community composition • macroalgae density (canopy forming species).
Target	<ul style="list-style-type: none"> • 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

5.5 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 proposed 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 proposed marine park. Some important species 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.

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 proposed marine park and limited size and restrictions on the South Coast Trawl Fishery it is likely that these communities are in an undisturbed condition (SCRMPWG, 2010).

Summary of management arrangements for soft-sediment communities	
Current status	Limited information is available, however, soft-sediment communities within the proposed marine park are believed to be in a generally good condition.
Pressures	<ul style="list-style-type: none"> • Construction of general marine infrastructure (e.g., navigation markers and jetties). • Commercial and recreational fishing (e.g., damage to habitat). • 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. • Sewage discharge from vessels. • Pests/disease. • Major pollution event (e.g., chemical or oil spill). • Sand mining, dredging and other sand bypassing works.
Current major pressure	Climate change
Management objectives	To ensure the species diversity and biomass of soft-sediment communities within the proposed marine park are not significantly impacted by human activities.
Management strategies	<ol style="list-style-type: none"> 1. Undertake and/or support research to better characterise the flora, fauna and distribution of soft-sediment communities within the proposed marine park. 2. Monitor the condition of soft-sediment communities and the pressures acting on them within the proposed marine park. 3. Educate users of the important ecological role of soft-sediment communities and the potential impacts that human activities have on these communities.
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.	

Performance measures	Indicators to be developed but may include: <ul style="list-style-type: none"> • diversity • species abundance.
Target	No significant decline in diversity or species abundance as a result of human activity.
Reporting	3-5 years

5.6 Filter feeder communities

Filter feeder communities are comprised of species such as sponges, bryozoans, sea squirts and sea anemones. They are generally located in areas that have strong water currents and hard substratum. Limited information exists on filter feeder communities found within the proposed marine park. It is likely that filter feeder dominated habitats are present within the proposed marine park and consist of similar assemblages as those found to the west.

Very few coral species are found within the proposed marine park. Coral fauna diminishes rapidly south of Rottnest Island with some species flourishing in a few suitable habitats along the south coast of Western Australia (Veron & Marsh, 1988). South coast coral communities are generally found in the moderately sheltered waters (Ross et al., 2018). Scleractinian corals (i.e., stony/hard corals) occur sporadically, but do not form coral reefs (Wells et al., 2005). Veron & Marsh (1988) reported 7 species from 4 genera that occur along the south coast of Western Australia including three (*Coscinaraea mcneilli*, *Plesiastrea versipora* and *Scolymia australis*) which extend across southern Australia (Shepherd & Veron, 1982), and *C. marshae* which extends into South Australia.

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 proposed marine park and management of the South Coast Trawl Fishery it is likely that these communities are in a relatively undisturbed condition (SCRMPWG, 2010).

Summary of management arrangements for filter feeder communities

Current status	Limited information is available on filter feeder communities, but they are believed to be in a generally good condition throughout the proposed marine park.
Pressures	<ul style="list-style-type: none"> • Commercial fishing (e.g., bottom trawling). • Climate change. • Discharge of toxicants and physical and chemical stressors (i.e., sediment and nutrients from outflows). • Sand mining, dredging and other sand bypassing works. • Large scale coastal developments such as groynes, marinas and ports. • Construction of general marine infrastructure (e.g., navigation markers and jetties). • Ground disturbing mining exploration/development. • Pests/disease. • Unregulated anchoring • Major pollution event (e.g., chemical or oil spill).

Current major pressure	None currently identified.
Management objectives	<ul style="list-style-type: none"> To ensure that filter feeder communities within the proposed marine park are not significantly impacted by human activities. To develop an increased understanding of the distribution and diversity of filter feeder communities in the proposed marine park.
Management strategies	<ol style="list-style-type: none"> Educate marine park users about the ecological importance of the proposed marine park's filter feeder communities and the potential detrimental impacts of physical disturbance (e.g., anchoring) on these communities. Monitor the condition of filter feeder communities and the pressures acting on them within the proposed marine park. Undertake and/or support research to characterise the diversity, community composition and condition of filter feeder communities in the proposed marine park.
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.	
Performance measures	<p>Indicators to be developed but may include:</p> <ul style="list-style-type: none"> diversity total cover community composition introduced species.
Target	<ul style="list-style-type: none"> 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

5.7 Invertebrates

Marine invertebrates are animals without a backbone, such as sea urchins, starfish, sea cucumbers, crabs, lobsters, octopus, abalone, jellyfish and anemones. Invertebrates have important functions within the ecosystem as a food source for other invertebrates, finfish, and migratory birds, as well as in nutrient cycling. Invertebrate communities in the proposed marine park exhibit high levels of endemism and consist of both tropic and temperate species. The presence and distribution of invertebrates within the proposed marine park is influenced by substrate, depth, availability of food and the temperature gradient produced by the Leeuwin current.

While specific species' ranges within the proposed marine park are unknown, approximately 347 species of temperate Australian echinoderms are known to occur across the south coast from Albany to Eucla, and 115 species of decapod crustaceans are known to occur in the area (Wells et al., 2005).

Invertebrates are vulnerable to impacts from climate change. 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 shell. In addition,

bioprospecting, fisheries bycatch, siltation, and pollution at the mouths of some inlets may impact invertebrates.

DPIRD is responsible for the management of the recreational and commercial take of invertebrate species under the FRM Act. DPIRDs 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, 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 proposed marine park.

Summary of management arrangements for invertebrates	
Current status	Invertebrates are generally considered to be in a good condition in the proposed marine park.
Pressures	<ul style="list-style-type: none"> Climate change. Pests/disease. Discharge of toxicants and nutrients. Sewage and ballast water discharge from vessels. Physical disturbance (e.g., trampling). Aquaculture (potential pressure) (e.g., habitat exclusion, discharges). Habitat degradation. Ground disturbing mining exploration/development. Large scale coastal developments such as groynes, marinas and ports. Sand mining, dredging and other sand bypassing works. Illegal fishing.
Current major pressure	Commercial and recreational fishing for targeted species.
Management objectives	<ul style="list-style-type: none"> To ensure non-targeted species are not significantly impacted by human activities within the proposed marine park. To manage targeted invertebrate species for ecological sustainability.
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.	<ol style="list-style-type: none"> 1. See section 9.3 – Zoning and permitted activities. 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 proposed marine park. [DPIRD for targeted species] 5. Monitor the condition of invertebrates and the pressures acting on them within the proposed marine park and take remedial action if required. [DPIRD for targeted species] 6. Educate users of the proposed marine park about the ecological importance of invertebrates and the ways to minimise disturbance to them, and relevant fisheries regulations that apply. [DPIRD] 7. Undertake and/or support research to characterise the sustainability of targeted invertebrate species and the consequences of their removal. [DPIRD for targeted species]

	8. Provide updates to marine park managers in relation to management of recreational and commercial fisheries, including reviews and amendments where relevant to the proposed marine park. [DPIRD]
Performance measures	Indicators to be developed but may include: <ul style="list-style-type: none"> • diversity • target species abundance • community composition.
Target	<p>Sanctuary zones</p> <ul style="list-style-type: none"> • No decline in diversity and abundance as a result of human activity. • No change in community composition as a result of human activity. <p>General use zones and special purpose zones</p> <ul style="list-style-type: none"> • No significant decline in community diversity as a result of human activity. • No significant change in community composition as a result of human activity. • No 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

5.8 Finfish, sharks and rays (KPI)

Fish communities of southwestern Australia are diverse 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).

The white shark (*Carcharodon carcharias*) 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.

It is understood that the south coast shoreline that extends from east of Esperance through to the Western Australia–South Australia border is a significant nursery area for Australian salmon (*Arripis truttacea*) and Australian herring (*Arripis georgiana*) (Gaughan & Santoro, 2020). Both species are important to the region’s fishing sector.

There are three species of seadragon endemic to Australia that 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 species under the FRM Act. DPIRDs 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, 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 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 proposed 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 proposed marine park.
Pressures	<ul style="list-style-type: none"> • Climate change. • Marine debris (e.g., entanglement, ingestion). • Introduction of marine pests. • Recreational and commercial fishing (direct removal and bycatch). • Feeding. • Mooring and anchoring—habitat damage. • Toxicants (e.g., marina or vessel discharge, untreated wastewater or stormwater). • Sand mining, dredging and other sand bypassing works. • Vessel discharge (e.g., sewage). • Large scale coastal developments such as groynes, marinas and ports. • Aquaculture (potential pressure) (e.g., habitat exclusion, entanglements, discharges). • Vessel noise and strike. • Major pollution events (e.g., chemical or oil spills).
Current major pressure	Recreational and commercial fishing (direct removal and bycatch).
Management objectives	<ul style="list-style-type: none"> • To ensure non-targeted species are not significantly impacted by human activities within the proposed marine park. • To manage targeted species for ecological sustainability.
<p>Management strategies</p> <p>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.</p>	<ol style="list-style-type: none"> 1. See section 9.3 – Zoning and permitted activities. 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 behaviours within the proposed 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 white shark ecological research with the aim of better understanding behaviour and assisting to mitigate shark attack risk whilst also improving conservation outcomes. [DPIRD] 6. Undertake research on sea dragons, investigating their behaviours, population numbers, ecological relationships, and threats. 7. Monitor the biodiversity, current fish health and abundance of finfish, sharks and rays and the pressures acting on them in the proposed marine park. [DPIRD for targeted species] 8. Educate users about recreational fishing rules, the ecological importance of finfish, sharks and rays and responsible fishing behaviour. [DPIRD]

	9. Provide updates to marine park managers in relation to management of recreational and commercial fisheries, including reviews and amendments where relevant to the proposed marine park. [DPIRD]
Performance measures	Indicators to be developed but may include: <ul style="list-style-type: none"> • diversity • species abundance • species size distribution • community composition.
Target	<p>Parkwide</p> <ul style="list-style-type: none"> • No loss in diversity or abundance of protected species as a result of human activity. <p>Sanctuary zones</p> <ul style="list-style-type: none"> • No decline in diversity, species abundance or species size distribution as a result of human activity. • No change in community composition as a result of human activity. <p>General use zones and special purpose zones</p> <ul style="list-style-type: none"> • No significant decline in species diversity or species abundance as a result of human activities. • No significant change in community composition as a result of human activity. • No 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

5.9 Seabirds and shorebirds

Seabirds generally forage at sea for the greater part of their lives, whereas shorebirds commonly feed by wading in shallow water along the shoreline. The sandy beaches and intertidal reef platforms of the proposed marine park provide important feeding, roosting and nesting habitat for seabirds and shorebirds.

Of the 110 species of seabirds that comprise the Australian seabird fauna, 81 (72 percent) can be found in the southwest region of Australia (McClatchie et al., 2006). The fleshy-footed shearwater (*Ardenna carneipes*) is listed as a vulnerable species under the BC Act. The southwestern population nest on islands between Cape Leeuwin and the South Australian border (Lavers, 2015).

The little penguin (*Eudyptula minor*) is endemic to southern Australia and New Zealand (McClatchie et al., 2006). The little penguin has been reported nesting at sites along the coast in the vicinity of Twilight Cove, the only known mainland breeding area for this species in Western Australia (CALM, 1994; Colman, 1998).

Other threatened seabird and shorebird species that are known to occur on the south coast include:

- the wandering albatross (*Diomedea exulans*)
- grey-headed albatross (*Diomedea chrysostoma*)
- black-browed albatross (*Diomedea melanophris*)
- northern giant petrel (*Macronectes halli*)
- fairy tern (*Sterna nereis nereis*) (DPaW, 2016; Dutson et al., 2009).

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).

The decline in some species of seabirds and shorebirds is caused by a variety of factors including overfishing of the prey that seabirds rely on for food, 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.

In July 2021, DPIRD convened an ecological risk assessment (ERA) of the fisheries that access the small pelagic scalefish resource including the West Coast Purse Seine Fishery, South Coast Purse Seine Fishery, purse seine development zones and recreational fishers (Blazeski et al., 2021). A medium/high risk was given to fleshy-footed shearwaters due to the potential interaction with purse seine nets and uncertainty associated with population modelling and fishery-dependent data. A voluntary code of practice in the South Coast Purse Seine Managed Fishery has been put in place.

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 to the 200nm economic exclusion zone.

