



Commonwealth Marine Reserves Review
Report of the Bioregional Advisory Panel

Colin D. Buxton and Peter Cochrane

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Commonwealth Marine Reserves Review: Report of the Bioregional Advisory Panel

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The Hon Greg Hunt MP
Minister for the Environment
PO Box 6022
Parliament House
Canberra ACT 2600

Dear Minister Hunt

We are pleased to submit the Report of the Bioregional Advisory Panel on the Commonwealth Marine Reserves Review.

The work undertaken by ourselves and the five Regional Panels is now complete and we present the report and recommendations for your consideration alongside the report of the Expert Scientific Panel.

We have undertaken wide and comprehensive consultation and drawn on a wide variety of information from public submissions and government agencies, as well as the work of the Expert Scientific Panel.

The suite of recommendations provides for an improved conservation outcome as well as reducing the impact on commercial fishing and therefore the cost implications for the Australian Government.

We believe that our recommendations as a package represent a robust balance of the diversity of interests and perspectives across this large and globally significant estate.

Yours sincerely



Professor Colin Buxton
Co-Chair



Mr Peter Cochrane
Co-Chair

December 2015

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Executive summary

In November 2012, forty new Commonwealth marine reserves (CMRs) were proclaimed in the South-west, North-west, North, Temperate East and Coral Sea marine regions as part of the Australian Government's contribution to the National Representative System of Marine Protected Areas (NRSMPA). This followed the establishment of the South-east network in 2007. In December 2013, management plans for these reserves were set aside pending the Commonwealth Marine Reserves Review (the CMR Review) to ensure that internal zoning and management arrangements reflected appropriate and further consultation with stakeholders, and were informed by the best available science.

Two parallel processes were established to conduct the CMR Review: a Bioregional Advisory Panel (BAP) with five Regional Panels to consult with affected and interested parties, to identify areas of contention and propose zoning arrangements, and to address these concerns; and an Expert Scientific Panel (ESP) to review and strengthen the science input into zoning, and to recommend future research and monitoring priorities and ways to address major information gaps in knowledge of the reserves. The BAP and ESP were asked to coordinate their work but to report separately.

Despite considerable criticism of the original design, size and location of the reserves, the Government made it clear in initiating this review that the outer boundaries of the reserves were out of scope, and that the focus of the review was on the internal zoning and allowed uses within each reserve.

This report from the BAP outlines the approach taken; the consultations with individuals, organisations and peak bodies; the submissions received; other inputs such as submissions to previous consultations; and the relevant findings of the ESP. The work of the BAP took into account socio-economic considerations such as the estimated economic impact of zoning options, and the impacts on local communities of including or excluding different types of activities from the reserves.

More than 260 meetings in 15 locations were held around Australia from February to August 2015 and elicited a wide diversity of views on the adequacy, appropriateness and effectiveness of the original zoning of the reserves. Many suggestions were also received, through written and online submissions, for improving reserve zoning.

Almost all of the areas of contention have been addressed in the zoning options recommended in this report. Scientific information was a key input and consideration in recommended new zoning and management arrangements. The solutions recommended either improve conservation outcomes without substantially increasing socio-economic impacts, or improve socio-economic outcomes without unacceptable impacts on the conservation values of the reserves.

There was a strong and consistent message from many stakeholders that the previous consultations that led to the establishment of these reserves had been lengthy and comprehensive, and had for the most part achieved a relatively robust balance of interests in reserve design and zoning. Many stakeholders expressed their desire for certainty so that they could make whatever decisions and adjustments were required and plan their futures accordingly—for example to exit the industry or to invest with confidence. Despite these strong expressions, many ideas for amending the existing zoning of the reserves were put to the Regional Panels.

Following extensive consultations, considerations of written and past submissions and the development of potential options to address many of the issues raised by stakeholders, a smaller set of options was distilled. This was based on an analysis of the potential economic impacts of these options and the overall balance of interests in the reserves and networks as a whole. This smaller set of options was tested with affected stakeholders in July and August 2015, and subsequently refined in the light of the feedback received.

As a result of these processes and considerations changes to zoning and zone boundaries are recommended for 26 of the 40 new reserves declared in 2012. Minor changes to three other CMRs are also recommended for overall consistency across the estate. As a package they will improve the representation and overall protection of conservation values, while providing access and continuity for a range of activities currently undertaken and proposed by commercial and recreational interests. The changes deliver more consistent zoning and reduce the displacement of existing economic activities.

The area zoned as Marine National Park (International Union for Conservation of Nature Protected Area Category II (IUCN II)) is increased in each of the four regional reserve networks, and decreased in the Coral Sea CMR. Protection of the Coral Sea coral reefs is improved with all zoned as either Sanctuary, Marine National Park, Habitat Protection or Habitat Protection (Reefs).

An additional 456 607 square kilometres across the reserve estate is recommended to be zoned as Habitat Protection (IUCN IV), to provide a higher level of protection against activities like seabed mining and some fishing gear types that are inconsistent with protecting conservation values. Together with Marine National Park (IUCN II) and Sanctuary (IUCN 1a) zones, the additional area zoned as Habitat Protection increases the proportion of the reserve estate receiving a high level of protection from 60% to 76%. In the Coral Sea, the combined area zoned for high level protection (IUCN Ia, II and IV) increases from 80% to 97% of the reserve.

The total area zoned as Multiple Use (IUCN VI) in these reserves, where extractive uses and mining are or may be allowed, is halved (to 18% of the estate), offset by a small increase (6%) in the area zoned as Special Purpose (IUCN VI). This reflects zoning that is much more tightly targeted for economic activities and other activities that would normally be excluded from the reserve estate. In some cases Special Purpose zoning also excludes seabed mining and oil and gas exploration and development, in addition to those activities being prohibited in all Marine National Park and Habitat Protection Zones (HPZs).

Impacts on commercial fishers will be substantially reduced from the proclaimed zoning, greatly reducing the cost to taxpayers of any adjustment to affected economic interests. Local solutions developed in close consultation with marine users generally accommodate the interests of recreational fishers and charter and dive tourism operators.

In three CMRs (Ningaloo and Ashmore and Mermaid reefs), zones that have had longstanding and continuing management arrangements that have provided for access and use of these zones have been assigned to a more appropriate IUCN category for consistency across the CMR estate.

In terms of the objectives of establishing the CMR estate and its contribution to the

NRSMPA, the recommended rezoning increases the number of primary conservation features (such as Provincial Bioregions, Depth Ranges, Key Ecological Features (KEFs) and Seafloor Types) in Sanctuary and Marine National Park Zones (up from 331 to 352 of the total of 509 features in the estate). The number of these features represented in HPZs increases from 192 to 272 in the recommended rezoning.

Two of the terms of reference for the BAP invited recommendations on the inclusion of social and economic considerations into reserve management decision-making, and on the inclusion of stakeholder views into management decisions. The BAP was also invited to comment on how the drafting of management plans could be improved. This report includes 24 recommendations for consideration by the Government on these and related issues.

Overall, the following succinct messages about stakeholder expectations of the CMR Review were distilled:

- My recreational experience will be better
- Fishing will be sustainable
- Climate resilience of our marine environment will be improved
- There will be economic gains from tourism
- There will be meaningful action on threatened, endangered and protected species
- There will be improved socio-economic outcomes for Indigenous and local communities
- Business will be able to invest with certainty
- Biodiversity will be protected
- We will see the benefits from the reserves
- The reserves will be adequately resourced and effectively managed.

In summary, the recommendations in this report set a positive and sound basis for delivering on these expectations.

Chapter 1—Introduction

Background

This review was initiated by the Australian Government in August 2014¹ in response to concerns raised by a number of affected parties about zoning arrangements in Australia's network of 40 new Commonwealth Marine Reserves (CMR) established in 2012,² which with four existing reserves were re-proclaimed in 2013.³ The criticisms distilled into two key concerns—the extent and quality of the consultation processes and the science that informed the establishment and zoning of the reserves.

A number of international and domestic environmental policy commitments provided the impetus for the creation of a representative system of marine reserves. These are outlined in Appendix A. The new CMRs contribute significantly to the completion of the Commonwealth waters component of the National Representative System of Marine Protected Areas (NRSMPA)⁴ for an Australia-wide system of marine reserves to contribute to the long-term conservation of marine ecosystems and to protect biodiversity. Since then, successive Australian governments have affirmed this commitment and have progressed a program of work to establish networks of marine reserves around the country. Forty new CMRs were proclaimed in 2012, creating networks of CMRs in four regions: South-west, North-west, North, and Temperate East, and a single reserve in the Coral Sea, complementing the network established in the South-east in 2007 (Figure 1).

¹ <http://www.marinereservesreview.gov.au>

² <https://www.comlaw.gov.au/Details/F2012L02188>

³ <https://www.comlaw.gov.au/Details/F2013L02108>

⁴ ANZECC (Australian and New Zealand Environment and Conservation Council), Task Force on Marine Protected Areas. (1998). [Guidelines for Establishing the National Representative System of Marine Protected Areas](#). Environment Australia, Canberra.

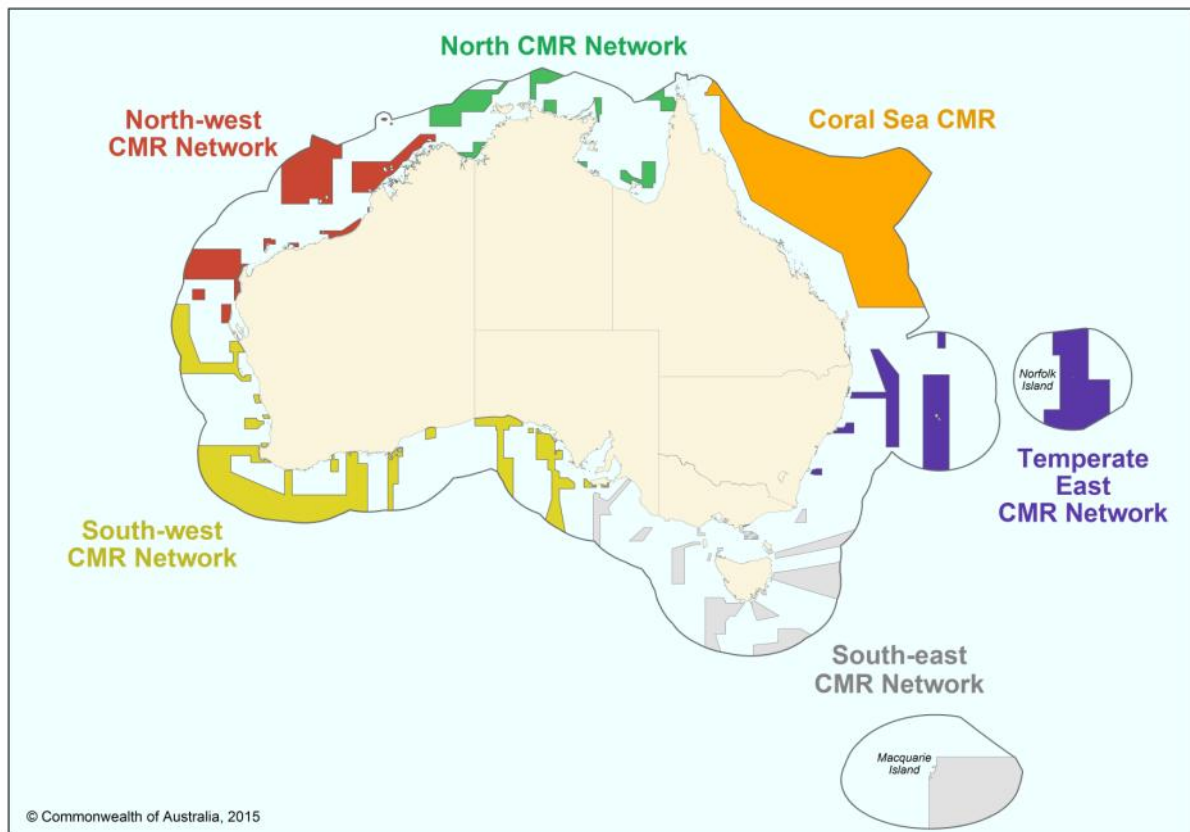


Figure 1 Australia's CMR networks

The primary goal of the NRSMPA was to establish a Comprehensive, Adequate and Representative (CAR) system of Marine Protected Areas (MPAs) to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels. This objective has guided the size and placement of marine reserves to represent biodiversity and marine ecosystems within the national network of reserves, while minimising adverse socio-economic impacts on coastal communities and people who use the marine environment. Representation is based on the Integrated Marine and Coastal Regionalisation of Australia (IMCRA),⁵ a spatial framework for classifying Australia's marine environment into bioregions that make sense ecologically and are at a scale useful for regional planning.

The objective of developing a marine reserve system that represents and protects biodiversity differs from what is commonly referred to as a 'threats-based approach', which is principally aimed at identifying and mitigating threats to the marine environment using spatial methods. Under the latter approach, the size and placement of marine reserves is determined by the level of threat facing a particular marine ecosystem, with the areas that are most under threat receiving the greatest level of protection regardless of whether they are representative of biodiversity.

The Australian Government developed a set of policy guidelines, the Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in

⁵ Commonwealth of Australia. (2006). [A Guide to the Integrated Marine and Coastal Regionalisation of Australia Version 4.0](#). Department of the Environment and Heritage, Canberra.

Commonwealth Waters (the Goals and Principles)⁶(Appendix B), to aid the design and establishment of the Commonwealth component of the NRSMPA. The goals state that each regional network should include examples of:

- The different large-scale ecological systems in the marine region, which are known as Provincial Bioregions (Goal 1)
- All Depth Ranges, because different biological communities live at different depths (Goal 2)
- All large-scale biological and ecological features (Goal 3)
- All types of seafloor features—for example, seamounts, canyons and reefs—because different ecological communities are associated with these features (Goal 4).

The 20 accompanying principles guide the location, selection, design (shape and size) and zoning of the reserves, and provide guidance in considering potential impacts on people when new CMRs are being proposed.

Terms of reference for the review

The terms of reference for the CMR Review outline the scope and process of the review and the roles of the Expert Scientific Panel (ESP) and Bioregional Advisory Panel (BAP) (Appendix C).

The BAP's tasks were to:

- Identify areas of contention and propose zoning options within the outer boundaries of the proclaimed reserves to address these concerns
- Consider how socio-economic issues could be better included in future decision-making
- Advise on the ongoing engagement of regional stakeholders
- Advise how the drafting of future management plans could be improved.

The ESP was tasked with reviewing the science supporting the CMRs, especially any relating to the understanding of threats to marine biodiversity within the marine reserves, and recommending future research and monitoring priorities, including ways to address the most significant information gaps hindering robust, evidence-based decision-making for the management of the marine reserves.

The two parallel processes of the BAP and ESP were asked to coordinate their work and to report separately.

The CMR Review was instructed to have regard to the Goals and Principles, and to the legislation and regulations for the development of management plans and managing activities within Commonwealth reserves contained within the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).⁷

Review process

To conduct the BAP process, the Minister for the Environment (the Minister) appointed

⁶ Department of the Environment. 'Goals and principles for the establishment of the National Representative System of Marine Protected Areas in Commonwealth waters. Available at <http://www.environment.gov.au/resource/goals-and-principles-establishment-national-representative-system-marine-protected-areas> [accessed 10 September 2015].

⁷ <https://www.comlaw.gov.au/Series/C2004A00485>

two people to co-chair five separate bioregional advisory panels (Regional Panels)—one for each of four bioregions and one for the Coral Sea. The Minister appointed three members with expertise to facilitate wide consultation with affected and interested parties to each of these panels. Both co-Chairs were also appointed to the ESP to ensure coordination and information sharing between the two processes. Membership of the Regional Panels is shown in Appendix D.

The BAP process was assisted and supported by a secretariat in Parks Australia. A wealth of existing information was made available to the panels, including the public submissions made on the draft marine reserve proposals (mid 2011 to early 2012), on the final proposed networks (mid 2012) and on the draft network management plans (late 2012 to early 2013). A detailed stakeholder list from these submissions was made available to the panels as an initial contact list.

The Regional Panels commenced by reviewing the information and submissions from earlier consultations on the draft and final reserve networks, and the set-aside management plans. They also reviewed an initial stakeholder list from these processes and, drawing on their knowledge and networks, identified additional contacts for their region for the CMR Review. As the review progressed, additional stakeholders were identified during the consultations, from submissions and through the website.

A CMR Review website (www.marinereservesreview.gov.au) was launched in September 2014. This website was progressively updated, providing ongoing information about the review, its progress and ways in which stakeholders and the public could engage with it.

Regular updates from the co-Chairs were sent out during the review. These updates were available on the website as well as being emailed to stakeholders who subscribed to receive information on CMRs.

Face-to-face stakeholder engagement began with a national stakeholder meeting in November 2014 to present an overview of the CMR Review, outline the proposed approach and listen to the views of these key stakeholder organisations. Participants included representatives from commercial fishing, recreational fishing, oil and gas, ports and shipping sectors, the science community, environmental non-government organisations (ENGOS), and government (the Australian Government Department of Agriculture and Water Resources and the Department of the Environment).

Stakeholders from around Australia were alerted to the CMR Review and asked to *'join the conversation'* by completing an online survey or providing a written submission either by email or reply-paid post. This message was also conveyed through national and regional newspaper advertisements. Particular emphasis was placed on the fact that previous submissions would be considered alongside new information.

The call for written submissions opened on 28 November 2014 and extended to 31 March 2015. The online survey opened on 19 December 2014 and also closed on 31 March 2015. A total of 1 859 survey responses and 13 124 written submissions were received. An overview of the three consultation streams and details of participants and organisations engaged in the process are at Appendix E.

Regional face-to-face consultation meetings across the Temperate East, South-west, North-west, North and Coral Sea marine regions were held between February and May 2015. The meetings included multi-sector forums along with smaller, more targeted

meetings with peak organisations, representatives of relevant business and ENGOs, government agencies and other interested parties. Stakeholders were asked to identify areas of contention and offer ideas as to how these areas could be addressed through zoning boundaries and management arrangements. They were encouraged to provide their input and any additional suggestions through written submissions to the CMR Review. A total of eight regional multi-sector forums and 173 individual meetings (including some via teleconference) were held across 15 locations. While every effort was made to contact and meet with all affected parties, the time frame precluded travel to some of the more remote communities. An overview of the online survey responses and a consolidated summary of the feedback received by the review is provided in Appendices F and G respectively.

A second national-level stakeholder meeting was held in April 2015 to provide an update on the progress of the review.

Following the round of regional consultations, the Regional Panels evaluated the inputs received from meetings, written submissions, the online survey and past submissions. This identified the major areas of contention. The Regional Panels then considered potential zone changes and management arrangements that could address these issues.

The Regional Panels used the following six criteria to determine whether an issue raised in a submission or by a stakeholder should be considered as an area of contention:

1. Was the issue raised as a result of changes that were made after the draft proposal stage, leading to a call of insufficient consultation/lack of awareness?
2. Has new relevant information been received since the proclamation/previous management planning process?
3. Was the issue raised by different people/sectors?
4. Was there an opportunity to deliver either:
 - a. A higher conservation outcome at no significant additional socio-economic cost (including for ongoing management)
 - b. A lower socio-economic cost with no significant change to the conservation outcome?
5. Has a change been suggested with clear and compelling evidence?
6. Was there a science question that could be referred to the ESP for advice?

Applying these criteria, the Regional Panels distilled the range and diversity of issues raised into a number of areas of contention, which are set out in Chapter 4. Potential zoning solutions were developed based on suggestions and submissions provided by stakeholders through the consultation period, and with the advice of the Regional Panels.

To guide the development of potential solutions to the key areas of contention, Regional Panels considered the following:

1. Was the nature of the solution:
 - a. A zoning change
 - i. To a boundary
 - ii. To the zone type
 - iii. To add a new/change an activity within a zone type
 - b. A management planning response
 - c. A policy recommendation?
2. Who/what would be impacted by the change?
3. Did the solution provide for ease of management and marine user compliance?

4. What was the nature and quantum of the potential socio-economic impact?
5. Would the proposed change be acceptable to other stakeholders?
6. How might the impacts of a change (that is, zoning, management planning response or policy recommendation) be designed to be more acceptable to other sectors?
7. Were there any barriers to reaching agreement between the parties?

There were a number of instances where the areas of contention required a review of new scientific information to inform the development of potential solutions. Where this was the case, the area of contention was referred to the ESP for advice.

The co-Chairs then further refined potential zoning options in the light of additional information on conservation values, revised fishing gear risk assessments, and other advice from the ESP and government agencies. Analysis of the estimated economic impact of potential zoning options on the commercial fishing sector was provided to the co-Chairs by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES).

Drawing on these inputs the co-Chairs developed a smaller set of potential options and presented these to affected stakeholders at 82 meetings at 11 locations in July and August 2015 to test the extent to which the changes addressed their areas of contention.

Many of the options were again revised by the co-Chairs in the light of the feedback received during these meetings. Following further analysis and evaluation, a final set of zoning recommendations for 26 of the new CMRs (plus reassignment of the Ningaloo, Ashmore Reef and Mermaid Reef CMRs) was produced. These options are presented and described in this report.

Bioregional Advisory Panel report

This report has been prepared by the BAP co-Chairs after taking into account the input from the BAP process and from a range of other sources including the ESP and relevant government agencies. A range of other information sources⁸ that supported the development of the CMR estate and management planning phase informed the CMR Review and were used in the preparation of the BAP report.

Throughout this report the term Bioregional Advisory Panel (BAP) is used to represent the overall process outlined above, including the advice and input from Regional Panels and from stakeholders, scientific and economic advice, and the submissions and consultations for this review.

The report includes a summary of the information obtained through the consultations (Chapter 2), and recommendations for alternative zoning and/or management arrangements for more than half of the proclaimed reserves within scope of the review to address key areas of contention identified during the review (Chapter 4). It also includes advice and recommendations on the inclusion of socio-economic considerations into management decisions (Chapter 5), the engagement of regional stakeholders in the future management of the reserves (Chapter 6), advice on improving management plans (Chapter 7), and commentary from the co-Chairs on a range of issues relevant to the CMR

⁸ Including but not limited to Marine Bioregional Plans, available at <https://www.environment.gov.au/marine/marine-bioregional-plans>.

Review's terms of reference (Chapter 8).

The ESP findings on matters referred by the BAP are provided in Chapter 3 of this report. The report's appendices include the consultation messages received from meetings and submissions, a summary of the online survey results, and lists of meetings held and stakeholders met.

The report adopts the following terminology, recognising that some of these terms are used in different ways by different stakeholders:

Marine reserve—areas established as CMRs under the EPBC Act. They must be, under the EPBC Act, proclaimed as one or more zones, with each assigned to an International Union for Conservation of Nature (IUCN) protected area category.

Sanctuary Zone (SZ)—zones within CMRs defined by management objectives that are consistent with, and formally assigned to, IUCN Protected Area Category Ia.

Marine National Park Zone (MNPZ)—zones within CMRs defined by management objectives that are consistent with, and formally assigned to, IUCN Protected Area Category II.

Habitat Protection Zone (HPZ)—zones within CMRs defined by management objectives that are consistent with, and formally assigned to, IUCN Protected Area Category IV.

Recreational Use Zone (RUZ)—zones within CMRs defined by management objectives that are consistent with, and formally assigned to, IUCN Protected Area Category IV.

Multiple Use Zone (MUZ)—zones within CMRs defined by management objectives that are consistent with, and formally assigned to, IUCN Protected Area Category VI.

Special Purpose Zone (SPZ)—zones within CMRs defined by management objectives that are consistent with, and formally assigned to, IUCN Protected Area Category VI and that provide for specific activities that are not generally allowed in MUZs (usually for socio-economic reasons) or that exclude activities that may be generally allowed in MUZs (e.g. mining).

General Use Zone (GUZ)—zones within CMRs defined by management objectives that are consistent with, and formally assigned to, IUCN Protected Area Category VI.

Chapter 2—Consultation messages

Many stakeholders raised issues in the context of a particular reserve or network that applied across the entire CMR estate. This chapter describes these issues at that broad level. The process described in Chapter 1 sets out how specific issues were distilled into areas of contention that could potentially be addressed by zoning decisions. The issues that specifically applied to particular networks and reserves are outlined and discussed in the relevant sections of Chapter 4 and are provided in greater detail in Appendix G.

Some of the issues raised required an assessment or reassessment of scientific evidence and were appropriately referred to and addressed by the ESP. In a number of cases the advice of the ESP was specifically sought to inform consideration of zoning decisions within a reserve—for examples, seeking more recent information on the conservation values of particular CMRs and Fishing Gear Risk Assessments (FGRAs). The ESP report includes more detailed consideration of each of these issues.

Where ESP advice was sought it was taken into account by the co-Chairs along with the advice of the Regional Panels and other stakeholder inputs in the process of refining potential options to address areas of contention.

Expectations of the reserve estate and the review

A range of expectations about the reserve networks and the CMR Review itself became evident in the consultations. These distilled into 10 succinct messages that have a bearing on the zoning of the reserves and on their future management, although most of these expectations would not be limited to or could be satisfied by the CMR estate. This set of broad community expectations provided useful guidance for the review as it began to narrow down the vast array of issues and potential options that might address those issues. They were (in no priority order):

- My recreational experience will be better
- Fishing will be sustainable
- Climate resilience of our marine environment will be improved
- There will be economic gains from tourism
- There will be meaningful action on threatened, endangered and protected species
- There will be improved socio-economic outcomes for Indigenous and local communities
- Business will be able to invest with more certainty
- Biodiversity will be protected
- We will see benefits from the reserve system
- The reserves will be adequately resourced and effectively managed.

Issues raised at the estate level that related to zoning

Representativeness of the estate

Several submissions and scientific commentaries on the reserve estate raised concerns about how effectively the reserve estate captured Biologically Important Areas and included representative samples of Provincial and Meso-scale Bioregions, Depth Ranges, Key Ecological Features (KEFs), Biologically Informed Seascapes and Seafloor Features (referred in aggregate as primary conservation features). Some networks were more heavily criticised than others on these grounds. For example, the Temperate East Marine

Region was seen to have a lack of adequate representation of marine reserves, including fully protected MNPZs, on the shelf. Conversely the Coral Sea was seen to be over-represented, with a very large MNPZ in offshore, deep ocean areas. It was also noted that not all primary conservation features were represented in the estate.

Many of these concerns would only be addressed by changes to the outer boundaries of reserves, or by additional reserves, but such changes were out of scope for the CMR Review. However, in some cases inadequate representation had the potential to be addressed within the outer boundaries of a reserve. These opportunities were actively considered by the Regional Panels, taking into account socio-economic implications of any changed zoning.

Consistency of zoning

Many stakeholders expressed their concern about the lack of consistency in either zoning or allowable uses between different networks in the CMR estate. This concern also extended to a comparison with zoning in adjacent state or territory MPAs. Concerns were also expressed about the lack of consistency, particularly with state zoning systems, of the colours used for different zone types, generally in the context of users being able to understand the different rules, and to simplify the management of compliance and enforcement. There was generally an appreciation of the complexity of achieving this consistency given the different stages of development and implementation of state/territory systems.

The BAP was sympathetic to these concerns, but the complexity of a federal system and the existing substantial disparities between state and territory approaches to zoning categories and naming did not allow a simple or consistent approach to be developed. Where possible the BAP has recommended consistent zone descriptions and prescriptions for CMRs adjacent to state or territory marine reserves.

Inconsistent zone restrictions on commercial fishing activities

Many commercial fishing stakeholders expressed their concern about the lack of consistency in allowable uses between networks. For example demersal trawling was permitted in SPZs in the Temperate East CMR Network, but not in SPZs in the South-west network. Similarly, gillnetting (pelagic or demersal) was not an allowable activity in the Coral Sea CMR and Temperate East network but pelagic gillnetting was allowed in the North (SPZ) and North-west (MUZ and HPZ) networks, and demersal gillnetting was allowed in the South-west (SPZ) network. Stakeholders who raised these issues accepted, however, that in some cases there were regional differences, for example in habitat or fishing gear types, which might warrant region-specific approaches.

Inconsistent treatment of trawling on soft sediments was raised as an issue by stakeholders about the North and South-west networks, citing examples of where this activity had been proposed as an allowable activity in SPZs in the Temperate East network and the GUZ in the Coral Sea CMR.

It is important to note that SPZs, where certain normally incompatible fishing methods are allowed, are an exception introduced to deal with local socio-economic consequences of a restriction that would otherwise apply. They are gear specific and area specific and do not imply that that method is allowable in SPZs in other areas.

Risks and impacts of mining and oil and gas development

Many stakeholders, including representatives of environment organisations, commercial and recreational fishers and local and Indigenous communities, expressed the view that seabed mining and oil and gas activities (including data collection by seismic vessels) should not be allowable activities in marine reserves.

Representatives of the oil and gas industry argued for the continuation of the existing approach whereby oil and gas exploration and production was an allowable activity in MUZs, recognizing prior usage rights, national energy security requirements, the existing regulatory controls over the industry, and their track record in effectively mitigating the risks and the relatively low impacts associated with their activities.

Recreational fishing in Marine National Park Zones

Some recreational fishing peak bodies raised their opposition to the exclusion of recreational fishing from MNPZs assigned as IUCN II zones. They used as precedent the assignment as IUCN II of the RUZs in the Ningaloo and Ashmore Reef CMRs where recreational fishing is allowed. They also argued that recreational fishing has no or minimal environmental impact (particularly pelagic fishing over benthic habitat) and therefore was consistent with international and Australian Government descriptions of IUCN II as allowing recreational use. Much of the argument used in support of recreational fishing generally was based on catch-and-release fishing and research findings from scientific studies that demonstrate low mortality of pelagic fish in catch-and-release techniques.

They also argued that the onus of proof for excluding recreational fishing from MNPZs should lie with reserve managers instead of assuming that recreational fishing should be excluded *a priori* from no-take zones.

Fishing gear drift

Some commercial fishers using longline or purse seine gear raised issues associated with gear drift, noting that they faced prosecution if their gear unintentionally drifted into marine reserves, for example from unexpected current speeds and changes or during retrieval. They noted that this created an artificial buffer around no-take areas that could be as large as 80–100 nm. It was suggested that zones where they were prohibited from operating should be reduced in size to compensate for this ‘buffer’ effect.

In a similar vein, trawl operators needed to haul gear and complete their fishing operations before reaching a prohibited zone, and argued that a similar ‘buffer’ effect applied to their operations.

In both cases there was an argument that their area for fishing was effectively reduced due to these boundary effects. Stakeholders making these points argued that these effects should be considered in zoning design and in assessing the socio-economic impacts of zoning decisions.

Estate issues raised not directly related to zoning

There were also a number of issues raised that did not directly relate to zoning options but were generally relevant to the CMR Review’s terms of reference.

Consultation fatigue

There was a considerable amount of ‘consultation fatigue’ expressed by many stakeholders in the face-to-face meetings. A common initial comment was ‘We’ve already been through this; can’t we just get on with it?’ Nonetheless when the opportunity came to discuss their concerns and ideas and opportunities for improvement in the networks, specific reserves, or past or future processes relating to management of the reserves, a wide diversity of issues and suggestions were forthcoming. Later in the process it became clear that many stakeholders had appreciated the opportunity for this further consultation.

Risk of further uncertainty and impact on business investment

A consistent message from many stakeholders was their concern about the risk of a further review of zoning if the CMR Review’s recommendations were not considered expeditiously by government and implemented through management plans that would be prepared, finalised and pass the statutory tabling process in the current Parliament.

Stakeholders with existing and potential businesses in the new reserves expressed their strong concern about ongoing uncertainty for their interests and future investment. They cited the long consultation process that led to the establishment of the new reserves, and the extension to this created by the current review. Some stakeholders with existing business interests have all or the majority of their operations occurring within one or more reserves. Some stakeholders have a large enough component of their business in one or more reserves that a small change in a zone or zone prescription could have a significant economic impact on them. Others may be only marginally affected.

Resourcing for effective management

Stakeholders from all sectors expressed their concern that future resourcing for reserve management would be inadequate. As a consequence the reserves would not be effectively managed, and compliance and enforcement would be ineffective. There were also concerns from users and commercial fishers in particular that they would be subject to new fees or charges to assist with reserve management. They were strongly opposed to this possibility.

Monitoring and evaluation

Many stakeholders wanted to be certain there would be adequate monitoring and evaluation of the reserves and their zoning to demonstrate the value of the networks for conservation, and to identify changes in the reserves, such as new threats, that might require management action. There was a broadly held view that with effective monitoring and evaluation, particularly with the involvement of stakeholders, and good communication, more informed discussions would be possible in the future on appropriate zoning and management of the reserves. This included the possibility to admit a previously prohibited activity into a specific zone, or to exclude a previously allowed activity, on the basis of scientific evidence and a transparent process to involve stakeholders in relevant assessment and advice on the implications of new evidence.

Past treatment of economic impacts

Commercial fishers expressed their concern about the approach used to assess the economic impacts of the reserves on their businesses. Many commercial fishing representatives questioned the accuracy of the ABARES data and the assumptions and methodology used to calculate economic impacts of zoning decisions.

Many called for improved understanding and recognition of the value chain and associated businesses including downstream processing, distribution, wholesale and retail sales, and supporting suppliers. Stakeholders, particularly from fishing cooperatives, were very concerned about the cumulative social and economic impacts on their members of relatively small decisions that reduced effort in or displaced effort out of their areas to the extent that their overall businesses became unviable. Many cited past actions, such as area closures, licence buyouts, state and territory marine reserves and the implementation of harvest strategies that reduced quota or effort, that had already impacted on the economies of scale critical for fishing cooperatives to operate. They argued that the additional burden of impacts from CMR decisions was a particular concern for these stakeholders and should be considered in this wider context.

Recreational fishing representatives argued that the proposed exclusion of recreational fishing from MNPZs had a social and economic cost for anglers and associated supply businesses such as retail and commercial tackle and bait suppliers. They argued that this would require some adjustment or compensation for these impacts. Suggestions for such compensation included the funding and placement of moorings and of artificial reefs and other fish-attracting devices.

While the issue of how the future impacts of zoning decisions on affected businesses might be addressed was outside the CMR Review's terms of reference, the BAP did consider the estimated direct economic impacts on commercial fishing as a key element in its assessment of potential zoning options.

Displaced fishing effort

Stakeholders from many sectors expressed a concern about displaced fishing effort that could intensify the pressure on remaining fishing grounds.

Prospective fisheries

A number of commercial fishers and their representatives raised concerns about the impact, intended or not, of reserve zoning on prospective fisheries. Examples were raised of potential fisheries that had been the subject of detailed investigation but were not yet formalised and managed as fisheries and would or could be prevented from achieving their potential through zoning decisions that excluded them. Some operators argued that they had included their estimated value of this prospectivity when purchasing their access right.

Some with interests in prospective fisheries argued that the CMR Review and the Government should consider opportunity costs before making decisions that could prevent these potential economic interests from being realised.

Recreational fishing representatives argued that, as their sector had a significant social and economic value, restricting potential recreational fishing activity had a cost that should be quantified and addressed by government.

Objectives and conservation values of reserve networks

There were many calls for better articulation of the conservation objectives of zones, reserves and networks. Stakeholders from different sectors suggested that this would assist users to better understand the purpose of CMRs and to identify and address potential risks and impacts of their activities more efficiently and robustly. Greater clarity

of objectives would also improve user and general public understanding of activity restrictions (including fishing gear restrictions) and assist in developing performance indicators to measure whether reserve objectives were being met.

There was some confusion on the purpose of the new networks of marine reserves, with many stakeholders seeing or portraying them as fisheries management measures and others claiming they were a tool for conservation groups to specifically target fisheries.

Management plans

A number of stakeholders made comments on management plans in general or made specific comments on the set-aside management plans. Most appreciated the key role of management plans in providing the legal basis and certainty for ongoing management. Many wanted to know how quickly new management plans could be brought in and to be assured that the CMR Review and the Government's response were the final stage, so that they could have greater certainty about their future use of a reserve or network. Some sought greater clarity in some of the management processes proposed in the management plans, for example how the proposed class approvals would work. Others sought greater clarity for some of the definitions used (for example clarifying what constituted 'stowed gear' for recreational fishers when traversing MNPZs and what 'transit' meant for shipping interests).

Some issues arising from the 2012 proclamation that had been addressed wholly or in part through the set-aside management plans were raised by relevant stakeholders in the expectation that these issues would be addressed through the CMR Review. These issues were raised with, and considered by, the Regional Panels through stakeholder meetings and submissions to the review, as well as through consideration of previous management plans, the public submissions received on the draft plans, and associated reports of the Director of National Parks (DNP).

Indigenous engagement in planning and management

All Indigenous groups and representatives that met with Regional Panels expressed their strong desire to be closely involved in the planning and management of marine reserves adjacent to or included within their areas of responsibility and geographic region, and particularly if they had a native title claim, determined or not, that intersected with a marine reserve. All expressed their desire to participate as co-managers of CMRs where they had a native title interest (determined or not). While cultural connection to sea country was a key element in these consultations, the future economic potential of these areas, and the opportunities that were seen to come from involvement in the management of the reserves, including compliance and enforcement roles, were also raised. Indigenous groups also strongly preferred to see Indigenous objectives, values, rights and interests reflected throughout management plans rather than relegated to an Indigenous-specific section or strategy.

Collaborative management, including citizen science

Many stakeholders expressed their strong interest in the future management of reserves and were keen to contribute to their design and management. Many users saw themselves as custodians or stewards of the environments within which they worked, and expressed their interest in actively contributing to research and monitoring activities in the reserves where they operated. Some saw themselves contributing in a citizen science role, collecting information on reserves as operators or involving their customers—for example divers participating in collection of observational data, recreational fishers

tagging and releasing fish, and commercial fishers providing catch data.

Many stakeholders, particularly those with businesses operating in reserves, were keen to participate in regular consultations on reserve management issues, seeking to engage in and receive feedback on research, monitoring and evaluation activities. Many sought, and were keen to participate in, forums where management decisions were discussed and considered, either at a reserve or a network level.

Chapters 5 to 8 discuss these issues along with recommendations for consideration by the Government.

Chapter 3—Advice from the Expert Scientific Panel

Introduction

Many stakeholders in the consultations and through submissions identified new information or a need to reconsider previous assessments and information that had underpinned the zoning of the proclaimed estate. Where these issues fell within the terms of reference of the ESP, they were referred by the BAP for advice. These referrals are summarised in Table 3.1.

Table 3.1 Matters referred for ESP consideration and advice

BAP advice request to the ESP	CMR and/or network to which the request related	Relevant ESP report chapter
Evaluate the process used to determine fishing gear risk for CMRs	Estate wide	ESP 2.3.5
Review the FGRA rating for demersal auto-longline gear, specifically in relation to operations in the Coral Sea CMR and the Central Eastern CMR	Central Eastern CMR Coral Sea CMR	ESP 3.1.1
Review the FGRA rating for the NPF, specifically in relation to the Gulf of Carpentaria CMR	Gulf of Carpentaria CMR North CMR Network	ESP 3.1.2
Review the FGRA for the former Northern Territory (NT) Finfish Trawl Fishery (now amalgamated into the NT Demersal Fishery), specifically in relation to the Oceanic Shoals and Arafura CMRs	Oceanic Shoals CMR Arafura CMR	ESP 3.1.3
Review the FGRA rating for Western Australian trawl fisheries, specifically demersal scallop trawl in the Bremer and Geographe CMRs	Bremer CMR Geographe CMR	ESP 3.1.4
Recreational fishing in relation to CMRs	Estate wide	ESP 3.2
Assess how different CMR zone types contribute to achieving conservation objectives and the potential merits of split zoning over coral reefs in the Coral Sea	Estate wide	ESP 3.3
Assess the value of specific marine features, systems and processes, including: <ul style="list-style-type: none"> • connectivity • the pelagic system • the continental shelf and slope • canyons and seamounts 	Estate wide	ESP 3.4
What new information is there on the conservation values of the: <ul style="list-style-type: none"> • Coral Sea CMR • Geographe CMR • Bremer CMR • Perth Canyon CMR • Oceanic Shoals CMR 	Coral Sea CMR Geographe CMR Bremer CMR Perth Canyon CMR Oceanic Shoals CMR	ESP 3.5

The ESP findings on the referred matters are summarised below and should be read in the

context of the full ESP report.

3.1 FISHING GEAR RISK ASSESSMENTS

Overall

- The ESP concluded that findings of the FGRAs were well founded in the context of the information available at the time they were conducted. However, the ESP found that a significant amount of research has since been published that is relevant to the assessment of the risk to biodiversity and ecosystems from commercial fishing operations.

Demersal auto-longline in Central Eastern and Coral Sea Commonwealth marine reserves

- Recent management arrangements implemented by the Australian Fisheries Management Authority (AFMA), particularly those relating to spatial closures, together with use of tori lines and industry codes of practice designed to improve the survival of bycatch, have significantly mitigated the threat of demersal longline fishing to vulnerable chondrichthyans and seabirds in the Central Eastern CMR. In addition, current fishery closures limit demersal longline fishing on most of the seamounts in this reserve.
- Information on the impact of the auto-longline sector of the Coral Sea Fishery in relation to target species, bycatch species and habitat is poor, but closer monitoring of logbooks and placement of observers has been recommended.
- The impact of demersal longline fishing on deepwater habitats such as those found in the Central Eastern and Coral Sea CMRs remains uncertain, as to date no research has specifically assessed this risk.
- In some circumstances and under appropriate management arrangements, demersal longline may be a more sustainable method relative to trawl for deepwater fisheries off the continental slope and on seamounts. However, this will depend largely on the habitat characteristics of the area fished and the intensity of fishing.
- Spatial closures appear to offer the best protection where catch rates of non-target species are high.
- Until such time that these relationships can be properly understood, a precautionary approach to deepwater fishing should be maintained. For this reason, demersal longline fishing (including auto-longlines) should remain a method that is incompatible with the conservation values of the Central Eastern and Coral Sea CMRs, particularly those relating to seamounts.

Northern Prawn Fishery and Gulf of Carpentaria Commonwealth Marine Reserve

- Recent research and better identification of the conservation values suggest that the NPF operations (demersal trawling) may not impact as significantly on the benthic environment in the Gulf of Carpentaria CMR as previously thought, particularly as operations avoid ecologically important habitats such as sponge gardens and reefs, which are located in what is considered untrawlable ground and which are protected within fishery spatial closures.
- More recent evaluations of the risks to elasmobranchs suggest that none were at risk from trawling because of widespread distributions and/or low overlaps with the fishery.
- It is highly likely that a similar situation may apply to other areas of the North and North-west, such as the Wessels CMR and the Joseph Bonaparte Gulf CMR.

However, consideration must be given to ensuring that sufficient areas are protected from the impacts of trawl, especially where there is an absence of MNPZs.

Northern Territory Demersal Fishery and Oceanic Shoals and Arafura Commonwealth marine reserves

- Recent research, an improved understanding of the habitat, a better identification of the conservation values of the area and improvements in gear type and management suggest that Demersal and Developmental Fishery operations (semi-demersal trawling) may not impact as significantly on the benthic environment as previously thought.
- More recent evaluations of the risks to elasmobranchs suggest that none were at risk because of widespread distributions and/or low overlaps with the fishery. A national recovery plan is being developed to address threats to these species.
- It is highly likely that a similar situation may apply to other areas of the North and North-west CMRs. However, consideration must be given to ensuring that sufficient areas are protected from the impacts of trawl, especially where there is an absence of MNPZs.

Demersal scallop trawl

- The South-west FGRA for demersal/bottom trawling, which had been transferred from the South-east FGRA, was not applicable to demersal scallop trawling in Western Australia (WA).
- For this reason, the fishing risk was assessed against ecologically sustainable development reporting conducted by the WA Department of Fisheries. It concluded that demersal scallop trawl was incompatible with the conservation objectives of CMRs, based primarily on the lack of information on the impact of these fisheries on small shark species.
- More recent research on the impact of scallop trawling on soft substrates in WA in both the South West Trawl Managed Fishery and the South Coast Trawl Fishery, together with state Ecologically Sustainable Development Assessments, suggest that the habitat impacts are both localised and minor. Similarly, current ecologically sustainable development reporting suggests that impacts on bycatch and threatened, endangered and protected species is low.
- This suggests that scallop trawl fisheries operating on soft sediment substrates in the Bremer and Geographe CMRs should be considered as being 'Compatible' with respect to the conservation values of these areas.
- These findings may be applicable to all scallop trawl operations in WA; however, care should be exercised when transferring risk assessments between areas of similar geomorphology but inherently different biodiversity assemblages.

3.2 RECREATIONAL FISHING

Recreational fishing surveys

- Previous national recreational fishing surveys provided substantial information on recreational fishing catches, but this information is dated, although individual jurisdictions continue to conduct surveys. The ESP notes that the spatial scope of these surveys is not directly applicable to Commonwealth waters or specific to CMR zones.

Comparisons and interactions with commercial catches

- Recreational catches of fish can be significant components of total catches of fish, often of the same order of magnitude and sometimes exceeding commercial fishing on the same species. At the spatial level of CMR, and for specialised fishing, such as for pelagic fish, research and monitoring is needed to quantify recreational catch and effort. The ESP notes that recently-developed novel methods may show promise in this regard.

Effects of recreational fishing on biodiversity

- While recreational fishing can have significant impacts on target species of fish, these impacts and the possible indirect effects of recreational fishing on biodiversity are not well understood or quantified, especially in Commonwealth waters. Risks to biodiversity need to be better understood.

Relative risks of recreational fishing

- There is good evidence that line fishing does have impacts, if not always on numbers of fish then on biomass per unit area of targeted relatively sedentary species. It is important to note, though, that these studies have been primarily conducted on reef habitats and, with respect to effects of recreational fishing per se, are often confounded by the additional impact of commercial line fishing on the same areas that are open to fishing. There is a good case for investment in specific experiments on effects of solely recreational fishing on fished versus no-take areas, including on non-sedentary species.

Catch-and-release fishing

- The ESP notes that post-release survival for some pelagic species may be high. However, for others, especially reef-associated species which are subject to barotrauma, survival may be considerably reduced, especially when caught from deep water. The prospect of post-release mortality and the unknown impact of capture on the physiology of survivors makes this form of fishing incompatible with MNPZ protection. It is likely that post-release survival of most species can be further enhanced by encouraging experimentally-determined gear and handling techniques.
- The voluntary practice of catch-and-release and the willingness of the recreational sector to assist research is a good basis for future beneficial citizen science studies. The ESP believes that investment in the monitoring of the levels of catch and release by recreational fishers in key regions of the CMR estate, especially in remote areas, and further engagement of recreational fishers in regulated and supervised citizen science activities will be an important component of CMR management into the future.

Effects of recreational fishing on pelagic fish

- While recreational fishing for pelagic species at low levels of effort would be unlikely to impact on the populations of these species, especially for catch-and-release fishing, the limited studies on catch and effort suggest reserve managers should adopt a cautious approach to recreational fishing for pelagic species until better data is available and there is an improved understanding of impacts on populations, particularly of targeted species.

Consume-on-site provisions

- Consume-on-site provisions for recreational fishing in some areas, especially remote reefs, have the potential to minimise impacts while allowing limited fishing to occur in such areas. Controlled experiments could be conducted on effects and

practicality of consume-on-site arrangements (if implemented) on pairs of more remote reefs within the CMR estate.

3.3 MARINE RESERVE ZONING AND THE UNDERPINNING SCIENCE

Marine National Park Zone (International Union for Conservation of Nature Protected Area Category II)

- The ESP recognises the significant body of scientific literature that demonstrates the effectiveness of MNPZs (no-take zones) in achieving conservation outcomes and for their role as scientific reference areas. The ESP notes the emerging consensus that, to attain and preserve natural condition, no-take, size, configuration, enforcement and length of time the area has been protected all need to be considered.
- The ESP considers that, because MNPZs are important scientific reference sites for monitoring change within and outside reserves, each reserve should include at least one MNPZ and that a significant sample of each primary conservation feature and each provincial bioregion be included in at least one MNPZ of an appropriate configuration and size to meet conservation objectives.
- The ESP also recognises the relative paucity of research on offshore MNPZs, including most of the Australian estate, and proposes future research to test the applicability of patterns emerging from shallow water no-take zones to their offshore equivalents.

Habitat Protection Zone (International Union for Conservation of Nature Protected Area Category IV)

- The ESP recognises the value of HPZs to protect habitat, biological diversity and associated ecosystem services and structure. Areas of high conservation value should be captured in HPZs across the CMR estate, where socio-economic factors prevent designation as a MNPZ. Allowed uses in HPZs must be compatible with the conservation of biodiversity and maintenance of the integrity of ecological processes.
- The ESP considers that there is a high conservation benefit from zoning areas as HPZs to protect benthic and demersal habitats by excluding damaging activities while allowing activities such as regulated fishing in the water column, including take of pelagic species that do not compromise conservation values and management objectives for these areas.
- The ESP notes the general paucity of studies on the value and effectiveness of Marine Protected Area zoning that protect specific habitats and that many studies that have been undertaken were not in Australia. This indicates a need for scientific study on the efficacy and benefits of HPZs and comparisons with MNPZs, MUZs and controls outside of CMRs. Investments in research and monitoring on this issue should be a priority in the future.

Multiple Use Zone (International Union for Conservation of Nature Protected Area Category VI)

- While the strongest biodiversity and conservation benefits are delivered by excluding extractive activities from marine reserves, less restrictive management regimes can also deliver biodiversity benefits. The inclusion of some extractive activities in MUZs can be compatible with biodiversity conservation as long as the intensity, extent and impact of the activities are known and well managed.
- MUZs should be used in conjunction with other regulatory controls, such as permits, quotas, bag limits and anchoring and fishing gear restrictions, for

managing social, economic and recreational activities where conservation objectives are not compromised by the inclusion of these activities.

Split zoning over coral reefs in the Coral Sea

- The ESP recognises the integrity of coral reefs, which are structurally and ecologically complex ecosystems with a high degree of dependency between habitat forming and associated species. Given this complexity, different management regimes across reef systems should not be applied across small reefs (less than 20 km across).
- Splitting reef systems into more than one zone type should only be considered on reef systems that are large enough to ensure that:
 - (i) each zone covers a sufficient area to deliver conservation outcomes
 - (ii) the allowable activities undertaken in one zone are not of a type, scale or intensity to impact on adjacent zones
 - (iii) one zone type is a MNPZ.
- Individual reefs often form part of larger reef systems which may offer a better opportunity to manage different areas for different objectives if biodiversity objectives are not compromised. The impacts of allowable activities in one zone need to be well managed and monitored to ensure that their impacts do not compromise the management objectives of other zones, particularly MNPZs.
- Split zones and paired sites offer an opportunity to study the effectiveness of different management approaches and can provide useful information to inform and improve future reserve management.

3.4 VALUES OF SPECIFIC MARINE FEATURES, SYSTEMS AND PROCESSES

Connectivity

- Connectivity is integral to the functioning of marine ecosystems. Recent studies illustrate the complexity and dynamics of dispersal processes and the need for further research. However, scientific understanding of connectivity in marine systems is steadily improving. The movements of species during one or more of their life stages are complex and not yet well described for the vast majority of species, especially in CMRs. Computer modelling of ocean currents and oceanographic processes is increasingly being used to improve understanding and facilitate better predictions of how marine species are connected, reproduce, disperse, forage and migrate.
- The identification of sink or source areas for recruitment can support reserve design and known patterns of connectivity should be included in conservation planning.
- Further research into connectivity will benefit future improvements of the CMR network. Future research will also need to address how connectivity might be affected by changing current strengths and other effects of global warming.

Pelagic ecosystems

- Our knowledge of pelagic ecosystems is in its infancy relative to benthic and coastal realms, especially in relation to offshore regions. Clearly there are many geographic gaps. Added to this is the uncertainty associated with broader environmental shifts associated with climate change.
- Despite this, much is known about the oceanographic processes in pelagic ecosystems around Australia and it is clear that they play an important role in

connectivity (migration and dispersal of marine species) and trophic dynamics, not just in the water column but in terms of benthic–pelagic coupling across the marine environment.

- For these reasons, pelagic ecosystems need to be adequately represented and protected through the network of Commonwealth marine reserves.
- However, the ESP recognised that pelagic ecosystems are dynamic and there are challenges for the design and location of pelagic reserves. To be effective in contributing to the conservation of pelagic and associated species and the ecological processes on which they depend, CMR design and management must recognise this dynamism and the importance of complementary measures taken in the management of surrounding waters.

Continental shelf and slope

- Species assemblages vary with latitude, depth and substrate type. Across the range of organisms studied so far, some species appear to be widely distributed, while others appear to have very limited distributions. While knowledge and understanding of patterns of biodiversity distribution have improved and will continue to improve with further sampling of less studied parts of Australia's ocean environment, the evidence so far supports the general approach adopted in the design and planning of the CMRs, which is to include representative samples of all depth ranges in regional networks that include a wide range of seafloor features and substrates.

Canyons and seamounts

- Submarine canyons and seamounts are major geomorphic features that hold significant implications for distribution, abundance, dispersal and persistence of a wide variety of marine organisms. While some areas have been well studied, there remain big gaps in the knowledge and understanding of oceanographic dynamics, drivers of productivity and the role played by canyons and seamounts in the structuring and functioning of marine ecosystems and as potential refugia in a climate-driven, changing environment.
- Given the role and significance of seamounts and canyons in the functioning of deep sea, continental shelf and pelagic ecosystems and growing concern about the impacts of human activities, it would be prudent to protect representative samples of both and to support further studies that improve understanding and effective conservation of these features and the management of sustainable uses.

3.5 SCIENCE ON SPECIFIC COMMONWEALTH MARINE RESERVES AND UPDATED CONSERVATION VALUES

Coral Sea Commonwealth Marine Reserve

- The coral reefs in the Coral Sea CMR have been shown to be distinctive at the species and functional group level in southern, central and northern parts of the reserve. The Coral Sea is shown to be a significant biodiversity hotspot for reef-associated sharks and is an important area for pelagic resources such as tuna and marlin. All six species of turtle are found in the Coral Sea and it is also a significant area for breeding seabirds. The Coral Sea CMR is also significant in that it is one of few remaining areas globally that has not been significantly impacted by human activities.
- The diversity of the Coral Sea reefs warrants a higher level of protection, especially in the southern region. Because they are relatively un-impacted by human activity,

the reefs, pelagic and demersal biodiversity of the Coral Sea form an important baseline reference area and an adequate representation should be contained in highly protected, no-take reserves.

Geographe Commonwealth Marine Reserve

- New information about Geographe CMR confirms that it contains important habitat and reveals that its seagrass beds extend further and deeper than previously thought. Protection of these extensive and potentially important seagrass beds extents should be maintained or improved.

Bremer Commonwealth Marine Reserve

- The Bremer Canyon is a biodiversity hotspot, especially in terms of aggregations of megafauna, and is worthy of protection that enhances eco-tourism in the area.
- Further research that measures larval transport from the area may be warranted.

Perth Canyon Commonwealth Marine Reserve

- New information supports the understanding that the Perth Canyon is an area of biological significance, driven by localised upwelling around canyon heads that drives productivity and the associated feeding aggregations of an array of species, from whales and seabirds to pelagic predators such as tuna and marlin.

Oceanic Shoals Commonwealth Marine Reserve

- The carbonate banks and terraces of both the Sahul Shelf and Van Diemen Rise are associated with high biodiversity and feeding aggregations. A higher level of protection could be provided for a representative sample of these KEFs.
- The survey sites established by the Marine Biodiversity Hub (MBH) study of the Oceanic Shoals CMR warrant protection as scientific reference sites that provide valuable baseline information for the reserve.

Chapter 4—Recommended Commonwealth marine reserves zoning

INTRODUCTION

This chapter sets out at both network and reserve level the major issues and areas of contention raised in consultations and submissions and other inputs such as findings from the ESP. It includes the recommended zonings and description of their conservation and socio-economic consequences, together with a comparison with the proclaimed estate against the Goals and Principles.

Sections 4.1 to 4.4 describe in detail the North, North-west, South-west and Temperate East networks respectively, and the reserves for which zoning changes are recommended. Section 4.5 deals with the Coral Sea CMR. The background information provided for each of the CMRs with recommended changes was compiled from information publically available on the Department of the Environment's webpage⁹ including the detailed analysis documents for each marine region¹⁰.

Section 4.6 describes the three reserves for which the management remains the same but, for consistency of zoning across the CMR estate, there is a recommended change to the IUCN protected area category of a reserve or zone. Section 4.7 outlines the CMRs for which no changes are recommended, whether or not contentious issues were raised with respect to their zoning. Finally, Section 4.8 outlines the overall performance of the recommended zoning changes across the five regions.

Zoning is a key tool for implementing the management objectives for a protected area or part thereof. Zones provide for the spatial segregation of different uses and allowed or prohibited activities.

The IUCN Protected Area Category system classifies protected areas (and zones) according to their management objectives. These IUCN categories are recognised under the Convention on Biological Diversity (CBD) and by other international bodies and many national governments, including the Australian Government, as the global standard for defining and reporting protected area purpose and performance.¹¹

The EPBC Act (sections 346–8) requires that a reserve proclaimed under the Act must be assigned an IUCN category, and the proclamation may divide a reserve into different zones and assign each zone to an IUCN category. Similar provisions apply for management plans (section 367) that must assign a reserve, and each zone, to an IUCN category. A management plan may assign a reserve or zone to an IUCN category different to the one that it was assigned in its proclamation. This provides considerable flexibility in adapting to changing information and management objectives over time. If the

⁹ <http://www.environment.gov.au/marinereserves>

¹⁰ <http://www.environment.gov.au/archive/coasts/mbp/north/publications/pubs/north-detailed-analysis.pdf>
<http://www.environment.gov.au/archive/coasts/mbp/north-west/publications/pubs/northwest-detailed-analysis.pdf>
<http://www.environment.gov.au/archive/coasts/mbp/south-west/publications/pubs/detailed-analysis.pdf>
<http://www.environment.gov.au/archive/coasts/mbp/coralsea/publications/pubs/coralsea-detailed-analysis.pdf>
<http://www.environment.gov.au/archive/coasts/mbp/temperate-east/publications/pubs/te-detailed-analysis.pdf>

¹¹ Further information on the use of IUCN categories by Parks Australia is at <https://www.environment.gov.au/node/20957>.

Government accepts the recommended zoning changes in this report, it would put them into effect through network (or reserve) management plans.

The BAP continued the zoning approach taken by the Australian Government for the proclaimed estate (and the South-east CMR Network) of utilising the following six zone types: Sanctuary Zone, Marine National Park Zone, Habitat Protection Zone, Recreational Use Zone, Multiple Use Zone and Special Purpose Zone. The IUCN categories associated with each of these zones are:

- SZ (IUCN Ia)
- MNPZ (IUCN II)
- HPZ and RUZ (IUCN IV)
- MUZ and SPZ (IUCN VI).

The small number of zones assigned as GUZ in the proclaimed estate have been more precisely defined by the BAP as MUZ if their multiple use objectives have been retained or as SPZ to describe their special use circumstances. RUZ is retained in three reserves and, for consistency across the estate, two previously characterised as IUCN II are reassigned as IUCN IV.

The primary purpose of the CMR estate is to conserve representative samples of Australia's marine biodiversity. The primary objective of all zones and IUCN categories is the long-term protection and maintenance of biological diversity and natural values, while providing for uses and activities that do not compromise this objective.

Many regard MNPZ and SZ as the 'gold standard', providing the highest level of protection for biodiversity by excluding all commercial and recreational activities involving the taking or extracting of marine resources. The BAP considers that the use of HPZ to maintain, conserve and restore species and habitats also provides a high level of protection for many conservation values and features. The BAP has drawn on HPZ as a key tool to provide a high level of habitat protection while allowing for some economic extractive activities in the water column.

The ESP considered the relative merits of all major zone types (ESP report Section 3.3) and found that areas of high conservation value could be managed as HPZ where socio-economic factors prevent designation as MNPZ. The ESP found that there was a high conservation benefit from HPZs to protect benthic and demersal habitats by excluding damaging activities while allowing other activities that did not compromise conservation values.

The ESP also found that, while the strongest biodiversity and conservation benefits are delivered by excluding extractive activities from marine reserves, less restrictive management regimes also deliver biodiversity benefits, as long as the intensity, extent and impact of the activities are known and well managed.

Throughout its consideration and approach to rezoning the BAP has attempted to produce greater consistency between networks and with adjacent state and territory marine park zoning schemes.

BAP Recommendation 4.1: The Australian Government accepts the zoning changes to 26 new CMRs (plus reassignment of Ningaloo, Ashmore Reef and Mermaid Reef CMRs).

4.1 NORTH COMMONWEALTH MARINE RESERVES NETWORK

The North CMR Network, established in 2012, included eight reserves covering 157 483 km² of Commonwealth waters from the west of Cape York Peninsula to north of Wyndham in WA (Figure 4.1.1).

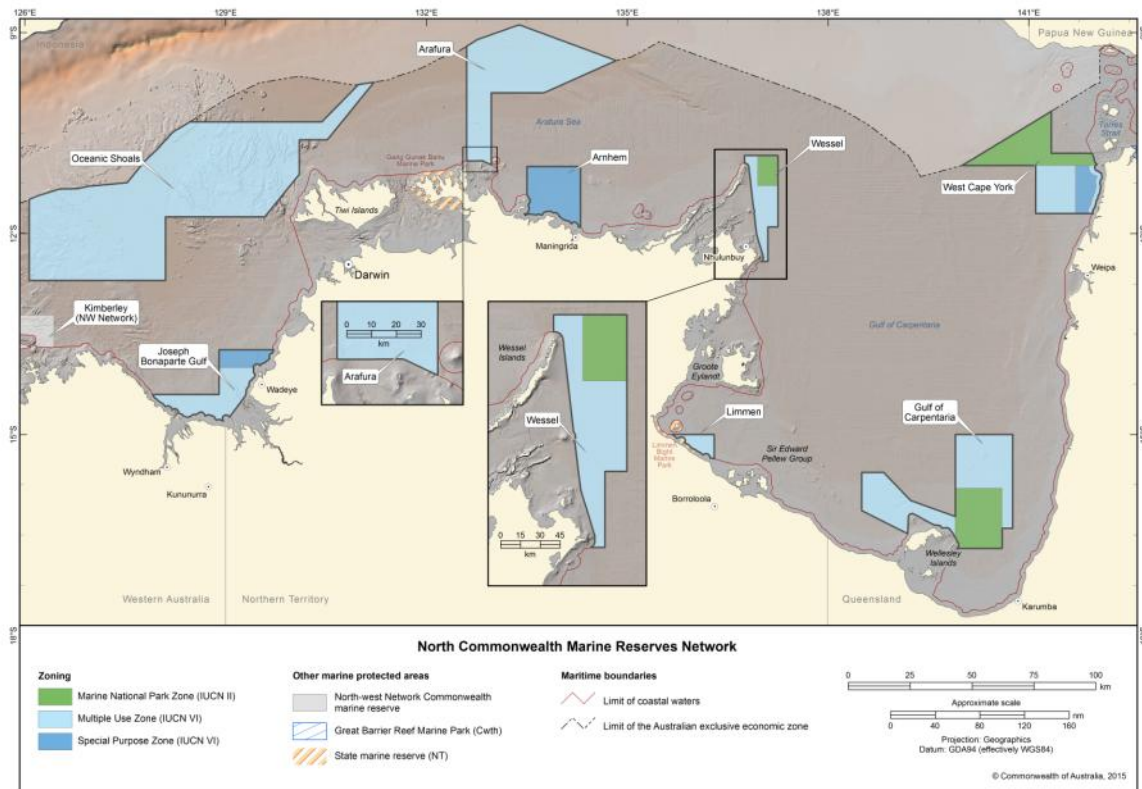


Figure 4.1.1 North CMR Network, as proclaimed

Issues raised during the CMR Review that were generic across the North CMR Network included:

- Mining, including oil and gas and mineral exploration—specifically, allowing exploration in 97% of the region rather than excluding exploration from all reserves
- The lack of high-level protection in most reserves
- Removing destructive fishing practices from reserves—specifically, gillnetting and trawling
- Access to all MNPZs (IUCN II) by recreational anglers
- Economic development including fishing prospectivity—particularly the ability to trial new gear
- Impact of effort displacement—specifically, that unless an appropriate fisheries adjustment policy was put in place the creation of marine reserves had the potential for negative consequences in adjacent areas, including:
 - Reduction of individual fishing business profitability as competition for a scarce resource increases
 - Regional depletion of adjacent fish stocks
 - Increased effort on non-target and protected species in adjacent areas
 - Increased conflict between different sectors (including recreational and commercial) as competition for scarce resources increases.
- Traditional owner interests and aspirations for economic development—specifically, the role of rangers in marine reserve management.

A comprehensive list of issues raised is provided at Appendix G.

North Commonwealth Marine Reserves Network—outcomes

Zoning changes are recommended for the Oceanic Shoals, Arafura, Wessel, Limmen, Gulf of Carpentaria and West Cape York CMRs, while no changes are recommended for the Joseph Bonaparte Gulf and Arnhem CMRs. Recommended zoning changes are shown in Figure 4.1.2 and summarised in Table 4.1.1.

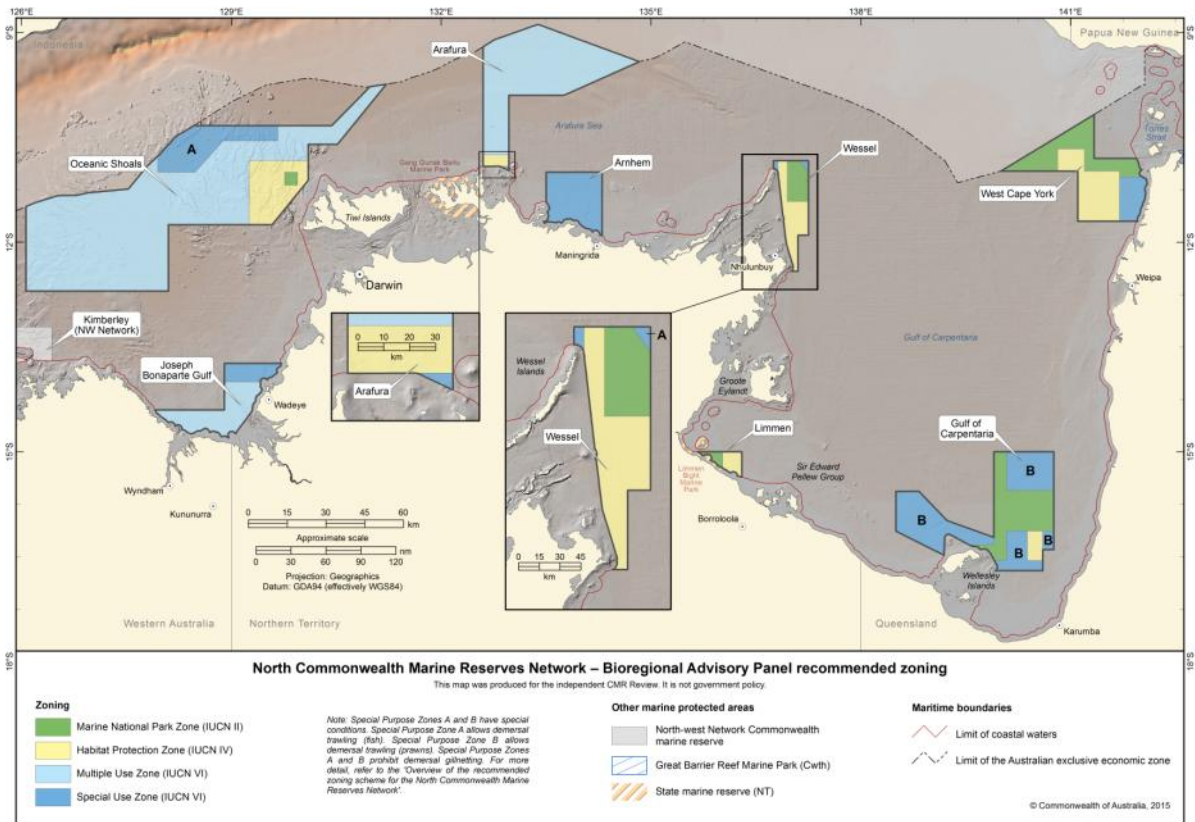


Figure 4.1.2 Recommended zoning for the North CMR Network

Table 4.1.1 indicates how the areas of different zone types (within the outer boundaries of the reserves) will change between the proclaimed and recommended zoning. As a result of changes to several reserves there is a small increase in the area under MNPZ. HPZs are introduced into six reserves which, together with MNPZs, provide a high level of protection for 24% of the network. There is a 28% decrease in MUZ and a 14% increase in SPZ, to accommodate several specific fisheries. The overall area zoned as MUZ and SPZ (IUCN VI) decreases from 89% to 76% of the network.

Table 4.1.1 Comparison of areas of zone types between proclaimed and recommended zoning for North CMR Network

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of Network	Area (km ²)	% of network	Area (km ²)	% of network
MNPZ (IUCN II)	16 977	10.78%	17 861	11.34%	+884	+0.56%
HPZ (IUCN IV)	Nil	Nil	20 057	12.74%	+20 057	+12.74%
MUZ (IUCN VI)	128 946	81.88%	85 561	54.33%	-43 385	-27.55%
SPZ (IUCN VI)	11 560	7.34%	12 092	7.68%	+532	+0.34%
SPZ A (IUCN VI)	Nil	Nil	7 461	4.74%	+7 461	+4.74%
SPZ B (IUCN VI)	Nil	Nil	14 451	9.18%	+14 451	+9.18%
Total	157 483	100%	157 483	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Conservation outcomes

The recommended zoning changes will provide the following key improvements to conservation outcomes for the North CMR Network:

- The introduction of new or improved MNPZs in five reserves that in aggregate amount to a small overall increase (0.6% increase) in no-take protection. This included:
 - A new MNPZ in the Oceanic Shoals CMR
 - A new MNPZ in the Limmen CMR
 - The reconfiguration of the MNPZ in the Gulf of Carpentaria CMR, to better protect the area to the north of Mornington Island and to create a north-south transect along the length of the reserve
 - The increase in MNPZ area in Wessel CMR
 - The extension of the MNPZ south of Crab Island in West Cape York CMR, to improve protection to important habitat areas for threatened turtle and seabird species.
- The introduction of HPZs, amounting to a significant increase (13%) in high protection in six reserves, including:
 - West Cape York CMR, to better protect benthic habitat in the Gulf of Carpentaria basin
 - Limmen CMR, to improve protection of the Gulf of Carpentaria coastal zone KEF and important habitat areas for sea snakes, aggregations of fish and sharks and inter-nesting habitat for threatened flatback turtles
 - Wessel CMR, to provide greater protection of benthic habitat in the Gulf of Carpentaria basin KEF
 - Arafura CMR, to prohibit activities that interact with the seafloor and provide greater protection to benthic habitat in the Northern Shelf Province Provincial Bioregion

- Oceanic Shoals CMR, to improve protection to the benthic ecosystems of the carbonate banks and terraces of the Van Diemen Rise.

Table 4.1.2 shows how the recommended zoning in the North CMR Network improves the representation of primary conservation features in MNPZ (IUCN II) and HPZ (IUCN IV), providing an indication of performance against the four primary goals. The additional 15 conservation features represented in MNPZ in the North CMR Network are a result of the introduction of new MNPZs in the Oceanic Shoals and Limmen CMRs, and the reconfiguration of the MNPZ in the Gulf of Carpentaria CMR.

The new HPZs in the West Cape York, Limmen, Wessel, Arafura and Oceanic Shoals CMRs provide increased protection to 49 conservation features. Thirty-nine of these features are also represented in MNPZs, which means that 53 of the 93 primary conservation features (57%) in the North CMR Network will be represented in these zones (and therefore 40 are represented in neither zone). A list of these conservation features is provided in Appendix H.

Table 4.1.2 Comparison of representation of conservation features between proclaimed and recommended zoning for North CMR Network

Goal	Primary conservation feature	Total no. in network	Proclaimed		Recommended	
			MNPZ (IUCN II)	HPZ (IUCN IV)	MNPZ (IUCN II)	HPZ (IUCN IV)
1	Provincial Bioregions (PBs)	4	2	0	3	3
	Meso-scale Bioregions	14	6	0	8	11
2	Depth by PB	22	4	0	7	7
3	Key Ecological Features	9	3	0	5	3
	Biologically Informed Seascapes	29	6	0	11	16
4	Seafloor Types	15	7	0	9	9
	Total	93	28	0	43	49

Note: Some features are represented in both MNPZs and HPZs; therefore the total number of features represented in both zones is not the simple sum of their occurrence in each zone.

Socio-economic impacts

Commercial fishing

The recommended zoning of the North CMR Network will reduce the impact on commercial fishing largely due to improvements in access for the Commonwealth managed NPF, the NT Demersal Fishery and Spanish Mackerel Fishery, and the Queensland Gulf of Carpentaria Finfish Fishery.

Recreational and charter fishing

The recommended zoning of the North CMR Network will improve access to some areas in the Gulf of Carpentaria and West Cape York CMRs, but will reduce access to some areas

in the Oceanic Shoals, Limmen and West Cape York CMRs. Based on consultations with recreational and charter fishing representatives, the recommended MNPZs in the North CMR Network largely avoid areas frequently accessed by their sectors, and the socio-economic impacts are considered to be minimal.

Mining and oil and gas development

The area under both MNPZ and HPZ is more than doubled to 24% of the network, reducing the area available for exploration and development for mining and oil and gas. Over three-quarters of the network remain potentially open to these activities.

Native title

Native title is not impacted by the proclamation of CMRs or the development and implementation of management plans for those reserves under the EPBC Act. The existence of native title claims over sea country in the North CMR Network presents significant opportunities for co-management with traditional owners and local Indigenous groups and for improvements in management outcomes. Recommendations relating to involvement of Indigenous groups and traditional owners in the management of CMRs are outlined in Chapters 5 to 7 of this report.

Practicality of implementation

The introduction of HPZs may increase the complexity of zoning for some users in the North CMR Network, although this zone type is widely adopted in other CMR networks. The addition was considered necessary in order to improve protection of benthic habitats while providing for economic activities that do not damage benthic habitat. Zoning boundaries are straight lines (running north–south or east–west where possible), and improvements to ease compliance are expected in some reserves such as West Cape York CMR and Limmen CMR.

Conclusion

The recommended zoning of the North CMR Network represents a balanced approach to addressing the key areas of contention that arose during the consultation. Socio-economic impacts on the commercial fishing sector are reduced through the reconfiguration of zone boundaries and the introduction of further SPZs. These concessions were balanced by new or improved positioning of MNPZs (increased to 11% of the network) and the introduction of HPZs (13% of the network), which together will improve biodiversity outcomes by better targeting and protecting important conservation values in several of the reserves. These recommended changes bring a high level of protection to nearly a quarter of the North CMR Network and 53 of the network's 93 primary conservation features. Attempts to provide high-level protection in more of the nearshore coastal areas of CMRs such as Arnhem, Arafura and Joseph Bonaparte Gulf were stymied by the constraints of moderate to high oil and gas prospectivity.

Table 4.1.3 Overview of recommended zoning scheme for North CMR Network

Activity type ^a		Special Purpose Zone (IUCN VI)	Multiple Use Zone (IUCN VI)	Habitat Protection Zone (IUCN IV)	Marine National Park Zone (IUCN II)
MINING^b	Mining (including exploration, development and other activities)	✓	✓	✗	✗
COMMERCIAL FISHING^c	Handline/rod and reel/trolling	✓	✓	✓	✗
	Hand collection	✓	✓	✓	✗
	Dropline/trotline	✓	✓	✗	✗
	Purse seine	✓	✓	✓	✗
	Fish traps and pots	✓	✓	✗	✗
	Nets (including cast, scoop, barrier, drag, skimmer and lift)	✓	✓	✗	✗
	Set mesh net and pelagic gillnet	✓ ^d	✗	✗	✗
	Demersal longline	✗	✗	✗	✗
	Demersal trawl (including semi-pelagic trawl and semi-demersal trawl)	✗ ^e	✗	✗	✗
AQUACULTURE		✓	✓	✗	✗
RECREATION	Boating	✓	✓	✓	✓
	Scuba diving and snorkelling	✓	✓	✓	✓
	Recreational fishing (including spear-fishing) ^f	✓	✓	✓	✗
COMMERCIAL TOURISM	Non-fishing related tourism (including scuba/snorkel tours and nature watching)	✓	✓	✓	✓
	Fishing related tourism (including charter fishing and fishing/spear diving tours)	✓	✓	✓	✗
INDIGENOUS ACTIVITIES	Non-commercial Indigenous harvesting and hunting (consistent with the <i>Native Title Act 1993</i>)	✓	✓	✓	✓
RESEARCH		✓	✓	✓	✓
GENERAL USE	Defence	✓	✓	✓	✓
	Shipping (general transit) ^g	✓	✓	✓	✓

a. All activities require approval to be undertaken in CMRs; approvals are provided in the management plan or through class approvals or individual permits.

b. Proposed mining operations carried out under usage rights that existed immediately before the declaration of a reserve do not require approval from the DNP.

c. Commercial fishing methods not listed in the table may require assessment.

d. Set mesh netting and pelagic gillnetting are not allowed in the North CMR Network SPZ A.

e. Demersal trawl (fish) is allowed in the North CMR Network SPZ A. Demersal trawl (prawns) is allowed in the North CMR Network SPZ B.

f. Recreational fishing is managed by the states. NT, Queensland or Western Australian rules and regulations (for example size and bag limits) will generally apply in the North CMR Network depending on the reserve location and unless otherwise specified in the management plan.

g. Ballast water exchange is managed under national arrangements. Restrictions may apply in some areas.

4.1.1 WEST CAPE YORK COMMONWEALTH MARINE RESERVE

Background

The West Cape York CMR extends from the boundary of Queensland waters adjacent to the northern tip of the Cape York Peninsula into the Gulf of Carpentaria basin and out to the boundary of the exclusive economic zone (EEZ). The reserve, established in 2012, covers an area of 16 012 km² and contains three zone types: Marine National Park (50%); Multiple Use (37%) and Special Purpose (14%) (Figure 4.1.1.1).

Bioregions represented within the reserve include the Gulf of Carpentaria coastal zone, the Gulf of Carpentaria basin, and examples of habitat and ecosystems of the Northern Shelf Province and Northeast Shelf Transition Province. Conservation values include inter-nesting habitat for threatened flatback, hawksbill and olive ridley turtles as well as roosting areas for aggregations of the migratory lesser frigatebird.

The area is important to traditional owners and contains several native title claims that overlap with parts of the marine reserve.

Fisheries operating in the area include the Queensland Gulf of Carpentaria Finfish Fishery (trolling), the NT Offshore Net and Line Fishery (gillnet) and the Commonwealth NPF (trawl). Charter fishing occurs in the area, mostly within state waters, with some activities extending into Commonwealth waters.

Petroleum prospectivity within the marine reserve boundaries is considered to be low or low to medium, and an existing petroleum lease lies to the south-west of the CMR. The CMR overlaps with a major shipping passage. It also overlaps with a military practice and exercise area (military flying).

Issues raised

In addition to the North CMR Network issues outlined above in Section 4.1, West Cape York CMR was canvassed in detail in several submissions as well as in meetings with stakeholders. Issues raised included:

- Loss of access for commercial fisheries, including commercial trolling and gillnetting
- Increased protection around important turtle habitat adjacent to Crab Island.

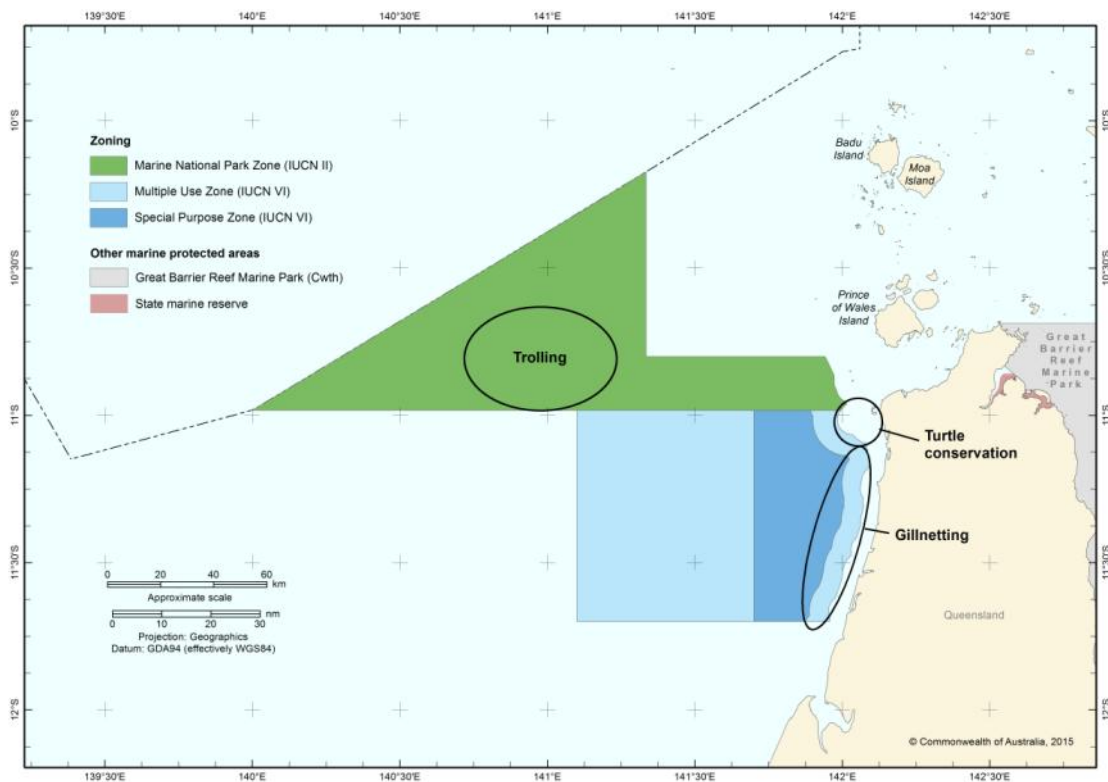


Figure 4.1.1.1 West Cape York CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by established commercial fisheries and the lack of protection around Crab Island were areas of contention in the West Cape York CMR.

Conservation

The coastal area adjacent to Crab Island is important inter-nesting habitat for the world's largest flatback turtle nesting population, habitat for endangered hawksbill turtles and vulnerable olive ridley turtles, and Biologically Important Areas for coastal dolphins.

The Regional Panel recommended an extension of the MNPZ adjacent to Crab Island to provide greater protection to this area.

Gulf of Carpentaria Finfish Fishery (trolling)

The area of particular interest was a series of reefs in the existing MNPZ that included the Carpentaria Shoals (Figure 4.1.1.1). In submissions received from the commercial sector, detailed confidential information was provided to show the location of several reefs in this reserve that were targeted by the fishery. Some of these reefs occurred in the MNPZ while others were to the east of the reserve or were found south of the MNPZ in the SPZ.

This fishery targets Spanish mackerel, *Scomberomorus commerson*, a large mobile pelagic species that is only present in the area at certain times of the year.

The inclusion of a HPZ over the shoals to allow recreational fishing and commercial fishing for pelagic species (trolling) would accommodate the request for access to the Carpentaria Shoals.

This option affords a high level of protection to the benthic habitat over the shoals while at the same time minimising the impact of the reserve on an important fishery. The HPZ

will also allow recreational and charter fishing to occur in the area, addressing concerns relating to both fishing prospectivity and economic development of the region.

The Regional Panel noted that having both an HPZ and an MNPZ in close proximity in this area provided an opportunity for future scientific evaluation of the relative effectiveness of these two zone options in achieving the conservation objectives for the area.

Offshore net and line fishery (gillnetting)

The area of interest was the strip of MUZ east of the SPZ in Figure 4.1.1.1. This affected the grey mackerel fishery in the N3 Gulf of Carpentaria Finfish Fishery and to a lesser extent the N9 fishery that extends from 7 nm to 25 nm offshore.

The fishery targets grey mackerel, threadfins, barramundi and spotted grunter bream.

It is proposed that the MNPZ be extended to 11°04'S, below which the SPZ be extended east over what was previously MUZ.

Recommendations

The recommendations for the West Cape York CMR are to:

- Create new HPZ over the Carpentaria Shoals
- Extend the MNPZ south to 11°04'S and east of 141°42'E to the 3 nm limit
- Remove the MUZ east of the existing SPZ, thereby creating an SPZ from the 3 nm limit south of 11°40'S to a western boundary at 141°42'E.

These changes are shown in Figure 4.1.1.2 and summarised in Table 4.1.1.1.

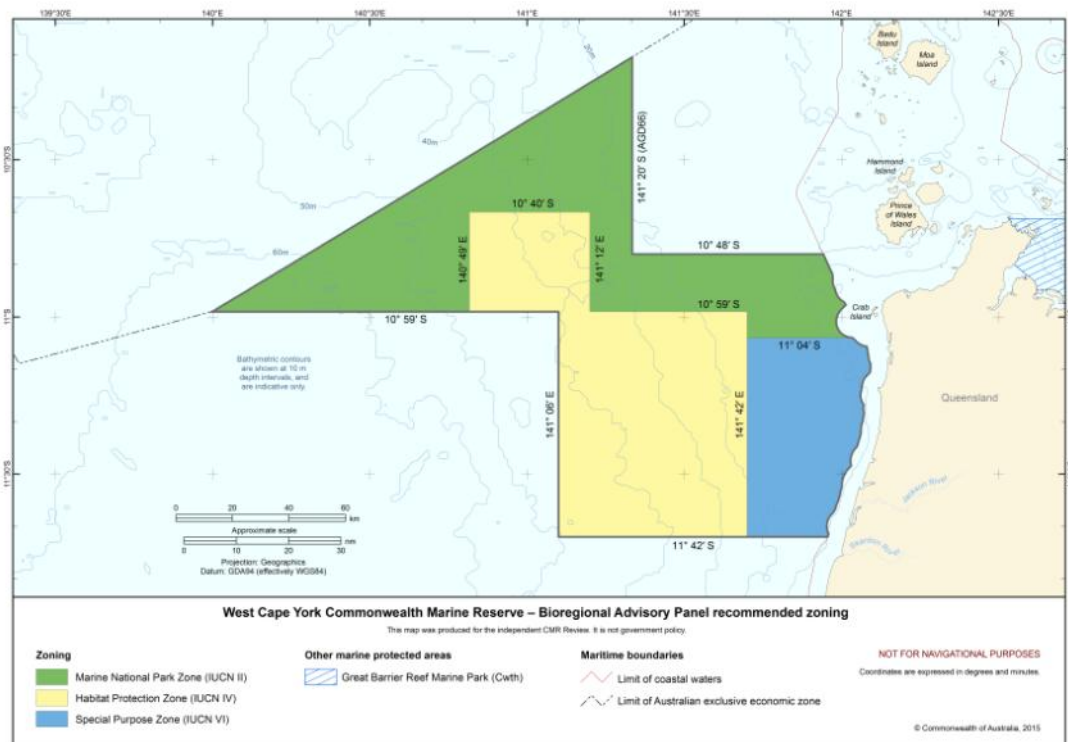


Figure 4.1.1.2 Recommended zoning for West Cape York CMR

Table 4.1.1.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. While the area of

MNPZ is reduced, this is offset by the introduction of a new HPZ. In combination with the MNPZ, this provides a high level of protection to 84% of the reserve. There is also a slight increase in the area under SPZ.

Table 4.1.1.1 Comparison of areas of zone types between proclaimed and recommended zoning for West Cape York CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	7 957	49.69%	6 783	42.36%	-1 174	-7.33%
HPZ (IUCN IV)	Nil	Nil	6 660	41.59%	+6 660	+41.59%
MUZ (IUCN VI)	5 871	36.67%	Nil	Nil	-5 871	-36.67%
SPZ (IUCN VI)	2 184	13.64%	2 569	16.04%	+385	+2.40%
Total	16 012	100%	16 012	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for West Cape York CMR improves conservation outcomes by increasing protection of the area adjacent to Crab Island, which provides important habitat for threatened turtle species, seabirds and coastal dolphins.

The introduction of a new HPZ that covers more than 40% of the reserve will provide greater protection to 15 conservation features in the North CMR Network, including two Provincial Bioregions, three Meso-scale Bioregions, two Depth Ranges (by Provincial Bioregion), one KEF, four Biologically Informed Seascapes and three Seafloor Types (see Appendix H). Twelve of these conservation features are also represented in MNPZ.

The recommended zoning of West Cape York CMR will reduce the overall impact on commercial fishing catch, particularly for trolling over the Carpentaria Shoals and gillnetting in the nearshore waters south of Crab Island. This zoning will improve access and provide a potential economic opportunity for recreational and charter fisheries in the area now zoned as HPZ.

The Commonwealth NPF also operates in or near the marine reserve. There are no recommended changes to the zoning of West Cape York CMR that will reduce the impacts on this fishery, as all forms of trawling will remain prohibited.

The new zoning will introduce one new zone type (HPZ) to make a total of four zones in the marine reserve. The change to a portion of the MNPZ to an HPZ around the Carpentaria Shoals may increase zoning complexity to some extent; however, straight boundary lines have been applied to minimise this complexity. By changing the proclaimed eastern MUZ (adjacent to the Queensland state water boundary), ease of compliance with zoning will improve. The West Cape York CMR overlaps with the Torres Strait Regional Sea Claim native title determination.

The recommended new HPZ in this reserve will increase the restriction on mining activities above the level in the proclaimed zoning. The area covered by the recommended HPZ was rated as having medium-low to low petroleum prospectivity.

4.1.2 GULF OF CARPENTARIA COMMONWEALTH MARINE RESERVE

Background

The Gulf of Carpentaria CMR covers approximately 23 774 km² of Commonwealth waters from waters adjacent to the Wellesley Islands and further north into the Gulf of Carpentaria basin. The reserve, established in 2012, was assigned two zone types; Marine National Park (31%) and Multiple Use (69%) (Figure 4.1.2.1).

This marine reserve is representative of several KEFs including the Gulf of Carpentaria coastal zone, the Gulf of Carpentaria basin, the plateaux and saddle north-west of the Wellesley Islands, and submerged coral reefs of the Gulf of Carpentaria. The area provides inter-nesting habitat for threatened flatback and green turtles and foraging areas for breeding aggregations of the lesser frigatebird, brown booby, roseate tern and listed marine crested tern.

The southern part of the reserve overlaps with the sea country zone of the Thuwathu/Bujimulla Indigenous Protected Area (IPA). A native title claim overlaps with parts of the marine reserve, and the area is important to traditional owners.

Several commercial fisheries operate within or adjacent to the marine reserve including the Queensland Gulf of Carpentaria Finfish Fishery (trolling), the NT Offshore Net and Line Fishery (gillnet) and the Commonwealth NPF (trawl). While recreational and charter fishing does extend into Commonwealth waters it mostly occurs within state waters. Petroleum prospectivity within the marine reserve boundaries is considered to be low. Shipping activity occurs in the area and possibly within the marine reserve.

Issues raised

In addition to the North CMR Network issues raised above in Section 4.1, the Gulf of Carpentaria CMR was discussed in several submissions and in several meetings with stakeholders. Issues raised included:

- Mining, including oil and gas and mineral exploration
- Traditional owner interests and aspirations for economic development
- Inadequate protection—specifically, that the area to the north of Wellesley Islands be included in MNPZ to protect important cultural heritage sites and habitat important to seabirds, sea snakes and turtles
- Loss of access for commercial fisheries, especially commercial trolling and the unintended consequence for prawn trawling of the setting aside of the North CMR Network Management Plan
- Need to re-evaluate the FGRA for prawn trawling in the Gulf of Carpentaria
- Access to long-term monitoring sites for the NPF.

