Design principles guiding Western Australia's **marine park network**

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

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Recommended citation:
Department of Biodiversity, Conservation and Attractions (2023). *Design principles guiding Western Australia's marine park network*. Department of Biodiversity, Conservation and Attractions, Perth, Western Australia.

Cover images
From top: Rowley Shoals Marine Park (Suzanne Long/DBCA); rangers measure a juvenile green turtle (Michael Hourn/DBCA); commercial fishing (courtesy DPIRD); southern right whale mother and calf (courtesy Dave & Fiona Harvey).

Footer images
From left: Soft corals at Ningaloo Marine Park (courtesy Tourism WA); recreational fishing (Carolyn Thomson-Dans/DBCA); Aboriginal rock engravings reflecting marine values in the Dampier Archipelago (Amy Stevens/Murujuga Aboriginal Corporation).



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Introduction

Western Australia has a remarkable and spectacular coastline spanning over 12,500 kilometres, with some of the most unique and biodiverse marine environments in the world. From the renowned Kimberley coast in the north, the World Heritage areas of Ningaloo and Shark Bay on the Gascoyne coast, the South-West Capes and the highly endemic southern coastline into the Great Australian Bight, the wide variety of ecosystems are home to an extensive array of flora and fauna.

With most Western Australians living or working near the coast, our marine and coastal areas support a diverse range of industrial, commercial, recreational, customary and tourism activities. We know there are global pressures on our marine environment. Decades of research has proven the benefits of marine parks in conserving marine biodiversity[1–13], thus safeguarding current and future opportunities for sustainable use[10,12,14].

The Western Australian Government is committed to developing a network of marine parks and reserves across Western Australia's coastal and marine environment and has been progressively building a representative system since the creation of Marmion and Ningaloo marine parks in 1987. The long-term goal is to establish and manage a comprehensive, adequate and representative system of marine parks and reserves that provide protection for all types of marine habitats and biodiversity found in Western Australia's coastal waters.

Western Australia's network of marine parks contributes to the National Representative System of Marine Protected Areas (NRSMPA), a commitment made by the Australian, State and Territory Governments through the Intergovernmental Agreement on the Environment[15,16]. The creation of state and national networks also helps fulfil Australia's international obligations to contribute to a global representative system of marine protected areas through the Convention on Biological Diversity (CBD), and the International Union for the Conservation of Nature's (IUCN) Protected Areas Program.

In Western Australia, marine parks and reserves are created under the *Conservation and Land Management Act 1984* (CALM Act). Several policy documents, including *New Horizons in Marine Management (1994)* and *New Horizons: The way ahead in marine conservation and management (1998)* provide the government's policy framework for the conservation and management of the marine environment. The Department of Biodiversity, Conservation and Attractions (DBCA) *Corporate Policy Statement No. 36: Conservation Reserve System (2017)* further articulates the commitment to establish and manage a system of comprehensive, adequate and representative reserves for both terrestrial and marine environments.



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Map of Western Australia's IMCRA marine bioregions.



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This document, *Design Principles guiding Western Australia's marine park network* provides further guidance for marine park planners, joint management partners, key stakeholders, scientists and the community on the approach used to design and review multiple use marine parks.

The design principles have been developed based on a thorough literature review of principles and criteria used nationally and internationally building on the work conducted for the NRSMPA and other Australian marine park networks[10,11,15–21]. The design principles also incorporate the latest thinking and knowledge from published literature and research, as well as expertise and knowledge from marine park planners, scientists, specialists in Aboriginal culture and heritage and marine natural resource managers.

Foundations for design

Four foundations govern the marine park design process: a bioregional framework, partnerships with Traditional Owners, community engagement, and a whole of government approach.

Bioregional framework

Internationally, best practice guidelines recommend the use of different biogeographical areas as a foundation for marine protected area reserve design[22–25]. Australia's coast and marine environment has been classified into 60 *Interim Marine and Coastal Regionalisation for Australia* (IMCRA) bioregions, 19 of which are in Western Australia [15,16,26]. Each bioregion is a distinct biogeographical unit that represents broad physical and biological differences in the coastal and marine environment across Australia. The guidelines for the NRSMPA 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[15,16,26]. In line with the national guidelines, Western Australia has adopted a bioregional approach to marine park design.

Partnerships with Traditional Owners

Aboriginal people have intimate and ancient connections and cultural responsibilities for country, and are acknowledged as Traditional Owners of the lands and waters managed by DBCA. Accordingly, Traditional Owners are invited, not as key stakeholders, but as partners with DBCA for marine park design and management. Native title and/or traditional ownership has been recognised along much of Western Australia's coastline and opportunities for formal joint management, as joint management partners with DCBA, are being discussed and formalised. Many joint management arrangements are already in place with Traditional Owners across Western Australia's marine park network.