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	<ul style="list-style-type: none"> • Entanglement in and ingestion of marine debris. • Climate change. • Introduction of non-native predators to seabird colonies • Disturbance to feeding, roosting and nesting activity by people, vehicles, vessels, low flying aircraft (including remotely piloted aircraft (RPA)). • Commercial fishing—bycatch and prey availability. • Infrastructure development. • Large scale coastal developments. • Major pollution event (e.g., chemical or oil spills). • Removal of 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 proposed marine park are not significantly impacted by human activity.
Management strategies	<ol style="list-style-type: none"> 1. Monitor human impacts to seabird and shorebird breeding and feeding habitat and regulate if required. 2. Design and implement an education and interpretation program that increases the public's awareness of the national and international significance of waterbird populations and informs visitors about impacts human activities can have on birds.
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.	<ol style="list-style-type: none"> 3. Undertake and/or support research to characterise bird diversity, abundance, natural variability, movement patterns and critical habitats within the proposed marine park. 4. Undertake research on the behaviours, population numbers, ecological relationships, threats to shearwaters, and their capacity to act as bio-indicators. 5. Assess the nature level and potential impacts of human activities to the seabird and shorebird populations in the proposed marine park and implement an appropriate monitoring program. 6. Ensure that management of migratory shorebirds in the proposed marine park supports relevant international agreements (e.g., Ramsar Convention, Convention on the Conservation of Migratory Species of Wild Animals). 7. Liaise with land managers, undertake complementary management actions on adjacent land and terrestrial reserves to manage potential detrimental impacts on seabirds and shorebirds.
Performance measures	Indicators to be developed by may include: <ul style="list-style-type: none"> • abundance • diversity • breeding success.
Target	<ul style="list-style-type: none"> • No loss of diversity and 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.

5.10 Pinnipeds (KPI)

Two species of pinnipeds, the Australian sea lion (*Neophoca cinerea*) and the long-nosed fur seal (*Arctocephalus forsteri*), can be found in the waters of the proposed marine park. Additionally, 11 of the 34 species of pinnipeds in the world are likely to be found in the coastal waters along the south coast of Australia (King, 1988).

The Australian sea lion is endemic to Australia and listed as an endangered species under the EPBC Act and the BC Act. Surveys of known Australian sea lion breeding sites estimate an overall population of between 9,900 to 12,500 animals. About 30 percent of the Australian population occurs at sites in Western Australia and 70 percent in South Australia. The Australian sea lion is neither increasing in population numbers nor expanding its range (DAFF, 2007; Dennis & Shaughnessy, 1996; Campbell, 2003; Gales et al., 1994).

There are reports of an Australian sea lion breeding colony on rocks at the base of the Baxter Cliffs, adjacent to the proposed marine park, as well as a recently confirmed breeding colony at Twilight Cove (CALM, 1994; Colman, 1998; Dennis & Shaughnessy, 1999; Goldsworthy et al., 2014; Goldsworthy et al., 2021).

Bycatch from fishing has been identified to be one of the largest threats to the Australian sea lion population as it often results in injury or death (Hamer et al., 2013). To assist in mitigating these risks, in June 2018 DPIRD implemented fisheries management changes which created a network of 33 Australian sea lion gillnet exclusion zones through the known range of Western Australia's 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 the risk of interaction between nets and sea lions. These zones range from 6 to 33 kilometres in radius around known breeding colonies and cover a total of 17,300 km² around Western Australia. As of 2021, no interactions have been reported since the implementation of the gillnet exclusion zones (Watt et al, 2021).

Sea lion exclusion devices are also a legislative requirement for operators in the commercial rock lobster fishery to reduce the risk of Australian sea lions drowning in pots. The effectiveness of these devices in mitigating interactions has been shown over a range of studies (How et al, 2023).

The long-nosed fur seal is listed as ‘other protected fauna’ under the BC Act and exists in New Zealand and Australia with an estimated population of 50,000 in New Zealand (including outlying islands) and 5,000 along Australia’s southern coast (Bonner, 1994; Lee & Bancroft, 2001; Shaughnessy et al., 2011; Shaughnessy et al., 2013). In Western Australia, long-nosed fur seals are found from the South Australian border to Cape Leeuwin (Shaughnessy et al., 1994). Though there are no recorded breeding or haul-out sites in the proposed marine park, it is likely that they are occasional visitors. Within the state, long-nosed fur seal populations increased at ~1% per year between 1999-2011, down on the 1989-1999 estimates which showed an increase of 10% per annum; however, their range has been found to be expanding (Campbell et al., 2014).

Current threats to both species include habitat and prey availability, fisheries bycatch, entanglement in demersal gillnets and marine debris, disturbed habitats and introduced diseases (DoPW, 2016; Hamer et al., 2013; Osterrieder et al., 2017; Shaughnessy et al., 2013). Additionally, it has been recognised that tourism, such as marine observations, can negatively impact haul-out cycles which influence the survival rate of pups (Osterrieder et al., 2017).

Summary of management arrangements for pinnipeds	
Current status	<ul style="list-style-type: none"> Australian sea lion numbers do not appear to be recovering in terms of population size and are listed as endangered under the EPBC Act and the IUCN Red List. Long-nosed fur seals in Western Australia appear to be increasing and expanding in range.
Pressures	<ul style="list-style-type: none"> Commercial fishing (bycatch, prey availability). Marine debris ingestion, entanglement. Disease (<i>Mycobacterium pinnipedii</i> – tuberculosis, <i>Coxiella burnetii</i> - Q fever). Discharge of toxicants and nutrients. Disturbance (wildlife watching and interactions). Vessel strike. Large scale coastal developments. Aquaculture (potential pressure) (e.g., habitat exclusion, entanglements). Major pollution event (e.g., oil or chemical spills). Provisioning (e.g., causing a change in behaviour). Illegal culling.
Current major pressure	Climate change.
Management objectives	To ensure the abundance of pinnipeds is not impacted by human activity in the proposed marine park.

<p>Management strategies</p> <p>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.</p>	<ol style="list-style-type: none"> 1. Educate users of the proposed marine park about pinnipeds and the potential detrimental impacts of human activities (e.g., feeding and discarding of offal and bait, disturbance, marine debris) on the proposed marine park's pinnipeds, and regulations for pinniped interactions under the BC Act. 2. Implement an eight-knot speed limit within 500m of pinniped breeding and haul-out sites. [Department of Transport (DoT)] 3. Conduct targeted compliance within gillnet exclusion zones around sea lion colonies. [DPIRD] 4. Investigate sources of injury and causes of mortality of pinnipeds and maintain records of them in the proposed marine park. 5. Undertake and/or support research projects where it contributes to management effectiveness. 6. Regulate access of recreational visitors to marine park areas adjacent to breeding grounds and haul-out sites. 7. Assess and respond to marine fauna entanglements in collaboration with other agencies, considering capacity and circumstances as appropriate. 8. Undertake complementary management actions in the terrestrial reserves such as restricting visitor access to haul-out and pupping areas, if required.
<p>Performance measures</p>	<p>Indicators to be developed but may include:</p> <ul style="list-style-type: none"> • number of reported pinniped injuries and deaths • number of Australian sea lions at breeding and haul-out sites over the course of a breeding cycle.
<p>Target</p>	<ul style="list-style-type: none"> • No significant increase in the number of reported pinniped injuries or deaths as a result of human activity. • No significant decline in the number of pinnipeds at haul-out or pupping sites and islands over the course of a breeding cycle within the proposed marine park.
<p>Reporting</p>	<p>3-5 years</p>

5.11 Cetaceans (KPI)

Of the 38 species of cetaceans recorded in Western Australia, 27 have been recorded or are likely to occur off the South Coast region (Colman, 1998). Humpback (*Megaptera novaengliae*) and southern right (*Eubalaena australis*) whales are the most common whale species that occur within the proposed marine park.

Whales are culturally significant to Mirning Traditional Owners and are valued as family. Mirning sea Country is the place of the dreamtime white whale Jeedara. Every year, Mirning people celebrate the return of the whales as a reunion of family (Mirning, 2023).

The humpback whale breeding population of Western Australia (Southern Hemisphere Group IV) is one of three different populations of the Australasian region and is widely reported as the largest natural breeding population in the world with current estimates of more than 20,000 (Colman, 1998; Lee & Bancroft, 2001; Hedley et al., 2011; Salgado-Kent et al., 2012). Humpback whales are frequently seen as they migrate along the south coast to and from their winter feeding grounds in Antarctica to breeding and calving grounds in the north of Western Australia. The humpback whale is listed as vulnerable under the EPBC Act and conservation dependant under the BC Act (Western Australia). The humpback whale is

subject to International Whaling Commission (IWC) regulations and protected within the Australian whale sanctuary.

Southern right whales visit the south coast between June and October each year. The females use sheltered bays on the south coast as birthing and nursery areas and cows and calves are often seen close to the shore between August and October (CALM, 1994). The southern right whale forms large aggregations in coastal embayments along the Western Australian south coast during the ‘over-wintering months’ (i.e., May to November) where breeding, calving and rearing of young takes place. An estimated 55,000–70,000 southern right whales could be found in the southern hemisphere in the late 1700s, however, whaling in the nineteenth century reduced southern right whale numbers in Australian waters. Current estimates of the south-western Australian subpopulation are at approximately 2500 individuals. The population is increasing at a rate of ~6 percent annually (Smith, 2021).

The southern right whale is listed as endangered under the EPBC Act and vulnerable under the BC Act.

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

The distribution of bottlenose dolphins (*Tursiops truncatus*) in Australian waters is not well known, although they are usually found offshore in waters deeper than 30m as well as some coastal areas (Lee & Bancroft, 2001). Bottlenose dolphins are known to have a low reproductive rate, with an interbirth interval of about three to six years, and high calf mortality (Connor et al., 2000; Wells & Scott, 2000).

Threats to whales and dolphins include entanglement in marine debris, climate change, overfishing, which includes prey availability, 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).

DPIRD assess fishing-related threats to species and ecosystems and identify and implement a range of management actions to mitigate impacts, as well as undertake ongoing monitoring to review the effectiveness of measures put in place. 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). In the Commonwealth fishery off the south coast (outside State waters), escape panels have been added to purse seining nets and there are strict handling methods for live animals brought aboard vessels as bycatch.

Summary of management arrangements for cetaceans

Current status	<ul style="list-style-type: none"> • The humpback whale population within the proposed marine park is believed to be the largest breeding population in the world and has been downlisted to species of conservation interest 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 when compared to the estimated population in the 1700’s. • Little is known about the size or health of other cetacean species in the proposed marine park, but they are assumed to be in a stable condition.
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Pressures	<ul style="list-style-type: none"> • Marine debris (ingestion, entanglement). • Climate change. • Discharge of toxicants and nutrients. • Disturbance (wildlife watching and interactions). • Vessel strike. • Mining exploration/development (seismic surveys). • Large scale coastal developments (habitat loss and/or modification). • Major pollution event (e.g., chemical or oil spills). • Commercial fishery (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 proposed marine park.
Management strategies	<ol style="list-style-type: none"> 1. Undertake monitoring to: <ul style="list-style-type: none"> • assess the condition of cetaceans and the pressures acting on them within the proposed marine park • monitor the effectiveness of any management responses to address pressures and issues involving cetaceans within the proposed marine park • develop and maintain records on the incidence of entanglement, vessel strike, strandings or mortalities of cetaceans in the proposed marine park. 2. Undertake and/or support research characterising cetacean diversity, abundance, natural variability and habitat use within the proposed marine park. 3. Report on cetacean monitoring, population assessments and management outcomes to other government agencies and the wider community. 4. Assess and respond to marine fauna entanglements, injuries and mortality events in collaboration with other agencies, considering capacity and circumstances as appropriate. 5. Educate marine park users and commercial tour operators about cetaceans, the potential detrimental impacts of human activities on cetaceans, responsible marine mammal viewing, and regulations relating to marine mammals under the BC Act. 6. Enforce marine mammal regulations in place under the BC Act. 7. Investigate the extent and significance of interactions between fishing and cetaceans and address as required. [DPIRD]
Performance measures	Indicators to be developed but may include: <ul style="list-style-type: none"> • diversity • species abundance • species distribution.
Target	<ul style="list-style-type: none"> • No decline in diversity or species abundance as a result of human activity. • No significant change to species distribution as a result of human activity.
Reporting	10 years

6. People on Country

Strategic objective: Provide equitable and sustainable opportunities for recreational and commercial activities by allowing communities to utilise the marine environment as a source of enjoyment, income and food.