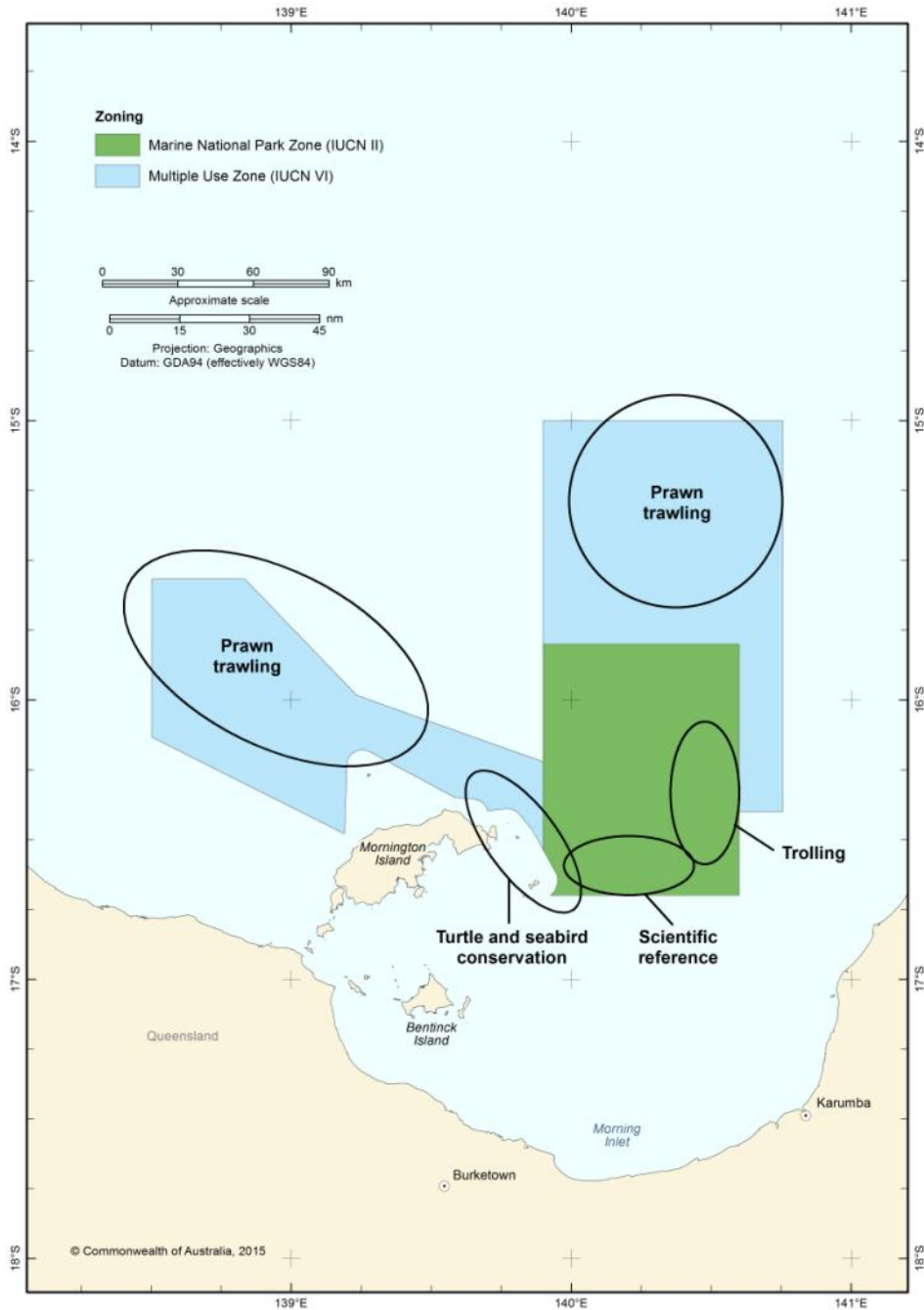


Figure 4.1.2.1 Gulf of Carpentaria CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

Northern Prawn Fishery

The North CMR Network Management Plan (set aside in 2013) recognised the importance of the fishing grounds in the Gulf of Carpentaria to the productivity and economic value of the NPF by categorising the MUZ as a GUZ (Carpentaria) that allowed bottom trawling.

An unintended consequence of setting aside the North CMR Network Management Plan was the loss of access to this important trawl ground.

The ESP advice on the FGRA for the NPF was that:

- Recent research and better identification of the conservation values suggested that NPF operations (demersal trawling) may not impact as significantly on the benthic environment in the Gulf of Carpentaria CMR as previously thought, particularly as operations avoid ecologically important habitats such as sponge gardens, and reefs, which are located in what is considered untrawlable ground and which are protected within fishery spatial closures.
- More recent evaluations of the risks to elasmobranchs suggest that none were at risk because of widespread distributions and/or low overlaps with the fishery.

The BAP accepted this finding and suggested that a SPZ be created (rather than a GUZ) that allows demersal trawling to occur in the Gulf of Carpentaria CMR.

Queensland Gulf of Carpentaria Finfish Fishery and Northern Territory Spanish Mackerel Fishery (trolling)

These fisheries target Spanish mackerel (*Scomberomorus commerson*), a large mobile pelagic species that is only present in the area at certain times of the year. The area of particular interest to Spanish mackerel fishers was a series of reefs in the southern portion of the proclaimed MNPZ (Figure 4.1.2.1). In submissions received from the commercial fishing sector, detailed confidential information was provided to show the location of several reefs in this reserve targeted by the fishery. Some of these reefs occurred in the MNPZ while others were to the north of the MNPZ in the MUZ. The latter did not affect the mackerel fishery as it is allowed in MUZ.

The Regional Panel suggested the MNPZ be shifted further north, to avoid these shoals, and enclose the shoals in an HPZ.

This option retained a high level of protection to the benthic habitat over the shoals while at the same time minimising the impact of the reserve on an important commercial fishery. The HPZ would also allow recreational and charter fishing to occur in the area, addressing concerns relating to both fishing prospectivity and economic development of the region.

The location of the southern boundary of the MNPZ to a position further north avoids as far as possible important long-term NPF trawl monitoring sites established by the Commonwealth Scientific and Industrial Research Organisation (CSIRO).¹² The inclusion of HPZ in this reserve provides an opportunity for future scientific evaluation of the relative effectiveness of these two zone types in achieving the conservation objectives for the area.

Conservation

Consultation with Indigenous representatives highlighted the importance of this area to the cultural heritage of the Lardil, Yangkall, Kaiadilt and Gangalidda communities. The area of specific interest overlapped with the Thuwathu/Bujimulla IPA to the north of Mornington Island (in the Wellesley Islands group).

¹² Dichmont, C.M. *et al.* (2004) Designing, implementing and assessing an integrated monitoring program for the NPF. Final Report FRDC project 2002/101.

The Regional Panel proposed extending the MNPZ to cover an area north of Mornington Island. This area is important habitat for seabirds, turtles (flatback and green), sea snakes and dugongs as well as containing critical seagrass habitat including *Pisonia grandis*.

Recommendations

The recommendations for the Gulf of Carpentaria CMR are to:

- Change the MUZ to an SPZ and reposition its boundaries to allow prawn trawling over historic trawl grounds
- Reconfigure and shift the MNPZ northwards, include a transect between 139°54'E and 140°05'E to the northern edge of the reserve and extend the MNPZ westwards over an area north of Mornington Island
- Create an HPZ to cover the shoals in the southern part of the reserve.

These changes are shown in Figure 4.1.2.2 and summarised in Table 4.1.2.1.

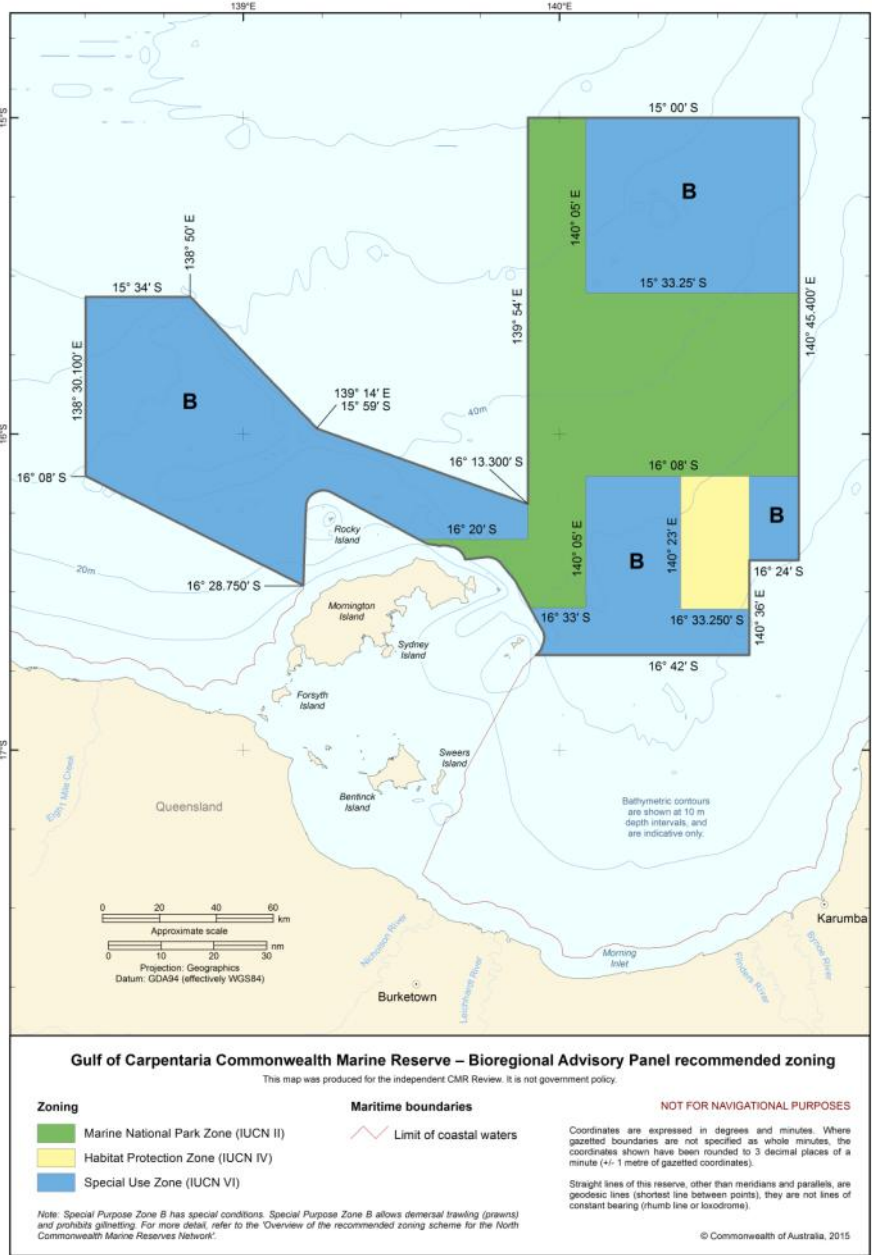


Figure 4.1.2.2 Recommended zoning for Gulf of Carpentaria CMR

Table 4.1.2.1 indicates how the areas of different zone types (within the outer boundaries of the reserve) will change under the recommended zoning. There is a small increase in the area under MNPZ and the introduction of a new HPZ. Together these cover just under 40% of the reserve. The SPZ effectively replaces the MUZ.

Table 4.1.2.1 Comparison of areas of zone types between proclaimed and recommended zoning for Gulf of Carpentaria CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	7 388	31.08%	8 246	34.68%	+858	+3.61%
HPZ (IUCN IV)	Nil	Nil	1 078	4.53%	+1 078	+4.53%
MUZ (IUCN VI)	16 387	68.93%	Nil	Nil	-16 387	-68.93%
SPZ B (IUCN VI)	Nil	Nil	14 451	60.78%	+14 451	+60.78%
Total	23 774	100%	23 774	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning of Gulf of Carpentaria CMR will improve the conservation outcomes of the reserve. The total area of MNPZ will increase and cover a wider range of water depths. The extension of the MNPZ north of Mornington Island will provide protection to important inter-nesting habitat for turtle species, while the HPZ provides protection for rocky reefs and shoals. Combined, these two zone types provide high-level benthic habitat protection to approximately 39% of the CMR (an increase of 8%). The recommended zoning will also improve conservation outcomes by increasing the representation of nine conservation features in HPZ or MNPZ, including one Provincial Bioregion, one Meso-scale Bioregion, one Depth Range (by Provincial Bioregion), two KEFs, two Biologically Informed Seascapes and two Seafloor Types (see Appendix H).

The recommended zoning substantially reduces overall impact on commercial fishing. As proclaimed, the reserve would have excluded prawn trawling from the entire area; however, the recommended zoning, which allows trawling by exception, will result in a substantial reduction in impacts on the NPF. It also removes restrictions on the commercial fisheries for Spanish mackerel and provides access for recreational and charter fishing in the HPZ.

The Gulf of Carpentaria CMR proposal overlaps with the Wellesley Islands Sea Claim native title determination and the Thuwathu/Bujimulla IPA.

The recommended zoning increases the number of zones in the reserve but this complexity is offset by the use of straight internal zoning boundaries and the use of the 139°54'E line of longitude for its northern and southern arms. The recommended zoning is not expected to present major compliance issues for commercial fishers, apart from the requirement to stow and secure all gear that is not permitted in a particular zone type on transiting vessels. The NPF is a Commonwealth managed fishery, and the requirement for

a vessel monitoring system (VMS) on each operating vessel provides both operators and managers with a high degree of confidence for compliance.

The proposal extends the restriction on mining activities for an additional 8% of the reserve.

4.1.3 LIMMEN COMMONWEALTH MARINE RESERVE

Background

The Limmen CMR covers approximately 1399 km² of waters between the Sir Edward Pellew group of islands and Maria Island in the Limmen Bight, and covers a large, shallow bay less than 30 m deep. The reserve, established in 2012, was assigned as a single zone: Multiple Use (Figure 4.2.3.1).

This marine reserve is representative of the Gulf of Carpentaria coastal zone KEF. Nutrients that flow from rivers into the coastal zone support high productivity and some of the most diverse and abundant biota in the North Marine Region. Species found in the area include sea snakes and aggregations of fish and sharks. The waters within the marine reserve provides inter-nesting habitat for threatened flatback turtles.

Several commercial fisheries operate within or near the marine reserve including the Commonwealth NPF (trawling) and NT Offshore Net and Line (mesh netting), Coastal Net and Coastal Line fisheries. Petroleum prospectivity within the marine reserve boundaries is considered to be low; however, the marine reserve overlaps with a number of applications for offshore seabed mining exploration licences.

Issues raised

In addition to the network issues raised above in Section 4.1, Limmen CMR was discussed in a large number of submissions and in meetings with stakeholders. The most common theme in these was in relation to zoning arrangements, specifically to increase the level of protection against the threat of seabed mining. Issues raised included:

- Inadequate protection—specifically, the lack of an MNPZ in the Pellew bioregion
- Threat of seabed mining and oil and gas
- Potential impact of MNPZs on Indigenous livelihoods and traditional owner interests and aspirations for economic development
- Role of rangers in marine reserve management
- Opportunity to link adjacent terrestrial and marine conservation
- Tourism potential
- Displaced fishing effort.

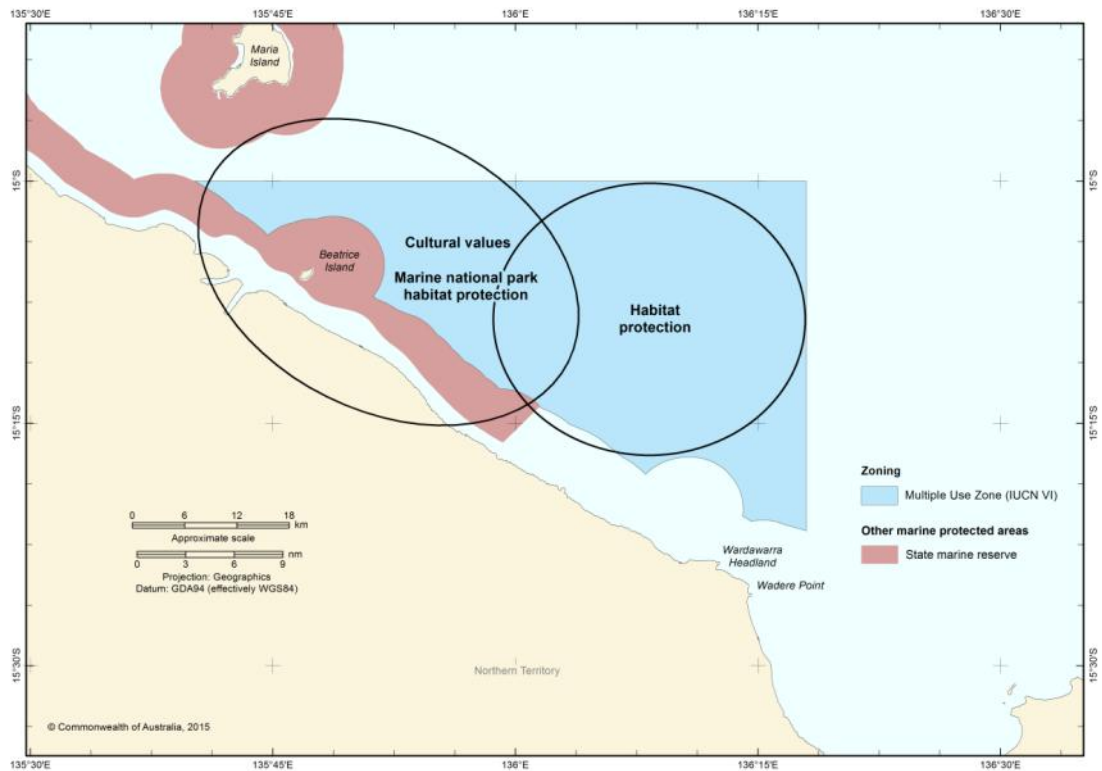


Figure 4.1.3.1 Limmen CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that inadequate protection of key conservation values was an area of contention.

Conservation values

The area is known for its aggregations of marine life, biodiversity and endemism. It abuts the Marra Aboriginal Land Trust and the Limmen Bight Marine Park (NT waters) and is offshore from the Limmen National Park (terrestrial). It is representative of the near-pristine Gulf of Carpentaria KEF. Species found in this KEF include marine turtles (olive ridley, green, hawksbill and loggerhead), 16 species of sea snakes, colonial and solitary seabirds (such as terns, frigatebirds, white-bellied sea eagle, osprey, brown booby), dugongs, and aggregations of fish and sharks. Small whales (false pilot whales) and bottlenose dolphins are common, and sawfishes (freshwater and green), syngnathids, rare rays and other elasmobranchs are also present.

Recommendations

The recommendations for the Limmen CMR are to:

- Create a new MNPZ on the western side of the Limmen CMR
- Create a new HPZ on the eastern side of the Limmen CMR.

These changes are shown in Figure 4.1.3.2 and summarised in Table 4.1.3.1

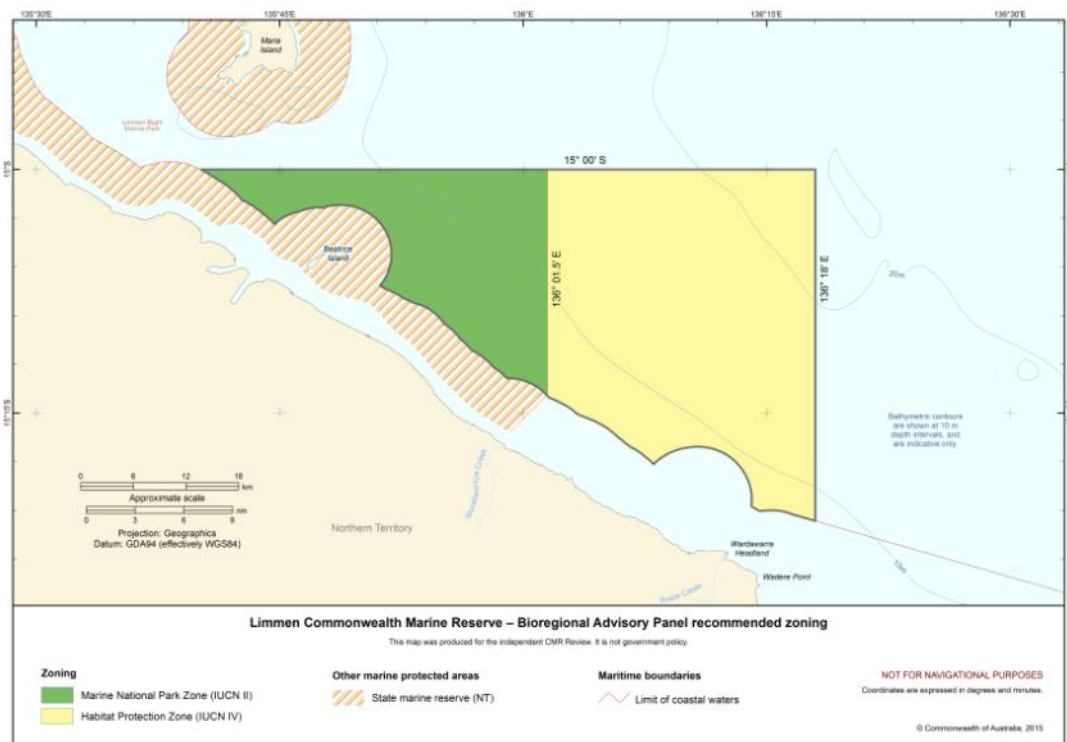


Figure 4.1.3.2 Recommended zoning for Limmen CMR

Table 4.1.3.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change under the recommended zoning. The MUZ is replaced by a new MNPZ and HPZ, which places the entire reserve under high-level protection.

Table 4.1.3.1 Comparison of areas of zone types between proclaimed and recommended zoning for Limmen CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	Nil	Nil	431	30.81%	+431	+30.81%
HPZ (IUCN IV)	Nil	Nil	969	69.26%	+969	+69.26%
MUZ (IUCN VI)	1 399	100%	Nil	Nil	-1 399	-100%
Total	1 399	100%	1 399	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for Limmen CMR will provide a high level of protection to an area of considerable ecological significance and establish a no-take reference site for monitoring change and impacts of human activity. The establishment of the MNPZ creates a significant no-take zone (almost 31% of the reserve) and, combined with the new HPZ for the balance of the reserve, creates a major increase in protection of this reserve. The

recommended zoning will increase the representation of three conservation features in both MNPZ and HPZ, including one Meso-scale Bioregion and two Biologically Informed Seascapes, and provide additional protection to another nine conservation features in HPZ in the North CMR Network, including one Provincial Bioregion, two Depth Ranges (by Provincial Bioregion), one KEF, four Biologically Informed Seascapes, and one Seafloor Type (see Appendix H).

The recommended zoning will not change the impact on commercial fishing, compared to the proclaimed zoning, as the potentially affected fisheries operate gear types that would have been prohibited under the proclaimed zoning. The recommended introduction of an MNPZ has the potential to reduce future access for recreational and charter fishers within the CMR. However, consultations with these sectors showed that these areas are not frequented by either sector and the socio-economic impacts are thus low.

The new recommended MNPZ is located adjacent to the Limmen Bight Marine Park (NT) and includes a straight boundary with the HPZ for ease of compliance. The recommended zoning is not expected to present major compliance issues for commercial fishers.

The overlap of the Limmen CMR with the Yanyuwa (Barni–Wardimantha Awara) IPA will provide opportunities for the local Indigenous people to assist in the management of the area.

The recommended new MNPZ and HPZ in this reserve will prohibit mining activities. The area covered by these recommended zones was rated as having low petroleum prospectivity.

4.1.4 WESSEL COMMONWEALTH MARINE RESERVE

Background

The Wessel CMR covers approximately 5 908 km² of waters east of the Wessel Island and Bromby Islands. The reserve, established in 2012, was assigned two zone types: Marine National Park (28%) and Multiple Use (72%) (Figure 4.1.4.1).

This marine reserve is representative of the Gulf of Carpentaria basin KEF and overlaps the Arafura Sill, which is the only feature of its type in the region. The sill is a seafloor barrier that restricts movement of water into the Gulf of Carpentaria basin and forms a distinct biogeographical transition area for sessile invertebrate and fish species. The reserve provides inter-nesting habitat for threatened flatback, green, hawksbill and olive ridley turtles as well as foraging habitat for breeding aggregations of the migratory common noddy and roseate tern and the listed marine crested tern.

The southern part of the reserve overlaps with the sea country zone of the Dhimurru IPA. The Wessel and English Company islands groups, Gove Peninsula and the north-east Arnhem coast are all recognised by the NT Government as Sites of Conservation Significance, and they lie within approximately 25 km of the marine reserve.

A number of commercial fisheries operate in or near the marine reserve including the Commonwealth NPF and the NT Spanish Mackerel, Offshore Net and Line, Demersal and Coastal Line fisheries. While charter fishing does extend into Commonwealth waters it mostly occurs within state waters.

Petroleum prospectivity within the marine reserve boundaries is considered to be low. Shipping activity occurs within the marine reserve.

Issues raised

In addition to the North CMR Network issues raised above in Section 4.1, Wessel CMR was canvassed in a number of submissions as well as in meetings with stakeholders. Issues raised included:

- Allowed uses in reserves—especially areas where future management plans may impact on fishing related tourism and recreational fishing
- Loss of access for commercial fisheries, including commercial trawling and gillnetting
- Validity of the FGRAs—particularly semi-demersal trawl
- Traditional owner interests and aspirations for economic development—specifically, the role of rangers in marine reserve planning and management and the protection of the cultural values of sea country
- Displaced effort—specifically, a potential increase in prawn trawling east of the reserve in Browns Cove.

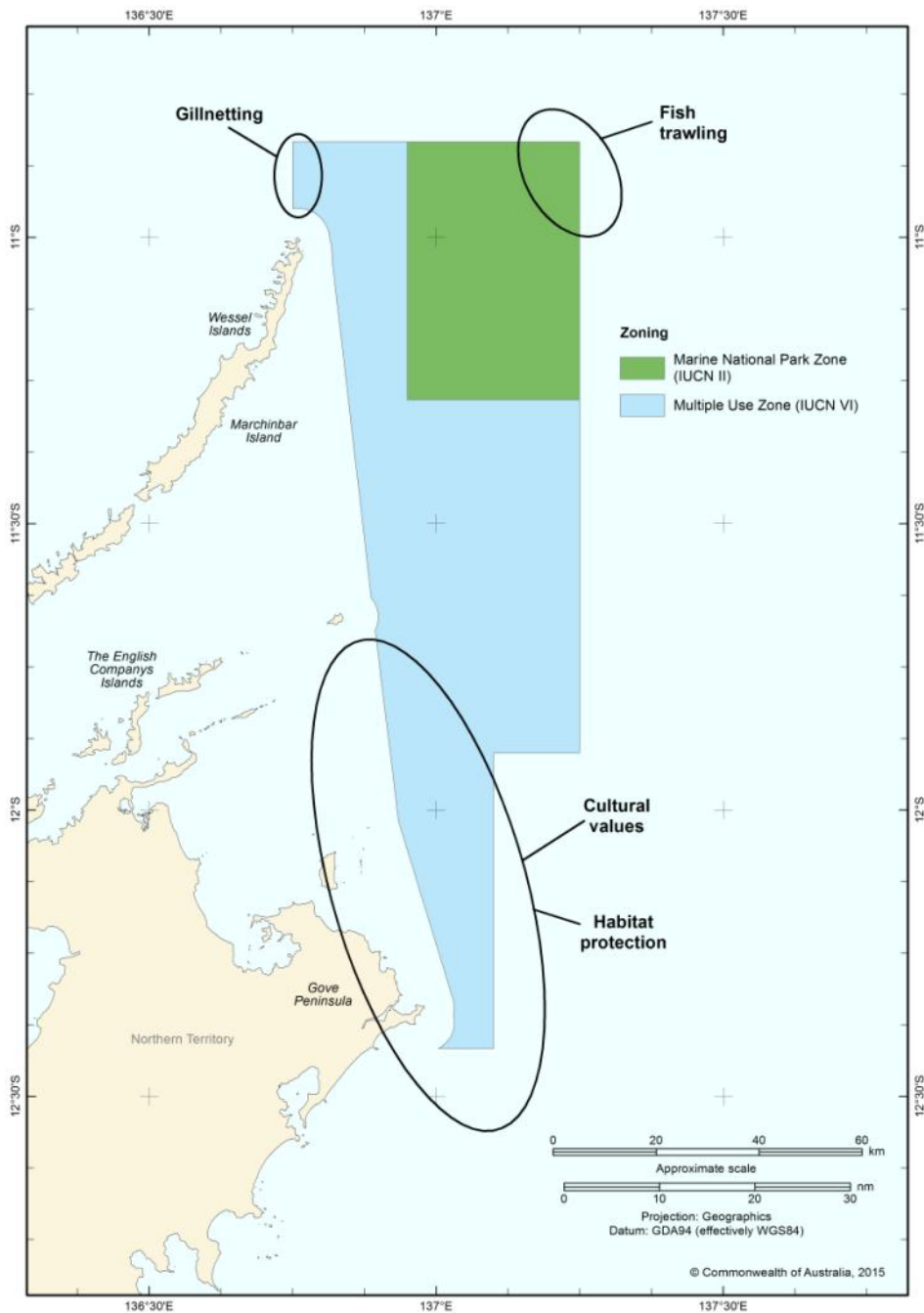


Figure 4.1.4.1 Wessel CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by commercial fisheries, potential mining impacts and traditional owner interests were areas of contention.

Offshore net and line fishery (gillnetting)

The fishery currently targets black-tip sharks and grey mackerel (*Scomberomorus semifasciatus*). The area of particular concern was north of Wessel Island in the MUZ, which prohibits gillnetting.

The Regional Panel suggested the establishment of a small SPZ (IUCN VI) in the north-western corner of the Wessel CMR to improve access for the gillnet fishery and reduce the socio-economic impact of this reserve on the fishery.

Demersal fishery (trawling)

The demersal fishery operations overlap the north-eastern corner of the proclaimed MNPZ in the Wessel CMR.

The Regional Panel recommended the establishment of a small SPZ in the north-east corner of the reserve to reduce the impact on the operational efficiency of the Demersal Fishery Trawl Sector. To balance this, the MNPZ is extended further south to 11°25'S, and the MUZ is rezoned as HPZ to provide higher protection for the benthic habitats of the CMR.

The ESP advice on the FGRA for the NPF was that:

- Recent research and better identification of the conservation values suggested that NPF operations (demersal trawling) may not impact as significantly on the benthic environment in the Gulf of Carpentaria CMR as previously thought, particularly as operations avoid ecologically important habitats such as sponge gardens, and reefs, which are located in what is considered untrawlable ground, and which are protected within fishery spatial closures
- More recent evaluations of the risks to elasmobranchs suggest that none were at risk because of widespread distributions and/or low overlaps with the fishery
- It is highly likely that a similar situation may apply to other areas of the North and North-west such as the Wessel CMR and the Joseph Bonaparte Gulf CMR. However, consideration must be given to ensure that sufficient areas are protected from the impacts of trawl, especially where there is an absence of MNPZs.

Conservation and Indigenous interests

Consultation with Indigenous representatives highlighted the importance of this area for the cultural heritage and aspirations of the Dhimurru, Yirralka and Gumurr Marthakal communities to look after their country. The area of specific interest was the overlap of the southern part of the CMR with the Dhimurru IPA sea country. Discussions with the representatives of the IPA indicated that the proposed zoning of the area as HPZ did not create any impediments to their aspirations to protect and manage natural and cultural values in this area and to explore economic opportunities that respected and protected environmental quality.

Recommendations

The recommendations for the Wessel CMR are to:

- Rezone the MUZ as a HPZ (IUCN IV) that includes the overlap between the CMR and the Dhimurru IPA
- Shift the southern boundary of the MNPZ southwards to 11°25'S
- Create new SPZs (IUCN VI) in the North-west and North-east corners of the existing reserve that allows gillnetting and trawl respectively.

These changes are shown in Figure 4.1.4.2 and summarised in Table 4.1.4.1.

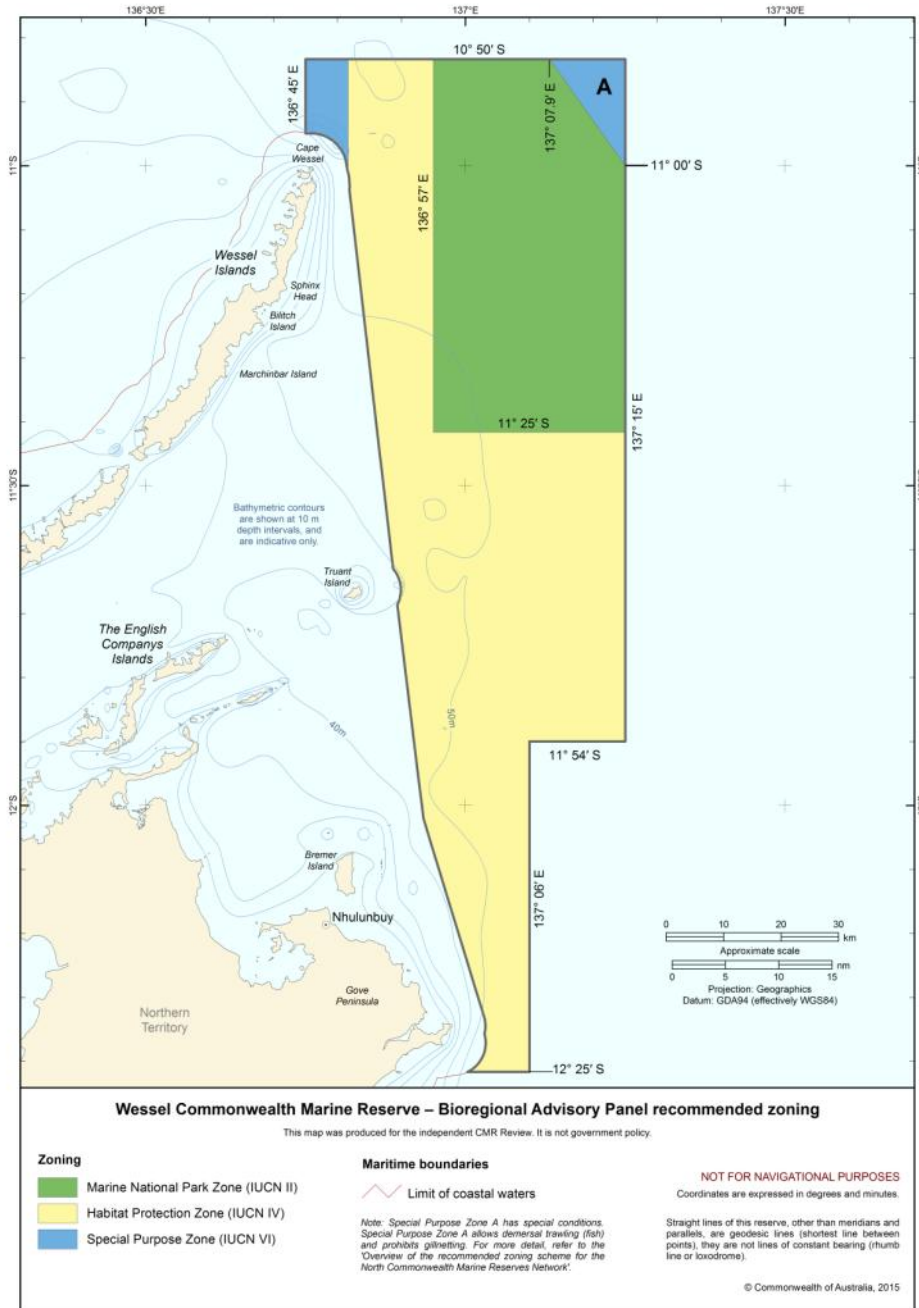


Figure 4.1.4.2 Recommended zoning for Wessel CMR

Table 4.1.4.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is an increase in the area of MNPZ which is complemented by the introduction of a new HPZ and the elimination of the MUZ. Two small new SPZs are created.

Table 4.1.4.1 Comparison of areas of zone types between proclaimed and recommended zoning for Wessel CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	1 632	27.62%	1 995	33.77%	+363	+6.14%
HPZ (IUCN IV)	Nil	Nil	3 690	62.46%	+3 690	+62.46
MUZ (IUCN VI)	4 276	72.38%	Nil	Nil	-4 276	-72.38%
SPZ (IUCN VI)	Nil	Nil	103	1.74%	+103	+1.74%
SPZ A (IUCN VI)	Nil	Nil	119	2.01%	119	+2.01%
Total	5 908	100%	5 908	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for the Wessel CMR will result in a higher level of protection (MNPZ and HPZ) for 96% of the reserve and a reduction in socio-economic impacts through the creation of small SPZs that accommodate localised operational and access needs of the trawl and gillnet sectors. The introduction of an HPZ to cover more than 60% of the reserve improves the protection of benthic habitats in the CMR while retaining opportunities for Indigenous community participation and economic activity. The HPZ also provides an increased level of protection to 13 conservation features, including one Provincial Bioregion, three Meso-scale Bioregions, one Depth Range (by Provincial Bioregion), one KEF, two Biologically Informed Seascapes, and five Seafloor Types (see Appendix H). Nine of these conservation features are also represented in MNPZ.

The two new SPZs are expected to decrease socio-economic impacts on commercial gillnetting and trawl sectors.

The recommended zoning for the Wessel CMR will result in a small increase in the MNPZ area. This is not considered to impact on recreational and charter fishers within the CMR, the majority of whom operate closer to shore and in the southern portion of the reserve.

The overlap of the Wessel CMR with the Dhimurru IPA should be accommodated within the CMR's management arrangements, and create opportunities for local engagement in planning and managing this part of the reserve. The HPZ should support the protection of Indigenous cultural values.

The recommended zoning for this reserve takes the total number of zone types from two to three, and the increased complexity in zoning boundaries may slightly increase the difficulty of compliance for users.

The recommended increased MNPZ and the new HPZ in this reserve will further limit potential mining activities above that set out in the proclaimed zoning. The area covered by these recommended zones was rated as having low petroleum prospectivity.

4.1.5 ARAFURA COMMONWEALTH MARINE RESERVE

Background

The Arafura CMR covers approximately 22 924 km², from north-west of Croker Island to the tributary canyons of the Arafura Depression. The reserve includes waters between 5 m and 250 m deep and it includes a continuous transect from the edge of NT waters to the limit of Australia's EEZ. The reserve established in 2012 was assigned entirely as Multiple Use because most of the area was prospective for oil and gas and it overlaps with a range of existing fisheries (Figure 4.1.5.1).

This marine reserve includes the tributary canyons of the Arafura Depression KEF, which is considered to be a region of high biodiversity and provides foraging habitat for the migratory roseate tern and inter-nesting areas for the threatened flatback, green, hawksbill and olive ridley turtles.

A native title claim overlaps with parts of the marine reserve and the area is important to traditional owners.

Several commercial fisheries operate within or near the marine reserve including the Commonwealth NPF and the NT Demersal, Spanish Mackerel, Offshore Net and Line, Coastal Net and Coastal Line fisheries. The marine reserve overlaps with areas identified as important for recreational and charter fishing. Petroleum prospectivity within the marine reserve boundaries ranges across low, medium and high but the reserve does not overlap with any existing lease or acreage release areas. The southern end of the marine reserve overlaps with a military practice and exercise area and shipping activity occurs across the marine reserve.

Issues raised

In addition to the North CMR Network issues raised above in Section 4.1, the Arafura CMR was canvassed in detail in several submissions as well as in meetings with stakeholders. Issues raised included:

- Traditional owner interests and aspirations for economic development—specifically, the role of rangers in marine reserve management and the potential impact of MNPZs on Indigenous livelihoods
- Concerns over the potential impact of mining, including oil and gas and mineral exploration
- Unprotected habitats—particularly the lack of MNPZs over the tropical Arafura Canyons and the lack of higher levels of protection in the reserve
- Loss of access for commercial fisheries, including commercial trawling and gillnetting
- Threat of illegal, unreported and unregulated fishing
- Validity of the FGRAs—particularly semi-demersal trawl.

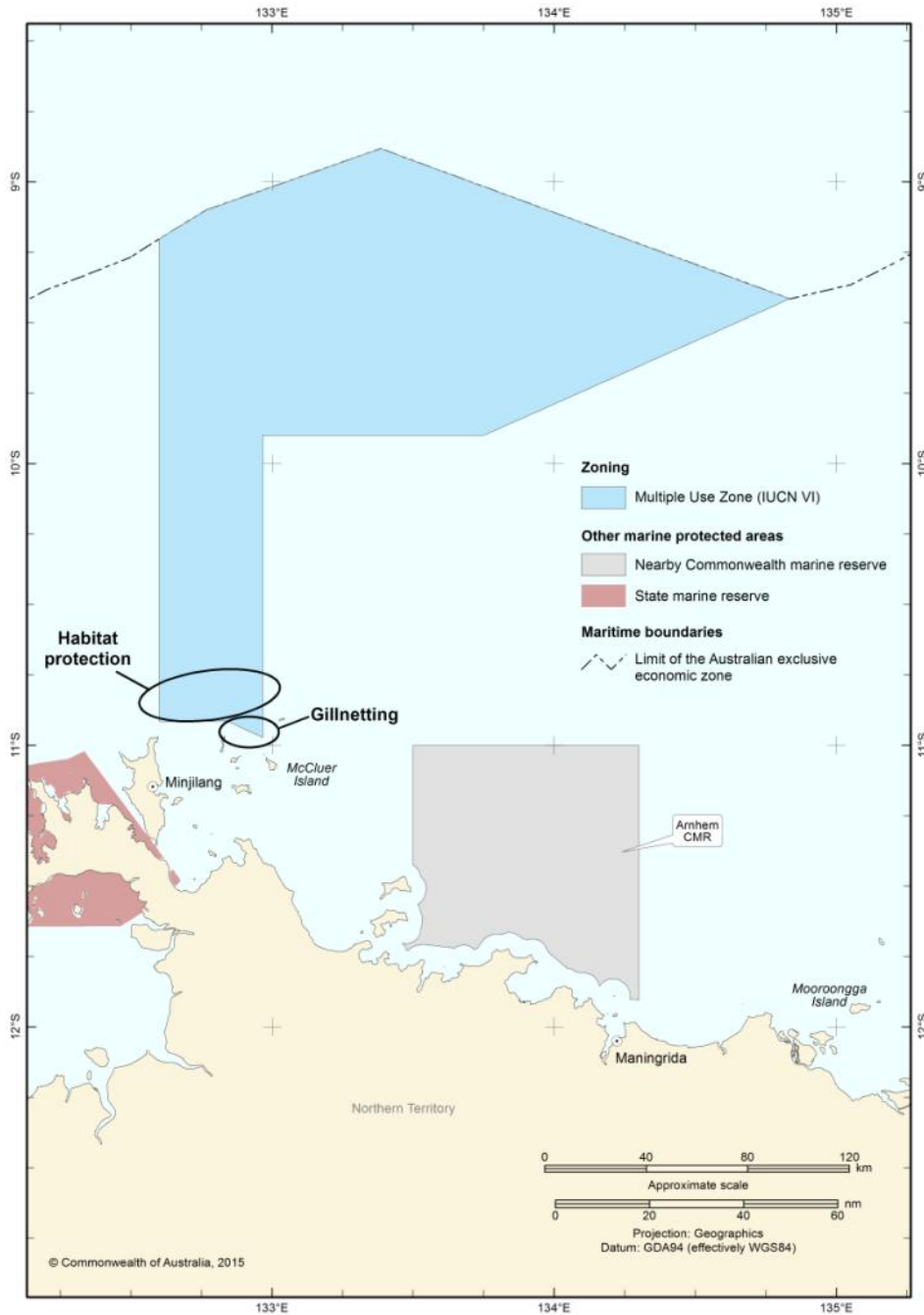


Figure 4.1.5.1 Arafura CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by commercial fisheries and the lack of an MNPZ or HPZ were areas of contention.

Conservation status

All of the submissions received from the conservation sector discussed the establishment of an MNPZ in the Arafura CMR, which would satisfy a commitment to create marine national parks within each bioregion, in this case the Timor Transition Provincial Bioregion and Cobourg Meso-scale Bioregion.

Noting that the reserve covered an area of moderate to high prospectivity for oil and gas, siting a new MNPZ in the CMR was considered by the Regional Panel but not pursued.

They did, however, propose an HPZ over the southern part of the reserve in an area that was not highly prospective.

Offshore net and line fishery (gillnetting)

The fishery currently targets black-tip sharks and grey mackerel (*Scomberomorus semifasciatus*). The area of particular concern to the gillnet fishery sector was in the south-eastern tip of the Arafura CMR around McCluer Island and New Year Island, where the proclaimed zoning as MUZ excludes gillnetting.

The Regional Panel proposed a small SPZ to allow gillnetting to continue in the area.

Demersal fishery (trawling)

The Regional Panel noted the overlap between the existing area of operation of the trawl fishery and the Arafura CMR, but noted previous negotiations with the fishing industry that accepted a loss of access to the southern parts of the reserve, which was reflected in the proclaimed zoning.

The ESP advice on the FGRA for the former NT Finfish Fishery (now amalgamated into the NT Demersal Fishery) was that:

- Recent research, an improved understanding of the habitat, a better identification of the conservation values of the area and improvements in gear type and management suggested that Demersal and Developmental Fishery operations (semi-demersal trawling) may not impact as significantly on the benthic environment as previously thought
- More recent evaluations of the risks to elasmobranchs suggested that none were at risk because of widespread distributions and/or low overlaps with the fishery. A National Recovery Plan was being developed to address threats to these species.

Recommendations

The recommendations for the Arafura CMR are to:

- Establish a small SPZ (IUCN VI) in the southern tip of the reserve
- Establish an HPZ in the southern section of the reserve above the SPZ, with a northern boundary at 10°45' S.

These changes are shown in Figure 4.1.5.2 and summarised in Table 4.1.5.1.

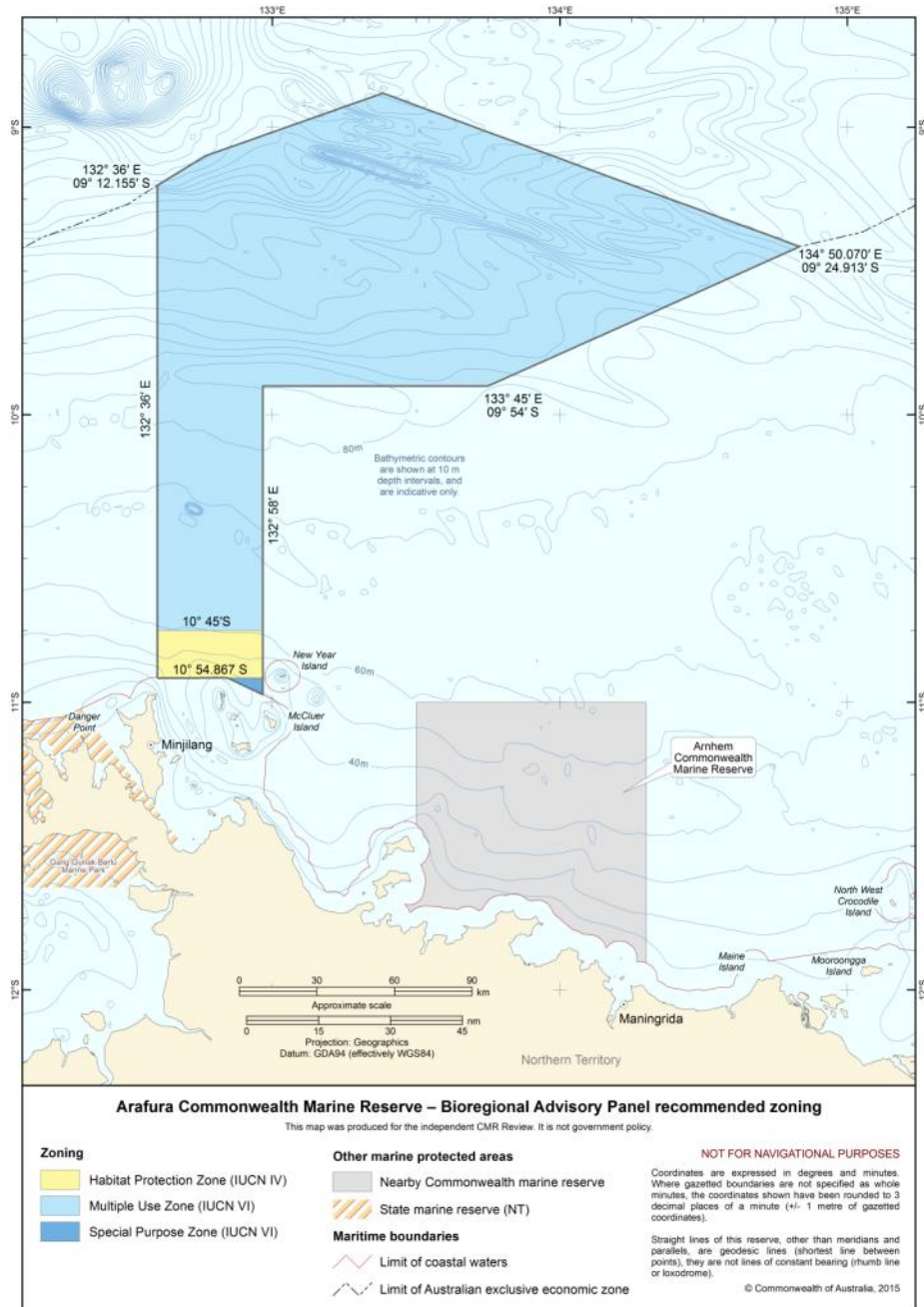


Figure 4.1.5.2 Recommended zoning for Arafura CMR

Table 4.1.5.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is a small decrease in the area of MUZ and corresponding introduction of a small new SPZ and small new HPZ.

Table 4.1.5.1 Comparison of areas of zone types between proclaimed and recommended zoning for Arafura CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area in km ²)	% of CMR
HPZ (IUCN IV)	Nil	Nil	731	3.19%	+731	+3.19%
MUZ (IUCN VI)	22 924	100%	22 149	96.62%	-775	-3.38%
SPZ (IUCN VI)	Nil	Nil	44	0.19%	+44	+0.19%
Total	22 924	100%	22 924	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for Arafura CMR will slightly improve the conservation outcomes of the reserve through the introduction of a new HPZ to protect benthic habitats while retaining opportunities for existing recreational and commercial fishing activity. The new HPZ will provide an increased level of protection for 10 conservation features, including one Provincial Bioregion, two Meso-Scale Bioregions, one Depth Range (by Provincial Bioregion), four Biologically Informed Seascapes, and two Seafloor Types (see Appendix H).

The recommended zoning of Arafura CMR will reduce the overall impact on commercial gillnetting as a result of the new SPZ.

The recommended zoning of the Arafura CMR will not change access for recreational and charter fishers within the CMR.

The recommended zoning for the Arafura CMR introduces a new SPZ and a new HPZ to make a total of three zone types in the reserve. The zone configuration is relatively simple, with the new zones being below the 10°45'S line of latitude and bordered by the southernmost outer boundaries of the reserve, which abut NT waters. The recommended zoning is not expected to present major compliance issues for commercial fishers.

The recommended new HPZ in this reserve will restrict mining activities to a small extent above the level of restriction set out in the proclaimed zoning. The area covered by this recommended zone was rated as having low petroleum prospectivity.

4.1.6 OCEANIC SHOALS COMMONWEALTH MARINE RESERVE

Background

The Oceanic Shoals CMR covers 71 743 km² of Commonwealth waters. The reserve lies within the Timor Sea, with its north boundary on the edge of Australia's EEZ. East of the reserve are Bathurst and Melville Islands (Tiwi Islands) The reserve was established in 2012 and assigned entirely as a MUZ (Figure 4.1.6.1).

The marine reserve represents a significant area of the Bonaparte Basin and includes some of the deepest waters found in the North Marine Region, at approximately 300 m. The reserve includes ecosystems of two Provincial Bioregions, the North West Shelf Transition and the Timor Transition bioregions, and contains a number of shoals, channels and valleys in the carbonate bank and terrace systems of the Van Diemen Rise and Sahul Shelf. These two large KEFs support rich sponge gardens, octocorals, pelagic fish, sharks and sea snakes. The reserve provides inter-nesting habitat for threatened flatback, olive ridley and loggerhead turtles.

The Commonwealth managed NPF and the NT managed Timor Reef, Demersal and Offshore Net and Line fisheries operate within or near the marine reserve. Waters within the Oceanic Shoals CMR overlap with areas identified as holding potential for recreational and charter fishing.

Petroleum prospectivity within the marine reserve boundaries is considered to vary from low and high. The marine reserve has shipping activity within it and overlaps with a military practice and exercise area.

Issues raised

In addition to the North CMR Network issues raised above in Section 4.1, the Oceanic Shoals CMR was discussed in detail by several submissions as well as in meetings with stakeholders. Issues raised included:

- Inadequate protection—specifically, that an area be designated as MNPZ
- Mining, including oil and gas and mineral exploration—specifically, the risk of subduction to carbonate banks arising from the extraction of oil and gas
- Loss of access for commercial fisheries—specifically, including commercial trawling and fishing prospectivity
- Validity of the FGRAs—particularly semi-demersal trawl
- Potential impact on ability to install oil and gas infrastructure.

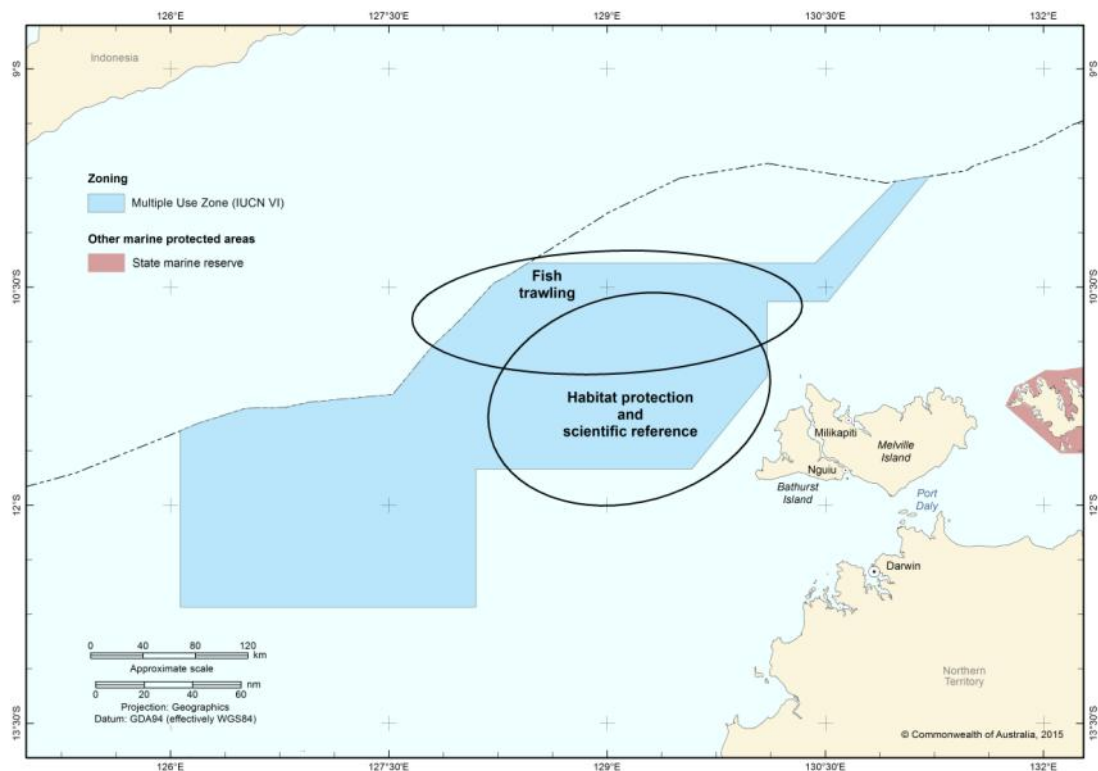


Figure 4.1.6.1 Oceanic Shoals CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that access for commercial fisheries and the lack of high-level protection were areas of contention.

Conservation status

Submissions received from the conservation sector discussed the establishment of an MNPZ in the reserve, which would satisfy a commitment to represent each bioregion within at least one MNPZ. The potential impact of mineral extraction on shallow water ecosystems that have built up on the carbonate banks utilising hydrocarbon seeps was noted.

Several areas were recently surveyed by Geoscience Australia through a MBH project. These were shown to contain significant ecological features and communities (for example, Van Diemen Rise carbonate banks) and held potential as reference sites and areas of higher protection.

The ESP advice about new information on the conservation values for the Oceanic Shoals CMR was that:

- The carbonate banks and terraces of both the Sahul Shelf and Van Diemen Rise were associated with high biodiversity and feeding aggregations, and suggested that a higher level of protection could be provided for a representative sample of these KEFs
- The survey sites established by the MBH study of the Oceanic Shoals CMR warranted protection as scientific reference sites as they could provide valuable baseline information for the reserve.

Demersal fishery (trawling)

The Oceanic Shoals CMR overlaps with part of the NT Demersal Fishery. This uses baited traps and vertical lines (handline and dropline), both of which are allowable uses in the MUZ. However, this fishery also includes two multi-gear areas where semi-demersal trawl may be used, one of which overlaps with the reserve. The fishery is trialling semi-demersal trawl in the Timor Reef Fishery, an area that also overlaps with the Oceanic Shoals CMR. Semi-pelagic trawl operations are a non-permissible activity in the North CMR Network, based on the FGRA done in 2010.

The ESP advice on the FGRA for the former NT Finfish Fishery (now amalgamated into the NT Demersal Fishery) was that:

- Recent research, an improved understanding of the habitat, a better identification of the conservation values of the area and improvements in gear type and management suggested that Demersal and Developmental Fishery operations (semi-demersal trawling) may not impact as significantly on the benthic environment as previously thought
- More recent evaluations of the risks to elasmobranchs suggested that none were at risk because of widespread distributions and/or low overlaps with the fishery. A National Recovery Plan was being developed to address threats to these species.

Recommendations

The recommendations for the Oceanic Shoals CMR are to:

- Create a new MNPZ which covers one of the recent Geoscience Australia survey sites, surrounded by a larger HPZ to improve protection of the benthic habitat without impacting on recreational and charter fishers and some of the commercial fisheries operating in the area
- Create a new SPZ which will allow trawling and accommodate the developmental fishery.

These changes are shown in Figure 4.1.6.2 and summarised in Table 4.1.6.1.

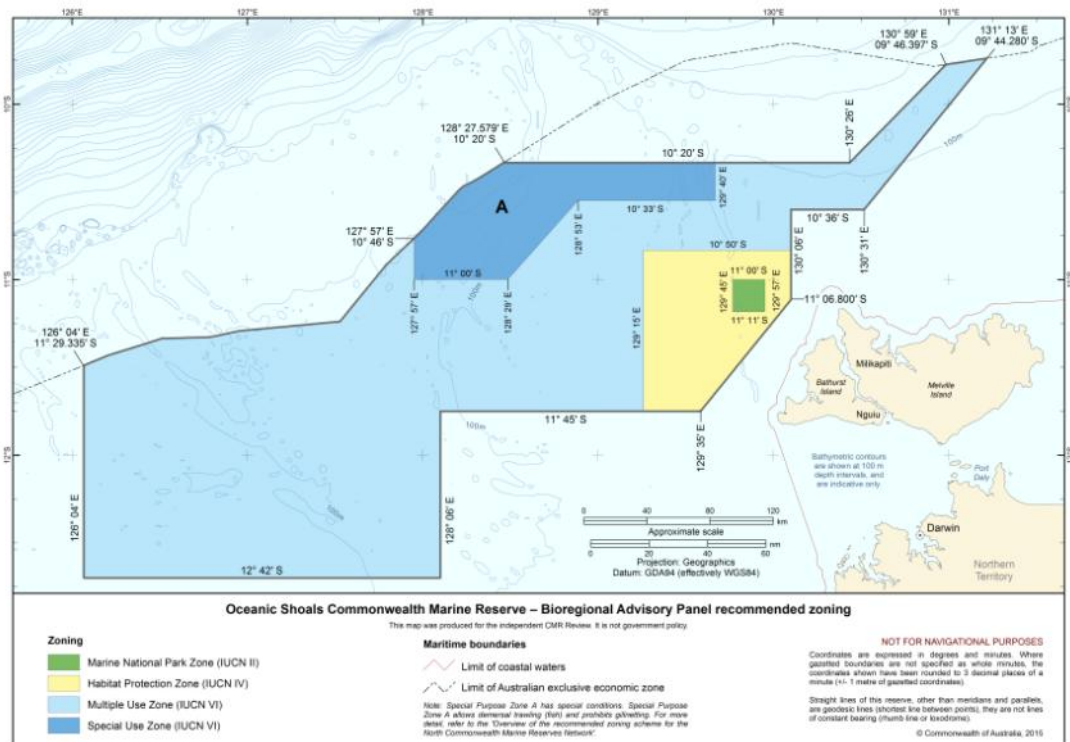


Figure 4.1.6.2 Recommended zoning for Oceanic Shoals CMR

Table 4.1.6.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is an increase in high-level protection for one of the KEFs through the introduction of a new MNPZ and a new HPZ, which combined make up 10% of the reserve. This, with the introduction of a new SPZ, reflects a balance of uses and protection in the reserve, reducing the MUZ by over 20%.

Table 4.1.6.1 Comparison of areas of zone types between proclaimed and recommended zoning for Oceanic Shoals CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	Nil	Nil	406	0.57%	+406	+0.57%
HPZ (IUCN IV)	Nil	Nil	6 929	9.66%	+6 929	+9.66%
MUZ (IUCN VI)	71 743	100%	57 066	79.54%	-14 677	-20.46%
SPZ A (IUCN VI)	Nil	Nil	7 342	10.23%	+7 342	+10.23%
Total	71 743	100%	71 743	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning of Oceanic Shoals will establish a large area of benthic protection for the carbonate bank and terrace system of the Van Diemen Rise KEF and creates an MNPZ over one of the recently surveyed sites that could function as a long-term scientific reference site.

The changed zoning will increase the representation of 12 conservation features in both MNPZ and HPZ, including one Provincial Bioregion, one Meso-scale Bioregion, three Depth Ranges (by Provincial Bioregion), one KEF, three Biologically Informed Seascapes and one Seafloor Type. The changed zoning will also provide additional protection to another 13 conservation features in HPZ in the North CMR Network, including two Meso-scale Bioregions, one Depth Range (by Provincial Bioregion), seven Biologically Informed Seascapes, and five Seafloor Types. These conservation features are listed in Appendix H.

The recommended zoning of Oceanic Shoals is expected to improve socio-economic outcomes for semi-demersal trawling in the NT Timor Reef Fishery. No other change in impact is expected for fisheries operating in this area.

The WA managed Northern Shark Fishery currently operates in the marine reserve. There are no recommended changes to the zoning of the Oceanic Shoals CMR that will reduce the impacts on this fishery, as gillnetting will remain prohibited in all zones of the reserve under the recommended zoning.

The introduction of a new MNPZ may slightly reduce access for recreational or charter fishers; however, as the location is only accessible by larger vessels this impact is expected to be minor. The HPZ allows continued access for the growing recreational and tourism values of the region, as well as several fisheries that are also compatible with HPZ.

The introduction of three new zones in the recommended configuration for the Oceanic Shoals CMR will take the total to four zone areas and four zone types. The recommended zoning is not expected to present major compliance issues for commercial fishers, apart from the requirement to stow and secure all gear types that are not permitted in a particular zone type on transiting vessels.

The recommended new MNPZ and HPZ in this reserve will restrict mining activities above the level of restriction set out in the proclaimed zoning. The area covered by these recommended zones was rated as low-level petroleum prospectively.

4.2 NORTH-WEST COMMONWEALTH MARINE RESERVES NETWORK

The North-west CMR Network, established in 2012, includes 13 reserves which cover approximately 335 437 km² of Commonwealth waters from the WA – NT border to Kalbarri, south of Shark Bay. Four reserves now included within the North-west CMR Network (Mermaid Reef Marine National Nature Reserve, Carter Island Marine Reserve, Ningaloo Marine Park and Ashmore Reef National Nature Reserve) were established prior to 2012 (Figure 4.2.1).

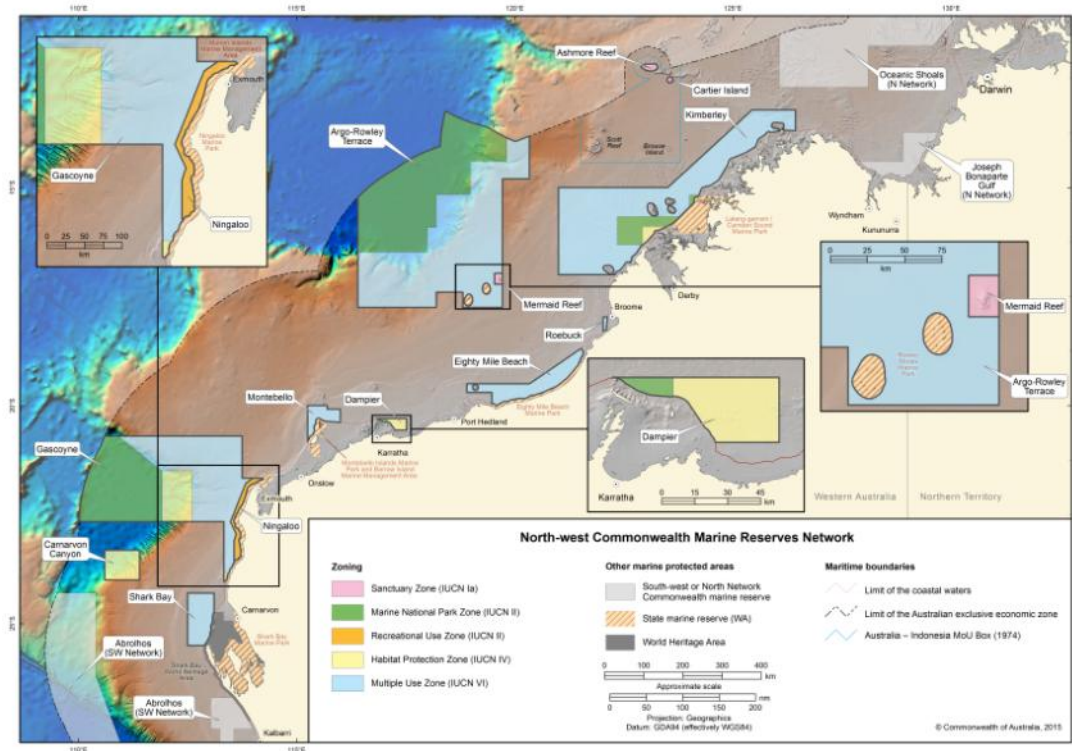


Figure 4.2.1 North-west CMR Network, as proclaimed

Issues raised during the CMR Review that were generic across the North-west Network included:

- Mining, including oil and gas and mineral exploration
- The lack of high-level protection in many reserves and in particular on the shallower shelf
- Removing destructive fishing practices from reserves
- Traditional owner interests and aspirations for economic development—specifically, the role of rangers in marine reserve management
- Access to all MNPZs (IUCN II) by recreational anglers.

A comprehensive list of issues raised is provided at Appendix G.

North-west network—outcomes

Zoning changes are recommended for Kimberley, Argo-Rowley Terrace, Dampier and Gascoyne CMRs. No changes are recommended for Roebuck, Carnarvon Canyon, Cartier Island, Eighty Mile Beach, Montebello and Shark Bay CMRs. Changes in IUCN categories are recommended for Ningaloo, Ashmore Reef and Mermaid Reef CMRs. These are shown in Figure 4.2.2 and summarised in Table 4.2.1

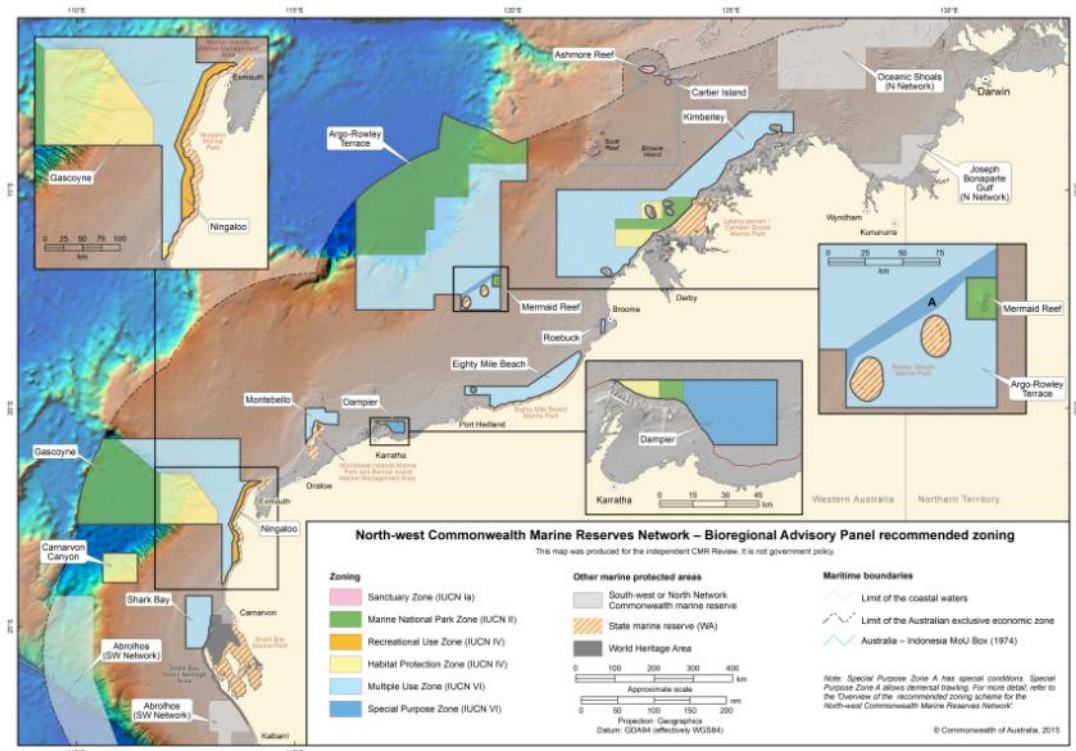


Figure 4.2.2 Recommended zoning for North-west CMR Network

Table 4.2.1 indicates how the areas of different zone types (within the outer boundaries of the network) will change between the proclaimed and recommended zoning. The change in the zoning of Mermaid Reef to MNPZ decreases the area of reef under SZ, but this is balanced by the overall increase in area zoned as no-take. This is complemented by a small increase in HPZ which, combined with MNPZ and SZ, sees almost 40% of the network under high-level protection. There is a small decrease in MUZ. Two types of SPZ are introduced which together make up 0.7% of the area of the network.

Table 4.2.1 Comparison of areas of zone types between proclaimed and recommended zoning for North-west CMR Network

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of Network	Area (km ²)	% of Network	Area (km ²)	% of Network
SZ (IUCN Ia)	1 262	0.38%	722	0.22%	-540	-0.16%
MNPZ (IUCN II)	103 082	30.73%	106 338	31.70%	+3 256	+0.97%
HPZ (IUCN IV)	17 682	5.27%	26 631	7.95%	+8 972	+2.67%
RUZ (IUCN IV)	2 469	0.74%	2 469	0.74%	Nil	Nil
MUZ (IUCN VI)	210 943	62.89%	197 078	58.75%	-13 888	-4.14%
SPZ (IUCN VI)	Nil	Nil	1 054	0.31%	+1 054	+0.31%
SPZ A (IUCN VI)	Nil	Nil	1 146	0.34%	+ 1 145	+0.34%
Total	335 437	100%	335 437	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Conservation outcomes

The recommended zoning changes provide the following improvements to conservation outcomes for the North-west CMR Network:

- The introduction of new or improved MNPZs in three reserves that in aggregate amount to a small overall increase in area of MNPZ (1%) due to:
 - Extension of the MNPZ in the Argo-Rowley Terrace CMR
 - Reassignment of Mermaid Reef CMR from SZ to MNPZ to support consistency in management approach
 - Reconfiguration of the MNPZ in the Kimberley CMR that complements the adjacent Camden Sound Marine Park in state waters
- The expansion of the HPZs in two reserves, which provided an overall increased area for benthic protection including:
 - Kimberley CMR around Adele Island
 - Gascoyne CMR over important canyon habitat off Ningaloo.

Table 4.2.2 shows how the recommended zoning in the North-west Network affects the representation of primary conservation features in SZ, MNPZ and HPZ zone types, providing an indication of performance against the four primary goals. While the overall number of conservation features represented in SZs and MNPZs in the North-west CMR Network will not change, there will be one less Meso-scale Bioregion and one more Depth Range (by Provincial Bioregion) in this zone type in the North-west CMR Network resulting from the zoning changes in the Kimberley and Argo-Rowley Terrace CMRs.

The additional six conservation features represented in HPZ (IUCN IV) in the North-west CMR Network are the result of the expansion of the HPZs in the Kimberley and Gascoyne CMRs and the reconfiguration of the HPZ in Dampier CMR. Thirty one of the primary conservation features occur in more than one highly protected zone (SZ, MNPZ and HPZ),

which brings the overall number of conservation features represented in these zones to 90 (64% of the network's features), an increase from 87 in the proclaimed zoning. There are still 50 features not represented in any of these three zones in the North-west CMR Network. The changes to the representation of specific conservation features are listed in Appendix H.

Table 4.2.2 Comparison of representation of conservation features between proclaimed and recommended zoning for North-west CMR Network

Goal	Primary conservation feature	Total no. in network	Proclaimed		Recommended zoning	
			SZ (IUCN Ia) and MNPZ (IUCN II)	HPZ (IUCN IV)	SZ (IUCN Ia) and MNPZ (IUCN II)	HPZ (IUCN IV)
1	Provincial Bioregions (PBs)	8	6	5	6	5
	Meso-scale Bioregions	9	5	3	4	6
2	Depth by PB	81	34	12	35	14
3	Key Ecological Features	8	4	1	4	1
	Biologically Informed Seascapes	19	14	9	14	9
4	Seafloor Types	15	14	8	14	9
	Total	140	77	38	77	44

Note: Some features are represented in SZ/MNPZ and HPZs and therefore the total number of features represented in these zones is not the simple sum of their occurrence in each zone.

Socio-economic impacts

Commercial fishing

The recommended zoning for the North-west CMR Network will reduce the overall impact on commercial fishing. The number of fisheries affected remains the same as for the proclamation; however, impact is reduced for the Western Australian Mackerel Fishery and the Pilbara Demersal Trap and Line Fishery. Improvements in overall socio-economic outcomes are expected to occur in the Kimberley and Dampier CMRs.

Recreational and charter fishing

Overall the recommended zoning for the North-west CMR Network is not expected to have a socio-economic impact on recreational and charter fishing sectors. Access for recreational and charter fishers to the Kimberley and Dampier CMRs has improved from the proclaimed zoning, while these sectors are unlikely to be affected by the new areas in MNPZs because they are either too far offshore or in areas that are not frequented by these users.

Mining and oil and gas development

The recommended zoning for the North-west CMR Network was developed with a view to the broader socio-economic interest in Australia's energy security. The recommended

changes, including the use of HPZs, RUZs, MNPZs and SZs in the reserves, have been used where oil and gas prospectivity is rated as low in all reserves except Gascoyne, where part of the recommended HPZ area is rated as medium-low. The recommended zones that might affect mining activities are in the Gascoyne, Kimberley and Dampier CMRs.

Native title

Native title is not impacted by the proclamation of CMRs or the development and implementation of management plans for those reserves under the EPBC Act. However, the existence of IPAs and native title claims and determinations in the North-west CMR Network presents significant opportunities for co-management with traditional owners and local Indigenous groups and improvements in management outcomes.

Recommendations relating to involvement of Indigenous groups and traditional owners in the management of CMRs are outlined in Chapters 5 to 7 of this report.

Practicality of implementation

These zoning proposals for the North-west CMRs are not expected to increase the difficulty for users of complying with zoning requirements. The introduction of a new zone type (SPZ) in the Dampier and Argo-Rowley Terrace CMRs increases the total number of zones in the network from five to six, which adds some complexity. However, additional complexity has generally been minimised through the adoption of straight north-south or east-west running boundary lines wherever possible. Where this was not possible, such as the eastwards extension of the HPZ in Gascoyne CMR, which has a diagonal boundary line, impacts on existing uses have been largely avoided. Other changes, including modifications of the MNPZs in the Kimberley, Argo-Rowley Terrace and Dampier CMRs and HPZs in the Gascoyne, Dampier, and Kimberley CMRs, may in some instances increase the complexity of the zoning configuration, but in many cases these zones have been designed to accommodate user interests, so this impact is expected to be low.

Conclusion

The recommended zoning of the North-west CMR Network addresses the key areas of contention that arose during the consultation. Socio-economic impacts have been reduced in several areas, particularly by improved access to areas important to the recreational and charter fishers. This outcome has been achieved without a loss of area under high-level protection. SZ and MNPZ make up 32% of the network, and with HPZ this coverage increases to 40%. These areas of high-level protection better target important biodiversity features across the network and include 90 of the network's 140 primary conservation features (64%). Attempts to further improve the high-level protection in more of the nearshore coastal areas, such as Eighty Mile Beach and the Roebuck and Gascoyne CMRs, were not possible due to constraints imposed by oil and gas prospectivity, although a number of potential options were actively explored with relevant stakeholders.

Table 4.2.3 Overview of recommended zoning scheme for North-west CMR Network

Activity type ^a		Special Purpose Zone (IUCN VI)	Multiple Use Zone (IUCN VI)	Habitat Protection Zone (IUCN IV)	Recreational Use Zone (IUCN IV)	Marine National Park Zone (IUCN II)	Sanctuary Zone (IUCN Ia)
MINING^b	Mining (including exploration, development and other activities)	✓	✓	✗	✗	✗	✗
COMMERCIAL FISHING^c	Handline/rod and reel	✓	✓	✓	✗	✗	✗
	Hand collection (including drift diving)	✓	✓	✓	✗	✗	✗
	Dropline/trolling	✓	✓	✓	✗	✗	✗
	Pelagic longline	✓	✓	✓	✗	✗	✗
	Purse Seine	✓	✓	✓	✗	✗	✗
	Traps and pots (including lobster, crab and fish)	✓	✓	✗	✗	✗	✗
	Demersal gillnet	✗	✗	✗	✗	✗	✗
	Demersal longline	✗	✗	✗	✗	✗	✗
	Demersal trawl	✗ ^d	✗	✗	✗	✗	✗
AQUACULTURE		✓	✓	✗	✗	✗	✗
RECREATION	Boating	✓	✓	✓	✓	✓	✗ ^e
	Scuba diving and snorkelling	✓	✓	✓	✓	✓	✗
	Recreational fishing (including spear-fishing) ^f	✓	✓	✓	✓ ^g	✗	✗
COMMERCIAL TOURISM	Non-fishing related tourism (including nature watching, scuba/snorkel tours)	✓	✓	✓	✓	✓	✗
	Fishing related tourism (including charter fishing and fishing/spear diving tours)	✓	✓	✓	✗ ^g	✗	✗
INDIGENOUS ACTIVITIES	Non-commercial Indigenous harvesting and hunting (consistent with the <i>Native Title Act 1993</i>)	✓	✓	✓	✓	✓	✓
RESEARCH		✓	✓	✓	✓	✓	✓
GENERAL USE	Defence	✓	✓	✓	✓	✓	✓
	Shipping (general transit) ^h	✓	✓	✓	✓	✓	✗ ^e

a. All activities require approval to be undertaken in CMRs; approvals are provided in the management plan or through class approvals or individual permits.

b. Proposed mining operations carried out under usage rights that existed immediately before the declaration of a reserve do not require approval from the DNP.

c. Commercial fishing methods not listed in the table may require assessment.

d. Demersal trawling is allowed in the North-west CMR Network SPZ A.

e. Does not affect the right of innocent passage, consistent with the United Nations Convention on the Law of the Sea (UNCLOS).

f. Recreational fishing is managed by the states. Western Australian rules and regulations (for example size and bag limits) will apply in the North-west CMR Network unless otherwise specified in the management plan.

g. Recreational fishing and fishing-related tourism is allowed in Ningaloo RUZ; recreational fishing for immediate consumption only, is allowed in the Ashmore Reef RUZ.

h. Ballast water exchange is managed under national arrangements. Restrictions may apply in some areas.

4.2.1 KIMBERLEY COMMONWEALTH MARINE RESERVE

Background

The Kimberley CMR extends from the Lacepede Islands to the Holothurian Banks offshore from Cape Bougainville. The reserve was established in 2012, covers approximately 74 469 km² and contains three zone types: Marine National Park (9%), Habitat Protection (2%) and Multiple Use (89%)(Figure 4.2.1.1).

The reserve includes ancient coastline, continental slope demersal fish communities (a KEF in this region) and examples of the communities and ecosystems of the Northwest Shelf Province, Northwest Shelf Transition and Timor Province Provincial Bioregions as well as the Kimberley, Canning, Northwest Shelf and Oceanic Shoals Meso-Scale Bioregions. Conservation values include important foraging areas for dugongs, dolphins, migratory seabirds and marine turtles, important migration pathways for humpback whales, proximity to important foraging and pupping areas for sawfish and important nesting sites for green turtles.

The area is important to traditional owners, and several native title claims overlap with parts of the marine reserve.

The WA managed Northern Shark Fishery, Northern Demersal Scalefish Fishery and Kimberley Prawn Fishery and the Commonwealth managed North West Slope Trawl Fishery operate within or near the marine reserve. The pearling industry has a significant presence in the Kimberley area, although the majority of its activities occur in state waters. Recreational and charter fishing occur in the area, particularly in state waters and around the many islands along the Kimberley coastline.

The reserve overlaps with moderately to highly prospective areas for oil and gas resources and with a number of exploration permits. Petroleum exploration, particularly in the Roebuck and Browse basins, is a major activity in the area.

Issues raised

In addition to the North-west CMR Network issues raised above in Section 4.2, the Kimberley CMR was canvassed in a number of submissions and in meetings with stakeholders. Issues raised included:

- Inadequate protection—specifically, that the level of protection (fully protected MNPZs and/or HPZs) be increased and extended to the Holothurian Banks
- Traditional owner interests and aspirations for economic development—specifically, concern that the MNPZ may restrict development in the Cape Leveque and other areas such as Cassini Island
- Complementarity between land and sea protection—particularly as it relates to cultural concepts of sea country and integration with Saltwater Country Plans
- Access to MNPZs (IUCN II) by recreational anglers—specifically, in the area around Cape Leveque
- Exclude high-impact activities (for example, mining, including oil and gas and mineral exploration)
- Loss of access for commercial fisheries—specifically, commercial trolling
- Remove destructive fishing practices from the network—specifically, pelagic gillnetting and longlining.

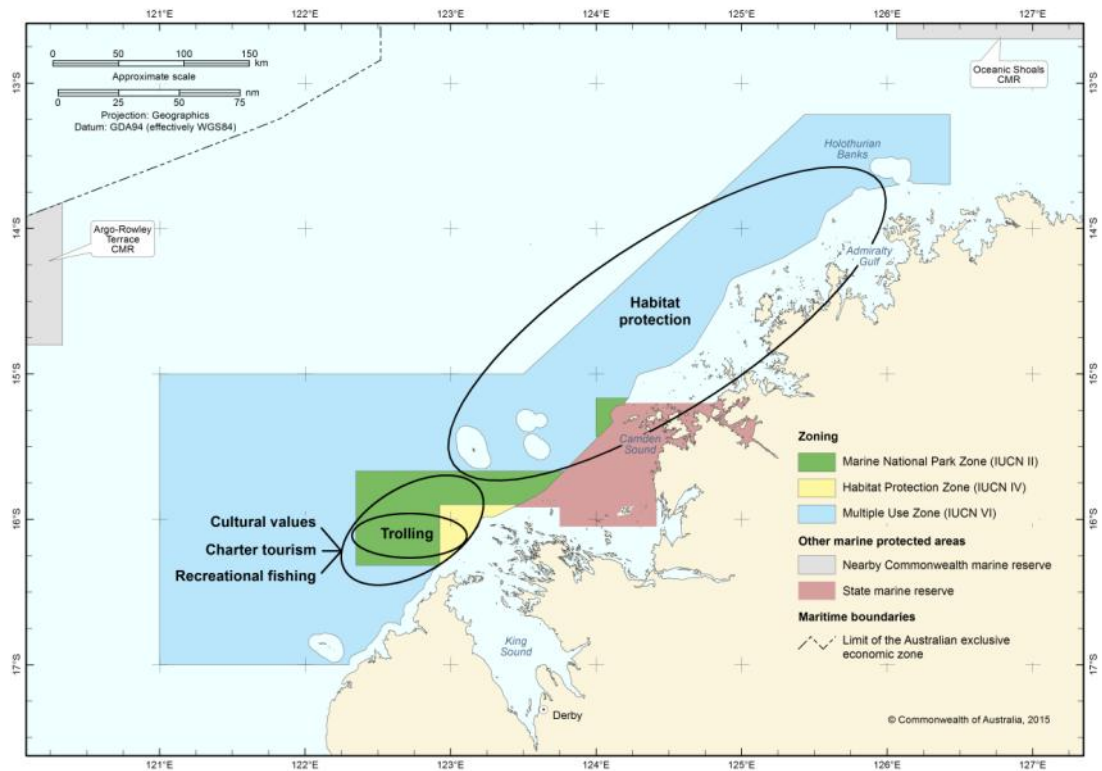


Figure 4.2.1.1 Kimberley CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by established commercial fisheries, local economic development and level of protection were areas of contention.

Mackerel fishery (North Coast bioregion)(trolling)

The area of particular interest for this fishery was a series of reefs in the south-eastern portion of the existing MNPZ (Figure 4.2.1.1). This fishery targets Spanish mackerel (*Scomberomorus commerson*), a large mobile pelagic species that is only present in the area at certain times of the year.

In submissions received from the commercial sector, information was provided to show the location of several reefs in this reserve that were targeted by the fishery.

Tourism and local economic development

Representations were heard relating to the development of the area adjacent to Cape Leveque and the potential impact that the MNPZ in this area would have in preventing this development. They included both recreational and charter fishing and local Indigenous community interests.

The Regional Panel suggested that both of the above concerns could be addressed by rezoning the MNPZ area closest to Cape Leveque as HPZ, and establishing a new MNPZ further north.

Conservation

Concerns were expressed over the level of protection over most of the Kimberley CMR, particularly areas that were important habitat for seasonal migratory cetaceans. This area extended from the south-west and east of Adele Island. Areas further east, especially over

the Holothurian Banks, were considered to be significant from a conservation perspective and worthy of higher protection.

The Regional Panel suggested an extension of the MNPZ in the area adjacent to the Western Australian Lalang-garram/Camden Sound State Marine Park, as well as a complementary HPZ around Adele Island.

Recommendations

The recommendations for the Kimberley CMR are to:

- Rezone the area adjacent to Cape Leveque as HPZ
- Extend the MNPZ over the area adjacent to the Western Australian Lalang-garram/Camden Sound State Marine Park and create a new HPZ around Adele Island.

These changes are shown in Figure 4.2.1.2 and summarised in Table 4.2.1.1.

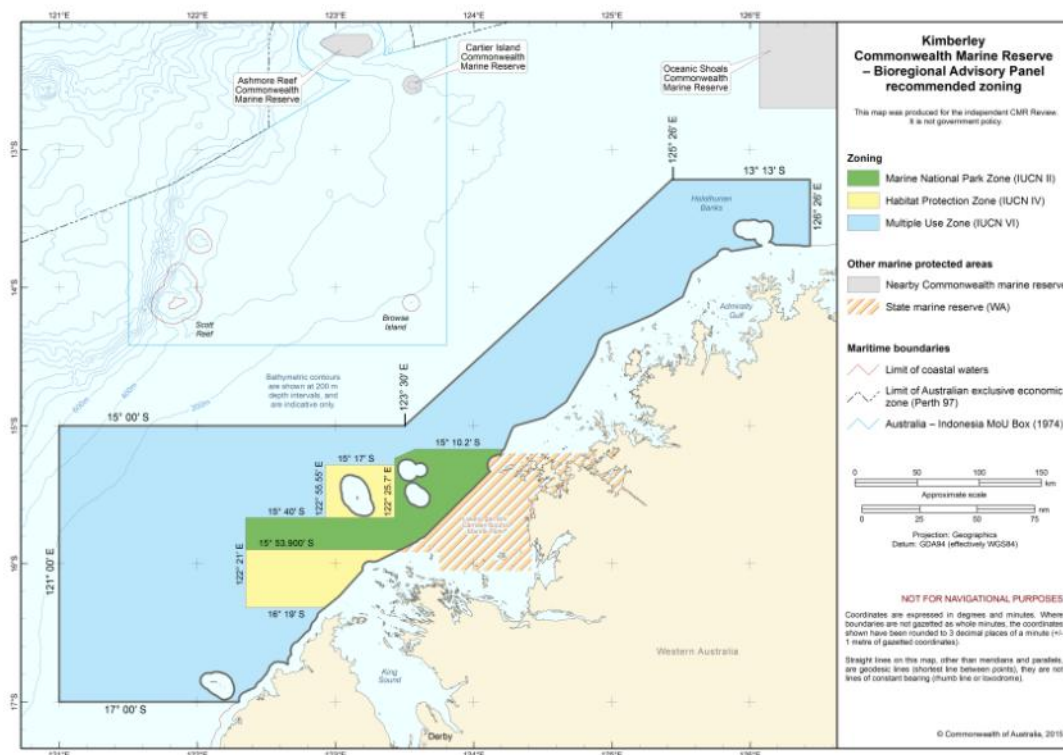


Figure 4.2.1.2 Recommended zoning for Kimberley CMR

Table 4.2.1.1 indicates how the areas of different zone types (within the limit of the outer boundaries of the reserve) will change between the proclaimed and recommended zoning. There is a small decrease in the area under MNPZ offset by an increase in the area under HPZ. Together these offer a high level of protection to 16% of the reserve. There is a small decrease in the area under MUZ.

Table 4.2.1.1 Comparison of areas of zone types between proclaimed and recommended zoning for Kimberley CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	6 775	9.10%	6 392	8.58%	-383	-0.51%
HPZ (IUCN IV)	1 131	1.52%	5 665	7.61%	+4 534	+6.09%
MUZ (IUCN VI)	66 563	89.38%	62 411	83.81%	-4 152	-5.58%
Total	74 469	100%	74 469	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for the Kimberley CMR will afford a high level of protection to the benthic habitat over the shoals and provide greater protection around Adele Island. The fivefold increase in area of HPZ, covering an additional 6% of the reserve, and the relocation of MNPZ will provide increased protection to two Meso-Scale Bioregions (one in MNPZ), one Depth Range (by Provincial Bioregion) (in MNPZ), three Biologically Informed Seascapes (one in MNPZ) and one Seafloor Type (in MNPZ) in the North-west CMR Network (see Appendix H). The relocation of the MNPZ means that the Canning Meso-scale Bioregion is no longer represented in this zone, although it is included in HPZ.

The recommended zoning for the Kimberley CMR reduces the overall impact on commercial fishing. This reduction is largely due to improved access for the WA managed Mackerel Fishery and Northern Demersal Scalefish Fishery.

Recreational and charter fishers will have improved access to the area around Cape Leveque, addressing concerns relating to both fishing and tourism prospectivity and economic development of the region.

The recommended zoning configuration for the reserve is slightly more complex than the proclaimed zoning of the reserve, retaining the same overall number of zone types but with one more discrete area of HPZ. However, the HPZ at Adele Island will complement the adjacent state marine reserve in this area, and the two separate proclaimed MNPZs have been merged into one zone, which will be simpler to implement and manage. The larger southern HPZ is expected to improve ease of compliance for local users.

The Kimberley CMR overlaps with the Mayala registered native title claim which covers the island and sea area north of Derby around the Buccaneer Archipelago. The Bardi and Jawi native title determination and Bardi Jawi IPA are adjacent to the CMR, extending over the Bardi and Jawi land and sea country on the Dampier Peninsula.

The recommended reconfigured MNPZ and HPZ and the new HPZ will restrict mining activities in a further 6% of this reserve. The area covered by these recommended zones was rated as having medium-low and low petroleum prospectivity.

4.2.2 ARGO-ROWLEY TERRACE COMMONWEALTH MARINE RESERVE

Background

The Argo-Rowley Terrace CMR is located offshore north-west of Broome and spans a large area to the limit of Australia's EEZ. The reserve, established in 2012, covers approximately 146 099 km² and contains two zone types: Marine National Park (43%) and Multiple Use (57%) (Figure 4.2.2.1).

Conservation values represented within the reserve include the Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals, canyons linking the Argo Abyssal Plain with the Scott Plateau, and seafloor and pelagic environments associated with the Northwest Transition and the Timor Province Provincial Bioregions. The reserve is an important foraging area for migratory seabirds and loggerhead turtles and is and important for sharks.

The WA managed Northern Shark Fishery and the Commonwealth managed North West Slope Trawl Fishery operate within or near the marine reserve. Recreational and charter fishing occur in area, particularly around the Rowley Shoals, known as a premium fishing and diving location.

Petroleum prospectivity in the area ranges from low to high, with a number of exploration permits overlapping the reserve's MUZ.