Community engagement

The involvement of key stakeholders and the community is critical to the success of robust and



effective marine park design. Understanding key stakeholder and local community activities and use of a proposed marine park area is vital to developing zoning arrangements which meet marine park objectives whilst also providing for the needs of the community[12,13,26–28]. Community engagement processes respect key stakeholder and community knowledge and expertise; help facilitate early insight, new ideas and solutions that are locally appropriate; improve trust, provide capacity building and empower stakeholders to support outcomes; and ensure better decisions are made which incorporate the interests and concerns of stakeholders and local communities [10,12,13,16,17,23,26,28,29].

The CALM Act outlines the process for formal consultation on indicative (draft) marine park management plans. Community and key stakeholder engagement processes are also tailored for each marine park planning process based on, and appropriate to, their location and regional context across Western Australia's coast.

Whole of government approach

The Department of Primary Industries and Regional Development (DPIRD) and the Department of Mines, Industry Regulation and Safety (DMIRS) have statutory advice and approval roles in the development of marine park management plans. Marine park planning processes will involve both departments, and other government agencies to ensure a whole of government approach to marine park planning.

Marine park objectives

The CALM Act states the purpose of marine parks is '*allowing only that level of recreational and commercial activity which is consistent with the proper conservation of the natural environment, the protection of flora and fauna, the protection and conservation of the value of the marine park to the culture and heritage of Aboriginal persons and the preservation of any feature of archaeological, historic or scientific interest*.'

Three broad objectives guide the development of marine park design to ensure national and international commitments and obligations under the CALM Act are met. These objectives are: biodiversity conservation, protecting and conserving Aboriginal culture and heritage, and providing for ongoing ecologically sustainable use. A set of design principles and selection criteria has been developed for each objective.

Biodiversity conservation

The objective of biodiversity conservation, along with its related ecological, biophysical and scientific principles and criteria, guides marine park design to help ensure the marine environment is protected into the future. The ecological principles provide a best practice foundation for marine park design which fulfils national obligations to develop a comprehensive, adequate and



representative reserve system, and to protect ecologically important values to safeguard long-term conservation of biodiversity, ecological integrity and ecosystem functioning[1–3,10,11,13,14,25].

Protect and conserve Aboriginal culture and heritage

Western Australia has a significant and rich Aboriginal culture and heritage from the oldest continuing culture in the world. Aboriginal people possess traditional knowledge, innovations and practices that have global importance for conservation and sustainable use of marine biodiversity and resources[30,31]. Under the CBD and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), Australia has international obligations to respect Aboriginal rights and culture and heritage, incorporate traditional knowledge in the implementation of protected area programs, and to respect customary use of biological resources[10,28,30–33]. Western Australia has legislated this responsibility through the CALM Act, by providing the objective to protect and conserve the value of the land to the culture and heritage of Aboriginal people on all CALM Act lands and waters. DBCA is committed to ensuring that any policies, plans or programs managed by the department, whether solely or jointly, protect and conserve Aboriginal culture and heritage values. The CALM Act also provides for joint management and joint vesting of CALM Act lands and waters, and access to land and sea country for Aboriginal customary activities.

Culture and heritage design principles and criteria guide marine park design to help ensure: the respect, protection and conservation of culture and heritage values including culturally significant sites and species; ongoing connection to country and culture; access to country for customary activities; consistency with cultural laws and protocols; and respect for Traditional Owner aspirations, including economic opportunities for sea country. Implementing culture and heritage design principles with Aboriginal people ensures that traditional, scientific and technical knowledge held by Traditional Owners is incorporated into marine park design.

Provide for ongoing ecologically sustainable use

The ecologically sustainable use objective, along with the associated design principles and criteria, provides guidance on how to best design marine parks to provide for all uses and users. Well-designed multiple use marine parks can provide social and economic benefits to local communities[12–14,26,28] and should provide for sustainable resource use such as recreational and commercial fishing, pearling and aquaculture, tourism and recreation, education, research and monitoring, and the protection of natural, historic and maritime heritage values[10,12,26].

As the implementation of highly protected zones may displace some resource extractive activities, it is important that marine park design is informed by social and economic information on existing activities and an understanding of cumulative impacts on users who may operate across more than one marine park (economic, mental health and well-being)[13,25–27,29]. Commercial and recreational



fishing, aquaculture, and the supply of fresh, sustainable and locally caught fish is highly important to regional communities and this should be reflected and supported in marine park design[12,26]. Community and key stakeholder input into marine park planning processes is critical to ensure effective and efficient design which meets ecological and cultural objectives, minimises unnecessary impacts to resource users, and provides an overall benefit to community livelihoods and wellbeing[10,12,13,26–29].