Maintaining a healthy environment, respecting Mirning cultural values and ensuring safe access for all users are ultimately required to support the range of socio-economic values within the proposed marine park.

6.1 Mirning economic development opportunities

This indicative joint management plan recognises that Mirning Traditional Owners have a need and intergenerational obligation to maintain family livelihoods and sustain existence from their land and sea Country and its resources.

The identification and creation of economic development opportunities that can deliver income and capacity to sustain Traditional Owners on Country will be an early and ongoing strategic focus of the JMB.

Creation of the proposed marine park may contribute to the provision of long-term employment for Mirning Traditional Owners through the provision of jobs associated with the proposed marine park, including direct employment and fee-for-service work for management purposes.

Summary of management arrangements for Mirning economic development opportunities	
Requirements	<ul style="list-style-type: none"> High environmental and aesthetic quality. Strong customary governance and cultural leadership.
Management objectives	To enable Mirning people to achieve economic benefits consistent with the purpose of the proposed marine park.
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.	<ol style="list-style-type: none"> Support and develop learning and career pathways, training, education and mentoring [DPIRD]: <ul style="list-style-type: none"> to enable positive and effective approaches for Mirning people to look after their land and sea Country for Mirning people to take advantage of opportunities for all levels of on-Country management in the contemporary context for Mirning people to attain marine biology qualifications and other research-oriented qualifications as part of contemporary land management approaches that provide employment, business and training opportunities in cultural ecotourism and visitor services for Mirning people on Country. Support the establishment of cultural tourism and cultural education businesses owned by local Mirning people that educate marine park visitors about the cultural significance of the area to Mirning people. Encourage and support MTLAC to develop and enhance existing business opportunities, including fee exemptions or commercial fishing and aquaculture and tour operator licencing. Support the establishment of a dedicated Mirning ranger workforce on Country to assist in marine park management. Ensure that industry, development and other resource use activities in and adjacent to the park encourage economic development, employment or capacity building opportunities for Traditional Owners.

6.2 Visitation, tourism and safety

Tourism has become one of the most significant economic sectors on the south coast (SCRMPWG, 2010). Patterns of recreational activity are mostly influenced by season/holiday periods, weather, access, and proximity to population centres. The distance from a major population centre and road access to the coast is currently a limiting factor for visitation to the proposed Mirning Marine Park. Most coastal recreational activity is centred around campgrounds. Marine based activities carried out in the proposed marine park include fishing, swimming, coastal walks, beachgoing and four-wheel driving.

Marine nature-based tourism has the potential to make an important contribution to protection of the region's ecosystem by fostering a greater understanding of the environment. However, if tourism is carried out inappropriately it has the potential to reduce the quality of the features visitors seek to experience. Examples include visitors leaving litter, interacting inappropriately with wildlife and physically disturbing or damaging marine habitats.

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 DBCA's Commercial Operator Handbook – Marine, which provides specific information for commercial businesses operating in a marine park or reserve.

Recreation and tourism within the proposed marine park will be in accordance with DBCA's Policy No. 18 – Recreation, tourism and visitor services, which focuses on both the management of activities consistent with protecting the proposed marine park's values (the values on which commercial nature-based marine tourism depend), and maintenance of a viable tourism product.

6.2.1 Visitor safety

The remote nature of the proposed marine park, combined with extreme weather conditions (e.g., strong wind, large swell and storms), pose a risk to visitors and other marine park users. This is particularly dangerous for visitors who may be inexperienced in, or unprepared for, such conditions. Visitors to the proposed marine park are advised to be mindful of the risk that Australian sea lions and other wildlife can pose to their safety and the effects of inappropriate interactions with them, such as feeding them or not maintaining separation distances.

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

- DoT, which is responsible for installing and maintaining navigation aids and other boating safety measures in all State waters
- The Australian Maritime Safety Authority (AMSA), which is 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 recreation, tourism and visitor safety	
Requirements	<ul style="list-style-type: none">• High water quality.• Healthy marine and estuarine communities.• Clean beaches and coastal areas.• High aesthetic quality of the marine environment.• Provision of 'undisturbed' areas for nature appreciation.• Appropriate infrastructure and activities.

	<ul style="list-style-type: none"> • Equitable access to the natural values in an appropriate zone. • Avoidance or minimisation of visitor injury.
Management objectives	<ul style="list-style-type: none"> • Ensure that tourism activities and recreational use are managed in a manner that is consistent with maintaining the cultural, ecological and social value of the proposed marine park. • To maintain the ecological values of the proposed marine park important for recreation and nature-based and cultural tourism. • To minimise risk to visitors and encourage appropriate behaviour. • To manage activities in a manner that minimises conflict between marine park users.
Management strategies	
<p>Joint management partners are the lead for all strategies.</p> <p>Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold</p>	<ol style="list-style-type: none"> 1. Promote awareness of cultural lores and protocols regarding visitor risk and safety. 2. Ensure opportunities for recreation and tourism: <ul style="list-style-type: none"> • are culturally appropriate • where possible, provide visitors with the opportunity to learn and experience Aboriginal cultural heritage • promote culturally respectful behaviour • do not significantly affect the rights of Traditional Owners to have ongoing cultural connection to Country • do not impact on cultural heritage values and sites. 3. Ensure the granting and renewal of commercial tour licences is consistent with the provisions of this management plan. 4. Establish customary approaches to maintaining sustainable use of the proposed marine park by the broader community, especially in relation to fishing and access. 5. Conduct information exchange workshops and interpretation training for marine nature based tourism operators. [DPIRD] 6. Develop and maintain a database of the spatial and temporal patterns and potential environmental impacts of commercial tourism operations within the proposed marine park. 7. 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] 8. Work with the Mirning and commercial operators to promote appropriate visitation and facilitate the establishment of high-quality commercial tourism operations that: <ul style="list-style-type: none"> • increase visitor enjoyment and safety • demonstrate a commitment to protect and promote the proposed park's cultural, natural, recreational and tourism values • ensure operations are conducted according to DBCA licence conditions • foster community stewardship of the proposed marine park. 9. Guided by the Commercial operators handbook – marine, develop codes of practice for commercial marine nature-based tourism operations in the proposed marine park, including performance measures, desired trends, short-term and long-term management targets, monitoring and reporting requirements. 10. Investigate opportunities to run safety campaigns to educate visitors on safe practices in and around Mirning sea Country. 11. Implement interpretative signage at access points around Mirning sea Country, with the aim of promoting Mirning protocol, and educating marine users on how to properly respect and care for Country.

	<p>12. Conduct visitor surveys to gather data on use of the proposed marine park, including visitor numbers, locations and anchoring points to understand potential impacts and direct monitoring programs.</p> <p>13. Seek to designate vessel speed restrictions for wildlife protection and/or for safety requirements if necessary. [DoT]</p> <p>14. Work collaboratively with the charter boat sector in the management of the proposed marine park particularly in key areas such as visitor education programs, mooring arrangements, compliance and monitoring programs. [Charter sector]</p> <p>15. Educate marine park users about protocols and regulations for the use of RPAs to minimise impacts and disturbance to marine park values.</p> <p>16. Conduct periodic visitor risk assessment in the proposed marine park as required and mitigate identified issues. [AMSA, DoT, DPIRD]</p>
Performance measures	<ul style="list-style-type: none"> • Visitor satisfaction (e.g., experiences and expectations) as determined by human use monitoring. • Number of visitor safety incidents reported to DBCA.
Target	<ul style="list-style-type: none"> • Visitor satisfaction is 85 percent or above within five years. • No 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 as well as the residents of and visitors to the South Coast and generates significant economic activity in regional centres. The most recent national social and economic survey of recreational fishers, prepared by the Fisheries Research and Development Corporation, February 2023 has estimated the annual economic contribution to Western Australia from recreational fishing is approximately \$1.1 billion (Moore et al., 2023). Previously the annual economic contribution from recreational fishing in Western Australia was estimated to be \$2.4 billion, including a total of approximately \$146.6 million in the Goldfields-Esperance region (McLeod & Lindner, 2018). Differences in estimates may be explained by different methodological approaches and assumptions made in the economic modelling. Nevertheless, the south coast offers a diverse array of recreational fishing experiences. Many south coast recreational fishers have catch-related motives related to obtaining a ‘fresh feed’ or ‘for fresh seafood’. In this respect, continued access for the community to undertake recreational fishing is important for food security, ensuring the community's access to healthy and affordable food.

On the South Coast, shore-based recreational fishing effort was more than double boat-based recreational fishing effort (McLeod & Lindner, 2018). Accordingly, consideration has been given to fine scale adjustments to shoreline boundaries of sanctuary zones that provide for ongoing ecological sustainable use in accordance with Appendix 1 – Design Principles.

Other primary motives for undertaking 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.

Due to the remoteness of much of the coastline and limited access to many areas, recreational beach and boat fishing in the proposed marine park tends to be concentrated at Twilight Cove and camping areas along the coast. The main species targeted by beach and rock fishers on the south coast include Western Australian salmon (*Arripis truttaceus*),

Australian herring (*Arripis georgianus*), whiting (*Sillaginodes spp.*) and silver trevally (*Pseudocaranx dentex*). Common species targeted by boat-based fishers include pink snapper (*Chrysophrys auratus*), queen snapper (*Nemadactylus valenciennesi*), bight redfish (*Centroberyx gerradi*) and King George whiting (*Sillaginodes punctata*), while mullet (*Mugilidae spp.*) and black bream (*Ancanthopagrus butcheri*) are targeted in rivers and estuaries (Newman et al., 2021).

The potential pressures associated with recreational fishing in the proposed 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. Many boat-based fishers focus their fishing efforts in waters that are adjacent to the proposed marine parks at Bremer Bay and in the Port of Esperance, whilst within the Mirning marine park, shore-based recreational fishing effort is predominant. Following the public submission period, consideration will be given to moving the boundaries of some sanctuary zones 200 metres from the mainland high water mark to allow for recreational fishing from and close to the shore.

DPIRD is responsible for managing target fish stocks for sustainability, with fisheries rules continuing to apply both within and outside of the proposed 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 proposed marine park require a licence from DBCA under the CALM Act and must also adhere to the rules, provisions and regulations outlined by DPIRD and the FRM Act.

Summary of management arrangements for recreational fishing	
Requirements	<ul style="list-style-type: none"> • Maintenance of key habitats (e.g., nursery and spawning areas). • Equitable and safe access to fishing grounds in appropriate zones. • Maintenance of sustainable targeted fish stocks. • Maintenance of recreational fishing experience. • Appropriate provision and placement of infrastructure and facilities.
Management objectives	<ul style="list-style-type: none"> • To ensure that, in collaboration with the community and DPIRD, recreational fishing in the proposed marine park is managed in a manner that is consistent with maintaining the proposed marine parks cultural and ecological values. • To maintain ecological values of the proposed 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 proposed marine park.
Management strategies Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If agencies are required to	<ol style="list-style-type: none"> 1. See section 9.2 – zoning and permitted activities. 2. Educate recreational fishers on recreational fishing rules, including in the proposed marine park. [DPIRD] 3. Educate recreational fishers on customary fishing and rights of Traditional Owners. [DPIRD] 4. In accordance with normal practice, DPIRD to conduct and/or support research to determine if ecosystem effects from recreational fishing are occurring in the proposed marine park and undertake adaptive management actions if required. [DPIRD]

take a lead role, their name is in bold.	<ol style="list-style-type: none"> 5. Implement safety signage in dangerous areas in/around Mirning Sea Country. [LGA] 6. Engage with local recreational fishing groups to promote responsible fishing behaviour i.e., best catch care practices. [DPIRD] 7. Monitor recreational fishing catch and effort in the proposed marine park. [DPIRD] 8. Review the adequacy of existing fisheries control measures such as bag and size limits and seek to amend these if required. [DPIRD] <p>Provide updates to marine park managers in relation to fisheries management and monitoring. [DPIRD]</p>
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6.4 Commercial fishing

Commercial fishing on the south coast 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 provides benefits in the form of the supply of locally caught, fresh and sustainable seafood to Western Australia 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 recognised key value in the proposed 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 on the south coast (see Appendix 2 for details):

- South Coast Crustacean Managed Fishery
- Abalone Managed Fishery
- South Coast Estuarine Managed Fishery
- South Coast Salmon Managed Fishery
- South Coast Purse Seine Managed Fishery
- South Coast Demersal Gillnet and Demersal Long Line Managed Fishery
- South Coast Line and Fish Trap Managed Fishery
- The South Coast Nearshore Net Managed Fishery
- Octopus Interim Managed Fishery (OIMF)
- Specimen Shell Managed Fishery (SSMF)
- Marine Aquarium Fish Managed Fishery (MAFMF)
- South Coast Trawl Fishery.