Issues raised

In addition to the North-west CMR Network issues raised above in Section 4.2, the Argo-Rowley Terrace CMR was discussed in a large number of submissions and in meetings with stakeholders. Issues raised included:

- Threats from nearby oil and gas and mineral exploration and production facilities
- Potential impact on the ability to install and service oil and gas infrastructure
- Inadequate protection—specifically, to extend the MNPZs to include canyon systems to the north-east
- Constraints for recreational fishing around the Rowley Shoals
- Loss of access for commercial fisheries.

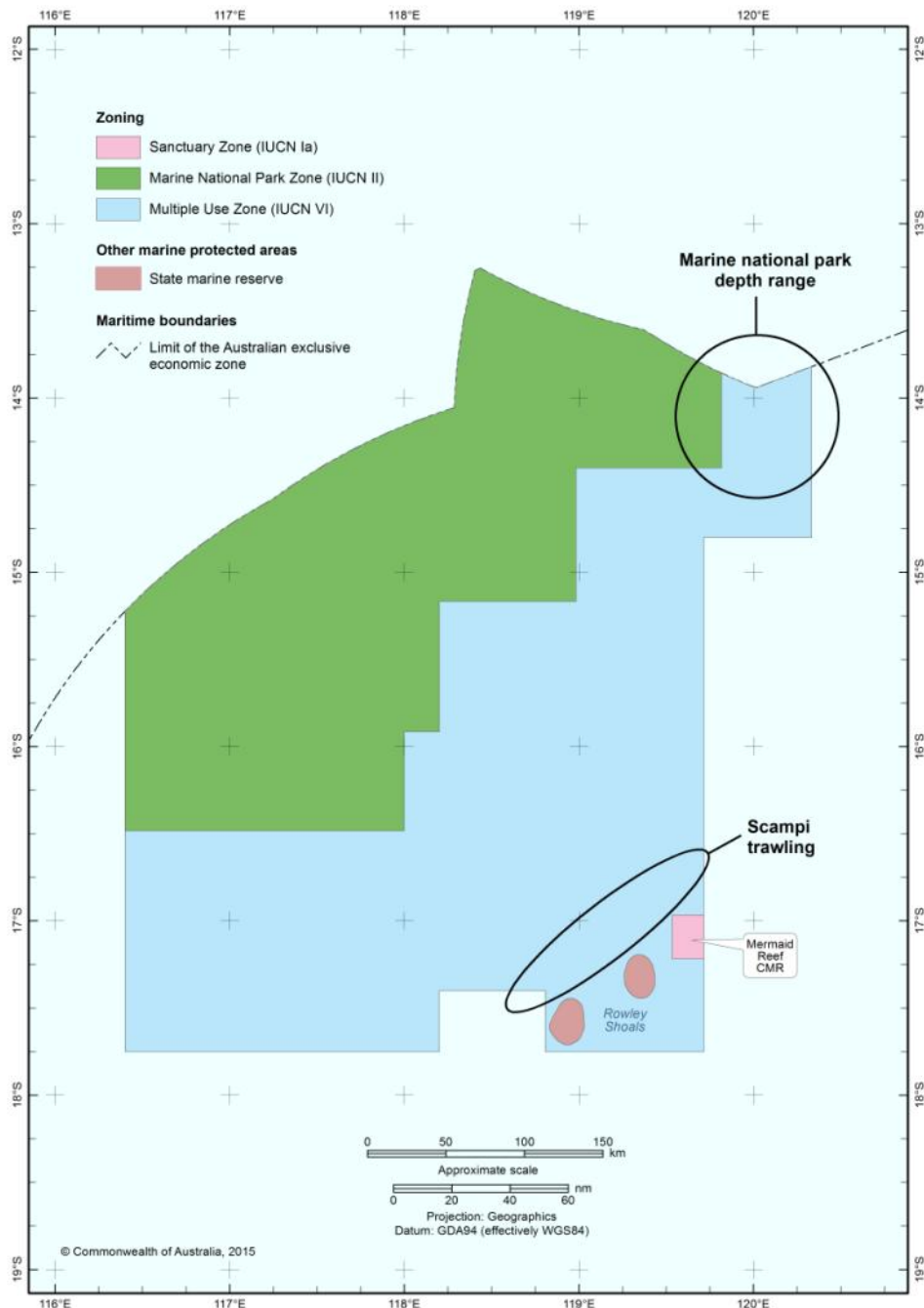


Figure 4.2.2.1 Argo-Rowley Terrace CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by established commercial fisheries and the protection of the canyon systems in the north-east were areas of contention.

Conservation

The continental shelf slope and canyons west of Scott Plateau are important ecosystems that support aggregations of cetaceans (sperm and beaked whales) and seabirds not recorded elsewhere in Australia (such as Bulwer's petrel, Matsudaira's storm-petrel and Swinhoe's storm-petrel).

Commercial fishing (scampi trawl)

The North West Slope Trawl Fishery operates on the soft sediment shelf habitat north of the Rowley Shoals. This is a demersal trawl fishery targeting scampi (*Metanephrops*

australiensis), operating between 350 m and 600 m on soft sediment well away from the shoals.

Recommendations

The recommendations for the Argo-Rowley Terrace CMR are to:

- Extend the MNPZ in the north-east to include the canyon systems and additional Depth Ranges
- Create a narrow SPZ to allow scampi trawling to continue north of the Rowley Shoals (following the 400–600 m water depth contours).

These changes are shown in Figure 4.2.2.2 and summarised in Table 4.2.2.1.

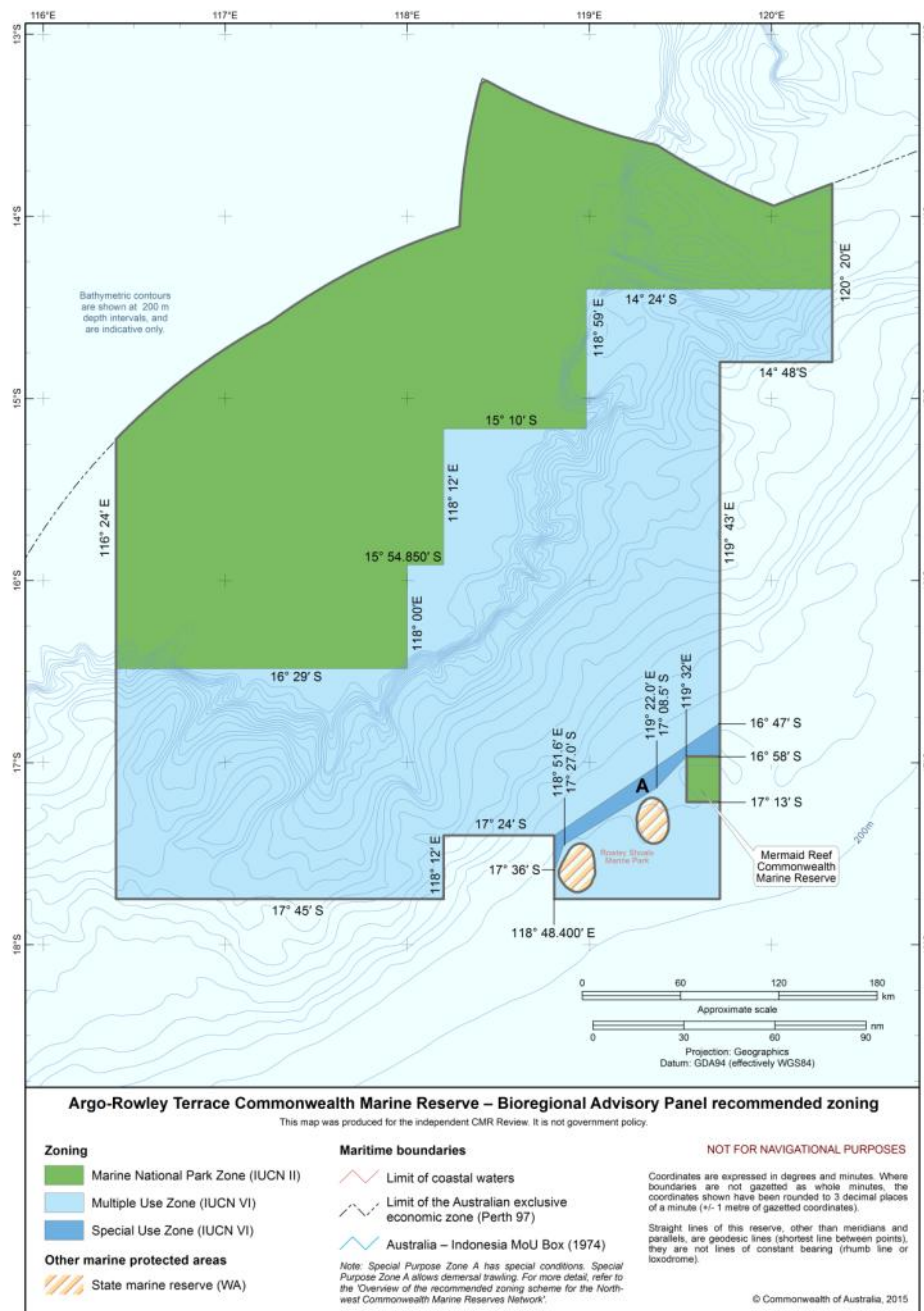


Figure 4.2.2.2 Recommended zoning for Argo-Rowley Terrace CMR

Table 4.2.2.1 indicates how the areas of different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is a small increase in the area under MNPZ (now 45% of the reserve), and the introduction of a new SPZ, with a corresponding decrease in the MUZ.

Table 4.2.2.1 Comparison of areas of zone types between proclaimed and recommended zoning for Argo-Rowley Terrace CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	62 721	42.93%	65 876	45.09%	+3 155	+2.16%
MUZ (IUCN VI)	83 378	57.07%	79 078	54.13%	-4 300	-2.94%
SPZ A (IUCN VI)	Nil	Nil	1 145	0.78%	+ 1 145	+0.78%
Total	146 099	100%	146 099	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for Argo-Rowley Terrace CMR will improve conservation outcomes by increasing the area in MNPZ in the northern part of the reserve. This change will provide increased protection to the Timor Province Deep Continental Slope Depth Range (by Provincial Bioregion) in the North-west CMR Network.

A reduction in impacts on the North West Slope Trawl Fishery will occur from the access for trawling permitted by the introduction of the new SPZ. The extension of the MNPZ in the reserve has the potential to increase impacts on the Western Tuna and Billfish Fishery; however, due to the confidential nature of the fisheries catch data for this area, the scale of the impact is unknown.

The extension of the MNPZ is not expected to impact on recreational or charter fishers as the location is only accessible to larger vessels and the size of the extension is minor in comparison to the area otherwise available for these activities.

Although the introduction of an SPZ that permits demersal trawling north of the Rowley Shoals will add an additional zone type to the reserve, the limited number of operators using this fishing gear minimises the potential for compliance issues, as the trawl zone is well established and operators in this Commonwealth managed fishery have VMS. The extension of the MNPZ in the north-eastern part of the reserve is not expected to increase the difficulty of compliance.

Argo-Rowley Terrace CMR does not overlap with any native title determinations, applications or IPAs.

4.2.3 DAMPIER COMMONWEALTH MARINE RESERVE

Background

The Dampier CMR is located adjacent to the Dampier Archipelago extending east approximately 35 km beyond Cape Lambert and offshore from the port of Dampier. The reserve, established in 2012, covers approximately 1 252 km² and contains two zone types: Marine National Park (12%) and Habitat Protection (88%) (Figure 4.2.3.1).

The area is important to traditional owners, although no native title claims overlap with the marine reserve.

Conservation values represented within the reserve include foraging areas adjacent to important breeding areas for migratory seabirds, foraging areas adjacent to important nesting sites for marine turtles, and part of the migratory pathway of humpback whales. The reserve incorporates shelf habitats adjacent to the Dampier Archipelago, with depths ranging from 15 m to 70 m, and examples of the communities and seafloor habitats of the Northwest Province Provincial Bioregion as well as the Pilbara (nearshore) Meso-scale Bioregion.

The WA managed Pilbara Demersal Trap and Line, Mackerel and Nickol Bay Prawn fisheries operate in the area. The reserve covers an area important for recreational fishing adjacent to the Dampier Peninsula. Port development supporting the mining industry also occurs in this area. Petroleum prospectivity in the area is rated as low.

Issues raised

In addition to the North-west CMR Network issues raised above in Section 4.2, the Dampier CMR was canvassed in detail in several submissions as well as in meetings with stakeholders. Issues raised included:

- Improve access for recreational fishing—specifically, in the MNPZ north of Legendre Island
- Impact of HPZ on existing and future port and shipping activities.

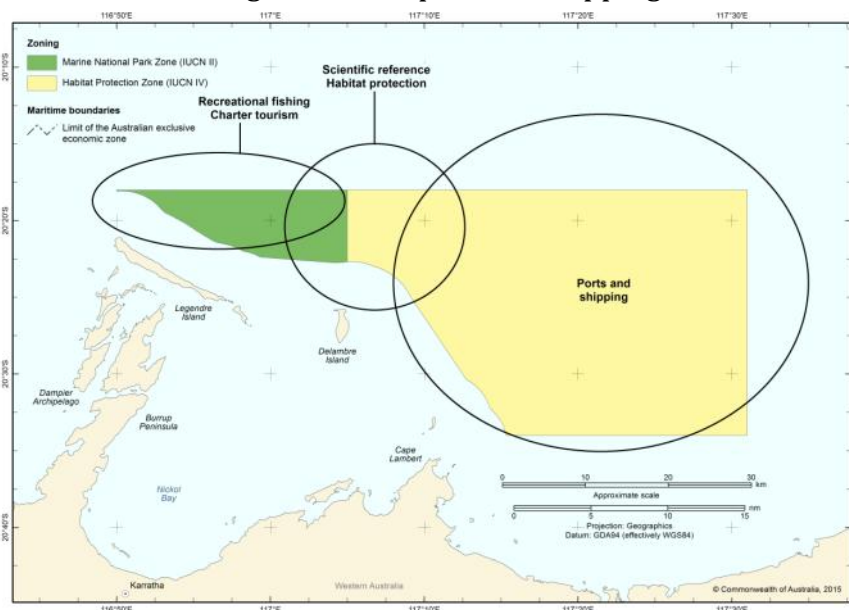


Figure 4.2.3.1 Dampier CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by recreational fisheries, habitat protection and the impact on ports and shipping were areas of contention.

The Dampier CMR is situated in an area where essential infrastructure and associated operations support existing and potential mining operations in the region. The existing HPZ was seen to have been a 'last minute' inclusion into the network without adequate consultation with stakeholders. The set-aside North-west CMR Network Management Plan rezoned the HPZ as SPZ (Ports).

The existing MNPZ also overlaps with an area that is important to the recreational and charter fishing sectors in a region with high boat ownership. These sectors are seen as key tourism opportunities.

Recommendations

The recommendations for the Dampier CMR are to:

- Establish a new HPZ on the western arm of the reserve north of Legendre Island
- Reduce and relocate the MNPZ westwards to an eastern boundary at 117°08'E
- Rezone the proclaimed HPZ as an SPZ to provide for continuation of port and shipping activities.

These changes are shown in Figure 4.2.3.2 and summarised in Table 4.2.3.1.

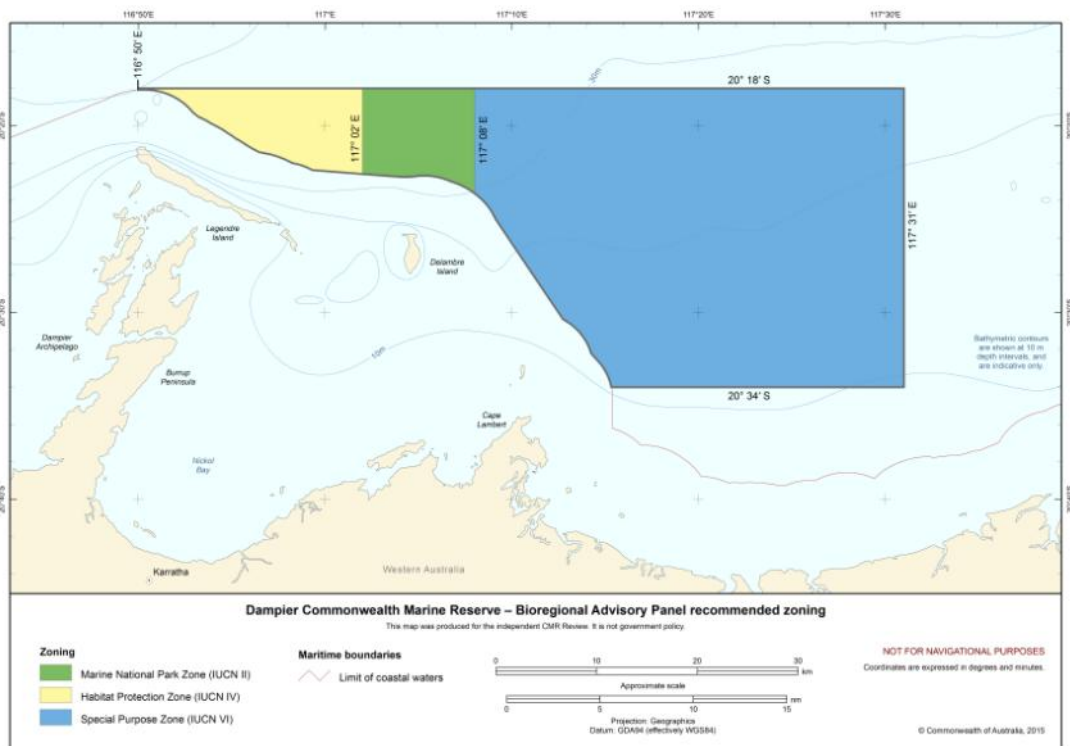


Figure 4.2.3.2 Recommended zoning for Dampier CMR

Table 4.2.3.1 indicates how the areas of different zone types (within the outer boundaries of the reserve) will change between the proclaimed and recommended zoning. There is a 5% reduction in the area under MNPZ, to accommodate recreational and charter fishing. The proclaimed HPZ is replaced by SPZ to accommodate port and shipping activities.

Table 4.2.3.1 Comparison of areas of zone types between proclaimed and recommended zoning for Dampier CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	150	11.98%	93	7.43%	-57	-4.55%
HPZ (IUCN IV)	1 102	88.02%	104	8.31%	-998	-79.71%
SPZ (IUCN VI)	Nil	Nil	1 054	84.19%	+1 054	+84.19%
Total	1 252	100%	1 252	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning of the Dampier CMR assigns the majority of the reserve as SPZ (IUCN VI) to accommodate port and shipping activities. It retains a small MNPZ and establishes an HPZ on the western arm of the reserve. The retention of the MNPZ not only provides high-level protection to the area but also provides the opportunity to establish a long-term scientific reference site in the area. The reconfiguration of the HPZ will retain protection for the benthic habitat in the north-west of the reserve including over the Pilbara (nearshore) Meso-scale Bioregion. In comparison to the proclaimed zoning, the zoning changes will result in one fewer Depth Range (by Provincial Bioregion) and three Biologically Informed Seascapes in HPZ in the North-west CMR Network (see Appendix H).

The recommended zoning of Dampier CMR will decrease the overall impact on commercial fishing. The WA managed Mackerel Fishery and the line sector of the Pilbara Demersal Trap and Line Fishery were displaced by the proclaimed zoning; however, due to recommended changes in the configuration of the MNPZ, no impacts on these fisheries are expected. Impacts on the trap sector of the WA managed Pilbara Demersal Trap and Line Fishery will also be reduced by the recommended changes to the MNPZ and HPZ.

The recommended zoning for the Dampier CMR will result in improved access for recreational and charter fishers within the reserve.

Importantly, the recommended zoning for Dampier CMR will allow activities (operating with EPBC Act approval) that are necessary to maintain existing export facilities, including installation of structures, shipping channel dredging and disposal of dredge spoil.

The recommended zoning will be more complex than the proclaimed zoning, introducing the additional SPZ type; however, this change is specifically designed to improve the practicality of implementation of the reserve, and was proposed in the set-aside network management plan. The reconfiguration of the MNPZ is also likely to improve ease of compliance for some users.

The recommended change from the proclaimed HPZ to an SPZ in this reserve removes the prohibition on mining activities above the level of restriction set out in the proclaimed

zoning. The area covered by these recommended zones was rated as having low petroleum prospectivity.

The Dampier CMR overlaps with the Ngarluma/Yindjibarndi native title determination and the Yaburara and Mardudhunera People registered native title claim, as well as the Anketell Port, Infrastructure Corridor and Industrial Estates Agreement Indigenous Land Use Agreement (ILUA) and the Kuruma Marthudenera and Yaburara and Coastal Mardudhunera People ILUA.

4.2.4 GASCOYNE COMMONWEALTH MARINE RESERVE

Background

The Gascoyne CMR is located in Commonwealth waters ranging from just north of Cape Cuvier to the waters offshore of Exmouth and into deep waters of the region out to the limit of the EEZ. The reserve, established in 2012, covers approximately 81 766 km² and contains three zone types: Marine National Park (41%), Habitat Protection (11%) and Multiple Use (48%) (Figure 4.2.4.1). Its eastern boundary abuts the Ningaloo CMR and the Ningaloo Coast World Heritage Area.

Geomorphological features and bioregions represented within the reserve include ancient coastline, canyons linking the Cuvier Abyssal Plain with the Cape Range Peninsula, Exmouth Plateau, seafloor habitats and communities of the Central Western Shelf Province, Central Western Shelf Transition, Central Western Transition, Northwest Province, Northwest Shelf Province and the Ningaloo, Zuytdorp and Pilbara (offshore) Meso-Scale Bioregions. Conservation features include the continental slope demersal fish communities in Commonwealth waters adjacent to the Ningaloo CMR, an important foraging area for migratory seabirds, proximity to high-intensity foraging areas for dugongs and whale sharks, an important foraging area for hawksbill and flatback turtles, and proximity to resting areas for migrating humpback whales.

The area is important to traditional owners, and a native title claim overlaps with parts of the marine reserve.

The WA managed Northern Shark, Deep Sea Crab, Shark Bay Snapper, and Pilbara Demersal Trap and Line fisheries operate within or near the marine reserve. The Commonwealth managed Western Tuna and Billfish, North West Slope Trawl and Western Deepwater Trawl fisheries also operate in the area. Recreational fishing and tourism occur in the reserve, particularly around Ningaloo Reef.

The marine reserve overlaps with the Northern Carnarvon Basin, an area of extensive petroleum exploration and production activity. Petroleum prospectivity is considered high in the northern part of the reserve.

Issues raised

In addition to the North-west CMR Network issues raised above in Section 4.2, the Gascoyne CMR was discussed in a large number of submissions, as well as in meetings with stakeholders. Issues raised included:

- Inadequate protection—specifically, that the level of protection (MNPZs and/or HPZs) be increased eastwards across the marine canyons and join the Ningaloo CMR
- Access to MNPZs (IUCN II) by recreational anglers
- Loss of access for commercial fisheries—particularly pelagic longlining.

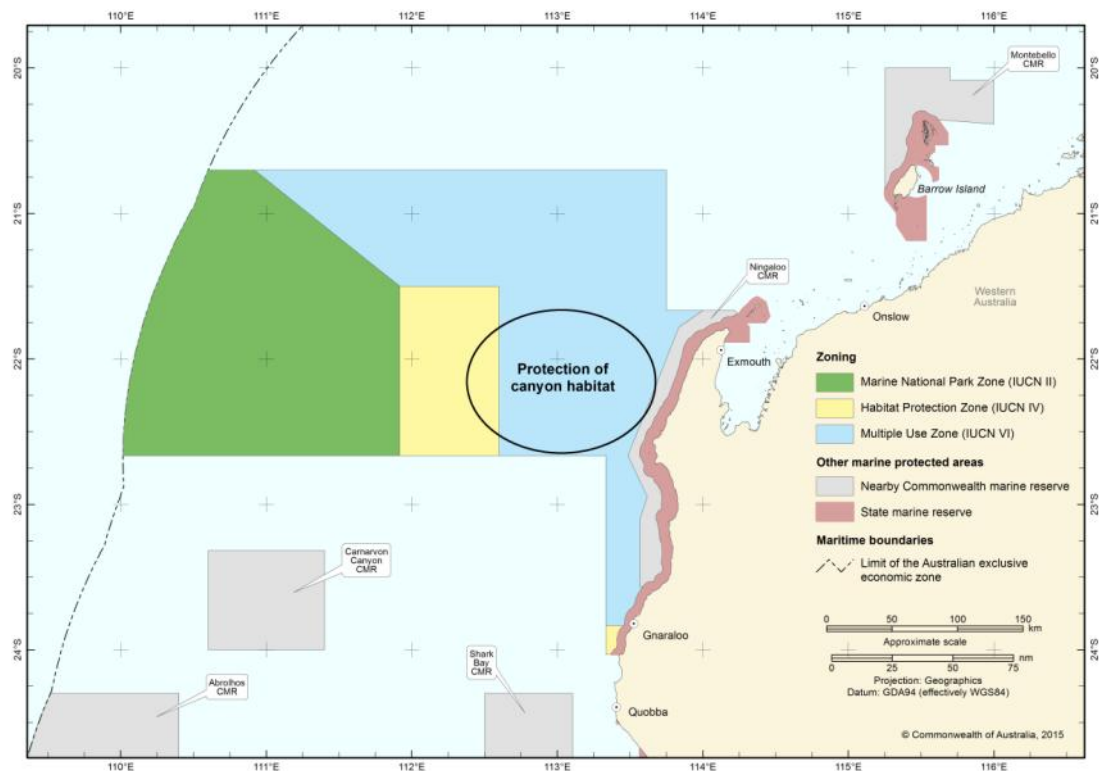


Figure 4.2.4.1 Gascoyne CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that the level of protection on the shelf and canyons was an area of contention.

Conservation

The Cape Range and Cloates canyons on the shelf adjacent to the Ningaloo Reef are considered to be important for their role in sustaining the nutrient conditions that support the high diversity of the Ningaloo Reef and diversity of megafauna such as whale sharks. Recent research¹³ has also highlighted the significance of the shelf fauna in this area including sponges, benthic infauna, soft corals and fish.

Recommendation

The recommendation for the Gascoyne CMR is to extend the existing HPZ eastwards as far as the 1000 m depth contour.

The change is shown in Figure 4.2.4.2 and summarised in Table 4.2.4.1.

¹³ P. K. Dunstan, N. J. Bax, S. D. Foster, A. Williams and F. Althaus. (2012). Identifying hotspots for biodiversity management using rank abundance distributions. *Diversity and Distributions* 18, 22–32; Przeslawski *et al.* (2013). Infaunal biodiversity patterns from Carnarvon Shelf (Ningaloo Reef), Western Australia. *Marine and Freshwater Research* 64(6), 573–583; G. C. B. Poore, L. Avery, M. Blazewicz-Paszkowycz, J. Browne, N. L. Bruce, S. Gerken, C. Glasby, E. Greaves, A. W. McCallum, D. Staples, A. Syme, J. Taylor, G. Walker-Smith, M. Warne, C. Watson, A. Williams, R. S. Wilson, and S. Woolley. (2015). Invertebrate diversity of the unexplored marine western margin of Australia: taxonomy and implications for global biodiversity. *Marine Biodiversity* 45, 271–286.

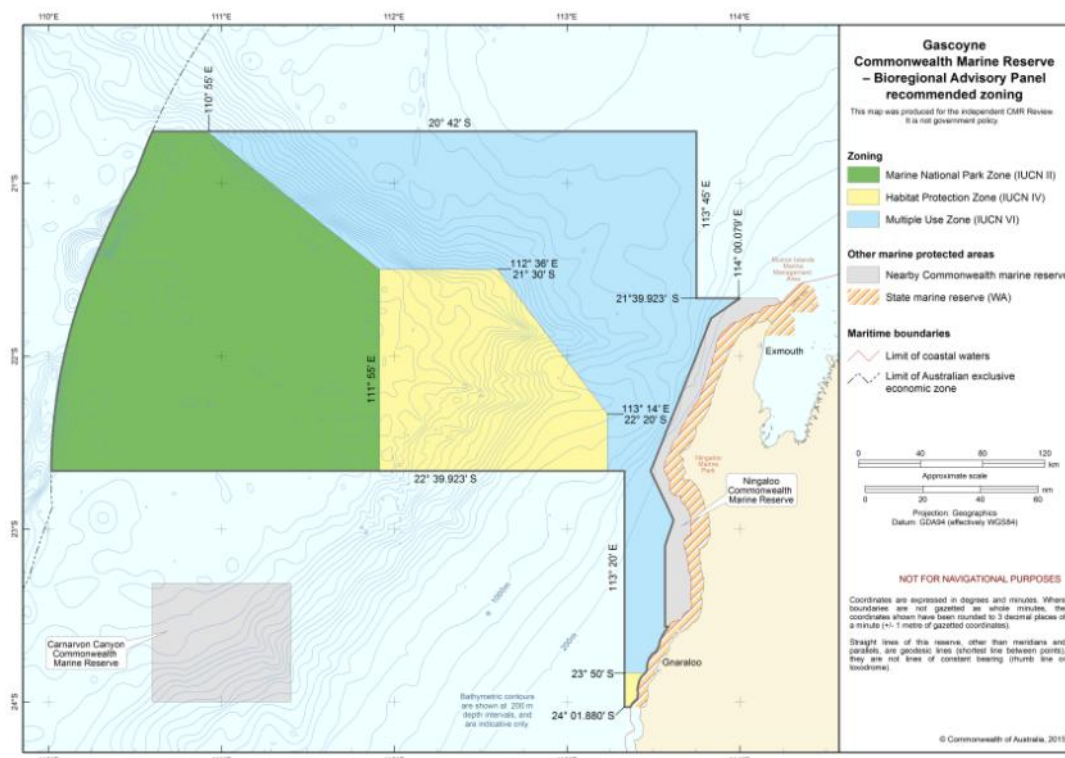


Figure 4.2.4.2 Recommended zoning for Gascoyne CMR

Table 4.2.4.1 indicates how the areas of different zone types (within the outer boundaries of the reserve) will change between the proclaimed and recommended zoning. There are no changes to the MNPZ but the area under HPZ increases with a corresponding decrease in MUZ. Overall nearly 60% of the reserve falls within highly protected MNPZ or HPZ.

Table 4.2.4.1 Comparison of areas of zone types between proclaimed and recommended zoning for Gascoyne CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	33 437	40.89%	33 437	40.89%	Nil	Nil
HPZ (IUCN IV)	9 272	11.34%	14 685	17.96%	+5 413	+6.62%
MUZ (IUCN VI)	39 057	47.77%	33 645	41.15%	-5 412	-6.62%
Total	81 766	100%	81 766	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning of Gascoyne CMR will significantly improve the conservation outcome for the area, reflecting connectivity with the Ningaloo CMR, protecting important benthic habitats and recognising the significance of benthic-pelagic upwelling processes and associated megafauna in the region. The recommended zoning will result in an

additional two Depth Ranges (by Provincial Bioregion) in HPZ in the North-west Network (see Appendix H).

The recommended zoning of Gascoyne CMR will not change the impact on commercial fishing arising from the proclaimed zoning boundaries. The recommended zoning extends the existing HPZ eastwards and introduces a new diagonal eastern boundary line. These changes do not increase the complexity of the zoning and should not present problems for users.

The recommended expansion of the HPZ in this reserve will restrict mining activities above the level of restriction set out in the proclaimed zoning. The area covered by the recommended HPZ was rated as having medium-low to low petroleum prospectivity.

The Gascoyne CMR overlaps with the Gnulli registered native title claim.

4.3 SOUTH-WEST COMMONWEALTH MARINE RESERVES NETWORK

The South-west CMR Network comprises 14 reserves established in 2012, which cover 508 605 km² from the easternmost end of Kangaroo Island, off South Australia (SA), to the waters offshore of Shark Bay in WA (Figure 4.3.1). One reserve, the Great Australian Bight CMR, incorporates the area of the previously proclaimed Great Australian Bight (Commonwealth Waters) Marine Park.

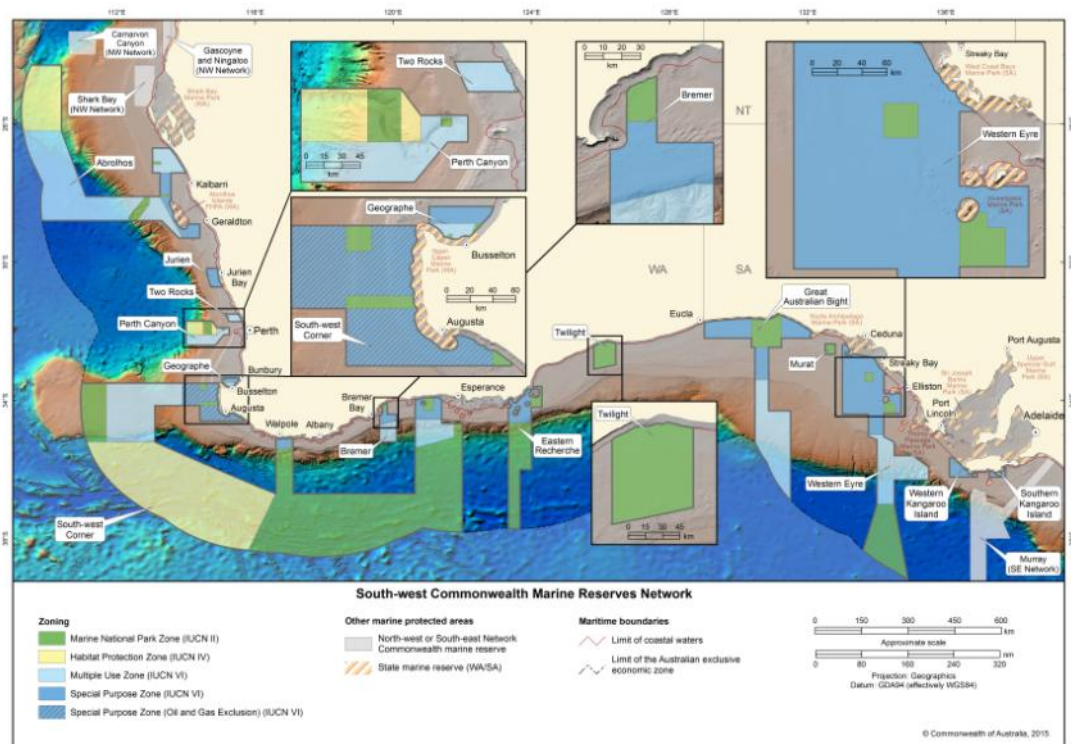


Figure 4.3.1 South-west CMR Network, as proclaimed

Issues raised during the CMR Review that were generic across the South-west CMR Network included:

- Remove destructive fishing practices from the network
- Increase the area of shelf under MNPZ protection
- Unprotected habitats—particularly the lack of MNPZs in several bioregions
- Access to all MNPZs (IUCN II) by recreational anglers
- Loss of access to inshore fishing grounds.

South-west network—outcomes

Changes to zoning are recommended for the Two Rocks, Perth Canyon, Geographe, South-west Corner, Bremer, Eastern Recherche, Twilight, Great Australian Bight and Western Eyre CMRs, while no changes are recommended for the Abrolhos, Jurien, Murat, Western Kangaroo Island and Southern Kangaroo Island CMRs. These are shown in Figure 4.3.2 and summarised in Table 4.3.1.

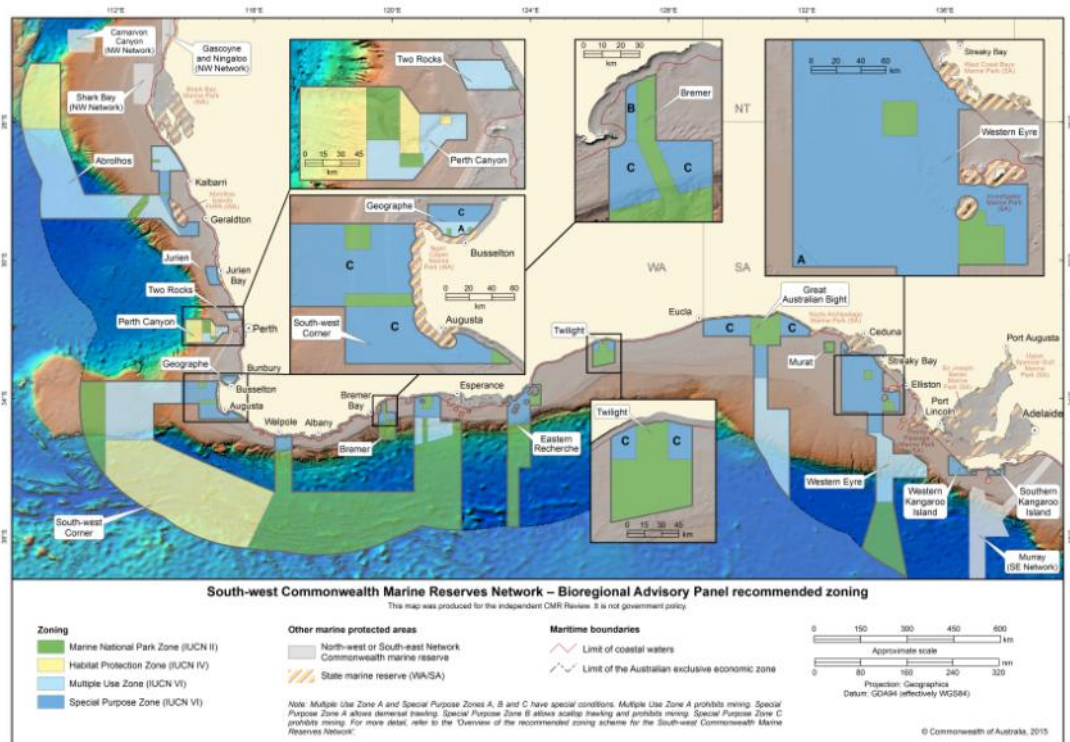


Figure 4.3.2 Recommended zoning for South-west CMR Network

Table 4.3.1 indicates how the areas of different zone types (within the outer boundaries of the network) will change between the proclaimed and recommended zoning. Overall a further 5090 km² is added to the area under MNPZ to comprise 36% of the network. Although there is a small decrease in the area under HPZ, this together with MNPZ, results in close to 60% of the network being afforded a high level of protection. These conservation gains are balanced by a small increase in the area of SPZ to improve access for some fisheries and the area zoned as SPZ where mining, including oil and gas activities will be prohibited is more than doubled.

Table 4.3.1 Comparison of areas of zone types between proclaimed and recommended zoning for South-west CMR Network

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of Network	Area (km ²)	% of Network	Area (km ²)	% of Network
MNPZ (IUCN II)	179 627	35.32%	184 717	36.32%	+5 090	+1.00%
HPZ (IUCN IV)	117 712	23.14%	116 039	22.82%	-1 673	-0.33%
MUZ (IUCN VI)	140 004	27.53%	133 950	26.34%	-6 054	-1.19%
MUZ A (IUCN VI)	Nil	Nil	291	0.06%	+291	+0.06%
SPZ (IUCN VI)	61 712	12.13%	49 214	9.68%	-12 498	-2.46%
SPZ A (IUCN VI)	Nil	Nil	204	0.04%	+204	+0.04%
SPZ B (IUCN VI)	Nil	Nil	147	0.03%	+147	+0.03%
SPZ (Oil and Gas Exclusion) /SPZ C* (IUCN VI)	9 550	1.88%	24 043	4.73%	+14 493	+2.85%
Total	508 605	100%	508 605	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated on the rounded figures.

*The proclaimed SPZ (Oil and Gas Exclusion) and recommended SPZ (C) have the same allowable activities, and are therefore reported as the same zone type.

Conservation outcomes

The recommended zoning changes will provide the following key improvements to conservation outcomes for the South-west CMR Network:

- The introduction of new or improvements to existing MNPZs in five reserves, which amounts to a small overall increase (1%) in no-take protection, including:
 - An expansion of MNPZ in the Two Rocks CMR
 - Relocation and expansion of MNPZ in the Perth Canyon CMR
 - Reconfiguration of MNPZs in the Geographe CMR
 - Expansion of MNPZ and greater protection for a significant canyon system in the South-west Corner CMR
 - Significant expansion of MNPZ in the Bremer CMR
- Exclusion of mining activities from the entire Geographe and Bremer CMRs and significant inshore areas in the Great Australian Bight CMR, together with their proclaimed exclusion in the South-west Corner CMR
- Increase in the area under MNPZ and HPZ in the Perth Canyon CMR.

Table 4.3.2 shows how the recommended zoning in the South-west network changes the representation of primary conservation features in MNPZs and HPZs, providing an indication of performance against the four primary goals.

The recommended zoning will provide increased protection to a further conservation feature in MNPZs and four conservation features in HPZs in the network. The conservation features captured in MNPZs include two additional Depth Ranges (by Provincial Bioregion), with the loss of one Biologically Informed Seascape. The conservation features newly captured in HPZs are four Depth Ranges (by Provincial Bioregion), two of which are also newly captured in MNPZs. Thirty two of the primary conservation features occur in both MNPZs and HPZs, which brings the overall number of conservation features represented in these zones to 122 (90%), an increase from 119 in the proclaimed zoning. Fourteen conservation features are not represented in either of these two zones. The changes to the representation of specific conservation features are listed in Appendix H.

Table 4.3.2 Comparison of representation of conservation features between proclaimed and recommended zoning for South-west CMR Network

Goal	Primary conservation feature	Total no. in Network	Proclaimed		Recommended	
			MNPZ (IUCN II)	HPZ (IUCN IV)	MNPZ (IUCN II)	HPZ (IUCN IV)
1	Provincial Bioregions (PBs)	9	8	4	8	4
	Meso-scale Bioregions	9	8	0	8	0
2	Depth by PB	69	53	18	55	22
3	Key Ecological Features	14	13	4	13	4
	Biologically Informed Seascapes	19	17	0	16	0
4	Seafloor Types	16	12	12	12	12
	Total	136	111	38	112	42

Note: Some features are represented in both MNPZs and HPZs; therefore the total number of features represented in both zones is not the simple sum of their occurrence in each zone.

Socio-economic impacts

Commercial fishing

The recommended zoning of the South-west Network will reduce impacts on commercial fisheries. The number of fisheries impacted by the recommended zoning will not change compared to the proclaimed zoning. Changes made in the South-west Corner, Eastern Recherche and Twilight CMRs will reduce impacts on several fisheries, including the South Coast Crustacean Fishery, the South Coast Trawl Fishery, and the Southern and West Coast Demersal Gillnet and Longline Fishery.

Recreational and charter fishing

Changes to zoning will improve access to important fishing areas in the Perth Canyon, Bremer and South-west Corner CMRs. Changes to MNPZs are unlikely to significantly

affect this sector except in the Two Rocks and Geographe CMRs, where the changes improve conservation outcomes.

Native title

In the South-west Network, the Twilight CMR is the only reserve that overlaps with a registered native title claim (that of the Western Australian Mirning people). Native title is not impacted by the proclamation of CMRs or the development and implementation of management plans for those reserves under the EPBC Act. The existence of a native title claim over sea country in the South-west Network presents opportunities for co-management with traditional owners and local Indigenous groups and for improved management outcomes. Recommendations relating to involvement of Indigenous groups and traditional owners in management of CMRs are outlined in Chapters 5 to 7 of this report.

Mining and oil and gas development

The proposals to exclude the oil and gas sector from the Geographe CMR, the Bremer CMR and part of the Great Australian Bight CMR reflects the significant community opposition to this activity articulated during the consultation and perceived risks to significant tourism and conservation values in these reserves. The exclusion for oil and gas remains for the SPZ off the Capes coast section (being the area around Cape Naturaliste to Cape Leeuwin) of the South-west Corner CMR and for the whole of the Twilight CMR.

Practicality of implementation

At a network level, the recommended changes are not expected to greatly increase the difficulty for users in complying with the zoning of the South-west CMRs. The use of only one type of SPZ across the network, with specific rules implemented in the marked areas in the Geographe, South-west Corner, Bremer, Twilight, Great Australian Bight and Western Eyre CMRs and the change to the proclaimed SPZ (Oil and Gas Exclusion) zone type in the South-west Corner CMR collectively should reduce the overall complexity of zoning at the network level. Other changes, including modifications of the MNPZs in the Two Rocks, Perth Canyon, Geographe, South-west Corner, Bremer, Eastern Recherche and Twilight CMRs and the HPZs in the Perth Canyon and South-west Corner CMRs may in some instances increase the complexity of the zoning configuration. However, this has generally been minimised through the adoption of straight north–south or east–west running boundary lines wherever possible. Specific depth contours that are important determinants of fishing grounds for commercial operators have been used to locate a number of zone boundaries across the network.

Conclusion

The recommended zoning for the South-west Network addresses the key areas of contention that arose during the consultation. It significantly reduces the socio-economic impacts on the commercial and recreational fishing sectors, although, in order to balance these impacts against conservation objectives, impacts on the sectors could not be eliminated. Zoning also takes into consideration Australian energy security considerations, for the most part avoiding areas that are of high or medium prospectivity. Overall there has been no loss of area under MNPZ but a significant reduction in the impact on commercial fisheries. Three more conservation features are contained in highly protected areas (MNPZ or HPZ) and together these two high protection zone types make up almost 60% of the network and include 122 of the network's 136 conservation features (90%).

Table 4.3.3 Overview of recommended zoning scheme for South-west CMR Network

Activity type ^a		Special Purpose Zone (IUCN VI)	Multiple Use Zone (IUCN VI)	Habitat Protection Zone (IUCN IV)	Marine National Park Zone (IUCN II)
MINING^b	Mining (including exploration, development and other activities)	✓ ^c	✓ ^d	x	x
COMMERCIAL FISHING^e	Handline/rod and reel/trolling	✓	✓	✓	x
	Hand collection	✓	✓	✓	x
	Pelagic longline	✓	✓	✓	x
	Purse seine	✓	✓	✓	x
	Mid-water trawl	✓	✓	✓	x
	Traps and pots (including crab, lobster and octopus)	✓	✓	x	x
	Demersal longline	✓	x	x	x
	Demersal gillnet	✓	x	x	x
	Demersal trawl (including fish and scallop)	x ^{f,g}	x	x	x
AQUACULTURE		✓	✓	x	x
RECREATION	Boating	✓	✓	✓	✓
	Scuba diving and snorkelling	✓	✓	✓	✓
	Recreational fishing (including spear-fishing) ^h	✓	✓	✓	x
COMMERCIAL TOURISM	Non-fishing related tourism (including scuba/snorkel tours and nature watching)	✓	✓	✓	✓
	Fishing related tourism (including charter fishing and fishing/spear diving tours)	✓	✓	✓	x
INDIGENOUS ACTIVITIES	Non-commercial Indigenous harvesting and hunting (consistent with the <i>Native Title Act 1993</i>)	✓	✓	✓	✓
RESEARCH		✓	✓	✓	✓
GENERAL USE	Defence	✓	✓	✓	✓
	Shipping (general transit) ⁱ	✓	✓	✓	✓

a. All activities require approval to be undertaken in CMRs; approvals are provided in the management plan or through class approvals or individual permits.

b. Proposed mining operations carried out under usage rights that existed immediately before the declaration of a reserve do not require approval from the DNP.

c. Mining is not allowed in the South-west CMR Network SPZs B and C.

d. Mining is not allowed in the South-west CMR Network MUZ A.

e. Commercial fishing methods not listed in the table may require assessment.

f. Demersal fish trawling is allowed in the South-west CMR Network SPZ A in Western Eyre CMR.

g. Demersal scallop trawling is allowed in the South-west CMR Network SPZ B in Bremer CMR.

h. Recreational fishing is managed by the states. South Australian or Western Australian rules and regulations (for example size and bag limits) will apply in the South-west CMR Network depending on the reserve location and unless otherwise specified in the management plan.

i. Ballast water exchange is managed under national arrangements. Restrictions may apply in some areas.

4.3.1 TWO ROCKS COMMONWEALTH MARINE RESERVE

Background

The Two Rocks CMR covers approximately 882 km² from the state waters boundary north of Perth and Rottnest Island to Two Rocks, extending westward across the continental shelf. It is located to the north-west of WA's Marmion Marine Park. The reserve was established in 2012 and contains two zone types: Marine National Park (<1%) and Multiple Use (>99%) (Figure 4.3.1.1).

Conservation values represented within the reserve include examples of ecosystems of the South-west Shelf Transition Province; migration areas for protected humpback whales; and foraging areas for threatened soft-plumaged petrels and Australian sea lions, and for migratory roseate terns, bridled terns, Caspian terns, wedge-tailed shearwaters and common noddies. The reserve includes three KEFs: western rock lobster habitat, the ancient coastline at a depth range of 90 m to 120 m, and the marine environment adjacent to the west coast inshore lagoons, which are key areas for the recruitment of the commercially and recreationally important western rock lobster, dhufish, pink snapper, breaksea cod, baldchin and blue groper, and many other reef species.

Recreational and charter fishing and recreational diving occur in the reserve, especially in nearshore waters, and several commercial fisheries operate in the area. They include the WA managed West Coast Rock Lobster, West Coast Demersal Scalefish, South West Trawl, and developing Octopus fisheries. No Commonwealth fisheries operate in the area.

The area is moderately to highly prospective for oil and gas and there are currently no petroleum permits overlapping the CMR.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Two Rocks CMR was discussed in submissions, as well as in meetings with stakeholders. Issues raised included:

- Access to MNPZs (IUCN II) by recreational anglers, in particular loss of access to a popular recreational fishing ground close to a metropolitan centre
- Opportunity to develop/enhance dive tourism in the MNPZ.

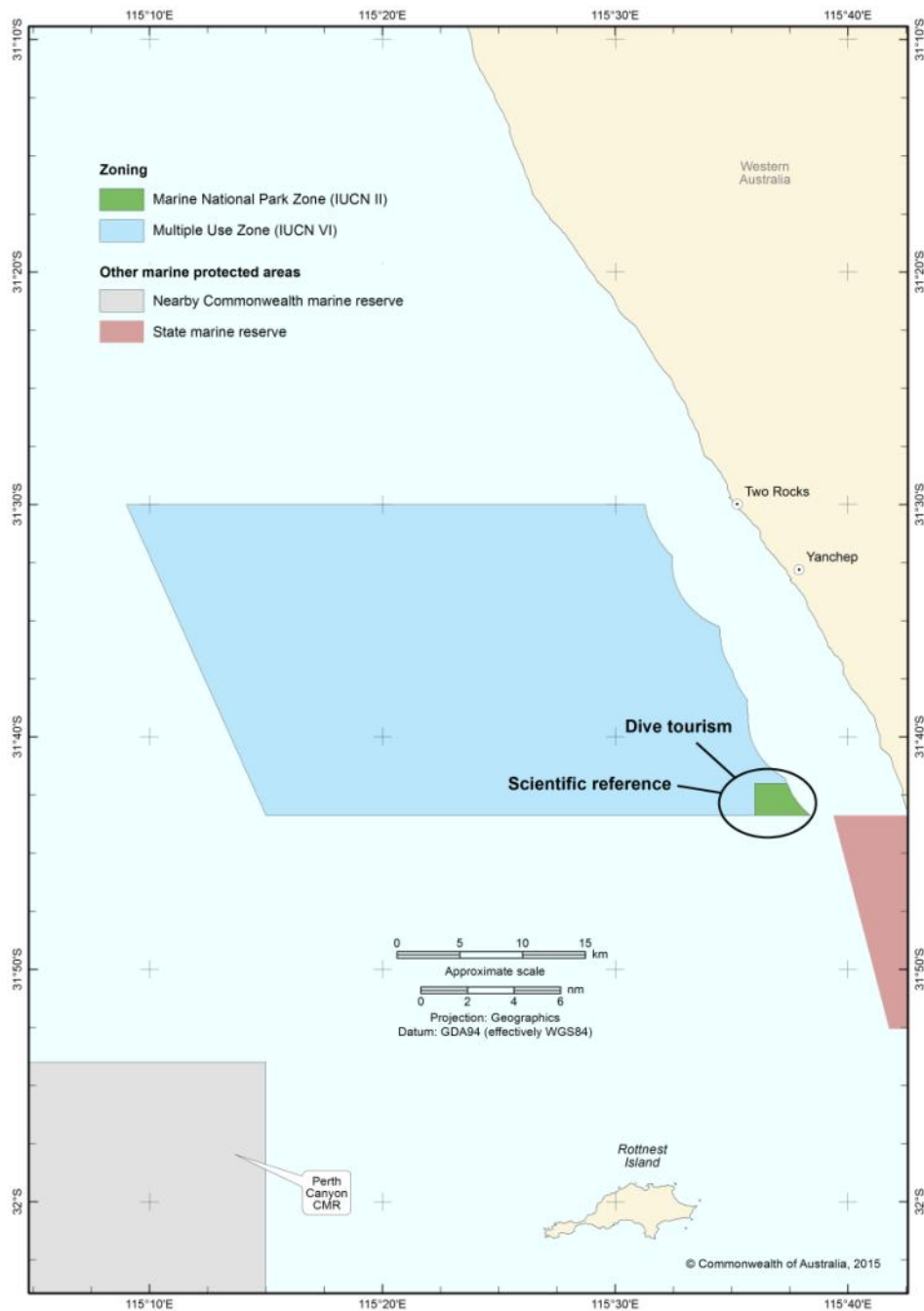


Figure 4.3.1.1 Two Rocks CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that the MNPZ was an area of contention.

Conservation and non-extractive recreational activities

The role of the Two Rocks MNPZ as an area accessible to a burgeoning dive tourism sector was highlighted. There was a request that this area be increased to encompass a larger portion of the reef extending westwards.

Scientific studies clearly demonstrate the effect of no-take zones, which results in an increase in the average size and relative abundance of most of the sedentary reef-associated species. This benefit is readily appreciated by diving communities that seek to

experience marine life in its natural condition and unaffected by fishing. While recreational fishing representatives argued for access to the whole CMR, the value of a no-take reference area, its modest size and the number of other similar reefs in the MUZ supported the approach to retain and increase the area of MNPZ.

Recommendation

The recommendation for the Two Rocks CMR is to increase the size of the MNPZ by a westerly extension.

These changes are shown in Figure 4.3.1.2 and summarised in Table 4.3.1.1

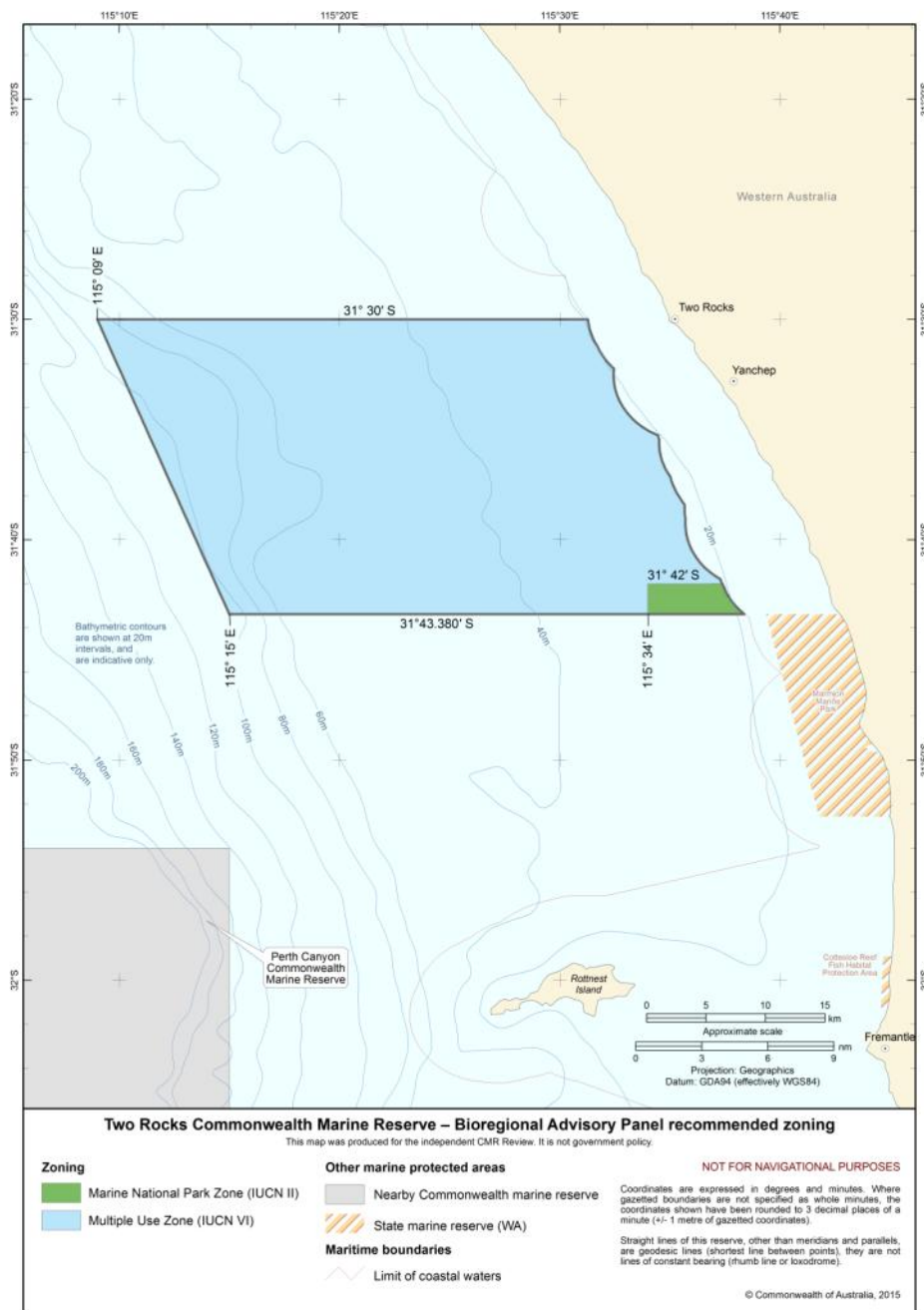


Figure 4.3.1.2 Recommended zoning for Two Rocks CMR

Table 4.3.1.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. The MNPZ is

doubled in size, with a corresponding loss in area of MUZ. Despite this the MNPZ is under 2% of the reserve area.

Table 4.3.1.1 Comparison of areas of zone types between proclaimed and recommended zoning for Two Rocks CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	7	0.79%	15	1.70%	+8	+0.91%
MUZ (IUCN VI)	875	99.21%	867	98.29%	-8	-0.91%
Total	882	100%	882	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for the Two Rocks CMR will double the small area of MNPZ, expanding it by approximately 8 km² to cover approximately 2% of the reserve area.

The recommended expansion of MNPZ will provide significant benefit to the scuba dive sector but will slightly decrease access for recreational and charter fishers within the Two Rocks CMR.

The recommended zoning for the Two Rocks CMR may increase the impact on some fisheries (the WA managed West Coast Rock Lobster Fishery, the West Coast Demersal Scalefish Fishery, the developing Octopus Fishery, and the Deep Sea Crab Fishery).

The expanded MNPZ abuts the WA state water boundary but otherwise adopts straight boundary lines running north–south and east–west. This configuration should not present any difficulty in compliance for users of the reserve.

The Two Rocks CMR does not overlap with any native title determinations, applications or IPAs. The reserve is adjacent to the Yued People registered native title claim and the Whadjuk People registered native title claim (which does not extend into Commonwealth waters).

The recommended increase to the MNPZ in this reserve would slightly restrict mining activities above the level of restriction set out in the proclaimed zoning. The area covered by the recommended zoning change is rated as having medium to high petroleum prospectivity.

4.3.2 PERTH CANYON COMMONWEALTH MARINE RESERVE

Background

The Perth Canyon CMR extends offshore from west of Rottnest Island into deep water off the continental shelf, and includes most of the Perth Canyon. It is located west of WA's Rottnest Island Reserve. The reserve, which was established in 2012, covers an area of approximately 7409 km² and contains three zone types: Marine National Park (15%), Habitat Protection (35%), and Multiple Use (50%) (Figure 4.3.2.1).

Conservation values represented within the reserve include examples of ecosystems of the Central Western Province, Southwest Shelf Transition Province, Southwest Transition and Southwest Shelf Province bioregions. The reserve includes areas of meso-scale eddies from the Leeuwin Current and deep ocean currents that rise through the canyon system and are associated with enhanced productivity and feeding aggregations. It includes habitat for western rock lobster and foraging areas for threatened soft-plumaged petrel, Australian sea lions and blue whales, as well as for sperm whales, pygmy blue whales and several species of migratory seabirds. It also overlaps with the northernmost extent of seasonal calving habitat for southern right whales and the migration path of humpback whales.

Two KEFs are represented in the reserve: the western demersal slope and associated fish communities, and the Perth Canyon, Australia's largest submarine canyon, associated with enhanced productivity and home to the largest known feeding aggregation of blue whales in Australia.

The Commonwealth Western Tuna and Billfish and Western Deepwater Trawl fisheries overlap with the reserve, as do the WA managed West Coast Rock Lobster, South West Inshore Trawl, West Coast Purse Seine, and Deep Sea Crab fisheries. The reserve overlaps with the Western Australian Metropolitan Zone Closure, which excludes commercial fishing for demersal finfish species and reduces impacts of the reserve on the region's commercial fishers.

The area is an important recreational game and charter fishing site, particularly off Rottnest Island and the northern head of the canyon (also known as the Rottnest trench).

The eastern part of the reserve is moderately to highly prospective for oil and gas resources, but there are no current petroleum permits issued.

The Royal Australian Navy's Western Australian exercise training area overlaps the reserve, as does a proposed aquaculture development zone in nearshore waters off Rottnest Island. While the reserve avoids the busiest shipping route in and out of Fremantle, shipping remains a significant activity in the area.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Perth Canyon CMR was canvassed in detail in a large number of submissions, as well as in meetings with stakeholders. Issues raised included:

- Loss of access to a significant recreational game fishing ground over the Perth Canyon head off Rottnest Island
- Inadequate protection—specifically, blue whale feeding grounds
- Need to protect KEFs—especially upwelling associated with the Perth Canyon which is a source of nutrients and supports large aggregations of marine fauna
- Importance of the area to central place foragers

- Loss of access for commercial fisheries, including pelagic longlining.

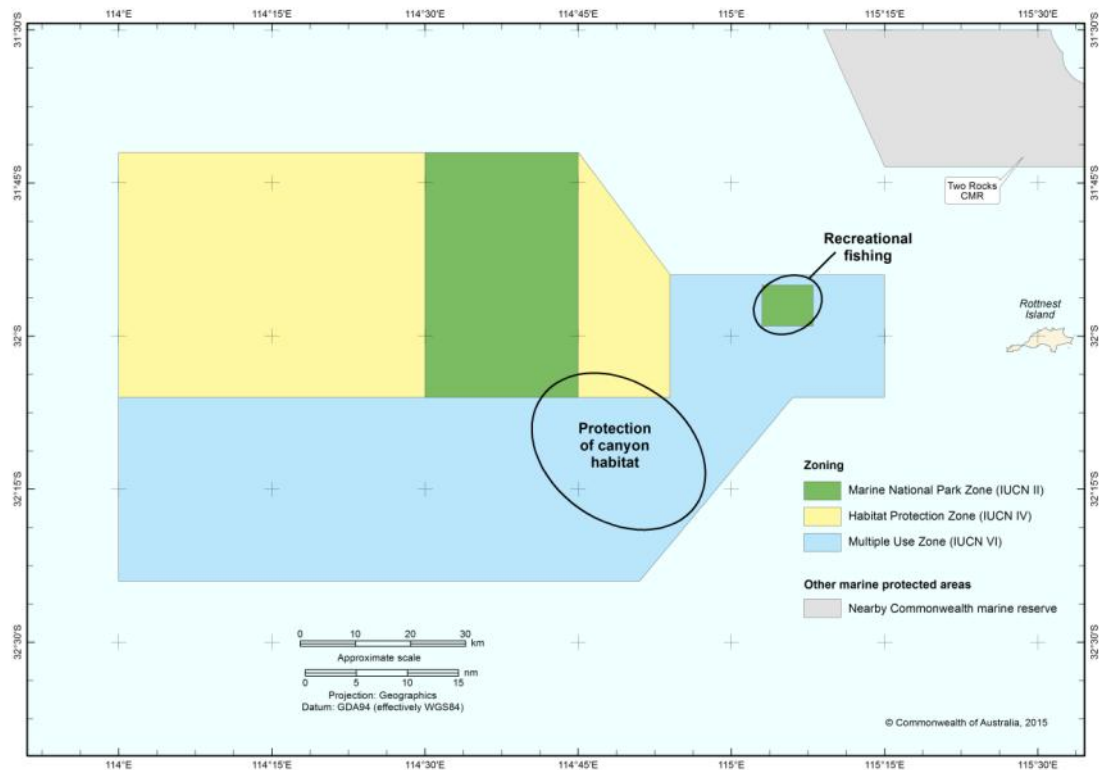


Figure 4.3.2.1 Perth Canyon CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that the loss of access to the Perth Canyon head off Rottneest Island by recreational fishers was an area of contention.

Recreational fishing

The head of the Perth Canyon adjacent to Rottneest Island has had a long history as a key recreational fishing site. The Perth Game Fishing Club and the Fremantle Sailing Club's Game Fishing Section have staged game fishing tournaments in this vicinity for approximately 35 years, targeting marlin and other pelagic species. Most of these tournaments are conducted on a tag-and-release basis.

These fishing clubs have cooperated in the deployment of several fish aggregating devices in close proximity to the MNPZ established in 2012, which created the distinct possibility that any fish caught outside this zone could move into the MNPZ and anglers would need to cease fishing and cut their line.

The Regional Panel noted that there were three canyon heads to the Perth Canyon: the one described above, which is a shelf-incising canyon, and two others to the south of this. These canyons are a source of nutrients that support plankton and other prey species. These areas are known aggregation and feeding sites for a number of pelagic fish, cetaceans and birds. The Regional Panel also noted that the proclaimed MNPZ covered a part of the northernmost canyon head.

The advice from the ESP on recent studies in the Perth canyon was that new information supported the understanding that the Perth Canyon was an area of biological significance,

driven by localised upwelling. This occurred around canyon heads where they intersected with the Leeuwin Current and formed complex eddies that drove productivity and associated feeding aggregations of an array of species, from whales and seabirds to pelagic predators such as tuna and marlin.

The Regional Panel accepted that catch-and-release fishing was likely to have a relatively small impact on target species and other species aggregations in the area.

Recommendations

The recommendations for the Perth Canyon CMR are to:

- Change the zoning of the MNPZ over the head of the Perth Canyon off Rottnest Island to HPZ
- Create a new MNPZ over the southernmost head of the Perth Canyon, ensuring that the area protects the entire canyon head feature
- Extend the western current HPZ further south to the southern boundary of the CMR
- Extend the eastern HPZ to join the new MNPZ.

These changes are shown in Figure 4.3.2.2 and summarised in Table 4.3.2.1

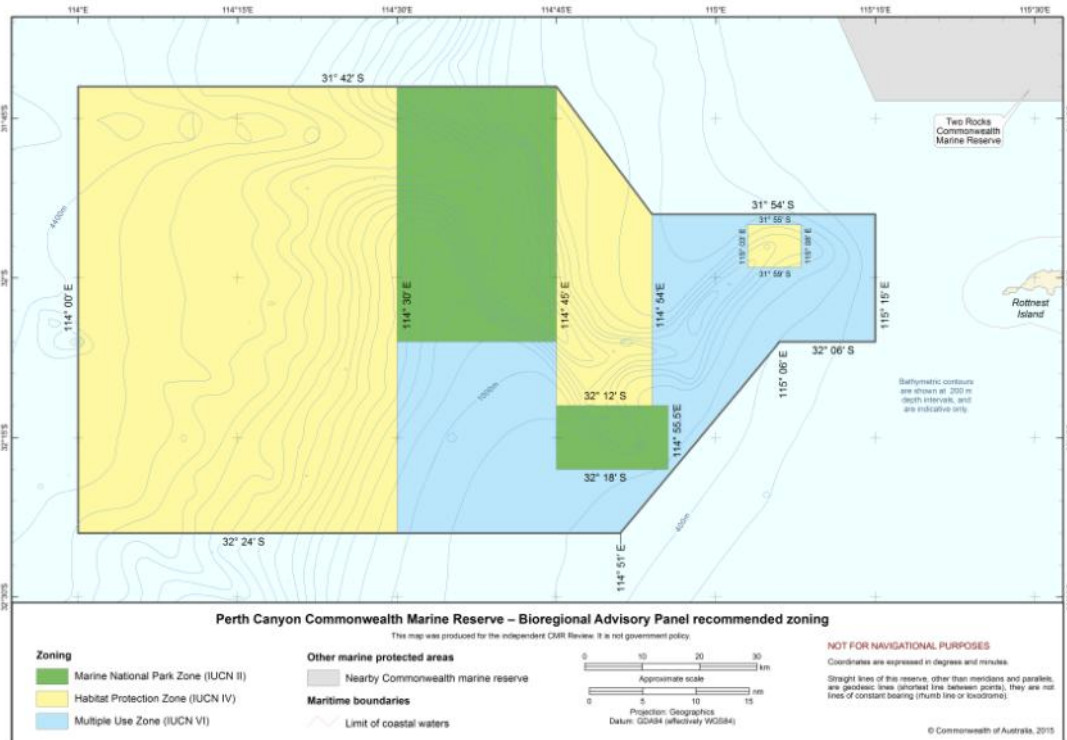


Figure 4.3.2.2 Recommended zoning for Perth Canyon CMR

Table 4.3.2.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is an increase in the area under MNPZ and a large increase in the area under HPZ. Together these zones offer a high level of protection to over 75% of the reserve. There is a corresponding reduction in the area under MUZ.

Table 4.3.2.1 Comparison of areas of zone types between proclaimed and recommended zoning for Perth Canyon CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	1 107	14.94%	1 232	16.63%	+125	+1.69%
HPZ (IUCN IV)	2 570	34.69%	4 352	58.74%	+1 782	+24.05%
MUZ (IUCN VI)	3 733	50.38%	1 825	24.63%	-1 908	-25.75%
Total	7 409	100%	7 409	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for the Perth Canyon CMR improves the conservation outcomes in the reserve by increasing the MNPZ to cover an entire canyon head. This is complemented by a large increase in the area under HPZ so that these two zones cover over 75% of the reserve, an increase of 26%, and provide a high level of protection to most of the canyon. The expansion of MNPZ and HPZ in the Perth Canyon CMR increases protection to two Depth Ranges (by Provincial Bioregion) in both MNPZs and HPZs, and to a further two Depth Ranges (by Provincial Bioregion) in HPZs in the South-west CMR Network (see Appendix H).

The recommended zoning improves access for recreational and charter fishers to important game fishing areas over the Perth Canyon, predominantly targeting highly mobile and migratory species such as marlin, tuna and mahi mahi.

The recommended zoning results in a marginal increase in the impact on commercial fishing.

The recommended zoning for the Perth Canyon CMR will not significantly change zoning complexity. All zoning boundary lines are straight and run north-south or east-west to aid with ease of compliance.

The Perth Canyon CMR does not overlap with any native title determinations, applications or IPAs. The reserve is adjacent to the Whadjuk People and Gnaala Karla Booja registered native title claims, which do not extend into Commonwealth waters.

The recommended expansion and reconfiguration of MNPZ and HPZ in this reserve will restrict mining activities above the level of restriction set out in the proclaimed zoning from 50% to 75% of the reserve. The area covered by these recommended zones is rated as having medium-high, medium-low and low petroleum prospectivity.

4.3.3 GEOGRAPHE COMMONWEALTH MARINE RESERVE

Background

The Geographe CMR is an inshore reserve located in Geographe Bay, adjacent to WA's Ngari Capes Marine Park, which covers coastal waters between Geographe Bay and Augusta. The reserve, established in 2012, covers an area of approximately 977 km². It contains three zone types: Marine National Park (4%), Multiple Use (30%), and a Special Purpose (66%) (Figure 4.3.3.1).

Conservation values represented in the reserve include examples of ecosystems of the South-west Shelf Province, foraging areas for threatened soft-plumaged petrel and migratory wedge-tailed shearwater, aggregation areas for migratory flesh-footed shearwater, and migration areas for protected humpback and blue whales. The reserve is located in Geographe Bay, which is recognised as a KEF of the South-west Marine Region. It is known for its extensive beds of tropical and temperate seagrass that provide nursery habitat for many species. The reserve also includes habitat for the western rock lobster.

The area is important to traditional owners, and the reserve is adjacent to the Harris Family native title claim, which covers 1772 km² of land and sea.

Recreational and charter fishing occur in the reserve and the area overlaps with several commercial fisheries. They include WA managed West Coast Rock Lobster, West Coast Demersal Scalefish, and South West Trawl fisheries, and the developing Octopus Fishery.

The area is considered to be moderately to highly prospective for oil and gas, but there are no petroleum permits in place.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Geographe CMR was canvassed in detail in many submissions, as well as in meetings with stakeholders. Issues raised included:

- Remove gillnetting from the reserve
- Opportunity to align state and Commonwealth reserves
- Exclude oil and gas and mineral exploration
- Loss of access to popular fishing grounds in a fast-growing region of WA
- Access to MNPZs (IUCN II) by recreational anglers
- Loss of access for commercial fisheries, including commercial trawl (prawn and scallop) and gillnetting
- Increased protection for an area of special significance for cetaceans.

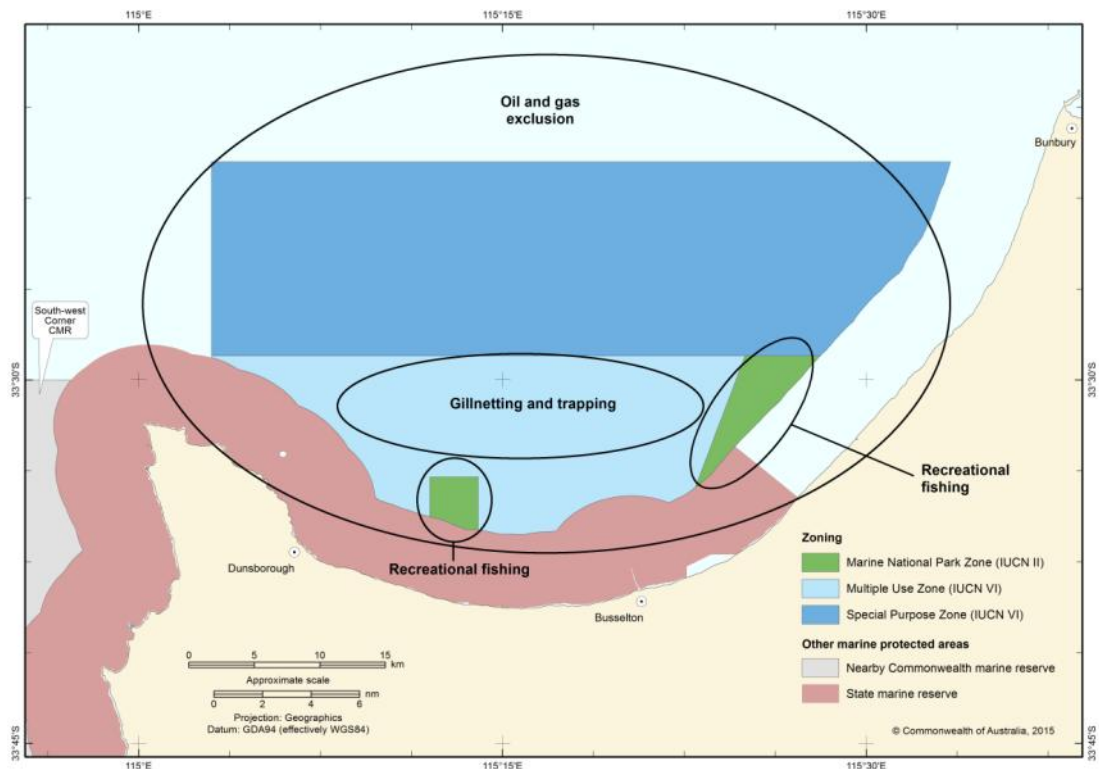


Figure 4.3.3.1 Geographe CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that gillnetting, access by recreational fishers, protection of seagrass beds, and oil and gas were areas of contention.

Southern and West Coast Demersal Gillnet and Longline Fishery (gillnetting) and South West Trawl Fishery (scallop trawl)

The inshore waters of Geographe Bay are an important fishing ground for demersal gillnet operators licensed under the Southern and West Coast Demersal Gillnet and Longline Fishery, as they provide shelter under certain weather conditions.

Scallop trawling in Geographe Bay is patchy due to the unpredictable and infrequent recruitment to the area, and recent catches in the area have been low. Nevertheless, occasional recruitment pulses produce good catches.

The advice from the ESP on the FGRA for trawl fisheries, specifically demersal scallop trawling in Geographe CMR, found that the impacts of scallop trawling on soft substrates in WA, in both the South West Trawl Managed Fishery and the South Coast Trawl Fishery were both localised and minor. Current WA ESD reporting suggested that impacts on bycatch and Threatened Endangered and Protected Species were low. This suggests that scallop trawl fisheries operating on soft sediment substrates in the Geographe CMR could be considered as being 'compatible' with respect to the conservation values of the area.

The BAP noted the intense community interest in the outcome of the review, specifically in relation to perceived conservation needs, including greater protection for migrating cetaceans, the impacts of demersal fishing on sensitive benthic habitats such as seagrass beds, and the impacts of commercial fishing on key recreational species such as dhufish, grouper and snapper.

In the opinion of the BAP, strong community opposition to gillnetting and demersal trawling in the reserve, the ecological significance of the seagrass beds in the area and the ephemeral nature of scallop recruitment did not warrant any change to the exclusion of these methods from the MUZ in the Geographe CMR.

Recreational fishing

Several submissions drew attention to population growth in the region and the importance of recreational fishing to the social and economic values of Geographe Bay. Some of these submissions called for MNPZs to be opened to recreational fishing, while others felt that there was no need for two MNPZs in Geographe CMR. Further suggestions were to allow access to the eastern MNPZ, which is closer to the Busselton area.

Conservation

The advice from the ESP on the conservation values of the Geographe CMR was that the area contained important habitat and that its seagrass beds extend further into deeper water than previously thought. Protection of these extensive and potentially unique seagrass beds should be maintained or improved.

Relocation of the eastern MNPZ in Geographe CMR to better align with the adjacent MNPZ in the Ngari Capes Marine Park in Western Australian state waters would create a more substantial no-take reference area. Given the intensity of use of the CMR for recreation and some commercial harvesting, and the scientific interest and activity in the CMR, two modestly sized MNPZs offer the opportunity for replicated reference sites for future studies.

The Regional Panel considered the option of changing the MUZ to an HPZ to better protect seagrass beds and address concerns in relation to demersal fishing practices that damage this habitat, but this would exclude fisheries such as western rock lobster and octopus trapping (trigger traps) and was thus not pursued.

Recommendations

The recommendations for the Geographe CMR are to:

- Remove the existing triangular MNPZ at the eastern end of the CMR and create a new rectangular MNPZ that complements and extends the adjacent no-take zone in the Ngari Capes Marine Park into deeper water
- Extend the western MNPZ into deeper water.
- Exclude oil and gas and mining across the entire Geographe CMR in both the SPZ and MUZ.

These changes are shown in Figure 4.3.3.2 and summarised in Table 4.3.3.1.

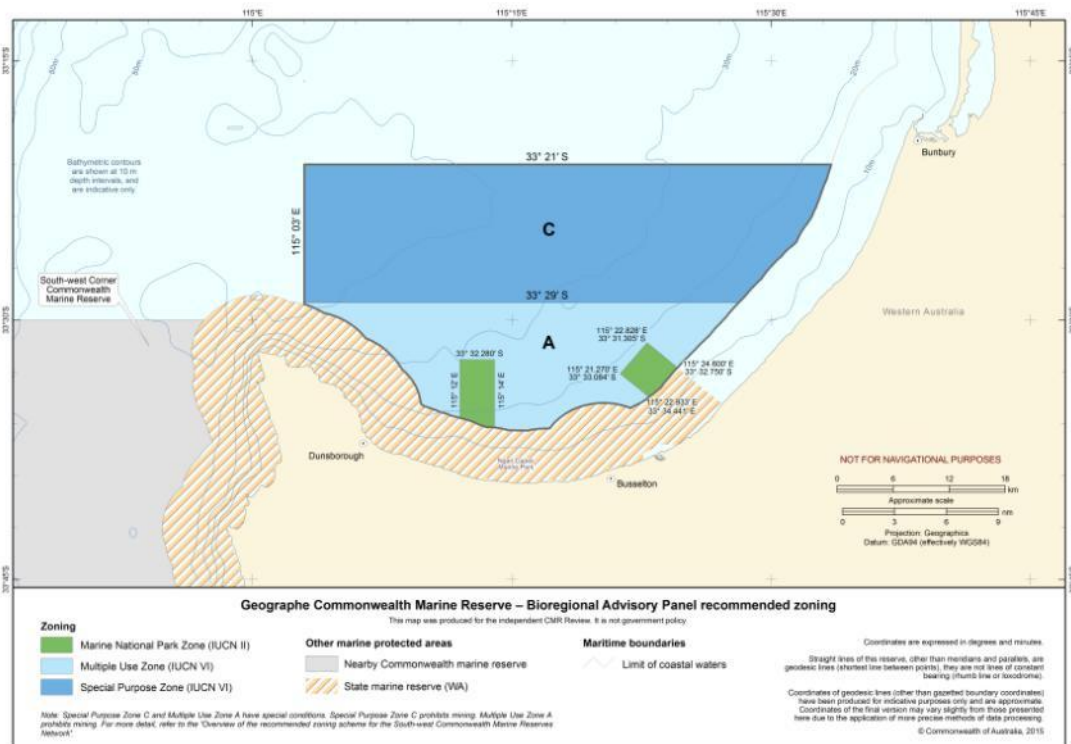


Figure 4.3.3.2 Recommended zoning for Geographe CMR

Table 4.3.3.1 indicates how the areas of different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There was no change to the area of MUZ and SPZ. The location of one MNPZ and shape of the other MNPZ were changed with no loss of MNPZ area.

Table 4.3.3.1 Comparison of areas of zone types between proclaimed and recommended zoning for Geographe CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	36	3.68%	36	3.68%	Nil	Nil
MUZ (IUCN VI)	291	29.79%	Nil	Nil	-291	-29.79%
MUZ A (IUCN VI)	Nil	Nil	291	29.79%	+291	+29.79%
SPZ (IUCN VI)	650	66.53%	Nil	Nil	-650	-66.53%
SPZ C (IUCN VI)	Nil	Nil	650	66.53%	+650	+66.53%
Total	977	100%	977	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning addresses significant community concerns relating to the long-term protection of the conservation and recreation values of the reserve and potential impact of the oil and gas industry on the area. The exclusion of mining and oil and gas development will complement a similar zone in the South-west Corner CMR off the Capes coast. The recommended zoning for the Geographe CMR also provides better articulation between the state and Commonwealth MNPZs, resulting in an improved depth transect across seagrass and mixed reef and seagrass habitat.

The zoning will not change the level of access for recreational or charter fishers within the reserve and will not change the impact on commercial fishing compared to proclaimed zoning.

The change in configuration of the eastern MNPZ to align with the Western Australian Ngari Capes Marine Park no-take zone will be simpler for compliance by users on the water. The use of a single MUZ and SPZ and designations across the South-west CMR Network, with specific rules for areas marked 'A' and 'C' in the Geographe CMR, reduces the overall complexity of zoning at the network level.

The Geographe CMR does not overlap with any native title determinations, applications or IPAs. The reserve is adjacent to the Harris Family registered native title claim and the Gnaala Karla Booja registered native title claim, which do not extend into Commonwealth waters.

The recommended exclusion of oil and gas and mining in both the SPZ and MUZ in this reserve will increase restrictions on mining activities. The area covered by the reserve is rated as having medium-low or medium-high petroleum prospectivity.

4.3.4 SOUTH-WEST CORNER COMMONWEALTH MARINE RESERVE

Background

The South-west Corner CMR is the largest reserve in the South-west CMR Network, covering approximately 271 898 km² of relatively pristine and unexploited ocean environment. The reserve extends offshore from Cape Leeuwin to the edge of Australia's EEZ, including parts of the Naturaliste Plateau. It extends eastwards, capturing deep offshore habitats of the Diamantina Fracture Zone before joining state waters to the west of Esperance. The reserve, established in 2012, included five zone types: Marine National Park (47%), Habitat Protection (34%), Special Purpose (2%), Special Purpose (Oil and Gas Exclusion) (4%), and Multiple Use (14%) (Figure 4.3.4.1).

Conservation values represented within the reserve include examples of ecosystems of the South-west Transition, Southern Province and South-west Shelf Province bioregions and a diversity of seafloor features including the Naturaliste Plateau and the Diamantina Fracture Zone KEFs, both of which are believed to be associated with rich and possibly unique biological communities. Other KEFs found in the reserve include the Albany Canyon group, the Cape Mentelle upwelling, and the Commonwealth marine environment surrounding the Recherche Archipelago. The reserve supports foraging areas for threatened white sharks, Australian sea lions, Indian yellow-nosed albatross and soft-plumaged petrel, as well as migrating sperm whales, flesh-footed shearwater, short-tailed shearwater and Caspian tern. The reserve also contains calving habitat for the threatened southern right whales and migration routes for protected humpback and blue whales.

The Commonwealth Western Deepwater Trawl and Western Tuna and Billfish fisheries operate in the area, along with the WA managed West Coast Rock Lobster, South Coast Crustacean, Southern and West Coast Demersal Gillnet and Longline, West Coast Demersal Scalefish, Deep Sea Crab, South Coast Trawl, South Coast Purse Seine, and South Coast 'open access' fisheries. Recreational and charter fishing also occurs in the area, mostly in state waters.

The vast majority of the reserve is not prospective for oil and gas. There is some moderate to high prospectivity associated with the Mentelle and Bremer sub-basins. There are no permits for oil and gas within the reserve.

Several shipping routes connecting western and eastern Australia converge in the area, south of Augusta.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the South-west Corner CMR was canvassed in detail in several submissions and in meetings with stakeholders. Issues raised included:

- Loss of access/fishing prospectivity for commercial fisheries—particularly pelagic longlining, gillnetting, scalefish, trap and scallops
- Misalignment with state reserve boundaries, which creates confusion
- Fishing prospectivity—particularly with regard to tuna longlining
- Lack of protection of canyon habitat.

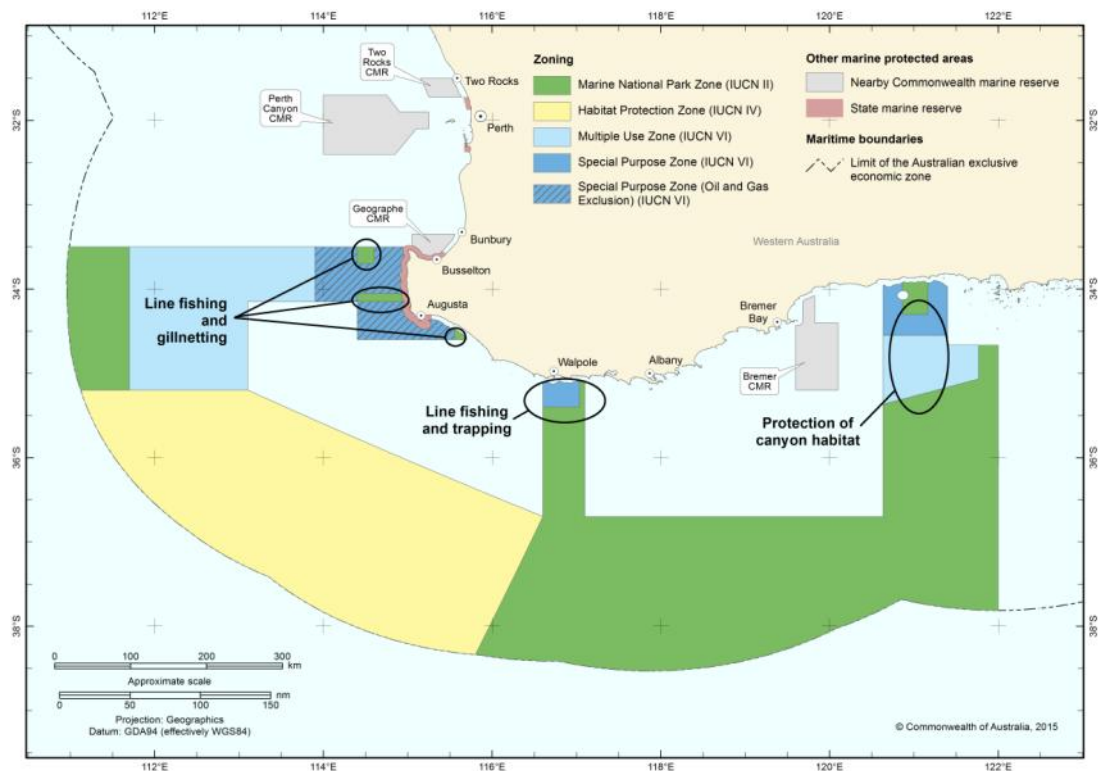


Figure 4.3.4.1 South-west Corner CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by established commercial fisheries was an area of contention.

Scalefish

The West Coast Demersal Scalefish Fishery is a small handline/dropline fishery that currently has seven licence holders in the south-west zone. It is managed under input controls that monitor hours at sea using a VMS. The fishery is deemed to be sustainable and is considered low impact, with gear being restricted to five handlines or droplines per vessel suspended vertically in the water column; these cannot be left unattended. The maximum workable depth for this fishery is the 800 m contour.

The Regional Panel noted the impact of the two existing MNPZs in the Capes coast area and considered a suggestion to move the northern MNPZ further east to avoid fishable ground to the west. This suggestion, however, created an unforeseen consequence for the gillnet fishery that operates in the inshore area.

At the invitation of the Regional Panel, the Western Australian Fishing Industry Council attempted to broker an alternative that could address the problem but was unable to find a better solution than the proclaimed arrangement. Hence the *status quo* was retained.

The Regional Panel also considered improving the conservation outcome in the Capes coast by extending the eastern end of each of the MNPZs as HPZs to the edge of the MUZ boundary. This suggestion, however, created an unintended consequence for deepwater trap fisheries operating offshore and was not pursued.

Demersal scalefish at Peaceful Bay

The Regional Panel noted that late changes in 2012 to the South-west Corner CMR that positioned an MNPZ over a section of the shelf at Peaceful Bay had a major and unintended impact on a local fishery operating out of this area, with significant consequences for a vertically integrated fishing operation.

Various alternative zoning configurations were canvassed, all of which had similar outcomes because of the location and size of the CMR in this area. As a consequence the workable solution was to zone this area as Multiple Use.

Donnelly Banks

The Regional Panel noted concerns that the MNPZ over the Donnelly Banks excluded the gillnet and scalefish sectors from this area. The area is considered to be an important nursery for reef-associated species such as dhufish, and is one of the few MNPZs that protect shelf environments. It is also a relatively small area that will act as an important reference and monitoring site in the future.

As a consequence the BAP declined to recommend changes to the zoning of this area.

Fishing prospectivity

The Regional Panel heard that there was considerable fishing prospectivity for the West Coast Tuna and Billfish Fishery in the offshore MNPZ in the South-west Corner CMR. It recognised that this area was currently not utilised by the industry for economic reasons, but acknowledged that the area could hold considerable potential in the future.

Recommendations

The recommendations for the South-west Corner CMR are to:

- Maintain the MNPZs off the Capes coast and the Donnelly Banks
- Extend the deepwater MNPZ on the western border of the CMR southwards
- Rezone the MNPZ off Peaceful Bay as SPZ down to 35°30.5'S
- Extend the MNPZ on the eastern arm of the South-west Corner CMR over Stokes Canyon to the 1 000 m contour
- Maintain the oil and gas exclusion off the Capes coast.

These changes are shown in Figure 4.3.4.2 and summarised in Table 4.3.4.1.