A note on how design principles are applied

Marine protected area design is complex. Designing zoning schemes which meet the requirements of biodiversity conservation and cultural objectives, whilst providing for sustainable use, can be challenging[27]. National and international best practice guidelines specify the use of highly protected, no-take zones to achieve biodiversity conservation outcomes[1–5,7,10–13,25,27,34–37]. In Western Australia, marine parks are zoned using one or more of four zone types: general use, special purpose, recreation and sanctuary zones to achieve multiple use outcomes (see appendix). Whilst sanctuary zones provide for a broad range of recreational activities, they do not permit the commercial or recreational take of any plants or animals.

The design principles and selection criteria in this document provide guidance to everyone involved in marine park planning and design processes and will assist with developing a zoning scheme. The design principles described in this guidance document are best practice, share the science behind marine park design, and provide transparency regarding the objectives and approach as to how information is considered and applied during planning processes.

Broadly, the ecological principles and selection criteria are used to identify options or broad areas of interest for sanctuary zones, as they relate to the conservation features (representative habitats, ecologically important plants, animals and communities) to be included in zones with high protection[15,18]. In many cases, there will be multiple options available which meet the ecological criteria. The sustainable use criteria are then used as an overlay to select areas to include in sanctuary zones (such as a research site) or aim to avoid (such as a fishing site)[18]. Areas not included in sanctuary zones will either be designated as special use, recreation or general use, depending on their values and uses. The socio-economic information is therefore used as a basis for decision making[18]. Where there is conflict between conservation and sustainable use objectives, the aim will be to minimise impacts on existing use where possible, without compromising the conservation objectives. For example, some areas may be prioritised for inclusion in sanctuary zones if they are of particular ecological significance or may not occur elsewhere.

The culture and heritage objectives are used throughout the process for both the identification and selection of options, and the intent will be to work in partnership with Traditional Owners to develop zoning and other management arrangements for the protection of all marine park values.



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Fishing in the Yawuru Nagulagun Marine Park. Photo – Chris Nutt/DBCA

It is important to note that reliable and accurate socio-economic use information is critical to successfully avoid placing key resource use areas in highly protected zones. Attempts to circumvent or misdirect design processes by providing inaccurate information often leads to poor outcomes for those involved, when marine park planners are genuinely trying to avoid identified resource use areas and minimise impacts to existing users. Trust is an essential component for all parties, and it is the role of DBCA to facilitate a balanced, pragmatic outcome based on the best available scientific information (using surrogates where biodiversity data is low) and information provided by key stakeholders, industry and the community.

Whilst the aim is to create an efficient design which meets all biodiversity, cultural and sustainable use objectives, it is worth noting that marine parks are iterative, subject to review processes and can be improved over time.

This guidance document provides a framework for marine park design in Western Australia. Flexibility will be needed at the individual marine park scale, and not all selection criteria will be applicable for every marine park. Additional principles or criteria may be considered on a park-by-park basis and priorities may be set based on the regional context. Culture and heritage principles may also need to be reviewed and tailored with Traditional Owner groups to ensure they are applicable and meet the needs and aspirations of Traditional Owners. Whilst the design principles guide boundary and multiple use zoning development, they may also inform other marine park management arrangements.



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DESIGN PRINCIPLES

Biodiversity conservation – Ecological principles

Comprehensiveness

The full range of ecosystems, habitats and communities present within and across each bioregion should be included within a marine park network[9,15,16,18,38].

Adequacy

The network includes enough of each component of biodiversity (i.e. enough of each habitat type) to maintain a healthy functioning marine ecosystem[15,16,22,23]. Key considerations to achieve adequacy include:

- the size and shape of sanctuary zones – preference for larger rather than smaller zones;
- avoiding fragmentation of habitats by incorporating whole ecological units;
- building redundancy through replication – multiple examples of each habitat or key feature within sanctuary zones;
- proportionality – representing features in similar proportions as they exist in each bioregion;
- permanence – long term protection;
- buffering sanctuary zones from edge effects;
- connectivity of the network; and
- avoidance of and/or complementary management of threats within and outside the network to build resilience.