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 proposed marine park.

Approximately 75% of the combined proposed 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. Following the public submission period, consideration will be given to moving the boundaries of some sanctuary zones 200 metres from the mainland high water mark to allow for commercial fishing from and close to the shore.

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

Summary of management arrangements for commercial fishing	
Requirements	<ul style="list-style-type: none"> • Maintenance of sustainable, targeted fish stocks. • Equitable access to fishing grounds in appropriate zones, across all extractive activities. • Appropriate provision and placement of infrastructure and facilities.
Management objectives	To ensure that, in collaboration with industry and DPIRD, commercial fishing in the proposed marine park is managed in a manner that is consistent with maintaining the ecological and cultural values of the proposed marine park.
Management strategies	<ol style="list-style-type: none"> 1. See Section 9.3 – zoning and permitted activities. 2. Work with commercial fishers through peak bodies to ensure operations are done in a culturally sensitive manner. [DPIRD] 3. Monitor commercial fishing catch and effort in the proposed marine park to inform periodic reviews of its management of commercial fisheries and aquatic resources. [DPIRD] 4. Investigate the extent and significance of interactions between commercial fishing and threatened, endangered or protected species and address as required. [DPIRD] 5. Conduct research to determine if ecosystem effects from commercial fishing occur in the proposed marine park and undertake adaptive management actions if required. [DPIRD] 6. Provide updates to marine park managers in relation to fisheries management and monitoring. [DPIRD]
<p>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.</p>	

6.5 Industry, mining and development proposals

6.5.1 Development proposals

During the life of the management plan there may be proposals to install or construct infrastructure in or adjacent to the proposed marine park. The nature of the proposed development will determine the appropriate level of assessment. DoT and DPLH are responsible for planning and development of coastal infrastructure. Any developments with

the potential to have environmental impacts may be subject to an environmental impact assessment under the EP Act.

One such proposal before government is the Western Green Energy Hub which will contain an onshore/offshore hub located around 20 kilometres to the west of Eucla within a 10-kilometre-wide ocean frontage. If the final development proposal attains all necessary environmental, planning and development approvals, an amendment to the proposed marine park will be made to accommodate the creation of port waters which will be managed by an appropriate port authority.

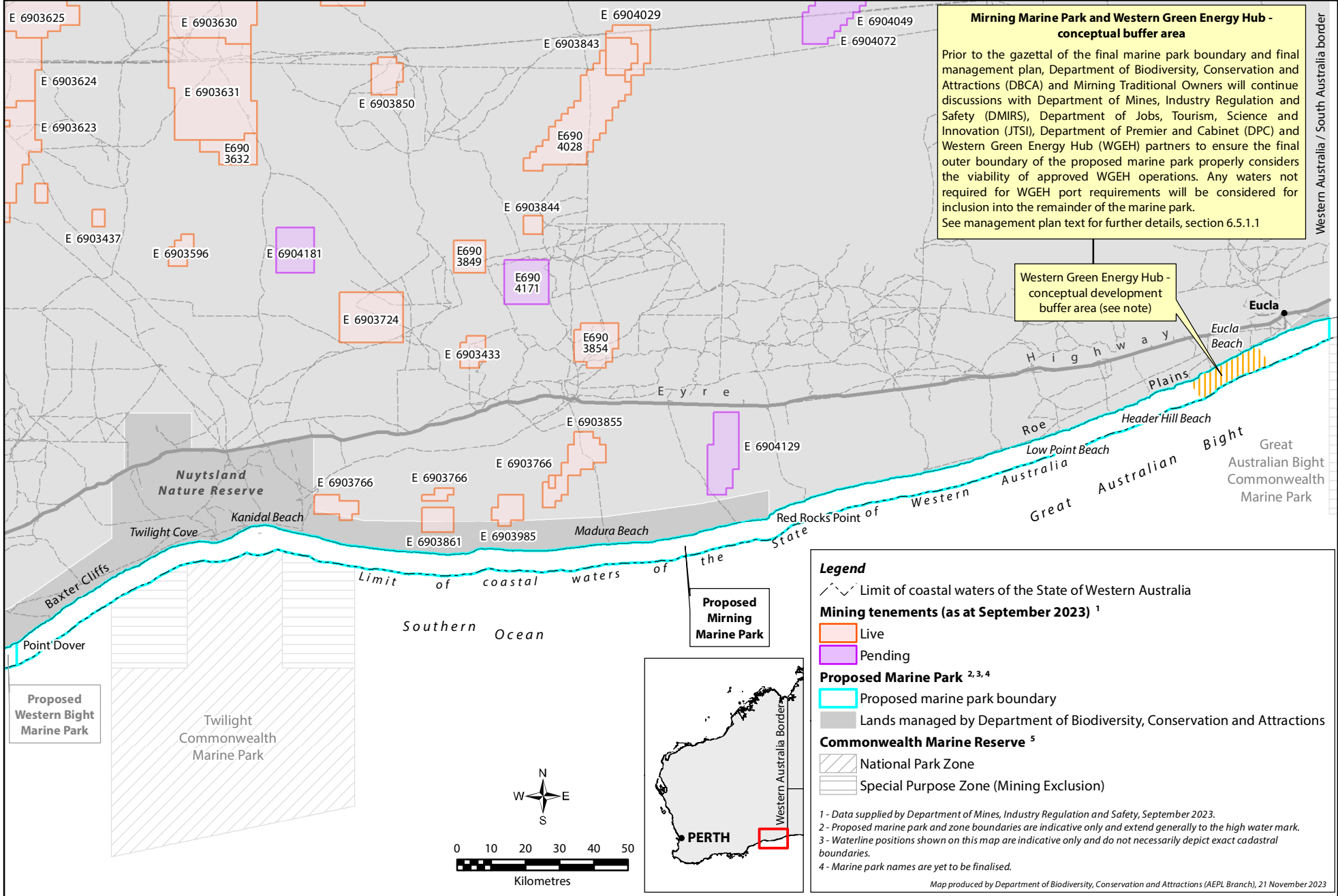
6.5.1.1 Proposed Western Green Energy Hub

The proposed Western Green Energy Hub (WGEH) Project is a large-scale renewable energy project which, if approved, will stimulate the State's economy and contribute to a cleaner future.

The project is being developed in partnership between InterContinental Energy, CWP Global and Mirning Green Energy Limited, the dedicated commercial entity for the MTLAC. The project contemplates an onshore/offshore hub located around 20 kilometres to the west of Eucla within an approximate 10-kilometre-wide ocean frontage.

Planning for the WGEH has commenced and to accommodate its potential future footprint in the marine environment, a marine buffer area (approximately 20km wide and out to the limit of State waters) around the conceptual development footprint is shown at Map 6. Subject to WGEH gaining all necessary approvals, this buffer will allow for the future creation of port waters which will be managed by an appropriate port authority. Any waters not required for port requirements will be considered for inclusion into the remainder of the marine park.

Marine reserve tenure arrangements for this buffer area are currently being considered by Government and MTLAC and will be confirmed prior to the park's creation; to be reflected in the final Mirning Marine Park Management Plan. Arrangements could include the identified buffer area being set aside as unclassified marine reserve or remain as unencumbered State waters to allow for future development.



6.5.2 Mining exploration and development

Mineral and petroleum exploration, extraction, and rehabilitation activities are regulated by other government agencies under legislation such as the Environmental Protection Act, *Mining Act 1978* (Mining Act), and State agreements. Petroleum (which includes oil, gas, and geothermal energy) exploration and production on state land and onshore waters is authorised under the *Petroleum and Geothermal Energy Resources Act 1967* (Petroleum Act). The Department of Mines, Industry Regulation and Safety (DMIRS) is the State’s lead agency for related assessment and approvals under the Mining Act and the Petroleum Act and is a decision-making authority for non-State agreement projects under these Acts. 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 Environmental Protection Act. Applications to explore or mine within parks vested in the Conservation and Parks Commission 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 fauna 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 proposed marine park will be subject to evaluation as part of the applicable State and Commonwealth government approvals processes.

6.5.3 Mooring and anchoring

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 proposed 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 DBCA’s Policy Statement 59: Mooring policy for further information regarding the management of moorings within marine parks.

Summary of management arrangements for industry, mining and development proposals	
Requirements	Access to suitable and culturally appropriate locations for current and future activities.
Management objectives	To ensure industry, development and associated activities are managed in a manner consistent with the objectives of the proposed marine park.
Management strategies	<ol style="list-style-type: none"> 1. Provide formal advice to the Commission and the EPA relating to industry, mineral, petroleum and renewable energy resources and coastal development activities in and adjacent to the proposed marine park. 2. If required, develop a mooring and anchoring plan with appropriate consultation, which will include an assessment of areas in which moorings would be acceptable from an ecological and social perspective and the capacities of these areas. [DoT] 3. Refer or recommend the referral of exploration or development proposals, that may impact significantly on the values of the park, to

	<p>the EPA for consideration under the Environmental Protection Act or to the Commonwealth Department of Climate Change, Energy, the Environment and Water for assessment under the EPBC Act.</p> <p>4. Ensure industry and resource development activities do not significantly impact the cultural heritage values, and are conducted in a culturally sensitive manner.</p> <p>Ensure that license conditions of approved industry activities include appropriate environmental performance measures, desired trends, short-term and long-term management targets, and monitoring and reporting requirements. [DWER]</p>
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7. Understanding Country

Strategic objective: Encourage and promote collaborative research, monitoring and the sharing of knowledge between Traditional Owners, scientists, marine park users and the local community to guide, adapt and improve Mirning sea Country management.

7.1 Research

The diversity of marine habitats, flora and fauna, combined with the range of human activities which occur in the proposed marine park, provide excellent opportunities for research and education.

The proposed marine park is located within the IMCRA Eucla mesoscale bioregion, which is influenced by the Leeuwin Current. The influence of this current provides a temperature gradient along the length of the Eucla bioregion, and as a result, the area is of significant scientific interest. The proposed sanctuary zones will provide an opportunity for scientists to undertake research on the recovery of marine ecosystems over time when pressures are removed. All zones provide the opportunity for social research with regard to use patterns and community perceptions.

Research and education can empower people to become stewards for marine parks and allow a greater dissemination of information to occur. Research and education can also help to create an affinity and respect for marine life and encourage participation in marine park use and management, particularly with respect to compliance with marine park rules.

With pressures likely to increase, an increased understanding of the cultural, ecological and social values of the proposed marine park will be critical to effective management. Research in the proposed marine park, informed by traditional ecological knowledge, will assist with continuous improvement of management practices and decisions and ensure the proposed marine park is effectively managed.

Research within the proposed marine park will require a licence issued by DBCA. This will enable DBCA to:

- 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 in the proposed marine park. These additional requirements are particularly relevant if the activity would otherwise be prohibited, such as the take of protected fish or the use of prohibited fishing gear.

Research strategies specific to particular values of the proposed marine park are detailed in sections 4 to 6. A summary of the generic management objectives, strategies and targets for the research program are described in the table below.

Summary of management arrangements for research	
Requirements	<ul style="list-style-type: none">• Equitable access to the full range of research opportunities in appropriate zones.• Access to representative sites covering the range of major human activity in the proposed marine park.• Access to representative sites free of major human influences.