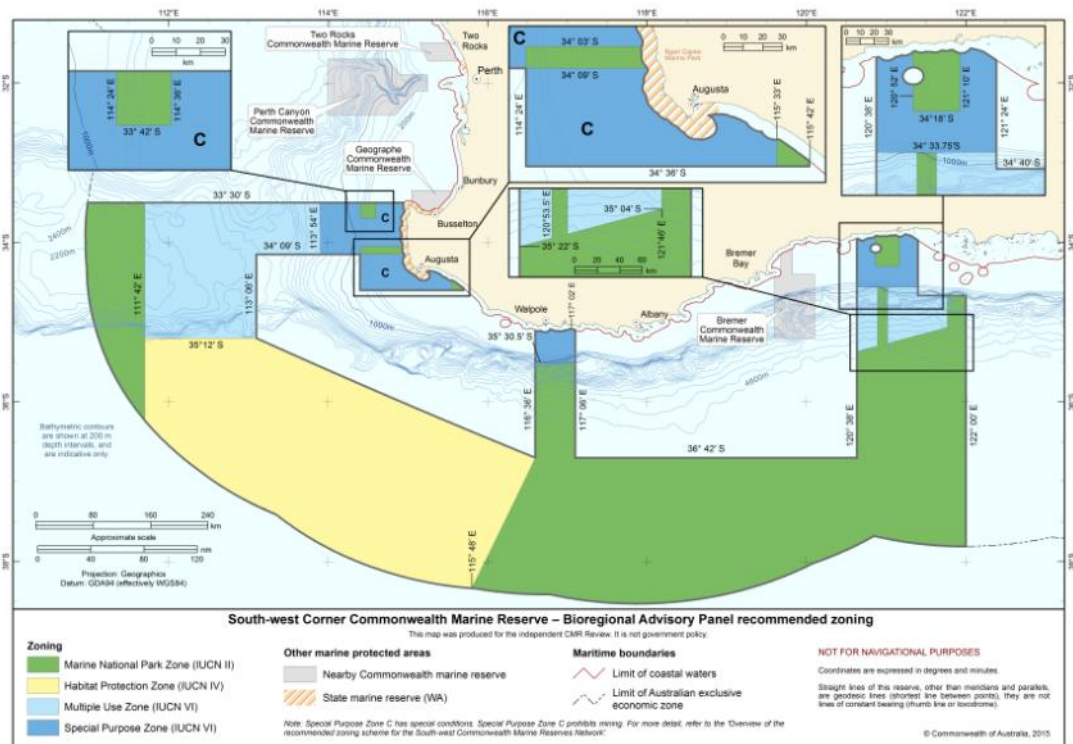


Figure 4.3.4.2 Recommended zoning for South-west Corner CMR

Table 4.3.4.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. The area under MNPZ is increased by 1%, the result of a decrease in the areas under MUZ and HPZ. Together these zones afford a high level of protection to over 80% of the reserve. There is also a slight increase in the area under SPZ.

Table 4.3.4.1 Comparison of areas of zone types between proclaimed and recommended zoning for South-west Corner CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	128 677	47.33%	132 290	48.65%	+3 613	+1.33%
HPZ (IUCN IV)	91 904	33.80%	88 448	32.53%	-3 456	-1.27%
MUZ (IUCN VI)	36 868	13.56%	35 857	13.19%	-1 011	-0.37%
SPZ (IUCN VI)	4 900	1.80%	5 753	5.63%	+853	+0.31%
SPZ (Oil and Gas Exclusion) /SPZ C*	9 550	3.51%	9 550	3.51%	Nil	Nil
Total	271 898	100%	271 898	100%		

*The proclaimed SPZ (Oil and Gas Exclusion) and recommended SPZ (C) have the same allowable activities, and are therefore reported as the same zone type.

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for the South-west Corner CMR will increase the total area of MNPZ to nearly 49% of the reserve area, providing a more extensive depth transect across the Naturaliste Plateau and greater protection to a significant canyon system on the south-west coast. The recommended zoning will reduce representation of one Biologically Informed Seascape in MNPZ in the South-west CMR Network (see Appendix H). Although the zoning changes will also reduce the representation in MNPZ of one Depth Range (by Provincial Bioregion) and one other Biologically Informed Seascape, the increase in representation of these features in the Bremer CMR will ensure they retain a high level of protection in the network. The recommended zoning will also maintain the number of conservation features represented in HPZs in the South-west CMR Network. These conservation features are listed in Appendix H.

The changes recommended are not considered to have an impact on recreational fisheries, which tend to operate closer inshore and mostly in state waters. On the other hand, some changes will result in improved access for recreational and charter fishers in waters off the Walpole area.

The number of fisheries impacted by the reserve is expected to decrease under the recommended zoning, compared to the proclaimed zoning. The increased area of SPZ in the reserve will result in greater access for the WA managed South Coast Crustacean Fishery and Trap and Net Fishery, and the Southern and West Coast Demersal Gillnet and Longline Fishery. A reduction in impacts on the Commonwealth managed fisheries operating in the reserve is not expected; however, due to the confidential nature of the fisheries catch data for this area the likely change of impact is unknown.

The recommended zoning changes in the South-west Corner CMR are expected to improve ease of compliance with the internal boundaries of the reserve for users such as commercial fishers. The westernmost MNPZ has been extended further southwards but maintains the same longitude along its eastern boundary as in the proclaimed zoning for simplicity. The removal of the narrow strip of MNPZ near Walpole and extension of the SPZ further southwards to below the 1000 m depth contour will be easier for commercial fishers to comply with. Conversely, the extension of the eastern MNPZ over the Stokes Canyon increases complexity in this area; however, the vast majority of the MNPZ occurs deeper than 1000 m and has been designed to minimise compliance difficulties for commercial fishers. The use of only one type of SPZ across the network, with specific rules implemented in the areas marked 'C' in the South-west Corner CMR, reduces the overall complexity of zoning at the network level. There is no change to the prohibition of oil and gas and mining in the SPZ off the Capes coast.

The South-west Corner CMR does not overlap with any native title determinations, applications or IPAs. The reserve is adjacent to the Esperance Nyungars native title determination and the Esperance Nyungars Government ILUA; the Harris Family, South West Boojarah #2, Southern Noongar, and Wagyl Kaip registered native title claims; and the Single Noongar Claim (Area 1) native title registered application area.

The recommended extensions to the MNPZs in this reserve will restrict mining activities above the level of restriction set out in the proclaimed zoning. The removal of the MNPZ near Peaceful Bay will allow mining activities above the level of restriction set out in the proclaimed zoning. The area covered by the recommended zoning change is rated as having medium-high and low petroleum prospectivity.

4.3.5 BREMER COMMONWEALTH MARINE RESERVE

Background

The Bremer CMR covers 4472 km² off the south coast of WA, adjacent to the state water boundary and close to the terrestrial Fitzgerald River National Park. The reserve, established in 2012, contained three zone types: Marine National Park (6%), Special Purpose (30%) and Multiple Use (63%) (Figure 4.3.5.1).

Conservation values represented in the reserve include examples of ecosystems of the Southern Province and South-west Shelf Province bioregions, including the Bremer Canyon, which supports known aggregations of sperm and killer whales. The reserve includes foraging areas for threatened white sharks, Australian sea lions, Indian yellow-nosed albatross, soft-plumaged petrel and flesh-footed shearwater, as well as calving habitat for threatened southern right whales and migration areas for protected humpback whales. Two KEFs found in the reserve are the Albany Canyons group and the ancient coastline at a depth range of 90 m to 120 m.

Several commercial fisheries overlap with the reserve, including the WA managed Southern and West Coast Demersal Gillnet and Longline Fishery, South Coast Purse Seine Fishery, and South Coast Trawl Fishery. Recreational and charter fishing occurs in the area, mostly within state waters, with some activities extending into Commonwealth waters. The area is moderately to highly prospective for petroleum and until recently there were petroleum exploration permits over part of the reserve.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Bremer CMR was raised in several submissions and in meetings with stakeholders. Issues raised included:

- Importance of the area for aggregations of calving southern right whales and other marine life
- Increase protection, specifically, MNPZs, to enhance ecotourism (whale watching) opportunities in the area
- Loss of access to MNPZs (IUCN II) by recreational anglers
- Exclude oil and gas and mineral exploration
- Loss of access for commercial fisheries, specifically scallop trawl.

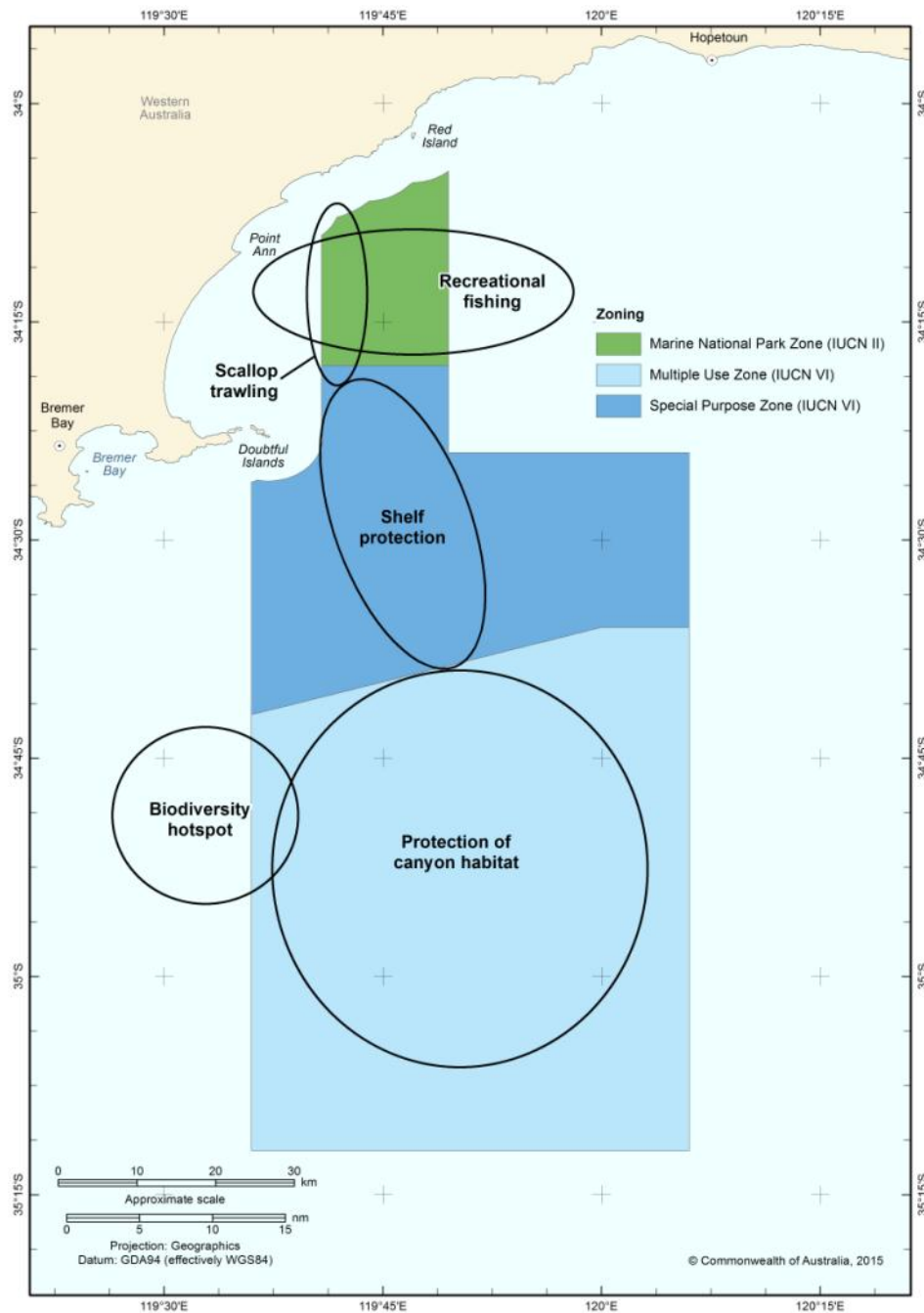


Figure 4.3.5.1 Bremer CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by established commercial fisheries and higher protection for the Bremer Canyon and the continental shelf were areas of contention.

Scallop trawl

The South Coast Trawl Fishery targets saucer scallops (*Amusium balloti*) in shallow, protected environments, often in the lee of islands and protected embayments. Typically recruitment of scallops is both temporally and spatially variable, making it an unpredictable resource. For this reason trawling in a particular area is not persistent and habitat is able to recover between periods of exploitation. In this fishery scallops are taken using an otter trawl fitted with 100 mm mesh and bycatch reduction devices, to reduce bycatch and the incidental catch of large animals respectively.

The ESP review of the FGRA for scallop trawling suggested that the benthic habitat impacts of this fishery were both localised and minor. Current ESD reporting indicated that impacts on bycatch and threatened, endangered or protected species were also low. This assessment suggested that scallop trawl fisheries operating on soft sediment in the Bremer CMR could be considered 'compatible' with respect to the conservation values of the area.

The Regional Panel noted that there was an extensive area of nearshore shelf environment protected in the Bremer CMR. While the ESP findings indicated that scallop trawling did not pose a significant overall risk to offshore environments, localised impacts were possible. For this reason the ESP recommended that a monitoring program be implemented to evaluate the effects of scallop trawl in the reserve area.

Conservation

The area has been recognised as one of significance to aggregations of marine megafauna including large sharks, cetaceans (including killer and sperm whales), dolphins and seals, as well as seabirds, although these concentrations are apparently predominantly to the west of the existing CMR boundary off the continental shelf. The ESP found that the Bremer Canyon is described as one of nine shelf-incising canyons in the South-West Bioregion and one of the largest of the 81 canyons described by Geoscience Australia in a comprehensive mapping exercise of the Albany region. Simulation modelling suggests that this canyon has a 'high source capacity' (typically topographically complex) and has a high potential to contribute to the resilience of the protected area network by exporting larvae to other connected locations.

Recommendations

The recommendations for the Bremer CMR are to:

- Establish a new SPZ replacing the western side of the existing MNPZ to include provision for scallop trawling on the inshore waters of the shelf
- Extend the MNPZ south as a transect across the shelf leaving an area of SPZ east and west of this down to a boundary mostly below the 1000 m contour
- Rezone the existing MUZ south of the SPZ as MNPZ
- Exclude oil and gas and mining from the SPZs
- While changing the outer boundaries of the CMR network was outside the scope of this review, there is considerable merit in investigating a westwards extension of the MNPZ south of the continental shelf to include the area that has been identified as being significant for the aggregation of megafauna (see further discussion in Chapter 8 and BAP Recommendation 8.8).

These changes are shown in Figure 4.3.5.2 and summarised in Table 4.3.5.1.

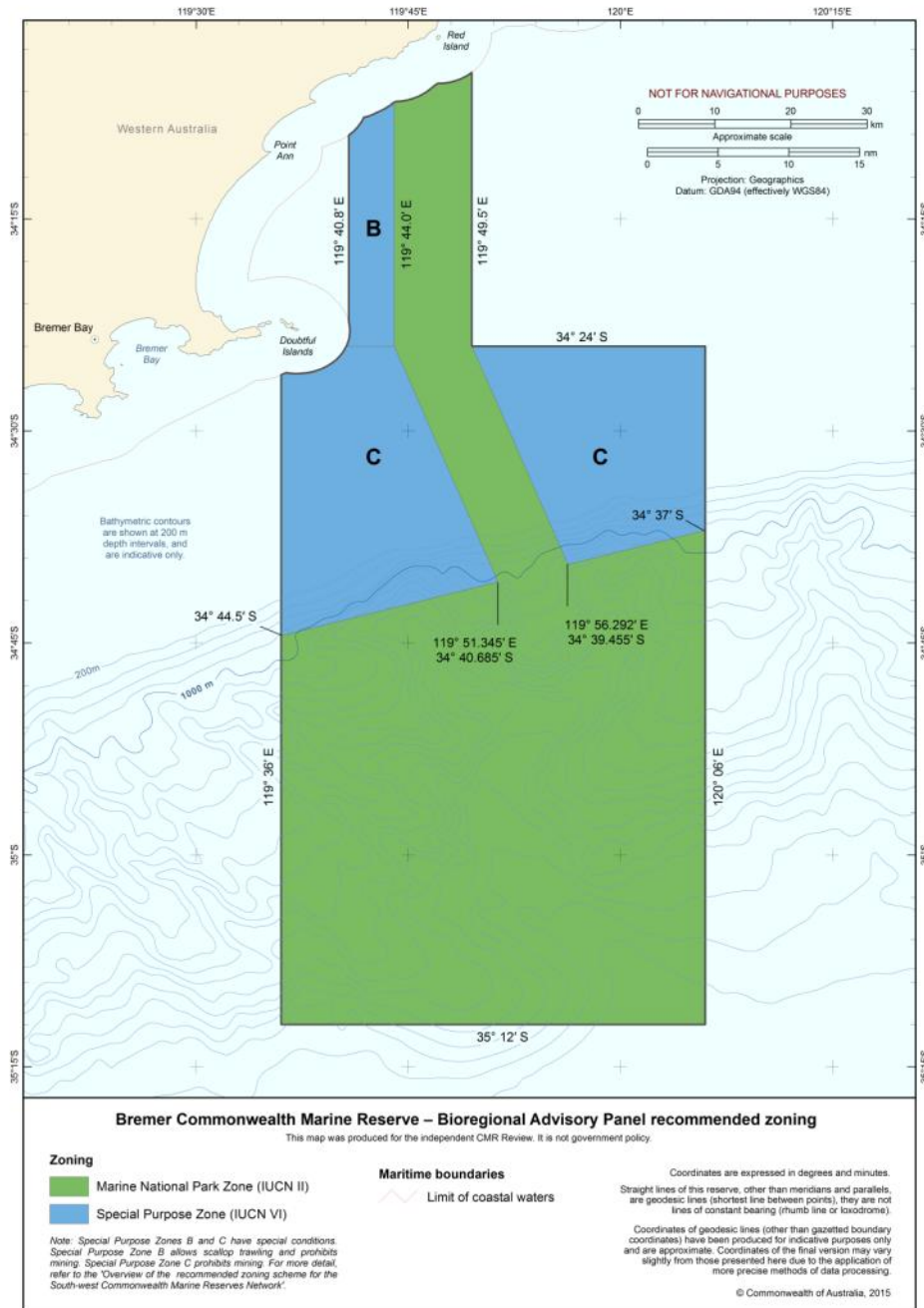


Figure 4.3.5.2 Recommended zoning for Bremer CMR

Table 4.3.5.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is a very significant increase in the area of MNPZ to cover 71% of the reserve and a corresponding decrease in the area under MUZ. Although a new SPZ to provide for scallop trawl is introduced, the overall area under SPZ decreases slightly. The SPZ areas will exclude oil and gas and mining.

Table 4.3.5.1 Comparison of areas of zone types between proclaimed and recommended zoning for Bremer CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	284	6.35%	3 172	70.93%	+2 888	+64.58%
MUZ (IUCN VI)	2 838	63.46%	Nil	Nil	-2 838	-63.46%
SPZ (IUCN VI)	1 351	30.21%	Nil	Nil	-1 351	-30.21%
SPZ B (IUCN VI)	Nil	Nil	147	+3.29%	+147	+3.29%
SPZ C (IUCN VI)	Nil	Nil	1 153	25.78%	+1 153	+25.78
Total	4 472	100%	4 472	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for Bremer CMR will significantly increase the area of the MNPZ. While this does not extend over the aggregating site to the west of the CMR, most of the Bremer Canyon, including the shelf break of the canyon head, will be highly protected under MNPZ.

The recommended zoning for Bremer CMR will not change the number or type of primary conservation features represented in MNPZ in the South-west CMR Network, but will increase the total area of most of these conservation features under protection in MNPZs.

The location of the MNPZ was determined in consultation with the local fishing community and avoids areas that are regularly used by the sector. In addition, recreational and charter fishers will have greater access to the area under the inshore SPZ.

The expansion of MNPZ in Bremer CMR will increase the impact on some commercial fishing catches. Fisheries affected include the Western Australian managed Line Fishery, Southern and West Coast Demersal Gillnet and Longline Fishery and Crab Trap Fishery and the South Coast Crustacean Fishery. This displacement is balanced by improved access in other parts of the network including the Twilight, Eastern Recherche and South-west Corner CMRs.

The reconfiguration of the MNPZ and SPZ in the north-western part of the reserve will decrease impacts on the South Coast Trawl Fishery by improving access for scallop trawling, and also reduce displacement of the Western Australian South Coast Purse Seine Fishery.

The zoning changes to the Bremer CMR reduce the total number of zone types in the reserve from three to two, decreasing the complexity for users. The introduction of the transect of MNPZ across the continental shelf may increase the difficulty of compliance for some users of the reserve; however, this has also been minimised by positioning the greater part of the MNPZ below 1 000 m. The use of only one type of SPZ across the

network, with specific rules implemented in areas marked 'B' and 'C' in the Bremer CMR, reduces the overall complexity of zoning at the network level.

The Bremer CMR does not overlap with any native title determinations, applications or IPAs. The reserve is adjacent to the Southern Noongar and Wagyl Kaip registered native title claims, which do not extend into Commonwealth waters.

The recommended reconfiguration and expansion of MNPZ and exclusion of oil and gas from the whole reserve will restrict mining activities substantially above the level of restriction set out in the proclaimed zoning. The area covered by these recommended zones is rated as having medium-high petroleum prospectivity.

4.3.6 EASTERN RECHERCHE COMMONWEALTH MARINE RESERVE

Background

The Eastern Recherche CMR covers an area of approximately 20 574 km², from Cape Pasley in the eastern part of the Recherche Archipelago into deep water off the continental shelf to the limit of Australia's EEZ. The reserve, established in 2012, includes two zone types: Marine National Park (78%), and Special Purpose (approximately 22%) (Figure 4.3.6.1).

Conservation values represented in the reserve include examples of the Southwest Shelf Province, Southern Province, and Great Australian Bight Shelf Transition bioregions, which include seagrass meadows and rocky reef habitats. The reserve includes foraging areas for the threatened white sharks and Australian sea lions and several migratory seabirds including flesh-footed shearwater. The reserve also includes calving habitat for the threatened southern right whales and seasonally predictable meso-scale eddies, which are associated with increased productivity and feeding aggregations. There is one KEF in the reserve: the Commonwealth waters surrounding the Recherche Archipelago, an area of extensive rocky reef environments that is recognised globally for its biodiversity. The reserve includes one of the few areas where this reef environment extends into Commonwealth waters. The islands of the archipelago support breeding colonies of seabirds, Australian sea lions and New Zealand fur seals.

The WA managed South Coast Crustacean and South Coast Trawl fisheries operate in the area along with the Southern and West Coast Demersal Gillnet and Longline Fishery. The Western Australian Abalone Fishery operates in the coastal waters adjacent to the reserve. Recreational fishing and tourism also occur in the area but are mainly confined to state waters.

The reserve is in an area that is not prospective for oil and gas.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Eastern Recherche CMR was canvassed in a number of submissions and in meetings with stakeholders. Issues raised included:

- Protection for cetaceans
- Loss of access for commercial fisheries, including commercial trolling and gillnetting
- Economic development including fishing prospectivity.

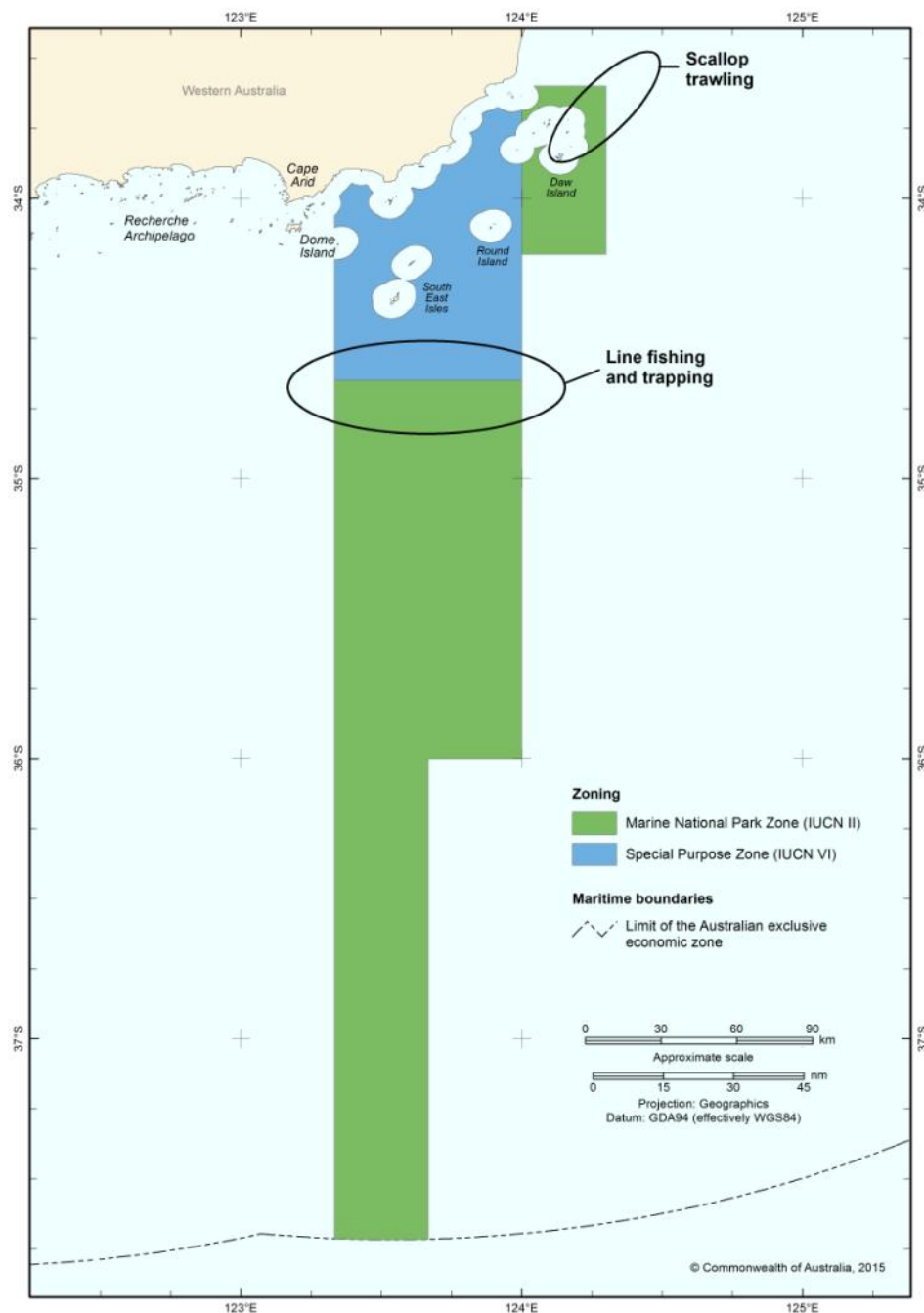


Figure 4.3.6.1 Eastern Recherche CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined the loss of access by established commercial fisheries to be an area of contention.

Commercial fishing

The area to the north-east of the existing inshore MNPZ encompasses the periphery of an area trawled for scallops. While it was suggested that an SPZ (Trawl) be created to accommodate this fishery, the Regional Panel was of the view that this area was not critical to the fishery and the conservation value of the MNPZ outweighed a minor loss of access to this area.

The Regional Panel noted the importance of the shelf break for the deepwater trap fishery in the area.

Conservation

The Recherche Archipelago is an area of biological significance that is lightly fished and therefore provides an area where increased shelf protection could be achieved without impacting on recreational or commercial fisheries.

The BAP noted this but considered that the area was already well served in terms of MNPZ protection and there was no merit in further restricting fisheries in the area.

Recommendation

The recommendation for the Eastern Recherche CMR is to extend the SPZ further south to the 1 000 m contour line.

The change is shown in Figure 4.3.6.2 and summarised in Table 4.3.6.1.

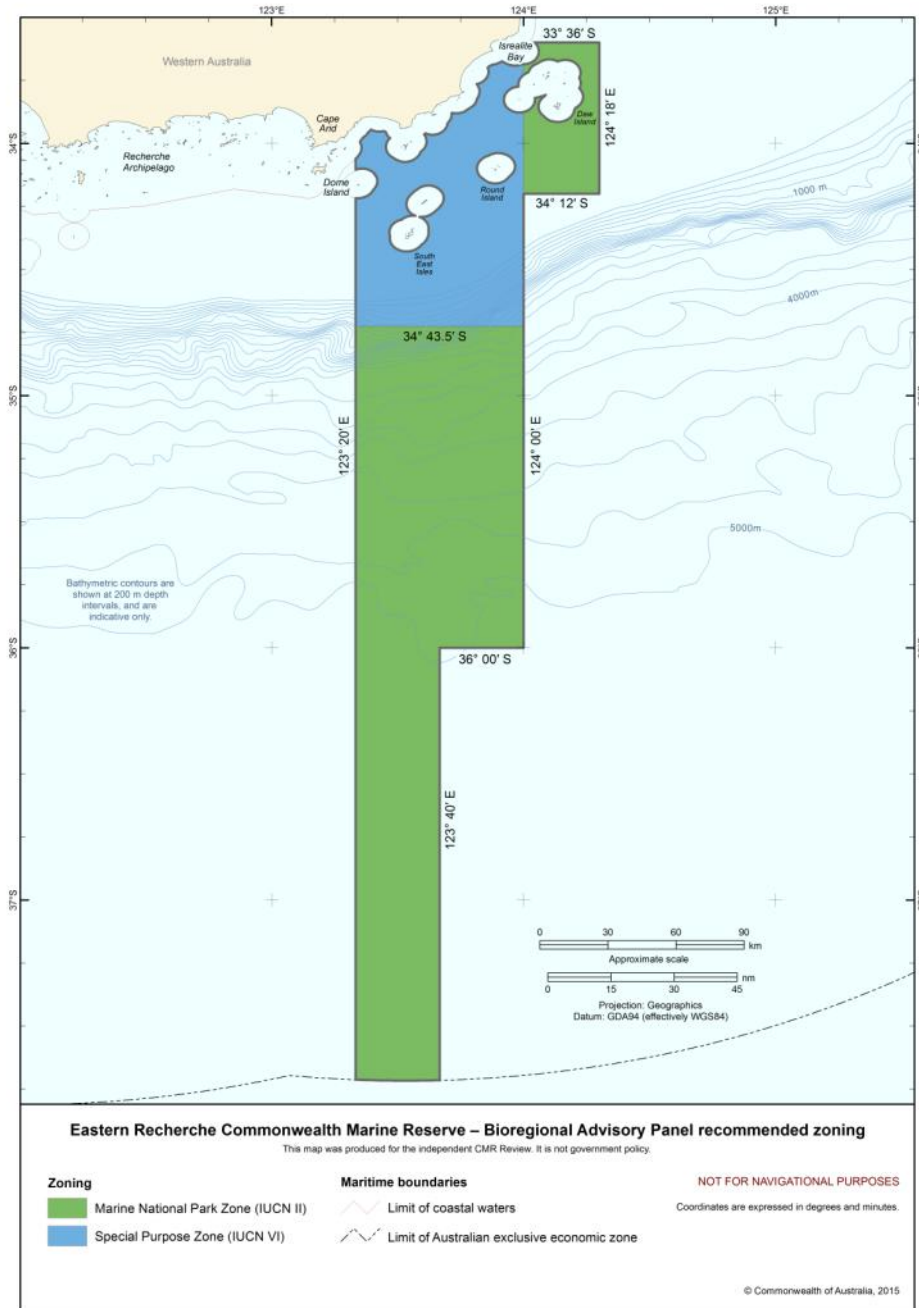


Figure 4.3.6.2 Recommended zoning for Eastern Recherche CMR

Table 4.3.6.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. The area under SPZ is increased and there is a corresponding decrease in MNPZ, which makes up 76% of the reserve.

Table 4.3.6.1 Comparison of areas of zone types between proclaimed and recommended zoning for Eastern Recherche CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	16 072	78.12%	15 564	75.65%	-508	-2.47%
SPZ (IUCN VI)	4 502	21.88%	5 010	24.35%	+508	+2.47%
Total	20 574	100%	20 574	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended small expansion of SPZ and corresponding reduction of MNPZ in the Eastern Recherche CMR will not change the number or type of conservation features represented in MNPZ in the South-west CMR Network.

Six WA managed fisheries operating in the reserve are estimated to be displaced by the recommended zoning to some extent. However, the changes reduce the impact on the Western Australian South Coast Trawl Fishery and Southern and West Coast Demersal Gillnet and Longline Fishery. The recommended change to the Eastern Recherche CMR to extend the SPZ southwards to below the 1 000 m depth contour is expected to improve the practicality of the zoning for commercial fishers who conduct their operations along depth gradients.

The changes may provide additional access for recreational and charter fishing, the majority of which occurs in shallow waters.

The Eastern Recherche CMR does not overlap with any native title determinations or applications or IPAs. The reserve is adjacent to the Esperance Nyungars and Ngagju native title determinations and the Esperance Nyungars Government ILUA.

The extension of the SPZ in this reserve may allow a small increase in mining activities above the level of restriction set out in the proclaimed zoning. The area covered by the recommended zoning change is rated as having low petroleum prospectivity.

4.3.7 TWILIGHT COMMONWEALTH MARINE RESERVE

Background

The Twilight CMR covers approximately 4641 km² adjacent to the state water boundary offshore of Twilight Cove on the south coast of WA. The entire reserve, established in 2012, is zoned as Marine National Park (Figure 4.3.7.1).

Conservation values represented in the reserve include examples of south coast continental shelf environments, ecosystems of the Great Australian Bight Shelf Transition bioregion, foraging areas for threatened white sharks and migratory flesh-footed shearwater, seasonal calving habitat for threatened southern right whales, and habitats surrounding haul-out sites for threatened Australian sea lions.

The area is important to traditional owners and a native title claim overlaps with parts of the marine reserve.

The WA managed South Coast Crustacean and South Coast Trawl fisheries operate in the area along with the Southern and West Coast Demersal Gillnet and Longline Fishery. The Western Australian Abalone Fishery operates in the coastal waters adjacent to the reserve. Recreational fishing and tourism also occur in the area but are mainly confined to state waters.

The area is not considered prospective for oil and gas, although prospectivity is moderate to high just to the south of the reserve, where an exploration permit has recently been granted.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Twilight CMR was raised in meetings with stakeholders. Issues raised included:

- Important foraging area for Australian sea lions and Australian fur seals
- Loss of access for commercial fisheries, including commercial gillnetting and rock lobster trapping.

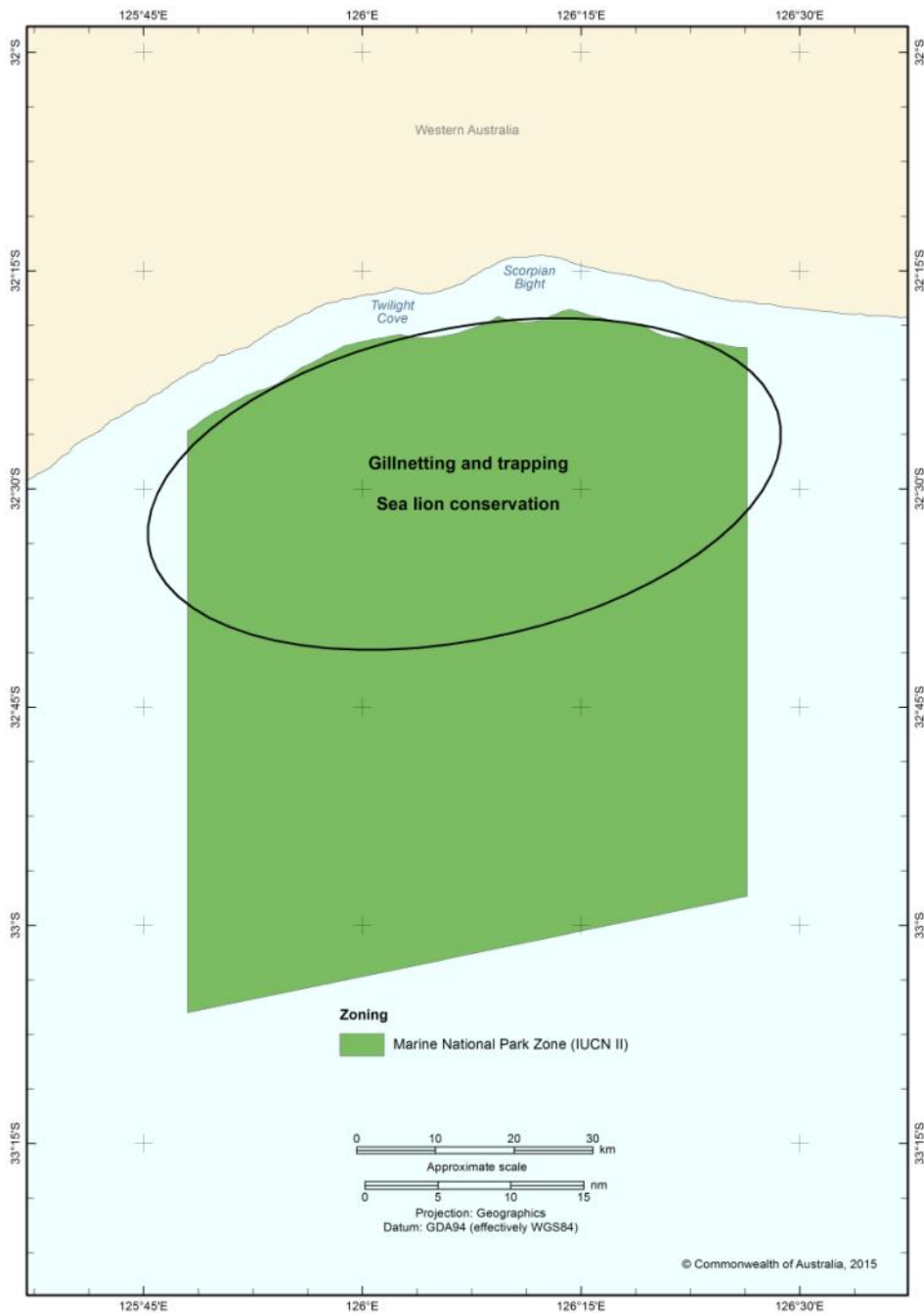


Figure 4.3.7.1 Twilight CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

Commercial fishing

The Regional Panel noted that the Twilight CMR had been a late inclusion in the process leading to the 2012 proclamation and had not involved the same level of consultation with affected stakeholders, particularly the commercial fishing sector.

The area is important to the gillnet fishery, particularly between state waters and the 50 m depth contour.

As proclaimed the area presented an operational barrier to fishers working along depth contours as they needed to traverse a significant distance between the western and eastern boundaries. This had the effect of limiting the operations of fishers working from

either the east or the west, as it was uneconomical to traverse this distance before resuming fishing.

Conservation

The coastal areas are important haul-outs and feeding grounds for Australian sea lions.

Recommendations

The recommendations for the Twilight CMR are to:

- Create two new SPZs to allow gillnetting and lobster fishing and exclude oil and gas and mining between the limit of state waters and an east–west boundary that falls within the 50 m contour
- Retain a significant MNPZ transect south from the inner shelf between Scorpion Bight and Twilight Cove.

These changes are shown in Figure 4.3.7.2 and summarised in Table 4.3.7.1.

Note: At the time of writing the BAP was made aware of changes to state regulations which prohibit gillnetting within a 20 km radius of sea lion colonies. This restriction will provide added protection within the reserve, increasing the area within the Twilight CMR where gillnetting is disallowed. However, the BAP did not think it necessary to amend the MNPZ in the reserve as this would have an impact on the lobster fishery which is allowed in the SPZ.

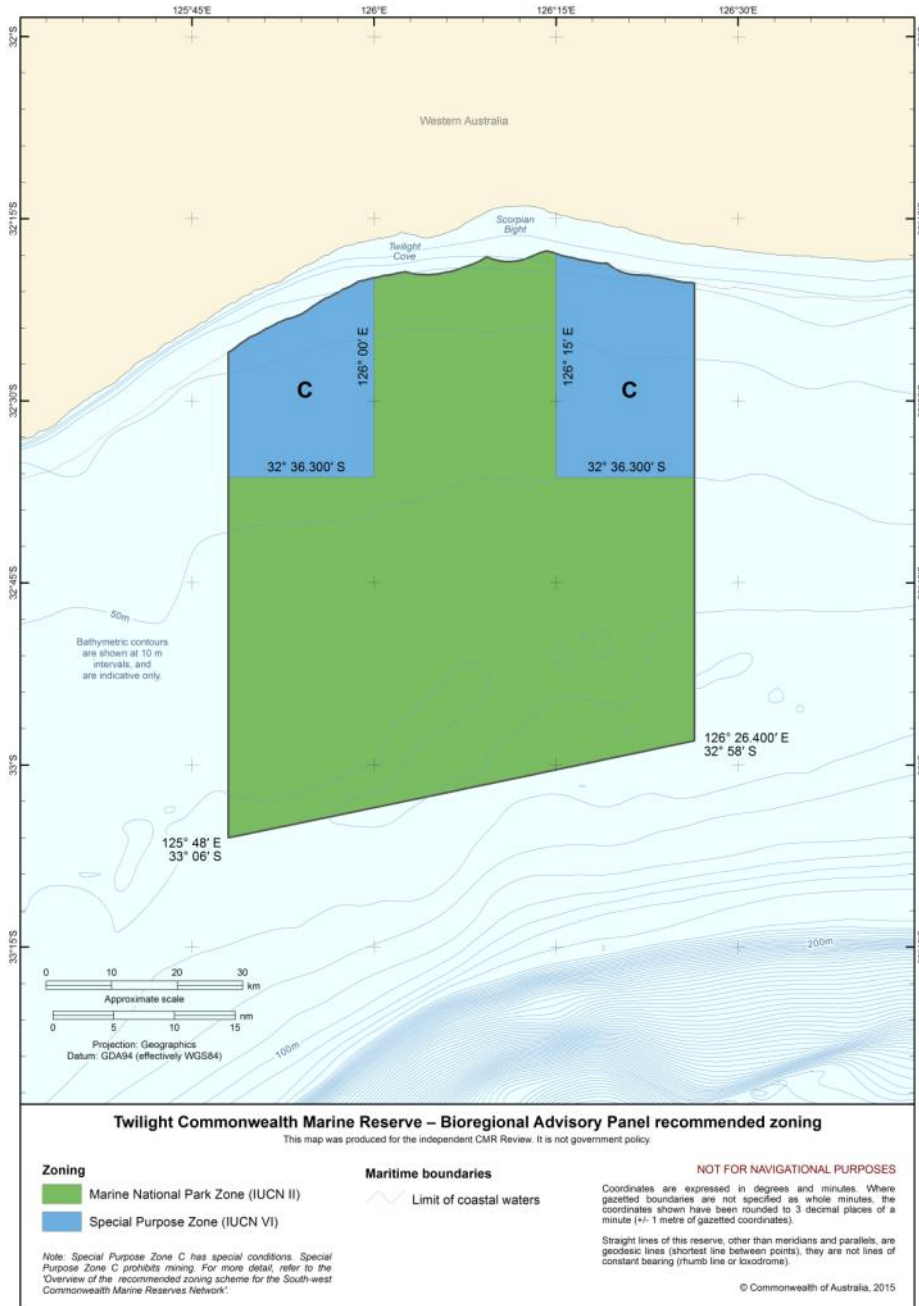


Figure 4.3.7.2 Recommended zoning for Twilight CMR

Table 4.3.7.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. An area under SPZ is created and there is a corresponding decrease in MNPZ, which makes up 78% of the reserve.

Table 4.3.7.1 Comparison of areas of zone types between proclaimed and recommended zoning for Twilight CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	4 641	100%	3 605	77.68%	-1 036	-22.32%
SPZ C (IUCN VI)	Nil	Nil	1 036	22.32%	+1 036	+22.32%
Total	4 641	100%	4 641	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended significant reduction of MNPZ and corresponding increase in SPZ in the Twilight CMR will not change the number or type of conservation features represented in MNPZ or HPZ in the South-west CMR Network.

The recommended reduction in MNPZ will increase access for recreational and charter fishers and reduce the impact on commercial fishing.

Four WA managed fisheries operating in the marine reserve are estimated to be displaced by the recommended zoning to a certain extent. However, the introduction of the two new SPZs will decrease the amount of displacement to three fisheries, with substantial reductions estimated for the Western Australian South Coast Crustacean Fishery and Southern and West Coast Demersal Gillnet and Longline Fishery.

The recommended zoning configuration of the Twilight CMR introduces an extra zone type and is more complex than that of the proclaimed zoning, which may increase complexity for users. The use of only one type of SPZ across the network, with specific rules implemented in areas marked 'C' in the Twilight CMR, reduces the overall complexity of zoning at the network level.

The Twilight CMR overlaps with the Western Australian Mirning People registered native title claim.

The introduction of the SPZs in Twilight CMR that will not allow mining activities maintains the level of restriction set out in the proclaimed zoning.

4.3.8 GREAT AUSTRALIAN BIGHT COMMONWEALTH MARINE RESERVE

Background

The Great Australian Bight CMR covers a total area of 45 926 km² and encompasses the continental shelf offshore from Eucla east to Nuyts Reef, extending into deep water off the shelf to the limit of Australia's EEZ. The reserve is adjacent to SA's Far West Coast and Nuyts Archipelago marine parks. The reserve, established in 2012, incorporates the former Great Australian Bight Marine Park (Commonwealth waters). The reserve includes three zone types: Marine National (17%), Special Purpose (34%), and Multiple Use (49%) (Figure 4.3.8.1).

Conservation values represented in the reserve include examples of ecosystems of the Great Australian Bight Shelf Transition and Southern Province bioregions, which include some of the world's most diverse soft sediment benthic invertebrate communities, as well as pelagic habitats supporting small pelagic fish species. The reserve also includes foraging areas for white sharks and Australian sea lions, as well as sperm whales and migratory short-tailed shearwater, and seasonal calving habitat for southern right whales. There is one KEF in the reserve: the ancient coastline at a depth range of 90 m to 120 m.

The Commonwealth Southern Bluefin Tuna Fishery is the most significant fishery operating within or near the reserve. Other key fisheries include the Commonwealth Gillnet, Hook and Trap Sector and the Great Australian Bight Trawl Sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF); the Commonwealth Skipjack Tuna and Western Tuna and Billfish fisheries; and the South Australian Marine Scalefish and Rock Lobster fisheries. The high-value South Australian Abalone Fishery also operates in this area, although it is mostly confined to state waters. Recreational and charter fishing also occur in this area but are mostly confined to state waters.

Petroleum prospectivity is high in the Ceduna sub-basin, which extends out from the shelf break down the continental slope within the boundaries of the reserve. The reserve overlaps with six existing petroleum exploration titles that were awarded in January 2011 and overlap sections of the MUZ.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Great Australian Bight CMR was canvassed in detail in several submissions and in meetings with stakeholders. Issues raised included:

- Potential oil and gas industry developments—specifically, excluding oil and gas from reserve
- Importance of the area to whale populations, including sperm and blue whales.

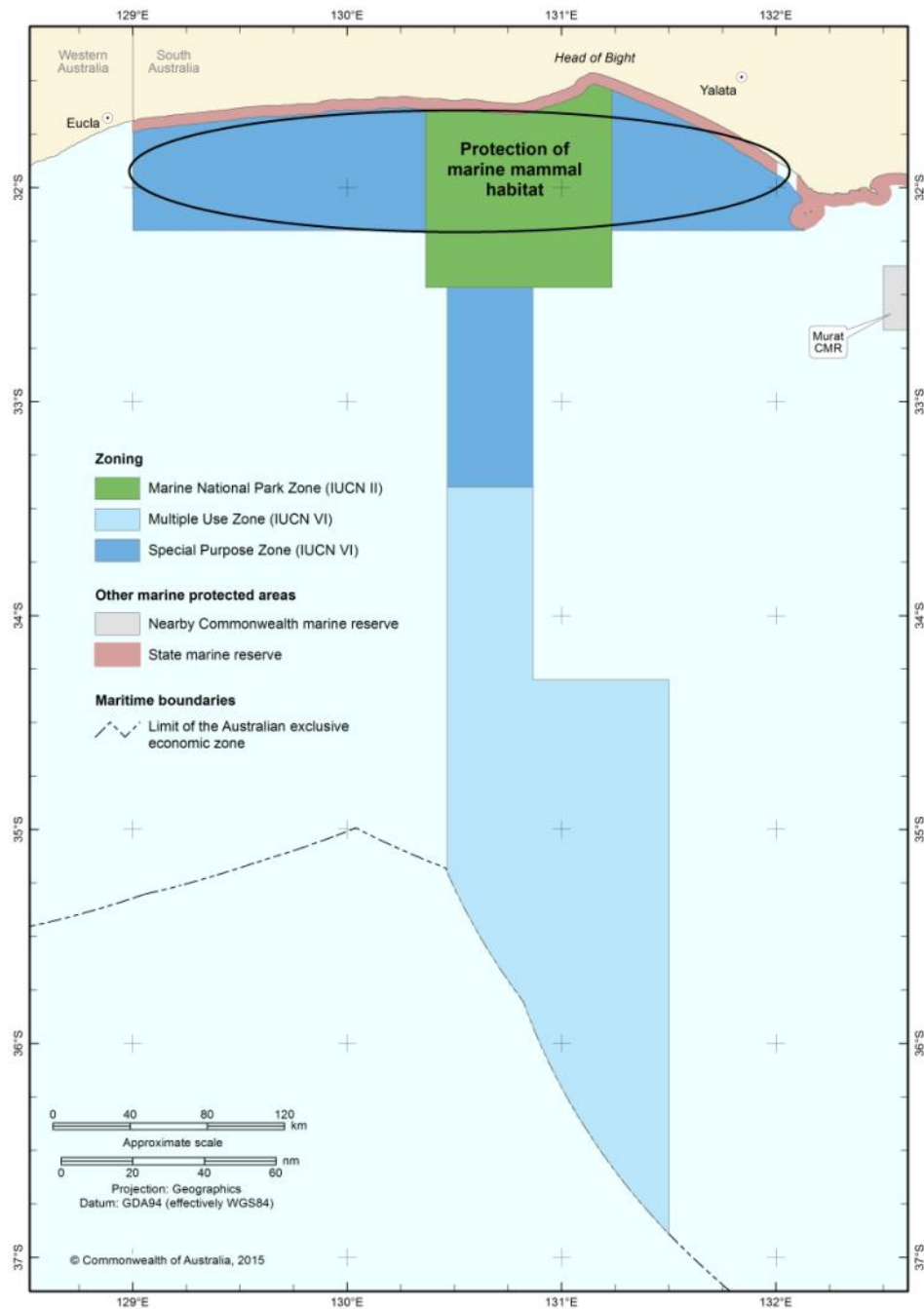


Figure 4.3.8.1 Great Australian Bight CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that a higher level of protection for important marine mammal habitat was an area of contention. The Regional Panel noted the significant number of submissions that had expressed a concern that oil and gas posed a risk to the conservation values at the head of the Bight and more generally.

Recommendation

The recommendation for the Great Australian Bight CMR is to exclude oil and gas and mining from the SPZs to the east and west of the MNPZ.

The change is shown in Figure 4.3.8.2 and summarised in Table 4.3.8.1.

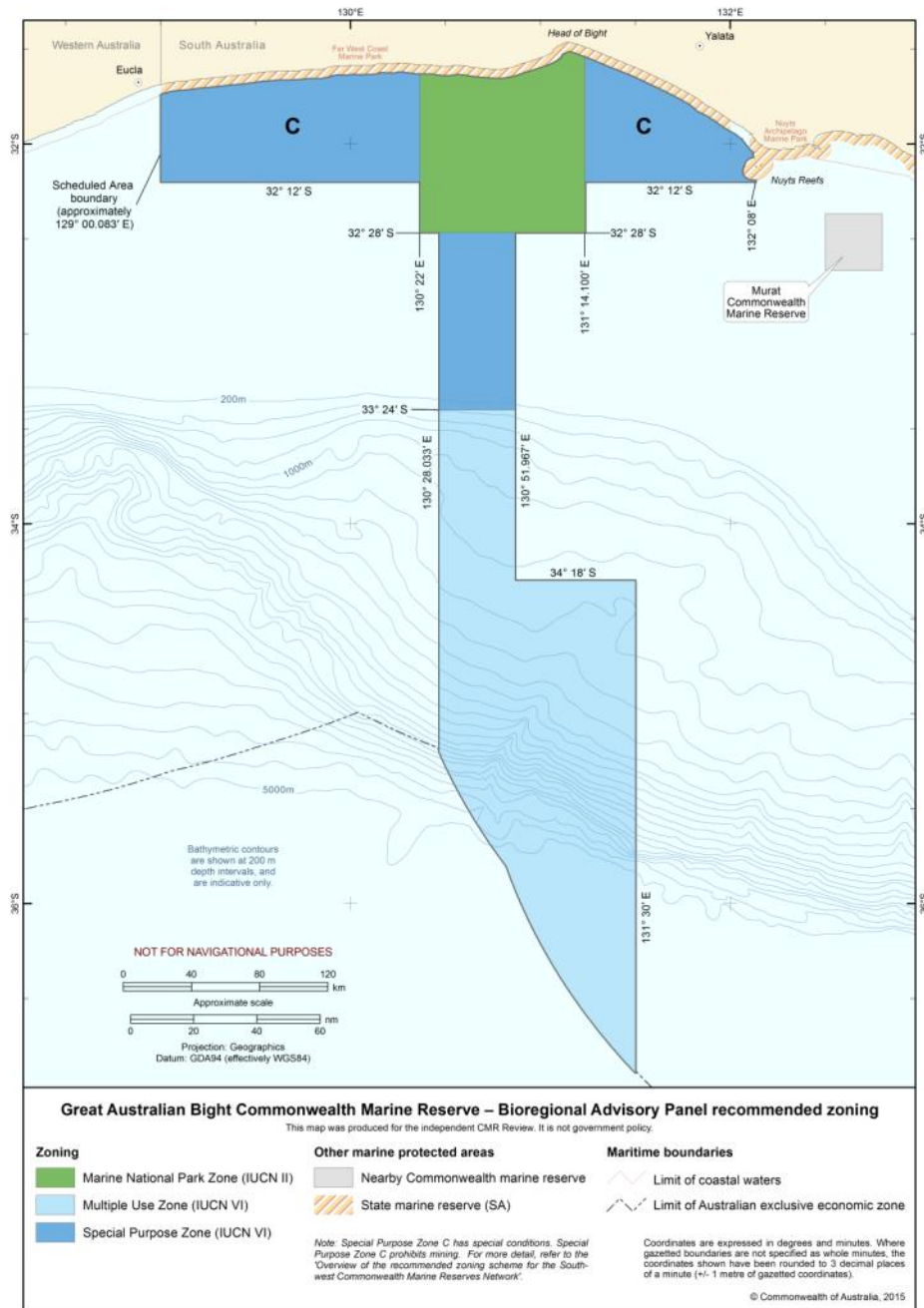


Figure 4.3.8.2 Recommended zoning for Great Australian Bight CMR

Table 4.3.8.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is no change to the MNPZ or MUZ but the SPZ now contains two areas where there is a exclusion of the oil and gas sector.

Table 4.3.8.1 Comparison of areas of zone types between proclaimed and recommended zoning for Great Australian Bight CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	7 728	16.83%	7 728	16.83%	Nil	Nil
MUZ (IUCN VI)	22 682	49.39%	22 682	49.39%	Nil	Nil
SPZ (IUCN VI)	15 516	33.78%	3 861	8.41%	-11 655	-25.38%
SPZ C (IUCN VI)	Nil	Nil	11 654	25.38%	+11 654	+25.38%
Total	45 926	100%	45 926	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning change for the Great Australian Bight CMR will not change the number or type of conservation features represented in MNPZ or HPZ in the South-west CMR Network. The recommended restriction on mining activities in the SPZ areas marked 'C' will preclude exploration and development from the nearshore coastal-shelf provinces.

The zoning will not change the level of access for recreational or charter fishers and will result in the same level of impact on commercial fishing as that arising from the proclaimed zoning boundaries. Two SA managed fisheries and three Commonwealth fisheries will remain displaced by the recommended zoning of the reserve to some degree and there are no recommended changes to the zoning of the Great Australian Bight CMR that will reduce the impacts on these fisheries.

The recommended zoning for the Great Australian Bight CMR introduces restrictions to mining in the two SPZ 'C' areas. The use of only one type of SPZ across the network, with specific rules implemented in areas marked 'C' in the Great Australian Bight CMR, reduces the overall complexity of zoning at the network level.

The Great Australian Bight CMR does not overlap with any native title determinations, applications or IPAs. The CMR is adjacent to the Western Australian Mirning People registered native title claim, the Far West Coast registered native title claim, the Far West Coast Native Title Settlement and Far West Coast Parks ILUAs, and the Yalata IPA.

The change to two SPZs in this reserve that do not permit mining will restrict mining activities above the level of restriction set out in the proclaimed zoning (from 17% to 42% of the CMR). The area covered by these recommended zones does not have a petroleum prospectivity rating.

4.3.9 WESTERN EYRE COMMONWEALTH MARINE RESERVE

Background

The Western Eyre CMR covers approximately 57 946 km² and encompasses the continental shelf from offshore of the Nuyts Archipelago south-east to the Investigator group of islands, extending into the deep abyssal zone of the eastern Great Australian Bight to the limit of Australia's EEZ. The reserve is adjacent to SA's Investigator, West Coast Bays and Nuyts Archipelago marine parks. The reserve, established in 2012, includes three zone types: Marine National Park (30%), Special Purpose (42%), and Multiple Use (28%) (Figure 4.3.9.1).

Conservation values represented in the reserve include examples of ecosystems of the Spencer Gulf Shelf Province, the Great Australian Bight Shelf Transition, and the Southern Province bioregions, including the highly diverse benthic invertebrate communities of the Great Australian Bight, meso-scale eddies associated with enhanced productivity and feeding aggregations, and pelagic habitats supporting small pelagic fish species. The reserve includes foraging areas for major breeding colonies of threatened Australian sea lions as well as white sharks, blue whales, sperm whales and migratory short-tailed shearwater and Caspian tern. It also includes seasonal calving habitat for threatened southern right whales. There are two KEFs in the reserve: the ancient coastline at a depth range of 90 m to 120 m; and the Kangaroo Island Pool, canyons and adjacent shelf break, and Eyre Peninsula upwellings. The Kangaroo Island canyons are known for their seasonal upwellings of deep ocean waters that support aggregations of krill, small pelagic fish and squid, which in turn attract marine mammals, sharks, large predatory fish, and seabirds.

The South Australian Rock Lobster and Sardine fisheries and the Commonwealth Gillnet, Hook and Trap Sector of the SESSF are the most significant fisheries operating within or near the reserve. Other key fisheries in the area include the South Australian Marine Scalefish Fishery, the Commonwealth Great Australian Bight Trawl Sector of the SESSF, and the Commonwealth Small Pelagic and Skipjack Tuna fisheries. The high-value South Australian Abalone Fishery also operates in this area, but is mostly confined to state waters. Key abalone fishing grounds that extend into Commonwealth waters, including reefs to the north of the Investigator group of islands, are outside the reserve boundaries.

Petroleum prospectivity within the boundaries of the reserve is moderate to high from the shelf break to the lower parts of the continental slope. The reserve overlaps partially with two offshore petroleum acreage releases.

Issues raised

In addition to the South-west CMR Network issues raised above in Section 4.3, the Western Eyre CMR was canvassed in detail in several submissions, as well as in meetings with stakeholders. Issues raised included:

- Potential for oil and gas industry developments—specifically, excluding oil and gas from reserves
- Complementarity of state and Commonwealth protection—specifically, the Pearson Island group
- Loss of access for commercial fisheries, including commercial purse seining (sardines and tuna) and trapping (rock lobster).

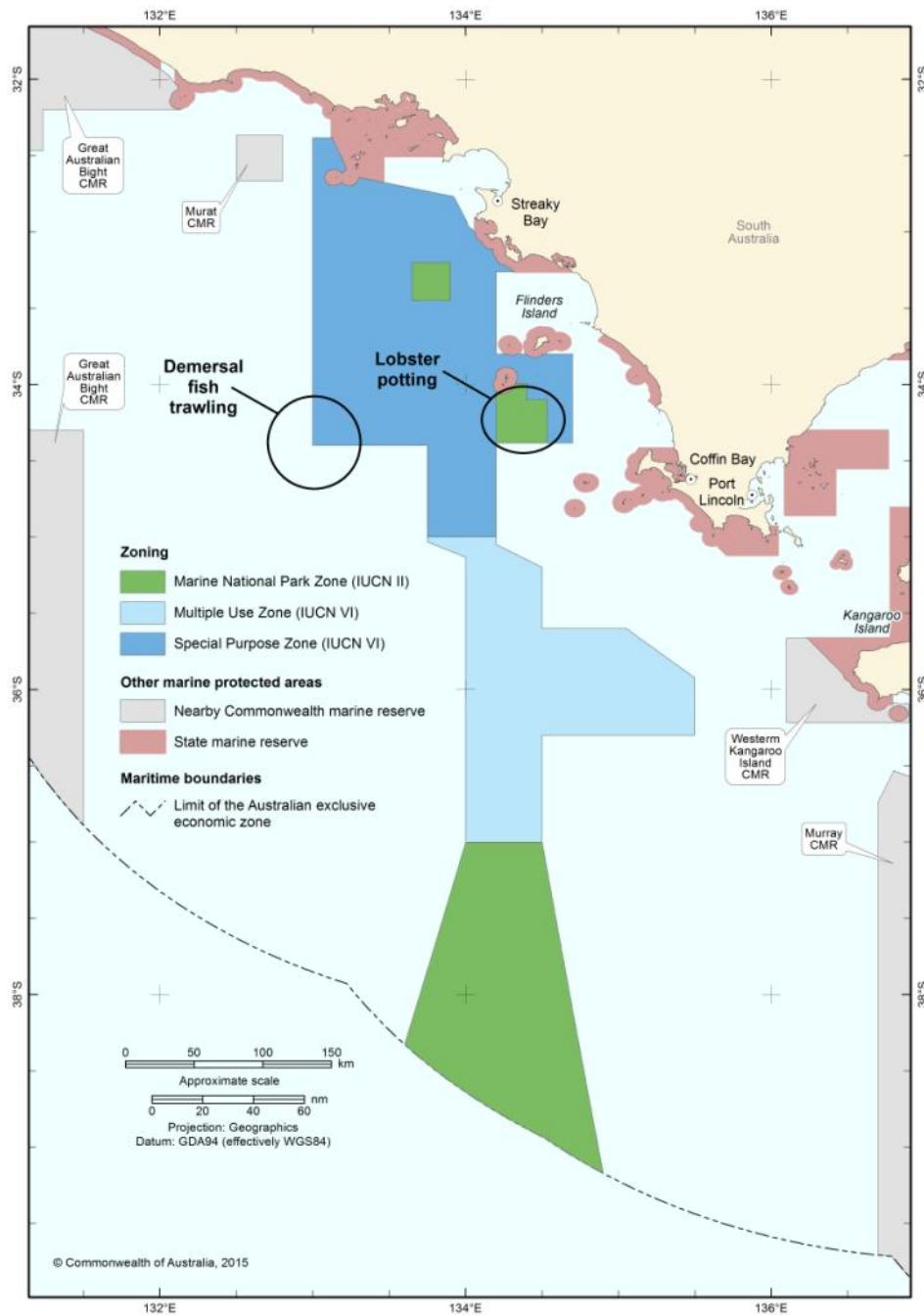


Figure 4.3.9.1 Western Eyre CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by established commercial fisheries was an area of contention.

Sardine fishery

The Regional Panel noted the concerns relating to the accidental drift of a sardine vessel into an MNPZ during the pumping of a catch. It was of the opinion that this was a management issue and not one of zoning.

Southern Bluefin Tuna Fishery

The Regional Panel noted that there was considerable variability in the distribution of southern bluefin tuna and that there would be occasions when these fish may be found in reserves. Concerns were also noted about the possible impact of oil and gas exploration

and drilling on tuna behaviour but the BAP did not believe that this could be addressed through zoning.

Great Australian Bight Trawl Fishery

The Regional Panel noted that a small corner of the CMR that was currently subject to trawling along a depth contour would create operational difficulties for the sector if trawling was excluded.

South Australian Rock Lobster Fishery

The Regional Panel noted concerns that the MNPZ south of Pearson Island had an impact on the southern rock lobster fishery in the area, but acknowledged the long history of negotiation that had led to the configuration of zones in the proclaimed reserve. Several alternatives to the existing MNPZ were tested but none proved to be an improvement on the existing arrangements.

Recommendation

The recommendation for the Western Eyre CMR is to create a small new SPZ 'A' where demersal trawling is permitted in the south-west corner of the existing SPZ.

This change is shown in Figure 4.3.9.2 and summarised in Table 4.3.9.1.

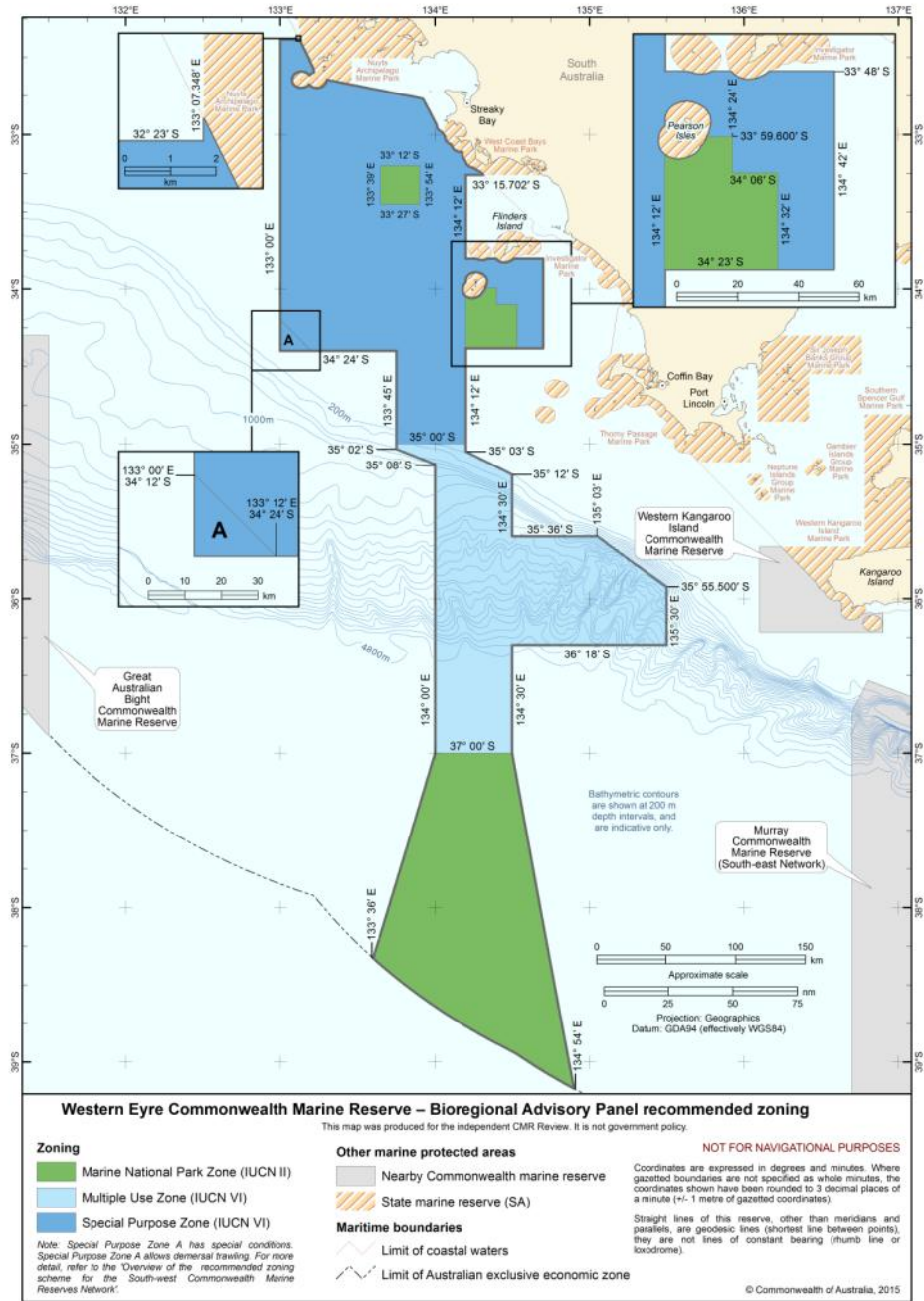


Figure 4.3.9.2 Recommended zoning for Western Eyre CMR

Table 4.3.9.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. The amendment to the zoning was so slight as to have no material impact on the zones.

Table 4.3.9.1 Comparison of areas of zone types between proclaimed and recommended zoning for Western Eyre CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNP (IUCN II)	17 439	30.10%	17 439	30.10%	Nil	Nil
MUZ (IUCN VI)	16 107	27.80%	16 107	27.80%	Nil	Nil
SPZ (IUCN VI)	24 400	42.11%	24 196	41.76%	-204	-0.35%
SPZ A (IUCN VI)	Nil	Nil	204	0.35%	+204	+0.35%
Total	57 946	100%	57 946	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning change for Western Eyre CMR will not change the number or type of conservation features represented in MNPZ or HPZ in the South-west CMR Network.

This will not change the level of access for recreational or charter fishers and will result in the same amount of impact on commercial catch from the reserve as would have been the case with the proclaimed zoning boundaries. Two SA managed fisheries and three Commonwealth fisheries will remain displaced by the recommended zoning of the reserve to some degree. However, allowing access for trawling in a small portion of the SPZ slightly reduces the potential displacement of the Commonwealth Great Australian Bight Trawl Sector of the SESSF. The reduction of impacts on this sector will be mainly due to improved operational efficiency.

The recommended zoning for Western Eyre CMR introduces a small area of SPZ 'A' specifically designed to increase the practicality of the zoning of the reserve, allowing commercial trawl operators to fish along the depth gradient. The use of only one type of SPZ across the network, with specific rules implemented in the area marked 'A' in Western Eyre CMR reduces the overall complexity of zoning at the network level. There are no other recommended changes to the zoning in this reserve.

The Western Eyre CMR does not overlap with any native title determinations, applications or IPAs. The reserve is adjacent to the Far West Coast registered native title claim, the Far West Coast Native Title Settlement and Far West Coast Parks ILUAs, and the Wirangu No. 2 and Nauo registered native title claims.

4.4 TEMPERATE EAST COMMONWEALTH MARINE RESERVES NETWORK

The Temperate East CMR Network, established in 2012, includes eight reserves and covers 383 352 km² of Commonwealth waters from the southernmost extent of the Great Barrier Reef Marine Park (GBRMP), approximately 40 km north of Bundaberg in Queensland, to offshore Jervis Bay in southern New South Wales (NSW) as well as the waters surrounding Lord Howe Island and Norfolk Island. The network incorporates four reserves—Cod Grounds CMR, Solitary Islands Marine Reserve (Commonwealth Waters), Lord Howe Island Marine Park, and Elizabeth and Middleton Reefs Marine National Nature Reserve—that were proclaimed prior to 2012 (Figure 4.4.1).

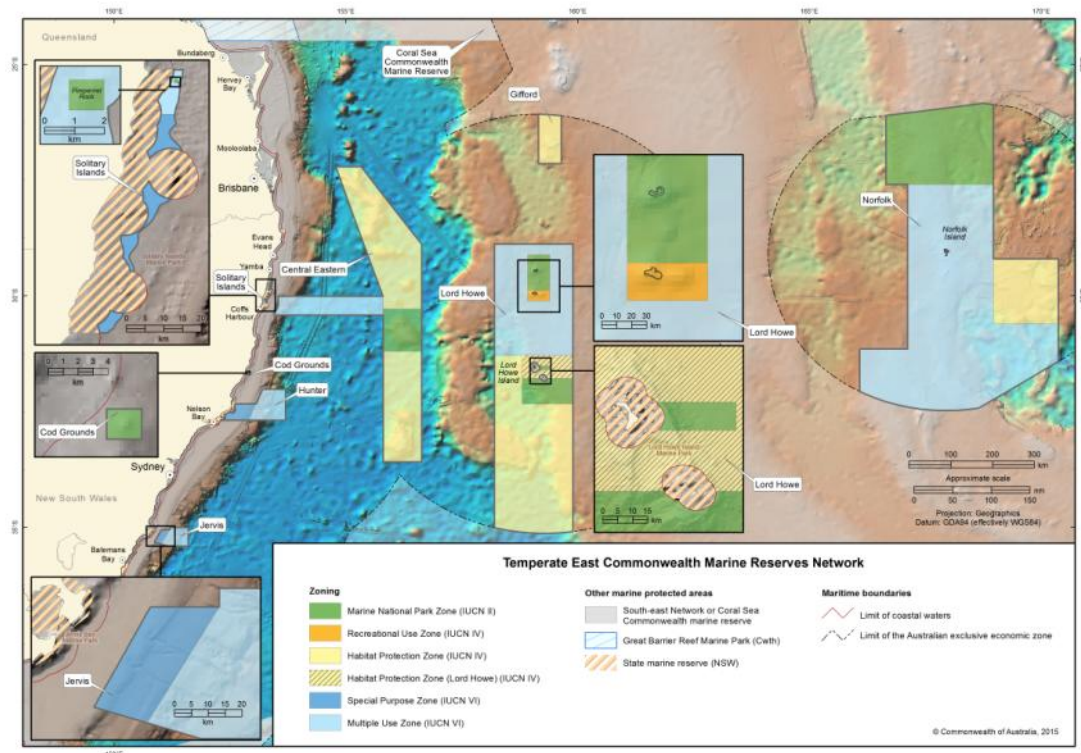


Figure 4.4.1 Temperate East CMR Network, as proclaimed

Issues raised during the CMR Review that were generic across the Temperate East CMR Network included:

- The lack of high-level protection in the network, particularly for the continental shelf, canyons and seamounts, and poor representation of the continental shelf in the network
- Concerns about the potential for mineral extraction including oil and gas exploration and seabed mining in marine reserves
- Removing destructive fishing practices from reserves—specifically, demersal trawling and auto-longlining on seamounts
- The commercial fishing industry had adapted to the proclaimed zoning and further restrictions would have a detrimental effect on fishers and their families; the industry needs certainty that zoning will not change within the 10-year management plan period
- Allowing recreational fishing in MNPZ (IUCN II).

A comprehensive list of issues raised is provided at Appendix G.

Temperate East network—outcomes

Zoning changes are recommended for the Jervis, Hunter, Solitary Islands, Central Eastern, Norfolk and Lord Howe CMRs, while no changes are recommended for the Gifford and Cod Grounds CMRs. These are shown in Figure 4.4.2 and summarised in Table 4.4.1.

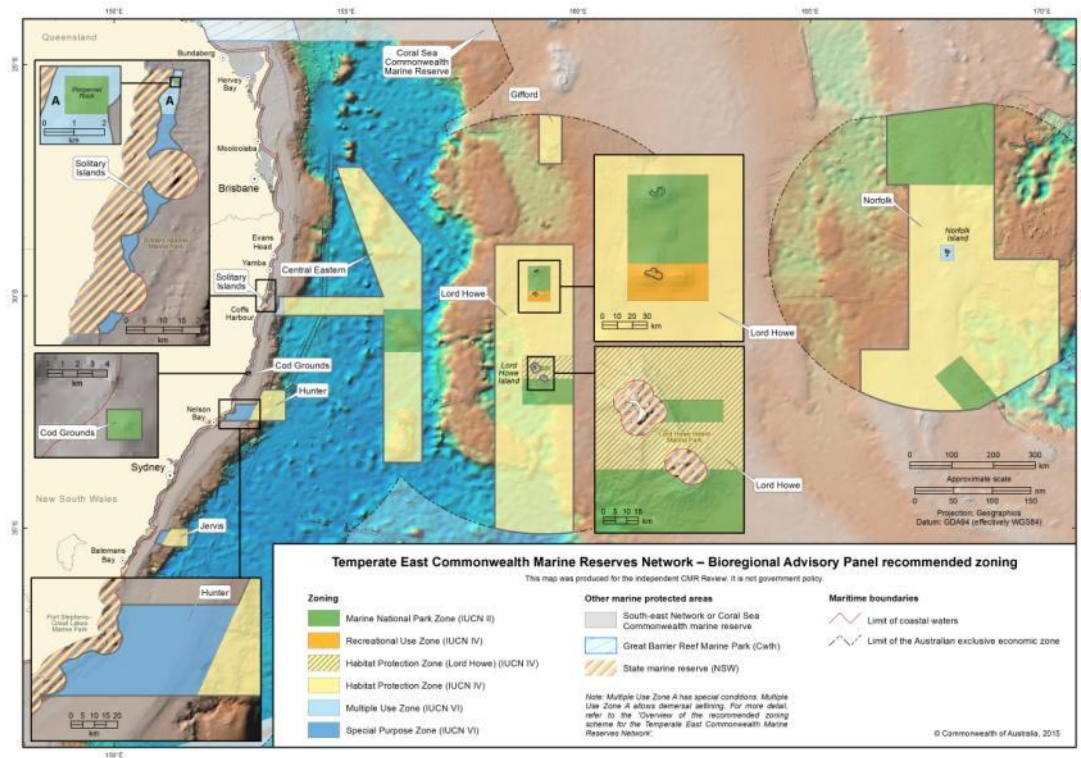


Figure 4.4.2 Recommended zoning for Temperate East CMR Network

Table 4.4.1 indicates how the areas of different zone types (within the outer boundaries of the network) will change between the proclaimed and recommended zoning. The area under MNPZ increases from 16% to 18% of the network. There is a large increase in the area under HPZs, from 36% to 81%. Together MNPZ and HPZs make up 99% of the network. There is a 47% decrease in the area under MUZ.

Table 4.4.1 Comparison of areas of zone types between proclaimed and recommended zoning for Temperate East CMR Network

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of Network	Area (km ²)	% of Network	Area (km ²)	% of Network
MNPZ (IUCN II)	60 264	15.72%	67 661	17.65%	+7 397	+1.93%
HPZ (IUCN IV)	133 776	34.90%	305 393	79.66%	+171 617	+44.76%
HPZ (Lord Howe) (IUCN IV)	5 136	1.34%	5 136	1.34%	Nil	Nil
RUZ (IUCN IV)	1 170	0.31%	1 170	0.31%	Nil	Nil
MUZ (IUCN VI)	180 607	47.11%	1 593	0.42%	-179 014	- 46.70%
MUZ/MUZ A* (IUCN VI)	37	0.01%	37	0.01%	Nil	Nil
SPZ (IUCN VI)	2 361	0.62%	2 361	0.62%	Nil	Nil
Total	383 352	100%	383 352	100%		

*The proclaimed Solitary Islands MUZ and recommended MUZ 'A' have the same allowable activities, and are therefore reported as the same zone type.

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Conservation outcomes

The recommended zoning changes will provide several improvements to the conservation outcomes for the Temperate East CMR Network. They include:

- The introduction of new or improvements to MNPZs in two reserves, which amounts to a small overall increase (2%) in no-take protection including:
 - Introduction of a new MNPZ in the Norfolk CMR, to provide a high level of protection for the Vening-Meinesz Fracture Zone
 - Expansion of the MNPZ at Pimpernel Rock in the Solitary Islands CMR, to improve protection of important habitat for threatened grey nurse sharks.
 It is noted, however, that most of the MNPZs in the Temperate East CMR are in deep offshore areas, and the shelf remains poorly represented in MNPZs, or reserves more generally.
- A significant increase in the area under HPZ (45%), prohibiting activities that interact with the seafloor and providing better protection of the benthic habitat in five reserves. They include the Jarvis, Hunter, Central Eastern, Lord Howe and Norfolk CMRs.

Table 4.4.2 shows how the recommended zoning in the Temperate East Network improves the representation of primary conservation features in MNPZs (IUCN II) and HPZs (IUCN IV), providing an indication of their performance against the four primary goals under the Goals and Principles. The recommended zoning will provide increased protection to a further five conservation features in MNPZs and 20 conservation features

in HPZs in the network. The five conservation features newly captured in MNPZs result from the zoning changes in the Norfolk CMR, and include four Depth Ranges (by Provincial Bioregion) and one Seafloor Type. The 20 conservation features newly captured in HPZs include 15 Depth Ranges (by Provincial Bioregion), two of which are also newly captured in MNPZ; two KEFs; and three seafloor types (see Appendix H).

The recommended zoning will result in 55 conservation features occurring in both MNPZs and HPZs, bringing the overall number of conservation features represented in these zones to 82 (75% of the network's features), an increase from the 65 features occurring in these zones in the proclaimed network. Twenty eight conservation features are not represented in either of these high-protection zones.

Table 4.4.2 Comparison of representation of conservation features between proclaimed and recommended zoning for Temperate East CMR Network

Goal	Primary Conservation Feature	Total No. In Network	Proclaimed		Recommended	
			MNPZ (IUCN II)	HPZs (IUCN IV)	MNPZ (IUCN II)	HPZs (IUCN IV)
1	Provincial Bioregions (PBs)	7	4	4	4	4
	Meso-scale Bioregions	3	1	0	1	0
2	Depth by PB	73	35	40	39	55
3	Key Ecological Features	6	4	2	4	4
	Biologically Informed Seascapes	6	1	0	1	0
4	Seafloor Types	15	11	10	12	13
	Total	110	56	56	61	76

Note: Some features are represented in MNPZs and HPZs and therefore the total number of features represented in both zones is not the simple sum of their occurrence in each zone.

Socio-economic impacts

Commercial fishing

The recommended zoning for the Temperate East CMR Network is expected to slightly increase impacts on the commercial catch for fishing operations in Hunter and Central Eastern CMRs. Impacts on catch will decrease for fishers in the Lord Howe CMR. Impacts on commercial fishing in the remaining reserves will not change compared to the proclaimed zoning.

A total of seven NSW and Commonwealth commercial fisheries will experience some displacement from the recommended zoning. This is the same number that would have been impacted by the proclaimed zoning.

Although there will be an overall slight increase in the impact on commercial fishing across the network, the recommended zoning will reduce the overall level of displacement for the East Coast Deepwater Trawl sector of the Commonwealth SESSF.

Recreational and charter fishing

The increase in MNPZ will not reduce access for recreational and charter fishers within the Temperate East CMR Network, because of its distance offshore, except in the Solitary Islands CMR, where the small change in area may have a slight local effect. Overall, the recommended zoning for the Temperate East CMR Network is not expected to have a negative socio-economic impact on the recreational and charter fishing sectors.

Practicality of implementation

At a network level, the recommended changes will not increase difficulty with compliance. Straight north–south or east–west running boundary lines have been maintained where possible. Where this was not possible, such as with the new MNPZ introduced in the Norfolk CMR, impacts on existing uses have been largely avoided. Specific depth contours that are important determinants of fishing grounds for commercial operators have been considered in proposing changes to zoning across the network. For the Norfolk CMR, existing uses of the reserve by Norfolk Islanders consistent with protecting reserve values can be maintained around the island.

Native title

The Temperate East CMR Network does not overlap with any native title determinations, applications or IPAs. Native title is not impacted by the proclamation of CMRs or the development and implementation of management plans for reserves under the EPBC Act. Recommendations relating to involvement of Indigenous groups and traditional owners in management of CMRs are outlined in Chapters 5 to 7 of this report.

The recommended zoning for the network was developed to minimise the broader socio-economic impact for Australia and energy security concerns.

Conclusion

The recommended zoning for the Temperate East network addresses most of the key areas of contention that arose during the consultations. Overall socio-economic impacts on the commercial fishing sectors have not substantially changed. Concerns about poor representation of continental shelf in the network could not be effectively addressed within the outer boundaries of the reserves without a higher economic cost to a number of valuable commercial fisheries. A higher level of protection is provided to more conservation features through a modest increase in area of MNPZ and a large increase in HPZ, which means that 99% of the network is in zones assigned as either IUCN II or IV, providing a substantial increase in benthic protection. This brings a total of 82 primary conservation features into high protection, amounting to a 26% increase on the 65 conservation features within these two IUCN categories in the proclaimed network.

Table 4.4.3 Overview of recommended zoning scheme for Temperate East CMR Network

Activity type ^a		Special Purpose Zone (IUCN VI)	Multiple Use Zone (IUCN VI)	Habitat Protection Zone (IUCN IV)		Recreational Use Zone (IUCN IV)	Marine National Park Zone (IUCN II)
MINING^b	Mining (including exploration, development and other activities)	✓	✓	✗	✗	✗	✗
COMMERCIAL FISHING^c	Handline/rod and reel	✓	✓	✓	✓	✗	✗
	Hand collection (including marine aquarium fish)	✓	✓	✓	✗	✗	✗
	Dropline ^d /Minor line/Poling	✓	✓	✓	✓	✗	✗
	Pelagic longline (including driftline)	✓	✓	✓	✗	✗	✗
	Purse seine	✓	✓	✓	✗	✗	✗
	Mid-water Trawl	✓	✓	✓	✗	✗	✗
	Traps and pots (including lobster, crab and fish)	✓	✓	✗	✗	✗	✗
	Nets (Spanner crab)	✓	✓	✗	✗	✗	✗
	Gillnet (including demersal and pelagic)	✗	✗	✗	✗	✗	✗
	Demersal longline (including auto-longline and trotline)	✗	✗ ^e	✗	✗	✗	✗
Danish seine	✓	✗	✗	✗	✗	✗	
Demersal trawl	✓	✗	✗	✗	✗	✗	
AQUACULTURE		✓	✓	✗	✗	✗	✗
RECREATION	Boating	✓	✓	✓	✓	✓	✓
	Scuba diving and snorkelling	✓	✓	✓	✓	✓	✓
	Recreational fishing ^f (including spear-fishing)	✓	✓	✓	✓ ^g	✓	✗
COMMERCIAL TOURISM	Non-fishing related tourism (incl. scuba/snorkel tours; nature watching)	✓	✓	✓	✓	✓	✓
	Fishing related tourism (including charter fishing and fishing/spear diving tours)	✓	✓	✓	✓ ^g	✗	✗
INDIGENOUS ACTIVITIES	Non-commercial Indigenous harvesting and hunting (consistent with the <i>Native Title Act 1993</i>)	✓	✓	✓	✓	✓	✓
RESEARCH		✓	✓	✓	✓	✓	✓
GENERAL USE	Defence	✓	✓	✓	✓	✓	✓
	Shipping (general transit) ^h	✓	✓	✓	✓	✓	✓

a. All activities require approval to be undertaken in CMRs; approvals are provided in the management plan or through class approvals or individual permits.

b. Proposed mining operations carried out under usage rights that existed immediately prior to the declaration of a reserve do not require approval from the DNP.

c. Commercial fishing methods not listed in the table may require assessment.

d. Dropline is defined as: a line that is vertically set or suspended in the water column, with no more than a single anchor point in contact with the seabed or substrate; and not operated with or as a trotline

e. Demersal setlining is allowed in the Temperate East CMR Network MUZ A.

f. Recreational fishing is managed by the states. NSW recreational bag and size limits and other NSW recreational fishing restrictions apply in the Temperate East CMR Network unless otherwise specified in this management plan. Norfolk Island recreational fishing rules apply in the Norfolk CMR.

g. Spearfishing is not permitted in the Temperate East CMR Network HPZ (Lord Howe).

h. Ballast water exchange is managed under national arrangements. Restrictions may apply in some areas.

4.4.1 JERVIS COMMONWEALTH MARINE RESERVE

Background

The Jervis CMR is located approximately 20 km offshore adjacent to Jervis Bay, extending into deep water off the continental shelf. The reserve was established in 2012 and covers approximately 2 473 km² and contains two zone types: Multiple Use (79%) and Special Purpose (21%) (Figure 4.4.1.1).

Conservation values represented within the reserve include examples of the ecosystems of the Central Eastern Province and the Southeast Shelf Transition Provincial Bioregions and the Batemans Shelf Meso-scale Bioregion; shelf rocky reefs and canyons on the eastern continental slope; one of three shelf-incising canyons occurring in the region; and important migratory pathways for humpback whales.

The NSW managed Ocean Trap and Line Fishery and Lobster Fishery as well as the Commonwealth managed SESSF, Small Pelagic Fishery, and Eastern Tuna and Billfish Fishery (ETBF) overlap with the area of the reserve. The area is a popular tourist destination particularly in the adjacent NSW Jervis Bay Marine Park and Commonwealth Booderee National Park, and recreational and charter fishing and whale watching occur within the area.

Other activities which occur in the area include shipping and defence training.

Issues raised

In addition to the Temperate East CMR Network issues raised above in Section 4.4, the Jervis CMR was canvassed in several submissions and in meetings with stakeholders. Several of these proposed the alteration of the outer boundary to link the reserve to the Jervis Bay Marine Park, but this was outside the scope of this review. Issues raised included:

- Inadequate protection—specifically:
 - The lack of no-take MNPZs
 - Higher protection for the shelf
 - The lack of protection for areas important to cetaceans.

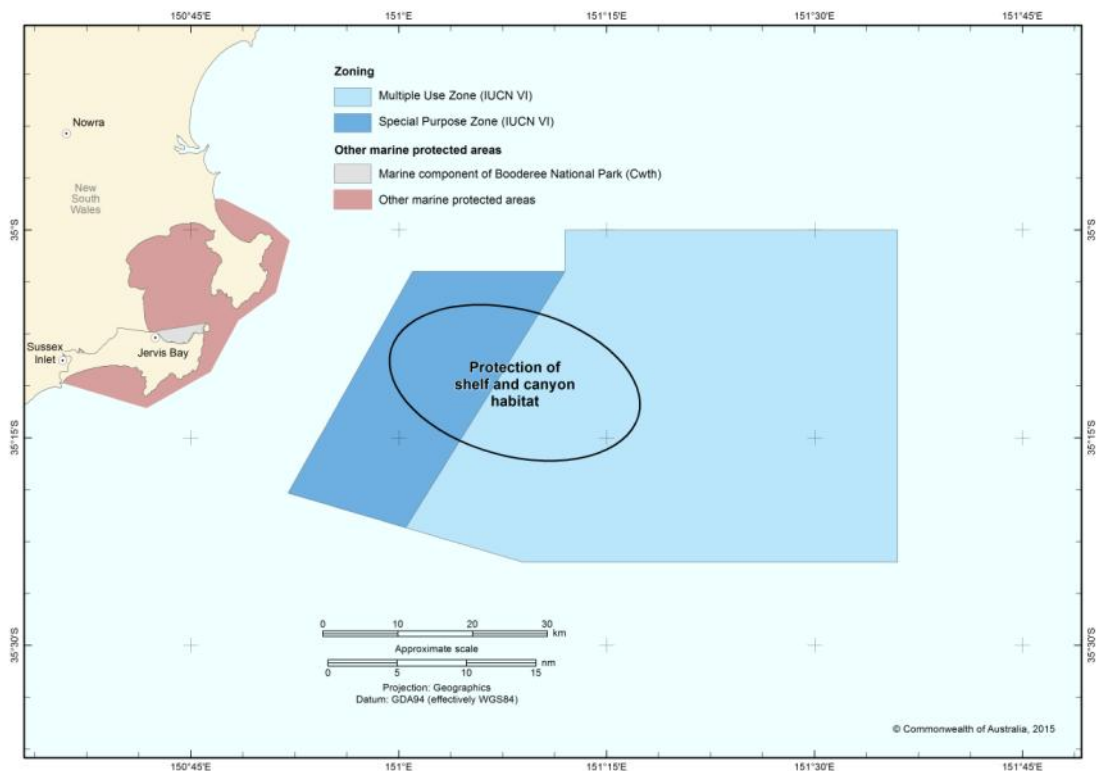


Figure 4.4.1.1 Jervis CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that the lack of protection on the shelf in this area, and more generally in the Temperate East CMR Network, was an area of contention.

Conservation

The canyons in the reserve link the shelf and lower slope and include one of three shelf-incising canyons in the Temperate East. Canyons are a KEF of the region. A higher level of protection for the shelf and canyons was sought by the conservation sector.

Trawling

Although the FGRA for the East Marine Region stipulates that trawling is not compatible with the conservation values of the area, it is a permissible activity in the SPZ.

Trawling in the Jervis CMR is part of the Commonwealth South East Trawl sector of the SESSF. It stretches from Barranjoey Point north of Sydney, south around Tasmania and west to Cape Jervis in SA. It is a multispecies otter trawl fishery taking over 30 quota species, with blue grenadier, flathead, pink ling and silver warehou accounting for most of the catch.

The Regional Panel gave careful consideration to several options aimed at increasing the area of the shelf under MNPZ, and in particular to provide protection to an east–west canyon feature in the middle of the CMR. These options were not pursued due to the operational impact on trawl and the popularity of the canyon edges for recreational and charter fishing.

The Regional Panel noted that in the area proclaimed as SPZ, there were several canyons on the shelf that were said to be avoided by the fishery and therefore not fished by this method. This observation was consistent with recent findings that only 6% of the area of the SESSF was impacted by trawl.