[1,2,6,7,9–12,14–18,22–27,34,38–45]

Although there are now many recommendations on percentage area targets for sanctuary zones [10,11,27,46], this metric alone is not a measure of the adequacy of marine park design [27]. For effective design the approach should focus on the adequate inclusion of representative habitats within sanctuaries, rather than the overall area percentage of sanctuary zones[9,10,25,27,47]. The variability across marine ecosystems and marine parks in Western Australia makes it difficult to specify a minimum size for sanctuary zones to use on a state-wide basis. The preferred approach is to target the efficient inclusion of all habitat types within sanctuary zones and determine sanctuary zone size on a park-by-park basis, noting that larger zones are more effective at conserving biodiversity than smaller ones[1,4,6,12,25,44].

Representativeness

Biodiversity features should be represented across their natural range, biological and genetic diversity and variability[2,11,15,18,22,23,27,45]. Representativeness is distinguished from comprehensiveness by focusing on overall levels of biodiversity protected by the system, as opposed to habitat level alone[22,40]. Where there is still much to learn about the biodiversity of the



marine ecosystems, habitats and other recognisable features such as physical and environmental gradients are used as surrogates[38,40,44]. For example, habitats and biological communities should aim to be represented across a range of depths, temperatures and across different wave exposures[2,17,39,40,48].

Precautionary principle

Lack of scientific certainty should not be used as a reason for postponing measures to protect the marine environment within a marine park network [2,15,16,18,38]. 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[2]. Where biodiversity data is limited, or there are areas of uncertainty, a precautionary approach uses surrogates (e.g. mapped and unmapped habitats or geomorphology) for biodiversity[17,18,26,44,49].

Ecological importance, vulnerability and resilience

Biologically and ecologically important areas play an essential role in sustaining populations and maintaining ecosystem function[4,16,22]. 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 into the future[3,4,18,22–24]. Key features may include:

- nursery, juvenile, nesting, breeding, spawning and calving areas, feeding, foraging and socialising areas (rookeries, haul outs) or other areas important for life history stages;
- areas that are unique, unusual, genetically diverse or highly productive;
- areas that are important for, or where known aggregations or occurrences of endemic, rare, threatened, vulnerable or protected species or habitats;
- ecological hotspots, or areas with a high level of biodiversity (species richness);
- areas that are vulnerable, fragile or slow to recover;
- areas with a high degree of naturalness and integrity;
- areas that are globally significant, or resting areas or important corridors for migratory species;
- areas with important species or populations such as keystone species or source populations or where particular interactions sustain communities e.g. permanent or seasonal upwellings which establish important food webs at certain times of the year;
- habitats important to ecosystem functioning and productivity, where their importance to biodiversity is connected over a wider geographic area than their immediate occurrence e.g. seagrass beds, saltmarshes, reefs, and kelp forests.
- habitats and species that function as potential carbon sinks e.g. tidal salt marshes, mangroves, seagrass beds and kelp forests.

[4,6,9,15–18,21–24,26,38,41,45,50]



Migratory species such as southern right whales must be considered in the design of WA's marine park network. Photo – Peter Nicholas/DBCA.

Connectivity

Connectivity refers to the way components of a marine ecosystem are connected through tides, currents and the behaviour of plants and animals[6,18,22,24,51,52]. Connectivity within marine ecosystems is complicated and may change and fluctuate between seasons and years e.g. variation in currents, fecundity of species etc[51,52]. In lieu of detailed knowledge of connectivity, a range of surrogates can be used. In addition, marine parks designed to be well represented from a bioregional and habitat perspective may also consequently be highly connected [22]. Key considerations for connectivity may include:

- dispersal ranges (including sources and sinks) for different marine organisms (including adult and propagule/larval dispersal for sessile, sedentary and motile species);
- distances between and within marine parks and sanctuary zones;
- benthic-pelagic linkages;
- connections between land and catchment to coast to deep water environments;
- physical oceanography, tides, current patterns, upwellings, coastal topography;
- foraging areas for pinnipeds and other species, migratory pathways for seabirds and cetaceans;
- linkages between sites for the transport of materials or nutrients, and
- land and marine based impacts of nutrients, pollution and sediments.

[2,6,7,9,11,17,18,22–24,26,34,40,45,51–56]



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Selection criteria for ecological design principles

Aim to include examples of all broad benthic and shoreline classes in sanctuary zones, and where available use fine-scale benthic data.

Consider scales (state-wide, bioregion, park) when including examples of all habitats within sanctuary zones. Aim to ensure all habitats present in each bioregion are included in sanctuary zones within marine parks.

Aim to incorporate fewer larger sanctuary zones, rather than many small ones.

Aim to incorporate whole areas of habitats within sanctuary zones (avoid fragmentation).

Aim to include a diversity of distances within and between sanctuary zones.

Aim to include multiple examples (replication) of habitats, communities and other ecologically important features within sanctuary zones, and spread the risk by incorporating habitats across sanctuary zones within and between marine parks for each bioregion.