	<ul style="list-style-type: none"> • Recognition of the role and importance of traditional ecological knowledge in research.
Management objectives	<ul style="list-style-type: none"> • To obtain increased understanding of the biodiversity, biocultural and cultural values, key ecological processes and socio-economic uses within the proposed marine park to inform management. • To promote research that improves knowledge of the values of the proposed marine park to inform management decisions. • To maximise the integration of conservation science with traditional ecological knowledge in all aspects of research in the proposed marine park. • To promote and facilitate the use of the park for education.
<p>Management strategies</p> <p>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.</p>	<ol style="list-style-type: none"> 1. Develop a shared understanding of culturally significant habitats and communities in the park, including an understanding of their cultural and ecological health (establish baselines). 2. Identify, prioritise and communicate high priority ecological and social research projects relevant to the management of the proposed marine park to appropriate research organisations. 3. Develop a research and engagement web portal, detailing relevant Mirning cultural protocols, research expectations, ongoing research and engagement news, interpretation and education content, and upcoming research opportunities. 4. Ensure MTLAC are briefed on proposed research activities and outcomes. 5. Develop collaborative research relationships with marine researchers and their institutions. 6. In all research projects: <ul style="list-style-type: none"> • where specific Mirning community members, rangers, and/or Elders have made a significant contribution to a research project (including data collection and processing), they should be included as co-authors in any associated output/publication • Mirning cultural and intellectual property should never be used or published by non-Mirning persons without the explicit informed consent of the MTLAC and appropriate acknowledgment as to ownership • where possible, research and monitoring conducted on Mirning sea Country should include provisions for Elders to be involved in activities and ensure cultural safety and opportunities for two-way science • where local baseline ecological data is not available, or efforts to source this data are not possible (e.g., resourcing or time limitations), Mirning knowledge, particularly that of Elders, should be drawn on for expert elicitation. 7. Encourage community and local industry involvement in research and education programs. 8. Develop and implement education and interpretation programs to: <ul style="list-style-type: none"> • ensure users of the proposed marine park are aware of and understand the values of the proposed marine park • ensure users are aware of management zones and regulations and the reasons for these controls • improve community knowledge of Mirning protocols and how to respect Country. 9. Develop and distribute to the local community and visitors a range of education materials about the proposed marine park's values and management.

	<ol style="list-style-type: none"> 10. Encourage commercial tour operators to provide educational courses/ materials to their staff and customers to foster the community stewardship of the proposed marine park. 11. Encourage and support Traditional Owner participation in the development and implementation of research and education programs and identify appropriate opportunities for integrating traditional knowledge. 12. Facilitate knowledge transfer and uptake of research findings to adaptive marine park management and planning. 13. Develop and implement an integrated education and interpretation program that complements existing initiatives (e.g., healthy Country plans) and increases local community and visitor cultural awareness, knowledge and understanding of: <ul style="list-style-type: none"> • cultural values, the cultural significance of living • cultural landscape/seascapes and cultural laws and protocols • Traditional Owner connection to Country and rights to enjoy Country and maintain customary practices • the use of traditional ecological knowledge as a foundation for sustainable traditional harvesting and resource management • ensures/encourages/provides advice/information on respectful and culturally appropriate behaviour and visitation • increases visitor enjoyment and safety • ensures visitors comply with management arrangements for the protection of culturally significant sites.
Performance measures	<ul style="list-style-type: none"> • Research plans have been developed and approved. • Research activities, as detailed in the plan, have been implemented.
Target	<ul style="list-style-type: none"> • Preparation and implementation of a research plan. • Ongoing and completed research projects.
Reporting	To be determined

7.2 Monitoring

Long-term monitoring of the condition of values in the marine environment and the pressures that impact those values is essential 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 measures are required, a monitoring program should also determine the rate of recovery of an affected area or value.

DBCA, in collaboration with joint management partners around the State, is progressively implementing the DBCA Marine Monitoring 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. Various monitoring activities have been undertaken for key ecological values in the park since its creation, and future monitoring efforts would seek to build upon these datasets.

In addition to DBCA, other organisations involved in monitoring include DPIRD for targeted species as defined in the FRM Act, universities and community groups. Monitoring of the proposed 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.

Summary of management arrangements for monitoring	
Requirements	<ul style="list-style-type: none"> • 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 proposed marine park. • Access to representative sites free of major human influences.
Management objectives	To monitor key cultural, ecological and social values in the proposed marine park within a 'condition-pressure-management response' framework, to provide a basis to assess, adapt and improve management.
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.	<ol style="list-style-type: none"> 1. 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] 2. Monitor the health and condition of culturally significant habitats and communities (and implement management actions to address issues where required). 3. Prepare a monitoring plan which considers existing information and the strategies and priorities listed in this management plan. 4. Develop a cultural values monitoring framework (and data storage and access process) to guide these activities, with respect to cultural lore and governance. 5. Investigate opportunities and develop a process to integrate traditional ecological knowledge in monitoring, where appropriate. 6. Provide necessary information and support for assessments of management plan implementation by the Commission. [DPIRD] 7. Design and implement monitoring programs to assess the effectiveness of zoning and other management arrangements for protection of cultural and ecological values. 8. Design and implement a Traditional Owner monitoring program, to track the progress of management strategies to protect marine park values. 9. Co-design monitoring programs for key threats to ecological and cultural values of the proposed marine park.
Performance measures	The development and implementation of a prioritised monitoring program.
Target	<ul style="list-style-type: none"> • 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, occurring 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 (Pörtner, 2019). It is possible that the impacts of climate change may limit the extent to which management objectives stated in the plan can be achieved.

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, decreased 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. Ocean warming is occurring not only in the shallow ecosystem but in environments exceeding 2000m deep in the Southern Ocean (Cooley et al., 2022).

Oceans uptake more carbon in response to the increasing concentrations of greenhouse gas, that can lead to ocean acidification. Acidification can impact the growth of shells, slow embryo development and even impact sound waves in the ocean. Climate change can also reduce oxygen content in the ocean which in general makes it harder for marine species to survive. Shallow-water communities may be more acutely impacted by deoxygenation. 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.

Establishing marine parks can contribute to maintaining climate change resilience and rebuilding ecological and social resilience (IUCN, 2017). Protection of coastal carbon habitats such as seagrass can help to ensure that carbon is not released as a result of the loss and degradation of those areas, while maintaining this critical habitat. Although marine parks can contribute to reducing local stressors, they do not protect against the impacts of climate change.

Little is known about the current impact of climate change on the proposed marine park. Research and monitoring programs contribute to our understanding of the effects of climate change, as well as the development of effective adaptive management responses. Management to reduce the impacts of climate change on the proposed marine park will focus on:

- increasing knowledge and understanding of the effects of climate change on the values
- monitoring the effects of climate change on the values and pressures
- increasing the health and resilience of ecosystems through the sound management of human uses and local pressures
- undertaking local adaptive management.

Summary of management arrangements for climate change	
Management objectives	To increase understanding of climate change on the proposed marine park and increase the resilience of ecological values to climate change.
Management strategies	1. Support international and national climate change initiatives where relevant in marine park research and adaptive management.
Joint management partners are the lead for	2. Ensure that impacts of climate change are considered in monitoring programs for the KPI's for the proposed marine park.

<p>all strategies. Supporting agencies are listed in brackets. If agencies are required to take a lead role, their name is in bold.</p>	<ol style="list-style-type: none"> 3. 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] 4. Monitor values of the proposed marine park and the climate-related pressures acting on them to inform the development of local and regional level adaptive management responses. 5. Educate users of the proposed marine park about the effects of climate change on the values of the proposed marine park. <p>Support or provide necessary information to contribute to climate forecast models to help predict the impacts of climate change on the values of the proposed marine park.</p>
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9. Plan implementation and operation

Sections 4 to 8 outline the management objectives, strategies, performance measures and targets required to achieve the strategic objectives for the proposed marine park. To successfully implement these strategies a number of supporting management strategies are required to effectively administer the proposed marine 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

Mirning people are the Traditional Owners of their Country, now also recognised in Australian law under their native title determination in 2017, which recognises that since time immemorial, Mirning people have maintained a living cultural, spiritual, familial and social relationship with Country and have an ongoing cultural obligation to the care and manage their lands and waters (Aboriginal Land Services, 2023). This timeless management right and responsibility means that management of the proposed Mirning Marine Park must recognise and support the importance of traditional and customary approaches to land and sea Country that involves Mirning people.

Summary of management arrangements for customary governance	
Requirements	<ul style="list-style-type: none"> Respect for Mirning customary governance and cultural protocols in decision-making about cultural knowledge. Reflection of traditional land management practices in management.
Pressures	<ul style="list-style-type: none"> Impact of colonisation and history on relationship between Mirning people and government. Misalignment between traditional Mirning lore and contemporary law.
Management objectives	MTLAC and government working together to create a new, holistic management model for the proposed marine park that aligns customary and contemporary management.
Management strategies	<ol style="list-style-type: none"> Develop long-term strategies and plans for building customary governance as core to the management of the proposed marine park. Ensure that customary lore is recognised and provided for in management where appropriate. Establish an Elder mentoring program for younger Mirning people employed in marine park management, where resources allow. Develop a cultural education program for government staff with Mirning Elders and/or senior Mirning people. Regularly report back to the Mirning community on progress of management plan implementation. Support Traditional Owners to identify and record cultural lores and protocols relevant to park management. Support the establishment of a Mirning cultural program by which customary lore is re-established to manage and protect Country.
Performance measures	To be determined in consultation with Traditional Owners and the MTLAC
Target	
Reporting	

9.2 Administration and governance

The following strategies will ensure appropriate legal, administrative, financial, governance, human resources and data management arrangements are in place to effectively implement management actions and manage the proposed marine park in a collaborative setting.

Summary of management arrangements for administration and governance	
Management objectives	To ensure the proposed marine park has appropriate legal, administrative, financial, operational and human resource frameworks in place so that it is effectively managed in a collaborative setting.
<p>Management strategies</p> <p>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.</p>	<ol style="list-style-type: none"> 1. Implement all statutory notices required to support implementation of the management plan within 12 months of marine park gazettal. 2. Collaborate with and provide advice to agencies, stakeholders and adjacent land managers, where necessary, to ensure the protection of marine park values and complementary management of adjacent reserves. 3. Secure and maintain appropriate funding for staff structures, operational equipment, including vessels, and infrastructure to adequately implement the management plan. [DPIRD] 4. Investigate the possibility of developing an information sharing platform for all agencies involved in managing the proposed marine park to share their data (e.g., a data dashboard). 5. Develop annual work plans. 6. Develop collaborative operational plans for implementation of relevant strategies in the plan. [DPIRD] 7. Ensure cultural safety protocols are observed by marine park managers including developing health and safety plans and protocols for all management and research operations conducted on Mirning sea Country, which incorporates cultural safety provisions. 8. Develop a communications plan and protocol for management actions, research and decision making, to ensure that Traditional Owners are aware of work on Country and are afforded opportunities to participate. 9. Pursue external funding and partnership opportunities to implement strategies in the indicative joint management plan. 10. Assess impacts on marine park values and manage appropriately as required (e.g., speed limits and/or additional measures to protect threatened species, ecological communities, and natural features or for safety reasons). [DoT] 11. Local Mirning spiritual connection, cultural heritage, knowledge, and lore is embedded in management decision making. 12. Regular reporting back to the Mirning community on the progress of management plan development and implementation. 13. Ensuring that special purpose cultural zones are established and maintained in a culturally appropriate way. Where possible, collaborate with MTLAC to ensure management of the proposed marine park is carried out in a culturally appropriate way. 14. Work with MTLAC to provide cultural awareness training to marine park management staff.

9.3 Zoning and permitted activities

The implementation of an appropriate zoning scheme is an important strategy for the conservation of marine biodiversity, increased recognition and protection of culturally

significant areas and customary practices, and the management of human use in the proposed 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 managers to achieve desired ecological, cultural and social outcomes.

9.3.1 Proposed zoning design

Multiple use zoning and other management strategies work together to protect and manage the values and uses of the area. Zoning is a key strategy for protecting the health and resilience of the proposed marine park, while supporting ongoing tourism, recreation, commercial activities and fishing.

The CALM Act requires marine parks to be zoned as one or a combination of sanctuary, recreation, special purpose or general use zones. The zones provide for varying levels of conservation, recreational and commercial use. Through multiple-use zoning, marine parks will provide economic, recreational and cultural benefits for local communities, as well as environmental benefits. Where possible and appropriate, the development of the proposed marine park zoning seeks to accommodate existing uses.

The national guidelines for establishing marine protected areas recommend that IMCRA bioregions form the basis for reserve design, with one or more examples of conservation features (e.g., habitats and ecosystems) found in each bioregion represented in highly protected zones (ANZECC, 1999). The proposed Mirning Marine Park falls within the IMCRA Eucla mesoscale bioregion. To complement the bioregional framework, a network-based approach was taken, considering the adjacent proposed marine parks, which were being developed concurrently.

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

- Thirty-one sanctuary zones covering approximately 330,000 ha or 25% of the parks.
- Twenty special purpose zones (cultural protection/cultural management) covering approximately 172,210 ha or 13% of the parks.
- Three special purpose zones (whale conservation) covering approximately 75,790 ha or 6% of the parks.
- One special purpose zone (wildlife conservation) covering approximately 3,380 ha or less than 1% of the parks.
- General use in the remainder of the parks, covering approximately 724,130 ha or 55% of the parks.