Conservation

The Regional Panel noted that changing the MUZ to HPZ would exclude activities that impact the benthos and would provide further protection for the canyons on the lower continental slope. There were no identified economic impacts of increasing the level of protection from MUZ to HPZ.

Recommendation

The recommendation for the Jarvis CMR is to change the MUZ to HPZ.

This change is shown in Figure 4.4.1.2 and summarised in Table 4.4.1.1.

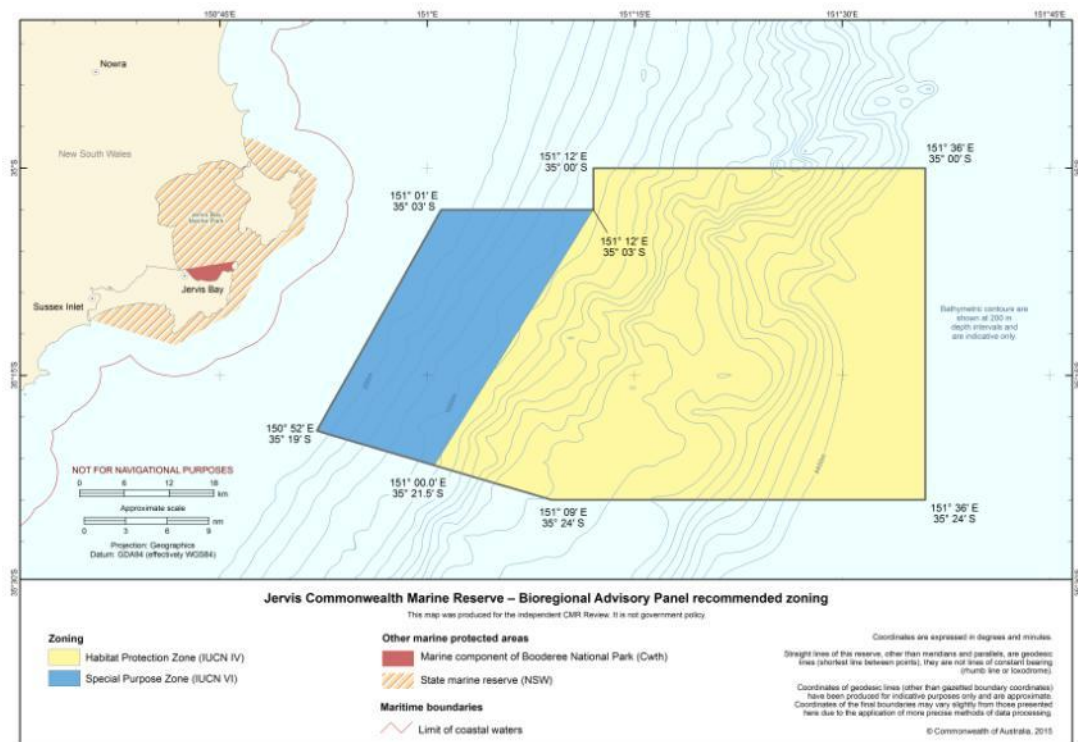


Figure 4.4.1.2 Recommended zoning for Jarvis CMR

Table 4.4.1.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. The MUZ is zoned as HPZ to increase the protection of habitat in the reserve.

Table 4.4.1.1 Comparison of areas of zone types between proclaimed and recommended zoning for Jervis CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
HPZ (IUCN IV)	Nil	Nil	1 965	79.46%	+1 965	+79.46%
MUZ (IUCN VI)	1 965	79.46%	Nil	Nil	-1 965	-79.46%
SPZ (IUCN VI)	508	20.54%	508	20.54%	Nil	Nil
Total	2 473	100%	2 473	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for Jervis CMR improves the conservation outcome for this reserve without impacting further on recreational or commercial fisheries. The HPZ that will cover nearly 80% of the reserve area provides an increased level of protection to six conservation features in the Temperate East Network, including four Depth Ranges (by Provincial Bioregion), one KEF and one Seafloor Type (see Appendix H).

The recommended zoning for Jervis CMR will not change the level of access for recreational and charter fishers or the impact on commercial fishing from the 2012 proclaimed zoning.

Jervis CMR does not overlap with any native title determinations, applications or IPAs.

The recommended new HPZ in this reserve will restrict mining activities in nearly 80% of the reserve, above the level of restriction set out in the 2012 proclaimed zoning. The area covered by this recommended zoning change is rated as having low petroleum prospectivity.

4.4.2 HUNTER COMMONWEALTH MARINE RESERVE

Background

The Hunter CMR covers an area stretching from NSW state waters to approximately 100 km offshore adjacent to the area between Port Stephens and Sugarloaf Point. The reserve established in 2012 covers approximately 6 257 km² and contains two zone types: Multiple Use (72%) and Special Purpose (28%) (Figure 4.4.2.1).

Conservation values represented within the reserve include examples of the ecosystems of the Central Eastern Province and the Central Eastern Shelf Province Provincial Bioregions and the Manning Shelf Meso-scale Bioregion; two KEFs: shelf rocky reefs and a shelf-incising canyon; and Biologically Important Areas for humpback whales, white sharks and a number of seabird species.

The NSW managed Ocean Trap and Line Fishery, Ocean Trawl Fishery and Lobster Fishery operate in the area. The Commonwealth managed SESSF and ETBF also operate in the area. Tourism, recreational and charter fishing also occur in the area and the area is a key gamefishing location.

Other activities that occur in the area include defence training and shipping.

Issues raised

In addition to the Temperate East CMR Network issues raised above in Section 4.4, the Hunter CMR was canvassed in a few submissions and in meetings with stakeholders.

Issues raised included:

- Inadequate protection—specifically:
 - The lack of no-take MNPZs
 - Higher protection for the shelf
 - Lack of protection for areas important to cetaceans.
- Loss of access for commercial fisheries and cumulative impacts of past closures and restrictions.
- Importance of the area for recreational gamefishing.

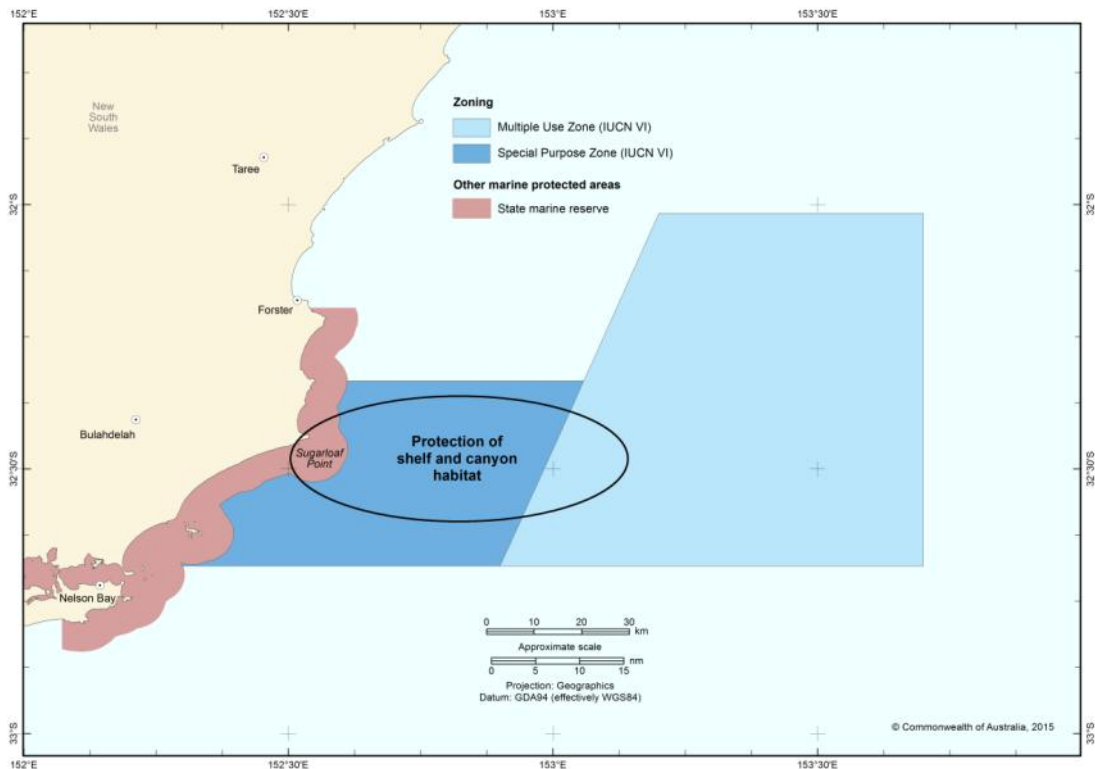


Figure 4.4.2.1 Hunter CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that the lack of protection on the shelf in this area, and more generally in the Temperate East CMR Network was an area of contention.

Conservation

The lack of MNPZs on the shelf was consistently identified as a significant deficiency in the design of the Temperate East CMR Network, and the Hunter and Jervis CMRs specifically, by conservation groups and by a number of scientists.

Trawling

Although the FGRA for the East Marine Region stipulates that trawling is not compatible with the conservation values of the area, it is a permissible fishery in the proclaimed SPZ.

Trawling in the Hunter CMR is part of the NSW Ocean Trawl Fishery, which includes two sectors: the prawn trawl sector and the fish trawl sector. Both sectors use similar otter trawl gear, and many of the fishers endorsed for fish trawling are also endorsed for prawn trawling. The fishery produces product predominately for the domestic market. The major species taken in the Ocean Trawl Fishery include school whiting (comprising stout whiting and red spot whiting); eastern king, school and royal red prawns; tiger flathead; silver trevally; various species of sharks and rays; squid; octopus; and bugs.

Lobster

The lobster fishery extends from the Queensland border to the Victorian border and includes all waters under jurisdiction of NSW to around 80 nm from the coast. The main target species is the eastern rock lobster (*Sagmaraisus verreauxi*) but southern rock lobster (*Jasus edwardsii*), and two species of tropical rock lobster (*Panulirus longipes* and *P. ornatus*) are also taken.

Trap and line

The Ocean Trap and Line Fishery is a multi-method, multi-species fishery targeting demersal and pelagic species along the entire NSW coast, in both continental shelf and slope waters.

The trawl, lobster and trap and line fisheries provide product to both the Wallis Lakes Commercial Fishermen's Coop (which supplies the Forster and Tuncurry areas) and the Commercial Fishermen's Cooperative, Newcastle. This product is sent throughout the local community, greater NSW, Australia and export markets.

The Regional Panel noted that several submissions called for more MNPZ status on the shelf in the Temperate East CMR Network and gave careful consideration to options aimed at establishing an area of the shelf in the Hunter CMR under MNPZ. The main option considered was the area of shelf adjacent to the state MPA off Seal Rocks and to extend this seawards, possibly to the eastern boundary of the SPZ. Testing this option with stakeholders revealed that the area immediately adjacent to the state no-take zone on the shelf was significant to the lobster, ocean trawl and trap and line sectors, as well as being important for the recreational game fishing sector. There was strong opposition to this option from these sectors.

The paucity of high-level protection on the shelf for a number of conservation features including Provincial Bioregions, mesoscale bioregions, depth ranges, KEFs, biologically informed seascapes and seafloor types—in the Temperate East CMR Network remains a significant concern.

Late in the review the BAP considered a further option for an MNPZ along some or the entire southern boundary of the shelf section of the Hunter CMR but did not have the opportunity to test this option with stakeholders. It seemed likely that a configuration could be developed that would improve the representativeness of the network and not substantially impact on commercial fishing interests. This option could be pursued in the future.

The Regional Panel noted that changing the MUZ to HPZ to exclude activities that impact the benthos would provide additional protection for several of the reserve's conservation features, including canyons and shelf slope. There were no identified economic impacts of increasing the level of protection in the MUZ to HPZ.

Recommendation

The recommendation for the Hunter CMR is to change the MUZ to HPZ.

This change is shown in Figure 4.4.2.2 and summarised in Table 4.4.2.1.

The lack of any significant highly protected area over the continental shelf and associated conservation features in the Temperate East CMR Network remains a deficiency in the comprehensiveness, adequacy and representativeness of the overall CMR estate. The Government should during the life of the first Temperate East network management plan investigate the conservation benefits, and social and economic impacts, of creating an MNPZ extending eastwards from state waters along the southern border of the Hunter CMR. The MNPZ transect should be not be less than 10km wide to ensure adequate protection from the impact of human activities.

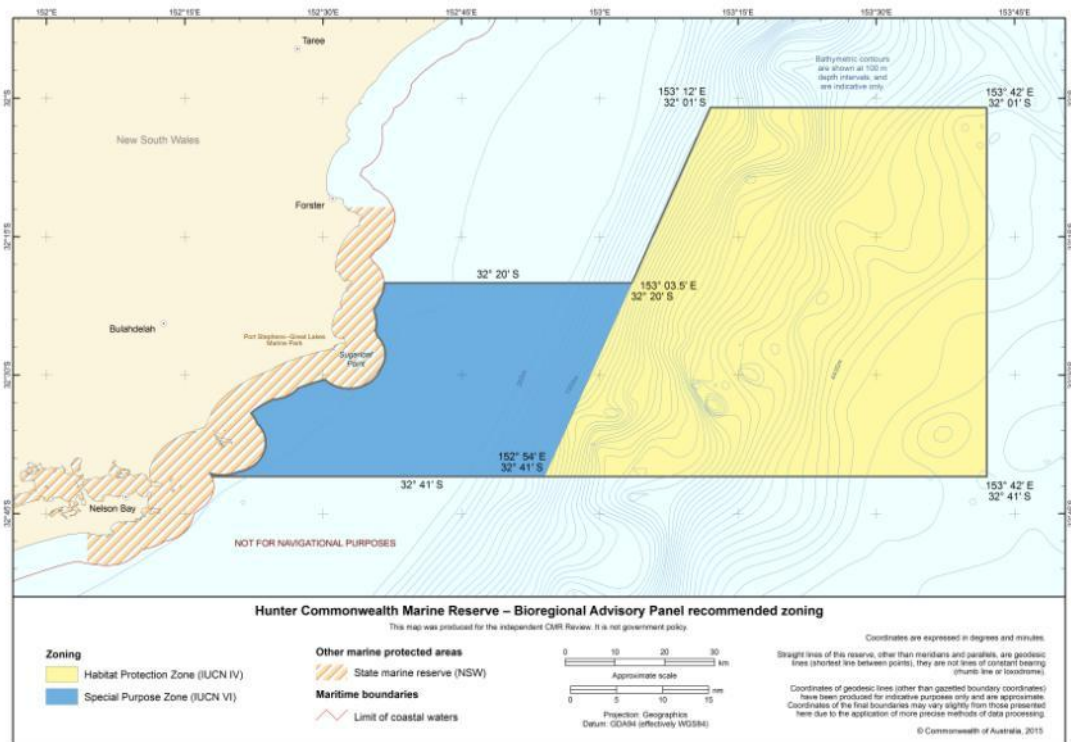


Figure 4.4.2.2 Recommended zoning for Hunter CMR

Table 4.4.2.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. The MUZ is zoned as HPZ to increase the protection of habitat in the reserve.

Table 4.4.2.1 Comparison of areas of zone types between proclaimed and recommended zoning for Hunter CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
HPZ (IUCN IV)	Nil	Nil	4 519	72.22%	+4 519	+72.22%
MUZ (IUCN VI)	4 519	72.22%	Nil	Nil	-4 519	-72.22%
SPZ (IUCN VI)	1 739	27.79%	1 739	27.79%	Nil	Nil
Total	6 257	100%	6 257	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for Hunter CMR will improve the conservation outcome for this reserve without impacting further on recreational fisheries. The introduction of an HPZ which will cover just over 72% of the reserve area will provide an increased level of protection to a further nine conservation features in the Temperate East Network,

including seven Depth Ranges (by Provincial Bioregion), one KEF and one seafloor type (see Appendix H).

The recommended zoning for Hunter CMR will not change the level of access for recreational and charter fishers.

The recommended introduction of a new HPZ is expected to increase the impact on the NSW Ocean Trap and Line Fishery, which was only marginally affected by the proclaimed zoning.

The recommended zoning of Hunter CMR changes the area of the proclaimed MUZ to an HPZ without altering the internal boundaries. The boundary between the SPZ and new HPZ would remain below the 1 000 metre depth contour to ensure ease of compliance and continued access to the SPZ by commercial fishers.

Hunter CMR does not overlap with any native title determinations, applications or IPAs.

The recommended new HPZ in Hunter CMR will restrict mining activities in 72% of the reserve, above the level of restriction set out in the proclaimed zoning. The area covered by this recommended zoning change does not have a petroleum prospectivity rating.

4.4.3 SOLITARY ISLANDS COMMONWEALTH MARINE RESERVE

Background

The Solitary Islands CMR is located approximately 5.5 km offshore adjacent to the area between Coffs Harbour and Sandon Bluffs. The reserve established in 2012 incorporates the former Solitary Islands Marine Reserve (Commonwealth Waters) and covers approximately 152 km² and contains three zone types: Marine National Park (1%), Multiple Use (24%) and Special Purpose (75%) (Figure 4.4.3.1).

Conservation values represented within the reserve include examples of the ecosystems of the Central Eastern Shelf Transition and the Tweed-Moreton Meso-scale Bioregion; habitat for the critically endangered east coast population of grey nurse sharks; and Biologically Important Areas for humpback whales, white sharks and a number of seabirds.

The NSW Ocean Trap and Line Fishery, Ocean Trawl Fishery and Lobster Fishery operate within or near the marine reserve. The Commonwealth ETBF also operates in the area. Recreational fishing, spearfishing, recreational scuba diving and snorkelling activities also occur within the area.

Other activities which occur in the area include defence training.

Issues raised

In addition to the Temperate East CMR Network issues raised above in Section 4.4, the Solitary Islands CMR was discussed in a number of submissions and meetings with stakeholders. Several of these proposed the alteration of the outer boundary to link the reserve to the Central Eastern CMR, but this was outside the scope of this review.

Issues raised included:

- Inadequate protection—specifically, the level of protection (MNPZs) on the shelf.
- Access for commercial fishers—specifically, that state marine park restrictions had led to major adjustment in operations and that further closures would impact on operations and the local fishing cooperative.

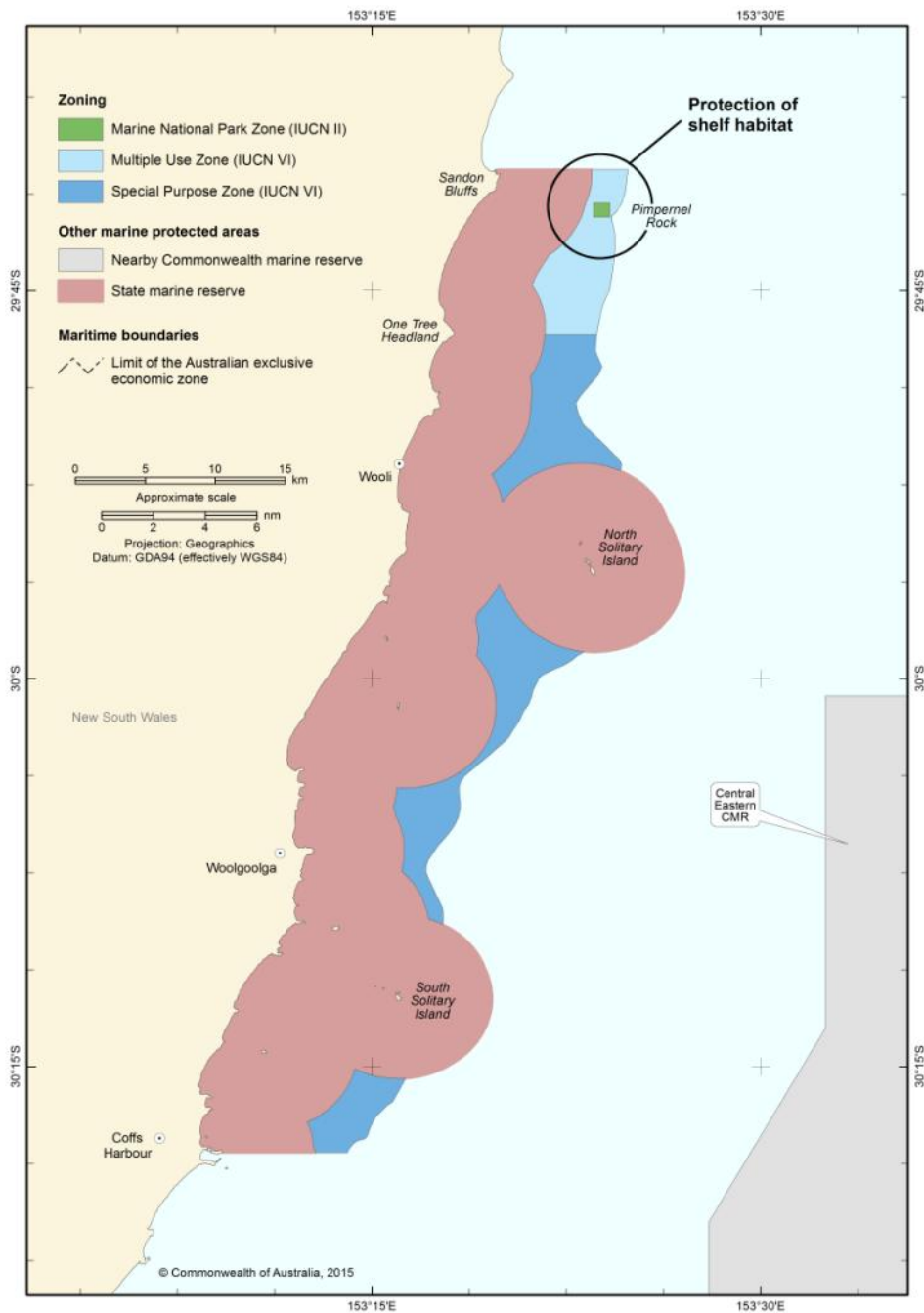


Figure 4.4.3.1 Solitary Islands CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that inadequate representation of shelf in MNPZs was an area of contention.

Recommendation

The recommendation for the Solitary Islands CMR is to extend the MNPZ over Pimpernel Rock eastward to the reserve boundary (by 80m) and by the same distance on the north, south and west sides.

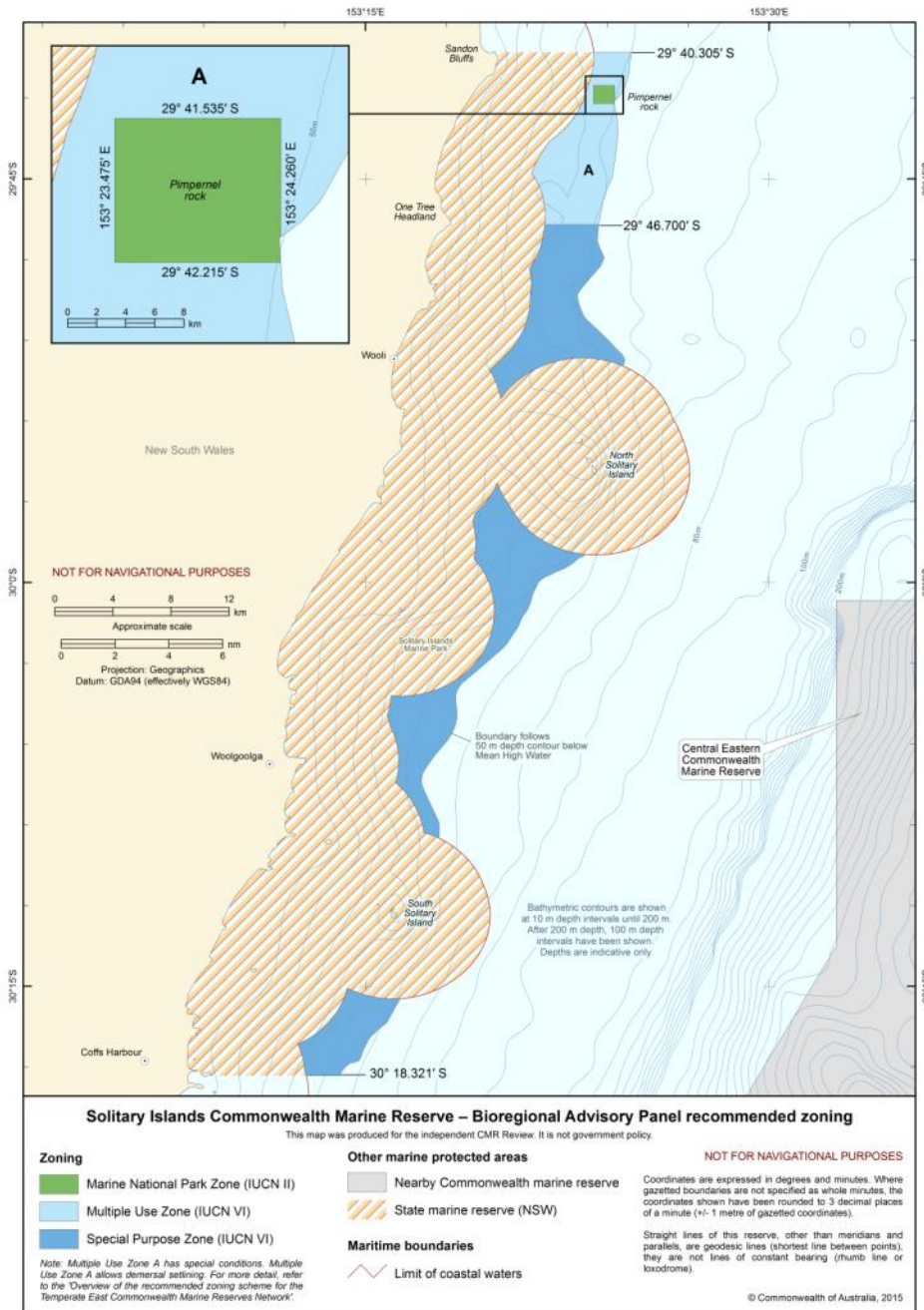


Figure 4.4.3.2 Recommended zoning for Solitary Islands CMR

Table 4.4.3.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning.

Table 4.4.3.1 Comparison of areas of zone types between proclaimed and recommended zoning for Solitary Islands CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	1.04	0.68%	1.59	1.04%	+0.55	+0.36%
MUZ/MUZ A* (IUCN VI)	37.21	24.43%	36.66	24.07%	-0.55	-0.36%
SPZ (IUCN VI)	114.08	74.90%	114.08	74.89%	Nil	Nil
Total	152.3	100%	152.3	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

*Note—the proclaimed Solitary Islands CMR MUZ and recommended MUZ 'A' have the same allowable activities, and are therefore reported as the same zone type.

Outcomes

The recommended expansion of the MNPZ in Solitary Islands CMR to just over 1% of the reserve area will provide a small increase in level of protection and include one Depth Range (by Provincial Bioregion) in MNPZ in the Temperate East CMR Network and a minor increase in protection for grey nurse shark habitat around Pimpernel Rock.

This will result in a minor reduction of access for recreational and charter fishing. The additional impact on commercial fishing is expected to be negligible for three NSW managed fisheries (Ocean Trap and Line, Ocean Trawl and Lobster) which would also have been displaced by the proclaimed zoning. The recommended zoning for Solitary Islands CMR will not result in any increased difficulty of compliance.

The Solitary Islands CMR is adjacent to the Yaegl People registered native title claim, which does not extend into Commonwealth waters.

The recommended expansion of the MNPZ in the Solitary Islands CMR will slightly restrict mining activities above the level of restriction set out in the proclaimed zoning. The area covered by this recommended zoning change does not have a petroleum prospectivity rating.

4.4.4 CENTRAL EASTERN COMMONWEALTH MARINE RESERVE

Background

The Central Eastern CMR extends from shelf-edge depths approximately 30 km offshore to deep ocean waters approximately 200 km offshore. It spans more than 500 km in a north–south alignment over the southern seamounts of the Tasmanid Seamount Chain. The CMR established in 2012 covers approximately 70 054 km² and contains three zone types: Marine National Park (12%), Habitat Protection (74%) and Multiple Use (14%) (Figure 4.4.4.1).

Conservation values represented within the reserve include examples of the ecosystems of the Central Eastern Province, Central Eastern Shelf Transition, and Tasman Basin Province Provincial Bioregions and the Tweed-Moreton Meso-scale Bioregion; canyons on the eastern continental slope (part of one of three shelf-incising canyons occurring in the region); the Tasmanid Seamount Chain including the Taupo seamount; and Biologically Important Areas for humpback whales, white sharks and a number of seabird species.

The NSW managed Ocean Trap and Line Fishery, Ocean Trawl Fishery and Lobster Fishery operate within or near the marine reserve. The Commonwealth managed SESSF and ETBF also operate in the area. Recreational and charter fishing occur in the area.

Other activities which occur in the area include shipping, tourism, defence training and petroleum exploration.

Issues raised

In addition to the Temperate East CMR Network issues raised above in Section 4.4, the Central Eastern CMR was canvassed in a number of submissions and meetings with stakeholders. Some of these proposed the extension of the western outer boundary to link the reserve to the Solitary Islands CMR, but this was outside the mandate of the review. Issues raised included:

- Relationship between the Coral Sea CMR and Temperate East CMR Network that results in:
 - Loss of access for commercial fisheries, particularly pelagic longline.
 - The potential for displaced effort—specifically, tuna operators that fished in the Coral Sea would have to move further south, placing increased pressure on limited swordfish stocks.
- Issues relating to the drift of pelagic longlines—specifically, that MNPZs needed a ‘buffer’ around them to avoid the problem of lines drifting into the reserve.
- Loss of access for potential fisheries—specifically, deepwater crab resources in waters between 400 and 1 000m.
- Need to re-evaluate the FGRA for demersal longlining.

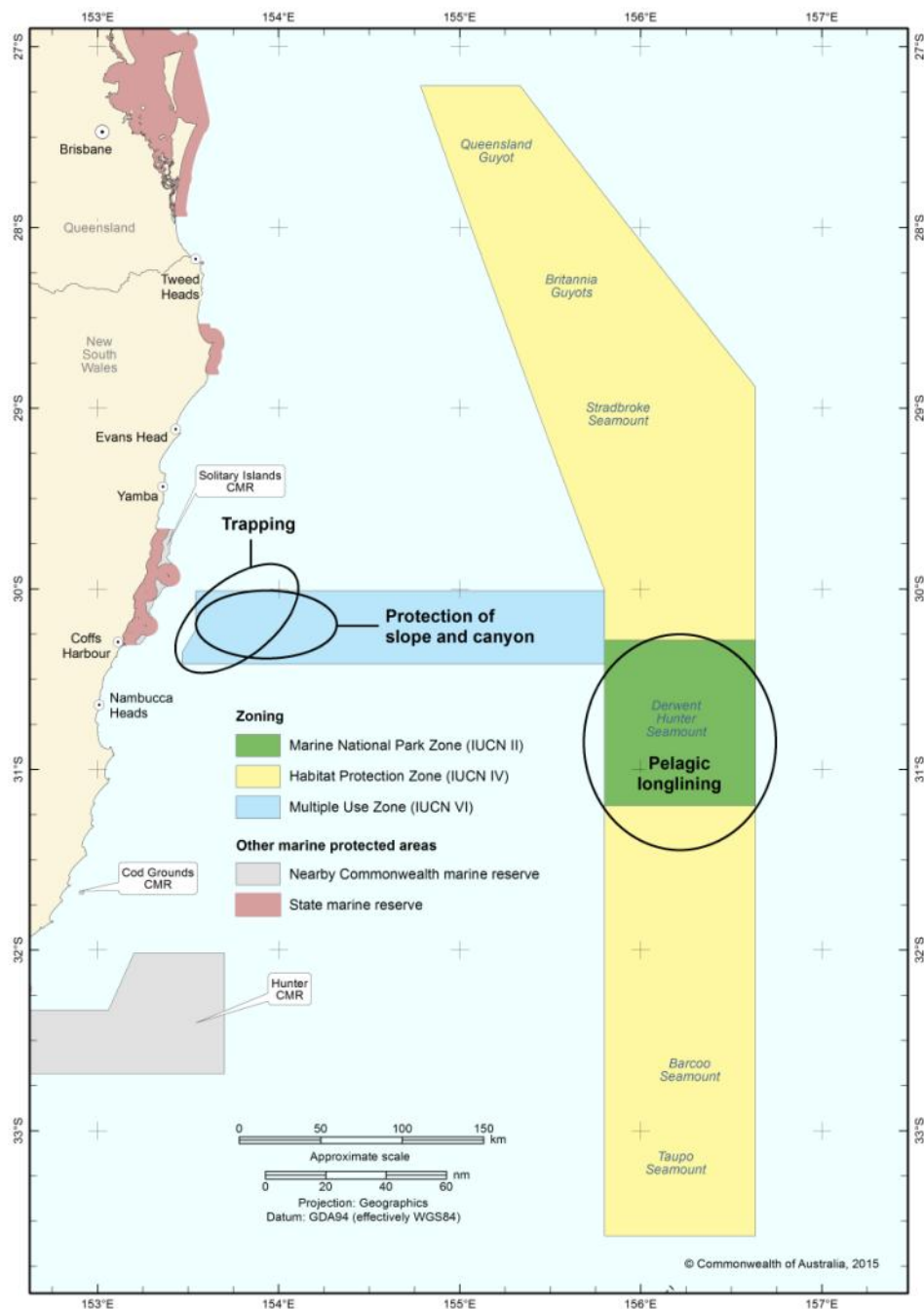


Figure 4.4.4.1 Central Eastern CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel did not record any specific area of contention in this reserve, beyond general concerns over lack of connectivity to and protection on the continental shelf and canyons in the Temperate East CMR Network, and the more general concerns of the ETBF.

Conservation

The Regional Panel noted the paucity of highly protected areas on the shelf and shelf slope and in particular the Central Eastern Shelf Transition and Central Eastern Provincial Bioregions and the canyon KEF. The Regional Panel also noted the lack of connectivity between the Central Eastern CMR and the Solitary Islands CMR, which would require an alteration of outer boundaries and was beyond the scope of this review.

The Regional Panel suggested that the MUZ over the Central Eastern reserve could be zoned as HPZ to improve the benthic protection over the shelf slope canyons and the Central Eastern Provincial Bioregion without impacting on any commercial fisheries, except the deepwater trap and line fishery on the shelf break.

Pelagic longline fishery

The Regional Panel considered the perspectives of different elements of the pelagic longline industry, the sector most significantly impacted economically by the CMR. While there was some industry acceptance of the objective of a fully protected seamount in the Temperate East CMR Network, none wanted the MNPZ to impact on their area of operation, suggesting the MNPZ be moved either further north or south. The Regional Panel concluded that the MNPZ over the Derwent-Hunter seamount remains the most reasonable compromise.

The Regional Panel also noted suggestions that more of the seamounts in the Central Eastern CMR be zoned as MNPZs—specifically, Queensland, Britannia, Stradbroke, Barcoo and Taupo—despite the fact that Queensland and Britannia are closed to commercial fishing to protect gulper sharks. All of these seamounts are in HPZ which excludes fishing methods with a benthic interaction including traps, crab nets, Danish seine, demersal trawl, gillnet and demersal longlining. The Regional Panel noted concerns of longliners that the MNPZ represented just one of several closures affecting them, drawing attention in particular to the fisheries closure to protect gulper sharks on other seamounts. There was a strong view expressed that there could be better coordination between conservation and fisheries managers especially where conservation outcomes were the focus.

The Regional Panel noted the issue of gear drift in the pelagic longline fishery which meant that there was an effective 'buffer' area around each MNPZ within which the gear should not be set (to avoid the gear drifting into the MNPZ). This did not mean that fish could not be caught in this 'buffer'.

Recommendation

The recommendation for the Central Eastern CMR is to retain the MUZ down to 1000 m depth and change the balance of the MUZ in the Central Eastern CMR to HPZ.

This change is shown in Figure 4.4.4.2 and summarised in Table 4.4.4.1.

The BAP noted that as the lack of significant highly protected areas over the continental shelf and associated conservation features in the Temperate East CMR Network remains a deficiency in the comprehensiveness, adequacy and representativeness of the overall CMR estate, the Government should during the life of the first Temperate East CMR Network Management Plan investigate the conservation benefits, and social and economic impacts, of extending the east-west 'arm' of the Central Eastern CMR westwards to join the Solitary Islands CMR, and of including an MNPZ transect from state waters eastwards across the shelf and slope that includes one of the reserve's canyon features.

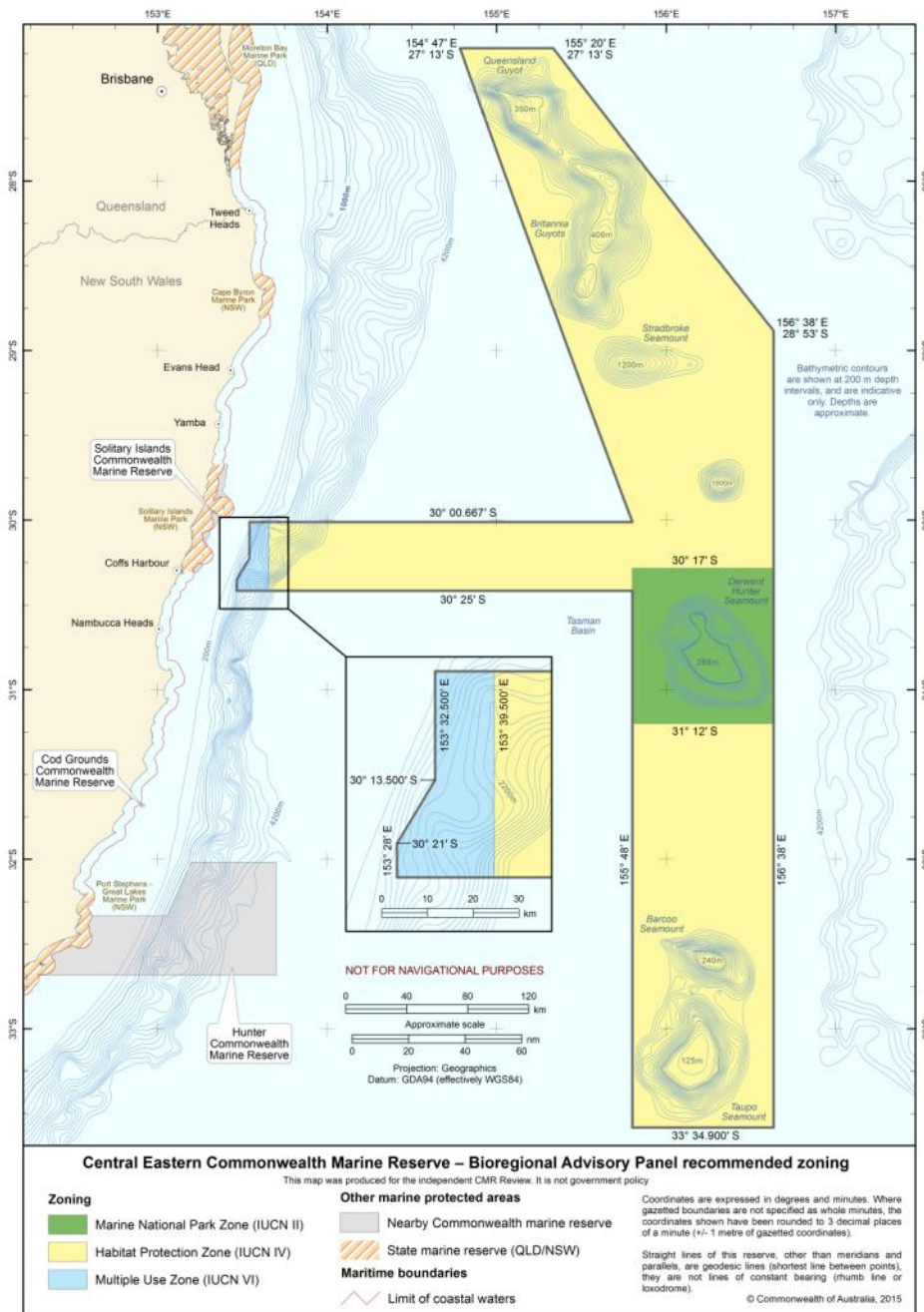


Figure 4.4.4.2 Recommended zoning for Central Eastern CMR

Table 4.4.4.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. There is no change to MNPZ but HPZ is increased by 13%, with a corresponding decrease in the area under MUZ. Together the MNPZ and HPZ provide a high level of protection to 99% of the reserve.

Table 4.4.4.1 Comparison of areas of zone types between proclaimed and recommended zoning for Central Eastern CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	8 110	11.58%	8 110	11.58%	Nil	Nil
HPZ (IUCN IV)	52 066	74.32%	61 336	87.56%	+9 270	+13.23%
MUZ (IUCN VI)	9 878	14.10%	608	0.87%	-9 270	-13.23%
Total	70 054	100%	70 054	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended expansion of HPZ in the Central Eastern CMR, which covers approximately 88% of the reserve area, will provide increased protection to a further six conservation features in the Temperate East CMR Network, including four Depth Ranges (by Provincial Bioregion), one KEF and one seafloor type (see Appendix H). This seafloor type (canyon) is also represented in MNPZ.

The recommended zoning for the Central Eastern CMR will not change the level of access for recreational and charter fishers but is expected to result in a small increase in the impact on commercial fishing.

The recommended zoning will not increase the total number of zone types in the reserve. However, as the area of MUZ will be substantially smaller than that proclaimed there is the potential for a slight increase in complexity and difficulty of compliance for some users, such as commercial operators using fishing gear types that are not compatible with HPZs. The MNPZ over the Derwent Hunter Seamount will remain the same as in the proclaimed zoning, with no resultant changes in practicality of implementation in this area.

The Central Eastern CMR does not overlap with any native title determinations, applications or IPAs.

The recommended expansion of the HPZ in the Central Eastern CMR will restrict mining activities above the level of restriction set out in the proclaimed zoning. The area covered by this recommended zoning change does not have a petroleum prospectivity rating.

4.4.5 LORD HOWE COMMONWEALTH MARINE RESERVE

Background

The Lord Howe CMR spans 680 km in a north–south alignment over the Lord Howe seamount chain. The reserve, established in 2012, incorporates the former Elizabeth and Middleton Reefs Marine National Nature Reserve and Lord Howe Island Marine Park (Commonwealth waters). It covers approximately 110 139 km² and contains five zone types: Marine National Park (10%), Recreational Use (1%), Habitat Protection (Lord Howe) (5%), Habitat Protection (50%) and Multiple Use (35%) (Figure 4.4.5.1).

Conservation values represented within the reserve include examples of the ecosystems of the Lord Howe Province and the Tasman Basin Province Provincial Bioregions; the Lord Howe seamount chain, Elizabeth and Middleton reefs and the Tasman Front and eddy field; a key location for black cod; Biologically Important Areas for humpback whales and a number of seabird species; and a major seabird breeding area for masked booby, grey ternlet, red-tailed tropic bird, black-winged petrel and Kermadec petrel.

The Commonwealth managed SESSF, the ETBF and the Small Pelagic Fishery operate within or near the marine reserve. Charter and recreational fishing occur in the area, mostly operating from Lord Howe Island. Shipping also occurs in the area.

Issues raised

In addition to the Temperate East CMR Network issues raised above in Section 4.4, the Lord Howe CMR was canvassed in several submissions and in meetings with stakeholders. Issues raised included:

- Loss of access for recreational fishing—specifically, spearfishing in Commonwealth waters around Lord Howe Island
- Loss of access for commercial fisheries—specifically, pelagic longline and pelagic trawl.

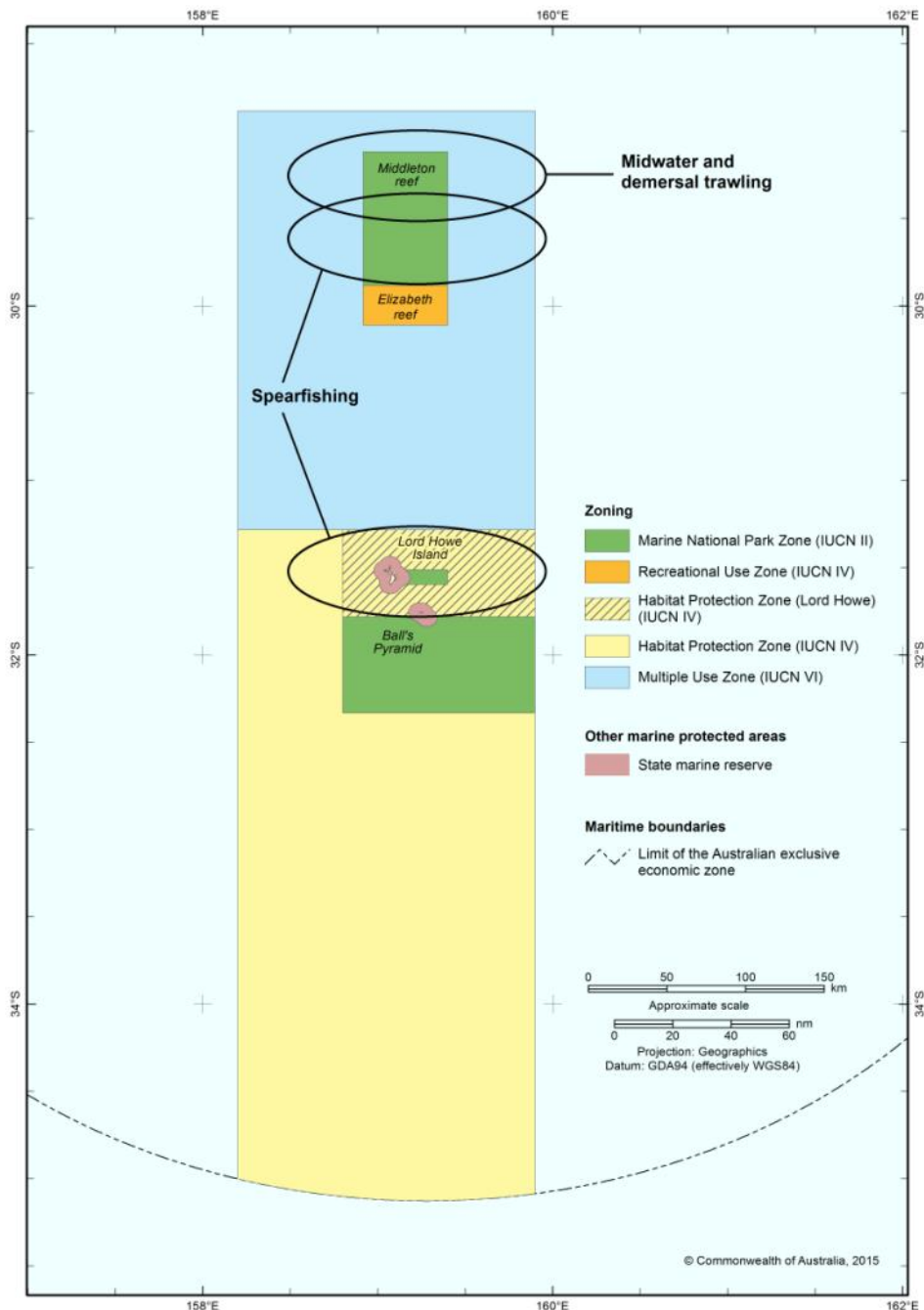


Figure 4.4.5.1 Lord Howe CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel determined that loss of access by established commercial fisheries was an area of contention, particularly with regard to the northwards extension of the MNPZ over Middleton Reef in the 2012 proclamation.

The Regional Panel noted concerns from the ETBF that any MNPZs present problems for the fishery because of the issues associated with gear drift.

The Regional Panel heard representations over the loss of access for the fishery north of Middleton Reef. This was proposed as both demersal and pelagic trawl. The Regional Panel suggested that the northern boundary of the MNPZ be moved south to the original Elizabeth Middleton MNPZ boundary, to allow access for the fishery, but that the area be zoned as HPZ.

The Regional Panel noted concerns expressed by the spearfishing sector in relation to access to waters around Lord Howe Island, but also heard concerns from island representatives who argued against this access and for parity between state and Commonwealth arrangements in marine reserves.

Recommendations

The recommendations for the Lord Howe CMR are to:

- Re-establish the northern boundary of the MNPZ over Middleton Reef at its original northern boundary at 29°21'S
- Convert all MUZ to HPZ.

These changes are shown in Figure 4.4.5.2 and summarised in Table 4.4.5.1.

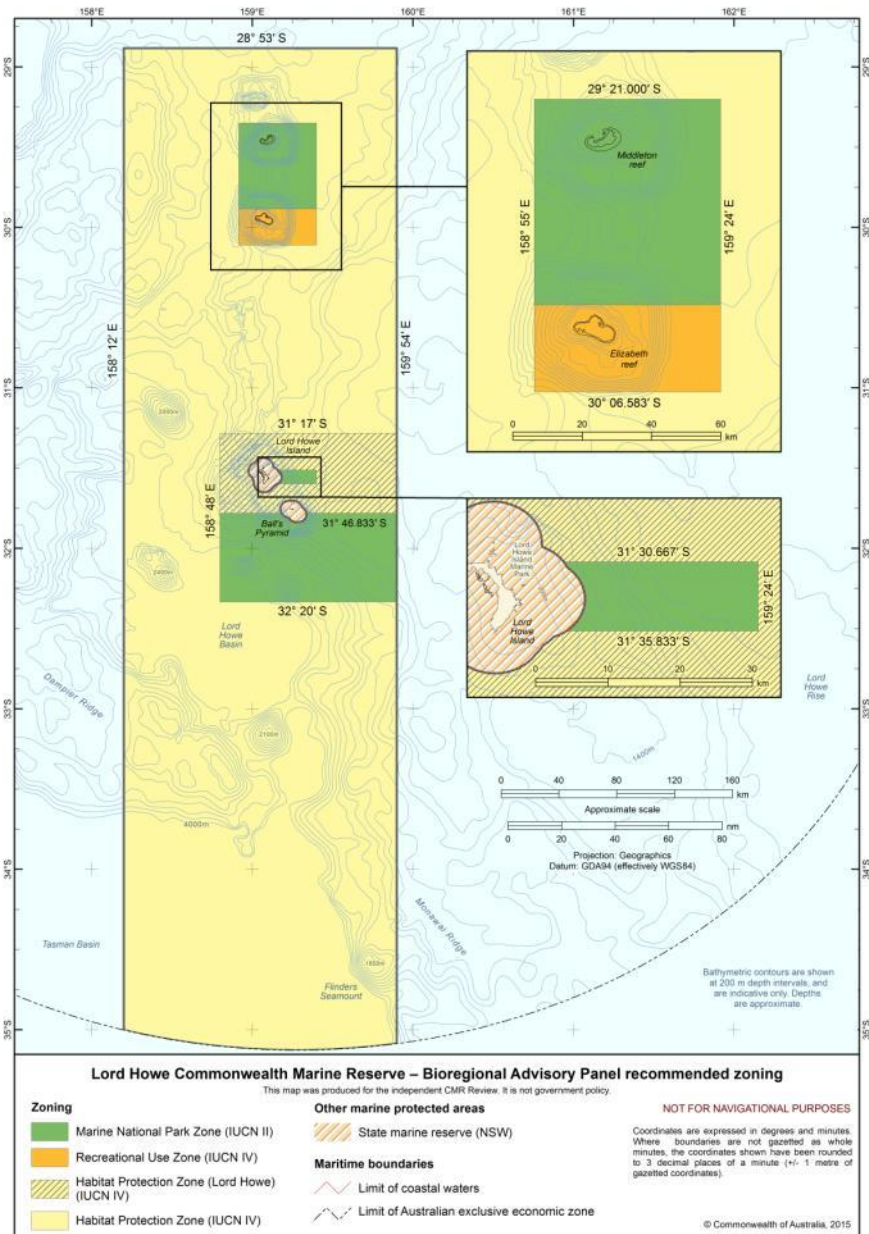


Figure 4.4.5.1 Recommended zoning for Lord Howe CMR

Table 4.4.5.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. While the area of MNPZ reduced slightly, this is offset by the increased HPZ and corresponding reduction in MUZ. All other zones stay the same.

Table 4.4.5.1 Comparison of areas of zone types between proclaimed and recommended zoning for Lord Howe CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	10 488	9.52%	9 273	8.42%	-1 215	-1.10%
HPZ (IUCN IV)	54 897	49.84%	94 559	85.85%	+39 662	+36.01%
HPZ (Lord Howe) (IUCN IV)	5 136	4.66%	5 136	4.66%	Nil	Nil
RUZ (IUCN IV)	1 170	1.06%	1 170	1.06%	Nil	Nil
MUZ (IUCN VI)	38 446	34.91%	Nil	Nil	-38 446	-34.91%
Total	110 139	100%	110 139	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended zoning for Lord Howe CMR will overall provide greater protection to the benthic habitat in the reserve, with the expansion of HPZ by 36% to cover just over 85% of the reserve area. The recommended expansion of HPZ and reduction of MNPZ in the Lord Howe CMR will not change the number of conservation features represented in MNPZs or HPZs in the Temperate East CMR Network.

The zoning will maintain access for recreational and charter fishers and decrease the overall impact on commercial fishing. The small change to the MNPZ above Middleton Reef will provide access for pelagic trawling for alfonsino in this area. The recommended zoning for the Lord Howe CMR reduces the number of zone types from five to four and will reduce complexity and improve ease of compliance for users.

The Lord Howe CMR does not overlap with any native title determinations, applications or IPAs.

The recommended extension of HPZ in the Lord Howe CMR will restrict mining activities above the level of restriction set out in the proclaimed zoning. The area covered by this recommended zoning change is rated as having medium-low to low petroleum prospectivity.

4.4.6 NORFOLK COMMONWEALTH MARINE RESERVE

Background

The Norfolk CMR is centred around Norfolk Island, spanning more than 700 km in a north–south alignment over the Norfolk Ridge. The reserve, established in 2012, covers approximately 188 443 km² and contains three zone types: Marine National Park (22%), Habitat Protection (11%) and Multiple Use (67%) (Figure 4.4.6.1).

Conservation values represented within the reserve include examples of the ecosystems of the Norfolk Island Province; the Norfolk Ridge; benthic habitats thought to act as stepping stones for faunal dispersal; the Tasman Front; and Biologically Important Areas for humpback whales and a number of seabird species.

The Commonwealth SESSF and the ETBF operate within or near the marine reserve. There is also an inshore shelf/upper slope fishery and an exploratory offshore deepwater fishery around Norfolk Island. Tourism shipping, charter fishing and recreational fishing occur in the area.

Issues raised

In addition to the Temperate East CMR Network issues raised above in Section 4.4, the Norfolk CMR was canvassed in several submissions, as well as in meetings with stakeholders. Issues raised included:

- Access and protection for local fishers
- Inadequate protection—specifically, inshore areas around Norfolk Island and Norfolk Island seamounts
- Unprotected habitats—particularly the lack of MNPZs over seamount features.

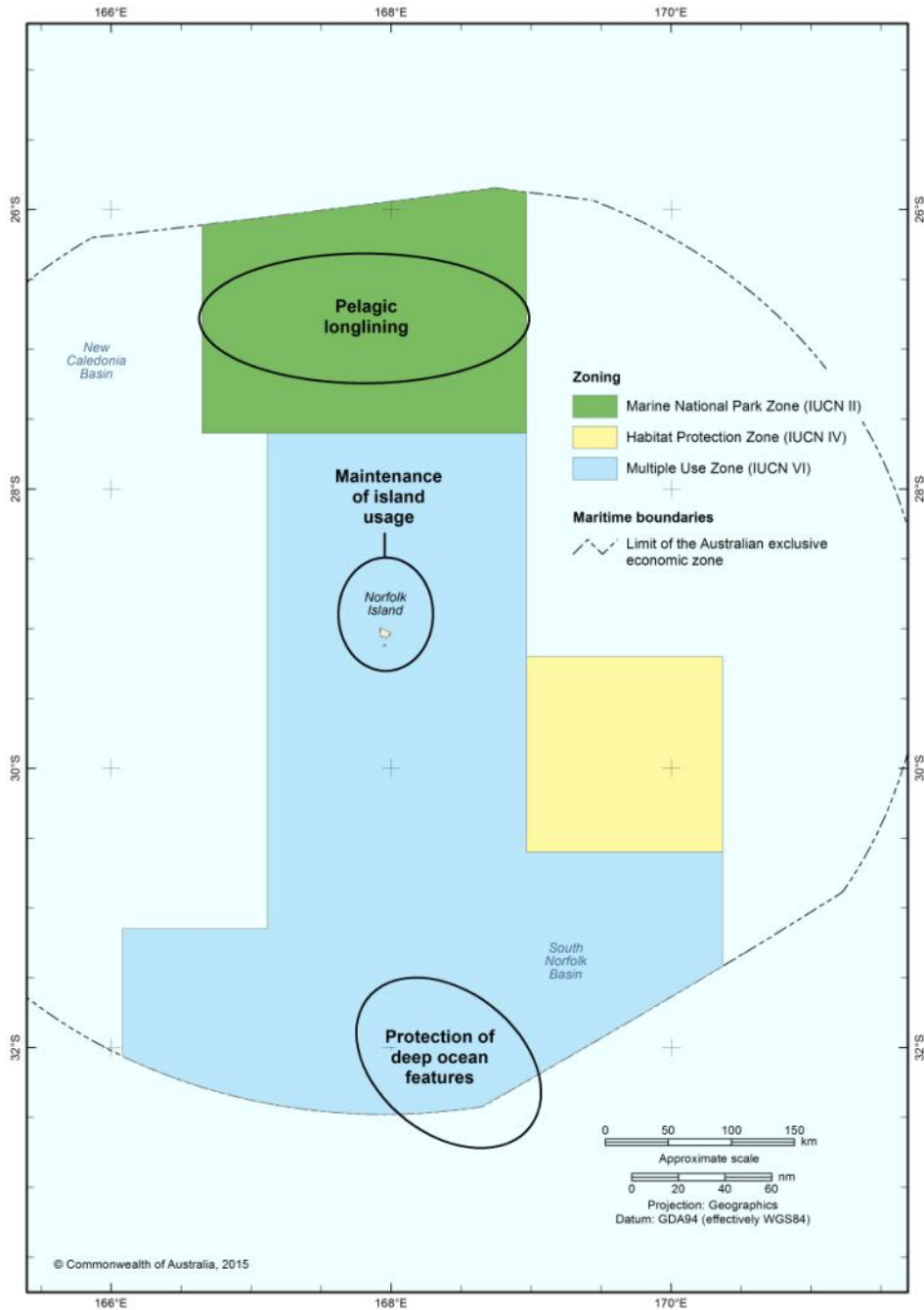


Figure 4.4.6.1 Norfolk CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel noted that the Norfolk CMR was one of few CMRs that extended to the high-water mark where there was permanent habitation. The Regional Panel noted that this required more specific site management arrangements and was something that could be considered under the CMR Review’s broader recommendations.

The Regional Panel noted submissions and representations from the Norfolk Island residents, which requested continued access and control over fishing in the area. The Regional Panel noted that delegation of fishing authorities’ regulations was beyond this review’s terms of reference.

The Regional Panel noted submissions and representations from the conservation sector calling for increased protection to seamounts in areas such as Norfolk CMR.

The Regional Panel noted the importance of retaining access to the Wanganella Banks area for commercial and recreational fishers. It also noted that there was some exploratory fishing in the current HPZ and in the area immediately north of it. They also noted some interest in pelagic longlining in the MNPZ.

The Regional Panel did not identify any areas of contention in the Norfolk CMR, but noted the opportunity to increase the level of protection over the Vening-Meinesz Fracture Zone feature and increase the representation of depth ranges under high protection in the CMR.

Recommendations

The recommendations for the Norfolk CMR are to:

- Change the MUZ to HPZ except for an area of 10 km x 10 km centred around Norfolk Island
- Establish a new MNPZ over the Vening-Meinesz Fracture Zone in the south of the Norfolk CMR.

These changes are shown in Figure 4.4.6.2 and summarised in Table 4.4.6.1.

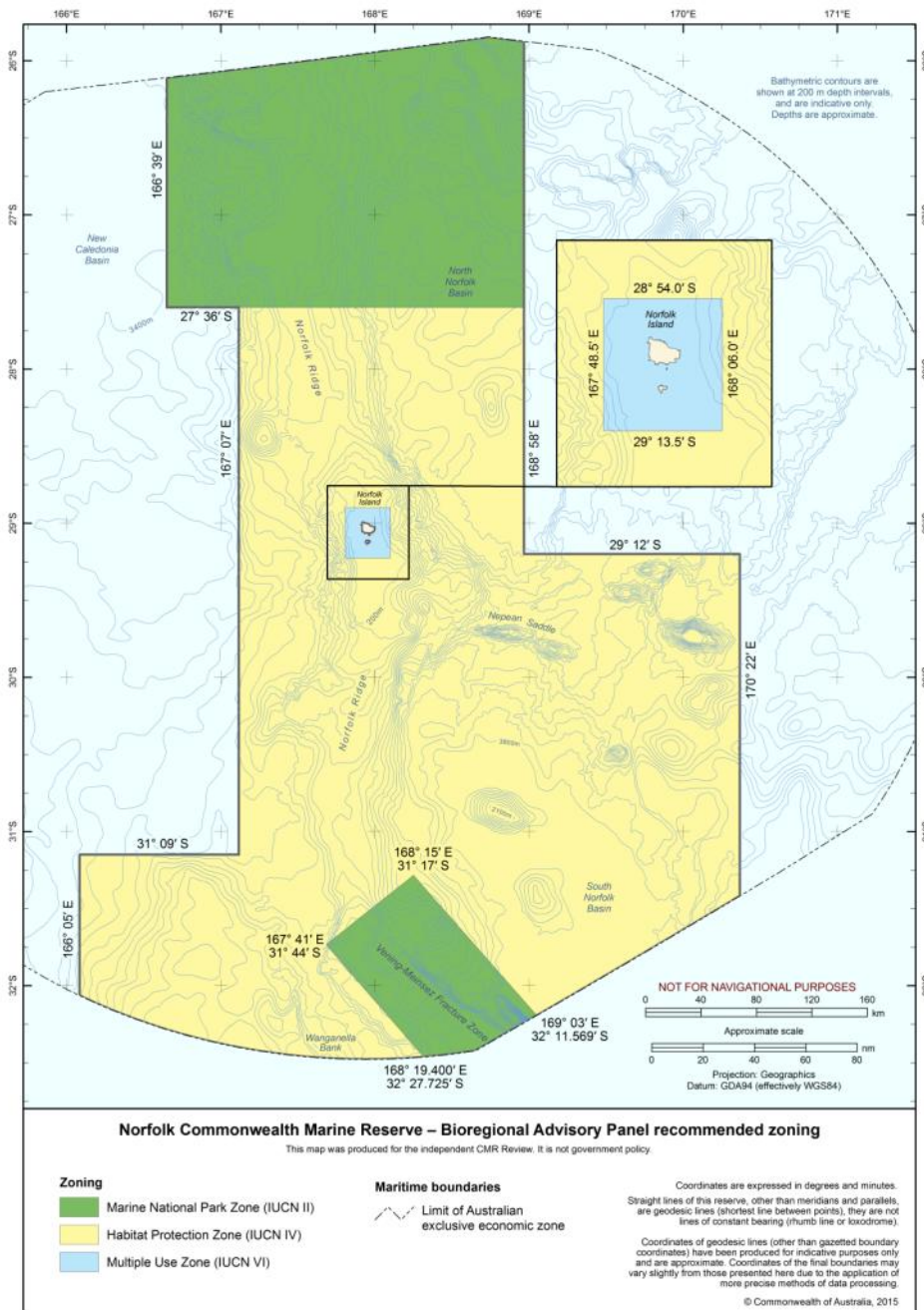


Figure 4.4.6.2 Recommended zoning for Norfolk CMR

Table 4.4.6.1 indicates how the areas under different zone types (within the outer boundaries of the reserve) will change with the recommended zoning. The area under MNPZ is increased, as is the area under HPZ. Together these zones, which afford a high level of protection, make up 99% of the reserve. There was a corresponding reduction in the MUZ.

Table 4.4.6.1 Comparison of areas of zone types between proclaimed and recommended zoning for Norfolk CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
MNPZ (IUCN II)	41 661	22.11%	50 273	26.68%	+8 612	+4.57%
Habitat Protection Zone (IUCN IV)	20 984	11.14%	137 186	72.80%	+116 202	+61.66%
Multiple Use Zone (IUCN VI)	125 799	66.76%	985	0.52%	-124 814	-66.23%
Total	188 444	100%	188 444	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Outcomes

The recommended introduction of an additional MNPZ and expansion of HPZ in the Norfolk CMR will provide increased protection to a further four conservation features in MNPZ and 11 conservation features in HPZ in the Temperate East CMR Network. The four conservation features newly captured in MNPZ include three Depth Ranges (by Provincial Bioregion) and one Seafloor Type. Two of these Depth Ranges (by Provincial Bioregion) will be newly included in both MNPZ and HPZ. The conservation features newly captured in HPZ zoning include an additional six Depth Ranges (by Provincial Bioregion), one KEF and two Seafloor Types. Changes to the representation of specific conservation features are listed in Appendix H.

The recommended zoning for Norfolk CMR is not expected to impact on any commercial, recreational or charter fisheries because of the remoteness of the area.

The recommended introduction of an additional MNPZ may increase the difficulty of compliance with the zoning of the Norfolk CMR for any commercial fishers operating in the area, particularly those with concerns about gear drift. Changing the boundaries of the MUZ and expanding the HPZ is not expected to result in any changes in difficulty of compliance. An MUZ around Norfolk Island will be maintained to allow a variety of existing marine uses to continue, and for more detailed management arrangements to be developed in the future in consultation with the island community.

The Norfolk CMR does not overlap with any native title determinations, applications or IPAs.

The recommended introduction of an additional MNPZ and expansion of HPZ in the Norfolk CMR will restrict mining activities above the level of restriction set out in the proclaimed zoning. The area covered by these recommended zoning changes is rated as having medium-low to low petroleum prospectivity.

4.5 CORAL SEA COMMONWEALTH MARINE RESERVE

Background

The Coral Sea CMR extends from the GBRMP out to the limit of Australia's EEZ, from Cape York Peninsula in the north and an east-west line approximately 40 km north of Bundaberg in Queensland in the south. The reserve's nearest point to the mainland is approximately 60 km and it extends out to about 1 100 km from the coast. Depth ranges from shallow waters around reefs and cays to the remote and little-known abyssal plains almost 5 km deep.

The Coral Sea CMR established in 2012 covered 989 842 km² and contained six zone types: Marine National Park (51%), Habitat Protection (Coral Sea) (18%), Habitat Protection (Seamounts) (9%), Conservation Park (2%), Multiple Use (20%), and General Use (0.4%) (Figure 4.5.1). It encompassed the former Coral Sea Conservation Zone, and included the former Coringa-Herald National Nature Reserve and former Lihou Reef National Nature Reserve which were proclaimed in 1982.

Much of the reserve is considered to be a relatively pristine marine environment with distinctive biological characteristics and has not been subject to major anthropomorphic pressures. Conservation values represented within the reserve include six Provincial Bioregions (Cape Province, Northeast Transition, Northeast Province, Central Eastern Transition, Kenn Province, and Kenn Transition); 94 Depth Ranges (by Provincial Bioregion); reefs, cays and herbivorous fish of the Marion Plateau; reefs, cays and herbivorous fish of the Queensland Plateau; the Tasmantid Seamount Chain; and over 100 historic shipwrecks.

The northern part of the Tasmantid Seamount Chain extends into the reserve, providing shallow reef and deepwater habitats for a wide range of species. Seamounts are seen as stepping stones for dispersal and hotspots of species richness, abundance and biomass in an otherwise nutrient-poor environment.

The reserve has a range of seafloor features, with shallow coral reefs such as Ashmore and Boot reefs in the north-west; seamounts and deep troughs, including the Townsville Trough that separates the Queensland and Marion plateaux; and the Queensland Trough, which extends along the reserve's border with the GBRMP. The Coral Sea Basin in the north of the reserve is a deepwater abyss that extends to the Mellish Rise in the east.

There are numerous cays and islets and over 30 reefs in the reserve, with a total reef area of approximately 15 024 km². These oceanic reef systems provide complex habitats that support diverse and abundant marine and terrestrial flora and fauna, distinct from the fringing reefs of the Great Barrier Reef. Several seamounts support coral reefs at their peaks, including Wreck, Cato, Kenn and Mellish reefs.

The Coringa-Herald and Lihou Reefs and cays were designated as a wetland of international importance under the Ramsar Convention in 2002. These cays and islets support communities of *Pisonia grandis* (a species of flowering tree in the *Bougainvillea* family) that is relatively uncommon in Australia and globally. These *Pisonia* forests provide significant habitat for nesting seabirds.

Heritage values are significant in the Coral Sea. Historically, many vessels involved in the mining of guano and harvesting of pearls, trochus and sea cucumbers were lost at sea. It is likely that hundreds of historic shipwrecks rest in the reserve, but the precise locations of

most remain unknown. The locations of at least 10 historic shipwrecks are known, with the *Cato* and the HMS *Porpoise* considered particularly important. The region was significant in the Battle of the Coral Sea during World War II. Three ships from this battle are known to have sunk in the north-east of the Reserve, the USS *Sims* (a destroyer), USS *Lexington* (an aircraft carrier) and USS *Neosho* (an aviation fuel supplier).

The north of the reserve, adjacent to the Torres Strait, is important for Indigenous use. This is acknowledged through the Torres Strait Regional Sea Claim, which extends over approximately 37 800 km² of sea in the Torres Strait, between Cape York Peninsula and Papua New Guinea. The Torres Strait Turtle Fishery operates in the far north-east corner of the reserve as an Indigenous fishery using hand-collection and traditional spear methods. Native title rights extend into a small portion of the north-west of the reserve.

Commercial fishing is an important industry in many coastal economies in the region. Associated activities, such as fish processing, trade and marketing, ship repair yards, marinas and dock facilities, transportation, boat construction, and the supply of marine equipment such as nets and rigging, are important to regional employment and economic activity and, more broadly, to food security.

Queensland fisheries that operate partially within the reserve include the East Coast Otter Trawl Fishery, the Deep Water Multiple Hook Fishery and the East Coast Inshore Fin Fish Fishery. The Commonwealth ETBF is partially within the Coral Sea, while the entire Coral Sea Fishery is within the Coral Sea. Hand collection of tropical fish and coral for the marine aquarium trade is the most economically important component of the Coral Sea Fishery. For a variety of reasons, including stricter fishing regulations and the introduction of quota controls, fuel prices and changing market conditions, the current extent of commercial fishing and reported catches are considerably lower than in the past.

Most recreational fishing and charter fishing, including spear and game fishing, occurs in and around the reefs and cays of the Queensland and Marion plateaux adjacent to GBRMP.

The Coral Sea is also important for tourism, particularly diving, whale watching and cruising as well as boating and shipping. Willis Island is a particular interest for the cruise ship industry in the region.

The reserve is also important for science with research and monitoring conducted on the former Coringa-Herald and Lihou Reef National Nature Reserves. The meteorological research station on Willis Island is the only permanently populated island in the Coral Seas Islands Territory. Unmanned weather stations, beacons and a lighthouse are located on some of the other islands and reefs.

The Coral Sea CMR contains one of Australia's busiest shipping routes, with important links to the global shipping lanes between Europe and Asia. There are no petroleum exploration permits, titles or acreage leases in the reserve.

Submarine telecommunication cables linking Australia with other countries, including Papua New Guinea, Guam and Japan, intersect the reserve.

The Australian Defence Force uses the entire marine reserve in the course of its operations, with a specific area set aside around Saumarez Reefs for training activities.

Issues raised

The Coral Sea CMR was canvassed in detail in many submissions and in meetings with stakeholders. Issues raised included:

General

- Concerns that the protection in existing zoning, or that modified through the set-aside Coral Sea CMR Management Plan, would be weakened
- Loss of access for fisheries and the regional socioeconomic consequences, specifically:
 - Loss of access for tuna fishing
 - Loss of potential to further develop tuna fisheries in the Coral Sea
 - Loss of access to potential deepwater prawn resources
 - Loss of access for collecting sea cucumber and aquarium species within several of the coral reefs
- Impact of MNPZs on the charter fishing industry
- Promotion of the Coral Sea reefs as an ‘eco-research’ destination
- Impacts of commercial and game fishing on the coral reefs and associated fish species
- Gear drift by tuna long-lines
- Illegal, unreported and unregulated fishing
- Inadequate protection—specifically, improved MNPZ protection of reefs, shoals, cays and seamounts
- Ports and shipping operations—specifically risks, impacts and unintended consequences, as well as dredge spoil management.
- Historical maritime significance of the area—particularly the Battle of the Coral Sea
- Effort shift—particularly negative consequences of concentrating fishing effort in areas outside MNPZs or outside the Coral Sea CMR more generally
- Impact of non-extractive uses on MNPZ values (e.g. diving and shark feeding)
- Importance of reference, monitoring and research in MNPZs
- Allowing recreational fishing in IUCN II zones
- Removal of destructive fishing practices from the Coral Sea CMR
- Exclusion of mining, including oil and gas and mineral exploration
- Need to better integrate fisheries and conservation management

Osprey, Shark and Vema reefs

- Loss of access for charter and recreational fishing
- Maintenance or expansion of protection to ensure adequate reserve size and secure ecotourism opportunities
- Maintenance or expansion of protection for reef habitat

Bougainville Reef

- Loss of access for charter and recreational fishing
- Maintenance of protection to secure ecotourism opportunities
- Maintenance or expansion of the MNPZ to ensure adequate protection

Kenn and Mellish reefs

- Maintenance of protection as an MNPZ
- Loss of access for fisheries—specifically:
 - Loss of access for tuna fishing
 - Loss of access for charter fishing

Seamounts

- Loss of access for commercial fisheries—specifically, the adequacy and implications of the FGRA that relates to auto-longlining
- Protection of seamounts under MNPZ.

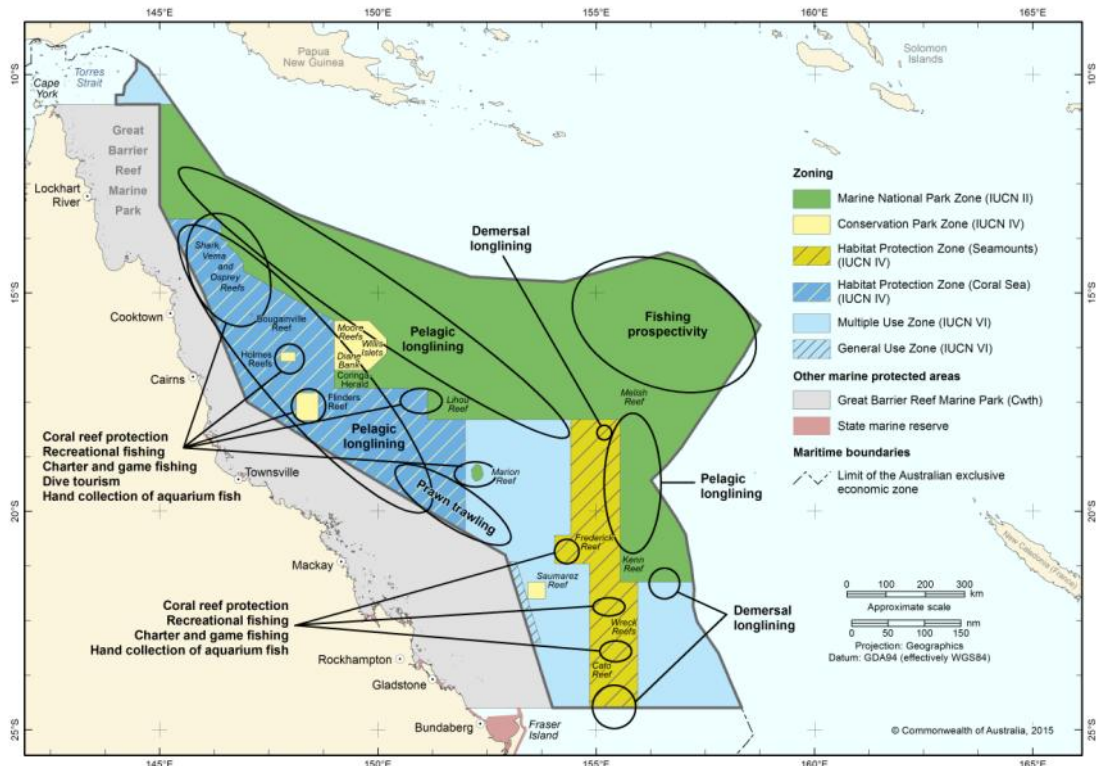


Figure 4.5.1 Coral Sea CMR as proclaimed, showing key issues and drivers for change identified during the CMR Review

Areas of contention

The Regional Panel listed several areas of contention in the Coral Sea CMR, including:

- Loss of access by established commercial, recreational and charter fisheries
- Access to, use of and improving level of protection of coral reefs in the Coral Sea
- Balancing competing uses of Osprey, Shark and Vema reefs
- The FGRA of auto-longlining on Coral Sea seamounts.

Commercial fishing—pelagic longlining

The ETBF extends from Cape York in Queensland to the border of South Australian and Victoria, and fishing occurs in both the Australian Fishing Zone and adjacent high seas. The main target species are albacore tuna (*Thunnus alulunga*), bigeye tuna (*T. obesus*), yellowfin tuna (*T. albaceres*), broadbill swordfish (*Xiphias gladius*) and striped marlin (*Tetrapturus audux*). These species are also caught in many other countries, and Australia's catch of tuna and billfish is only a very small part of the total international catch. The catch in Australia is sustainable, but bigeye tuna is considered overfished and broadbill swordfish subject to overfishing.

Fish are taken by minor line (that is, trolling, pole and line (poling) or rod and reel fishing) and pelagic longline (baited hooks attached to the longline by short lines called snoods that hang off the mainline, which can be many kilometres long and can carry thousands of hooks). Recreational anglers use minor line methods.

The methods of fishing employed in the ETBF have been found to have little to no direct impact on the physical marine environment. AFMA ecological risk assessment identified nine species at high risk from the effects of fishing in the ETBF. This included longfin

mako, dusky whaler, pelagic thresher and crocodile sharks; two species of sunfish; short-finned pilot and false killer whales; and leatherback turtle. No target species, ecological communities or habitats were assessed to be at high risk from the effects of fishing in the ETBF.

Areas of particular interest:

- The Coral Sea Zone (formerly known as Area E), a restricted area off the Queensland coast where a 500-hook limit per shot applies to protect juvenile marlin species and their spawning grounds. Under the 2012 proclamation this area was entirely contained in the HPZ (Coral Sea) that prohibited commercial longlining.
- The remainder of the Coral Sea CMR all of which overlaps with the ETBF, with a significant portion in the MNPZ proclaimed in 2012.

The Regional Panel considered that the ETBF was a sustainable fishery which, together with a number of ancillary shore-based businesses, made a significant contribution to the regional economy. It found little justification for the extent of the proclaimed restriction of commercial tuna longlining in the Coral Sea, given its conservative management. The BAP also took the view that the large MNPZ that covered 51% of the Coral Sea CMR, most of which was in distant waters of over 2000 m depth, placed unnecessary constraints on the ETBF, which usually set hooks shallower than 300 m.

Aquarium fish collection and sea cucumber fishery

Hand collection of aquarium fish and of sea cucumbers (*beche-de-mer*) are sectors of the Coral Sea Fishery managed by AFMA and operating from Cape York to Sandy Cape in Queensland. The Aquarium Sector is licensed to collect 40 000 specimens of more than 500 species found in the Coral Sea. The sea cucumber sector targets mainly black teatfish, prickly redfish, surf teatfish, white teatfish greenfish and lollyfish as well as 11 other minor species with a total allowable catch of over 40 t in total. Both sectors operate on the coral reef and flats.

The Regional Panel considered that both fisheries were low impact as long as they maintained their established pattern of rotational fishing on reefs, including Osprey, Shark, Bougainville and Marion reefs, to avoid localised depletion.

Recreational and charter fishing

The Coral Sea is an internationally recognised fishing destination that supports a significant recreational and charter fishing sector that markets and is reliant on the remoteness and wildness of the Coral Sea.

The BAP noted representations from both sectors that illustrated the importance of access to nearshore reefs, particularly Osprey, Bougainville, Holmes, Flinders, Marion and Saumarez reefs, as local destinations for their respective communities fishing out of Cooktown, Cairns, Townsville, Mackay and Gladstone respectively. The BAP also noted the importance of these reefs for charter operations as a key 'staging post' on the way to more distant locations.

Several of these reefs are very large and, in the opinion of the BAP, can be zoned in such a way as to achieve the highest level of conservation (MNPZ) alongside low-impact recreational and charter fishing (HPZ (Reefs)). These areas included Osprey, Shark, Vema, Holmes, Flinders and Marion reefs.

The BAP also considered the general findings of the ESP on recreational fishing and its impacts, in particular that consume-on-site provisions and/or restrictions on the catch of reef associated species in some areas which had the potential to minimise impacts while allowing limited fishing to occur in such areas.

Trawling

Demersal trawling occurs in the Coral Sea CMR and is a component of the Queensland Trawl Fishery. The area of interest is the deeper water (250–800 m) adjacent to the boundary with the Great Barrier Reef between Townsville and Rockhampton. Species of interest include giant scarlet prawns and royal red prawns as well as bycatch such as scampi, crabs and ornamental shells.

Impacts of prawn trawling on inter-reefal areas of the Great Barrier Reef have been well described and are likely to be similar for prawn trawling on these habitats in the East Marine Region.¹⁴ Single trawl shots have little impact but repeated trawling has a cumulative effect and can remove the majority of highly susceptible species. In general, research indicates that the impacts of trawling are related to the distribution and intensity of fishing effort, the resilience of taxa to removal by the gear, and the ability of the taxa to recover after impact. Prawn trawls have been reported to have smaller effects than fish trawls and beam trawls.¹⁵

Auto-longlining

Demersal or bottom longlining has occurred in the Coral Sea CMR in several places along the Tasmanid Seamounts. This method is allowed in the Coral Sea Fishery. Reef and seamount species are targeted: a broad range of finfish including tropical snappers and emperors (*Lethrinidae*, *Pristipomoides* or *Lutjanidae*), eyeline snapper (*Nemypteridae*), coral cod (*Epinephelus* spp, *Serranidae*), jobfish (*Lutjanidae*), and coral trout (*Plectropomus leopardus*). Other species may also be targeted, depending on the area being fished, such as trevalla and sharks.¹⁶

The ESP advice on the FGRA for demersal automatic longline gear specifically in relation to operations in the Coral Sea CMR was that:

- Recent management arrangements implemented by AFMA, particularly those relating to spatial closures, together with use of tori lines and industry codes of practice designed to improve the survival of bycatch, have significantly mitigated the threat of demersal longline fishing to vulnerable chondrichthyans in the Central Eastern CMR
- Information on the impact of the auto-longline sector of the Coral Sea Fishery in relation to target species, bycatch species and habitat is poor, but closer monitoring of logbooks and placement of observers has been recommended
- The impact of demersal longline fishing on deepwater habitats such as those found in the Coral Sea CMR remains uncertain, as to date no research has specifically assessed this risk in this region

¹⁴ K. McLoughlin and S. Morison. (2010). Assessment of risks that commercial fishing methods may pose to conservation values identified in the Areas for Further Assessment of the East Marine Region. Department of the Environment, Water, Heritage and the Arts, Canberra.

¹⁵ C. R. Pitcher, C. Y. Burrige, T. J. Wassenberg, B. J. Hill and I. R. Poiner. (2009). A large scale BACI experiment to test the effects of prawn trawling on seabed biota in a closed area of the Great Barrier Reef Marine Park, Australia. *Fisheries Research* 99(3), 168–183.

¹⁶ D. Furlani, M. Fuller, C. Bulman, J. Dowdney and M. Sporcic. (2007). Ecological Risk Assessment for the Effects of Fishing: Report for the Demersal Longline Subfishery of the Coral Sea Fishery. Report for the Australian Fisheries Management Authority, Canberra.

- In some circumstances and under appropriate management arrangements, demersal longline may be a more sustainable method than trawl for deepwater fisheries off the continental slope and on seamounts. However, this will depend largely on the habitat characteristics of the area fished and the intensity of fishing
- Spatial closures appear to offer the best protection where catch rates of non-target species are high
- Until such a time that these relationships can be properly understood, a precautionary approach to deep water fishing should be maintained. For this reason demersal longline fishing (including auto-longlines) should remain a method that is incompatible with the conservation values of the Coral Sea CMR, particularly those relating to seamounts.

Conservation

The ESP noted that:

- Recent studies have shown that Coral Sea fish assemblages have complex patterns of connectivity and are unique on a regional, national and global scale. Deepwater fish in the western Coral Sea display high species richness and endemism, while coral reef associated fish species are more similar to Pacific assemblages than to the Great Barrier Reef.
- New information relevant to two of the identified KEFs of the Coral Sea—the reefs, cays and herbivorous fish of the Queensland Plateau and the reefs, cays and herbivorous fish of the Marion Plateau—indicates that the underpinning assumption that the Coral Sea provides connectivity between the Great Barrier Reef and the South Pacific may need to be revised for macroinvertebrates and herbivorous fish. Instead, fish and macroinvertebrate assemblages of the Coral Sea more closely align with those of the western Pacific, such as Tonga and Samoa, while those in the Great Barrier Reef were more closely aligned with Papua New Guinea, the Solomons Islands and Vanuatu.
- Reefs within marine national parks zoned as IUCN II, including the Coringa-Herald and Lihou reef systems, supported higher fish biomass (approximately 70%) than comparable reefs where fishing is allowed. Shark biomass was approximately 90% higher and large predator biomass 50% higher in IUCN II zones than at comparable fished areas nearby.¹⁷

The BAP noted that this information supported the argument for greater protection of the coral reefs in the Coral Sea, including a better spatial coverage across the Queensland and Marion plateaux.

The BAP noted the importance placed on the size of the Coral Sea MNPZ in several of the submissions, that argued that the area needed to be protected as one of a few relatively intact marine ecosystems globally. It also noted that much of this area was in deep offshore waters and lightly impacted by fishing and other anthropogenic activities. The area held potential in terms of fishing prospectivity, especially for tuna, and aside from historical fishing by international fleets, had not been exploited by Australia.

The BAP paid particular attention to zoning that would complement the zoning and management arrangements of the GBRMP, recognising the conservation, social and

¹⁷ G. J Edgar, D. M. Ceccarelli and R. D. Stuart-Smith. (2015). Reef Life Survey Assessment of Coral Reef Biodiversity in the Coral Sea. Report for the Department of the Environment. The Reef Life Survey Foundation Inc. and Institute of Marine and Antarctic Studies.

economic values and potential of the Coral Sea for a wide variety of users and other interested stakeholders.

The ESP advice about new information on the conservation values for the Coral Sea CMR included:

- The coral reefs in the Coral Sea CMR have been shown to be distinctive at the species and functional group level in southern, central and northern parts of the reserve. The Coral Sea is shown to be a significant biodiversity hotspot for reef associated sharks and is an important area for pelagic resources such as tuna and marlin. All six species of turtle are found in the Coral Sea and it is also a significant area for breeding seabirds. The Coral Sea CMR is also significant in that it is one of few remaining areas globally that has not been significantly impacted by human activities
- The diversity of the Coral Sea reefs warrants a higher level of protection especially in the southern region. Because they are relatively un-impacted by human activity, the reefs, pelagic and demersal biodiversity of the Coral Sea form an important baseline reference area and an adequate representation should be contained in highly protected, no-take reserves.

The ESP advice regarding split zoning over coral reefs in the Coral Sea was that:

- Split zones and paired sites offer an opportunity to study the effectiveness of different management approaches and can provide useful information to inform and improve future reserve management
- Splitting reef systems into more than one zone type should only be considered on reef systems that are large enough to ensure that (i) each zone covers a sufficient area to deliver conservation outcomes (ii) the allowable activities undertaken in one zone are not of a type, scale or intensity to impact on adjacent zones, and (iii) one zone type is MNPZ.

Recommendations

The recommendations for the Coral Sea CMR are to:

- Combine the HPZ (Coral Sea) and MUZ areas in the south into a single HPZ. This area will provide a larger area of access for the ETBF, charter and recreational fisheries
- Retain the majority of the proclaimed MNPZ in deeper waters of the Coral Sea
- Create a new HPZ (Reefs) zone over Shark, Vema and Bougainville reefs; Diane Bank; Willis Islets; Moore, Saumarez, Frederick and Cato reefs; the southern part of Osprey; the northern half of Marion and Flinders reefs; and western Holmes Reefs. This will provide a greater level of protection to coral reef systems of the Coral Sea while providing access for aquarium, hand-collection, charter and recreational fisheries. Specific restrictions on linefishing and spearfishing for reef associated species should be developed, including no take of reef fish species
- Establish a SZ on Lihou Reef
- Retain MNPZ status on Herald Cays, Coringa Islets, Magdelaine Cays, Mellish and Kenn reefs, and the horn and northern part of Osprey Reef
- Establish new MNPZs on South Flinders, eastern Holmes and Wreck reefs which together with those above, will provide the highest level of protection to a significant and geographically widely spaced number of coral reefs in the Coral Sea for conservation and reference purposes

- Establish five new MNPZs along the south-western boundary of the Coral Sea CMR, to align and complement MNPZs in the GBRMP
- Change and extend the proclaimed GUZ (IUCN VI) to a SPZ near the border of the GBRMP from Townsville to above Rockhampton that will improve access for deep water prawn trawling
- Introduce two small SPZ areas in the southern part of the Coral Sea CMR that will permit demersal longlining
- Change the MUZ in the north around Ashmore and Boot Reefs to HPZ.

These changes are shown in Figures 4.5.3 to 4.5.16 and summarised in Table 4.5.1.