Aim to represent conservation features (e.g. habitats) in sanctuary zones in similar proportions as they exist in the marine parks and each bioregion.

Where possible locate sanctuary zones away from threats (particularly point source pollution).

Ensure effective zoning schemes remain in place long term.

Aim to include examples of benthic habitats at different depth and temperature ranges and shoreline classes at different wave exposures.

Aim to represent longitudinal and cross shelf diversity, including some sanctuary zones which provide connections between the coast to deep water environments.

Aim to incorporate areas with key linkages between land and sea environments.

Aim to ensure mixes of habitats, including areas with habitat heterogeneity, and transition areas between habitats within sanctuary zones.

Consider unmapped habitats as separate habitats. Aim to include unmapped areas in sanctuary zones. Use physical gradients (oceanographic, geomorphic) as surrogates.

Aim to include unmapped areas at different depths in sanctuary zones in equal proportions (if not more) than they occur within a marine park to act in a precautionary manner.



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Aim to ensure the full range of depth classes are protected in sanctuary zones, recognising the deeper waters are not as well mapped as shallower areas.

Consider potential spatial extents of habitats adapting to climate change and aim to provide high level protection to those areas (include the furthest possible landward extent to marine parks for future sea level rise scenarios).

Aim to include key ecologically important or vulnerable species, habitats and life stages in sanctuary zones, and include multiple examples where possible.

Prioritise species and habitats of conservation concern for inclusion within sanctuary zones (e.g. EPBC Act or IUCN red listed species and communities).

Prioritise unique features for inclusion within sanctuary zones.

Aim to include known important nursery, juvenile, nesting, breeding, spawning, calving, foraging and socialising areas in sanctuary zones.

When identifying areas for inclusion in sanctuary zones, where possible aim to create an efficient design by selecting areas which incorporate multiple values.

2,4,6,7,9–18,20,22–27,34,38–45,48–55

Flatback turtle nesting. Photo – Carolyn Thomson-Dans

Sponges in the North Kimberley Marine Park. Photo – John Huisman

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Protect and conserve Aboriginal culture and heritage – culture and heritage principles

Conserve culturally significant sites and areas important for culturally significant species (location specific protection)

Cultural sites are evidence of the very long historical connection to, and the use and occupation of land and sea by Traditional Owners[31]. Cultural sites associated with sea country may be tangible or intangible. Particular plants and animals may be culturally important to Aboriginal people and may have their own songs and oral traditions[31]. Traditional Owners may have a relationship of mutual obligation with certain plants or animals, some may also be totems or have significance relating to the Dreaming.

Visiting cultural sites maintains Traditional Owner connection to country and their ancestors, and it is a cultural responsibility for Traditional Owners to visit important places and check that they haven't been disturbed and are still healthy. Conversely, some cultural sites may be considered dangerous or taboo by Traditional Owners, and therefore access to those sites needs to be managed. The protection of sacred and significant sites helps to uphold their cultural integrity[31]. Generally, not all sites of cultural significance have been recorded, and there may be ongoing work to identify sites across land and sea country. Marine park zoning, including the use of sanctuary and special purpose zones can help to protect areas where culturally significant sites, plants, animals and habitats occur.

Key considerations:

- All Aboriginal heritage sites, registered and unregistered, are protected under the *Aboriginal Heritage Act 1972*.
- Tangible sea country sites may include stone arrangements, fish traps, burial sites, middens, freshwater sources or other water bodies, fishing and hunting grounds, significant land and seascape features, scatters/tools/quarries, shell sites, carving sites, ochre site, sites where there is diversity and abundance of plants and animals, breeding sites for important species and culturally important habitats such as reefs or beaches.
- Intangible sites may include meeting places, ceremonial sites, Men's sites, Women's sites, increase sites, Dreaming sites, song lines, birthing sites, associations with specific plants and animals, mythological sites/stories – areas which still interact with spirits, sad places, areas for preparing and consuming food, and areas which may other have specific cultural associations.
- Sites and features identified in relevant healthy country and/or sea country planning documents
- Traditional science and monitoring regimes
- Cultural values mapping

[26,29,31]



Respect and provide for ongoing connection to country and culture, including customary activities (Cultural connection and activities on country)