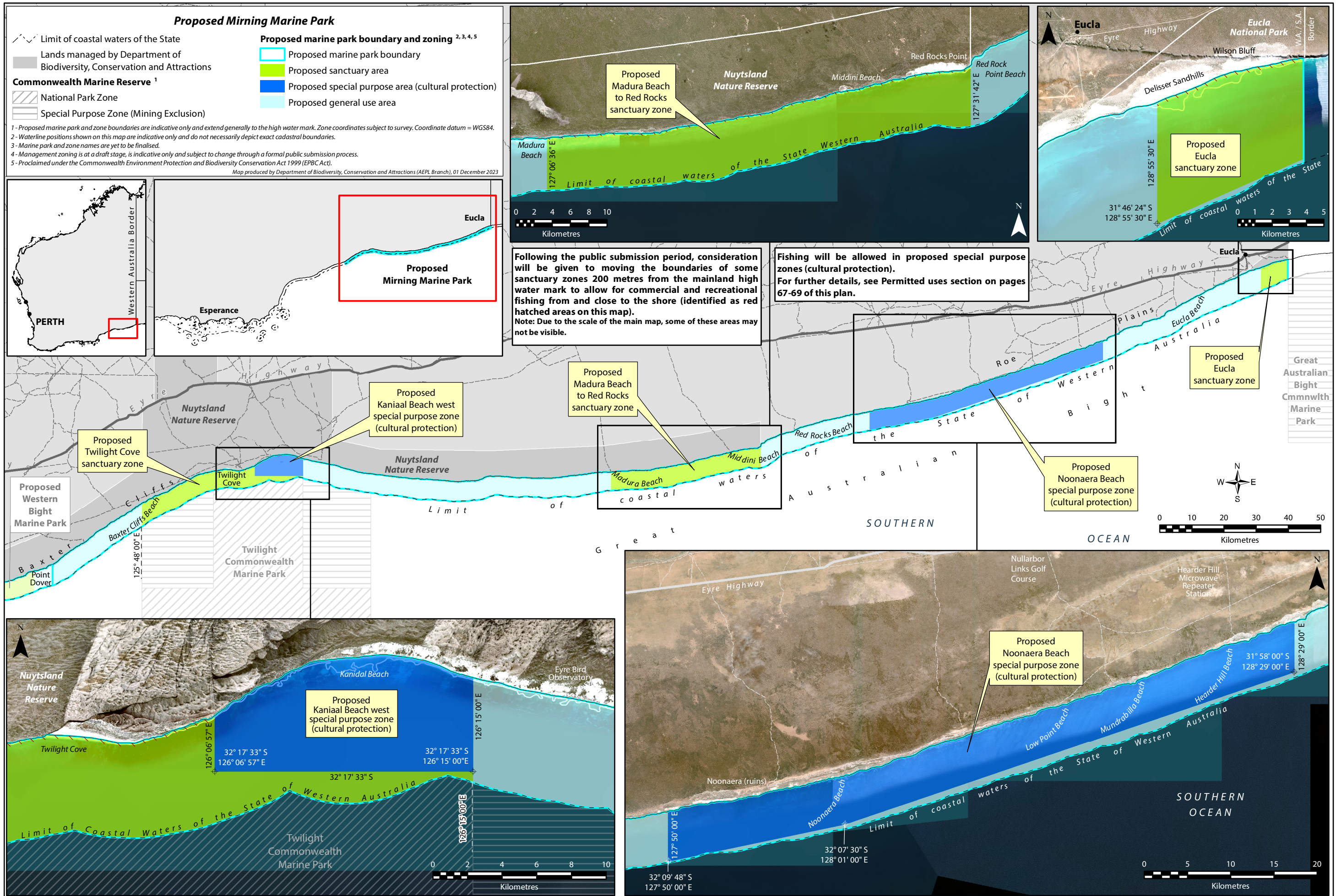
Map 7 shows the proposed zoning scheme for the Mirning Marine Park. A summary of the activities permitted in each proposed zone is presented in Table 1.

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

The proposed zoning scheme is based on a comprehensive, adequate and representative (CAR) approach. It aims to protect ecologically and culturally important high-priority values such as seagrass, macroalgal, reef, soft substrate and filter feeding communities and considers the level of current and projected future pressures on these values. The proposed zoning scheme is designed to provide connectivity out to deeper water and provide complementarity to adjacent marine and terrestrial reserves.

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

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



Map 7 - Proposed Mirning Marine Park proposed zoning.

9.3.2 Sanctuary Zones

The proposed sanctuary zones will play an important role in protecting areas of critical habitat to maintain the healthy functioning of the complex ecosystems that make up the proposed marine park. Sanctuary zones 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.

For Mirning Traditional Owners, many ecological values also have a particular cultural significance, and the sanctuary zoning will also contribute to the protection and conservation of Mirning cultural heritage values. Sanctuary zones can help to increase ecosystem health by reducing pressures on the ecosystems protected, thereby increasing resilience to external pressures such as climate change.

Proposed Twilight Cove Sanctuary Zone

The coastline of the proposed Twilight Cove Sanctuary Zone (approximately 20,445ha) transitions from cliff and mixed sand and reef to a depositional sandy coast environment. The proposed zone will protect representative examples of highly productive marine habitats, including sub tidal platform reef, high profile nearshore reef communities and soft sediment communities, in the Eucla bioregion. The proposed Twilight Cove Sanctuary Zone will protect features of ecological importance including breeding and foraging areas for flesh-footed shearwaters, little shearwaters and Pacific gulls. The proposed sanctuary zone will also protect the only known mainland breeding site for Australian sea lions and little penguins. Bordering the Twilight Marine Park in Commonwealth waters and the Nuytsland Nature Reserve, the proposed Twilight Cove Sanctuary Zone will provide connectivity between these marine and terrestrial conservation reserves.

Proposed Madura Beach to Red Rocks Point Sanctuary Zone

The proposed Madura Beach to Red Rocks Point Sanctuary Zone (approximately 23,472ha) represents a change in coastal aspect to predominantly south facing with gradually sloping coastline. The coastline is also known to accumulate large volumes of wrack which are ecologically important for marine food webs. The proposed zone will protect representative examples of marine habitats, including mixed soft-sediment and macroalgae reef communities, and shallow and intertidal shoreline platform reefs. The proposed sanctuary zone is adjacent to the Nuytsland Nature Reserve providing connectivity between these important marine and terrestrial conservation reserves.

Proposed Eucla Sanctuary Zone

The proposed Eucla Sanctuary Zone (approximately 4,800ha) represents a geomorphic transition area from soft-substrate to cliff and will protect representative examples of marine habitats, including mixed soft-sediment and macroalgae reef communities, and shallow and intertidal shoreline platform reefs. The proposed sanctuary zone lies adjacent to the South Australian border, providing connectivity to the South Australian network of marine reserves. The proposed sanctuary zone will contribute to the protection of an area of Mirning Country that has been identified as having high cultural significance by the Traditional Owners.

9.3.3 Proposed Special Purpose Zones (cultural protection)

The two proposed special purpose zones (cultural protection) will play an important role in protecting the value of Mirning sea Country to the culture and heritage of Mirning people. The conservation purpose of the special purpose zones (cultural protection) is to protect and conserve culturally sensitive geographical areas and features that are significant to Mirning people. These may contain tangible and intangible values.

Name	Area (ha) approximately
Proposed Kaniaal Beach West special purpose zone (cultural protection)	7,379
Proposed Noonaera Beach special purpose zone (cultural protection)	33,665

9.3.4 Proposed general use zones

All areas in the proposed marine park not included in proposed sanctuary or proposed special purpose zones are proposed to be zoned as general use (approximately 119,144ha). Management of general use areas is provided for through mechanisms under the CALM Act and CALM Regulations, as well as the implementation of management strategies. The general use areas provide for biodiversity conservation and a range of activities including recreational and commercial fishing and aquaculture. Aquaculture leases that exist prior to the establishment of a marine park have a right of renewal and cannot be displaced by the creation of a marine park.

9.3.5 Permitted uses

The permitted uses table (Table 1) summarises the range of permitted activities in the different zone types in the proposed 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 (e.g., commercial tourism and research) in State marine parks. The implementation of the management plan may include management actions such as temporal 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 in accordance with relevant legislation and the management objectives and targets in this plan.

Any changes to the permitted activities and uses table requires 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 proposed Mirning Marine Park.

Activity	Sanctuary zones	Special purpose zones (cultural protection)	General use zones
Customary			
Customary activities (e.g., sustainable harvesting and fishing)	Yes [a]	Yes [a]	Yes [a]
Commercial fishing and aquaculture [b]			
Commercial abalone fishing	No	Yes	Yes
Commercial crustacean fishing	No	Yes	Yes
Commercial estuarine fishing	No	Yes	Yes
Commercial line and trap fishing	No	Yes	Yes
Commercial nearshore net fishing	No	Yes	Yes
Commercial purse seine fishing	No	Yes	Yes
Commercial salmon fishing	No	Yes	Yes
Commercial demersal longline (shark) fishing	No	Yes	Yes

Commercial demersal gillnet (shark) fishing	No	Yes	Yes
Commercial trawl fishing (scallop)	No	Yes	Yes
Commercial octopus fishing	No	Yes	Yes
Commercial specimen shell fishing	No	Yes	Yes
Commercial marine aquarium fishing	No	Yes	Yes
Commercial fishing (other)	No	Yes	Yes
Aquaculture	No	Assess	Yes
Commercial—other			
Ground-disturbing mining and petroleum exploration and development [c]	No	No	Assess
Non-ground-disturbing activities including geophysical surveys, geological mapping, sampling and geochemical surveys [d]	No	No	Assess
Ship loading and other mining related infrastructure (e.g., ship loading docks, cabling or pipelines)	No	No	Assess
General marine infrastructure (e.g., groynes, jetties and boat launching facilities)	No	Assess	Assess
Artificial structures (e.g., artificial reefs)	No	Assess [f]	Assess
Dredging and dredge spoil dumping	No	Assess [e]	Assess
Scenic flights (charter) [b]	Yes	Yes	Yes
Commercial tour operators – fishing [b]	No	Yes	Yes
Commercial tour operators – non-extractive (e.g., wildlife viewing) [b]	Yes	Assess [f]	Yes
Commercial use of remotely piloted aircraft (drones) [b]	Assess	Assess	Assess
Commercial (other) [b]	Assess	Assess	Assess
Wildlife/fish feeding	No	No	No
Recreational			
Boating (motorised and non-motorised)	Yes	Yes	Yes
Nature appreciation and wildlife viewing	Yes	Yes	Yes
Recreational fishing [b- if from a boat]	No	Yes	Yes
Remotely piloted aircraft (RPA, drone) launching and landing [g]	Yes	Yes	Yes
Recreational live shell collecting	No	No	Yes
Other use			
Access	Yes	Yes	Yes
Vessel transit	Yes	Yes	Yes
Navigation aids	Yes	Yes	Yes
Research and monitoring [b]	Yes [h]	Assess [f]	Yes
Anchoring [i]	Yes	Yes	Yes

Mooring	Assess	Assess	Yes
Seaplane and helicopter launching and landing [j]	Assess	Assess	Assess
Vessel sewage discharge and de-ballasting	No	No	Yes [k]

Permitted activities provisions
<p>[a] Customary take is confined to Mirning Traditional Owners, or where Traditional Owners have provided consent to another Aboriginal person or group.</p> <p>[b] Licence or permit required under the <i>Conservation and Land Management Act 1984</i> and/ or <i>Fish Resources Management Act 1994</i> and related regulations.</p> <p>[c] Ground-disturbing mining and petroleum exploration and development activities include any activity that disturbs the land, seabed and/or subsoil within the marine park (e.g., drilling).</p> <p>[d] Geophysical surveys will be assessed by the Department of Mines, Industry Regulation and Safety.</p> <p>[e] Activity 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.</p> <p>[f] Any new proposals to also be referred to marine park managers.</p> <p>[g] Recreational use of RPAs must comply with Civil Aviation Safety Authority (CASA) rules as well as legal requirements under the CALM Act, BC Act 2016, and the <i>Bushfires Act 1954</i> and related regulations. Restrictions on the use of RPAs may be applied in some areas or for certain periods of time subject to the <i>Civil Aviation Regulations 1988</i> and the <i>Civil Aviation Safety Regulations 1998</i>, under the <i>Civil Aviation Act 1988</i>.</p> <p>[h] Non-extractive/destructive research and monitoring activities only.</p> <p>[i] Except where restrictions are put in place for the protection of ecological and/or cultural values.</p> <p>[j] Lawful authority must be obtained to launch, land or touchdown in an aircraft on CALM Act lands and waters.</p> <p>[k] Only in gazetted sewage discharge areas.</p> <p>- Consideration will be given where existing permissions relating to animal exercise areas are in effect.</p> <p>- '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.</p>