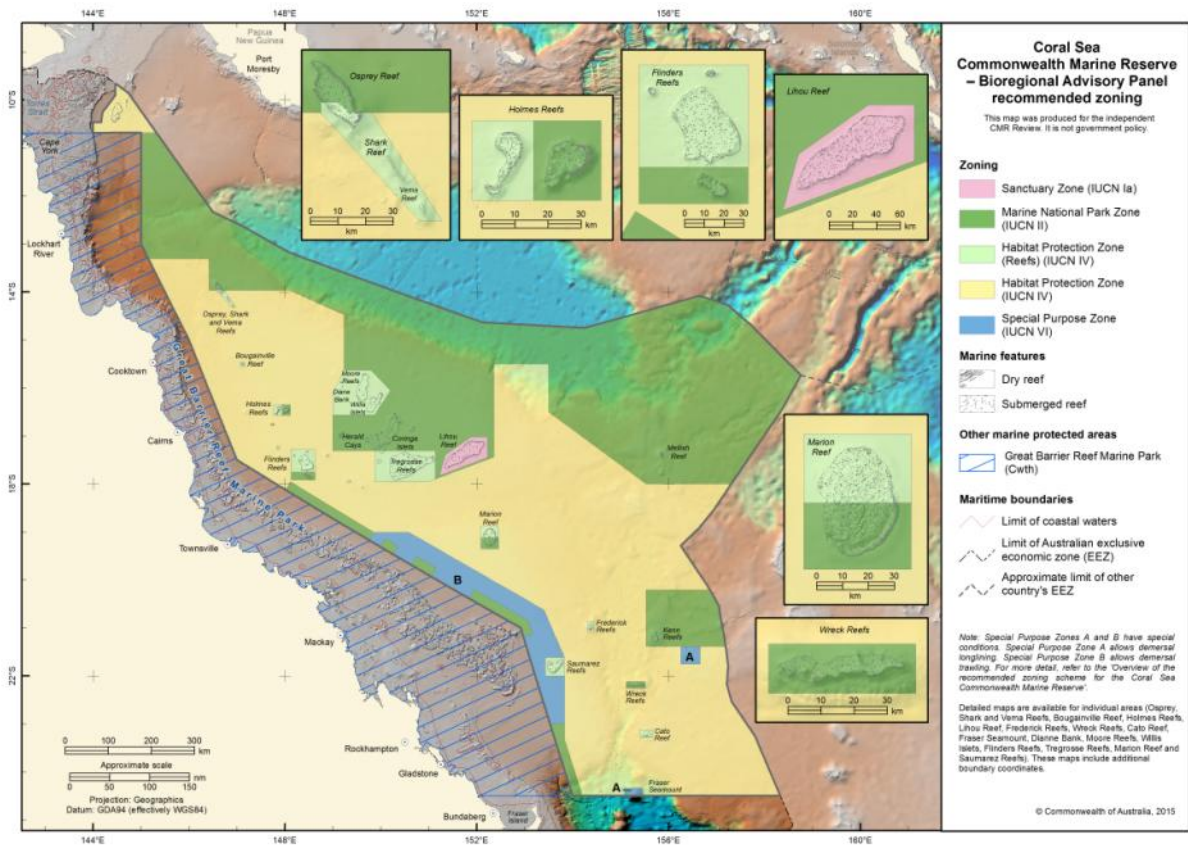


Figure 4.5.3 Recommended zoning for Coral Sea CMR

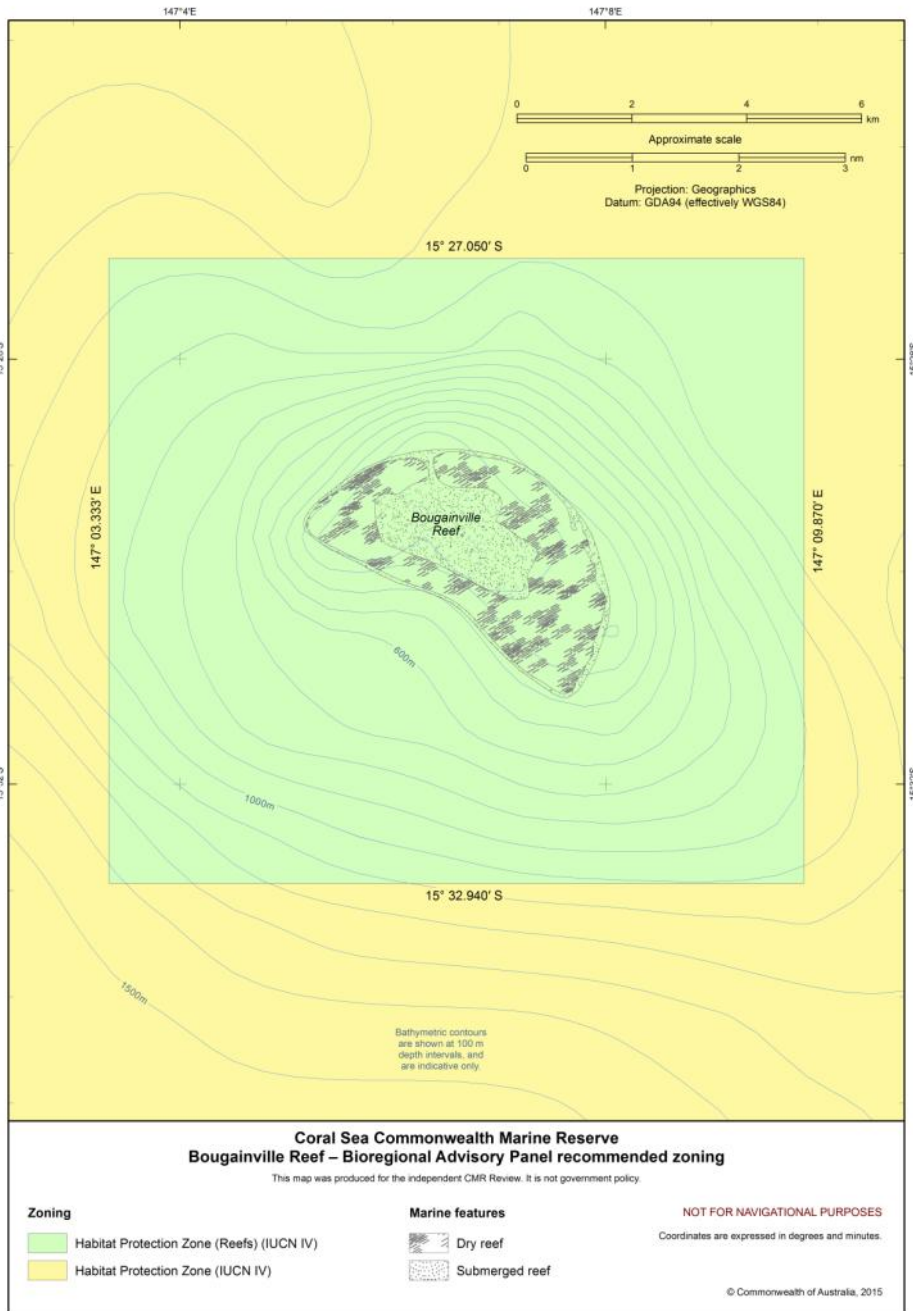


Figure 4.5.4 Recommended zoning for Bougainville Reef, Coral Sea CMR

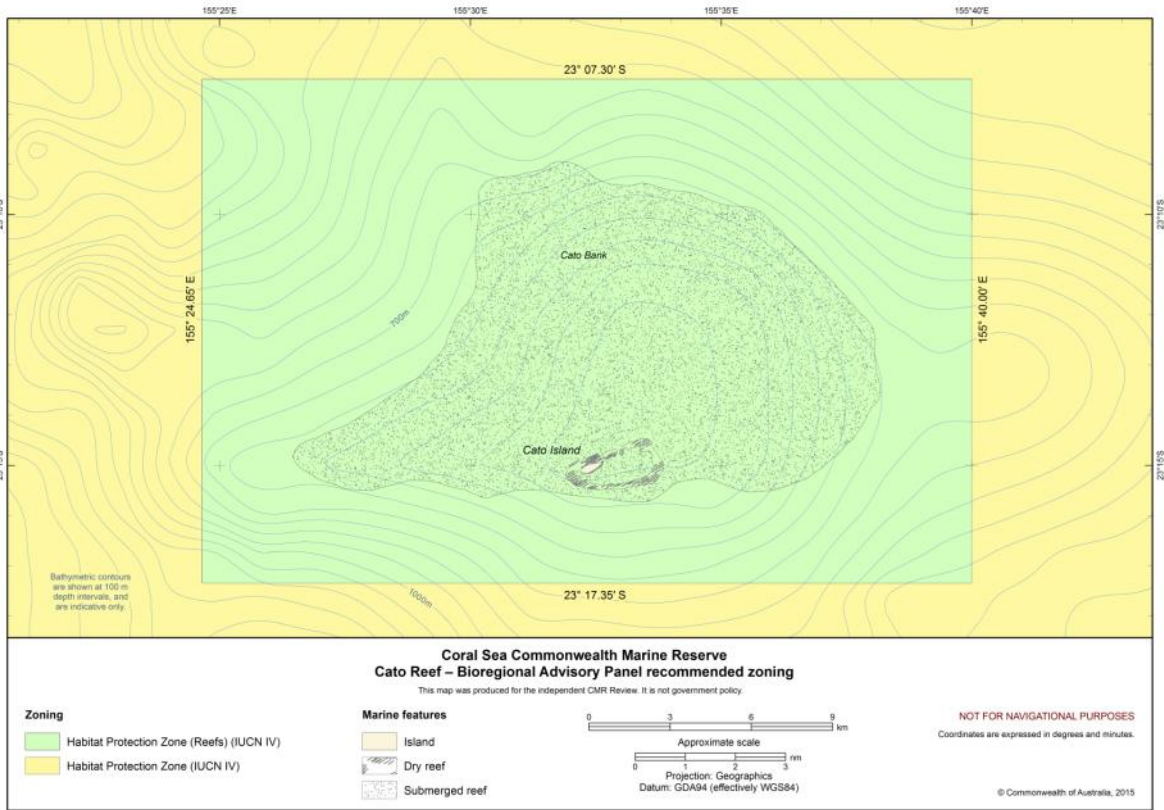


Figure 4.5.5 Recommended zoning for Cato Reef, Coral Sea CMR

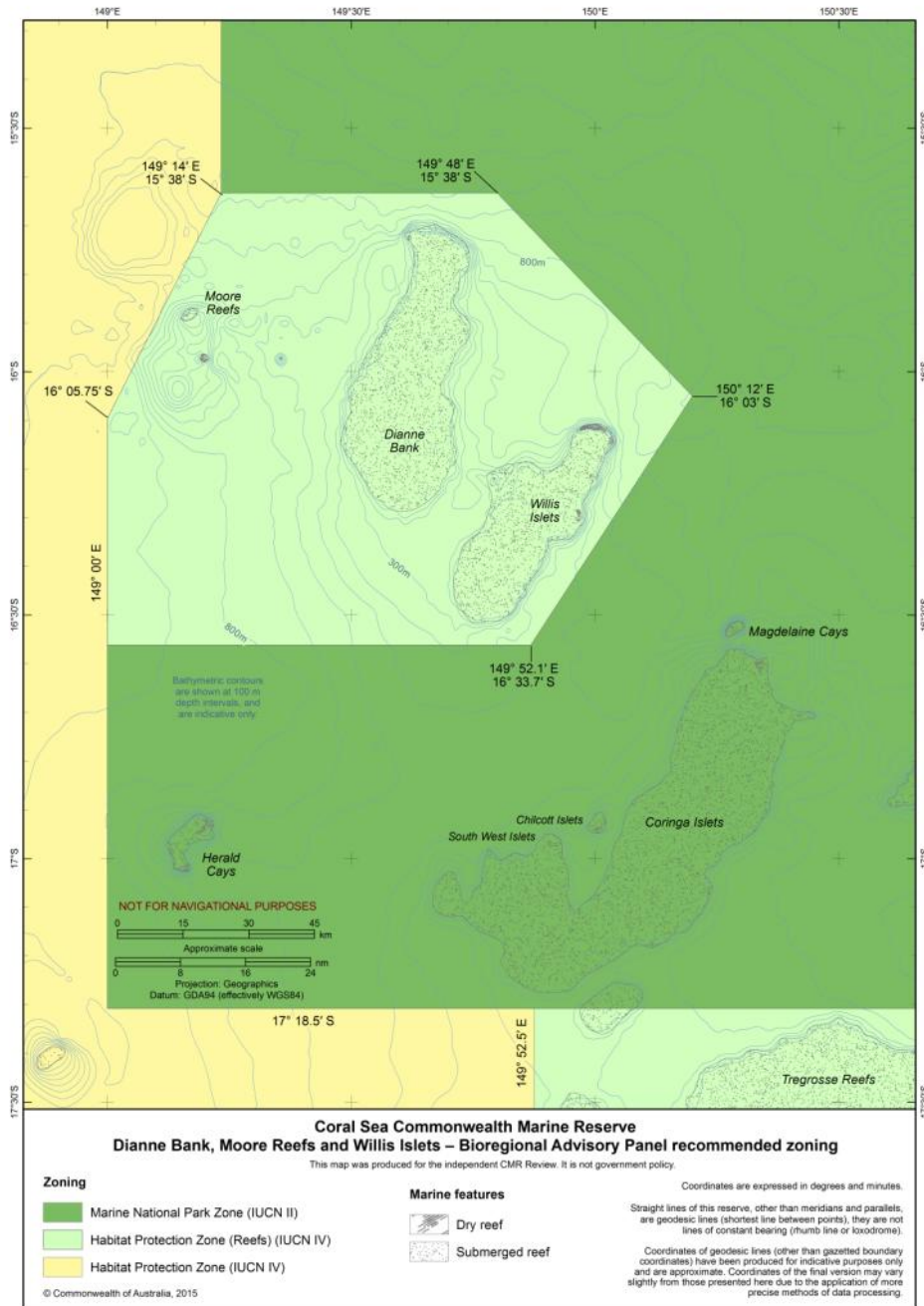


Figure 4.5.6 Recommended zoning for Dianne Bank, Moore Reefs and Willis Islets, Coral Sea CMR

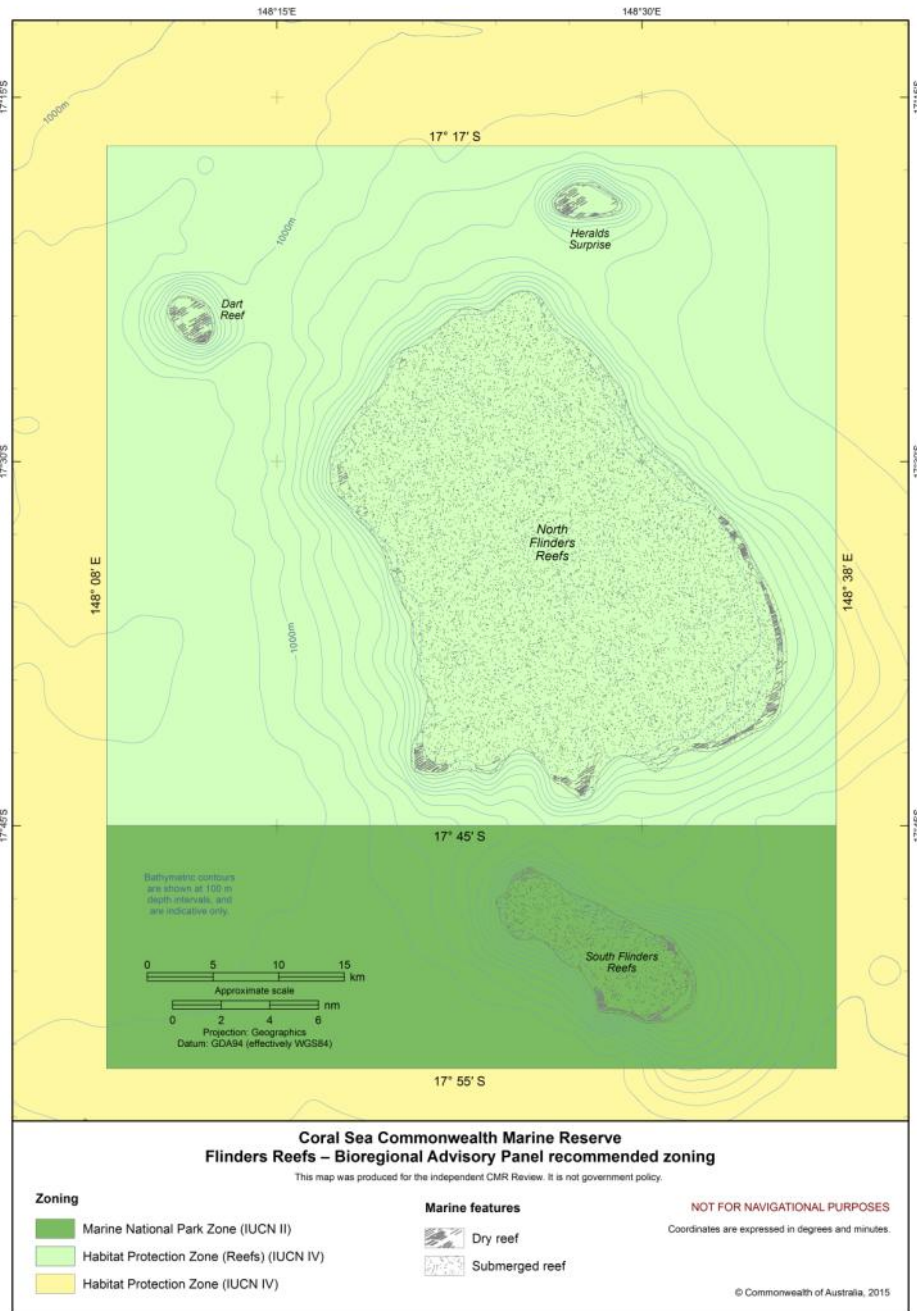


Figure 4.5.7 Recommended zoning for Flinders Reefs, Coral Sea CMR

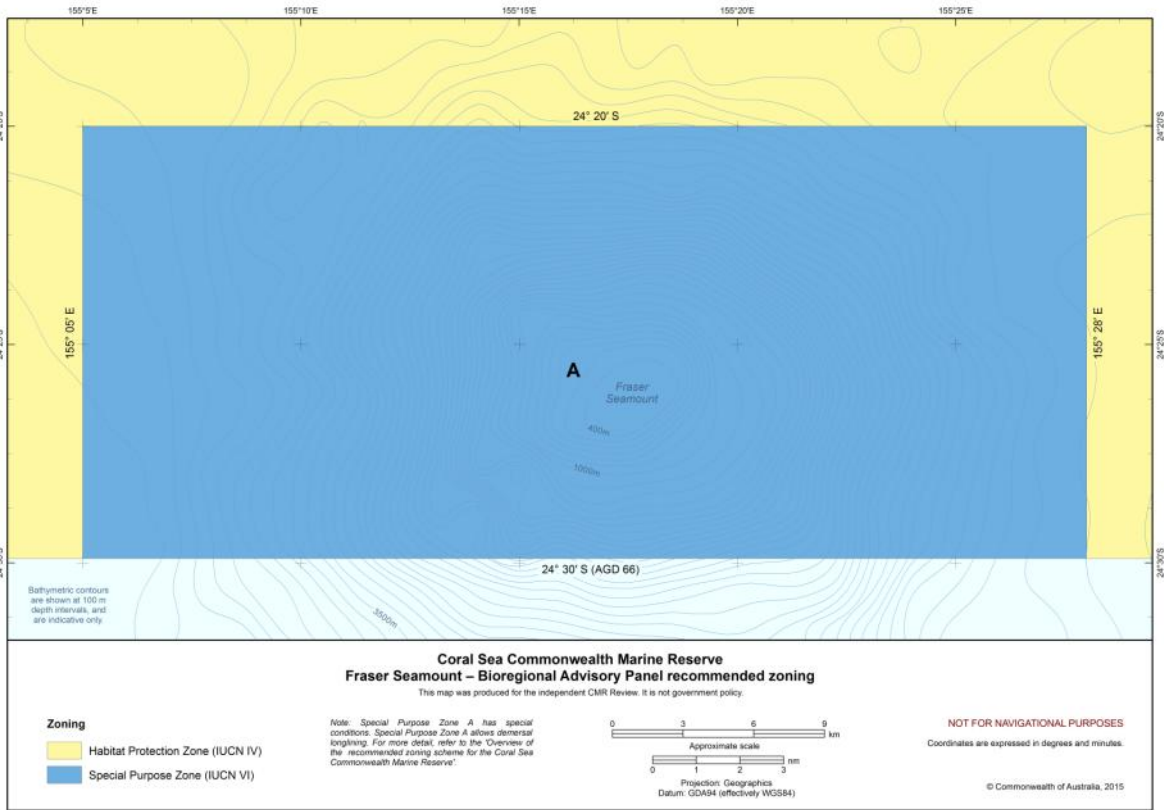


Figure 4.5.8 Recommended zoning for Fraser Seamount, Coral Sea CMR

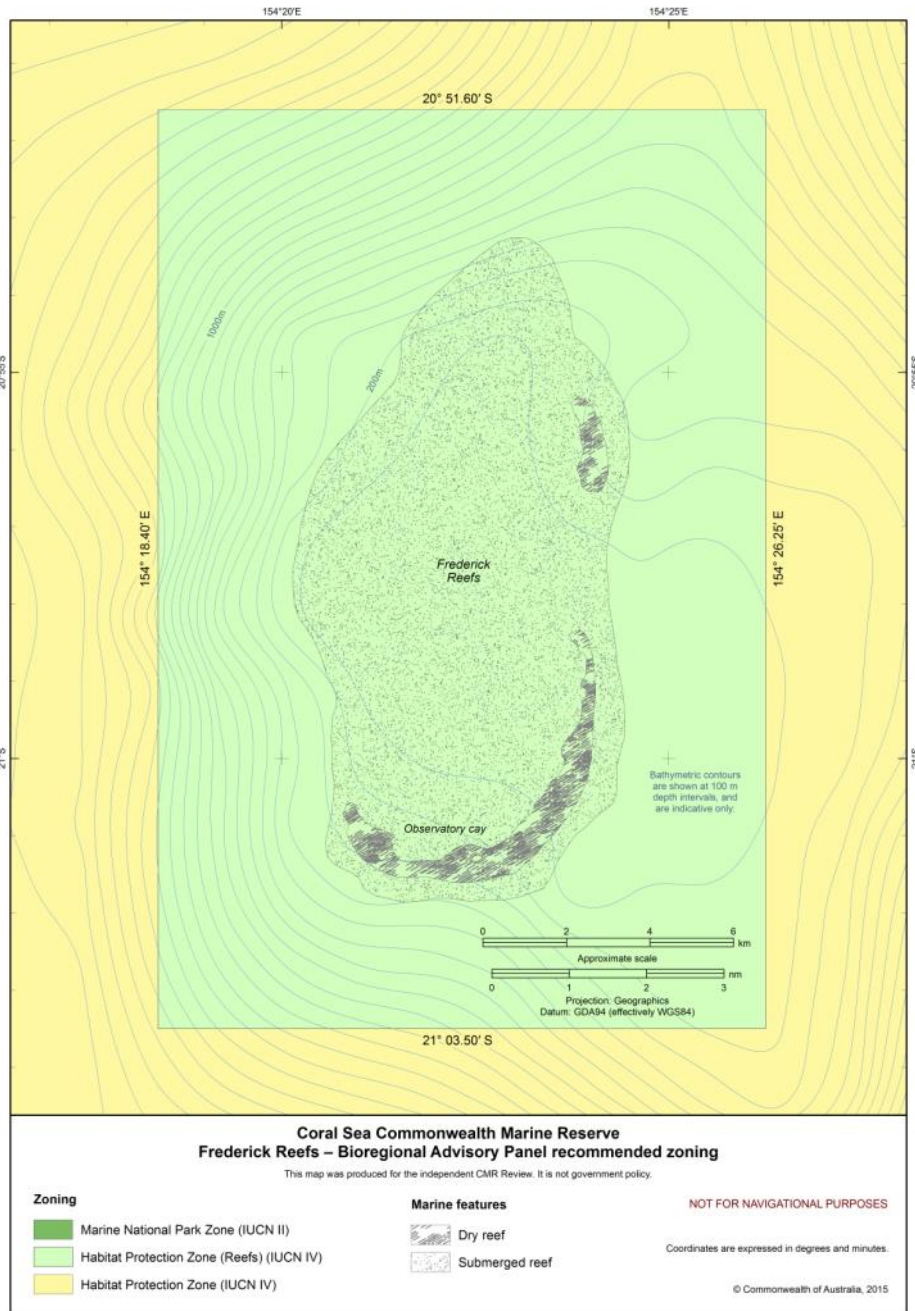


Figure 4.5.9 Recommended zoning for Frederick Reefs, Coral Sea CMR

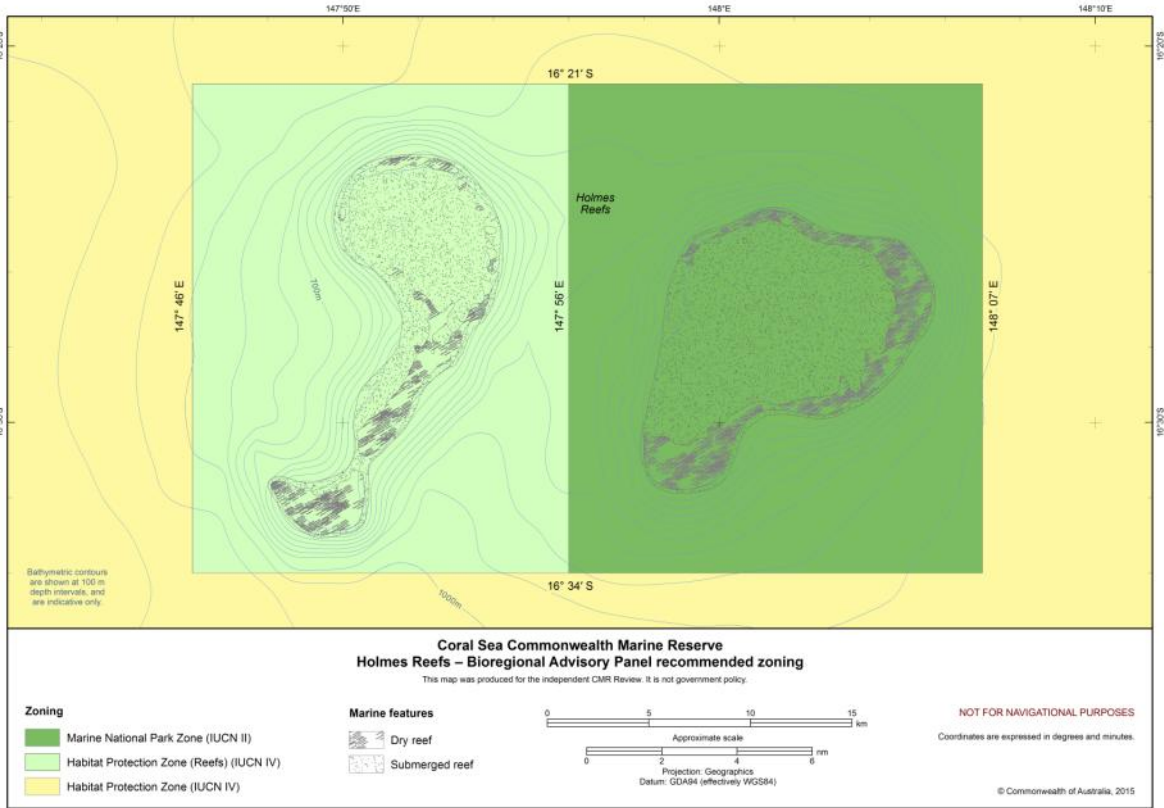


Figure 4.5.10 Recommended zoning for Holmes Reefs, Coral Sea CMR

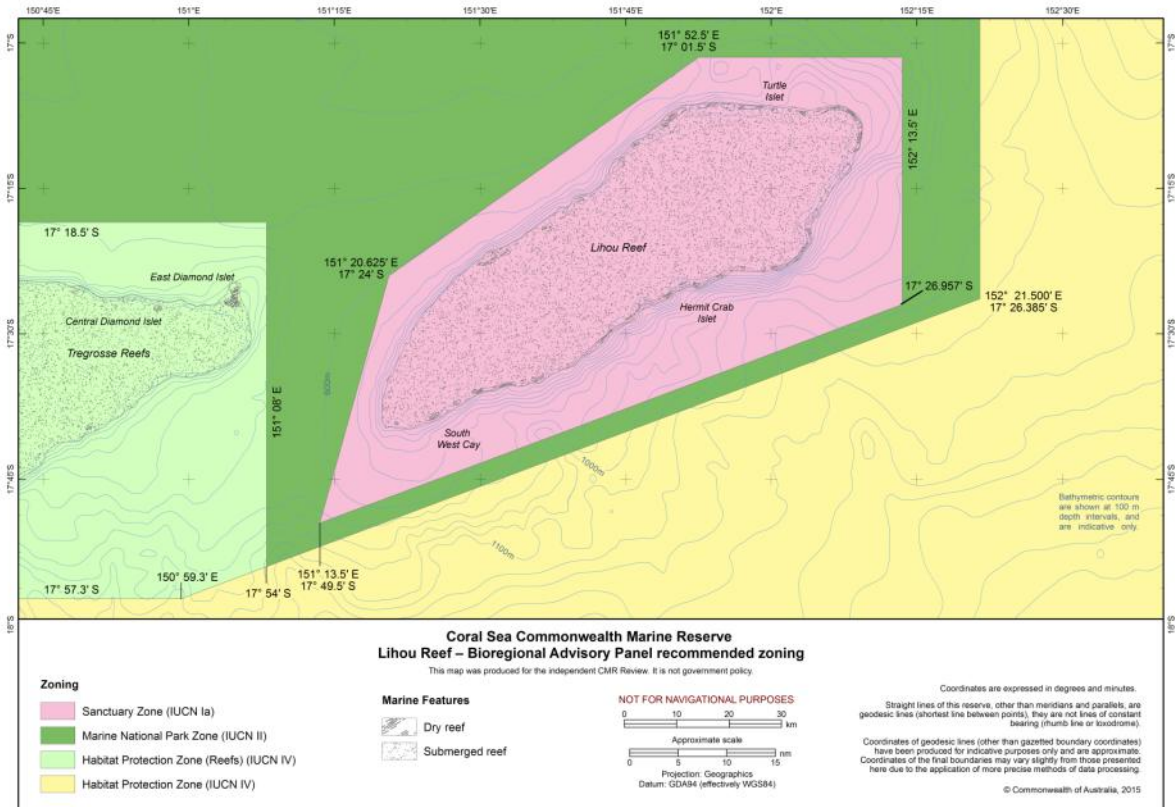


Figure 4.5.11 Recommended zoning for Lihou Reef, Coral Sea CMR

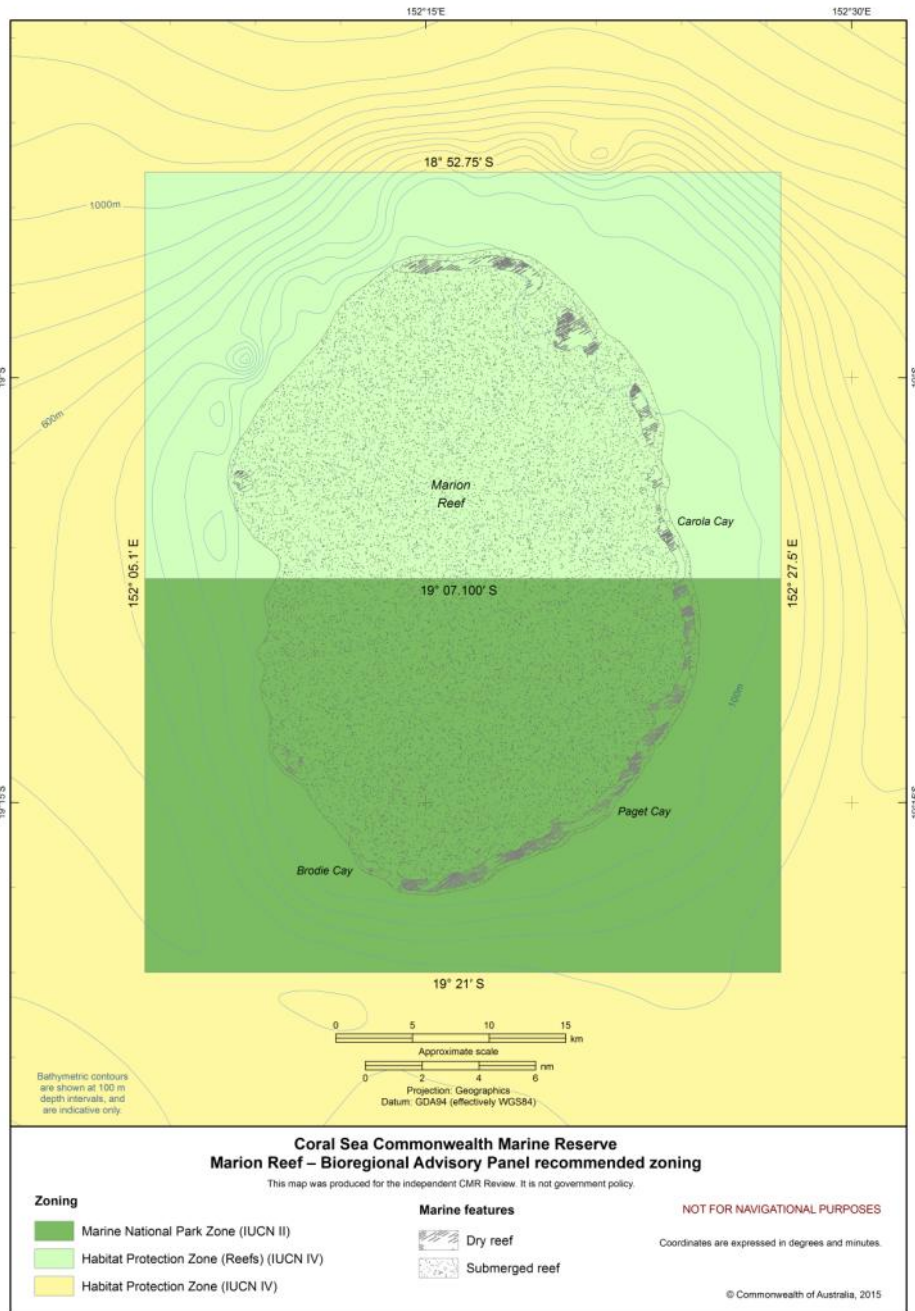


Figure 4.5.12 Recommended zoning for Marion Reef, Coral Sea CMR

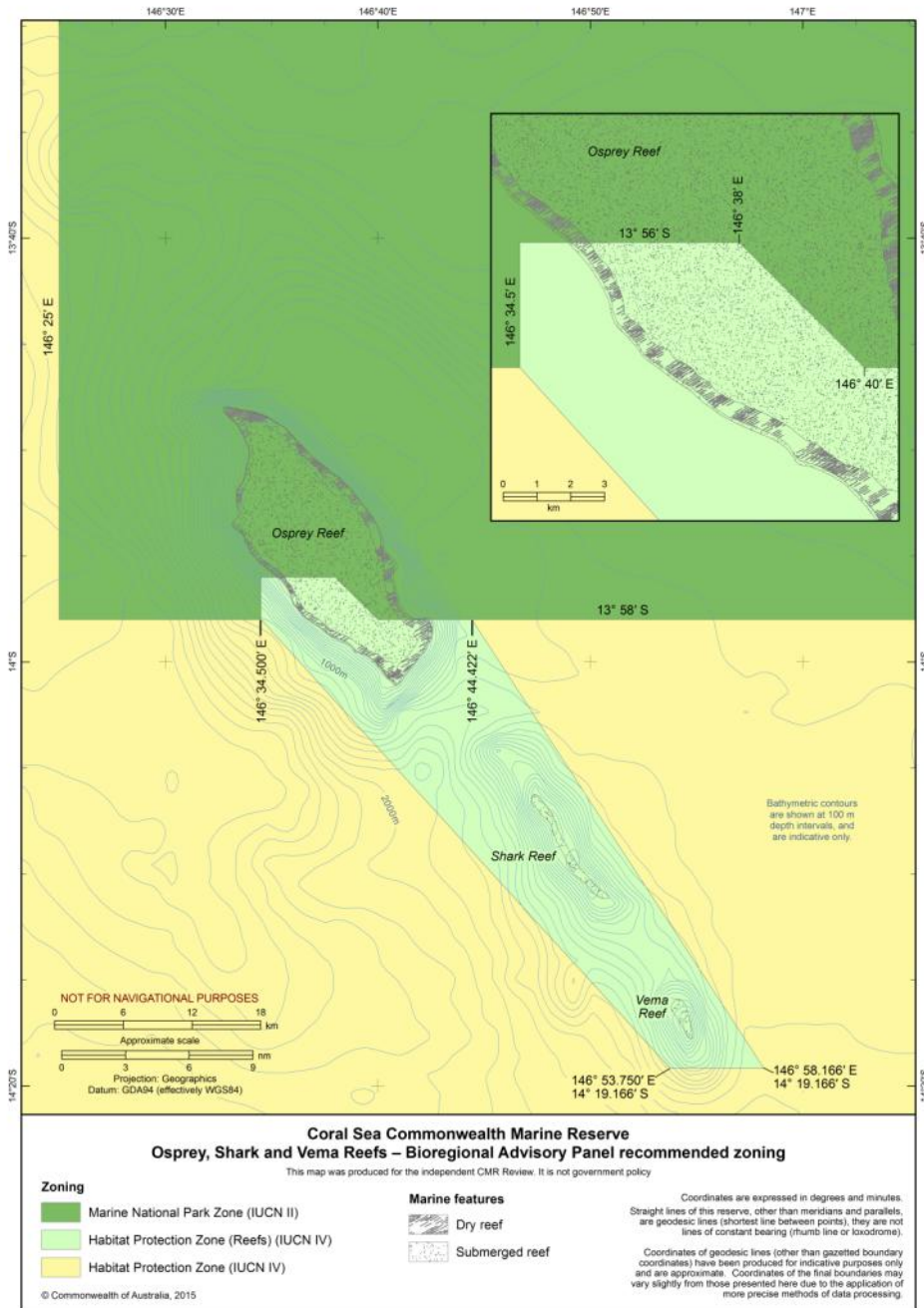


Figure 4.5.13 Recommended zoning for Osprey Reef, Shark Reef and Vema Reef, Coral Sea CMR

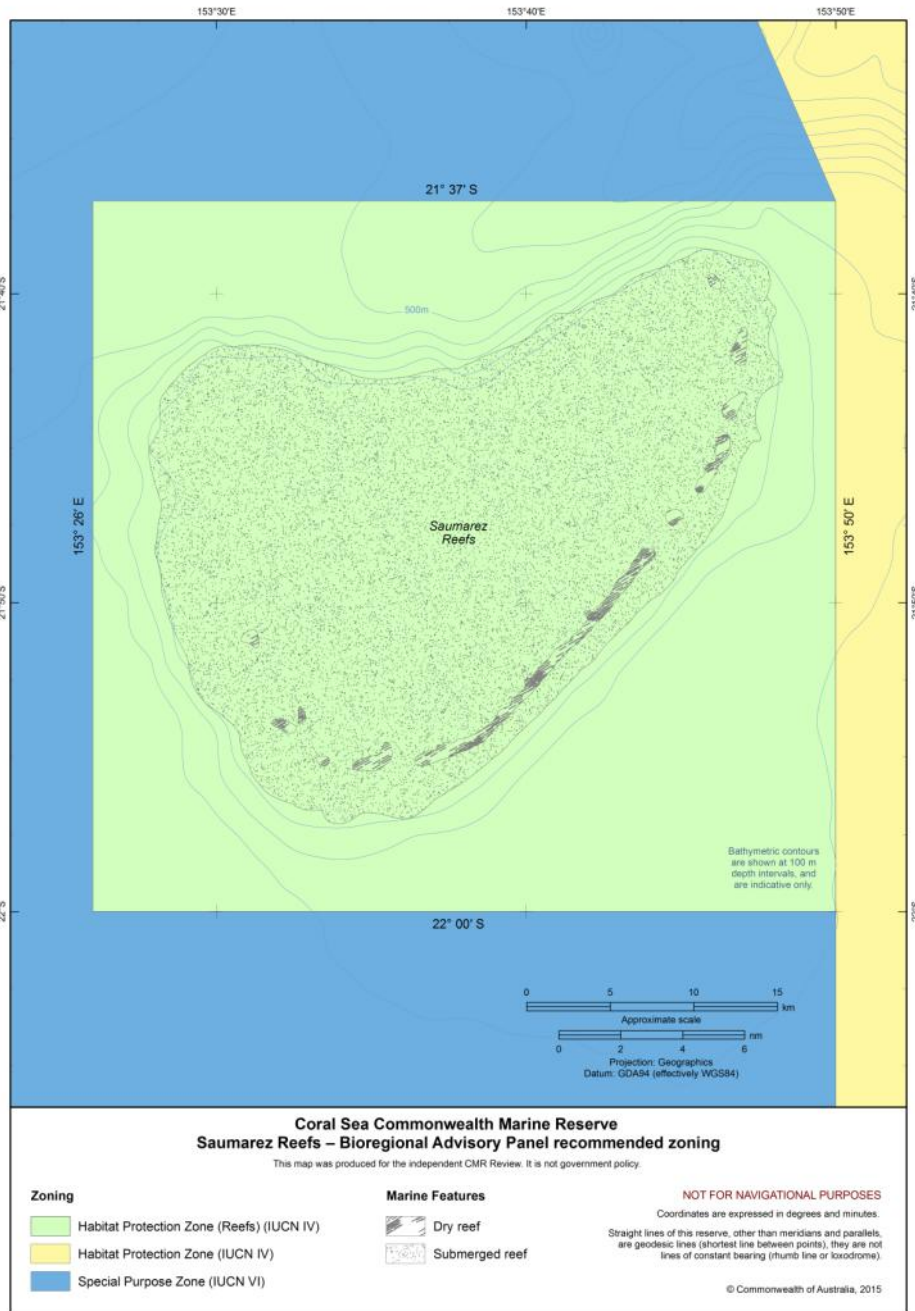


Figure 4.5.14 Recommended zoning for Saumarez Reefs, Coral Sea CMR

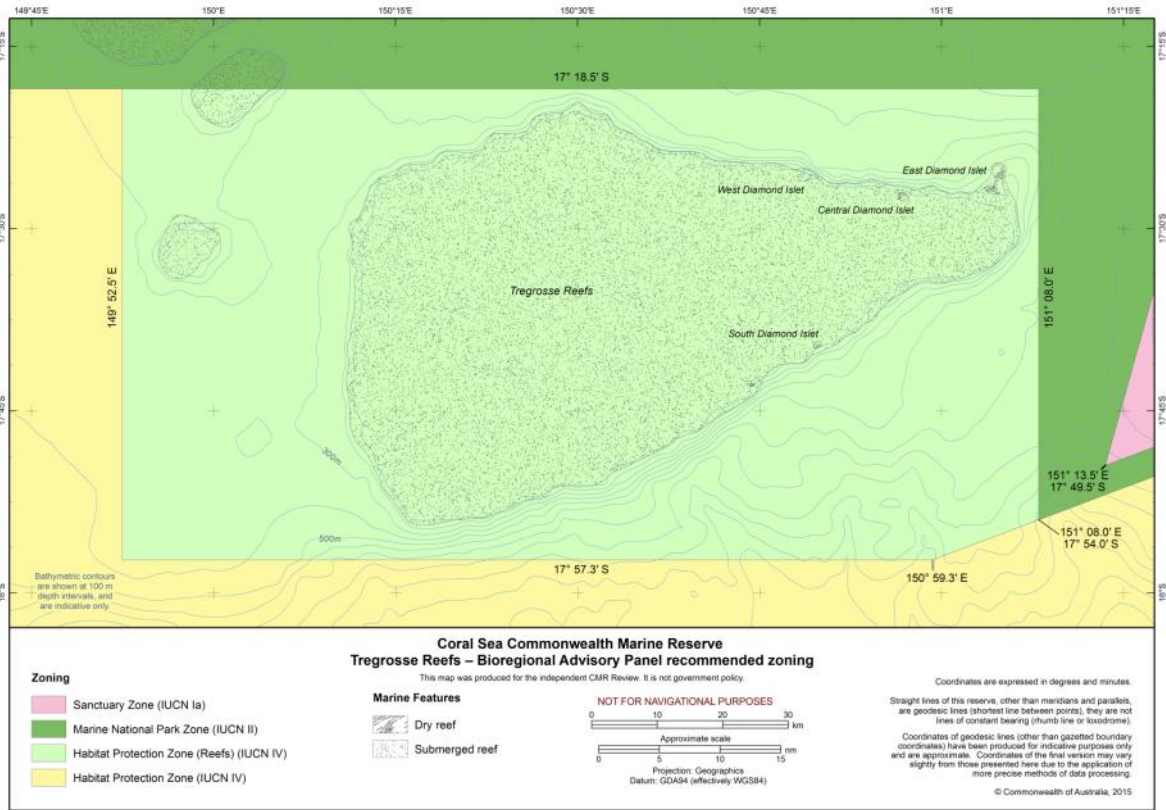


Figure 4.5.15 Recommended zoning for Tregosse Reefs, Coral Sea CMR

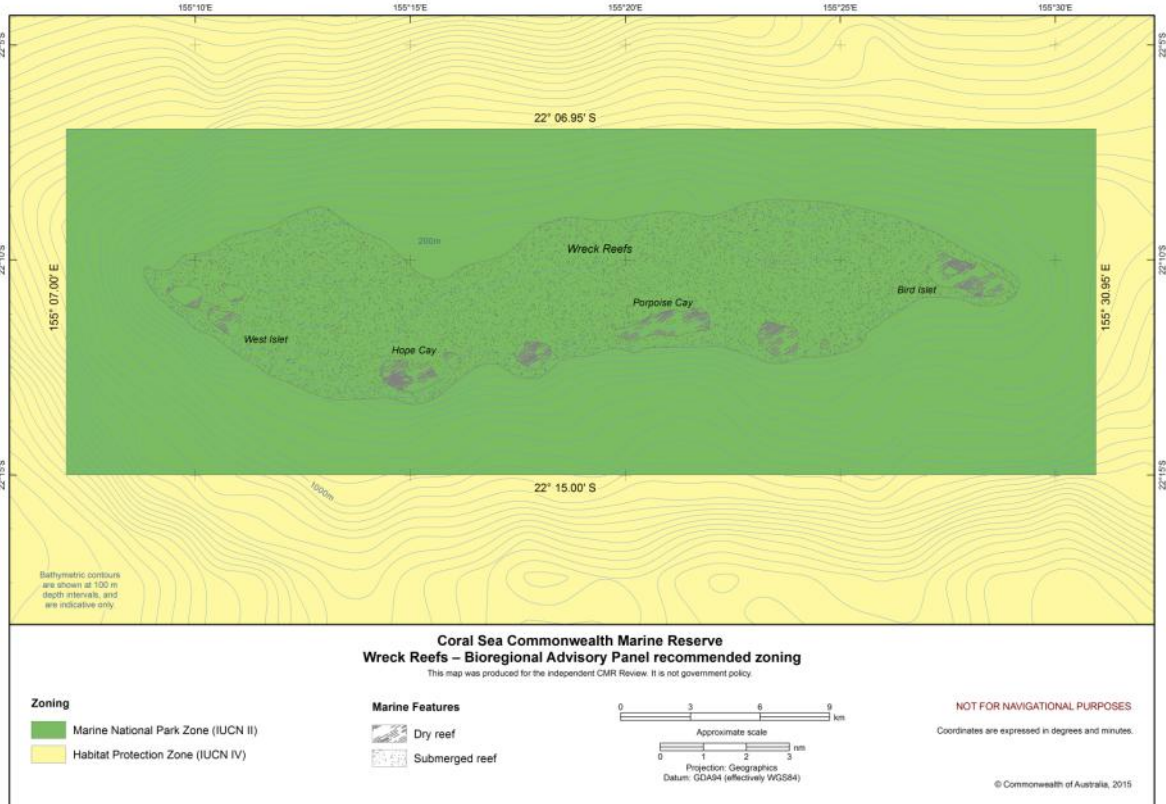


Figure 4.5.16 Recommended zoning for Wreck Reefs, Coral Sea CMR

Table 4.5.1 indicates how the areas of different zone types (within the outer boundaries of the reserve) would change between the proclaimed and recommended zoning. There is a

reduction of MNPZ from 51% to 41%. The HPZ (Coral Sea) and HPZ (Seamounts) are removed, as is the MUZ in the northern and southern parts of the CMR. Combined these areas form a new HPZ which affords high-level protection to 52% of the benthic habitat in the reserve. A new zone, HPZ (Reefs), is established which covers close to 3% of the reserve and approximately 54% of the area of coral reef. A SZ is introduced over Lihou Reef, providing the highest level of protection (IUCN 1a) to this feature. The GUZ is eliminated and is replaced by SPZ, which covers 3% of the reserve and allows trawling and demersal longlining by exception.

Table 4.5.1 Comparison of areas of zone types between proclaimed and recommended zoning for Coral Sea CMR

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of CMR	Area (km ²)	% of CMR	Area (km ²)	% of CMR
SZ (IUCN Ia)	Nil	Nil	5 212	0.53%	+5 212	+0.53%
MNPZ (IUCN II)	502 654	50.78%	405 258	40.94%	-97 396	-9.84%
CPZ (IUCN IV)	20 570	2.08%	Nil	Nil	-20 570	-2.08%
HPZ (Coral Sea) (IUCN IV)	182 578	18.45%	Nil	Nil	-182 578	-18.45%
HPZ (Seamounts) (IUCN IV)	85 507	8.64%	Nil	Nil	-85 507	-8.64%
HPZ (IUCN IV)	Nil	Nil	518 833	52.42%	+518 833	+52.42%
HPZ (Reefs) (IUCN IV)	Nil	Nil	27 477	2.78%	+27 477	+2.78%
MUZ (IUCN VI)	194 232	19.62%	Nil	Nil	-194 232	-19.62%
SPZ A (IUCN VI)	Nil	Nil	2 407	0.24%	+2 407	+0.24%
SPZ B (IUCN VI)	Nil	Nil	30 656	3.10%	+30 656	+3.10%
GUZ (IUCN VI)	4 300	0.43%	Nil	Nil	-4 300	-0.43%
Total	989 842	100%	989 842	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures.

Conservation outcomes

Under the recommended zoning for the Coral Sea CMR, the total area zoned as MNPZ will decrease by 10% but still comprise approximately 41% of the reserve. The protection of Coral Sea coral reefs is improved by the inclusion of three additional reefs in MNPZ (Holmes, South Flinders and Wreck) and three in the new HPZ (Reefs) (Tregosse, Cato and Frederick). The recommended zoning will result in a significant increase in IUCN IV

zoning in the Coral Sea CMR, with approximately 55% of the reserve zoned as HPZ or HPZ (Reefs).

Many of the submissions focused attention on the uniqueness and level of protection of the Coral Sea coral reefs. To address these concerns the recommended zoning will afford a high level of protection in SZ, MNPZ and/or HPZ/HPZ (Reefs) to all of the 34 reefs in the Coral Sea, and notably improves the protection of reefs of the Marion Plateau.

Table 4.5.2 shows how the proclaimed and recommended zoning represent primary conservation features in SZ/MNPZ and CPZ/HPZs, providing an indication of their performance against the four primary goals under the Goals and Principles. All of the Provincial Bioregions in the Coral Sea CMR are now represented in either SZ or MNPZs and HPZs. Depth ranges (by Provincial Bioregion) increase from 70 to 78 in SZ/MNPZ and from 67 to 83 in HPZs, increasing the level of protection for this conservation feature. Similarly an additional seafloor type is captured in HPZs. Ninety-one conservation features are represented in both SZ/MNPZ and HPZs, and together these zone types include all but one of the 119 primary conservation features in the reserve. These conservation features are shown in Appendix H.

Table 4.5.2 Comparison of representation of conservation features between proclaimed and recommended zoning for Coral Sea CMR

Goal	Primary Conservation Feature	Total no. in CMR	Proclaimed		Recommended	
			MNPZ (IUCN II)	CPZ and HPZs (IUCN IV)	SZ (IUCN Ia) or MNPZ (IUCN II)	HPZs (IUCN IV)
1	Provincial Bioregions (PBs)	6	5	5	6	6
	Meso-scale Bioregions	N/A	N/A	N/A	N/A	N/A
2	Depth by PB	94	70	67	78	83
3	Key Ecological Features	3	3	3	3	3
	Biologically Informed Seascapes	N/A	N/A	N/A	N/A	N/A
4	Seafloor Types	16	15	14	15	15
	Total	119	93	89	102	107

Note: Some features are represented in SZ/MNPZ and HPZs; therefore the total number of features represented in these zones is not the simple sum of their occurrence in each zone.

Table 4.5.3 compares the recommended zoning of coral reefs with the proclamation. Although the eastern part of Holmes and South Flinders and Wreck reefs are new MNPZs, the number of reefs in either SZ or MNPZ (no-take) increases by one. This is because Lihou Reef is re-zoned from MNPZ to SZ and Bougainville and Vema reefs are re-zoned from MNPZ to HPZ (Reefs). This recommended zoning notably improves the protection of

reefs of the Marion Plateau in the southern part of the CMR. These reefs are listed in Appendix I.

Table 4.5.3 Comparison of representation of reefs between the proclaimed and recommended zoning for Coral Sea CMR

No. of reefs in CMR	Features represented						
	Proclaimed			Recommended			
	MNPZ (IUCN II)	CPZ and HPZs (IUCN IV)		SZ (IUCN Ia) or MNPZ (IUCN II)	HPZs (IUCN IV)		
34	10	10	4	10	11	9	18
		Total: 24				Total: 27	

Note: Some reefs are represented in SZ/MNPZ and HPZs and therefore the total number of reefs represented in these zones is not the simple sum of their occurrence in each zone.

Socio-economic impacts

Commercial fishing

The recommended zoning substantially decreases the impact on commercial fishing compared to the proclaimed zoning. This decrease is largely due to the increased access for pelagic longlining in the reserve.

The Regional Panel could find no reasonable argument not to provide greater access for this fishery given that it is a pelagic fishery, that it is sustainably managed and that parts of it have recently been afforded Marine Stewardship Council accreditation. This was particularly relevant in the case of the fishery in 'Area E', which has a modest total allowable catch relative to tuna fishing in adjacent international waters, and which makes a substantial contribution to the regional economy in north Queensland.

The introduction of the new HPZ (Reefs) zoning and in places the introduction of split reef zoning (Osprey and Marion reefs) allows access for the aquarium and sea cucumber sectors of the Coral Sea Fishery. Impacts on the three other Queensland managed fisheries displaced by the proclaimed zoning (Marine Aquarium Fish; Coral, Shells, Shell Grit and Star Sand; and Sea Cucumber) may also decrease slightly as a result of the recommended zoning changes to the marine reserve; however, due to the confidential nature of the catch data in this area the likely change in impact is unknown. Access to a larger number of reefs decreases the risk of localised depletion and facilitates current rotational harvesting practices.

The recommended new SPZs to allow auto-longlining reduce the displacement of this component of the Commonwealth Coral Sea Fishery.

Impacts on the Queensland East Coast Otter Trawl Fishery will also be reduced by the increased area made available to trawling through the introduction of the new SPZ 'B' in the area proclaimed as MUZ and GUZ. A slight increase in impacts on the Queensland East Coast Inshore Fin Fish Fishery is likely result from the removal of MUZ as well as the increased area of HPZ.

Recreational and charter fishing

The introduction of the new HPZ (Reefs) zoning and removal of MNPZ over part or all of several reefs (Osprey, Shark, Vema, Bougainville and Marion) addresses many of the

concerns of these sectors and ensures continuing access for recreational and charter fishing, which are vital to the regional visitor economy in the area. A balance has been struck between reef access (HPZ (Reefs)) and no-take (SZ and MNPZ) to ensure conservation and socio-economic objectives are met.

Practicality of implementation

In comparison to the proclaimed zoning, the recommended zoning for the Coral Sea CMR may change the practicality of implementation in different ways for different users. For recreational fishers and commercial pelagic longliners operating within the CMR, the much larger area zoned as HPZ will improve ease of compliance and reduce problems associated with gear drift into areas where commercial longlining is not permitted (that is, HPZ (Reefs) and MNPZ), many of which are located over reefs which would already be avoided by this fishing method. The previous GUZ has been enlarged and rezoned as SPZ 'B', which would improve ease of use for commercial trawlers. While the introduction of two small areas of SPZ 'A' that allow auto-longlining will increase zoning complexity, it is expected that a limited number of operators will be using this fishing gear and that compliance with zoning boundaries in these areas will not be problematic for these operators. The introduction of a SZ and five new MNPZs along the south-western boundary of the CMR, including three MNPZs encompassed by SPZ B, may increase zoning complexity although the SPZ B and MNPZs align with and complement equivalent zoning in the GBRMP.

For the reefs in the Coral Sea CMR, the changes recommended may impact on ease of compliance for some users. The split zoning of Osprey and Marion reefs, where a portion of the reef is zoned as MNPZ and a portion is HPZ (Reefs), adds some complexity for recreational, charter and commercial fishers accessing the reefs. However, in comparison to the proclaimed zoning, which placed boundary lines along the reef edge at Marion, Osprey, Shark and Vema reefs, the recommended zoning adopts straight boundary lines around and across the reefs, and should markedly improve ease of compliance for most users.

The new zone type HPZ (Reefs) introduced over all or a portion of Moore Reefs, Dianne Banks, Willis Islets, Coringa Islets/Magdelaine Cays, Heralds Surprise, Holmes, North Flinders, Dart, Unnamed Reef 3, Bougainville, Frederick, Tregrosse, Cato, Saumarez, Marion, Osprey, Shark and Vema reefs aims to provide greater protection for reef habitats. This zonation foreshadows the need for restrictions in the management plan on the take of reef associated species (such as consume on site or limitation on the take of reef species). This restriction may increase the complexity of compliance for users, and as such it is expected that specific guidance will need to be developed in the preparation of the management plan.

Native title

The HPZ over Ashmore Reef overlaps with the Gudang Yadhaykenu People registered native title claim and Torres Strait Regional Sea Claim, presenting important opportunities for co-management with traditional owners and local Indigenous groups and improvements in management outcomes. Native title is not impacted by the proclamation of CMRs nor the development and implementation of management plans for those reserves under the EPBC Act. Recommendations relating to involvement of Indigenous groups and traditional owners in management of CMRs are outlined in Chapters 5 to 7 of this report.

Mining and oil and gas development

The recommended zoning for the Coral Sea CMR retains the restriction on mining activities within the reserve.

Conclusion

The recommended zoning of the Coral Sea CMR represents a carefully balanced approach to addressing the key areas of contention that arose during the consultation. Recognising the uniqueness and pristine nature of the area, the CMR Review has provided an opportunity to increase the level of protection given to the iconic coral reefs of the Coral Sea. At the same time socio-economic impacts on the commercial fishing sector are significantly reduced and in some cases improved through the reconfiguration of zone boundaries. The introduction of several small SPZs also reduces commercial fishing impacts and provides for limited harvesting of several currently unexploited species.

The overall proportion under MNPZ, at 41% of the reserve, is greater than the proportion of the GBRMP in no-take green zones and the total area of MNPZ in the Coral Sea CMR is nearly 20% bigger than the GBRMP. The combination of SZ, MNPZ and HPZs in the Coral Sea CMR affords a high level of protection to almost 97% of the reserve.

The approach to complementing GBRMP zoning and improving protection of the Coral Sea reefs is aimed at, and should result in, improvement in the overall protection of the World Heritage values of the GBR.

Table 4.5.4 Overview of recommended zoning scheme for Coral Sea CMR

Activity type ^a		Special Purpose Zone (IUCN VI)	Habitat Protection Zone (IUCN IV)	Habitat Protection Zone (Reefs) (IUCN IV)	Marine National Park Zone (IUCN II)	Sanctuary Zone (IUCN Ia)
MINING	Mining (including exploration, development and other activities)	x	x	x	x	x
COMMERCIAL FISHING^b	Handline/rod and reel	✓	✓	x	x	x
	Hand collection (including sea cucumber; marine aquarium fish)	✓	✓	✓	x	x
	Dropline ^c /Minor line/Poling	✓	✓	x	x	x
	Pelagic longline	✓	✓	x	x	x
	Purse seine	✓	✓	x	x	x
	Mid-water trawl	✓	✓	x	x	x
	Traps and pots (including crab and fish)	✓	x	x	x	x
	Gillnet (including demersal and pelagic)	x	x	x	x	x
	Demersal longline (including auto-longline and trotline)	x ^d	x	x	x	x
Demersal trawl	x ^e	x	x	x	x	
AQUACULTURE		✓	x	x	x	x
RECREATION	Boating	✓	✓	✓	✓	x
	Scuba diving and snorkelling	✓	✓	✓	✓	x
	Recreational fishing (including spear-fishing) ^f	✓	✓	✓ ^g	x	x
COMMERCIAL TOURISM	Non-fishing related tourism (including scuba/snorkel tours and nature watching)	✓	✓	✓	✓	x
	Fishing related tourism (including charter fishing and fishing/spear diving tours)	✓	✓	✓ ^g	x	x
INDIGENOUS ACTIVITIES	Non-commercial Indigenous harvesting and hunting (consistent with the <i>Native Title Act 1993</i>)	✓	✓	✓	✓	✓
RESEARCH		✓	✓	✓	✓	✓
GENERAL USE	Defence	✓	✓	✓	✓	✓
	Shipping (general transit) ^h	✓	✓	✓	✓	x ⁱ

a. All activities require approval to be undertaken in CMRs; approvals are provided in the management plan or through class approvals or individual permits.

b. Commercial fishing methods not listed in the table may require assessment.

c. Dropline is defined as: a line that is vertically set or suspended in the water column; having no more than a single anchor point in contact with the seabed or substrate; and not operated with or as a trotline.

d. Demersal longlining is allowed in the Coral Sea CMR SPZ A.

e. Demersal trawling is allowed in the Coral Sea CMR SPZ B.

f. Recreational fishing is managed by the states. Queensland size and bag limits will apply in the Coral CMR unless otherwise specified in the management plan.

g. Specific restrictions on both linefishing and spearfishing for reef associated species may need to be imposed.

h. Ballast water exchange is managed under national arrangements. Restrictions may apply in some areas.

i. Does not affect the right of innocent passage, consistent with UNCLOS.

4.6 Recommendations to support consistency of zoning

Three reserves located in the North-west CMR Network were identified as having an inconsistency in zoning as it relates to their management regime: Ashmore Reef CMR, Ningaloo CMR and Mermaid Reef CMR. All of these reserves have well-established management regimes and were declared under legislation that was in place before the commencement of the EPBC Act and before the more recent release of revised guidelines for assigning IUCN categories to MPAs.

Ashmore Reef CMR was originally declared in 1983. The majority of the reserve is assigned as IUCN Ia and has been closed to the public since 1997. A small part of the reserve is managed as a RUZ, assigned as IUCN II, which is open to the public and allows for subsistence recreational fishing. Two management plan cycles for the reserve have occurred without significant change, and no compelling case has been proposed to alter the current management approach.

Ningaloo CMR, adjacent to the Ningaloo Marine Park in Western Australian waters, was first declared in 1987 and is managed as a RUZ, assigned as IUCN II. Management of the CMR provides for recreational activities to occur consistently with the adjacent Ningaloo Marine Park. Feedback on Ningaloo CMR did not support any changes to the activities that are currently allowed, and there was no case to alter the current management approach.

Mermaid Reef CMR was originally declared in 1991 as a strict nature reserve (IUCN Ia) and has been managed over many years to allow recreational activities. It has been through one management plan cycle. No compelling case has been mounted to alter current management arrangements and allowed activities.

BAP Recommendation 4.2:

- **Reassign the Ashmore Reef CMR RUZ from IUCN II to IUCN IV.**
- **Reassign the Ningaloo CMR RUZ from IUCN II to IUCN IV.**
- **Reassign the Mermaid Reef CMR SZ from IUCN Ia to MNPZ IUCN II.**

The outcome of this recommendation will be more consistent zoning and management arrangements across the CMR estate.

4.7 Commonwealth marine reserves with no recommended changes

No changes are recommended for 15 CMRs, as it was determined that either:

- a. no sufficiently contentious issues were raised by stakeholders in relation to the reserve (nine CMRs):

North-west: Cartier Island, Carnarvon Canyon, Shark Bay and Montebello CMRs

South-west: Jurien, Murat and Southern Kangaroo Island CMRs

Temperate East: Cod Grounds and Gifford CMRs; or

- b. a better balance of interests for stakeholders impacted by the proclaimed zoning could not be found (six CMRs):

North: Arnhem and Joseph Bonaparte Gulf CMRs

North-west: Roebuck and Eighty Mile Beach CMRs

South-west: Abrolhos and Western Kangaroo Island CMRs.

As outlined in Chapter 2, the BAP assessed the many issues raised by stakeholders against criteria to determine whether the issue translated into either an area of contention that could be addressed by zoning or an area of contention that required a management or policy-based response. For those areas of contention that could be addressed by zoning or management arrangements, options for zoning and/or management arrangements within a reserve were developed and their likely conservation outcomes and socio-economic impacts assessed. The options that provided improved conservation outcomes without increasing socio-economic impacts to an unacceptable level (or improved socio-economic outcomes without unacceptable conservation impacts) were tested with stakeholders that had a direct interest in them.

In order to give interested stakeholders an understanding of the reasoning underlying those outcomes, an overview of the six options that were tested with stakeholders but not progressed to a final recommendation is provided below.

North Commonwealth Marine Reserves Network:

Joseph Bonaparte Gulf Commonwealth Marine Reserve

Some stakeholders stated that there should be increased protection of habitat for turtles and MNPZ protection for the unique carbonate banks in the area, which has high levels of oil and gas prospectivity. Others asked for bottom trawling to be allowed. After considering the implications of various changes, it was decided that a better balance of interests could not be found than that delivered by the proclaimed zoning of the CMR.

Arnhem Commonwealth Marine Reserve

A number of stakeholders raised issues about improving the conservation status of this CMR, continued access for commercial fisheries, potential for impacts from mineral exploration and mining, and concerns about limiting development opportunities for nearby rural and remote communities.

Changes to the zoning in this reserve to increase protection were contemplated; however, once the competing interests involved were considered, an improved outcome could not be reached.

North-west Commonwealth Marine Reserves Network:

Eighty Mile Beach Commonwealth Marine Reserve

Stakeholders advised that this area was critical to pearl farming as it was the primary source of pearl oysters and an area where seeded oysters were cultivated on benthic racks. The Regional Panel also heard that the area lacked sufficient protection for the habitats of migratory shorebirds and critically endangered sawfish.

The option of changing the zoning in this reserve from MUZ to HPZ was considered and canvassed with stakeholders. The potential impacts on both the oil and gas industry and existing commercial fishing activities were impractical, so this option was not progressed.

Roebuck Commonwealth Marine Reserve

Most of the stakeholder input related to strengthening habitat protection, in part because the CMR is adjacent to and would complement the proposed Roebuck Bay Marine Park (WA). Concerns were raised about the potential restriction of port and shipping activities near the northern boundary of the CMR.

A change in the zoning from MUZ to HPZ was considered for the reserve (except for the area of existing port and shipping activities) and canvassed with stakeholders. This option was not progressed due to the potential impact on the oil and gas industry.

South-west Commonwealth Marine Reserves Network:

Abrolhos Commonwealth Marine Reserve

The location of the MNPZ just north of the Abrolhos Islands and its impacts on operators in both the North Island Rock Lobster and the West Coast Demersal Scalefish and Mackerel fisheries were raised by commercial fishing stakeholders. The BAP invited industry to propose alternatives to the zoning configuration. However, an arrangement that better balanced the competing interests could not be identified, so no changes to the Abrolhos CMR are recommended.

Western Kangaroo Island Commonwealth Marine Reserve

Concerns raised by the commercial fishing sector about purse seining nets drifting into the MNPZ could not be reconciled with calls for increasing the size of that and other MNPZs in the CMR, due to the ecological importance of the Kangaroo Island Canyon.

4.8 Estate-wide performance of the options

The proclaimed CMR estate (excluding the South-east CMR Network and Heard Island and McDonald Islands CMR, which are not under review) covers a total area of 2 374 719 km² (Figure 4.8.1). As outlined in Chapter 1, the CMR estate was established as part of the NRSMPA, and has the key objective of being comprehensive, adequate and representative. Guided by the terms of reference (see Appendix C), this review has been conducted with regard to the Goals and Principles, a set of policy guidelines that aid the design and establishment of CMRs (see Appendix B). This section provides a high-level analysis of the recommended zoning changes, including performance against the Goals and Principles, how they minimise socio-economic impacts, and their overall contribution to the comprehensiveness, adequacy and representativeness of the CMR estate.

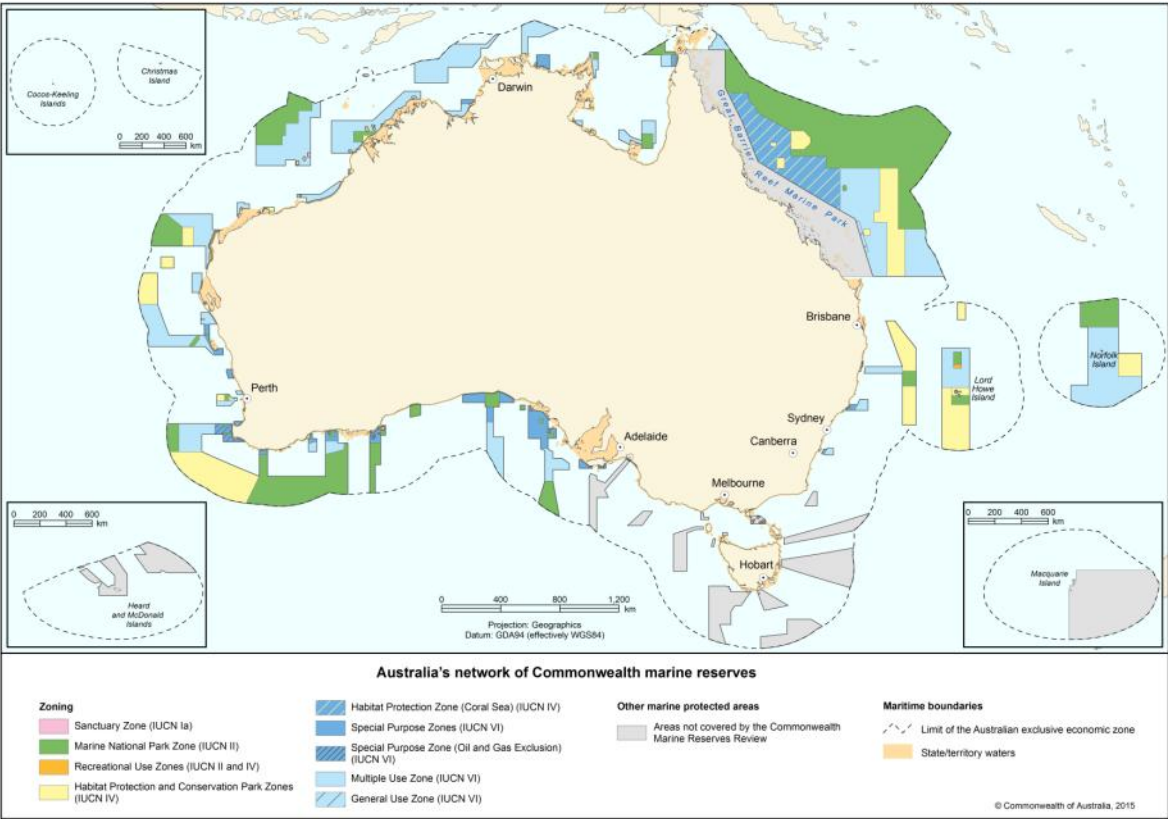


Figure 4.8.1 Australia's network of CMRs, as proclaimed

A number of zoning issues raised during the CMR Review were relevant to the establishment and management of the entire CMR estate. As all of these issues were also relevant to at least one CMR Network, they have been noted and addressed in Sections 4.1 to 4.5. Zoning changes were recommended where a practical solution to these issues was found. These provide either improved conservation outcomes without substantially increasing socio-economic impacts, or improved socio-economic outcomes without unacceptable impacts on the conservation performance of the reserves. A comprehensive list of issues raised is provided at Appendix G.

Figure 4.8.2 depicts the recommended zoning for the CMR networks that were the subject of this review. Changes are recommended for six reserves in the North CMR Network (West Cape York, Gulf of Carpentaria, Limmen, Wessel, Arafura and Oceanic Shoals CMRs); four reserves in the North-west CMR Network (Kimberley, Argo-Rowley Terrace,

Dampier and Gascoyne CMRs); nine reserves in the South-west CMR Network (Two Rocks, Perth Canyon, Geographe, South-west Corner, Bremer, Eastern Recherche, Twilight, Great Australian Bight and Western Eyre CMRs); six reserves in the Temperate East CMR Network (Jervis, Hunter, Solitary Islands, Central Eastern, Lord Howe and Norfolk CMRs); and the Coral Sea CMR. Three additional reserves in the North-west CMR Network (Mermaid Reef, Ningaloo and Ashmore Reef CMRs) have recommended zoning changes for the purposes of improving zoning consistency and ensuring their IUCN categorisation is consistent with the current management of these reserves.

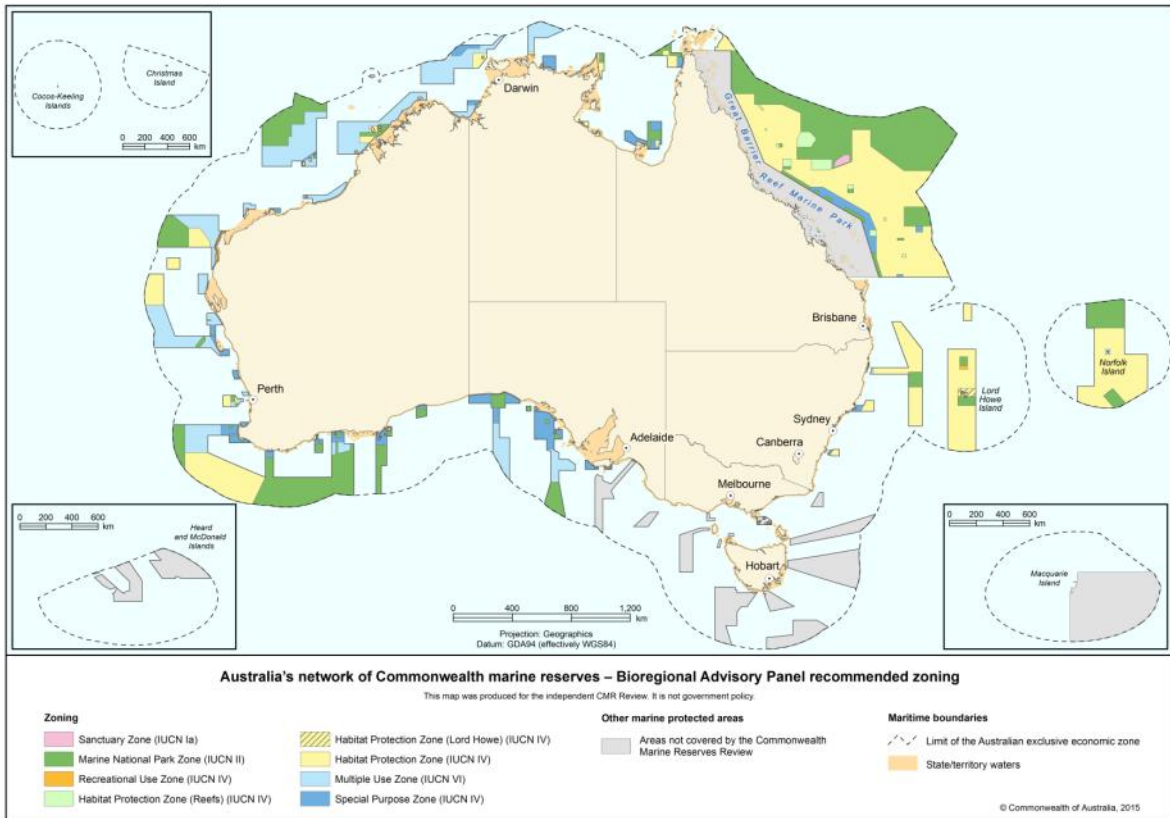


Figure 4.8.2 Recommended zoning for Australia's network of CMRs

Conservation outcomes

Table 4.8.1 provides a comparison between the proclaimed and recommended zoning. Almost half a million km² has been added to HPZs (IUCN IV). These zone types provide a high level of protection for habitat, particularly against activities such as seabed mining and the impacts of fishing gear types that are described as incompatible with conservation values of the area. This additional area increases the total number of conservation features in HPZs from 192 to 272 (Table 4.8.2). The increase in HPZs is largely a result of the reduction in area of MUZ (IUCN VI) by almost half (over 436 000 km² across the estate). MUZs are managed for multiple use, allowing mining and other extractive uses which are compatible with other values of the reserves.

The area of the estate zoned as SZ (IUCN Ia) has increased slightly, due to the introduction of this zone type in the Coral Sea CMR.

Overall, the area of the estate zoned as MNPZ (IUCN II) has decreased by 3%. This reduction is a result of rezoning in the Coral Sea CMR as there is a small increase in the area under MNPZ in each of the four other networks. Despite the reduction in the total area under MNPZ in the estate, there is an improvement in representativeness and its

performance against guiding principle 18 of the Goals and Principles. Twenty-one additional conservation features are now represented in SZ or MNPZ (Table 4.8.2).

The areas zoned as SPZ (IUCN VI) have increased to approximately 6% but remain a small fraction of the CMR estate (not including the South-east CMR Network). For the most part SPZs are used to allow fishing methods normally excluded from the CMR estate, while some are designed to facilitate port operations and others to exclude mining and mineral exploration. The large reduction in MUZ and small increase in SPZ reflects a more tightly targeted zoning of economic activities.

Table 4.8.1 Comparison of areas of zone types between proclaimed and recommended zoning for the CMR estate (not including South-east CMR Network)

Zone	Proclaimed		Recommended		Difference	
	Area (km ²)	% of estate	Area (km ²)	% of estate	Area (km ²)	% of estate
Sanctuary Zone (IUCN 1a)	1 262	0.05%	5 934	0.25%	+4 672	+0.20%
Marine National Park Zone (IUCN II)	862 604	36.32%	781 833	32.92%	-80 771	-3.40%
Habitat Protection Zones* (IUCN IV)	562 961	23.71%	1 019 568	42.93%	+456 607	+19.23%
Recreational Use Zone** (IUCN IV)	3 639	0.15%	3 639	0.15%	Nil	Nil
Multiple Use Zones** (IUCN VI)	854 770	35.99%	418 508	17.62%	-436 262	-18.37%
Special Purpose Zones**** (IUCN VI)	89 483	3.77%	145 237	6.12%	+55 754	+2.35%
Total	2 374 719	100%	2 374 719	100%		

Note: All figures are rounded to the nearest km² (and therefore in some instances can appear to not add up to the totals supplied). No changes have been made to the outer boundaries and total area of the reserves. Percentages are calculated based on the rounded figures. HPZs, MUZs and SPZs have different prescriptions in different CMRs.

*HPZs refers to all proclaimed and/or recommended HPZs, Conservation Park Zones (CPZ), HPZ (Coral Sea), HPZ (Lord Howe), HPZ (Seamounts), and HPZ (Reefs).

** The proclaimed RUZs in Ningaloo and Ashmore CMRs are noted here as IUCN IV, consistent with the other RUZs in the estate.

***MUZs refers to all proclaimed and/or recommended MUZs (including those labeled A).

****SPZs refers to all proclaimed and/or recommended SPZs (including those labeled A, B and C), SPZ (Oil and Gas Exclusion), and GUZ.

Table 4.8.2 shows how the recommended zoning improves the representation of primary conservation features in highly protected SZs, MNPZs and HPZs, and provides an indication of performance against the four primary goals of the NRSMPA. The recommended zoning will provide increased protection to 21 features in SZ (IUCN Ia) or MNPZ (IUCN II), including one Provincial Bioregion, one Meso-Scale Bioregion, 13 Depth Ranges (by Provincial Bioregion), two KEFs and four Biologically Informed Seascapes. The zoning changes in the North-west CMR network will result in the loss from MNPZs of one Meso-scale Bioregion (which will instead be captured within an HPZ), and changes in the South-west CMR Network will result in the loss of one Biologically Informed Seascape. However, this loss is largely offset by the significant increase in primary conservation features represented in HPZs in comparison to the proclaimed zoning, including three additional Provincial Bioregions, 14 Meso-scale Bioregions, 49 Depth Ranges (by Provincial Bioregion), five KEFs, 16 Biologically Informed Seascapes and two Seafloor Types. While across the CMR estate there will be a loss of nine Depth Ranges (by Provincial Bioregion) in HPZs, eight of these occur in the Coral Sea CMR and will now be represented within MNPZs in this reserve.

These conservation features are identified at Appendix H, which provides an analysis of the network-level representation of conservation features as an outcome of the recommended zoning.

Table 4.8.2 Comparison of representation of conservation features between proclaimed and recommended zoning for the CMR estate (not including South-east CMR Network)

Goal	Primary Conservation Feature	Total no. in estate	Proclaimed		Recommended	
			SZ (IUCN Ia) or MNPZ (IUCN II)	HPZs* (IUCN IV)	SZ (IUCN Ia) or MNPZ (IUCN II)	HPZs (IUCN IV)
1	Provincial Bioregions (PBs)	31	26	17	27	20
	Meso-scale Bioregions	33	21	3	22	17
2	Depth by PB	325	200	135	213	175
3	Key Ecological Features	39	26	9	28	14
	Biologically Informed Seascapes	60	38	9	42	25
4	Seafloor Types	21	20	19	20	21
	Total	509	331	192	352	272

*Includes the proclaimed CPZ (IUCN IV) in the Coral Sea CMR but does not include RUZs.

Note: Some features are represented in SZ/MNPZ and HPZs and therefore the total number of features represented in both zones is not the simple sum of their occurrence in each zone.

Socio-economic outcomes

Overall, the recommended zoning will result in improved socio-economic outcomes for a number of sectors relative to the 2012 proclamation. There will be a significant reduction in the amount of commercial fishing catch displaced by the CMR estate, particularly for fisheries managed under Commonwealth, Queensland, and Western Australian jurisdictions. The substantial reduction in impacts on Commonwealth fisheries in particular will improve the socio-economic outcomes in the North, North-west, South-west and Temperate East CMR Networks and the Coral Sea CMR. This reduction is the result of the lengthy consultations undertaken by the BAP, which allowed the identification of solutions to specific areas of contention raised by stakeholders who were negatively impacted by the proclaimed zoning of the CMR estate.

Similarly for recreational fishers across the estate a number of solutions have been developed to address specific areas of contention, such as the loss of frequently accessed recreational fishing grounds. Zoning changes have been recommended where access could be improved without compromising conservation outcomes, such as in the Perth Canyon and Kimberley CMRs.

As outlined in Section 4.6, the recommended zoning changes are also aimed at improving zoning consistency across the estate. At a minimum, design principles about minimising complexity and increasing complementarity with existing spatial management measures such as state marine park zoning have been followed. The outcome is a reduction in complexity which will ease compliance, and the practicality of implementing the CMRs is expected to improve slightly.

The recommended zoning of the CMR estate will retain and extend areas of high-level protection where mining operations, including the exploration or production of petroleum, are not permitted. For example, the recommended zoning changes in the South-west CMR Network will increase by 18 348 km² the area where mining is excluded. Overall the area where seabed mining and oil and gas exploration and production is excluded increases from 60% to 79% of the CMR estate under review.

Recommendations relating to the ongoing management of the reserves are provided in Chapters 5 to 7.

Conclusion

Careful evaluation of the key areas of contention and options for zoning and management has resulted in adjustments that improve the conservation outcomes for the CMR estate while at the same time relieving a substantial number of the socio-economic pressures associated with the proclamation of the reserves. At the network level these changes include significant improvements to protection of Coral Sea coral reefs, improvements and additions to MNPZs in several reserves, a large increase in the area under HPZs and a large reduction in MUZ. The representation of primary conservation features in SZ, MNPZ and HPZs is improved. These conservation gains are achieved with a substantial decrease in the impact on commercial fisheries and improved access to key recreational fishing areas. The recommended changes will improve conservation and socio-economic outcomes for the CMR estate and set a sound foundation for its future management.

Chapter 5—Inclusion of social and economic considerations into decision-making

The third term of reference for the BAP sought recommendations for improving the inclusion of social and economic considerations into decision-making for marine reserves, with particular regard to their future management.

Introduction

The inclusion of social and economic considerations into decision-making on reserve design and zoning attracted commentary from almost all stakeholders, often invoking different value systems, perspectives, priorities and time frames (for example, current versus future benefits).

Some argued that insufficient account was taken of socio-economic factors in the design and zoning of reserves; others argued too much account was taken of these factors to the detriment of conservation outcomes. Some argued for greater prominence of and focus on social and economic outcomes over biodiversity conservation objectives. Others asserted that biodiversity conservation, as well as being a primary objective of marine reserves, delivered significant social and economic benefits. Even in situations where individual businesses operated entirely in marine reserves, the social and economic impacts and benefits of particular reserve configurations were difficult to estimate.

Commentary in the scientific literature maintained that the estate failed to achieve the objective of being comprehensive and representative because of the weight placed on socio-economic factors.^{18,19,20} A number of submissions to the CMR Review also made reference to these criticisms, and the comprehensiveness of the CMR estate is discussed in the ESP report.

Primary concerns relating to socio-economic impact have included:

- Adequately assessing the benefits or costs of a specific decision to include or exclude an activity in a zone
- Establishing and promoting the value of marine reserves for future wellbeing
- Protecting and fostering regional businesses and communities.

In addition to the issues raised about direct economic impacts on existing users of reserves, community representatives and non-government organisations raised related issues, often with a broader or indirect context, including community concern about ocean health, the value for future generations of conserving ocean resources, and the sustainability of extractive activities in the ocean. These concerns were reflected in stakeholder meetings, written submissions and the responses in the online survey. The

¹⁸ L. M. Barr and H. P. Possingham. (2013). Are outcomes matching policy commitments in Australian marine conservation planning? *Marine Policy* 42, 39–48.

¹⁹ R. Devillers, R. L. Pressey, A. Grech, J. N. Kittinger, G. J. Edgar, T. Ward and R. Watson. (2014). Reinventing residual reserves in the sea: are we favouring ease of establishment over need for protection? *Aquatic Conservation: Marine and Freshwater Ecosystems* 25(4), 480–504.

²⁰ R. Pressey. (2013). 'Australia's new marine protected areas: why they won't work.' Available at <http://theconversation.com/australias-new-marine-protected-areas-why-they-wont-work-11469> [accessed 1 July 2015].

need for greater common ground, and the value of providing a platform towards this objective, was demonstrated to the BAP at each of the eight multi-sector forums held during the consultation phase of the review. Post-meeting feedback indicated that these forums were well regarded, as for some they were the first opportunity to hear and appreciate the different concerns, expectations and aspirations of other stakeholders.

Regional engagement of stakeholders is discussed further in Chapter 6. The potential social and economic implications of alternative zoning options were major considerations in the CMR Review. Every existing zone (and its associated set of allowed, allowable and prohibited activities) impacts one or more existing or potential interests, and virtually no alternative possible zoning option is without some positive or negative environmental, social and economic consequence.

Commercial fishing

The commercial fishing sector was most directly impacted by zoning arrangements that exclude or constrain fishing gear types. The primary source of advice for government in assessing the potential economic consequences of zoning decisions on this sector was the ABARES, which assessed the displacement of catch and gross value of production (GVP) for each fishery group in each of the CMRs in the lead-up to the 2012 proclamation.

The BAP drew on the input from consultations and submissions in conjunction with updated ABARES assessments of GVP impacts on commercial fisheries as an important input in considering potential zoning options. The ABARES assessments were based on operators' catch data over many years, and were comprehensive and relatively consistent within a jurisdiction.

The BAP heard and recognised that this approach was heavily criticised by the fishing industry, which maintained that GVP figures for Australia's fishing industry under-represented the true value of Australia's commercial fisheries and failed to capture downstream value-adding activities and other contributions from associated fishing industry activities (for example, onshore processing, repairs and maintenance, retail and restaurant sales). The use of estimated income measures to define economic impacts of zoning was seen by many commercial fishing representatives as an inadequate basis on which to make decisions that affect their future. These concerns were set out in industry submissions and raised in stakeholder meetings.

More specific criticisms of the use of GVP included the time period used to estimate average GVP, perceived either to be too short, or to cover a period when a fishery was operating or behaving in a unique or unusual way; the reliability of catch data (notwithstanding that these were derived from fishery logbook reporting); and the natural variability of catch across the geographic range of a fishery or a business, which could significantly alter the estimated impacts on a particular spatial area within that broader region.

Business costs were another major concern, including increased fuel costs if fishers were displaced and had to travel further to fish, and fixed costs such as licence fees which would fall more heavily on remaining operators as others left the industry. It was further noted that the progressive changes in fishing gear technology and the associated cost of implementing these and other compliance measures, particularly to reduce bycatch and mitigate other environmental impacts, were not included in assessments of economic impact of the establishment of and constraints created by marine reserves.

Many fishers and their representatives raised concerns and issues with the past structural adjustment policy associated with the proclamation of the reserves. These were outside the review's terms of reference.

Despite the criticisms described above, and lacking an alternative approach, the BAP relied on recently updated ABARES assessments of catch and GVP impacts on commercial fisheries in its consideration of proposed zoning options. These assessments were a vital input into BAP decisions to retain, discard or modify zoning options.

Recreational fishing

Many assertions were made about the social and economic benefits of including, and impacts of excluding, recreational fishing. This is an area where data on effort, impact and value, especially in Commonwealth waters, is clearly deficient. The vast majority of recreational fishing occurs in state waters, and much of the available information on recreational fishing is based on experience and activity from coastal and nearshore environments. It is not clear to what extent this can be translated to the more remote areas that comprise much of the CMR estate.

Lessons from coastal experience, however, may be an important guide to how recreational fishing is assessed and managed in the future. A number of reports identify recreational fishing catch as comparable to or exceeding commercial catch in coastal systems.²¹ One study reported similar findings for the impacts of offshore pelagic sports fishing.²² The ESP considered recent scientific publications on the impacts of recreational fishing and provided its findings to the BAP for its consideration in potential zoning options. The BAP considers the information gap on the effort, impact and socio-economic value of recreational fishing in CMRs to be significant and a matter that needs to be addressed as a priority.

Prospective fisheries

The Regional Panels were made aware of a number of prospective fisheries that were in varying stages of development, from early exploration to testing of gear types and stock assessment, and potential expansion of existing fisheries into new areas. The issue of assessing the opportunity cost of excluding a prospective fishery from a zone is complex, given that catch quantity, quality and distribution, prices and costs are largely speculative. Mindful of these uncertainties, fisheries prospectivity was not discounted in the consideration of zoning options by Regional Panels and in the later refinement of options.

Oil and gas prospectivity

While information on the location of mining, oil and gas prospectivity was available, its potential economic value cannot be reliably estimated for the purposes of the CMR Review and was therefore not considered by the review. No direct existing mining, oil or gas industry interest is displaced by recommended zoning options. Some recommended

²¹ J. Ford and P. Gilmour. (2013). *The state of recreational fishing in Victoria: a review of ecological sustainability and management options*. Report to the Victorian National Parks Association, Melbourne.

²² M. Zischke, S. P. Griffiths and I. R. Tibbetts. (2012). Catch and effort from a specialized recreational pelagic sport fishery off eastern Australia. *Fisheries Research* 127–128, 61–72.

zones, including MNPZ and HPZs, which exclude oil and gas and mining activities and a range of other commercial activities, do cover areas of known petroleum prospectivity.

Non-extractive economic value

A number of stakeholders made reference to the social and economic benefits that could arise from the exclusion of extractive activities from MNPZs and SZs. The direct economic benefits associated with non-extractive tourism were highlighted. A number of stakeholders provided data and analysis on the current and potential value of non-extractive economic activities such as dive tourism. Broader benefits from the provision of ecosystem services such as production of oxygen, carbon dioxide storage, and buffering of climate change impacts were also raised in support of excluding extractive activities.

A number of submissions made the point that the benefits of marine reserves do not arise purely from direct economic uses and activities such as commercial fishing and oil and gas extraction (that is, market values). Several submissions and stakeholders referred to studies that estimated the non-visible economic benefits of marine reserves arising from provisioning, regulating, habitat and cultural services.^{23,24} Estimates for the annual non-market value of the proposed South-west CMR Network,²³ and for the Marine National Park component of the CMR estate²⁵ were comparable to or exceeded the market value of existing commercial activities.

Socio-economic considerations in future decision-making

The CMR Review makes a number of further observations and recommendations that could improve how social and economic factors can be better included in future decision-making.

Every management decision has a socio-economic impact. Every decision-maker should be aware of this dimension. Decisions about prohibiting, allowing or constraining uses and activities requires careful judgment. Relevant data may be lacking or inadequate.

Clear management objectives for a reserve and for each zone will be essential to guide and inform future decisions about uses and activities in reserves. Building stakeholder trust and confidence and employing a transparent decision-making framework that draws on available data and engages affected parties are also essential.

Impacts, costs and benefits cannot be adequately assessed (for example, the impact of excluding an activity or the benefits of its inclusion) if adequate baseline data is not available. The social and economic dimensions of recreational fishing are an example of where better baseline data would be useful. The definitions and methodologies for collecting baseline data must be broadly accepted by managers and those affected. Data needs and priorities should be clearly linked to reserve objectives and desired outcomes, and developed in consultation with affected stakeholders and their communities. Some of

²³ The Allen Consulting Group. (2009). *The economics of marine protected areas: Application of principles to Australia's South West Marine Region. Report to the Conservation Council of Western Australia.* The Allen Consulting Group, Melbourne.

²⁴ L. Eadie and C. Hoisington. (2011). *Stocking up: securing our marine economy.* Centre for Policy Development.

²⁵ C. Hoisington and L. Eadie. (2012). *Preserving our marine wealth: an economic evaluation of the proposed Commonwealth marine reserves network.* Centre for Policy Development.

this data will come from specific monitoring activities and research projects, and some is likely to be provided by or obtained from other sources including users. Business information collected by stakeholders is vital, as is data collected through approaches such as citizen science, government agencies, and other independent sources. More consistent approaches to data collection, especially between jurisdictions, would assist more consistent decision-making.

Industries that are based on natural resources that are highly variable in space and time pose particular challenges in this regard. Data that is averaged over long time frames (that is, more than a decade), is preferable to that from shorter time frames, as long as natural variability and underlying trends at a location, and in quantity and quality of the resource base, can be accounted for in a transparent and generally understood and accepted way. Often the potential resource base (prospectivity) that creates opportunity for growth and development is unknown or not well known.

The development of reliable models that predict how components and dependencies of marine and human systems intersect and interact would help managers deal with the complexity that arises from the variability and possible trends in natural resource distribution and abundance, the interdependencies of different species and trophic levels, and the array of economic and social interests that depend to some degree on these resources. Such bio-economic modelling could assist in the design and testing of hypotheses that consider potential impacts, costs and benefits and aid future decision-making processes.