Traditional Owners have a deep spiritual connection to country through their extensive cultural and ecological knowledge developed over thousands of years[31,32]. Under traditional law, Traditional Owners have an obligation to care for country and ensure culture is passed on to future generations[30]. Traditional Owner language is an important mechanism for passing on cultural knowledge and heritage, often carrying meaning beyond the words themselves and playing a central role in a sense of identity. Traditional Owners also share knowledge through customary activities, including sustainable fishing, hunting and harvesting; managing country in accordance with traditional practices; visiting important cultural places; passing on oral traditions, including stories and songs; and engaging in artistic and ceremonial events[29,31]. Traditional Owners continue to use their intimate knowledge of the environment, seasons, currents and tidal movements to navigate safely through country, hunt and harvest marine resources and gather tools, bait, materials and medicine[29,31]. Knowing the country and observing the changes through the seasonal and daily cycles is critical knowledge and was a crucial skill for survival. Access to and maintaining connection to country is integral to the culture and well-being of Traditional Owners. Where culturally appropriate, marine parks can be designed to recognise and protect special places, record language and stories, and support customary activities through appropriate zoning arrangements[26].

Key considerations:

- Customary activities such as fishing, and hunting are provided for under the CALM Act and *Biodiversity Conservation Act 2016* (BC Act).
- The *Fish Resources Management Act 1994* (FRM Act) recognises customary fishing activities and is subject to the *Native Title Act 1993* (NT Act) where an Aboriginal person is expressing a native title right or interest for the purpose of satisfying personal, domestic or non-commercial communal needs.
- Customary activities will be managed in accordance with Traditional cultural protocols, Parks and Wildlife Service *Policy No. 86 Aboriginal customary activities* and DPIRD's customary fishing policy.
- The CALM Act Aboriginal customary purpose provisions allow a wide range of activities in the conservation estate (including marine parks), some of which are not specified in the NT Act or in many native title determinations.
- If Traditional Owners want to undertake customary activities or exercise native title rights that are inconsistent with the CALM Regulations, Parks and Wildlife Service's regional or district manager may give written permission to allow that activity, if considered safe to do so.



Where culturally appropriate, provide consistency with cultural laws, lore and protocols, including cultural management arrangements (Consistency and complementarity)

Aboriginal people have a complex system of law, practised for thousands of years. Customary laws, lore and protocols are connected to 'Dreamtime' and provide rules on how to interact with the land, kinship and community – how to look after country, hunt and fish sustainably, collect and share food and resources, use language appropriately, access country appropriately, and how to behave with family members. Customary laws and protocols may be passed on to young people through customs and ceremonies, including traditional narratives, songs and dances[31]. Cultural laws may relate to specific areas or sites, or different plants and animals. The laws and protocols may be specific to an individual, family or 'clan' group and may be different for men and women. In some cases, Traditional Owners may share information about cultural laws and protocols so marine park management can be complementary, can support traditional owner obligations for access to country or the safety of visitors to country, and so visitors to marine parks can behave in a culturally sensitive manner. Consistency with cultural laws and protocols can help ensure cultural values remain healthy and that zoning and management arrangements support traditional owner responsibilities for country. For example, in some marine parks in Western Australia, there are cultural laws or protocols around the taking of shells from beaches or walking on intertidal reefs in certain areas.

Key considerations include:

- Healthy country plans, sea country plans
- Traditional seasonal calendars
- Indigenous Protected Areas (IPAs) and associated plans
- Cultural values mapping
- Cultural safety rules and protocols

Where culturally appropriate, contribute to raising awareness of Aboriginal culture and heritage values (Education/Awareness)

Traditional Owners are intrinsically connected to land and sea country, which hold culture and heritage values. Aboriginal culture and heritage values can be tangible and intangible and can extend beyond specific places and objects. The deep understanding Traditional Owners have of plants, animals, the seasons and land and seascape features can greatly inform marine park management[28,31]. It also contributes to scientific research and conservation programs in traditional owner country[31]. Where appropriate, raising awareness of Aboriginal culture and heritage values can help improve the understanding and respect of culture and heritage values in the community. It also helps to ensure visitors do not unknowingly damage values or visit places inappropriately, increases protection to culturally significant places, supports cultural and eco-tourism activities,



and maintains traditional owner obligations to country, particularly around culturally appropriate visitation and visitor safety.

Key considerations:

- The CALM Act provides a legislative responsibility to protect and conserve the value of the land to the culture and heritage of Aboriginal persons on all CALM Act land and water.
- DBCA is committed to ensuring that lands and waters vested in or under the control and management of the department, whether solely or jointly, are managed in a manner that protects and conserves Aboriginal culture and heritage values.
- CALM Act regulations can be used to restrict or prohibit public access to certain areas in land and sea country to protect highly significant cultural areas, such as lore grounds, for safety reasons, or to provide privacy for Traditional Owners engaging in cultural practices.