9.4 Community stewardship and compliance

Education and public participation will help to increase public awareness and understanding of the values and management issues in the proposed 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 proposed marine park. While most users comply with management arrangements when they understand why they are implemented, it is important to monitor compliance and mitigate inappropriate or illegal behaviour. It will also be important that users of the proposed marine park also 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 proposed marine park and achieve a high level of compliance with regulations, permitted uses and other management arrangements within the proposed marine park.
Management strategies	<ol style="list-style-type: none"> 1. Install zone markers and educational signage for the proposed marine park where appropriate. [DPIRD for signage] 2. Develop and implement a collaborative compliance program. [DPIRD] 3. Ensure proposed marine park users, including researchers, obtain and comply with appropriate formal permissions. [DPIRD] 4. Encourage voluntary compliance and peer enforcement of regulations. [DPIRD, DoT]
Joint management partners are the lead for all strategies. Supporting agencies are listed in brackets. If	

<p>agencies are required to take a lead role, their name is in bold.</p>	<ol style="list-style-type: none"> 5. 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. 6. Develop an education and interpretation plan which communicates: <ul style="list-style-type: none"> • the importance of the proposed marine park's values • Mirning culture and values • the purposes of management zones and regulations • the appropriate behaviour to reduce human impacts and ensure public safety • considers all education and interpretation strategies listed in the management plan. 7. Maintain a database of compliance statistics and adapt management strategies to address any non-compliance issues. [DPIRD] 8. Identify opportunities to provide specific training opportunities for Mirning to build the skills required to assist with DPIRD compliance and education activities on the south coast. [DPIRD]. 9. Develop a caring for Country program that ensures there are rangers on land and sea Country to manage and protect cultural, ecological and socio-economic values of the proposed marine park.
<p>Performance measures</p>	<p>To be determined</p>
<p>Target</p>	<p>To be determined</p>

10. Assessing management effectiveness

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

10.1 Annual reviews

The prioritised management strategies contained in the final management plan will be implemented by the joint management partners, primarily through the collaboration of DBCA’s Esperance district, Marine Science Program 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 final management plan will be considered by the Commission. Key parts of the annual review will include:

- progress in implementing the 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.

10.2 Periodic assessments

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

10.3 Revision of the management plan

The final management plan will guide management of the proposed marine park for 10 years, or until a statutory revision is undertaken and a new 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 plan is approved. Full public consultation will occur at the time of revision, and endorsement of a revised indicative joint management plan will be sought from the Commission. 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 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.	<ol style="list-style-type: none"> 1. Develop and implement a management effectiveness reporting process that is consistent with DBCA and Commission policy and ensure results are reported back to the Mirning community. [Commission] 2. Support MTLAC to conduct periodic reviews of the effectiveness of plan implementation in meeting cultural, capacity building and other priority objectives. [DPIRD] 3. Review and where necessary, refine zoning arrangements in the proposed marine park in light of cultural knowledge about caring for sea Country. 4. Provide necessary information and support for the management effectiveness reporting process. [DPIRD]

References

- Australian Academy of Science (2020) *The science of climate change*. <https://www.science.org.au/education/immunisation-climate-change-genetic-modification/science-climate-change>. Accessed 21 October 2020.
- Aboriginal Land Services (2023). Mirning Traditional Lands Aboriginal Corporation – Cultural Values Consultation and Mapping to Advise on the Establishment of a Marine Park and Management Plan on Mirning Sea Country. *FINAL Cultural Values Interpretation Report*.
- Australian and New Zealand Environment and Conservation Council (ANZECC) Task Force on Marine Protected Areas (1999). Strategic plan of action for the national representative system of marine protected areas: guide for action by Australian Governments. Environment Australia, Canberra.
- Bearham, D., Vanderklift, M. A., & Gunson, J. (2013). Temperature and light explain spatial variation in growth and productivity of the kelp *Ecklonia radiata*. *Marine Ecology Progress Series*, 476, 59–70. <https://doi.org/10.3354/meps10148>.
- Blazeski, S., Norriss, J., Smith, K.A. & Hourston, M. (2021). Ecological Risk Assessment for the State-Wide Small Pelagic Scalefish Resource. Fisheries Research Report No. 320 Department of Primary Industries and Regional Development, Western Australia. 115 pp.
- Bonner, W. N. (1994). *Seals and sea lions of the World*. Blandford, London.
- Burnett, N. P., & Koehl, M. A. R. (2022). Ecological biomechanics of damage to macroalgae. *Frontiers in Plant Science*, 13.
- Campbell, R. (2003). Demography and population genetic structure of the Australian sea lion, *Neophoca cinerea*., Doctoral Thesis, UWA.
- Campbell, R., Holley, D., Collins, P., & Armstrong, S. (2014). Changes in the abundance and distribution of the New Zealand fur seal (*Arctocephalus forsteri*) in Western Australia: Are they approaching carrying capacity? *Australian Journal of Zoology* 62, 261-267.
- Carruthers, T. J. B., Dennison, W. C., Kendrick, G. A., Waycott, M., Walker, D. I., & Cambridge, M. L. (2007). Seagrasses of south–west Australia: A conceptual synthesis of the world's most diverse and extensive seagrass meadows. *Journal of Experimental Marine Biology and Ecology*, 350(1-2), 21-45. doi:10.1016/j.jembe.2007.05.036
- Colman, J. G. (1998). *South Coast Terrestrial And Marine Reserve Integration Study. National Reserves System Cooperative Program Project #713. MRIP/SC-10/1997*.
- Commonwealth of Australia. (2012). *Marine Bioregional Plan for the South-west Marine Region*.
- Commonwealth of Australia. (2018). *Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations*.
- Connor, R. C., Wells, R. S., Mann, J., & Read, A. J. (2000). The bottlenose dolphin: Social relationships in a fission-fusion society. *Cetacean societies: Field studies of whales and dolphins*.
- Conservation and Land Management (1994). A representative marine reserve system for Western Australia. Report of the Marine Parks and Reserves Selection Working Group. Department of Conservation and Land Management, Perth.

Cooley, S., D. Schoeman, L. Bopp, P. Boyd, S. Donner, D.Y. Ghebrehiwet, S.-I. Ito, W. Kiessling, P. Martinetto, E. Ojea, M.-F. Racault, B. Rost, & M. Skern-Mauritzen, (2022): Oceans and Coastal Ecosystems and Their Services. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lössche, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 379–550, doi:10.1017/9781009325844.005.

CSIRO & Bureau of Meteorology (2015). *Climate Change in Australia. Information for Australia's Natural Resource Management Regions: Technical Report*. CSIRO and Bureau of Meteorology, Australia.

Dennis, T. E., & Shaughnessy, P. D. (1996). Status of the Australian Sea Lion, *Neophoca cinerea*, in the Great Australian Bight. *Wildlife Research*, 23, 741-754.

Dennis, T. & Shaughnessy, Peter. (1999). Seal survey in the Great Australian Bight region of Western Australia. *Wildlife Research*. 26. 10.1071/WR98047.

Department of Agriculture, Fisheries & Forestry (DAFF) (2007). *National Assessment of Interactions between Humans and Seals: Fisheries, Aquaculture and Tourism*. Canberra: DAFF. Available from: <https://www.agriculture.gov.au/sites/default/files/sitecollectiondocuments/fisheries/environment/bycatch/sealassessment.pdf>

Department for Environment & Heritage (DEH). (2009). A technical report on the outer boundaries of South Australia's marine parks network. Department for Environment and Heritage, South Australia

Department of Parks & Wildlife (DoPW). (2016). *Esperance and Recherche Parks and Reserves Management Plan 84*.

Department of Primary Industries & Regional Development (DPIRD). (2021). *Fisheries Research Report 320*.

Department of Transport. (2009). *Strategy for Management of Sewage Discharge into the Marine Environment*. <https://www.transport.wa.gov.au/mediaFiles/marine/MAC-IS-SewageStrategy.pdf>

Dutson, G. C., Garnett, S. T., & Gole, C. (2009). *Australia's Important Bird Areas: Key sites for bird conservation*. Birds Australia.

Entwisle, T. J., & Huisman, J. M. (1998). Algal systematics in Australia. *Australian Systematic Botany*, 11, 203-124.

Foster, M. S. (2001). Rhodoliths: Between rocks and soft places. *Journal of Phycology*, 37, 659-667.

Gales, N. J., Shaughnessy, P. D., & Dennis, T. E. (1994). Distribution, abundance and breeding cycle of the Australian sea lion, *Neophoca cinerea* (Mammalia: Pinnipedia). *Journal of Zoology*, 234, 353-370.

Gaughan, D. J., & Santoro, K. (2020). *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2018/19: The State of the Fisheries*. Department of Primary Industries and Regional Development, Western Australia.

- Goldsworthy, S. D., Kennedy, C., & Lashmar, K. (2014). Monitoring the status, trends in abundance and key demographic rates of the Australian sea lion population at Seal Bay – Kangaroo Island. *Report to the Nature Foundation SA*. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No. F2014/000787-1. SARDI Research Report Series No. 815. 29pp.
- Goldsworthy, S. D., Shaughnessy, P. D., Mackay, A. I., Bailleul, F., Holman, D., Lowther, A. D., Page, B., Waples, K., Raudino, H., Bryars, S., & Anderson, T. (2021). Assessment of the status and trends in abundance of a coastal pinniped, the Australian sea lion *Neophoca cinerea*. *Endangered Species Research*. 44. 421-437. 10.3354/esr01118
- Hamer, D. J., Goldsworthy, S. D., Costa, D. P., Fowler, S. L., Page, B., & Sumner, M. D. (2013). The endangered Australian sea lion extensively overlaps with and regularly becomes by-catch in demersal shark gill-nets in South Australian shelf waters. *Biological Conservation*, 157, 386-400.
- Hedley, S. L., Bannister, J. L., & Dunlop, R. A. (2011). Abundance estimates of Southern Hemisphere Breeding Stock 'D' humpback whales from aerial and land-based surveys off Shark Bay, Western Australia 2008. *Journal of Cetacean Research and Management, Special Issue 3*, 209-221.
- Hoegh-Guldberg O. & Bruno J. F. (2010). *The Impact of Climate Change on the World's Marine Ecosystems*. *Science*, 328, 1523-1528.
- How J., Smith K.A., Donnelly H., Wiberg L. & Oliver R. (2023). Ecological Risk Assessment for the Western Australian Offshore Crustacean Resource. Fisheries Research Report No. 332. Department of Primary Industries and Regional Development, Western Australia. 104 pp.
- Hutchins, J. B. (2001). Biodiversity of shallow reef fish assemblages in Western Australia using a rapid censusing technique. *Records of the Western Australian Museum*, 20, 247-270.
- Ince, R., Hyndes, G. A., Lavery, P. S., & Vanderklift, M. A. (2007). Marine macrophytes directly enhance abundances of sandy beach fauna through provision of food and habitat. *Estuarine, Coastal and Shelf Science*, 90(1-2), 77-86.
- IUCN (2017). Marine protected areas and climate change. https://www.iucn.org/sites/dev/files/mpas_and_climate_change_issues_brief.pdf. Accessed March 2020.
- James, N., Bone, Y. & Collins, L. (2001). Surficial Sediments of the Great Australian Bight: Facies Dynamics and Oceanography on a Vast Cool-Water Carbonate Shelf. *Journal of Sedimentary Research*. 71. 549-567. 10.1306/102000710549.
- Kemper, C. M., & Gibbs, S. E. (2001). Dolphin interactions with tuna feedlots at Port Lincoln, South Australia and recommendations for minimising entanglements. *Journal of Cetacean Research and Management*, 3(3), 283-292.
- Kemper, C. M., Pemberton, D., Cawthorn, M., Heinrich, S., Mann, J., Wursig, B., & Gales, R. (2003). Chapter 11. Aquaculture and marine mammals: Co-existence or conflict? In N. J. Gales, M. Hindell, & R. Kirkwood (Eds.), *Marine Mammals: Fisheries, Tourism and Management Issues*. CSIRO Publishing.
- Kendrick, G. A., Harvey, E. S., & McDonald, J. I. (2009). Historical and contemporary influence of the Leeuwin Current on the marine biota of the southwestern Australian

Continental Shelf and the Recherche Archipelago. *Journal of the Royal Society of Western Australia*, 92, 211-219.