Economic and social activities and the benefits and impacts of operating in marine reserves will change over time. Businesses and consumer interests will evolve; knowledge about the impacts, threats and pressures on a reserve will improve; new technologies and more efficient processes will be developed; and management of the reserve estate will need to maintain a degree of flexibility to consider and accommodate new uses and users, as well as to decide whether a use could be, or is no longer, appropriately undertaken in a reserve. Apart from any impacts on biodiversity and the conservation values of a reserve, such decisions must take account of relevant social and economic data.

The non-market benefits of the CMR estate should be more systematically and rigorously quantified. General models of ecosystem product and service provision, and overseas studies and experience, may be useful in this regard; however, it is likely that more accurate estimates will need specific surveys, data and research based on the particular circumstances of the CMR estate and Australia's marine environment. These benefits should be communicated to users and the general public interested in the overall value of the CMR estate.

Estimation of non-market value and the potential for new or additional non-extractive economic activities such as marine tourism in the CMR estate need to be based on a more robust basis than extrapolation from coastal and inshore experience, which should be regarded with caution. For example, the relatively calmer and more accessible coastal waters do not always compare well to the open ocean conditions of the vast majority of the CMR estate. Several of the tourism operators working in the Coral Sea referred to the limited number of days when weather and wave conditions were favourable enough to operate—advising that they only experienced these conditions on 100 to 120 days a year. Part of the attraction of their products and services was environment quality and

remoteness and the low likelihood of encountering others. These values could be at risk if the scale and scope of these activities substantially increases.

Community and consumer views and broader social and economic dynamics are relevant to the management of such a large estate for the public good. With rising public and consumer concern about food safety and quality, and the impacts of food production and other economic activities on the environment, there is value and considerable benefit in encouraging businesses that obtain products and services from marine reserves to seek appropriate certification for their products and services, and to promote these products and services as being derived from well-managed reserves.

There is wider social and regional benefit to be gained from the marketing and promotion of high-quality, locally caught, sustainably harvested seafood. This can contribute to and support local, regional and national branding of Australia's destinations and food offerings, and can complement other tourism offerings in regions adjacent to CMRs. The BAP encountered a number of excellent and inspiring examples of local, regional and national businesses committed to sustainable harvesting and local and regional employment that were delivering quality products to local and international markets. Wider regional, social and economic benefits from the operation of these businesses (such as contributing to a region's attractions and brand or increasing visitor numbers), in addition to direct benefits such as employment, were evident.

As discussed in the next chapter, proposed management actions that are raised in consultative forums in sufficient time and detail to allow for effective stakeholder consideration and input can better inform decision-makers and reduce the risk of an action unknowingly and adversely affecting a socio-economic interest, and increase the likelihood of a positive socio-economic outcome.

Assessment of the long-term socio-economic benefits and impacts of the zoning and management arrangements across the CMR estate will be essential to ensure that future management and zoning decisions are well founded. Socio-economic data must be collected as an integral part of the ongoing monitoring of the reserves.

Recommendations

BAP Recommendation 5.1: Given the multiple and sometimes disparate perspectives on the influence and importance of socio-economic factors in CMR design, the DNP should foster and support an ongoing dialogue with stakeholders to build a greater and shared understanding of their concerns and aspirations.

BAP Recommendation 5.2: The Australian Government, in collaboration with the recreational fishing sector, should invest in building a better understanding of impacts of recreational fishing (including the charter fishing sector), in CMRs and Commonwealth waters more generally to better inform future management decisions.

BAP Recommendation 5.3: Good baseline social and economic data is vital, and must be acquired systematically with wide and transparent stakeholder engagement as part of an ongoing program of monitoring and evaluation for the CMR estate.

BAP Recommendation 5.4: Recognising the statutory primacy of biodiversity conservation in management priorities, the DNP should nonetheless ensure that socio-economic considerations are included as key inputs to decision-making for CMR management.

BAP Recommendation 5.5: The benefits of market activities in, and non-market values of, the CMR estate should be evaluated to develop more reliable estimates on which future management decisions can be based. These market and non-market benefits of the estate must be communicated to stakeholders and the general public.

BAP Recommendation 5.6: The DNP should engage with national and regional tourism bodies and the commercial fishing sector to build a shared understanding of the value of a well-managed marine environment and opportunities for promoting locally caught, sustainably harvested seafood in the context of national and regional tourism branding (see also BAP Recommendation 8.5).

Chapter 6—Ongoing engagement with regional stakeholders

This chapter focuses initially on stakeholder engagement with the CMR Review, and then provides some reflections and recommendations for the Government's consideration.

The importance of traditional owners and Indigenous communities and their responsibilities and connection to sea country is acknowledged, and their ongoing engagement is discussed below.

Engagement of regional stakeholders during the review

The engagement of stakeholders and communities is essential to the effective management of CMRs. The past consultation processes during the development of Marine Bioregional Plans, through to the proclamation of the reserve networks and the development of the set-aside management plans, had identified, and to a considerable degree had addressed, a wide range of stakeholder issues and concerns. It was clear from the BAP consultations that a diversity of disparate views remained on the appropriate design and management of individual marine reserves and zones. Often these views were in direct contrast to each other.

Across all sectors there was a high level of interest in the CMR estate. Users and user groups expressed strong interest in being involved in ongoing management, monitoring of and contributing to discussions on future management. Much of the input received in the course of the CMR Review reflected a good understanding of the purpose of the reserves, and of the processes and information used to design and zone the reserves. Disagreement centred around the extent to which scientific and socio-economic information was used, and how this affected the design and zoning of the reserves.

The experience of the BAP was that while often the initial stakeholder commentary suggested consultation fatigue or a cynicism with yet another consultation, once the opportunity presented by the CMR Review was clearly outlined and the commitment given that they would be heard, people were keen to present their issues and thoughts on how they might be addressed. The BAP greatly appreciated and valued the time and effort that many stakeholders put into the review. The level of stakeholder interest and engagement remained high throughout the review, with over 13 100 submissions and 1859 online surveys received, and over 260 BAP meetings held across 16 locations involving over 600 individuals.

A wide range of stakeholders engaged with the CMR Review including individuals; operators and representatives involved in tourism, fishing and diving businesses; local and Indigenous community groups and their representatives; non-government organisations; state and territory government agencies; science associations; natural resource management bodies; recreational fishing interests; and representatives from the oil and gas industry, ports and shipping and regional development bodies.

The national-level stakeholder meetings and multi-sector forums held throughout the review showed that stakeholders had an appetite for understanding the perspectives of others. Engagement in these meetings was cordial and respectful, and post-meeting feedback was positive and supported continuity at this level of engagement.

The five Regional Panels of the BAP were instrumental in facilitating discussion and stakeholder engagement at a regional level. Panel members' knowledge and networks were invaluable in helping the BAP to reach out widely to interested parties.

Time and logistical constraints meant very limited BAP engagement with local and Indigenous communities on country. This was unfortunate given the growing formal recognition of sea country and of Indigenous rights and responsibilities, and the existence and mapping of Indigenous cultural values in a number of the CMRs.

Stakeholders clearly want to be part of the decision-making process and want to contribute. This is fundamental to making informed decisions that will be widely accepted and robust over time. The additional benefit of broad stakeholder engagement in management decision-making is a greater awareness and understanding of other stakeholder perspectives. This should be a clear objective for ongoing management of the marine reserves and will be important in ensuring stakeholder and marine reserve user needs are considered and the socio-economic impacts of management actions are incorporated into decision-making.

Ongoing stakeholder engagement

In general stakeholders were keen and expected to remain engaged in the future management and management arrangements for the reserves. There was interest at the national level from representative bodies in ongoing dialogue on the future management of the estate, as there was at the regional level. For some reserves, there are local issues that specifically interest local communities and their representatives. This is particularly the case for Indigenous communities living near CMRs and for businesses with a local footprint.

While acknowledging these concerns and issues, as the estate is most likely to be managed at a network (that is, regional) level through network management plans, it makes most sense for formal stakeholder engagement processes to be established at the network level, recognising that some local issues will need more specific engagement at a local level.

The BAP had an opportunity to talk to some of the stakeholders involved in the South-east CMR Network and participating in the South-east CMR Network Stakeholder Forum. They saw it as an effective mechanism for engaging stakeholders in the management of CMRs. The forum brings together representatives from regional industry associations, conservation, marine science agencies and other community interest groups to discuss issues relevant to the management of the South-east network. These stakeholders advised the BAP that they appreciated being involved in the regional management process and, particularly, being able to provide advice on the implementation of the South-east CMR Network Management Plan. They mentioned the need for flexibility in the establishment and management of the forum, to account for different membership needs and interests that change over time. The fact they met periodically with scheduled meetings but with the flexibility not to meet if there were no issues to discuss, or to meet outside the scheduled meetings if the need arose, was seen as a valuable and mature aspect of their working relationship with reserve management. They acknowledged that they would expect regional differences in the engagement approaches that may best work nationally and for each network.

This approach could be applied across other networks. A similar structure, purpose and mode of operating may help to ensure a consistent approach is undertaken across networks, while allowing flexibility for regionally specific needs such as timing requirements, 'actual work' undertaken, shared experiences, and the frequency and format of meetings.

A number of stakeholders suggested that there could be efficiencies in tapping into existing groups, committees or community consultation bodies on an as needs basis and as appropriate. As each network has its own distinct geographic and demographic characteristics no simple model of stakeholder engagement is recommended; rather each network will need its own unique forum arrangement.

A desirable objective of encouraging and supporting broad-based and robust stakeholder engagement is the development of partnerships that assist, and in some cases could deliver, management tasks and services. Good stakeholder engagement will assist in initiating and co-designing these approaches, in consultation with those affected.

Working with Indigenous people and communities

During the consultations the BAP met with a number of Indigenous groups and individuals and many raised the CMR Indigenous Forum held in October 2012 in Darwin as a useful first step in engagement. They suggested that the DNP could build on this approach for the management of the marine reserves. In particular, the BAP acknowledges a finding of the forum that consultation be direct and at the local Indigenous group level wherever possible, noting that representatives of land councils and peak Indigenous organisations are not in a position to speak on behalf of Indigenous people and communities directly responsible for and managing sea country.

Engagement with Indigenous people and communities will be important, particularly at the level of the communities that hold land and sea country rights and responsibilities that extend into CMRs. This intersection of interests and responsibilities creates opportunities for collaboration on both the planning and management of these areas. The delivery of management services is one such opportunity. (see also Chapter 7)

Reflections

Overall, from feedback obtained during the consultations and from submissions and survey inputs, the relationships built with most stakeholder groups over a long period, and most recently through the CMR Review, appeared to be respectful and effective. Maintaining these relationships and the wide engagement of stakeholders established through the review will be important for the DNP to effectively and efficiently manage the marine reserves in the future.

Management and indeed compliance over such a vast CMR estate will present unique logistical challenges, but these challenges are also opportunities for stakeholder engagement in management and compliance tasks. Engagement of local people can help build local ownership of and support for CMR management.

Partnerships with other Commonwealth and state agencies will be vital, particularly those charged with regulating and monitoring activities that occur inside and outside CMRs, such as the AFMA, the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), and the Australian Maritime Safety Authority (AMSA) at the Commonwealth level, and state parks and fisheries agencies. Each has

expertise and capabilities that contribute to effective reserve management and stakeholder engagement. Some of these contributions are likely to include developing the capability to respond to, or help coordinate responses to, issues and incidents.

Open regular communication and multi-sector dialogue are vital to increase understanding and build trust between stakeholders, particularly those with different priorities and perspectives. This will provide a foundation for more efficient and effective compliance and enforcement, especially if the relevant interests are engaged to help design and implement management programs.

Effective ongoing engagement and communication with such a diversity of interests will require a combination of approaches and tools, including:

- Network (regional) forums to deal with more strategic issues and the implementation of network management plans
- A national CMR forum of stakeholders if there are national-level issues to discuss
- Regular email contact including short updates from managers as well as input from stakeholders
- Use of social media—for example, network Facebook pages
- Twitter feeds to advise of new information, activities or consultations.

The feedback from the online survey showed the clear preference of respondents for email contact every several months as a way of staying in touch.

Collaboration with stakeholder groups and sectors on monitoring programs, including citizen science programs, is needed and will help to engender support and understanding of the use and the conservation values of the marine reserves. The combination of these activities should build understanding of and support for the conservation and management of the marine reserves and assist with the ongoing challenges of adaptively managing such a large multiple-use reserve estate.

The scientific and research community are another vital set of stakeholders. Encouraging, fostering and collaborating with research partnerships will be essential to help reserve managers build the knowledge and understanding necessary to manage the estate effectively, and to communicate its values and benefits to a broader range of stakeholders. This is discussed in more depth in the ESP report.

Regional Panel members of the BAP were invaluable in bringing knowledge, networks and different perspectives into the consultation process. Their engagement in the CMR Review represents a valuable resource to draw on in the future.

In summary, a wide range and great diversity of existing regional bodies, organisations, users and interested parties engaged in the review. Many are keen and have the potential to make valuable contributions to the design and implementation of reserve management programs. All these relationships need to be valued and nurtured.

BAP Recommendation 6.1: The model and experience of the stakeholder forum for the South-east CMR Network could form the basis for a regional consultative forum for each of the other networks and the Coral Sea CMR. Initially consideration could be given to drawing on the experience and involvement of BAP Regional Panel members in or as members of future forums for CMR consultation.

BAP Recommendation 6.2: The DNP should make continuing regional engagement a priority, using a variety of communication tools and approaches with users, user groups and regional communities as management plans are developed and implemented.

BAP Recommendation 6.3: Regional engagement models, including the South-east CMR Network Stakeholder Forum, should be evaluated to enable the implementation of robust, sustainable and effective mechanisms for engaging stakeholders.

Chapter 7—Comments and advice on Commonwealth marine reserve management plans

Introduction

The BAP terms of reference invited advice and the inclusion of information received in the course of the consultations that could influence, contribute to or improve the drafting of future management plans. Many stakeholders were familiar with the process and some of the content of the set-aside management plans, and specific suggestions were made for the improvement of the process, the content or both. Some comments, however, reflected a lack of detailed understanding of the content of the former plans.

This chapter outlines the issues raised. In addition, a number of other observations are made that are relevant to management plans. These are included in the last part of this chapter.

Process for development of management plans

The BAP found broad acceptance of the concept of a network management plan for each of the four CMR networks, and one for the Coral Sea. The BAP supports this approach.

Most stakeholders understood that management plans provide the legal means to implement new zoning arrangements for CMRs and that two statutory periods of consultation were mandated for developing new management plans. Most were very keen to see the end of the lengthy consultation processes of reserve design and zoning that led up to the 2012 proclamation and the development of the set-aside management plans. They understood, however, that the management planning process that will follow the CMR Review is the necessary end point before there can be certainty about the allowed and prohibited activities and the rules and decision processes for activities that may be allowed in different zones.

Many stakeholders showed considerable apprehension about further delays or uncertainty about how the reserves would be managed. Given the extent and comprehensiveness of the BAP consultations, the feedback received on management plans (outlined in this chapter), and the ‘consultation fatigue’ that was articulated by many stakeholders, adopting the statutory minimum consultation periods for developing new management plans would help bring the lengthy establishment phase of the CMRs to a close.

BAP Recommendation 7.1 The DNP should initiate the process of developing new management plans as soon as practicable, and adopt the minimum statutory consultation periods (see also BAP Recommendation 8.1).

Many comments on management plans were applicable across the regional networks and the Coral Sea CMR. These are summarised under the following broad headings.

Indigenous cultural values

A number of common themes emerged from consultations with Indigenous people and their representatives, although logistical and time constraints prevented engagement with each and every community adjacent to marine reserves:

- Management plans should recognise and include reference to cultural values of

reserves

- Indigenous values and interests should inform and be reflected in the plans
- Best practice principles and concepts for Indigenous engagement should be identified in management plans and adopted in management practice
- There should be alignment between management plans and Saltwater Country Plans or Sea Country Plans
- Indigenous rights should be protected through measurable targets
- Traditional practices and knowledge of sea country should be recognised in conserving biodiversity values and should inform management activities
- Management plans should identify and support opportunities for Indigenous people to engage in the management of sea country in CMRs, such as through the delivery of management services like monitoring, compliance and research.

A number of Indigenous people and representatives identified aspirations for the development of small-scale tourism and fishing businesses in or adjacent to CMRs, although this is not strictly an issue for management plans.

Management plan terminology

The BAP heard many comments that related to the definition and clarity of terms and process in management plans. They include:

- Provide more detailed descriptions of conservation values of specific CMRs
- Make a clearer distinction between the commercial activities of charter boats (tourism and recreation) and commercial fishing
- Make a clear distinction (if any) between vessel transit (on innocent passage) and vessels associated with supply and servicing of offshore oil and gas facilities (potentially defined as mining activities) when transiting zones, where mining is prohibited
- Provide a clear definition of commercial vessel transit with respect to anchoring, drifting and route, and any restrictions in relation to ballast water exchange or rubbish disposal
- Acknowledge existing governance and regulatory controls on shipping
- Provide more definition of and clarity on class approvals and how they would operate. Class approvals should be developed in consultation with the affected marine users and other relevant interests (for transparency)
- Clarify the circumstances where an activity requires no further approval if it has received approval under Part 9 of the EPBC Act, or is subject to a decision under Part 7 that the action is not a controlled action if undertaken in a particular manner, or is otherwise authorised under another part of the Act
- Identify how the laying and maintenance of submarine cables is regulated
- Provide more clarity on how new information, technologies and efficiency improvements will be taken into account in management decision-making.

Monitoring and evaluation of conservation values

Ensure that there is an ongoing monitoring program for key conservation features and values and that the information gained is used in assessing the plan's effectiveness and informing the next management cycle. Biodiversity surrogates should be progressively verified as accurate indicators of biodiversity patterns and used to build a better understanding of biodiversity and ecological systems. As discussed in the ESP report, baseline information is critical in being able to ascertain changes in biodiversity and

ecological systems within and outside CMRs, to efficiently target management actions, including addressing threats to biodiversity, and to measure management effectiveness.

Communication and education

The content of management plans should be readily available, and education programs developed to inform the public of the values of the reserves, how they are being managed and the results of monitoring programs. Particular attention should be given to local communities, local government, regional development and tourism organisations as important audiences.

Climate change

Climate change is recognised as one of the most significant threats and challenges facing the marine environment and the conservation of marine biodiversity. Understanding of the implications of climate change and its potential impacts on marine biodiversity and ecological processes is increasing rapidly and is providing strong evidence of a change in community composition as many species move to higher latitudes. Planning for such change is challenging, particularly in terms of the representation and management of biodiversity in static zones. Management plans will need to provide flexibility so that an adaptive management approach can be taken to address climate impacts.

Goals and performance indicators

Management plans need to include more explicit goals and indicators that measure the condition and trends in condition of marine reserve values including those associated with biophysical and management performance.

Flexibility to adapt to change

Management plans should provide for explicit review and assessment of prohibited and allowed activities to accommodate and respond to new information, technologies, and scientific advice in a clear and transparent process.

Research and monitoring of socio-economic aspects of Commonwealth marine reserve management

Research and monitoring programs should include assessing the social and economic impacts of reserves, and patterns of use of the marine environment, and should provide for the periodic updating of relevant datasets and ensuring they are publicly accessible.

Site-specific issues—Norfolk Island

Specific site plans should be developed to protect key habitats and effectively manage industrial activities and high usage in sensitive habitats like coral reefs and inshore areas around Norfolk Island.

Improving and communicating the content of management plans

Management plans are statutory documents and necessarily follow and comply with legal format and content requirements. As such they may be relatively inaccessible for many readers. As many of the issues outlined above were included and dealt with in the set-aside management plans, there is clearly a need for appropriately worded and targeted communication products that set out how the CMRs will be managed once management plans are finalised.

BAP Recommendation 7.2: The DNP should note the issues identified in Chapter 7 of this report, take them into account in the preparation of new management plans and, when new management plans are finalised, develop and disseminate appropriately worded and targeted communication products that set out how the CMRs will be managed.

Compliance and enforcement of management plans

A number of stakeholders expressed the view that the Australian Government would not be able to implement a successful compliance and enforcement regime over such a large estate. The establishment of such a nationally and globally significant marine conservation initiative will undoubtedly fail from the perspective of effective biodiversity protection and public confidence if there is poor compliance with CMR rules and requirements and inadequate monitoring of use.

Advice was received from Parks Australia on the approach taken in the South-east CMR Network to compliance and enforcement, with particular regard to the use and utility of VMS data received by the AFMA and available to Parks Australia. This approach was regarded as underpinning a cost-effective compliance and enforcement regime for this network, although the compulsory requirement for VMS installation and operation only applied to vessels operating in Commonwealth fisheries. While this approach is expected to also underpin an efficient and effective approach to monitoring the activities of Commonwealth-licensed commercial fishers, its major deficiency is that no similar requirement or capability exists for vessels operating in state- or territory-licensed fisheries, many of which operate in CMRs.

BAP Recommendation 7.3: The Australian Government must institute and adequately fund a compliance and enforcement program across the CMR estate.

BAP Recommendation 7.4: The Australian Government should facilitate the requirement for the installation and operation of VMS on all fishing vessels licensed in state or territory managed fisheries that operate in Commonwealth waters.

Chapter 8—Other recommendations and observations

A wide variety of issues relevant to the planning and management of the CMR estate were included in the submissions, survey and consultations. These are outlined in this chapter and, if appropriate, accompanied by a recommendation.

Business uncertainty and risk

Many of the stakeholders in the face-to-face consultations, including fishers and associated businesses, government and development authorities, and conservation representatives, expressed concern about continuing uncertainty surrounding the final zoning and management of the marine reserve estate. They referred to the lengthy consultation processes leading up to the 2012 proclamation and the subsequent development of management plans. While the opportunity to engage in the CMR Review was appreciated, there was considerable nervousness about what would happen once it reported. Many were concerned about further changes or another review, continuing the uncertainty. This was seen as a major disincentive by many businesses to invest in their future.

The desire for a more secure future for all affected parties is a clear focus for many. Most expressed the view that, while the zoning outcomes may not address all or indeed any of their issues, the need for certainty had become a significant priority.

During the final consultations in July and August to test proposed zoning options, virtually all stakeholders asked about the timetable for report submission, government response and the finalisation of management plans.

The Government should consider initiating the statutory Notice of Intent (NOI) process to prepare new management plans in concert with the public release of this BAP report. This would allow interested parties the opportunity to comment on the report's recommendations through the NOI consultation process. The Government's formal response to this report could then be released in much the same time as the release of draft management plans for public comment, as presumably its response would be encapsulated in these draft plans.

BAP Recommendation 8.1: The Australian Government should respond to and release this BAP report as soon as possible, ideally in conjunction with the commencement of the preparation of CMR management plans (see also BAP Recommendation 7.1).

Marine park agencies working together

The BAP heard of a number of existing business arrangements (contracts or service agreements) between Parks Australia and state agencies that delivered management services for specific CMRs, such as the Great Australian Bight CMR with SA, the Ningaloo CMR with WA, and the Solitary Islands CMR with NSW. Encouragingly these arrangements appeared to be well regarded in each case by both parties.

With the significant increase in the area and number of CMRs it seems sensible, where capability and interest exists in relevant state and territory agencies, to extend these business arrangements to new CMRs where appropriate. Given this additional complexity it may be prudent for Parks Australia to establish a regular dialogue with relevant partners and service providers to ensure a coordinated and consistent approach to

management of CMRs and, where relevant, adjacent reserves in state and territory waters.

BAP Recommendation 8.2: Parks Australia should play a lead role in coordinating the development of consistent and collaborative approaches to marine reserve management with state and territory agencies.

Improving coordination and collaboration between Commonwealth agencies with marine management responsibilities

A number of Commonwealth agencies have planning and operational responsibilities for activities in Commonwealth waters. These include the AMSA for shipping, the AFMA for fisheries, Geoscience Australia for mapping, the Australian Communications and Media Authority for submarine cables, the NOPSEMA for the oil and gas sector, the Australian Border Force for customs and immigration, and the Department of Defence, as well as Parks Australia for the management of the CMRs that cover one-third of these waters. While interagency cooperation between Parks Australia and individual agencies appeared to be effective, a mechanism for regular dialogue between these agencies did not appear to exist. Given the obvious benefits of a consistent and coordinated approach to managing Australia's ocean responsibilities, not the least for pure operational efficiency reasons, there should be a mechanism for such dialogue, if only on an annual basis.

BAP Recommendation 8.3: The Australian Government should consider establishing an annual interagency forum to help develop a consistent and coordinated approach to ocean management.

Complexity and consistency of fisheries management arrangements

Several stakeholders expressed their concerns relating to the complexity of fisheries management arrangements, seeing the matrices of allowed and prohibited activities for the CMR networks as a further layer of bureaucracy over already complicated ecosystem-based fisheries management arrangements. They pointed to the similar objectives of both fisheries and conservation legislation.

This complexity is evident through small but significant differences between CMR networks, where the same fishing gear types may be treated differently and where fishers could be subject to different rules and requirements in different locations.

Fisheries catch data is reported at different scales by different jurisdictions and in different fisheries. Particularly for state/territory managed fisheries this reporting was often not at a resolution useful for evaluating the potential impacts of zoning options for some reserves.

A common observation—and often plea for action—pertained to the different terminology between jurisdictions, the lack of alignment of reserve borders and zones between some Commonwealth and state/territory reserves or with fisheries management boundaries, the inconsistency of zone prescriptions across the Commonwealth estate and between Commonwealth and state/territory reserve estates in terms of allowable/prohibited activities, and even the lack of consistency of colour of the same zones in the maps of different jurisdictions.

These factors create unnecessary complexity for those charged with compliance and enforcement.

The CMR Review strove to reduce complexity and improve consistency of approach where this was within the scope of the review. However, many issues of complexity and lack of consistency remain and can only be addressed in a collaborative way between levels of government, and between different government departments and agencies.

BAP Recommendation 8.4: Governments and agencies should collaborate to progressively identify and resolve lack of consistency in terminology, objectives and management arrangements for marine users.

Sustainable fisheries

The growing commitment by a number of fisheries and operators to third-party certification of their operations (for example, Marine Stewardship Council certification) was raised by some fisheries representatives as an indication that their operations were compatible with the objectives of the CMR estate and therefore no further regulatory control or oversight was necessary. The BAP did not accept this proposition.

The certification of fisheries is a positive step in helping to improve the image of the sector as an industry of the future rather than the past. The continuing focus on sustainability and reducing impacts on the environment through improved technology and practices is positive and needs to be more effectively communicated to the public. The growing recognition of the importance of food in the visitor economy and the regional and national branding of Australia as a destination with sustainable and healthy food provides an opportunity for the seafood industry to communicate this message. Sustainability certification, and for relevant fisheries the catch being legitimately harvested from marine reserves, could become points of difference for marketing and promotion of sustainable Australian seafood domestically (see also Chapter 5)

BAP Recommendation 8.5: The DNP should collaborate with relevant parts of the seafood sector that operate in the CMR estate and are seeking third-party certification for sustainably harvested seafood and work with regional and national tourism promotion and marketing campaigns that promote Australia's sustainably harvested quality produce (see also BAP Recommendation 5.6).

Comprehensiveness and representativeness of the Commonwealth marine reserve estate

Many community, conservation and science stakeholders commented on the lack of comprehensiveness and representativeness of the proclaimed reserve estate against a number of criteria. This issue was considered by and is addressed in the ESP report for the proclaimed estate against the Goals and Principles.

The constraint for the CMR Review to remain within the proclaimed outer boundaries of reserves meant that there was very little scope for the BAP to address the overall representativeness and comprehensiveness of the estate, with the exception of principle 18: the inclusion of some highly protected areas (IUCN I and II) in each Provincial Bioregion. As indicated in Chapter 4, a range of socio-economic constraints limited the opportunities for improving this aspect of comprehensiveness.

The zoning recommended in Chapter 4 results in an additional 80 primary conservation features being represented in HPZs, and 21 primary conservation features in SZs or MNPZs. However, gaps remain in the coverage and comprehensiveness of the marine

reserve estate against most of the four goals in the Goals and Principles (Provincial Bioregion, Depth Ranges, KEFs and Biologically Informed Seascapes, and Seafloor Features).

As a number of stakeholders and submissions observed, the representation of conservation features in highly protected zones on the continental shelf in the Temperate East CMR Network and the North CMR Network could be considerably improved.

In addition, several stakeholders raised the absence of CMRs in the Indian Ocean Territories as a major gap in comprehensiveness of the CMR estate. The absence of any marine reserves in these territories is the most significant gap in the comprehensiveness of the reserve estate in Commonwealth waters. The ESP also noted this gap, citing a major report by the CSIRO on the conservation values of the Indian Ocean Territories.²⁶ This study could form the basis for an assessment and initial design of reserves to conserve representative samples of these values. The Government could use the Conservation Zone provisions in the EPBC Act (Part 15, Division 5) to initiate this assessment and design step.

A number of stakeholders, including conservation groups and a local tourism operator, documented an area within the Bremer Canyon system and to the west of the Bremer CMR as a biodiversity hotspot for a variety of marine species including cetaceans and seabirds. There would be value in further investigation of the area's conservation values and the merits of extending the western boundary of the Bremer CMR to include it. The Government could use the Conservation Zone provisions in the EPBC Act (Part 15, Division 5) to initiate this investigation and assessment of the area's conservation values.

Some stakeholders expressed concern about the potential for mining and oil and gas exploration and production to occur at some stage in the future in the Coral Sea CMR. The policy position of the previous Government to prohibit mining was given effect through the reserve's management plan (s5.8), which has been set aside. A new management plan would presumably include a similar provision. Given the role of management plans to implement, but also to alter, zoning and management objectives, a stronger and more secure expression of the intent to prohibit mining in the Coral Sea CMR would be to amend the EPBC Act and create a similar provision to that prohibiting mining in Kakadu National Park (EPBC Act section 387).

BAP Recommendation 8.6: Future reviews should consider improving the comprehensiveness of the CMR estate as identified in this report, particularly with respect to representation of continental shelf features in the CMR estate (see also the ESP report).

BAP Recommendation 8.7: The Australian Government should address the most significant current gap in the comprehensiveness of the CMR estate by designing and establishing CMRs in the Indian Ocean Territories, building on the existing CSIRO assessment of their conservation values and using the Conservation Zone provisions of the EPBC Act (Part 15, Division 5) to initiate and frame the necessary assessment and design processes.

²⁶ D. T. Brewer, A. Potter, T. D. Skewes, V. Lyne, J. Andersen, C. Davies, T. Taranto, A. D. Heap, N. E. Murphy, W. A. Rochester, M. Fuller and A. Donovan. (2009). Conservation values in Commonwealth waters of the Christmas and Cocos (Keeling) Islands remote Australian Territories. Report for Department of Environment, Water, Heritage and the Arts, Canberra. CSIRO, Canberra.

BAP Recommendation 8.8: The Australian Government should assess the merits of protecting a biodiversity hotspot identified to the west of the Bremer CMR and, to this end, could employ the Conservation Zone provisions of the EPBC Act (Part 15, Division 5) to initiate and frame this assessment.

BAP Recommendation 8.9: The Australian Government should provide greater certainty about the prohibition of mining in the Coral Sea CMR by providing the same legislative protection that applies to Kakadu National Park in the EPBC Act (section 387).

Prospectivity

A number of commercial fishers and government representatives expressed their concerns that the socio-economic considerations in the CMR estate design focused only on existing fisheries and current knowledge, assumed all fisheries were at capacity, and failed to account for or accommodate prospective fisheries. They argued there are many prospective areas for fishing, either because they are currently not fished, for economic or other reasons, or because they may hold stocks of fish that are undiscovered or not exploited due to current technological limitations. They also argued for a greater recognition of food security issues as a consideration in the design and zoning of the CMR estate.

The South-west Corner CMR contains three very substantial north–south MNPZ transects from the continental slope to the EEZ boundary, and the validity of the inclusion of the large east–west MNPZ south of 36°42S was questioned by fishing industry representatives as being unlikely to further contribute to the conservation values of the area, given it is well offshore and in very deep water. The area, however, holds significant potential for the Western Tuna and Billfish Fishery if economic conditions change (including fuel costs, exchange rates and other market conditions). While a change to this zone is not recommended in this report, the Government could include consideration of this fisheries potential at a future review opportunity.

Similar issues were raised by stakeholders for the Coral Sea, Oceanic Shoals, Lord Howe and Norfolk CMRs. The extensive areas of MNPZ that were zoned when the Coral Sea CMR was proclaimed were seen by fisheries representatives as precluding the realisation of significant economic potential for the ETBF from harvesting pelagic tuna species. A large area in the southern part of the Coral Sea CMR adjacent to the boundary with the GBRMP has been identified as having the potential for a new deepwater prawn fishery. Consideration was given to formally identifying this area in the zoning of the reserve but, as there is no established fishery, licence or permit to operate and there was little information on which to base a zoning decision, this issue has been left for a future management decision when these information gaps have been adequately addressed.

In the Oceanic Shoals CMR the extensive areas excluding midwater and semi-demersal trawl were argued to preclude the realisation of potential economic benefits from the development of these NT fisheries. Provision has been made in the recommended zoning of this CMR for a current permitted developmental fishery with established catch records, but it is recognised that potential exists to expand this fishery in future

While some of these issues were addressed in part through this Review, the issues assessing and accounting for prospective economic activity, the opportunity cost of its

exclusion, and lack of knowledge of the resource are likely to remain significant for future governments.

A further element of prospectivity that was drawn to the BAP's attention related to unknown prospectivity in the mining and petroleum sectors. Similar to the above, current decisions have been made based on existing knowledge of mineral and oil and gas resources and prospectivity.

Adequacy of funding and managing effectively

Many stakeholders expressed their concern that, following the intensive and lengthy consultations on the design of the CMR estate, it would not be adequately funded or effectively managed.

The whole CMR estate, including the South-east CMR Network, is nationally and globally significant in extent, ambition and comprehensiveness. It very deliberately embraces a multiple-use approach that includes a wide variety of uses and users, along with significant areas managed with no extractive activity and limited disturbance to act as reference areas, and places where natural processes can operate with minimal impact from human activity. This vast estate, larger than all but seven countries of the world, and six times larger than the CMR estate existing before 2012, will require a high degree of active management.

Key management issues will be working in partnership with other agencies, organisations and businesses, monitoring and evaluation, building the knowledge base to manage effectively, compliance and enforcement, the capacity to identify and respond to threats as they emerge, and communication with users and the broader public.

The substantial investments made over the last two decades to design and establish this estate will be wasted if it is not effectively managed, and effective management requires adequate funding.

While there will undoubtedly be efficiencies to be gained from applying the approaches and lessons learned from the management of the South-east network more broadly, an overall estate that is six times larger will by necessity require some proportionate increase in resourcing for effective management.

BAP Recommendation 8.10: The Australian Government must adequately fund CMR management to ensure that the estate is managed effectively and responsibly, so that the benefits of establishing this estate are not lost for future generations.

Conclusion

While the primary focus of the CMR estate is and must continue to be a system that represents and conserves biodiversity with no-take zones at its core, it adopts a multiple-use management approach to embrace a wide diversity of uses and users of the marine environment. In doing so, managers and decision-makers must weigh up the costs and benefits of including and excluding a range of activities. While the relevant decisions can only be made on the best available knowledge and understanding, it is inevitable that these will improve and that past decisions will therefore eventually need to be reviewed and revised.

The ecological integrity of the CMR estate should be the primary consideration. However,

while there are undoubtedly very significant non-market benefits produced, there are also considerable direct economic and social benefits from economic activities in the reserves. Balancing these objectives is likely to remain a difficult and contentious task, but the goal should be the maintenance of a healthy marine environment that sustains a wide variety of uses and users and is valued, widely enjoyed and appreciated by current and future generations.

9. Acknowledgements

We have appreciated and benefited from the contributions of hundreds of individuals and organisations that made time to talk with us, share their concerns and issues, write detailed submissions, and propose possible ways to design a better marine reserve estate. Their frank and keen interest and engagement in the CMR Review created an energy and dynamic that has assisted us in working through the complex array of competing values, interests and priorities that we encountered.

We were amazed and enthused by the level of knowledge and passion evident around the country about Australia's marine environment, the appetite to know more, the desire of different sectors to discuss their issues in a respectful and collegial manner in the multi-sector forums, and the enormous potential seen for economic, social and environmental benefit from the CMR estate.

We acknowledge and thank the members of the Regional Panels who shared their expertise and detailed knowledge of a wide variety of aspects of marine users, uses and management issues, and helped us find stakeholders that otherwise would have eluded us, to ensure we consulted as widely as possible in the time available.

The Environmental Resources Information Network team (ERIN) in the Department of the Environment in Canberra exceeded our expectations in producing zoning maps with associated assessments from the available government datasets.

We would like to thank the ABARES staff who provided invaluable assistance to the CMR Review, often in short time frames, with catch data and estimated GVP impacts.

We would not have been able to undertake this major exercise without the support of the very capable and dedicated team that comprised the CMR Review Secretariat within Parks Australia. While our particular thanks go to Belinda Jago for her unfailing good humour, her apparent lack of need of sleep and her encyclopaedic knowledge of people and issues and of the history and detail of the design and management of marine reserves in Australia, all of her team who participated in the work of the secretariat made significant contributions to ensuring we were able to do the best job we could. We are indebted to them all.

However, all responsibility for the content and accuracy of this report lies with us.

APPENDICES

- A. Policy context for identifying Commonwealth marine reserves
- B. Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in Commonwealth Waters
- C. Terms of reference for the review
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- E. Consultation streams—online survey, written submission and stakeholder meetings
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Appendix A: Policy context for identifying Commonwealth marine reserves

In 1991 the Australian Government initiated a long-term marine conservation program to ensure the conservation and sustainable use of Australia's marine and estuarine environments. A key component of this initiative was a commitment to expand Australia's existing marine reserve system through the establishment of a national system of MPAs.

Convention on Biological Diversity (1992–1993)

The Australian Government provided signature and ratification of the CBD at the United Nations Conference on Environment and Development (Rio Earth Summit). This convention was developed by working groups of the United Nations Environment Programme in recognition of the need for global action on conserving biological diversity. This was an important first step in working towards the creation of Commonwealth MPAs.

Signature and ratification of the CBD was the first major step in a long journey to developing a network of marine reserves in Australian waters. The subsequent key policy commitments that show the history of marine reserve policy development are:

- Australia's Intergovernmental Agreement on the Environment (1992)
- Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity (1995) (the Jakarta Mandate)
- National Strategy for the Conservation of Australia's Biological Diversity (1996)
- Australian and New Zealand Environment and Conservation Council Guidelines for Establishing the National Representative System of Marine Protected Areas (1998) (the ANZECC Guidelines)
- Australia's Oceans Policy (1998)
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
- World Summit on Sustainable Development (2002)
- Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in Commonwealth Waters (2007) (see Appendix B)
- Australia's Biodiversity Conservation Strategy 2010–2030
- 40 new marine reserves declared in Commonwealth waters (2012)
- Commonwealth Marine Reserves Review (2013).

Australia's Intergovernmental Agreement on the Environment (1992)

The Intergovernmental Agreement on the Environment was made between the Commonwealth, state, territory and local governments to facilitate a cooperative national approach to management of the environment. The parties agreed that a representative system of protected areas encompassing terrestrial, estuarine and marine environments is a significant component in maintaining ecological processes and systems (Schedule 9, item 13).

Jakarta Mandate (1995)

Marine and coastal biological diversity was identified as a priority at the first Conference of Parties to the CBD in 1994. The Jakarta Mandate was presented as the global consensus on marine and coastal biological diversity at the second Conference of Parties in Indonesia in 1995. Key objectives for conservation of marine and coastal biological diversity presented in the Jakarta Mandate were:

- Integrated marine and coastal area management
- Sustainable management of marine and coastal living resources
- Effective marine and coastal protected areas

- Development and management of mariculture
- Prevention of incursions of invasive species.

National Strategy for the Conservation of Australia's Biological Diversity (1996)

The 1996 National Strategy for the Conservation of Australia's Biological Diversity was developed and agreed by Commonwealth, state and territory governments to meet commitments made under the CBD and the Intergovernmental Agreement on the Environment. The strategy recognised that the marine and estuarine MPA system in particular was inadequate to maintain biological diversity. The strategy recommended expansion of marine parks and reserves to encompass representative examples of Australia's marine environments. Action 1.4.1 of the strategy commits to undertake a program that ensures that the Commonwealth, state and territory terrestrial and MPA systems are comprehensive, adequate and representative.

Australian and New Zealand Environment and Conservation Council Guidelines for Establishing the National Representative System of Marine Protected Areas (1998)

The ANZECC Task Force on Marine Protected Areas prepared the Guidelines for Establishing the National Representative System of Marine Protected Areas (NRSMPA) to assist government agencies in the development of the NRSMPA and to assist stakeholders in understanding the process. They set out high-level criteria to identify and select MPAs. The primary goal of the NRSMPA was 'to establish and manage a CAR system of MPAs to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels'.

The ANZECC Guidelines include the CAR principles:

- **Comprehensiveness:** the NRSMPA will include the full range of ecosystems recognised at an appropriate scale within and across each bioregion
- **Adequacy:** the NRSMPA will have the required level of reservation to ensure the ecological viability and integrity of populations, species and communities
- **Representativeness:** areas that are selected for inclusion in MPAs should reasonably reflect the biotic diversity of the marine ecosystems from which they derive.

They outline additional principles for the development of the NRSMPA, including a regional framework, the inclusion of highly protected areas (IUCN I and II in each bioregion), use of the precautionary principle, appropriate consultation (to address social, economic and cultural issues), Indigenous involvement (to recognise and incorporate interests of Indigenous peoples), and principles relating to decision-making (to integrate long- and short-term environmental, economic, social and equity considerations).

Australia's Oceans Policy (1998)

A comprehensive policy for ecosystem-based marine and coastal management was released in 1998 (Australia's Oceans Policy), which integrated regional marine planning with the development of the NRSMPA.

Australia's Oceans Policy sets out the framework for the implementation of integrated marine planning and management. The policy included a three-year, \$50 million programme for the commencement of regional marine planning, including identifying current and emerging threats to ecosystem health and developing management strategies and frameworks to address them. A key component of the policy was to accelerate

development of the NRSMPA, including development of new MPAs and improved management of existing ones.

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's key piece of environmental legislation. It enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and of biodiversity conservation.

The EPBC Act is the principal regulatory tool for managing marine environmental issues and provides a framework for the management of matters of national environmental significance in the entire Australian marine environment.

The primary provisions of the EPBC Act in marine matters relate to marine bioregional planning, protected and listed species and ecological communities, key threatening processes, World Heritage and, in the Commonwealth marine area, mitigation of marine impacts. The EPBC Act provides for Commonwealth reserves to be established and managed and includes statutory consultation requirements for all stages of reserve and management plan development. It gives effect to a range of domestic and international policy commitments relating to marine reserves.

World Summit on Sustainable Development (2002)

The 2002 United Nations World Summit on Sustainable Development focused on developing action plans for meeting commitments made at the 1992 Rio Earth Summit. Australia promoted its Oceans Policy (1998) as an effective framework for meeting the Jakarta Mandate. Australia also committed to establish a national marine reserve network by 2012.

Appendix B: Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in Commonwealth Waters

The Goals

Four goals to maximise conservation outcomes are guiding the identification of areas suitable for inclusion in the NRSMPA. These goals apply nationally, and they guide identification of representative marine reserves in all the marine regions (except the South-east Marine Region, where the process has been completed). Additionally, a number of supporting principles are assisting in determining the location, selection (when more than one option to meet the goals is available), design and zoning of suitable areas.

1. Each provincial bioregion occurring in the marine region should be represented at least once in the marine reserve network. Priority will be given to provincial bioregions not already represented in the National Representative System.
2. The marine reserve network should cover all depth ranges occurring in the region or other gradients in light penetration in waters over the continental shelf.
3. The marine reserve network should seek to include examples of benthic/demersal biological features (for example, habitats, communities, sub-regional ecosystems, particularly those with high biodiversity value, species richness and endemism) known to occur in the marine region at a broad sub provincial (greater than hundreds of kilometres) scale.
4. The marine reserve network should include all types of seafloor features. There are 21 seafloor types across the entire Exclusive Economic Zone. Some provincial bioregions will be characterised by the presence of a certain subset of features, such as continental slope or seamounts.

Guiding Principles

Location

In developing options that meet the four goals, the following location principles will be applied:

1. Marine reserves will be located taking into account the occurrence and location of existing spatial management arrangements (for example, existing protected areas and sectoral measures) that contribute to the goals.
2. The goals should be met with the least number of separate marine reserves (that is, a smaller number of larger marine reserves rather than many small marine reserves) to maximise conservation outcomes.

Selection

Where different options that meet the goals exist, the following selection principles should be considered in selecting areas suitable for inclusion in the National Representative System of Marine Protected Areas.

3. The capacity of a marine reserve to mitigate identified threats to conservation values.
4. The occurrence of spatially defined habitats for and/or aggregations of threatened and/or migratory species.

5. The occurrence of ecologically important pelagic features which have a consistent and definable spatial distribution.
6. The occurrence of known small-scale (tens of kilometres) ecosystems associated with the benthic/demersal environment.
7. Relevant available information about small-scale distribution of sediment types and sizes and other geo-oceanographic variables.
8. Occurrence of listed heritage sites (where inclusion in the marine reserve network would improve administration of protection regimes).
9. Socio-economic costs should be minimised.

Design

Once the broad location of marine reserves has been determined, the following design principles should be applied to further refine the size and shape of individual marine reserves:

10. Individual areas should, as far as practicable, include continuous depth transects (for example, from the shelf to the abyss).
11. Whole seafloor features (such as geomorphic features) should be included.
12. Features should be replicated wherever possible within the system of marine reserves (that is, included more than once).
13. Size and shape should be orientated to account for inclusion of connectivity corridors and biological dispersal patterns within and across marine reserves.
14. Boundary lines should be simple, as much as possible following straight latitudinal/longitudinal lines.
15. Boundary lines should be easily identifiable, where possible coinciding with existing regulatory boundaries.
16. The size and shape of each area should be set to minimise socio-economic costs.

For each area identified as a candidate marine reserve, specific conservation objectives will be set. Area-specific conservation objectives will reflect the four goals. For example, they may relate to the integrity of bioregional characteristics (Goal 1) or of specific large-scale biological features (Goal 3) that the area aims to represent. They may also relate to other relevant principles, such as the integrity of habitat important for a threatened species (Principle 4). To accommodate climate change as far as practicable, design principles and zoning that promote resilience and adaptation will be incorporated. In particular, accommodating latitudinal or longitudinal movement in ecosystem or species distributions and changes in oceanographic features and currents, anticipated in response to climate change.

Zoning

Because zoning of marine reserves (that is, the allocation of appropriate management regimes to different areas) has the potential to affect the socio-economic costs associated with the establishment of any marine reserve, the Australian Government recognises the importance of addressing zoning considerations as early as possible in the process. The following zoning principles will be applied in developing the regional systems of marine reserves:

17. Zoning will be based on the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)/the World Conservation Union (IUCN) categories of protection.
18. The regional marine reserve network will aim to include some highly protected areas (IUCN Categories I and II) in each provincial bioregion.
19. Zoning will be based on the consideration of the threat that specific activities pose to the conservation objectives of each marine reserve.
20. Zoning of marine reserves will seek to ensure that the conservation objectives of the area are protected, taking into account a precautionary approach to threats as well as the relative costs and benefits (economic, social and environmental) of different zoning arrangements.

Appendix C: Terms of reference for the review

Context

The Coalition Government committed to establish a national representative system of marine protected areas in 1998, and confirmed that commitment at the 2002 World Summit for Sustainable Development.

A key milestone towards the national representative system was the 2007 proclamation of the South-east network of Commonwealth Marine Reserves. In November 2012, forty new Commonwealth marine reserves were proclaimed in the South-west, North-west, North, Temperate East and Coral Sea marine regions, completing the Australian Government's contribution to Australia's national system of marine protected areas.

Commonwealth marine reserves are proclaimed and managed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which requires that statutory management plans be developed and implemented by the Director of National Parks.

To fulfil its commitment, in December 2013 the Government set aside the management plans for the reserves in the South-west, North-west, North, Temperate East and Coral Sea marine regions. New management plans will be developed following a review to ensure that management arrangements reflect appropriate consultation with stakeholders and are informed by the best available science.

As stated in the Government's policy for a *More Competitive and Sustainable Fisheries Sector* an expert marine panel will be appointed to review the science supporting the boundary area for each zone. This process will reconsider proposed zoning boundaries in consultation with stakeholders. The review will restore confidence in the process by bringing genuine consultation.

Scope and process of the Review

The review will comprise two interrelated streams:

- An Expert Scientific Panel of five members including a Chair will review the science supporting the current marine reserves.
- Bioregional Advisory Panels of three members for each marine region covered by the review, with two co-chairs working across all panels, will facilitate enhanced consultation with stakeholders on marine reserves.

Terms of reference for these panels are described below.

The panels will operate and report separately, but will share information to ensure that review outcomes collectively reflect robust consideration of scientific, economic and social evidence. To facilitate this, the co-chairs of the Bioregional Advisory Panels will also participate as members of the Expert Science Panel.

Both components of the review will be conducted with regard for the *Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in Commonwealth Waters* (the Goals and Principles) and the legislation and regulations for the development of management plans and managing activities within Commonwealth reserves.

The review will only consider the reserves proclaimed in November 2012: that is, those reserves in the South-west; North-west, North, Temperate East and Coral Sea marine regions.

Secretariat support will be provided to the panels by the Department of the Environment. The Department will also facilitate the involvement of other relevant Australian Government departments in the review process, including the Department of Agriculture.

The panels will report to the Government within six months of the first meeting of the panels, unless extended by the Minister for the Environment. The reports will be transmitted to the Government via the Minister for the Environment. The panel chairs are responsible for transmitting the reports of the panels.

The reports of the Expert Scientific Panel and the Bioregional Advisory Panels will be made publicly available.

The Government's response to the reports will inform the development of new management plans for the marine reserves. Further public consultation on the development of new marine reserve management plans will be undertaken in accordance with the EPBC Act.

Terms of reference for the Expert Scientific Panel

The Expert Scientific Panel will advise the government on the science underpinning the Commonwealth marine reserves including proposed zoning boundaries and allowed uses. The Expert Scientific Panel will review the risk assessments that supported zoning, and zoning boundary, considerations and other scientific information related to zoning decisions for individual networks or reserves. Based on this review, the Expert Scientific Panel will advise on:

- options for zoning, and zoning boundaries, and allowed uses consistent with the Goals and Principles
- future priorities for scientific research and monitoring relating to marine biodiversity within the marine reserves, especially any relating to the understanding of threats to marine biodiversity within the marine reserves.
- options for addressing, the most significant information gaps hindering robust, evidence-based decision-making for the management of the marine reserves.

The Expert Scientific Panel will produce a single report addressing these issues. The report will be separate to the report of the co-chairs of the Bioregional Advisory Panels.

Membership

The Expert Scientific Panel will consist of five members selected through agreement between the Minister for the Environment and the Parliamentary Secretary to the Minister for Agriculture. Two of these members are also the co-chairs of the Bioregional Advisory Panels, in order to facilitate sharing of information across the review panels.

Terms of reference for the Bioregional Advisory Panels

Bioregional Advisory Panels will be appointed for the South-west; North-west, North, Temperate East and Coral Sea marine regions. These panels will share two co-chairs, who will oversee the work of all of the panels and will consult with peak bodies for all relevant sectors. These co-chairs are also members of the Expert Scientific Panel. All Bioregional Advisory Panels will consult across sectors including: industry, recreational users,

community groups, tourism, Indigenous communities, environmental interest groups and other parties as appropriate.

The Bioregional Advisory Panels will then provide the government with:

- Advice on areas of contention with the marine reserves
- Advice on options for zoning boundaries to address those areas of contention
- recommendations for improving the inclusion of social and economic considerations into decision-making for marine reserves, with particular regard for their management
- Suggestions for ongoing engagement of regional stakeholders.

The Bioregional Advisory Panels will also report, or provide advice on, any information received through the consultation process they feel may influence, contribute to or improve the drafting of future management plans.

The co-chairs of the Bioregional Advisory Panels will produce a single report addressing these issues and reflecting the inputs of all of the panels. The report will be separate to the report of the Expert Scientific Panel.

Manner of consultation

The Panels will consider views of interested parties provided through a range of mechanisms that may include:

- Regional meetings with key stakeholders or stakeholder organisations
- Meetings with peak organisations representing relevant business and not-for-profit sectors and with relevant government agencies
- Online survey
- Other written representations.

Membership

The co-chairs of the Bioregional Advisory Panels have been selected based on their capacity to facilitate input into marine reserves planning from the full range of stakeholders, and based on agreement between the Minister for the Environment and the Parliamentary Secretary to the Minister for Agriculture.

The Bioregional Advisory Panels will consist of three members for each region. Members have been selected for their capacity to facilitate input from a broad range of stakeholders.

Appendix D: Bioregional Advisory Panel membership, conduct of meetings and handling of conflicts of interest

Co-Chairs

Professor Colin Buxton

- Adjunct Professor and retired Director (2010-2013), the Institute for Marine and Antarctic Studies, University of Tasmania
- Director and Professor, Tasmanian Aquaculture and Fisheries Institute, University of Tasmania (1998–2010)
- Independent Scientific Audit of Marine Parks in New South Wales (2011)
- Member of the IUCN Species Survival Committee

Mr Peter Cochrane

- Australian Government Ambassador for the IUCN World Parks Congress 2014
- Adjunct Fellow, the Australian National University Fenner School of Environment and Society
- Director of National Parks, Australian Government (1999–2013)
- Member of the Executive Committee IUCN World Commission on Protected Areas

North Bioregional Advisory Panel

Mrs Katherine Winchester

- Chief Executive Officer, Northern Territory Seafood Council Incorporated
- Member and past treasurer, National Seafood Industry Alliance
- Selection Panel, Fisheries Research and Development Corporation Board (2012)

Mr Peter Cox

- Project Officer and Past President, Nhulunbuy Regional Sports Fishing Club Inc.
- Vice President, Northern Territory Game Fishing Association Inc.
- Past NT Executive Officer, Game Fishing Association of Australia

Mr Joe Morrison (until May 2015)

- Chief Executive Officer, Northern Land Council
- Chief Executive Officer, North Australian Indigenous Land and Sea Management Alliance (2001–2013)
- Former member, Australian Government's Indigenous Advisory Committee on the EPBC Act

North-west Bioregional Advisory Panel

Mr Brett McCallum

- Deputy Chair, Fisheries Research and Development Corporation
- Executive Officer, Pearl Producers Association (2001–2014)
- Board Member, National Aquaculture Council (2006–2011)

Dr Andrew Rowland

- Chief Executive Officer, Recfishwest
- Member, Advisory Panel on the Western Australian Government's Marine Stewardship Council
- Member, Fisheries Research and Development Corporation's Western Australian Fisheries Research Advisory Body

Associate Professor Stephan Schnierer

- Associate Professor, School of Environment, Science and Engineering, Southern Cross University
- Member, New South Wales Ministerial Fisheries Advisory Council
- Member, Fisheries Indigenous Reference Group (Fisheries Research and Development Corporation)

South-west Bioregional Advisory Panel

Mr Clayton Nelson

- Director and Vice Chair, Western Australian Fishing Industry Council
- General Manager Fishing, MG Kailis
- Adviser to federal Minister for Fisheries, Northern Prawn Fishery Management Advisory Committee (2006–2007)

Dr Andrew Rowland

- Chief Executive Officer, Recfishwest
- Member, Advisory Panel for Western Australian Government's Marine Stewardship Council
- Member, Fisheries Research and Development Corporation's Western Australian Fisheries Research Advisory Body

Ms Sue Middleton

- Chair, Western Australian Regional Development Trust
- Commissioner, Agricultural Produce Commission
- Rural and Regional Representative, Council of Australian Governments Reform Council

Temperate East Bioregional Advisory Panel

Mr Simon Boag

- Director (Vice Chairman), Commonwealth Fisheries Association
- Member, Victorian Fisheries Advisory Council
- Executive Officer, South East Trawl Fishing Industry Association (2009–2014)

Mr Stelios (Stan) Konstantaras

- President, Australian National Sportfishing Association (ANSA) NSW Branch
- Foundation member, Recreational Fishing Alliance of NSW Inc.
- President, South Sydney Amateur Fishing Association

Professor William Gladstone

- Head of School, School of the Environment, University of Technology, Sydney
- Director, Centre for Sustainable Use of Coasts and Catchments, University of Newcastle (2002–2009)
- Board member, Sydney Institute of Marine Science

Coral Sea Bioregional Advisory Panel

Mr Neville Rockliff

- Board member, Petuna Aquaculture
- Owner and Managing Director, Ceas Pty Ltd
- Managing Director, Rockliff Seafoods

Mrs Judy Lynne

- Executive Officer, Sunfish Queensland Inc.
- Director, Australian Recreational Fishing Foundation (2012–2014)
- Member, Great Barrier Reef Marine Park Authority Tourism and Recreation Reef Advisory Committee (2008–2014)

Mrs Larissa Hale

- Executive Director, Yuku Baja Muliku Landowners and Reserves Limited
- Working on Country Coordinator, Balkanu Cape York Business Development
- Coordinator, Yuku Baja Muliku Indigenous Land and Sea Ranger Program

Conduct of meetings

BAP members participated in the panel meetings as outlined in Table D1.

Table D1 BAP meeting dates and locations

BAP	Meeting	Date	Location
All (combined)	BAP meeting 1	5-6 November 2014	Sydney
Coral Sea	BAP meeting 1	9 December 2014	Brisbane
South-west/ North-west	BAP meeting 2	12 December 2014	Teleconference
Temperate East	BAP meeting 2	12 December 2014	Teleconference
Temperate East	Regional consultation approach	23 January 2015	Teleconference
Coral Sea	Regional consultation approach	23 January 2015	Teleconference
North	BAP meetings 1 and 2	7 February 2015	Darwin
North-west	BAP meeting 3	28–29 April 2015	Fremantle
South-west	BAP meeting 3	30 April – 1 May 2015	Fremantle
Temperate East	BAP meeting 3	3–4 May 2015	Melbourne
North	BAP meeting 3	11–12 May 2015	Cairns
Coral Sea	BAP meeting 3	13–14 May 2015	Cairns
All (combined)	BAP meeting 4	19 July 2015	Sydney

Handling of conflicts of interest

Committees and panels appointed by the Australian Government are required to establish and maintain an interest register and appropriately manage conflicts of interest. Members of the panels were selected for their capacity to facilitate input from a broad range of stakeholders and were not selected to represent any particular sector(s).

At the commencement of the CMR Review, procedures were established to capture and manage any actual, perceived or potential conflict of interest. As part of the formal appointment process, each panel member was required to complete a declaration of interest and was required to review and, if necessary, update their declared interests, considering any changes to their circumstances and the scope of the panels' work at each meeting. An interest register was established and maintained throughout the review.

The co-Chairs were responsible for managing any conflicts of interest throughout the review. In accordance with the conflict of interest guidance, the co-Chairs requested panel members to declare any interests at the start of each meeting. Panel members also had a responsibility to speak with each other if they perceived a conflict of interest that someone had not recognised and/or disclosed, and to advise the panel member of this perception. The co-Chairs have considered all declarations and decided on the appropriate course of action. Management of conflicts of interest included restriction or exclusion from the meeting at the discretion of the Chairs when considered to be necessary and appropriate.

Appendix E: Consultation streams—online survey, written submissions and stakeholder meetings

To facilitate feedback from a broad range of stakeholders, the CMR Review provided three consultation streams to support stakeholders ‘joining the conservation’. Stakeholders were encouraged to use any or all three methods:

- 1—An online survey primarily designed to quickly capture participants’ views on the areas of contention about the marine reserves network.
- 2—Written submissions to allow stakeholders the opportunity to provide a detailed written submission for the BAP’s consideration.
- 3—Face-to-face stakeholder meetings designed to foster detailed discussions on reserve design and identify areas of contention.

An overview of each of the three approaches is provided below.

1) Online survey

Overview

The co-Chairs of the BAP invited interested parties to complete the online survey to provide ideas and suggestions on how marine reserves should be managed into the future. The online survey was open for approximately four months from 19 December 2014 to 31 March 2015. During this time 1 859 responses were received.

The online survey was a key consultation tool to enable all stakeholders to provide targeted feedback to the panels in a quick and efficient manner.

Online survey questions

- | | |
|-------------|--|
| Question 1a | ‘Which Commonwealth marine reserve(s) are you interested in? You can choose multiple reserves, all of the reserves or entire networks.’ |
| Question 1b | ‘For each reserve or network that you are interested in, do you support the existing zoning? What are the main issues you would like to see addressed?’ |
| Question 1c | ‘What do you think is important about marine reserves? Please indicate how important each of the following are to you: ...’ |
| Question 2a | ‘What do you think are the major issues impacting biodiversity in Commonwealth marine reserves? You can select as many issues as you like.’ |
| Question 2b | ‘Of the above, which three do you see as the most critical issues? Please rank (from 1 to 3) the 3 most critical issues [1 being the most critical].’ |
| Question 3 | ‘Which management activities do you think should be the highest priority for the Government within Commonwealth marine reserves? Please rank three in order from highest to lowest priority [1 being the highest priority].’ |
| Question 4 | ‘How do you think the Commonwealth marine reserves will affect you (positively or negatively)? Please provide a brief explanation.’ |
| Question 5 | ‘What is your preferred communication method about the ongoing management of Commonwealth marine reserves?’ |

Question 6	'Which topics would you like to get updates on?'
Question 7	'How often would you like to get information about the ongoing management of the marine reserves?'
Question 8a	'How frequently do you visit a Commonwealth marine reserve(s)?'
Question 8b	'What was the purpose for visiting the reserve(s)? You can select more than one purpose.'
Question 8c	'What is your gender?'
Question 8d	'Do you wish to identify yourself as an Aboriginal or Torres Strait Islander?'
Question 8e	'What is your country of residence?'
Question 8f	'What is your postcode?'
Question 8g	'What is your age?'
Question 8h	'Are you responding on behalf of a group, business or organisation? If yes, who are you responding on behalf of?'

Who provided feedback through the survey?

The demographic questions in the survey allowed survey participants to provide information such as their location, age and gender. The majority of survey responses (95%) were submitted by participants living in Australia, aged 50 years or older (60%). Responses were equally submitted by males and females.

A small number (5%) of the responses received were on behalf of groups, businesses or organisations. These included recreational fishing organisations, commercial fishing companies, scientific or research organisations, and environmental organisations.

A summary of the feedback obtained through the online survey is provided in Appendix F.

2) Written submissions

Overview

Written submissions opened for approximately five months from 28 November 2014 to 31 March 2015.

The CMR Review received 13 124 written submissions, of which 13 096 were submitted via email and 28 through the post.

Who provided feedback?

Submissions were received from a wide variety of stakeholders. The vast majority (12 906 or 98%) were from individuals. The remainder (218 or 2%) were from organisations, including businesses, clubs, representative associations, local or state government agencies and industry bodies, across a range of sectors.

A full list of the names of submitters and their submissions are available on the CMR Review website.

Nature of submissions received

The CMR Review received a number of very detailed submissions that provided valuable information to assist the Regional Panels in their deliberation on the areas of contention. These submissions were received from individuals, organisations, businesses and groups or alliances of organisations. The submissions not only identified areas of contention but also provided reasonable, justifiable solutions to identified problems, alternative options for allowable activities, zoning etc. including the provision of maps and/or geospatial coordinates.

A significant number of submissions (approximately 12 000) utilised talking points and feedback mechanisms provided on various websites.

One email campaign submission—containing identical information from 120 respondents—was received from the Billfish Foundation. The 120 responses were considered as one submission, in line with the instructions provided at the opening of the submissions period.

Of the 13 124 submissions received, approximately 69% did not provide feedback on issues within the terms of reference for the review. An additional 6% did not contain any content other than a salutation ('Dear Review panels' etc.) and closing statement ('Yours sincerely' etc.).

3) Stakeholder meetings

The Regional Panels met with individuals, members and representatives of conservation councils, Indigenous groups and traditional owners, tourism authorities, fishing clubs, local governments, shipping associations and port authorities, oil and gas companies and associations, commercial fishers and their representative organisations, national parks associations, conservation groups, game fishing associations, charter operators, researchers, natural resource management groups and state and territory governments.

There were 265 meetings, forums and teleconferences held around the country between February and August 2015.

The first round of consultation was held between February and May 2015 across 15 locations. Stakeholders were asked to identify areas of contention and suggest changes to zoning boundaries and management arrangements. Table E1 summarises the meetings held during the first round of consultation.

Table E1 Number of first-round meetings and participants

Region(s)	Individual meetings	Individual meeting attendees	Multi-sector/national forums	Multi-sector/national forum attendees
Coral Sea	40	62	2	42
Coral Sea/North *	3	12		
North	25	43		
North/North-west *	1	1	1	18
North-west	23	34	1	11
South-west	32	65	1	13
South-west/North-west *	9	26	1	25

Temperate East	33	44	2	23
Temperate East/Coral Sea *	2	3		
National	5	14	2	21
Total	173	304	10	153

* Some meetings were conducted with panel members from two Regional Panels where the stakeholder or issue was relevant to both regions.

Following evaluation of all input received, options were developed and a second round of consultation was held between July and August 2015 across 11 locations. Table E2 summarises the meetings held for the option-testing consultations.

Table E2 Numbers of option-testing meetings and participants

Region(s)	Option-testing meetings	Option-testing meeting attendees
Coral Sea	15	49
North	13	27
North-west	15	25
South-west	15	46
South-west/North-west *	4	14
Temperate East	9	26
Temperate East/Coral Sea *	2	14
National	9	25
Total	82	226

* Some meetings were conducted with panel members from two Regional Panels where the stakeholder or issue was relevant to both regions.

Meeting dates and locations and participant numbers for the consultations undertaken in the Temperate East, South-west, North-west, North and Coral Sea regions and those meeting at a national level are summarised in Tables E3 to E8.

Invitations were also extended to national representatives from the commercial fishing, recreational and game fishing, oil and gas, ports, shipping and tourism sectors; the science community; ENGOs; and Indigenous communities. Table E8 summarises the sectoral representation and participants.

Table E3 Temperate East regional consultation

Total meetings	Total meeting attendees
48	110
Location	Dates
Ulladulla	13 February
Sydney	16–17 February, 23 July
Port Stephens	18–19 February, 24 July
Multi-sector forums	
Sydney	16 February
Port Stephens	19 February

Participants	Organisation/business	Sector
Rocky Legana	Bermagui Fishermen's Co-operative	Commercial fishing
Tony Lavelle		Commercial fishing
Rocky Pirello		Commercial fishing
Angelo Maiorana		Commercial fishing
Tricia Beatty	Professional Fishermens Association	Commercial fishing
Mark Boulter	Sydney Fish Market	Commercial fishing
Gus Dannoun	Sydney Fish Market	Commercial fishing
Tony Muollo	Trans Tasman Fisheries	Commercial fishing
Mike Rowley	Fortuna Seafoods	Commercial fishing
Joe Rowley	Fortuna Seafoods	Commercial fishing
John Skoljarev		Commercial fishing
John Skoljarev Snr		Commercial fishing
Les Scott	Australian Longline Pty Ltd	Commercial fishing
Darren Ward		Commercial fishing
Leo Lukin		Commercial fishing
Ross Fidden	Commercial Fishermen's Co-operative (Newcastle)	Commercial fishing
Robert Guata	Commercial Fishermen's Co-operative (Newcastle)	Commercial fishing
Greg Parker		Commercial fishing
Noel Gogerly	Wallis Lake Fishermen's Co-operative	Commercial fishing
David Shannon	Fremantle Tuna	Commercial fishing
Gary Heilmann	De Bretts Seafood Pty Ltd	Commercial fishing
Brett Taylor	4 Seas Pty Ltd	Commercial fishing
Adam Whan	Whan & Boxall Pty Ltd	Commercial fishing
Pavo Walker	Walker Seafoods Australia	Commercial fishing
Miro Mislov		Commercial fishing
Elio Mislov		Commercial fishing
Denis Brown	NSW Seafood Industry Council	Commercial fishing
Phil Ward		Commercial fishing
Paul Williams	P&M Williams Enterprises	Commercial fishing
Michael Williams	P&M Williams Enterprises	Commercial fishing
Jeff Moore	Commonwealth Fisheries Association	Commercial fishing
Danny Stewart		Commercial fishing
Cathal Farrell	Upscale Seafoods	Commercial fishing
Frank Pirello		Commercial fishing
Grahame Turk	National Seafood Industry Alliance	Commercial fishing
Bill Barker	Nature Coast Marine Group	Conservation
Pia Winberg	Venus Shell Systems	Conservation
Alexia Wellbelove	Humane Society International	Conservation
Suzanne Milthorpe	Nature Conservation Council of NSW	Conservation
Daisy Baram	Nature Conservation Council of NSW	Conservation
Gary Shoer	National Parks Association of NSW	Conservation
Megan Kessler	NSW Environmental Defenders Office	Conservation
Rachel Walmsley	NSW Environmental Defenders Office	Conservation
Charlotte Richardson	The Wilderness Society	Conservation
Alice Forest	The Wilderness Society	Conservation
Jack Albert	Surfrider Foundation	Conservation
Bruce Pease	EcoNetwork Port Stephens	Conservation
Darrell Dawson	EcoNetwork Port Stephens	Conservation

Elizabeth Edmonds	Australian Ocean Institute	Conservation
Chris Smyth	Australian Ocean Institute	Conservation
Ron Ward	Norfolk Island Government	Government
Robin McKenzie	Norfolk Island Government	Government
Lisle Snell MLA	Norfolk Island Government	Government
Rodney James	NSW Department of Primary Industries	Government
Cameron Lay	NSW Department of Primary Industries	Government
Trish Harrup	NSW Department of Primary Industries	Government
Peter Gallagher	NSW Department of Primary Industries	Government
Natalie Gollan	NSW Department of Primary Industries	Government
Alan Jordan	NSW Department of Primary Industries	Government
Ryan Bennett	Port Authority of NSW	Ports
Jacki Spiteri	Port of Newcastle	Ports
John Burgess	Australian National Sports Fishing Association	Recreational fishing
Adrian Wayne	Australian Underwater Federation, Spearfishing Commission	Recreational fishing
Malcolm Poole	Recreational Fishing Alliance of NSW	Recreational fishing
Tim Dean	Calypso Fishing Adventures	Recreational fishing
Scott Thorrington	Haven Sport Fishing Charters	Recreational fishing
Brent Hancock	Newcastle and Port Stephens Game Fishing Club	Recreational fishing
Denis Sterling	Norfolk Island Fishing Association	Recreational fishing
Pat Hutchings	Australian Museum Research Institute	Research
Will Figueria	Australian Marine Sciences Association (NSW)	Research
Robert Kearney	University of Canberra	Research
Bil Colthurst	Fishing International Supplies & Hardware	Shore-based industry
Sue Newson	Crest Diving Jervis Bay	Tourism

Table E4 South-west regional consultation

Total meetings	Total meeting attendees	
62	189	
Location	Dates	
Adelaide	23–24 February, 27 July	
Busselton	25–26 February	
Peaceful Bay	27 February	
Fremantle	11–13 March, 28–30 July	
Multi-sector forums		
Adelaide	23 February	
Fremantle	12 March	
Participants	Organisation/business	Sector
Aaron Irving	Pearl Producers Australia	Commercial fishing
Alan Miles		Commercial fishing
Bev Cooke	Southern Coast Gillnet Association, WA Demersal Gillnet and Longline Association	Commercial fishing

David Carter	Southern Coast Gillnet Association, WA Demersal Gillnet and Longline Association	Commercial fishing
George Kailis	Kailis Bros/Southern Coast Gillnet Association, WA Demersal Gillnet and Longline Association	Commercial fishing
Brendan Johnson		Commercial fishing
Brian Jeffriess	Australian Southern Bluefin Tuna Association	Commercial fishing
Kirsten Rough	Australian Southern Bluefin Tuna Association	Commercial fishing
Paul Watson	Australian Southern Bluefin Tuna Association	Commercial fishing
David Drew	Bremer Fish Processors	Commercial fishing
David Hand		Commercial fishing
Doug Gibson		Commercial fishing
Felicity Horne	Western Australian Fishing Industry Council	Commercial fishing
Angus Callander	Western Australian Fishing Industry Council	Commercial fishing
Guy Leyland	Western Australian Fishing Industry Council	Commercial fishing
John Harrison	Western Australian Fishing Industry Council	Commercial fishing
Jeff Moore	Great Australian Bight Fishing Industry Association/Western Australian Fishing Industry Council	Commercial fishing
Hamish Ch'ng	Far West Scallops	Commercial fishing
Ian Ricciardi	Ricciardi Seafoods and Coldstores	Commercial fishing
Jaime Phillips	Southern Star	Commercial fishing
Ryan Phillips	Southern Star	Commercial fishing
Kevin Tenardi		Commercial fishing
Kyri Toumazos	South Australian Northern Zone Rock Lobster Fishermen's Association	Commercial fishing
Roger Rowe	South Australian Northern Zone Rock Lobster Fishermen's Association	Commercial fishing
Nathan Bicknell	Wildcatch Fisheries South Australia	Commercial fishing
Neil MacDonald	Wildcatch Fisheries South Australia	Commercial fishing
Franca Romeo	Wildcatch Fisheries South Australia	Commercial fishing
Jonas Woolford	Wildcatch Fisheries South Australia	Commercial fishing
Neville Manstead	WA Shark Association, Esperance Rock Lobster	Commercial fishing
Nicholas Soulos		Commercial fishing
Ray Davies	Ocean Wild Tuna	Commercial fishing
Terry Romaro		Commercial fishing
Talor Bradley	CC Fisheries	Commercial fishing
Terry Mouchemore	Western Rock Lobster Council	Commercial fishing
Vern Wilde		Commercial fishing
William Robb		Commercial fishing
Adrian Meder	Australian Marine Conservation Society	Conservation
Alexis Grayson	Rockingham Regional Environment Centre	Conservation

Brad Norman	ECOOCEAN	Conservation
Chris Burton	Busselton Dunsborough Environment Centre, Margaret River Regional Environment Centre	Conservation
Drew McKenzie	Surfrider Margaret River	Conservation
Laura Bailey	Surfrider Margaret River	Conservation
Tracey Muir	Surfrider Margaret River	Conservation
Dylan Gleave	South Coast NRM	Conservation
Carl Beck	South Coast NRM	Conservation
Emily Hughes dit Ciles	South West Catchments Council, South West NRM	Conservation
Garry Burke	Busselton Dunsborough Environment Centre, Margaret River Regional Environment Centre	Conservation
Jim Matten	Busselton Dunsborough Environment Centre, Margaret River Regional Environment Centre	Conservation
Allison Cassanet	Busselton Dunsborough Environment Centre, Margaret River Regional Environment Centre	Conservation
Joan Jenkins	Friends of the Earth	Conservation
Kady Grosser	Save Our Marine Life Alliance	Conservation
Mary-anne Rath		Conservation
Michelle Grady	The PEW Charitable Trusts/Save Our Marine Life Alliance	Conservation
Sharna True	The PEW Charitable Trusts	Conservation
Nick Dunlop	Conservation Council WA	Conservation
Peter Owen	The Wilderness Society South Australia	Conservation
Angus Mitchell	SA Department of Environment and Natural Resources	Government
Brenton Greer	SA Department of Environment and Natural Resources	Government
Chris Thomas	SA Department of Environment, Water and Natural Resources	Government
Dirk Holman	SA Department of Environment, Water and Natural Resources	Government
Vera Hughes	SA Department of Environment, Water and Natural Resources	Government
Jenny Cassidy	SA Department of Transport, Planning and Infrastructure	Government
Joel Peters	WA Department of the Premier and Cabinet	Government
Lee Butcher	WA Department of the Premier and Cabinet	Government
Simone Soliman	WA Department of the Premier and Cabinet	Government
Rae Burrow	WA Department of Fisheries	Government
Shaun Meredith	WA Department of Fisheries	Government
Martin Holtz	WA Department of Fisheries	Government
Scott Whiting	WA Department of Parks and Wildlife	Government
Denam Bennetts	WA Department of Parks and Wildlife	Government
Liesl Ludgerus	WA Department of Parks and Wildlife	Government

Tania Ashworth	WA Department of State Development	Government
Vitus D'Cunha	WA Department of Transport	Government
John Morris	WA Department of Transport	Government
Mark Sparrow	WA Department of Transport	Government
Saul Bosch	WA Department of Transport	Government
Ian Briggs	WA Department of Mines and Petroleum	Government
Josh Wilson	Mayor of Fremantle	Government
Melissa Parkes MP	Member for Fremantle	Government
Rick Wilson	Liberal Member for O'Connor	Government
Tom Hatton	WA Marine Parks and Reserves Authority	Government
Martin Holtz	WA Department of Fisheries	Government
Nola Marino MP	Member for Forrest	Government
Steve Thomas	Media Advisor to Nola Marino MP	Government
Darren Forster	Goldfields Land and Sea Council	Indigenous
David Garner	Yamatji Marlpa Aboriginal Corporation	Indigenous
Jose Kalpers	Yamatji Marlpa Aboriginal Corporation	Indigenous
Margaret Rose	Yamatji Marlpa Aboriginal Corporation	Indigenous
Odetta Lennane	Yamatji Marlpa Aboriginal Corporation	Indigenous
Peter Metcalfe	BP Developments Australia	Oil or gas
Rochelle Smith	BP Developments Australia	Oil or gas
Denis Doak	Fremantle Ports	Ports
Shaun Davis	Fremantle Ports	Ports
Ben Patrick	Halco Tackle	Recreational fishing
Leyland Campbell	Recfishwest	Recreational fishing
John Webber	Perth Game Fishing Club, Western Australia Game Fishing Association	Recreational fishing
Peter Coote	Game Fishing Association of Australia (GFAA), Western Australian Game Fishing Association	Recreational fishing
Tim Carter	Australian Fishing Trade Association (AFTA) Western Australia, Halco Tackle	Recreational fishing
Len Vertigan	King Bay Game Fishing Club	Recreational fishing
Ben Fitzpatrick	Oceanwise Expeditions	Research
Chris Daniels	University of South Australia	Research
Clare Charlton	S2V Consulting, Curtin University	Research
Corey Bradshaw	University of Adelaide	Research
Lynnath Beckley	Murdoch University	Research
Rob Lewis	University of Adelaide and Flinders University	Research
Alicia McDonald	Busselton Jetty and Diving Operators	Tourism
Sophie Teedle	Busselton Jetty and Diving Operators	Tourism
Chris Dodd	Diving Frontiers, NARC Dive Club	Tourism
David Riggs	Riggs Australia	Tourism
Lee Johnson	Perth Scuba	Tourism
Phil Tickle	Siesta Park Holiday Resort	Tourism

Table E5 North-west regional consultation

Total meetings	Total meeting attendees	
55	154	
Location	Dates	
Fremantle	12–16 March, 28–30 July	
Broome	17 March, 31 July	
Darwin	18 March	
Multi-sector forums		
Fremantle	12 March	
Fremantle	16 March	
Darwin	18 March	
Participants	Organisation/business	Sector
Aaron Irving	Pearl Producers Australia	Commercial fishing
Annie Jarret	Northern Prawn Fishery Association	Commercial fishing
Rob Fish	Northern Territory Seafood Council	Commercial fishing
David Shannon	Fremantle Tuna	Commercial fishing
Doug Gibson		Commercial fishing
Guy Leyland	Western Australian Fishing Industry Council	Commercial fishing
Jeff Moore	Western Australia Fishing Industry Council	Commercial fishing
John Harrison	Western Australia Fishing Industry Council	Commercial fishing
Hamish Ch'ng	Far West Scallops	Commercial fishing
Ian Flemming	Tasmanian Seafoods	Commercial fishing
James Brown	Cygnets Bay Pearls	Commercial fishing
Jeff Westerberg		Commercial fishing
Kym Coffey	Paspaley Pearling Company	Commercial fishing
Sam Buchanan	Paspaley Pearling Company	Commercial fishing
Tony Thiel	Paspaley Pearling Company	Commercial fishing
Patrick Moase	Clipper Pearls	Commercial fishing
Simon Little	Westmore Seafoods	Commercial fishing
Steve Hinge		Commercial fishing
Terry Romaro		Commercial fishing
Adrian Meder	Australian Marine Conservation Society	Conservation
Jacqueline Taylor	Australian Marine Conservation Society	Conservation
Alexander Watson	World Wide Fund for Nature Australia	Conservation
Alexis Grayson	Rockingham Regional Environment Centre	Conservation
Andy Duke	No Shark Cull Inc	Conservation
Anna Boustead	Environment Centre NT	Conservation
Micha Neumann	Environment Centre NT	Conservation
Brad Norman	ECOOCEAN	Conservation
David Morris	Environmental Defenders Office	Conservation
Jacqueline Hine	Cape Conservation Group	Conservation
Jason Fowler	Environs Kimberley	Conservation
Martin Pritchard	Environs Kimberley	Conservation
Jenita Enevoldsen	The Wilderness Society	Conservation

Kady Grosser	Save Our Marine Life Alliance	Conservation
Kandy Curran	Roebuck Bay Working Group	Conservation
Mary-anne Rath		Conservation
Michelle Grady	The PEW Charitable Trusts/Save Our Marine Life Alliance	Conservation
Sharna True	The PEW Charitable Trusts	Conservation
Nick Dunlop	Conservation Council WA	Conservation
Richard Costin	Kimberley Whale Watching	Conservation
Simon Woodley	Ningaloo Coast World Heritage Advisory Committee	Conservation
Chris Mitchell	Regional Development Australia—Kimberley	Government
Tom Hatton	WA Marine Parks and Reserves Authority	Government
Joel Peters	WA Department of the Premier and Cabinet	Government
Lee Butcher	WA Department of the Premier and Cabinet	Government
Simone Soliman	WA Department of the Premier and Cabinet	Government
Rae Burrow	WA Department of Fisheries	Government
Shaun Meredith	WA Department of Fisheries	Government
Martin Holtz	WA Department of Fisheries	Government
Scott Whiting	WA Department of Parks and Wildlife	Government
Denam Bennetts	WA Department of Parks and Wildlife	Government
Liesl Ludgerus	WA Department of Parks and Wildlife	Government
Tania Ashworth	WA Department of State Development	Government
Vitus D’Cunha	WA Department of Transport	Government
John Morris	WA Department of Transport	Government
Mark Sparrow	WA Department of Transport	Government
Saul Bosch	WA Department of Transport	Government
Ian Briggs	WA Department of Mines and Petroleum	Government
Colin Sutton	Kooljaman at Cape Leveque	Indigenous
Erica X	Kooljaman at Cape Leveque	Indigenous
David Garner	Yamatji Marlpa Aboriginal Corporation	Indigenous
Jose Kalpers	Yamatji Marlpa Aboriginal Corporation	Indigenous
Margaret Rose	Yamatji Marlpa Aboriginal Corporation	Indigenous
Odette Lennane	Yamatji Marlpa Aboriginal Corporation	Indigenous
Desmond Williams	Wunambal Gaambera Aboriginal Corporation	Indigenous
Lillian X	Wunambal Gaambera Aboriginal Corporation	Indigenous
Tom Vigilante	Wunambal Gaambera Aboriginal Corporation	Indigenous
Richard Campbell	Northern Land Council	Indigenous
Lorrae McCarthur	Northern Land Council	Indigenous
Tom Holyoake	Kimberley Land Council	Indigenous
Bindi Gove	BHP Billiton Petroleum	Oil or gas
Emmet Fay	BHP Billiton Petroleum	Oil or gas
Mark Garrahy	BHP Billiton Petroleum	Oil or gas
Tim Cooper	BHP Billiton Petroleum	Oil or gas
Greg Oliver	INPEX	Oil or gas
Patrick Hastwell	ConocoPhillips Australia Pty Ltd	Oil or gas

Peter Metcalfe	BP Developments Australia	Oil or gas
Samantha Jarvis	Santos Offshore Pty Ltd	Oil or gas
Tom Baddeley	Santos Offshore Pty Ltd	Oil or gas
David McMaster	Darwin Port Corporation	Ports
Brad Kitchen	Pilbara Ports Authority	Ports
Denis Doak	Fremantle Ports	Ports
Shaun Davis	Fremantle Ports	Ports
Kevin Shellack	Kimberley Ports Authority	Ports
Tim Hungerford-Morgan	Kimberley Ports Authority	Ports
Veronica Mair	Kimberley Ports Authority	Ports
Vikas Bangia	Kimberley Ports Authority	Ports
Diane Dowdell	Aurizon Ltd	Ports
Ben Little	Broome Fishing Club	Recreational fishing
Ben Patrick	Halco Tackle	Recreational fishing
Craig Ingram	Amateur Fishermen's Association of the NT	Recreational fishing
Tristan Sloane	Amateur Fishermen's Association of the NT	Recreational fishing
Dennis Bryan-Smith	Exmouth Gulf Fishing Club	Recreational fishing
Kirt Dekker	Exmouth Gulf Fishing Club	Recreational fishing
Derek Albert	Broome Fishing Club	Recreational fishing
Jeff Cooper	Broome Fishing Club	Recreational fishing
John Webber	Perth Game Fishing Club, Western Australia Game Fishing Association	Recreational fishing
Peter Coote	Game Fishing Association of Australia, Western Australia Game Fishing Association	Recreational fishing
Len Vertigan	King Bay Game Fishing Club, Western Australian Game Fishing Association	Recreational fishing
Leyland Campbell	Recfishwest	Recreational fishing
Tim Carter	Australian Fishing Trade Association Western Australia, Halco Tackle	Recreational fishing
Tracey Rushford	Reelteasers Charters	Recreational fishing
Ben Fitzpatrick	Oceanwise Expeditions	Research
Clare Charlton	S2V Consulting, Curtin University	Research
Jackie Gould	Charles Darwin University	Research
Lynnath Beckley	Murdoch University	Research
Neil Lonergan	Murdoch University	Research
Chris Dodd	Diving Frontiers, NARC Dive Club	Tourism

Table E6 North regional consultation

Total meetings	Total meeting attendees
43	101
Location	Dates
Darwin	18–19, 26 March, 4–5 August
Nhulunbuy	27 March, 6 August
Cairns	30 March, 11 August

Multi-sector forum		
Darwin	18 March	
Participants	Organisation/business	Sector
Annie Jarrett	Northern Prawn Fishing Industry Association	Commercial fishing
Rob Fish	Northern Territory Seafood Council	Commercial fishing
Ian Flemming	Tasmanian Seafoods	Commercial fishing
Jeff Westerberg		Commercial fishing
Steve Hinge		Commercial fishing
Andy Prendergast	Austral Fisheries	Commercial fishing
Michael O'Brien	Tropical Ocean Prawns	Commercial fishing
Robert Pender	Fishermen's Portal	Commercial fishing
Bruce Davey	FV Wildcard	Commercial fishing
Tiger Davey	FV Wildcard	Commercial fishing
David Wren	Wren Fishing	Commercial fishing
Claudine Ward	Gulf of Carpentaria Commercial Fishermen Association	Commercial fishing
Greg Neumann	Gulf of Carpentaria Commercial Fishermen Association	Commercial fishing
Brian Koennecke		Commercial fishing
Eric Perez	Queensland Seafood Industry Association	Commercial fishing
Marshall Betzel	Queensland Seafood Marketers Association and North Queensland Trawlers	Commercial fishing
Rob Lowden	Seafresh Seafoods, RB Lowden Pty Ltd	Commercial fishing
Jacqueline Taylor	Australian Marine Conservation Society	Conservation
Anna Boustead	Environment Centre NT	Conservation
Micha Neumann	Environment Centre NT	Conservation
Jackie Gould	Environment Centre NT	Conservation
Daniel Beaver	Centre for Conservation Geography	Conservation
David Morris	Environmental Defenders Office	Conservation
Michelle Grady	The PEW Charitable Trusts/Save Our Marine Life Alliance	Conservation
Bob Manning	Cairns Regional Council	Government
Neil Quinn	Cairns Regional Council	Government
Lara Wilde	Gulf Savannah Development	Government
Valerie Smith	Tourism NT	Government
Tony Griffiths	NT Department of Land and Resource Management	Government
Ian Curnow	NT Department of Primary Industry and Fisheries	Government
Glenn Shipp	NT Department of Primary Industry and Fisheries	Government
Rachel Bacon	NT Department of the Chief Minister	Government
Jim Rogers	NT Department of the Chief Minister	Government
Jordy Bowman	NT Department of the Chief Minister	Government
Ernie Wonka	NT Department of the Chief Minister	Government
Thomas Noael	NT Department of the Chief Minister	Government
Alister Trier	NT Department of Primary Industry and Fisheries	Government
Ron Kelly	NT Department of Mines and Energy	Government

Russell Ball	NT Department of Mines and Energy	Government
Jann Crase	Regional Development Australia Far North Queensland and Torres Strait Inc	Government
David Rolland	GHD	Consultant
Lorrae McCarthur	Northern Land Council	Indigenous
Richard Campbell	Northern Land Council	Indigenous
Kelly Gardner	Carpentaria Land Council Aboriginal Corporation	Indigenous
Warwick Angus	Crocodile Island Rangers	Indigenous
Leonard Bowaynu	Crocodile Island Rangers	Indigenous
George Milaypuma	Crocodile Island Rangers	Indigenous
Steve Roeger	Dhimurru Aboriginal Corporation	Indigenous
Vanessa Drysdale	Dhimurru Aboriginal Corporation	Indigenous
Thomas Amagula	Dhimurru Aboriginal Corporation	Indigenous
Djalinda Ulamari	Dhimurru Aboriginal Corporation	Indigenous
Mandaka Marika	Dhimurru Aboriginal Corporation	Indigenous
John Wilson	Gumurr Marthakal Rangers	Indigenous
David Preece	Yirralka Rangers, Laynhapuy Homelands Association Inc	Indigenous
Patrick Hastwell	ConocoPhillips Australia Pty Ltd	Oil or gas
Greg Oliver	INPEX	Oil or gas
David McMaster	Darwin Port Corporation	Ports
Tristan Sloan	Amateur Fishermen's Association of the NT	Recreational fishing
Craig Ingram	Amateur Fishermen's Association of the NT	Recreational fishing
Ralph Pellenat	Nhulunbuy Regional Sport Fishing Club	Recreational fishing
Sean Canobie	Nhulunbuy Regional Sport Fishing Club	Recreational fishing
Jackie Gould	Charles Darwin University	Research
Karen Edyvane	Charles Darwin University	Research
Kiki Dethmers	North Australian Marine Research Alliance	Research
Michael Guinea	North Australian Marine Research Alliance	Research
Rik Buckworth	North Australian Marine Research Alliance	Research

Table E7 Coral Sea regional consultation

Total meetings	Total meeting attendees
64	182
Location	Dates
Cairns	30 March – 1 April, 11–12 August
Mooloolaba	7 April, 10 August
Brisbane	8–9 April
Sydney	13 August
Townsville	9 November
Multi-sector forums	
Cairns	31 March
Brisbane	8 April

Participants	Organisation/business	Sector
Andy Prendergast	Austral Fisheries	Commercial fishing
Angelo Maiorana		Commercial fishing
Annie Lamason	Great Barrier Reef Tuna	Commercial fishing
Bob Lamason	Great Barrier Reef Tuna	Commercial fishing
Kyle Lamason	Great Barrier Reef Tuna	Commercial fishing
Rowan Lamason	Great Barrier Reef Tuna	Commercial fishing
Sarah Lamason	Great Barrier Reef Tuna	Commercial fishing
Ben Leahy		Commercial fishing
Brett Taylor	4 Seas Pty Ltd	Commercial fishing
Brett Adamson		Commercial fishing
Cathal Farrell	Upscale Seafoods	Commercial fishing
Chauncey Hammond	Tasmanian Seafoods	Commercial fishing
Eric Perez	Queensland Seafood Industry Association	Commercial fishing
Frank Pirello		Commercial fishing
Gary Heilmann	De Bretts Seafood Pty Ltd	Commercial fishing
Glenn Adamson		Commercial fishing
Grahame Turk	National Seafood Industry Alliance	Commercial fishing
Greg Keatley	GIMK Pty Ltd	Commercial fishing
Jeff Moore	Commonwealth Fisheries Association	Commercial fishing
Renee Vajtauer	Commonwealth Fisheries Association	Commercial fishing
Keith (Nick) Schulz	Urangan Fisheries Pty Ltd	Commercial fishing
Robert McLachlan	Urangan Fisheries Pty Ltd	Commercial fishing
Les Scott	Petuna Sealord Deepwater Fishing, Australian Longline Pty Ltd	Commercial fishing
Malcolm Mackay		Commercial fishing
Marshall Betzel	Queensland Seafood Marketers Association and North Queensland Trawlers	Commercial fishing
Megan McKay	Barameda Fisheries	Commercial fishing
Michael O'Brien	Tropical Ocean Prawns	Commercial fishing
Paul Williams	P&M Williams Enterprises	Commercial fishing
Michael Williams	P&M Williams Enterprises	Commercial fishing
Pavo Walker	Walker Seafoods Australia	Commercial fishing
Peter Jackson	East Coast Crabfishers Industry Network	Commercial fishing
Rob Lowden	Seafresh Seafoods, RB Lowden Pty Ltd	Commercial fishing
Steven Murphy	Australian Ocean King Prawn Company	Commercial fishing
Wayne Delongville	Seavine Pty Ltd	Commercial fishing
Adam Whan	Whan & Boxall Pty Ltd	Commercial fishing
Denis Brown	NSW Seafood Industry Council	Commercial fishing
Elizabeth Edmonds	Australian Oceans Institute	Conservation
Chris Smyth	Australian Oceans Institute	Conservation
Fiona Maxwell	Australian Marine Conservation Society	Conservation
Josh Coates	Cairns and Far North Environment Centre	Conservation
Michelle Grady	The PEW Charitable Trusts/Save Our Marine Life Alliance	Conservation
Narelle McCarthy	Sunshine Coast Environment Centre	Conservation
Nicola Hungerford	Queensland Conservation Council	Conservation
Paul Donatui	National Parks Association of Queensland Inc	Conservation
Paul McDonald	South East Catchments Ltd	Conservation
Sue Sargent	Burnett Mary Regional Group NRM	Conservation

Tony Isaacson	Dive Care Dare	Conservation
Bob Manning	Cairns Regional Council	Government
Neil Quinn	Cairns Regional Council	Government
James Murphy	Qld Department of National Parks, Sports and Racing	Government
Maria Mohr	Department of Agriculture and Fisheries	Government
Peter Hutchinson	Qld Department of Premier and Cabinet	Government
Jann Crase	Regional Development Australia Far North Queensland and Torres Strait Inc	Government
Jessica Bourner	Gold Coast City Council	Government
Kristopher Boody	Gold Coast City Council	Government
Warren Entsch MP	Federal Member for Leichardt	Government
Richard Quincey	Great Barrier Reef Marine Park Authority	Government
David Wachenfeld	Great Barrier Reef Marine Park Authority	Government
Bruce Elliot	Great Barrier Reef Marine Park Authority	Government
Kirsten Dobbs	Great Barrier Reef Marine Park Authority	Government
Alex Wells	Balkanu Cape York Development	Indigenous
Frankie Deemal	Balkanu Cape York Development	Indigenous
Danny O'Shane	Northern Queensland Land Council	Indigenous
Greg Smith	Dalrymple Bay Coal Terminal	Ports
Rick Morton	Rick Morton Consulting	Ports
Adam Smith	Reef Ecologic, Australian Underwater Federation	Recreational fishing
Adrian Wayne	Australian Underwater Federation, Spearfishing Commission	Recreational fishing
Luke Randall	Australian Underwater Federation, Spearfishing Commission	Recreational fishing
Alex Johnston	Cairns Game Fishing Club, Broadbill Charters	Recreational fishing
Bruce Alvey	Sunfish Queensland	Recreational fishing
David Bateman	Sunfish Queensland	Recreational fishing
Bruce Stobo	Kanimbla Charters	Recreational fishing
Bruce Davey	FV Wildcard	Recreational fishing
Damon Olsen	Nomad Sportfishing	Recreational fishing
Daniel McCarthy	Cairns Professional Game Fishing Association, Big Fish Down Under	Recreational fishing
Darren Haydon	Down Under Marlin Charters	Recreational fishing
Dianne Hance	Queensland Game Fishing Association	Recreational fishing
Doug Sanderson	Queensland Game Fishing Association	Recreational fishing
Evan Jones	Queensland Game Fishing Association	Recreational fishing
Graeme Devin	Queensland Game Fishing Association	Recreational fishing
Graham Johnston	Cairns Game Fishing Club, Broadbill Charters	Recreational fishing
Ian Bladin	Queensland Game Fishing Association	Recreational fishing
Mick Meiers	Queensland Game Fishing Association	Recreational fishing
Paul Aubin	Cairns Recreational Fishing Industry Stakeholders (CAREFISH)	Recreational fishing
Peter Sayre	Bianca Charters	Recreational fishing
Brad Congdon	James Cook University	Research
Robin Beaman	James Cook University	Research
Hannah Robertson	Biopixel	Research
Richard Fitzpatrick	Biopixel	Research

Vanessa Adams	University of Queensland	Research
Bil Colthurst	Fishing International Supplies and Hardware	Shore-based industry
Ryan Donnelly	Cairns Marine	Shore-based industry
Lyle Squire	Cairns Marine	Shore-based industry
Wayne Bayne	Mitchells Marine	Shore-based industry
Catherine Johnson	Ecrolight, Deep Sea Divers Den	Tourism
Tobi Schnell	Ecrolight, Deep Sea Divers Den	Tourism
Chris Eade	Cod Hole and Ribbon Reef Operators Association	Tourism
Craig Stephen	Cod Hole and Ribbon Reef Operators Association	Tourism
Col McKenzie	Association of Marine Park Tourism Operators	Tourism
Mike Ball	Mike Ball Dive Expeditions	Tourism
Ronda Green	Wildlife Tourism Australia	Tourism

Table E8 National-level stakeholder consultation

Meetings	Total meeting attendees	
16	60	
National forums/meetings		
Sydney	7 November 2014	
Melbourne	22 April 2015	
Canberra	22 July 2015	
Sydney	13 August 2015	
Brisbane	10 November 2015	
Participants	Organisation	Sector
Renee Vajtauer	Commonwealth Fisheries Association	Commercial fishing
Jeff Moore	Commonwealth Fisheries Association	Commercial fishing
Les Scott	Commonwealth Fisheries Association	Commercial fishing
Grahame Turk	National Seafood Industry Alliance	Commercial fishing
Annie Jarret	Northern Prawn Fishery Association	Commercial fishing
John Harrison	Western Australian Fishing Industry Council	Commercial fishing
Darren Kindleysides	Australian Marine Conservation Society	Conservation
Fiona Maxwell	Australian Marine Conservation Society	Conservation
Adrian Meder	Australian Marine Conservation Society	Conservation
Michelle Grady	The PEW Charitable Trusts/Save Our Marine Life Alliance	Conservation
Teagan Goolmeer	Rottneest Island Authority/Indigenous Advisory Committee	Conservation
Keld Knudsen	Australian Petroleum Production and Exploration Association	Oil and gas
Clare Valence	Australian Petroleum Production and Exploration Association	Oil and gas
Miranda Taylor	Australian Petroleum Production and	Oil and gas

Christine Lamont	Exploration Association National Offshore Petroleum Safety and Environmental Management Authority	Oil and gas
Cameron Grebe	National Offshore Petroleum Safety and Environmental Management Authority	Oil and gas
Susan Fryda-Blackwell	Ports Australia	Ports
Allan Hansard	Australian Recreational Fishing Foundation	Recreational fishing
Brett Cleary	Australian Recreational Fishing Foundation	Recreational fishing
John Burgess	Australian National Sportfishing Association	Recreational fishing
Evan Jones	Queensland Game Fishing Association, Game Fishing Association of Australia	Recreational fishing
Adrian Wayne	Australian Underwater Federation, Spearfishing Commission	Recreational fishing
Hugh Kirkman	Australian Marine Sciences Association	Research
Lynnath Beckley	Australian Marine Sciences Association	Research
Hugh Possingham	Ocean Science Council of Australia	Research
Craig Johnson	Ocean Science Council of Australia	Research
Kikki Dethmers	Ocean Science Council of Australia	Research
David Booth	Ocean Science Council of Australia	Research
Ove Hoegh-Guldberg	University of Queensland	Research
Tyrone Ridgeway	University of Queensland	Research
Rod Nairn	Shipping Australia	Shipping
Angela Gillham	Maritime Industry Australia	Shipping
Sam Bradley	Maritime Industry Australia	Shipping

Appendix F: Overview of online survey responses

The majority of survey participants (95%) indicated that they lived within Australia. Of the participants living outside of Australia, 33% lived in the United States of America, 13% in New Zealand, 11% in Canada and 9% in the United Kingdom.