Respect current and future aspirations and arrangements for sea country, including opportunities for economic development, training and management (Current/Future opportunities)

Traditional Owners have needs, aspirations and inter-generational obligations to maintain family livelihoods and sustain existence from their land and sea country and its resources[28,31,32]. Identification and development of commercial opportunities and investments based on natural and cultural assets can deliver incomes and help build a sustainable future for Traditional Owners. Economic development opportunities such as cultural tourism can create employment for Traditional Owners on country, whilst also promoting cultural understanding and respect by immersing tourists in a cultural experience. Marine parks can contribute to long-term employment for Traditional Owners on-country through direct employment and fee for service work for management purposes.

Key considerations:

- Zoning schemes should consider current and future aspirations of Traditional Owners, including employment, training and commercial opportunities.
- Healthy country and/or sea country planning documents.
- The Convention on Biological Diversity and the United Nations Declaration on the Rights of Indigenous Peoples.
- All Australian governments, including Western Australia, have committed to the National Agreement on Closing the Gap.

[26,28,29]



Selection criteria for culture and heritage principles

Provide respect for, and protection to, culturally significant sites through appropriate zoning.

Where possible, zoning arrangements should include culturally appropriate names in Traditional Owner language.

Ensure zoning arrangements support ongoing accessibility of marine parks for Traditional Owners and ongoing connection to country and culture.

Consider appropriate zoning and other management arrangements for areas important for customary activities, including traditional fishing and hunting.

Consider zoning arrangements which are consistent with cultural laws, lore and protocols.

When designing zoning arrangements, consider the appropriateness of other management arrangements and tools (e.g. management strategies), and access to sensitive sites which may have restrictions through cultural laws and protocols.

Consider zoning that facilitates raising community awareness and the protection of culture and heritage values (e.g. special purpose (cultural protection zones).

Consider appropriate zoning which supports opportunities for economic development, such as cultural ecotourism.

Consider zoning arrangements which are consistent with cultural management arrangements (e.g. management strategies outlined in healthy country plans).

10,12,15,16,18,26,28–31,33

NB: It is intended that culture and heritage selection criteria be applied working in partnership with Traditional Owners.

Provide for ongoing ecologically sustainable use - socio-economic or community principles

Consider the full diversity of marine uses, including economic use, social use and ecosystem services

The zoning scheme should be developed with the aim of achieving a balance between conservation and cultural objectives and ongoing sustainable use. The development of the zoning scheme should



recognise and provide for social, economic, cultural and ecological values and uses[2,13,18,26,28,29,31,40]. Any proposed zoning should aim to be practical and minimise any unnecessary impacts to the lifestyles and livelihoods of users of the marine park (including access, activities, values and aspirations), without compromising the conservation objectives of marine parks[9,18,26,29,39,40].

Key considerations include:

- multiple use zoning arrangements with consideration to appropriate and available zone types
- users with an economic or resource extractive interest (commercial, recreational and charter fishing, aquaculture, mining etc.) and the current management arrangements in place to manage those activities
- the importance of commercial and recreational fishing and aquaculture to regional communities and the ability to access fresh, sustainable and locally caught fish
- small vessel safety considerations, with access to safe fishing grounds close to shore
- social and economic information on existing activities, and cumulative impacts on users who operate across more than one marine park
- social, ecological and conservation values including ecosystem services, and their potential economic value (e.g. recreational fishing, tourism and recreation)
  [2,12,13,17,18,26,29,31,39,40]

Complementarity

Where possible, proposed marine park management arrangements should complement any existing management[18,26]. Complementarity aims to consider, augment and/or achieve consistency with existing terrestrial and marine protected areas, management arrangements and practices, policies and conservation agreements[18,26]. Complementing existing protected areas can assist with connectivity by providing ecosystem linkages between the land and sea; minimise restrictions placed on the community by avoiding duplication of marine protected areas; and when aligned to terrestrial reserves can provide buffering from land-based impacts[18]. Complementing existing management arrangements and agreements can also provide greater operational clarity for marine managers; help coordinate and improve management of the marine environment; and assist with greater understanding of the arrangements by government, industry and the community[18].

Key considerations include:

- existing protected areas and spatial management (e.g. Commonwealth marine parks, sea lion exclusion zones, historic shipwreck protection, existing spatial closures for fisheries management, marinas, ports and harbours, terrestrial parks and reserves, indigenous protected areas)



- Conservation agreements (e.g. migratory bird agreements, wetland agreements)
- Recovery and other management plans for species of conservation concern [17,18,26]

Promote opportunities for recreation and appreciation of the marine environment

Multiple use marine parks provide a wide range of opportunities for recreation, appreciation and enjoyment of the marine environment[2]. Designing marine parks which promote natural, cultural and social values can lead to improved tourism and recreational experiences, increased visitation and use, increased community ownership and therefore compliance with zoning and management arrangements, and improved health and wellbeing of marine park users[2,12,17,18].