Kendrick, G. A., Harvey, E. S., McDonald, J. I., Pattiaratchi, C. B., Cappo, M., Fromont, J., Butler, J. (2005). *Characterising the fish habitats of the Recherche Archipelago. Fisheries Research and Development Corporation Report Project No. 2001/060*. Retrieved from <http://www.marine.uwa.edu.au/recherche/>

Kerswell, A. P. (2006). Global biodiversity patterns of benthic marine algae. *Ecology*, 87(10), 2479-2488.

Kilminster, K., Hovey, R., Waycott, M., & Kendrick, G. A. (2018). Seagrasses of southern and south-western Australia. In *Seagrasses of Australia: structure, ecology and conservation* (pp. 61-89). Cham: Springer International Publishing.

King, J. E. (1988). Australasian Pinnipeds. *Background Paper*.

Kirkman, H., & Kuo, J. (1990). Pattern and process in southern Western Australian seagrasses. *Aquatic Botany*, 37(4), 367-382. Doi:10.1016/0304-3770(90)90022-d

Lavers, J. L. (2015). Population status and threats to Flesh-footed Shearwaters (*Puffinus carneipes*) in South and Western Australia, *ICES Journal of Marine Science*, 72 (2), 316–327, <https://doi.org/10.1093/icesjms/fsu164>

Lee, S., & Bancroft, K. (2001). Review of the existing ecological information for the proposed Recherche Archipelago marine conservation reserve. Unpublished report. Marine Conservation Branch, Department of Conservation and Land Management. 110 pp.

Lee, K. S., S. R. Park, & Y. K. Kim. (2007). Effects of irradiance, temperature, and nutrients on growth dynamics of seagrasses: A review. *J. Exp. Mar. Biol. Ecol.* 350: 144–175. doi:10.1016/j.jembe.2007.06.016

McClatchie, S., Middleton, J., Pattiaratchi, C. B., Currie, D., & Kendrick, G. A. (2006). *The south-west marine region: ecosystems and key species groups: Report prepared for the National Oceans Office*.

McLachlan, A. & Brown, A.C. (2006). *The Ecology of Sandy Shores*. Academic Press, Burlington, MA, USA, 373 pp.

McLeod, P., & Lindner, R. (2018). *Economic Dimension of Recreational Fishing In Western Australia Research Report for the Recreational Fishing Initiatives Fund*.

Mirning (2023). *Wenyo, Welcome*, mirning.org, accessed 23 March 2023.

Moore, A., Schirmer, J., Magnusson, A., Keller, K., Hinten, G., Galeano, D., Woodhams, J., Wright, D., Maloney, L., FRDC, ABARES & UC, 2023. National Social and Economic Survey of Recreational Fishers 2018-2021, February. CC BY 3.0.

Muhling, B. & Ryan, K. (2002). A preliminary investigation of issues associated with the deposition of wrack on Perth metropolitan beaches. *Internal Report for the Department of Conservation and Land Management*

Newman, S.J., Wise, B.S., Santoro, K.G. & Gaughan, D.J. (eds). (2021). Status Reports of the Fisheries and Aquatic Resources of Western Australia 2020/21: The State of the Fisheries. Department of Primary Industries and Regional Development, Western Australia.

- Nordlund M. L., Koch E. W., Barbier E. B., & Creed J.C. (2016). Seagrass Ecosystem Services and Their Variability across Genera and Geographical Regions. *PLOS ONE*, 11(10): e0163091. <https://doi.org/10.1371/journal.pone.0163091>
- Osterrieder, S. K., Salgado-Kent, C., & Robinson, R. W. (2017). Responses of Australian sea lions, *Neophoca cinerea*, to anthropogenic activities in the Perth metropolitan area, Western Australia. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 27, 414–435.
- Phillips, J. C. (2001). Marine macroalgal biodiversity hotspots: why is there high species richness and endemism in southern Australian marine benthic flora? *Biodiversity and Conservation* 10, 1555–1577.
- Pörtner, H. O., Roberts, D. C., Masson-Delmotte, V., Zhai, P., Tignor, M., Poloczanska, E., ... & Weyer, N. M. (2019). IPCC special report on the ocean and cryosphere in a changing climate. IPCC Intergovernmental Panel on Climate Change: Geneva, Switzerland, 1(3), 1-755.
- Ross, G. J. B. (2006). *Review of the Conservation Status of Australia's Smaller Whales and Dolphins*.
- Ross C. L., Schoepf V., DeCarlo T. M., & McCulloch M. T. (2018). Mechanisms and seasonal drivers of calcification in the temperate coral *Turbinaria reniformis* at its latitudinal limits. *Proceedings of the Royal Society B* 285: 20180. DOI: 10.1098/rspb.2018.0215.
- Ryan, D. A., Brooke, B. P., Collins, L. B., Kendrick, G. A., Baxter, K. J., Bickers, A. N., . . . Pattiaratchi, C. B. (2007). The influence of geomorphology and sedimentary processes on shallow-water benthic habitat distribution: Esperance Bay, Western Australia. *Estuarine, Coastal and Shelf Science*, 72(1-2), 379-386. doi:10.1016/j.ecss.2006.10.008
- Salgado-Kent, C., Jenner, K. C. S., Jenner, M. N., Bouchet, P., & Rexstad, E. (2012). Southern Hemisphere breeding stock "D" humpback whale population estimates from North West Cape, Western Australia. *Journal of Cetacean Research and Management*, 12, 29-38.
- SCRMPWG (2010). *Oceans of Opportunity: A proposed strategic framework for marine waters of Western Australia's south coast*.
- Shaughnessy, P. D., Gales, N. J., Dennis, T. E., & Goldsworthy, S. D. (1994). Distribution and Abundance of New Zealand Fur Seals, *Arctocephalus forsteri*, in South Australia and Western Australia. *Wildlife Research*, 21, 667-695.
- Shaughnessy, P. D., Goldsworthy, S. D., Burch, P., & Dennis, T. E. (2013). Pup numbers of the Australian sea lion (*Neophoca cinerea*) at The Pages Islands, South Australia, over two decades. *Australian Journal of Zoology*, 61(2), 112-118.
- Shaughnessy, P. D., Goldsworthy, S. D., Hamer, D. J., Page, B., & McIntosh, R. R. (2011). Australian sea lions *Neophoca cinerea* at colonies in South Australia: distribution and abundance, 2004 to 2008. *Endangered Species Research*, 13(2), 87-98. doi:10.3354/esr00317
- Shepherd, S. A. & Veron, J. E. N. (1982). Stony Corals (Order Scleractinia or Madreporararia). In S. A. Shepherd & I. M. Thomas (Eds), *Marine Invertebrates of Southern Australia Part 1* (169-178).
- Short, F. T., Polidoro, B., Livingstone, S. R., Carpenter, K. E., Bandeira, S., Bujang, J. S., ... Zieman, J. C. (2011). Extinction risk assessment of the world's seagrass species. *Biological Conservation*, 144(7), 1961–1971

Smith J.N., Jones D., Travouillon K., Kelly N., Double M. & Bannister, J.L. (2021). Monitoring Population Dynamics of 'Western' Right Whales off Southern Australia 2018-2021 - Final Report on activities for 2020. Report to the National Environmental Science Program, Marine Biodiversity Hub. Western Australian Museum (lead organisation).

Stiller, J., Wilson, N. G., & Rouse, G. W. (2015). A spectacular new species of seadragon (Syngnathidae). *Royal Society Open Science*, 2(2), 140458. doi:10.1098/rsos.140458

Sutton A.L. & Day P.B. (2021) A review of the south coast marine environment and proposed areas for state marine reservation between Albany and Eucla, Western Australia. Report prepared for the Department of Biodiversity, Conservation and Attractions, Western Australia. Carijoa Marine Consulting, Fremantle, WA, 169pp.

Thomson-Dans, C., Kendrick, G. A., & Bancroft, K. P. (2003). *Researching the Recherche*.

Threatened Species Scientific Committee. (2013). Conservation advice for subtropical and temperate coastal saltmarsh, Australian Government Department of Climate Change, Energy, the Environment and Water.

<https://www.dcceew.gov.au/environment/biodiversity/threatened/nominations/comment/posidonia-australis-seagrass-meadows#:~:text=A%20public%20nomination%20was%20received%20in%202010%20to,Priority%20Assessment%20List%20by%20the%20Commonwealth%20Environment%20Minister.>

Unsworth, R., & Cullen-Unsworth, L. (2014). Biodiversity, ecosystem services, and the conservation of seagrass meadows. In B. Maslo & J. Lockwood (Eds.), *Coastal Conservation* (Conservation Biology, pp. 95-130). Cambridge: Cambridge University Press. doi:10.1017/CBO9781139137089.005

Veron, J. E. N., & Marsh, L. M. (1988). Hermatypic corals of Western Australia. Records and annotated species list. *Records of the Western Australian Museum. Supplement No. 29*, 136.

Watt, M., Braccini, M., Smith, K.A. & Hourston, M. (2021). Ecological Risk Assessment for the Temperate Demersal Elasmobranch Resource. Fisheries Research Report No. 318. Department of Primary Industries and Regional Development, Western Australia. 110 pp

Wells, F. E., Longbottom, A. F., & Longbottom, J. (2005). The marine molluscs of Esperance Bay and the Recherche Archipelago, Western Australia. In *The Marine Flora and Fauna of Esperance, Western Australia* (pp. 289-313): Western Australian Museum.

Wells, R. S., & Scott, M. D. (2000). Common bottlenose dolphin, *Tursiops truncatus*. In W. Perrin, B. Wursig, & J. G. M. Thewissen (Eds.), *Encyclopedia of Marine Mammals* (pp. 249-255).

Wormersley, H. B. S. (1990). Biogeography of Australasian Marine Macroalgae. In M. N. Clayton & R. J. King (Eds.), *Biology of Marine Plants* (pp. 368-381). Melbourne, Australia: Longman Cheshire Pty Limited.

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 (e.g., 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 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. The SCCMF is a multi-species, effort-controlled pot-based fishery, with catches of southern rock lobster (*Jasus edwardsii*) and western rock lobster (*Panulirus cygnus*) as well as deep-sea crab species namely 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. conicopra*) 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, with fishing activity occurring in 13 estuaries between Cape Beaufort on the southwest and the Western Australian/South Australian border. This fishery targets estuarine finfish species and blue swimmer crabs (*Portunus armatus*), with the main fishing methods being gill netting, purpose-designed crab traps and haul netting. This fishery is managed through input controls with restrictions of the number, length and mesh size of nets used, and the number of crab traps used, as well as 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 Western Australian/South Australian border and utilises beach seine nets to target Western Australian salmon (*Arripis truttaceus*). This fishery is managed through input controls with restrictions on the type, length and mesh size of nets used, as well as size limits (Duffy, Harris and Blay, Status of the Fisheries Report 2020/21).

The South Coast Purse Seine Managed Fishery (SCPSNF)

The SCPSMF operates between Cape Leeuwin on the southwest and the Western Australian/South Australian border. This fishery operates with purse seine nets to catch pilchards (*Sardinops sagax*) and other small pelagic fish, and is managed through limited entry (with a restricted number of licences issued) and Total Allowable Commercial Catches, (meaning it is a quota-based fishery). There are also other input controls with restrictions on the number, length and mesh size of nets used, as well as size limits. There are 5 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 southwest to the Western Australian/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 shark 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 on the southwest and the Western Australian/South Australian border (excluding the waters of the South Coast Estuarine Fishery). The fishery is divided across 4 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 means of net in the SCNNMF between Black Point and the Western Australian/South Australian border. Fishing operators in this fishery are targeting scalefish and squid (*Sepioteuthis australis*) - this excludes Western Australian salmon and small pelagic fish, through the use of beach seine, haul and gill nets. This fishery is managed through limited entry (with a restricted number of licences issued) and input controls with restrictions of the number, length and mesh size of nets, as well as 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 the majority of 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 through limited entry (with a restricted number of licences issued) and input controls with 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 fishes, 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).