Provide for natural and maritime heritage values

Natural, historic and maritime heritage values may include areas or sites of aesthetic, historic, naval/military, scientific, maritime or social significance, some of which may be nationally or globally significant[18]. Marine park design should aim to protect, conserve and, where appropriate, promote areas of natural, historic and maritime significance.

Provide for education and research

Marine parks provide opportunities for scientific research, school and community education programs, and monitoring[2,31]. In particular, sanctuary zones provide areas where natural processes can be studied relatively free of significant human influence[2,18]. Marine park design should consider areas accessible by schools and community groups for education, research and monitoring activities (e.g. intertidal reefs), existing scientific research and monitoring sites, and potential future research and monitoring sites[2,17,18].

Ensure ease of identification, understanding and compliance

Marine parks should be designed so they are easy for users to identify, understand and comply with zoning and management arrangements[12,18]. The zoning scheme should consider operational and management issues to help provide for efficient management and compliance[12,17,18,36]. Where practicable, uses in the marine park should be consistent with other marine parks in the State to help user's ease of understanding.

Key considerations include:

- Implementation of zoning schemes including resources available for compliance, education, community awareness and research and monitoring activities.
- Easily identifiable boundary and zone shape, using straight lines instead of curves where appropriate, alignment to latitude/longitude coordinates.
- Using existing jurisdictional boundaries, e.g. state water limits and high water mark
- Preference for fewer and larger sanctuary zones (rather than more and smaller zones).



- Align zone boundaries with prominent coastal features, identifiable landmarks, buoys or built structures.
- Include whole physical structures within zones where possible e.g. reef systems.

1,4,6,17,18,23,24,26,39,40,44

Selection criteria for socio-economic/community principles

Consider the full range of zoning options and management strategies available and aim to ensure zoning arrangements provide for all values and uses.

Consider appropriate zoning to support extractive activities such as commercial and recreational fishing.

When identifying habitats for inclusion in sanctuary zones, and where there are multiple options available, aim to include areas which minimise impact on extractive uses.

Where appropriate, align (adjacency or overlapping) sanctuary zones with existing marine and terrestrial protected areas.

Where possible and appropriate, achieve consistency through zoning and other management arrangements with existing terrestrial and marine management arrangements, plans, practices, policies and conservation agreements.

Consider zoning arrangements which are accessible and promote opportunities for a variety of recreational activities and uses.

Consider appropriate zoning arrangements for natural, historic and maritime heritage values.

When designing sanctuary zones, aim to include areas which are used (or have the potential to be used) for scientific research, monitoring or school-based education programs.

Aim to design zones which are easy for users to identify, where appropriate use straight lines instead of curves, and align with existing jurisdictional boundaries and prominent coastal features and landmarks where possible.

2,9,12,13,17,18,25–29,31,36,39,40,48



Recreational abalone fishing in Marmion Marine Park. Photo - DPIRD

Conclusion

The Western Australian government is committed to progressively building a comprehensive, adequate and representative system of marine parks and reserves across Western Australia's coastal and marine environment. The application of these design principles in designing and reviewing multiple use marine parks will help ensure we meet our obligations under the CALM Act, fulfil our international and national responsibilities and provide for respectful engagement processes leading to better outcomes for community livelihoods and wellbeing. A well-designed marine park network will also help to provide increased resilience to future pressures and threats, maintain ecosystem health and productivity, protect cultural values and safeguard future opportunities for recreational and economic growth[2,3,5,12,13,26,29,31,57].



APPENDIX 1

Marine parks zoning

Marine parks in Western Australia are multiple use, and zoned using one or more of four zone types: general use, special purpose, recreation and sanctuary zones. Table 1 shows a summary of permitted uses for each zone type outlined in the CALM Act.

Table 1: Permitted uses for marine park zones

	General Use Zone	Special Purpose Zone	Recreation Zone	Sanctuary Zone
Commercial fishing	✓	?	✗	✗
Pearling and aquaculture	✓	?	✗	✗
Exploratory drilling for production of petroleum and geothermal energy	✓	?	✗	✗
Recreational fishing	✓	?	?	✗
Customary fishing including fishing and hunting	✓	✓	✓	✓
Removal 'take' of flora for scientific purposes	(Licence required)	(Licence required)	(Licence required)	(Licence required)

? Activity may only be permitted if it is compatible with the specified purpose of the zone (specified in management plans)



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