Survey participants tended towards the older age brackets, with just under 60% of participants aged over 50. The gender balance was almost equal.

Approximately 50% of participants indicated that they visited a CMR yearly or less than once a year.

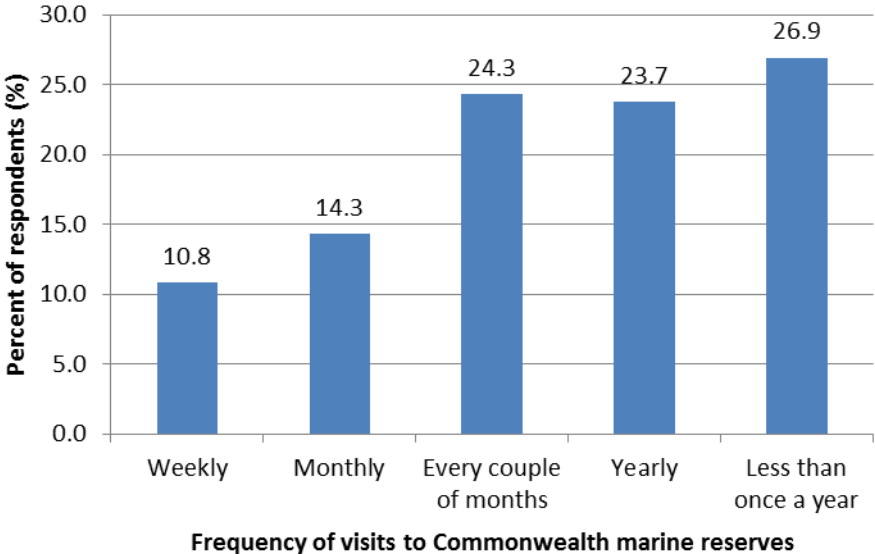


Figure F1 Frequency of visits to CMRs

The top three purposes for visiting CMRs were identified as recreational other (sailing, diving etc.), recreational fishing and conservation activities.

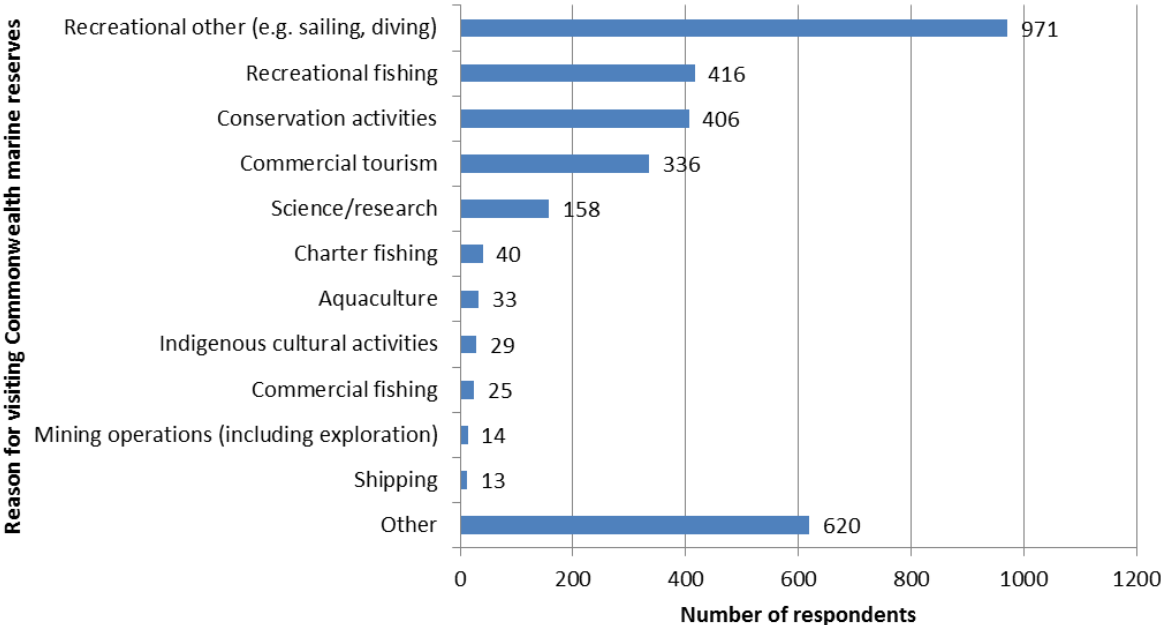


Figure F2 Reasons for visiting CMRs

A total of 620 participants described other reasons for visiting CMRs. Table F1 summarises the types of responses provided within this category.

Table F1 Other reasons nominated as a main purpose survey participants visit CMRs

Other reasons for visiting CMRs	Frequency
Statements such as, 'These areas belong to all Australians, not just commercial fisheries and oil companies that operate there'	217
Environmental appreciation/nature watching/enjoying nature/concern for the environment	166
Don't visit/haven't visited, but interested	21
Educational reasons	7
I live here	7
Painting/photography	5
Existing category: recreational other (e.g. sailing, diving etc.)	83
Existing category: commercial fishing	1
Existing category: conservation activities	1
Additional (various)	112

Only 5% of survey participants indicated that they were responding on behalf of a group, business or organisation. Within this 5% of participants there were a total of 58 different groups, businesses or organisations, including recreational fishing organisations; commercial fishing companies, individuals and organisations; scientific or research organisations; and environmental organisations.

The majority of participants indicated that they were interested in all of the networks and reserves within the CMR estate; therefore the survey responses did not allow the review to identify any areas of particular interest at either the network or reserve level.

This held true more broadly for the other survey responses, with no reserve, network or geographic region being of greater interest than any other.

There were 1328 responses in total, which provided enough detail to determine whether participants supported the existing zoning. Of these, 95% indicated support for the existing zoning. Of the 5% that did not support the existing zoning, no particular geographic region received a greater number of comments.

Survey participants who visited the marine reserves for aquaculture, mining operations and shipping were more likely to support the existing zoning, while those who visited for commercial fishing or charter fishing purposes were less likely to support the existing zoning. Table F2 summarises participants' support for the proclaimed zoning.

Table F2 Support for existing zoning compared to purpose of visiting CMRs

Purpose for visiting	No.	Support for existing zoning?	
		Yes (%)	No (%)
Aquaculture	21	100	0
Charter fishing	23	70	30
Commercial fishing	16	44	56
Commercial tourism	250	96	4
Conservation activities	289	98	2
Indigenous cultural activities	19	89	11
Mining operations (including exploration)	5	100	0
Recreational fishing	287	87	13
Recreational other (e.g. sailing, diving etc.)	712	97	3
Science/research	91	91	9
Shipping	8	100	0
Other	487	98	2

The top two responses for what participants considered important about the CMRs were: ‘Maintaining the health of oceans and marine ecosystems’ (95.3% important and above) and ‘Protection/preservation of marine biodiversity’ (95.1% important and above).

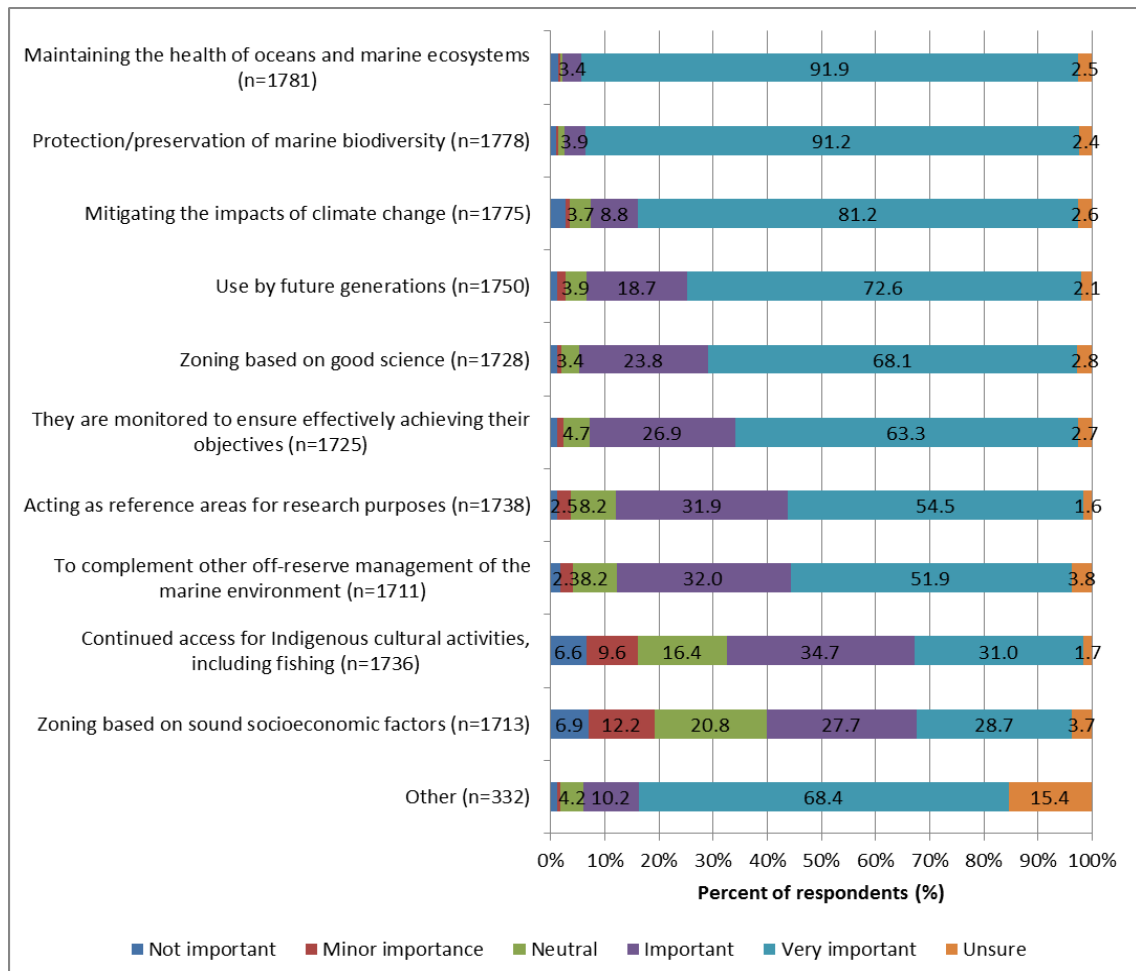


Figure F3 Participants' ratings of the importance of CMRs

A total of 283 participants provided details of other important roles of CMRs. Table F3 illustrates the types of responses received about other roles of CMRs.

Table F3 Other important roles of CMRs

Other important roles of CMRs	Frequency
Sanctuaries work/are good/effective	20
Expansion or creation of new reserves/exclusion zones	19
Access (for all people/recreational fishers/recreational users)	11
Stakeholder engagement/education	9
Importance of tourism	9
Against Indigenous cultural activities	8
Need for adequate funding	4
100% no-take zones/larger no-take zones	3
All of the above/all are related	3
Existing categories: protection/preservation of marine biodiversity/maintaining the health of oceans and marine ecosystems	84
Existing category: zoning based on good science	15
Existing category: mitigating the impacts of climate change	5
Existing category: continued access for Indigenous cultural activities, including fishing	3
Other (various)	90

The top three issues impacting biodiversity in CMRs were identified as being pollution, mining operations (including exploration) and habitat degradation and loss.

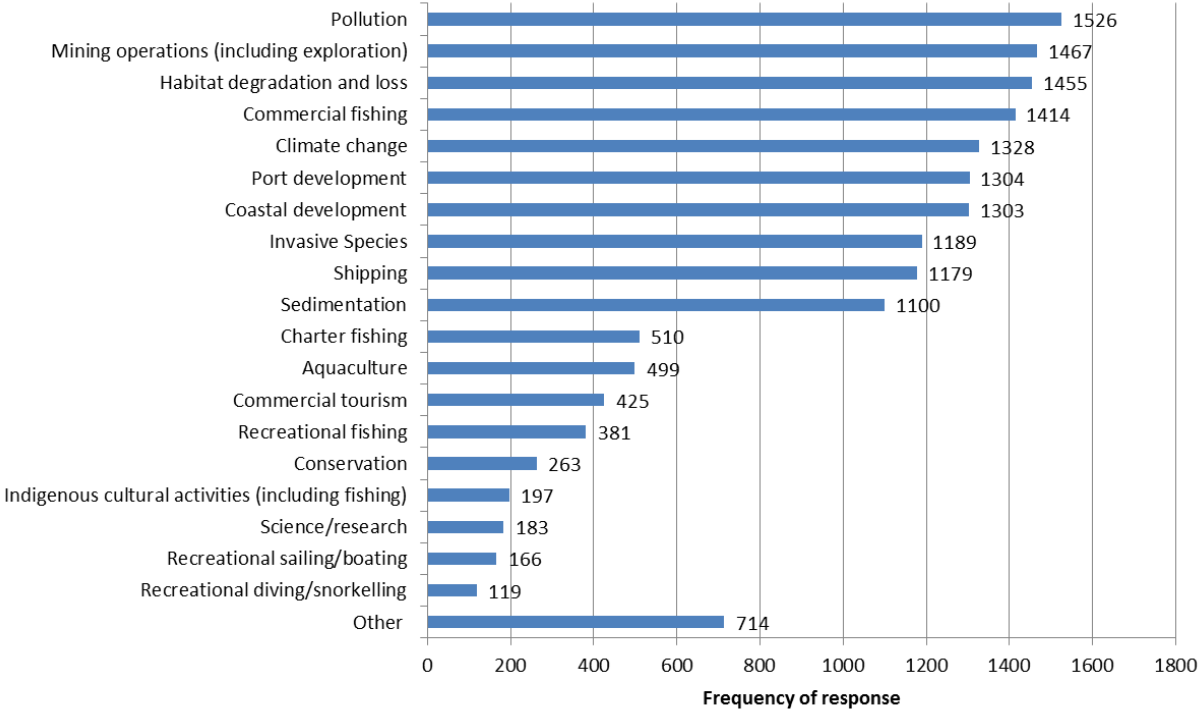


Figure F4 Issues impacting biodiversity in CMRs

A total of 714 survey participants indicated there were other important issues impacting on biodiversity in CMRs. All of these participants provided a description. Table F4 summarises the other issues identified by participants.

Table F4 Other issues impacting biodiversity in CMRs

Other issues impacting biodiversity in CMRs	Frequency
Positive impact statements such as, 'It depends on the reserve, but sanctuaries are proven to work'	525
All of the above	12
Illegal activities	7
Exploitation/greed	6
Dredging	5
Lack of knowledge/information/education	5
Existing category: commercial fishing	12
Existing category: pollution	20
Existing category: shipping	8
Existing category: recreational fishing	8
Existing category: science/research	5
Existing category: mining operations (including exploration)	5
Existing category: recreational sailing/boating	4
Existing category: Indigenous cultural activities (including fishing)	3
Existing category: habitat degradation and loss	2
Existing category: port development	2
Other (various)	85

Survey participants ranked the most critical issues impacting biodiversity as mining operations (including exploration), climate change and habitat degradation and loss.

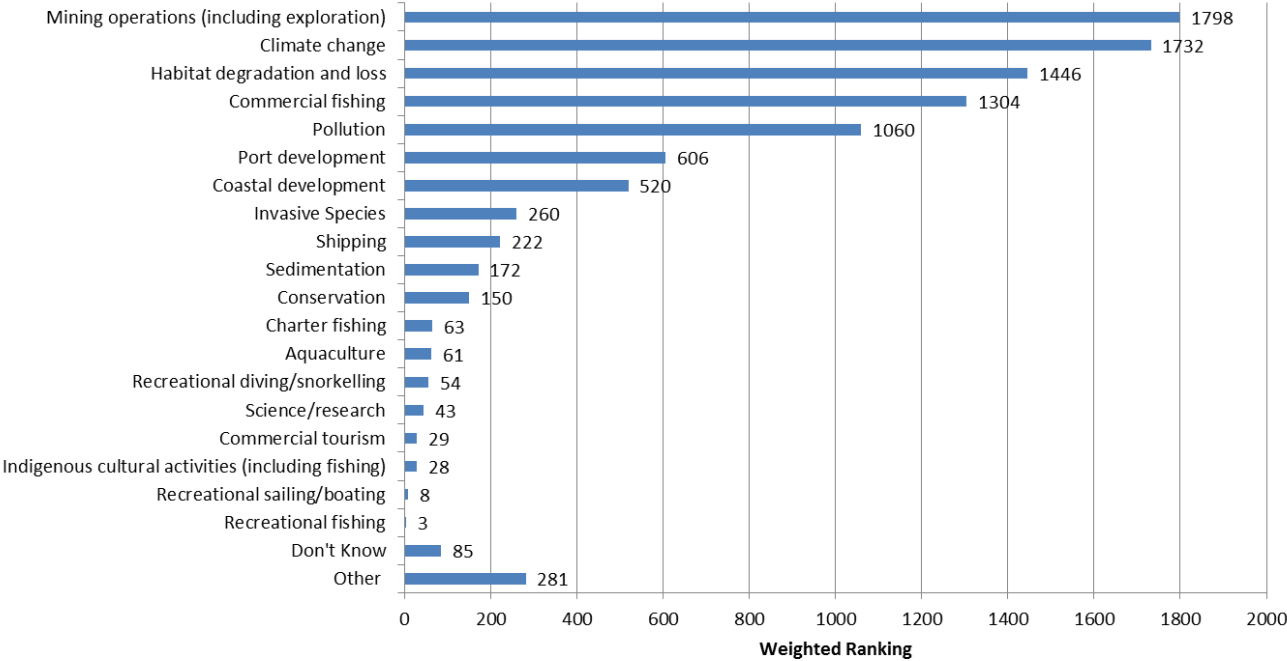


Figure F5 Participants' rankings of critical issues impacting biodiversity

The three highest priorities for management activities were identified as ‘well developed and resourced scientific monitoring to support ongoing management’, ‘ensuring that users comply with rules and regulations’, and ‘involving the community in management of the reserves’. The fourth, ‘raising community awareness’, had only 20 fewer responses.

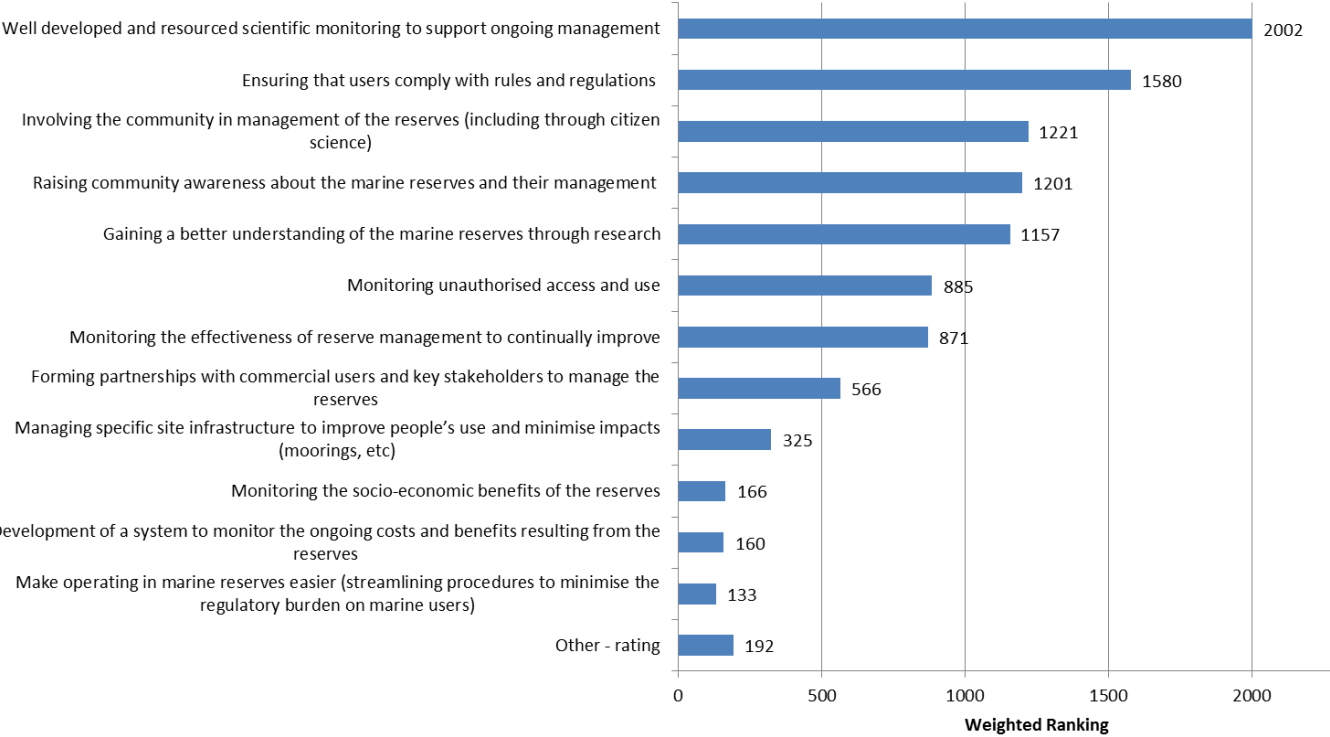


Figure F6 Participants' weighted rankings of priority for management activities

A total of 136 participants provided details about other management activities in CMRs. Table F5 summarises these responses.

Table F5 Other management activities in CMRs

Other management activities in CMRs	Frequency
Against commercial fishing/big industry/commercialising the ocean	24
All of the above are important/linked	11
Expansion or creation of new reserves/exclusion zones/no-take zones	8
Existing category: ensuring that users comply with rules and regulations	11
Existing category: raising community awareness about the marine reserves and their management	6
Existing category: well developed and resourced scientific monitoring to support ongoing management	4
Existing category: monitoring the effectiveness of reserve management to continually improve	2
Existing category: involving the community in management of the reserves (including through citizen science)	2
Existing category: gaining a better understanding of the marine reserves through research	1
Other (various)	67

Of the participants who explained how the CMRs will affect them personally, 92% indicated that there would be a positive personal impact and 98% indicated a positive impact in broader ways (other than personally).

The expected personal impacts of CMRs were compared against participants' purposes for visiting CMRs. Participants visiting CMRs for aquaculture, commercial tourism, conservation activities, Indigenous cultural activities, recreational activities (other than fishing) and shipping were more likely to report positive impacts, while those visiting for commercial fishing, recreational fishing and charter fishing were more likely to report negative personal impacts. Table F6 summarises the perceived personal impacts of the CMRs compared to the reasons for visiting the CMRs.

Table F6 Personal impacts compared to purpose for visiting CMRs

Purpose of visiting CMRs	Personal impact			Impact other than personal		
	No.	Positive (%)	Negative (%)	No.	Positive (%)	Negative (%)
Aquaculture	12	92	8	15	100	0
Charter fishing	25	44	56	5	80	20
Commercial fishing	14	29	71	5	80	20
Commercial tourism	169	95	5	91	100	0
Conservation activities	192	99	1	115	98	2
Indigenous cultural activities	11	100	0	11	100	0
Mining operations (including exploration)	6	100	0	3	100	0
Recreational fishing	204	76	24	103	92	8
Recreational other (e.g. sailing, diving etc.)	461	93	7	303	99	1
Science/research	68	93	7	114	100	0
Shipping	3	100	0	2	100	0
Other	327	98	2	179	100	0

Participants' preferred method for receiving information was clearly email updates (75%), followed by website updates (23%).

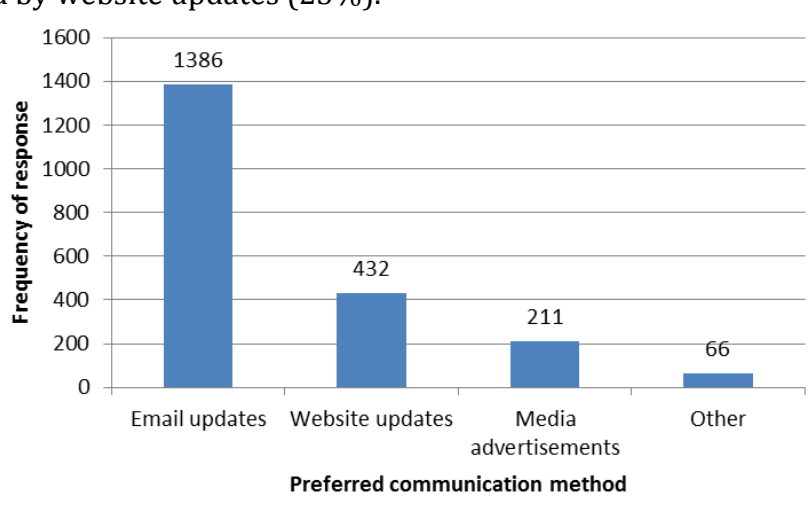


Figure F7 Preferred communication methods

The topics of most interest for participants were 'Science and research activities' and 'New information about the Commonwealth marine reserves'.

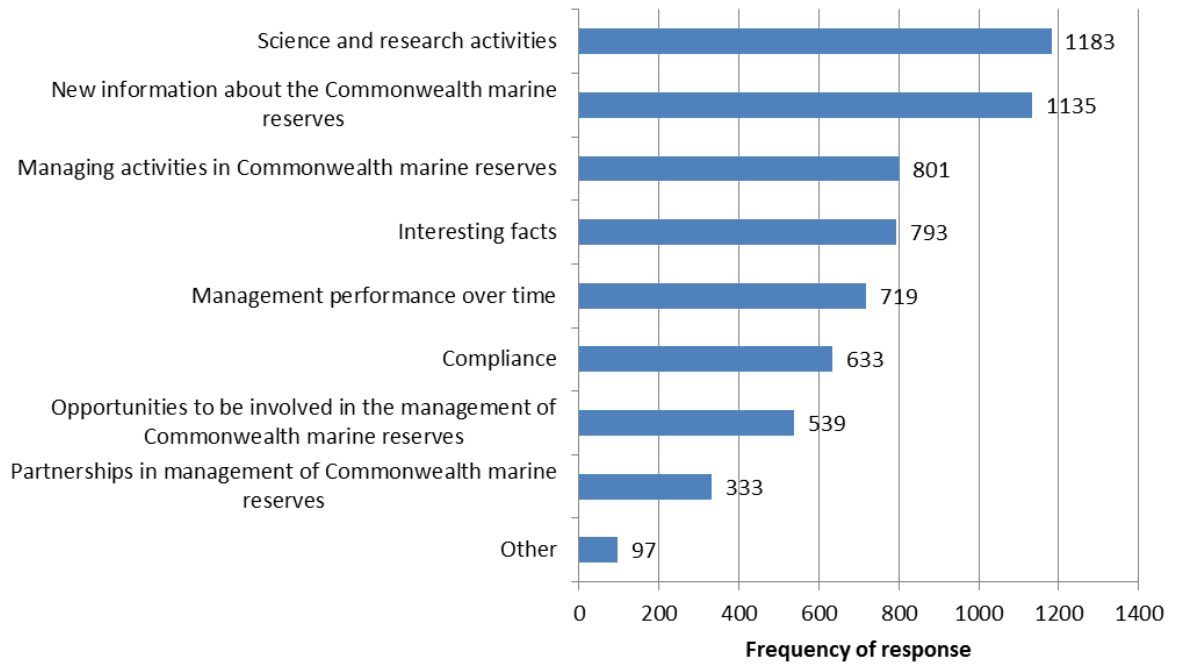


Figure F8 Topics of interest for information updates to participants

Appendix G: Consolidated summary of feedback received by the review

This appendix contains a high-level summary of the feedback received during the CMR Review. To avoid unnecessary duplication, feedback summarised at the estate-wide or network level is not repeated at the reserve level unless it specifically addresses that reserve.

This appendix is a summary of the feedback and opinions provided by stakeholders. As such it has not been edited to ensure the comments received are accurate or factually correct.

ESTATE WIDE

- Questioning of the scientific integrity of the decision to exclude commercial fishing in IUCN VI zones while permitting all forms of mining and oil and gas activity.
- Questioning of the scientific integrity of Multiple Use zoning that allows all forms of mining and oil and gas activity but not trawl or other forms of demersal fishing which, in the case of the NPF, have proven to be low impact.
- It is inconsistent, unfair and not sustainable that commercial fishing is excluded from IUCN IV and II zones despite other industries, including oil and gas mining, being permitted that pose equal levels of risk to the environment.
- The 2012 guidelines for IUCN protected area management Category VI, currently SPZs and MUZs, define these areas as 'under low-level non-industrial sustainable natural resource management and where such use of natural resources compatible with nature conservation is seen as one of the main aims of the area'. Mining is an extractive industrial process and that is not compatible with the aim of this zoning or within the spirit of the marine reserves process itself. There is an inconsistency when removing commercial bottom trawl fishing methods while allowing mining including exploration and development in these current zones.
- Commercial fisheries are already regulated by the AFMA and therefore there is a need to differentiate the level of protection within a reserve opposed to the surrounding area outside the reserve. IUCN VI zones do not clearly articulate the protection provided and should be upgraded.
- Sound fisheries management tools such as spatial closures for demersal species and recreational catch-and-release zoning for pelagic species are given more consideration in management plans for fishing stakeholders, rather than arbitrary percentages of seafloor topography permanently closed to all forms of fishing through SZ designation.
- The commercial fishing industry has serious concerns about development of the FGRA used in the planning of the reserves in terms of their policy, methodology and process of development.
- The plans should allow for explicit review and assessment of 'prohibited' activities, (including new gears types and/or new information) based on a clear, transparent process and sound science.
- Gillnetting should not be put in the same FGRA category as trawling.
- There should be an FGRA for the various types of recreational fishing and the impact these types have on the conservation values.

- If recreational fishing is allowed in IUCN I or II zones then the CMR Review must specifically address the lack of an environmental impact statement currently available regarding recreational fishing methods.
- Ongoing engagement with the commercial fishing industry must occur before the finalisation of each management plan.
- Policing and management of CMRs presents new logistical and cultural challenges. New and emerging technologies can provide part of the answer, but there is no substitute for an engaged community and a culture of compliance.
- The CMR Review should consider the South-east CMR Network Stakeholder Forum as one model for facilitating ongoing stakeholder engagement.
- The South-east collaborative forum was a positive model that involved up to a dozen stakeholder groups. It was important to have the right people at the table for a logical and meaningful engagement and resources for maintaining engagement and dealing with stakeholder fatigue needed to be considered.
- Each management plan requires a research plan and communication strategy for that region's stakeholders.
- Management Plans should develop partnerships with relevant industries to increase understanding of the impacts of anthropogenic disturbance on the region's KEFs and protected species. Specifically, plans should make provision for translating knowledge into action with a view to reducing anthropogenic disturbance of the region's KEFs.
- An overarching governing body should be established to facilitate and provide opportunities for government agencies, non-government organisations and concerned scientists to contribute to the effectiveness of the Marine Bioregional Plan.
- The management plans are focused on mega-scale ecological features and needs to be refined further to account for local fine-scale ecosystems.
- In the case of displaced activities, such as fishing, it may be appropriate to phase out activities over a period of time, to allow alternative livelihoods to be developed, and to reduce the burden of compensation.
- Depletion (overfishing) of areas surrounding reserves because of the concentration of commercial fishers excluded from reserves would have a negative impact on species numbers. Restriction may also lead to resource conflict between commercial fishers.
- Concerns that the displaced commercial fishers will impact on the operations of other commercial fishers or on the catch available for recreational fishers.
- To assist the transition of commercial fisheries resulting from the establishment of the CMRs, the CMR Review should recommend that management plan implementation coincide with the structural adjustment for affected operators.
- Fair compensation, including marketing costs, is required for any areas where fishing is prohibited, to cover any cost associated with a transition to another business model, such as 'green tourism'.
- Commonwealth marine sanctuaries are needed to supplement the tiny area covered by state marine reserves, as very little of existing areas are actually no-take zones free from fishing and other impacts. Increase the level of protection for marine sanctuaries across the network.

- Zoning is supposed to be based on a representative approach and therefore it is anomalous to have adjacent areas in Commonwealth and state waters in reserves, as this is duplication.
- There are significant benefits, both direct and indirect, from marine reserves. Trawling, longlining and gillnetting should be excluded from these areas to protect fish stocks.
- Retain the existing zoning at a minimum and improve and expand the MNPZs throughout the CMR estate.
- In order to provide an adequate level of protection, there needs to be at least one strict nature reserve (IUCN Ia or II) within each bioregion.
- Within each reserve there should be a minimum of 30% IUCN Ia and II to ensure full and adequate protection.
- Reserves that have low-level protection due to oil and gas leases/activities are changed, once the lessee has ceased operations in the area, to IUCN Ia or II zones.
- Where existing CMRs have less than 30% of their area in IUCN Ia or II, increase coverage to at least this level, providing coverage for all geomorphic units and across depth gradients; particular attention needs to be paid to the continental shelf.
- In order to meet the NRSMPA primary goals and principles, which it does not currently meet, the zoning would need to be adjusted to include greater protection and representation of marine habitats in highly protected areas, especially on the continental shelf.
- Current protection across all the CMRs is not adequate, particularly on the continental shelf. There should be significant and individually large no-take areas in our marine reserves, as called for by marine scientists and covering all habitat types as set out in the Goals and Principles.
- Dive tourism is estimated to contribute approximately \$4.2 billion to the Australian economy. Winding back of marine national parks would place at risk not only the future of marine biodiversity but also the viability of our businesses and Australia's international reputation as a world-class nature tourism destination.
- The review should use the Devilliers *et al.* four-step framework when considering the CMR in the Coral Sea and the CMR networks in the South-west, North-west, North and Temperate East marine regions.
- IUCN II zones need to be large to be fully effective. Pelagic (and, to a lesser extent, benthic) fishes are often highly mobile. Large areas are needed to reasonably ensure a sufficient biomass of fish is protected for the designations to be meaningful in the first place. Certain small zones could help protect specific, small, iconic features from bottom trawling or future seabed mining. Successful conservation of marine biodiversity requires reserve designs to meet five minimum criteria: (1) no take, (2) well enforced, (3) established over long time frames, (4) big (more than 100 km²), and (5) contain isolated habitat. It will be essential for the network to meet these criteria to be successful in achieving the primary goal of the NRSMPA.
- The Commonwealth network of marine reserves as they stand have achieved a CAR system of marine reserves with good connectivity between individual reserves.
- The Goals and Principles do not provide appropriate guidance for the overall achievement of all CMR regions. The CMR Review must begin with the identification and prioritisation of threats to Australia's marine biodiversity. The specific activities

and their resultant impact/threat to marine biodiversity should be determined and then prioritised for management.

- Two important growth areas in marine research have led to significant advances in knowledge since the inception of the CMR and provide overwhelming support for implementing a well-designed and managed marine reserves system: (1) increased understanding of the role of connectivity in maintaining marine populations, and (2) understanding the impacts of a changing environment.
- Adequate, well-spaced reserves containing suitable habitat for targeted species provides important SZs for these species to grow, reproduce and disperse across the wider region, restocking depleted areas (whether seasonally or in less frequent episodic events). Careful planning in reserve design between existing inshore protected (state designated), offshore (CMR) and even terrestrial national parks, will also be key to providing connectivity for many species.
- It is essential that reserve design is fit for purpose. The network of reserves needs to meet the CAR criteria and have clarity as to the intent and purpose of the marine reserves while minimising the impact on fisheries.
- Management plans and managers need detailed knowledge of baseline conditions and standard monitoring protocols and methodology including the storage of and public access to environmental data.
- Marine national parks do not address root causes. There should be increased resources allocated to activities including compliance, monitoring, enforcement, education, and Indigenous ranger programs. All other zones except MNPZs, including recreational fishing zones, or those that include vertical zoning like benthic protection zones, only offer partial protection and are designed either to achieve particular social or economic outcomes or to act as buffers to the MNPZs.
- MNPZs should only be declared where Australian species are scientifically identified as possibly endangered.
- CMRs have the capacity to be baseline areas for scientific research and monitoring.
- The issue of threats is an important one but the primary purpose of marine reserves is not threat mitigation but to protect, conserve and maintain biodiversity. Research should focus on understanding functional response to changing environmental conditions and to potential risks, using highly protected marine reserves (IUCN Ia and II) as reference areas.
- The general benefits of no-take marine reserves to society as a whole—directly to conservation, education, recreation and management, and indirectly to tourism and coastal planning—are so important that a systematic approach to their creation is in the public interest.
- Marine reserve networks need to have quantifiable audit-based frameworks, to assess the efficacy of the network in achieving its objectives, encompassing ecological, social and economic objectives. Each network should have its own research plan devised with regional stakeholder engagement. There is a need for increased general research in the area.
- Promoting citizen research avenues and using citizen science is a valuable way to engage stakeholders in research activities such as evaluation of disease, marine mammal protection and SZ exemptions.

- A future research priority should be the continued mapping of Biologically Important Areas and the mapping of sperm and southern right whale distribution in Australian waters.
- Re-evaluate activities and use checklists at both state and Commonwealth levels to reflect cause-and-effect rationalism. Target the source of each specific threat and make it accountable in lieu of bans to all forms of fishing as a resilience mechanism to these increasing threats.
- Adaptive management planning is critical to the success of the reserve network.
- Marine reserve design should be based on robust science and, unless new scientific data come to light, the boundaries of the existing reserves should not be changed. The management plans should contain well-defined conservation values to assist in impact risk assessments.
- Management plans must be preceded by the necessary and appropriate risk assessments and prioritisation of these risks, and only then drafted to deal with these threats. All activities should be considered under the same broad assessment criteria, and no single activity should be treated differently to other activities.
- There is a need for establishment, maintenance and monitoring of larger improved enforcement and management strategies. The regulatory impact statement (RIS) talks about establishing a monitoring program after the reserves are created. However, these two strategies, whilst deserving of separate RISs, should be developed in conjunction with each another to ensure a seamless transition from the new management strategy into enforcement and monitoring processes.
- Scientific research and monitoring should be permitted within all zones, provided it does not compromise the values of the reserve area. Destructive sampling at small scales (such as fish, plankton, habitat sampling) should be permitted. The burden of proof should be on the proponent of any activity. Monitoring and reporting of such research should be publically available for scrutiny, just as for any other activity.
- The differing allowable uses between the existing South-east network and the proposed networks for identical zone types/colours is confusing for commercial operators, particularly those that operate across networks.
- The zoning arrangements and communication materials for the reserve should be consistent with the adjoining state reserve to assist users who may not be aware of the jurisdictional boundaries/requirements.
- Management arrangements must take into account retrieval of fishing gear, vessel transiting and landing of fish caught outside a CMR within the CMR due to drift etc. A 30–50 m buffer zone was needed to account for line drift close to MNPZs
- Oppose recreational fishing in SZs.
- Alter the operation of the MNPZs (IUCN II) to allow recreational fishing. Catch-and-release recreational fishing, including game fishing, is not an 'extractive' activity and therefore should be permitted.
- Excluding recreational and game fishers from MNPZs would jeopardise participation in valuable Australia-wide tag-and-release research for billfish and marlin species; therefore approved tag-and-release activities should be permitted in the reserve.
- Spearfishing is a selectively sustainable activity and therefore should be allowed in all zones, including MNPZs. Where additional protections are required, harm minimisation practices should be used, not blanket bans.

- There is support for a review process and subsequent drafting of management plans that recognise the importance of collaboration with the industries that make up Australia's marine economy (such as fishing, resources, tourism) and ensure future investment in exploring and developing Australia's offshore energy resources.
- The oil and gas industry is the largest investor in, and the biggest contributor to the Australian economy from, Australia's marine environment. Investors need certainty in marine reserve planning and clarity in the approvals process for activities in or near reserves. The approvals process for these activities should be streamlined.
- The existing environmental safeguards available under the processes of the EPBC Act and the Offshore Petroleum Gas Storage Act are robust and provide a well-managed offshore petroleum industry. Ban oil, gas and mining exploration with marine reserves, and demersal (bottom) and midwater trawl within marine reserves.
- There should be no concessions given to mining exploration and minerals or gas extraction in any zonal category of the network, and to do so would undermine the integrity of the reserves.
- Oil, gas and seabed mining activities can have a impact on Indigenous cultural values of the reserves and these activities should be restricted.
- Management plans must permit the continuation of shipping and other port-related activities within the zones. The plans should specify that activities such as the placement of clean dredged material in the MUZ or Special Use Zone (IUCN Category VI) is consistent with permitted uses within the zone.
- The definition of commercial vessel transit should be altered to include a reference to prevailing circumstances or conditions. Clarity is also needed as to whether anchoring or drifting are permitted activities.
- Management plans should acknowledge and clearly articulate the requirements for installation, repair and maintenance of submarine cables as these are items of nationally significant infrastructure.
- It would be helpful if the co-existence of new CMRs and existing submarine telecommunications cables were acknowledged, and any implications for new cables and maintenance activities associated with existing cables, such as permit conditions and time frames.
- Submarine cables would normally avoid areas of intense environmental significance such as MNPZs; however, the large MNPZ in this reserve makes avoiding the area when laying and undertaking maintenance of submarine cables impractical.
- A requirement to secure a permit for laying and maintenance of submarine cables as proposed in the set-aside management plans is inconsistent with the provisions of the UNCLOS, which protects the right to construct, operate and maintain submarine cables in the contiguous zone, EEZ and continental shelf. The requirement to consider whether it is practicable for a submarine cable to be located outside a zone is inconsistent with the rights in the UNCLOS to lay submarine cables on the continental shelf without the consent of the relevant coastal state.
- Create a corridor between Australia's EEZ and marine parks to provide 'eyes on the ground' for the fishing industry. Create a fishing-permitted corridor of 20 nm to ensure foreign fishing fleets/vessels do not enter or fish where parks adjoin the EEZ.

- National support in the shape of a marine reserve and sanctuary for Cape Byron Marine Park would work towards success in efforts on the different scales, which are linked and nested together.

NORTH COMMONWEALTH MARINE RESERVES NETWORK

Entire region

Feedback on the North CMR Network in its entirety, without specifying a particular CMR within the network, included:

- Sufficient detail should be articulated in the management plans, particularly relating to research, monitoring, review and evaluation systems, to enable assessments of how/if the plan is meeting its objectives.
- The North Marine Region contains nine marine bioregions with no marine sanctuaries despite governments committing to, and scientific support for, establishing marine sanctuaries in all of Australia's marine bioregions over 15 years ago.
- The North CMR Network seems to lack significant wildlife corridors between the reserves, which is concerning considering Guiding Principle 13: 'Size and shape should be orientated to account for inclusion of connectivity corridors and biological dispersal patterns within and across marine reserves.'
- There is a need for more MNPZs, particularly on the shelf and upper slope.
- Stronger conservation is needed including expanded IUCN II, reduced oil, gas and mining and a permanent ban on seabed mining.
- The North Marine Reserves Network contains areas of international, national and regional significant species which need greater protection from destructive extractive industries such as oil, gas and seabed mining.
- MUZs and SPZs within the North CMR Network should be made HPZs (or otherwise restrict all mining activities).
- Exclude all mining from all non-lease areas.
- Increase number/size of IUCN II zones and engage with Indigenous ranger groups about the management of the reserves.
- The zoning plan for the North Marine Reserves Network would be substantially improved by prohibiting mining from operating in those parts of the marine reserves that are currently outside exploration leases. This would increase the area protected from mining and exploration from 3% to 18% of the North Marine Region.
- Retain the current reserves and prohibit oil, gas and seabed mining for the benefit of tourism operators.
- Recommend that some of the Special Purpose and MUZs should be changed to HPZs in recognition of the social, health and environmental impact mining can have on coastal Indigenous communities.
- Ongoing formal consultative structures funded by government, especially to allow users to be engaged in the management of the reserves network, are critical.
- The tourism industry is an important driver in the NT. Opportunities for non-fishing related tourism activities are very limited in the North CMR Network. Tourism operators should be consulted with, particularly when considering potential management plans.
- Indigenous sacred sites and sites of significance and heritage should be identified and included in the management plan as well as the role of the Indigenous community in the management of those sites.

- There should be a commitment to including Indigenous stakeholders as decision-makers and managers of the reserves at all levels, including an amended wording of the North CMR Network Draft Management Plan.
- Where government planning processes overlap with Indigenous people's sea country this needs to be recognised by incorporating traditional owners and other relevant Indigenous bodies as decision-makers rather than a stakeholder within the process.
- Indigenous people and organisations should be partners in the management of sea country within CMRs.
- It is imperative that management plans are prepared in collaboration with local Indigenous ranger groups.
- Restrictions on mining should be placed wherever possible within the remaining reserves within the North CMR Network. The lack of restrictions on mining activities should be addressed, as these pose the greatest risk to marine-based livelihoods and therefore on the social, cultural, environmental and economic wellbeing of remote Indigenous communities.
- The North CMR Network, particularly its MNPZs, are a piece of critical regional economic infrastructure for maintaining and growing the \$1.6 billion tourism industry.
- Future management plans should not impact fishing-related tourism or recreational fishing use on water areas where it currently occurs.
- Allow recreational/sport fishing/trolling in MNPZs, and provide amenities such as safe moorings and ability for recreational fishers to identify no-fishing areas.
- There is no scientific evidence to support the blanket exclusion of bottom trawling by NPF fishers in the North (and North-west) regions. To the contrary, there is a large body of scientific evidence that indicates trawling in these fisheries is not a threat to biodiversity in the North Marine Region. Bottom trawling is an acceptable activity under IUCN Category VI and occurs in various marine reserve networks around the world, including in the GBRMP and in the Commonwealth's East Marine Region marine reserve.
- Seventy per cent of the Timor Reef Fishery is contained within a reserve and therefore the impact of this reserve on the commercial fishers is high.
- 'Class approvals' for commercial fishers are generally supported by industry to facilitate much-needed administrative and operational efficiency. However, there is still a need for greater certainty about the development of class approvals and dealing with sensitive information.
- There should be continued fishing access to important long-term research survey sites which provide critical inputs into stocks assessments. Uncertainty remains around the fishing industry being able to use new gears.
- The current network of reserves is not supported by the commercial fishing industry because the FGRAs and regulatory impact statement used in the design process were fundamentally flawed and would have a significant impact on the industry.
- Question the scientific integrity of Multiple Use zoning that allows all forms of mining and oil and gas activity, but not trawl or other forms of demersal fishing which, in the case of the NPF, have proven to be low impact.

- Amend the Commonwealth displaced effort policy so that it is in line with the Fisheries Queensland guidelines prior to any adjustments being rolled out for the new MPAs in Queensland.
- The plans should allow for explicit review and assessment of 'prohibited' activities, (including new gears and/or new information) based on a clear, transparent process and sound science
- No risk assessment was carried out on any other stakeholder, based on the fact their activities are managed under other legislation. Commercial fishing is managed under other legislation, so this has led to the position that managed fishing operations in the North Marine Region are deemed of greater risk to park values than mining operations.
- Propose a fishing corridor adjacent to (inside) the 200 nm limit outer boundaries of West Cape York CMR, Arafura CMR and Oceanic Shoals, which will provide a commercial fisher monitoring presence in this area and establish a buffer zone for protection from illegal foreign fishing. Unprotected borders and foreign fishing activity are a major concern.
- This area is targeted by illegal foreign fishers and the reserves will need to be adequately policed.

Joseph Bonaparte Gulf Commonwealth Marine Reserve

- An MNPZ in the reserve, as recommended by the CSIRO, would satisfy the Government's longstanding commitment to create an MNPZ within the Anson Beagle, Cambridge-Bonaparte and Bonaparte Gulf bioregions.
- A new MNPZ (IUCN II) west of 128°30'E should be established to include the unique carbonate Medusa Bank and King Shoals.
- The southern and western branch adjacent to Western Australian and NT should be designated as a habitat/species management area (IUCN IV). This area is important nesting and inter-nesting habitat for the largest population of the flatback sea turtle.
- The North Marine Reserves Network could significantly improve the protection of marine life by the total removal of pelagic gillnetting and set mesh nets (demersal gillnets) from this reserve.

Oceanic Shoals Commonwealth Marine Reserve

- An MNPZ in the reserve, as recommended by the CSIRO, would satisfy the Government's longstanding commitment to create an MNPZ within the Oceanic Shoals bioregion and provide protection for the turtle feeding habitats of the Bonaparte Gulf.
- The reserve should be changed to an MNPZ (IUCN II). Although the area is highly prospective for oil and gas, a consequence of such activity is the compression of rock layers as the oil and gas is removed. Such subduction is likely to damage the surface shallow water ecosystems that have built up on the carbonate banks utilising the hydrocarbon seeps.
- Where sections of this reserve are not of prospective interest, they should be made HPZs to enhance the overall potential for biodiversity protection across the North CMR Network.
- The holothurian banks are an important feeding ground for turtles and birds; therefore this area should be changed to a MNPZ.

- Advocated that 10% of the reserve should be MNPZ, particularly around KEFs, as there were clear indications of important foraging areas for turtles, though little was understood about exact locations.
- Entry and speed limits for commercial shipping, particularly to service oil and gas operations, should not be considered by the DNP as this would constrain mining operations in the area.
- There is a loss of access for commercial fisheries—specifically including commercial trawling and fishing prospectivity.

Arafura Commonwealth Marine Reserve

- The canyon area is currently not protected from main threats, particularly from oil and gas and angling.
- As a KEF for Australia’s marine life, the Arafura Canyons (north-east of Darwin) are Australia’s largest canyon system in tropical waters. Please establish marine sanctuaries to protect these canyons’ marine life.
- An MNPZ in the reserve, as recommended by the CSIRO, would satisfy the Government’s long standing commitment to create an MNPZ within the Arnhem-Wessel bioregion and protect the tropical canyon system.
- Habitat zones should be created over any non-prospective areas of the Arafura reserve.
- Establish an MNPZ in the reserve to highlight the importance of protecting this area, which sits adjacent to the Coburg Peninsula World Heritage Area.
- Advocated that 10% of the reserve should be MNPZ, particularly around KEFs as there were clear indications of important foraging areas for turtles, though little was understood about exact locations.
- The south-eastern tip of the reserve should be changed to an SPZ to allow gillnetting for grey mackerel.
- Change the zoning in the reserve to allow gillnetting and demersal trawling.
- If certain fisheries were excluded from CMR zones near the boundary of Australia’s EEZ, these areas would be illegally fished by overseas fishers. Better to have these areas fished by managed Australian fisheries than illegally fished by overseas fishers.

Arnhem Commonwealth Marine Reserve

- An MNPZ in the reserve, as recommended by the CSIRO, would satisfy the Government’s longstanding commitment to create an MNPZ within the Arnhem-Wessel bioregion.
- The North CMR Network could significantly improve the protection of marine life by the total removal of pelagic gillnetting and set mesh nets (demersal gillnets) from this reserve.
- Establish an MNPZ in the reserve, as the potential losses for future tourism (recreational fishing) would be outweighed by the benefits to biodiversity conservation.
- The reserve will impact commercial fishing for grooved tiger prawn around Cape Arnhem.
- Oil and gas and seabed mining should be prohibited in the reserve.

Wessel Commonwealth Marine Reserve

- HPZs should be created over the MUZ.
- Consideration should be given to how IPAs and marine reserves can complement one another and the importance of Indigenous consultation.
- Indigenous organisations would like to manage the overlap of the IPA with the CMR as seamlessly as possible. This highlights the need for Indigenous consultation so as to not limit the commercial opportunities available to the Indigenous communities.
- There is also an opportunity to expand the Wessel Marine National Park region to protect a broader section of the marine bioregion from oil and gas, seabed mining and fishing impacts and to support substantial opportunities for cultural tourism from the town of Nhulunbuy.
- There are concerns that trawling displaced by the Wessel CMR would impact Browns Cove.
- Negative impacts for commercial fishers and downstream processing—change ‘green zone’ to ‘blue zone’ to allow continued access to historical trolling grounds.
- Allow demersal (bottom) trawl fishing in an area of the CMR and allow all forms of gear endorsed by the fishery within the area of overlap between the reserve and the demersal fishery.
- The north-west tip of the reserve (extending over north Wessel Islands) should be changed to an SPZ.

Limmen Commonwealth Marine Reserve

- The reserve needs a SZ as recommended by the CSIRO and is under threat from seabed mining.
- Limmen Bight is under threat from seabed mining and contains no marine sanctuaries. At a minimum, a zoning scheme which bans mining in the Limmen reserve should be applied.
- An MNPZ in this reserve would satisfy the Australian Government commitment regarding the United Nations Environment Programme for dugongs. The MNPZ should join the adjoining state reserve.
- The area is remote, supports very significant conservation values, and is central to large communities at Borroloola and Robinson River. Inadequate levels of protection for Limmen CMR may impact the opportunity to create an ecotourism hub in this region. There is an opportunity to connect the Limmen CMR to the Limmen Bight National Park.
- There are concerns about potential commercial fishing effort shift into the areas used by recreational fishers as a result of the zoning in the Limmen CMR.
- Greater protection is needed as this location has been recognised as integral for marine life by state and federal governments, yet remains without any marine sanctuaries and is under threat from potential seabed mining.
- At a minimum the zoning for this reserve should prohibit seabed mining as the reserve covers the only portion of the Gulf of Carpentaria coastal zone of NT waters.
- Seabed mining and associated pollution will destroy the benthic habitat that had been identified as having an internationally significant population of dugong.

- Change the reserve to an MNPZ. The small geographic area of this reserve should not belie its significance as a marine hotspot, particularly as a breeding ground for dugong.
- There is support for the zoning and a preference to increase the level of protection for this 'forgotten treasure' reserve and the dugong population.
- A Habitat Protection zoning for the reserve would prohibit trawling operations while catering for the social and economic needs of the local communities.

Gulf of Carpentaria Commonwealth Marine Reserve

- The reserve does not contain an MNPZ and is under threat from seabed mining.
- The western branch, north of Wellesley Islands, should be listed as RUZ (IUCN II). This is an area of high species diversity composed of many oceanic species of seabirds and sea snakes, particularly leatherback sea turtles.
- Traditional owners and Indigenous ranger groups are often the only groups with capacity to undertake management actions in remoter areas such as this reserve, so there should be a focus on working with these peoples in development and implementation of management plans.
- Traditional owners would like the MNPZ extended west within the reserve to include areas to the north of Mornington Island that are critical habitat due to prolific turtle nesting areas.
- Traditional owners were disappointed with the zoning change in the management plan to allow trawl operations in the reserve. Traditional owners would not support moving the MNPZs northward as this would reduce protection for green turtles that were a significant part of their culture.
- The NPF supports the solutions-based amendment to the zoning as proposed in the set-aside management plan for the reserve to change the zoning to include a GUZ allowing continued access for the fishery to this highly productive fishing ground that was also part of a survey network (with the CSIRO).
- An unintended consequence of the revocation of the North CMR Network management plan is that the 'general purpose' zone established to minimise impacts on the NPF in the reserve has now resorted back to a 'light blue' zone which will have the effect of prohibiting trawling in the area. Reinstate the 'general purpose zone' to allow bottom trawling to continue.
- Amend the Commonwealth Displaced Effort Policy so that it aligns with the Fisheries Queensland guidelines prior to any adjustments being rolled out for the reserves.
- This reserve has negative impacts for commercial fishers and downstream processing. Change 'green zone' to 'blue zone' to allow continued access to historical trolling grounds and safe operations of fishing vessels.
- The area to the west of Mornington Island is an important fishing area for tiger prawns.

West Cape York Commonwealth Marine Reserve

- The area is not suitable for MNPZ as it is subject to heavy ship traffic, polluted with marine debris and has regular illegal fishing incursions, and the Carpentaria Shoal has been destroyed by AMSA light ship mooring and the associated 'maintenance'. Change the 'green zone' to 'blue zone' to allow continued access for commercial trolling.

- The North Marine Reserves Network could significantly improve the protection of marine life by the total removal of pelagic gillnetting and set mesh nets (demersal gillnets) from this reserve.
- The bordering light-blue MUZ near the 3 nm mark needed to be changed to dark-blue SPZ and extended 7 nm for the N3 offshore pelagic gillnet.
- There is concern about loss of access to prime commercial fishing grounds in the green zone in the West Cape York CMR.
- Amend the Commonwealth displaced effort policy so that it aligns with the Fisheries Queensland guidelines prior to any adjustments being rolled out for the reserves.

NORTH-WEST COMMONWEALTH MARINE RESERVES NETWORK

Entire region

Feedback on the North-west CMR Network in its entirety, without specifying a particular CMR within the network, included:

- Every bioregion in the North-west network should contain an SZ or MNPZ.
- The zoning plan should be adjusted to ensure that destructive fishing practices are fully removed from the North-west CMR Network.
- Expand the level of protection within the North-west region and increase the area of MNPZs on the shelf and upper slope areas. The boundaries of the existing reserves satisfy the conservation goals of CMR network policy while not unduly restricting access to areas which are potentially prospective for hydrocarbons.
- The protection of a comprehensive and representative reserve system in the long term will also require a greater emphasis on Sanctuary and Limited Use Zones as opposed to the overabundance of MUZs in a marine reserve.
- The North-west network seems to lack significant wildlife corridors between the reserves, which is concerning considering Guiding Principle 13. Size and shape should be orientated to account for inclusion of connectivity corridors and biological dispersal patterns within and across marine reserves.
- The zoning scheme for the North-west CMR Network should not allow mining in those areas where mining leases do not currently exist.
- The main issue is policing the zones and, without the support of the local communities and user groups of these marine parks, they will be abused.
- Ensure sufficient resourcing of the proposed zoning scheme, including education, communication and enforcement programs.
- Changes are needed to the activities list to allow some flexibility and enable the zoning to achieve its conservation values.
- Management plans' cultural heritage should be protected and plans should integrate Indigenous values at all levels of management, and Indigenous peoples should be included as key partners in management of reserves.
- To maintain consistency with native title rights, limitations on activities should explicitly state that they do not apply to Indigenous activities.
- The time frame to develop the previous management plans did not provide adequate time for engagement with Aboriginal peoples.
- Indigenous objectives, values, rights and interests should be reflected throughout the management plan and not only within separate Indigenous strategies or chapters.
- Each marine reserve management plan should require the establishment of a formal management committee inclusive of all affected stakeholders.
- Increased protection in the network will assist the emerging dive tourism sector.
- The zoning information around ballast water exchange states that 'restrictions may be applied in some areas'. Clarification is needed on what these restrictions are and where they would occur and whether vessels that are compliant with IMO ballast water exchange requirements would be affected.

- Marine reserve management plans should set out clear guidelines for reviewing allowed activities within zoning throughout the lifespan of a 10-year plan, covering topics such as issues to trigger a review, scientific monitoring of zoning effects and mechanisms that reduce administrative, compliance and cost inefficiencies.
- The objectives of the North-west CMRs, not just at a network level but at a reserve and zone level, need to be more clearly articulated.
- Allow recreational/sport fishing/trolling in MNPZs
- Future research priorities should focus on the impacts of petroleum exploration and development on biodiversity, and provide valuable baseline data to benchmark management effectiveness and the status of conservation areas.
- Zoning should allow for access to reserves by titleholders in the event of an emergency (such as oil spill response).
- Special arrangements for aquaculture will need to be incorporated into the management plan for activities such as pearl fishing and the associated tasks such as holding, seeding and turning.
- Allow demersal gillnet and demersal longline in Multiple Use zoning arrangements and remove SPZs.
- The North-west CMRs do impact fishing grounds, eliminating sandy bottom demersal trawl sustainable scallop fisheries.
- If a project has been assessed under various other forms of legislation, then no additional approval/permit should be required.
- Concerns that the proposed zoning in the Kimberley CMR may hamper future growth opportunities for ports and future port developments in King and Yampi sounds.
- Opposition to any changes to multiple use zoning which may restrict or complicate future pipeline construction affecting the oil and gas industry.

Shark Bay Commonwealth Marine Reserve

- Retain the existing zoning and increase the level of protection for the reserve, with MNPZs connecting outer shelf regions.
- Establish an MNPZ in this reserve to protect important seagrass beds from longline and gillnets.

Carnarvon Canyon Commonwealth Marine Reserve

- Retain the existing zoning within the reserve.
- A portion of the western HPZ should be changed to MUZ to reduce impacts on deep-sea crab fishers and address issues with drift by pelagic longliners. The area proposed for the MUZ is in the south-eastern corner, in order to allow access to the 1000 m depth contour.

Ningaloo Commonwealth Marine Reserve

- The zone over Ningaloo Reef needs to be changed to an MNPZ to provide protection for humpback whales and whale sharks.
- An MNPZ in this region would improve the diversity of marine habitats protected in the North-west Marine National Park.

- MNPZs should be placed adjacent to Cloates sanctuary in areas least used by recreational fishers.
- Retain the existing zoning and increase the level of protection for the reserve, with an MNPZ connecting outer shelf regions.
- Increase the level of protection for whale sharks.
- Marine sanctuaries are a major asset to the dive industry and include some of our most iconic and popular dive sites, such as the Ningaloo Reef.
- Ningaloo Reef is a 'forgotten treasure' and home to the iconic whale shark and a marine hotspot off Australia's north-west, and therefore requires additional protections such as an MNPZ.
- It is necessary to increase Sanctuary/high-level protection zones that are proven mechanisms to assist in the recruitment of high-value food species and for the protection of less well represented species. Most critical areas are closely bordered by MUZs that allow endangering activities such as the passage of oil tankers and the undertaking of oil and gas exploration. Ningaloo is a case in point with the gas flare-off from drilling clearly visible from the coastline.
- Ningaloo needs to be fully protected as it is vital as a nursery for whale sharks and as a breeding ground for many other tropical fish.
- Ningaloo is also managed well, although the SZs could be slightly smaller. Bag limits seem fair and from my experience fishing has not impacted on stocks.
- There should be a regulated shark fishing industry as whaler species in particular are becoming very bold and aggressive in the Ningaloo marine park.
- Engage Ningaloo Coast World Heritage Advisory Committee in future stakeholder engagement processes.

Gascoyne Commonwealth Marine Reserve

- The area within the reserve south of 21°39.923'S should be rezoned to MNPZ (IUCN Category II) with no depth limit applied.
- The waters adjacent to the Muiron Islands Marine Management Area should be included in the Gascoyne CMR—with a minimum protection level of IUCN VI.
- The HPZ should be extended eastward along the northern and southern boundaries to join with the outer (western) boundary of the Ningaloo CMR. This will provide adequate protection for the canyon systems that supply nutrients to Ningaloo Reef.
- A 10 km 'buffer' zone around Ningaloo Reef CMR would inhibit access to portions of a number of petroleum leases for areas with proven economic quantities of hydrocarbons.
- Create an MNPZ extending from the edge of Ningaloo Reef (within 150 km) all the way out to the deep ocean.
- The potential oil extraction from areas as close as 45 km to Ningaloo should not be allowed to occur.
- The MNPZ should be changed to an HPZ to allow recreational fishing and pelagic longlining which has no contact with the seafloor.
- There should be continued access for trawling in the MUZ.

Montebello Commonwealth Marine Reserve

- Disagree with allowing oil and gas expansion/exploration within the reserve.
- Establish a new MNPZ in the Montebello CMR.

Dampier Commonwealth Marine Reserve

- Retain the existing zoning for the reserve.
- The reserve should be allocated an SPZ that incorporates restricted anchorage, no diving and no commercial activities unless it is trolling, and restrict recreational fishing to trolling only.
- Should the SPZ (Ports) be implemented as per the set-aside management plan, then clear statements that no further approvals for port-related activities are needed under the plan if the activity has prior approval under the EPBC Act.
- The North-west CMR Network Management Plan should clearly state no further approvals are required for port-related activities in the SPZ (Ports) (IUCN VI) if the activity (1) has been approved under Part 9 of the EPBC Act, (2) is subject to a decision under Part 7 of the EPBC Act that the action is not a controlled action if taken in a particular manner, or (3) is authorised by a permit issued under the Sea Dumping Act. If class approval is required, parameters (such as scope, timeline, decision-making authority, process) should be detailed.
- The HPZ should be changed to an SPZ (Ports) as negotiated in the development of the set-aside management plan. Existing (and approved) port-related activities within the current HPZ appear inconsistent with that IUCN classification.
- Consideration should be given to aligning objectives of 'SPZ (Ports)' to objectives for an IUCN Category VI zone.
- Existing activities approved prior to the declaration of the reserve should be recognised and not require additional approval.
- If a class approval is needed for an SPZ (Ports), then any additional requirements should be clearly articulated in the plan.
- The protection of the area covered by the MNPZs should be downgraded to an IUCN IV or VI zone that would continue to protect the seafloor habitat without unduly restricting other activities.
- The MNPZ should be modified to allow recreational fishing, or move the MNPZ to the north-east part of the reserve or change to an HPZ.
- MNPZs should be modified to allow recreational fishing. If there are benthic zones such as coral, sponges or others that require additional protection, then a special management area should be identified in a footnote to the zoning. An alternative solution is to move the IUCN Category II zone to the north east corner of the yellow zone and to retain it as green but apply the same access as proposed above.
- The MNPZ should be moved to the east of the reserve and prohibit anchoring in the reserve.

Eighty Mile Beach Commonwealth Marine Reserve

- The MNPZ does not compliment the adjoining state marine reserve. Portions of the reserve adjacent to the state reserve should be zoned SPZ, with special consideration given to allow pearling and recreational fishing activities.

- MNPZs should be placed adjacent to existing state sanctuaries in areas least used by recreational fishers.
- The reserve zoning could be changed to an HPZ as this would be compatible with commercial uses such as pearling and charter fishing.
- A new MNPZ (IUCN II) should be created adjacent to Anna Plains state SZ to protect a nursery area for juvenile Spanish Mackerel.
- The reserve should include a SZ or at least a RUZ in the northern portion (near Port Smith).
- Create an MNPZ that connects to the outer shelf region.
- Establish a new MNPZ to meet conservation objectives while minimising impact on the pearl dive fishery.
- Increase the protection for the reserve by changing the entire reserve to an MNPZ.
- Change the MUZ IUCN VI to an SPZ (Pearling) (IUCN VI) to allow the continuation, or expansion, of pearl oyster fishing and farming activities (and related ancillary activities). This zone should include all activities save the high-risk and high-impact activities of demersal fishing, oil and gas and mining, which are expressly excluded.

Roebuck Commonwealth Marine Reserve

- Increase the protection in this reserve to protect snubfin dolphins.
- Increase the protection for the reserve by changing the entire reserve to an HPZ.
- In the Roebuck CMR the MUZs should become MNPZs or at least well-regulated RUZs, which should complement the soon-to-be-announced state Roebuck Bay Marine Park and protect whale migration routes.
- Anchoring in the area of Disaster Rock is causing extensive damage and an SPZ over Disaster Rock is needed to prohibit anchoring in that area.
- The reserve zoning should be changed to an HPZ as this would be compatible with commercial uses such as pearling and charter fishing.
- Change the MUZ IUCN VI to an SPZ (Pearling) (IUCN VI) to allow the continuation, or expansion, of pearl oyster fishing and farming activities (and related ancillary activities). This zone should include all activities save the high-risk and high-impact activities of demersal fishing, oil and gas and mining, which are expressly excluded.
- Change the zoning from Multiple Use to Recreational Use (IUCN II) to protect dolphins, whales and turtles and prohibit anchoring at Disaster Rock.
- The current Broome Port outer pilot boarding area is adjacent to the southern boundary line of the Roebuck CMR. It is suggested that this boundary is lowered to limit any future conflicts between the marine reserve and port activities.

Mermaid Reef Commonwealth Marine Reserve

- Zoning for Mermaid Reef should be changed from SZ to RUZ (IUCN II), with a SZ on the cod hole and the zone constricted to catch and release only.
- Retain the existing zoning.

Argo-Rowley Terrace Commonwealth Marine Reserve

- The MNPZ should be extended to include, at a minimum, the significant canyon systems that lie in the north-east of the reserve that are important for a range of cetaceans and seabirds.
- In the Argo-Rowley Terrace CMR, an MNPZ (IUCN II) should be created south of 16°58'S and east of 118°48.400'E
- Extend the SZ in the north-east to cover the canyon habitat.
- An MNPZ, or a well-regulated RUZ, is needed around all three Rowley Shoals.
- A MNPZ (IUCN II) should be created south of 16°58'S and east of 118°48.400'E to protect some of the world's healthiest coral reefs and to provide baseline data for scientists to measure the health of coral reefs elsewhere.
- The Argo-Rowley Terrace CMR MNPZ (IUCN II) should be extended eastwards from 118°59'E, 15°10'S to the eastern and northern boundary of the reserve to protect important ecosystems that support large aggregations of sperm whales, beaked whales and seabirds.
- Mermaid Reef should be changed from SZ to RUZ (IUCN II) sanctuary, with a SZ on the cod hole and the zone constricted to catch and release only.
- The oil and gas industry did not bid for leases near the globally significant Rowley Shoals and the review should capitalise on this and create an MNPZ around the shoals.
- The Rowley Shoals is threatened by oil and gas mining and therefore an MNPZ is essential to protect this area.
- This area is highly targeted by illegal foreign fishers and the reserve will need to be adequately 'policed'.
- Change a portion of the MUZ around the Rowley Shoals into an SPZ or HPZ to allow continued access for commercial fishers and change the area below the Rowley Shoals into an HPZ.

Kimberley Commonwealth Marine Reserve

- The MNPZ should be maintained and ideally increased to provide protection to the calving, nursing and resting areas for the largest population of humpback whales in the southern hemisphere.
- An MNPZ should be created to complement state reserves and protect the waters adjacent to Maret Islands, Long Reef, Cassini Island and Holothuria Reef.
- The MNPZ should be moved further south adjacent to the Camden Sound Marine Park to allow recreational fishers to access this important fishing area. Alternatively an HPZ (IUCN IV) or RUZ (IUCN II) should be extended south of Cape Leveque to allow recreational fishing while protecting the area.
- Boundaries should remain unchanged, or Regional Panels should engage in direct consultations with affected oil and gas titleholders.
- An MNPZ should be created around the Adele and Lacapede islands to protect important sites for dugong, turtles and whales.
- The MNPZ (IUCN II) should be extended northwards to 122°21'E, 15°00'S and eastwards to the Western Australian boundary. A new MNPZ (IUCN II) should be established from 125°26'E to 126°26'E to the Western Australian boundary.

- An MNPZ should be established in the eastern part of the reserve as it is the least used area.
- Change the MUZ into an HPZ to provide adequate protection for the main calving and feeding areas for humpback whales.
- The MNPZ should be modified to allow recreational fishing or changed to an HPZ.
- Entry and speed limits for commercial shipping, particularly to service oil and gas operations, should not be considered by the DNP as this would constrain port and mining operations in the area.
- The definition of vessel transit need to be clarified for circumstances such as inclement weather or marine hazards that preclude transiting via the most direct route, and whether anchoring or drifting in the reserve are permitted activities.
- Change the MUZ IUCN VI to an SPZ (Pearling) IUCN VI to allow the continuation, or expansion, of pearl oyster fishing and farming activities (and related ancillary activities). This zone should include all activities save the high-risk and high-impact activities of demersal fishing, oil and gas and mining, which are expressly excluded.
- Move the MNPZ western boundary east approximately 8 nm to allow commercial fishing (mackerel) on reef AUS 323.
- Extend the MNPZ in the Camden Sound area.
- The MNPZ should be moved further south adjacent to the Camden Sound Marine Park. Alternatively a HPZ (IUCN IV) or RUZ (IUCN II) should be extended South of Cape Leveque.
- The MNPZ should be changed to allow pelagic trolling/line for mackerel at the shoals. A small area within the current MNPZ could be made HPZ, but would need to retain access to a reef at 16°01.209'S, 122°26.655'E.
- The vast areas of the Kimberley are not heavily fished by recreational fishers; however, they are an important drawcard for many tourists and the increasing reliance on tourism by Indigenous communities. The area immediately to the north-west of Cape Leveque is a popular seasonal fishing area for species such as mackerel, sailfish and other pelagic species.
- Management plans should integrate Indigenous values at all levels through aligning with the management plans and values contained in state and terrestrial conservation protection regimes, National Heritage listings and Saltwater Country Plans. The management plan should allow for the extension of IPAs over saltwater country.
- The enormous green zone has been put close to where Indigenous and non-Indigenous tourism operators operate. Allow recreational fishing in the IUCN II and reduce the size to create a buffer zone around the tourism operators.
- The MNPZ to the west could restrict charter business opportunities for Aboriginal communities; so that MNPZ should be changed to yellow and the MNPZ could be increased in the east of the reserve.
- An SPZ should be created to mitigate concerns raised about shipping and associated anchorage areas in or just outside the reserve.
- The MNPZ should be relocated as far away as possible from access points such as Cape Leveque.

- Intersperse the MUZs with HPZs where there are no oil and gas leases and provide an MNPZ over the holothurian banks.

Ashmore Reef Commonwealth Marine Reserve

- There is support for the existing zoning to ensure species are protected.

Cartier Island Commonwealth Marine Reserve

- There is support for the existing zoning to ensure species are protected.

SOUTH-WEST COMMONWEALTH MARINE RESERVES NETWORK

Entire region

Feedback on the South-west Network in its entirety, without specifying a particular CMR within the network, included:

- There is support for the existing zoning, with a view to flexibility of the boundaries in the management plans to enable tailoring zones to changing climactic conditions.
- There is support for MNPZs and the positive effects for the dive and tourism industry and the flow-on/spill-over effects for recreational fishers in terms of larger fish and greater catches.
- Add Marine Sanctuary zoning in the Southern Kangaroo Island, Western Kangaroo Island, Western Eyre and Great Australian Bight CMRs to include sperm whale feeding grounds in these reserves.
- Priority areas for high levels of protection should be the bathymetrically complex areas of the shelf edge between 50 m and 200 m depth; none of the green zones designated in the Perth Canyon, Two Rocks, Jurien and Abrolhos plans encompass such areas. The green zones are too far offshore and their significance with respect to the abyssal biota is not clear. The insignificant green zone in the Two Rocks reserve doesn't seem to have an identifiable objective and Jurien appears superimposed over an existing experimental Western Australian fisheries closure.
- Zoning should be simplified, consistently colourised, allow the same activities, be fully coordinated with and not duplicate state reserves in regard to the representative habitat captured in reserves.
- The MNPZs at the head of the Perth Canyon, Two Rocks and Jurien Bay should all be increased to at least 100 km² to bring them into line with recent scientific research.
- Dedicated funding for research and monitoring, including publically available network 'report cards' on the networks would add to the existing knowledge base and assist decision-making.
- Promote the benefits of joint management with Indigenous organisations or natural resource management groups.
- Management plans must clearly articulate the decision-making framework, quantifiable audits and reviews of assessments as well as cost-effective compliance, monitoring and reporting activities.
- Further restrictions on oil and gas operations must also consider the social and economic impacts for Australia's energy security.
- Remove oil and gas mining/exploration as an allowable activity, such as by changing the SPZ to HPZ or SPZ (Oil and Gas Exclusion).
- The Great Australian Bight reserves should exclude oil and gas.
- The network needs better balance with regard to greater protection against oil and gas operations/exploration and seabed mining, with over 80% of the reserves allowing these activities.
- Changes to zoning including changing all Multiple Use and SPZs outside oil and gas leases to CPZs; removing pelagic longlining from MUZs; removing pelagic longlining, demersal gillnetting and longlining from SPZs; and changing SPZs (Oil and Gas) to Conservation Zones.

- A future research priority should be the impact of, and potential mitigation measures for, oil and gas exploration/mining in the network.
- Restrict the use of midwater trawling and purse-seine netting in shallower parts of the South-west Marine Region due to the potential for significant impacts on non-target species and seafloor ecosystems.
- The zoning plan for the South-west CMR Network should remove trawling, longlining and gillnetting from all marine reserves.
- Note the benefits of geo-fencing that provides GPS alerts when entering an MNPZ to assist fishers to comply with zoning arrangements.
- MNPZs appear too far offshore to encompass the local processes driving epipelagic ecosystems, and their significance with respect to abyssal biota is unclear.
- Increasing the size and number of MNPZs to ensure adequate protection for whales and sea lions is required.
- Fewer and larger MNPZs would have a superior conservation outcome.
- Prospective fishing rights should be recognised socially and economically in the South-west.
- Tuna fishing is highly opportunistic and fishers need to follow the fish stocks and catch/spot the highly migratory fish in the right conditions in order to fill their quota. The industry had invested heavily in shallow water nets that did not interact with the seafloor.
- Spatial shifts in southern bluefin tuna migration and catching areas need to be incorporated into the zoning arrangements.
- The issue surrounding towing of fish through MNPZs should be resolved in the South-west CMR Network, following the recent allowance of these activities in the same zone type in the South-east CMR Network.
- Support allowing longlining for tuna in MNPZs and HPZs.
- MNPZs are too big and too permanent. Consideration should be given to geographically relocating them on a five-yearly basis.

Southern Kangaroo Island Commonwealth Marine Reserve

- Add further MNPZs to protect the feeding grounds of blue and sperm whales.
- Remove oil and gas mining/exploration as an allowable activity within the CMR through changing the SPZ to HPZ or SPZ (Oil and Gas Exclusion).
- Designate the entire CMR a MPZ to allow for flexibility in commercial sardine and rock lobster fishing.

Western Kangaroo Island Commonwealth Marine Reserve

- Add further MNPZs to protect the feeding grounds of blue and sperm whales and the Kangaroo Island Canyon.
- Remove oil and gas mining/exploration as an allowable activity within the CMR through changing the SPZ to HPZ or SPZ (Oil and Gas Exclusion).
- Designate the entire CMR a MPZ to allow for flexibility in commercial sardine and rock lobster fishing.

- Change the MNPZ to Habitat Protection to allow commercial fishing for southern bluefin tuna that now frequent the zone due to changed migratory patterns due to climate change.
- Remove the MNPZ in this reserve as it duplicates and protects the same conservation values as the adjoining state reserve.

Western Eyre Commonwealth Marine Reserve

- Support the existing zoning, particularly the MNPZs near the Pearson Island group, as a good balance for conservation and compliance.
- Add further MNPZs to protect the feeding grounds of blue and sperm whales.
- Propose altering the SPZs to SPZ (Oil and Gas Exclusion) to increase protection against exploration activities, waste discharge and accidental spills.
- Oil and gas exploration and mining is a significant risk to the most significant whale nurseries in the world, located in the Great Australian Bight. All MNPZs should remain and all other zones should be oil and gas exclusion zones.
- Remove oil and gas mining/exploration as an allowable activity within the CMR.
- The CMR network complements the state network of marine reserves in not only achieving connectivity, replication and adequacy but also being designed in a manner that will enable ease of compliance effort and management practices.
- The zoning is inadequate and the CMR appears to have been engineered to avoid limitations on commercial fishing, which is ridiculous considering this is the primary adverse activity occurring in the CMR.
- New information was available that there was a biodiversity hotspot that attracted divers near Pearson Islands in the CMR.
- The Perth Canyon CMR should include recreational fishing as a permitted activity in the MNPZs and relocate the small MNPZ to the south-westernmost canyon head.
- Change a small area of the south-west corner of the SPZ (at 34°24'S) to MUZ with demersal trawl permitted as it overlaps with the tuna fishery. The zone could be called an SPZ (Trawl).
- There is concern about loss of access for commercial fisheries, including commercial purse seining (sardines and tuna) and trapping (rock lobster)
- Change the MNPZ near Pearson Islands to Habitat Protection where water depths exceed 40 m for commercial sardine fishers and also for southern bluefin tuna that now frequent the zone due to changed migratory patterns due to climate change. The MNPZ could possibly be extended north of Pearson's Island provided no commercial fishers were impacted.
- Change the MNPZ near Pearson Islands to SPZ to allow for commercial rock lobster fishing.
- Change the southernmost MNPZ to Habitat Protection to allow commercial fishing for southern bluefin tuna that now frequent the zone due to changed migratory patterns due to climate change.
- Alter the MNPZ near Pearson Islands to remove the dogleg resulting in a straight north-south zone boundary that could possibly be extended southward provided no other fishers were impacted.

- The north-eastern boundary of the MNPZ should be squared up to a line at 33°59.6'S.
- Extending the SUZ southward to assist commercial tuna fishers.

Murat Commonwealth Marine Reserve

- Change the entire reserve to an SPZ to allow the continued operation of the Northern Zone Rock Lobster Fishery in that CMR.

Great Australian Bight Commonwealth Marine Reserve

- Extending the MNPZ to the western boundary of the CMR would increase protection for southern right and blue whales with minimal impact on commercial fishers.
- Remove oil and gas mining/exploration as an allowable activity within the CMR.
- Commercial fishing industries sought confirmation that there would be no east-west temporal closure once the South-west CMR Network Management Plan came into effect.
- The SPZ in the reserve runs through the only viable part of the trawl fishery and the zone should therefore permit demersal trawl, as this does not pose a threat to the muddy bottom seafloor.
- Alter the SPZ to an SPZ (Oil and Gas Exclusion) to increase protection against exploration activities, waste discharge and accidental spills.

Twilight Commonwealth Marine Reserve

- Support the zoning in this reserve without change.
- The Australian sea lion colony located in the Twilight CMR is very isolated and may even be a sub-species. Conservation and monitoring is critical.
- It was disappointing that the MNPZ/CMR was not included in the initial reserve development/consultation in order for stakeholders to make holistic/cumulative assessments of CMR impact.
- Reduce the MNPZ to 10 nm across and change the remaining reserve to an MUZ (that allows gillnetting) to maintain conservation values and minimise the impact on rock lobster fishers.
- There is concern about loss of access for commercial fisheries, including commercial gillnetting and rock lobster trap.

Eastern Recherche Commonwealth Marine Reserve

- Change part of the MNPZ into a Special Purpose scallop zone (IUCN VI) to allow fishers to selectively trawl these areas and for rock lobster and gillnet fishers.
- Change the MNPZ in the lower part of the reserve to match the 1000 m depth contours.
- There is concern about loss of access for commercial fisheries, including commercial trolling and gillnetting.

South-west Corner Commonwealth Marine Reserve

- Support the zoning, in particular the MNPZ, to maintain and protect biological diversity and tourism. Advocate changing the HPZ, MUZ, SPZ and SPZ (Oil and Gas Exclusion) to MNPZ to allow for connectivity of protection for mobile species including whales.

- The boundaries of the MNPZ should be aligned with adjoining state reserves such as the Cape Freycinet and Ngari Capes state reserves.
- Although it is not heavily fished, the misalignment with the state boundary is confusing and will cause unnecessary compliance issues and unnecessary confusion.
- Remove oil and gas mining/exploration as an allowable activity within the entire Mentelle Basin.
- Alter the operation of the MNPZs (IUCN II) to allow recreational fishing.
- Altering the boundaries of the two MNPZs west of Cape Naturaliste and rezoning some areas as HPZs will ensure the viability of the West Coast Demersal Scalefish Fishery.
- Move the southernmost MNPZ boundary south off the continental shelf to 36°S.
- Change the southernmost MNPZ to an SPZ or divide it up into smaller MNPZs within an SPZ.
- Change the SPZ to an MUZ to exclude commercial gillnetting and longlining.
- The MNPZ south-east of Augusta could possibly be moved towards Augusta.
- The MNPZ near the Investigator Islands should be extended south to provide a full transect of the shelf and slope, including the Swan Canyon.
- The green and yellow zones in the South-West Corner CMR cover the very best areas for catching bigeye tuna and southern bluefin tuna in the WTBF Fishery, affecting commercial fishing and fishing prospectivity.
- Remove the MNPZ south-east of Augusta as this is the highest priority area for handline and gillnet fishing. The zone could also be changed to allow shark fishing.
- Change the MNPZ over the shelf below Walpole to an MUZ.
- The MNPZ near Margaret River affects gillnet and handline fisheries and these activities should be allowed in that area.
- Change the north-eastern SPZs and MNPZs into MUZs. Extend the HPZ east to 117°20'E. The SPZ near Walpole should be changed to an MUZ. The most northern MNPZ should be changed to an HPZ due to gear drift from pelagic longliners. The most western MNPZ should be changed to an HPZ due to the impact on longline fishers.
- At Donnelly Bank (south of Augusta), the MNPZ would impact shark, lobster and finfish fisheries. This zone should be changed to SPZ (Oil and Gas Exclusion). There is a need to consider the cumulative impacts on the Augusta region from Western Australian state marine parks over the shelf area.

Bremer Commonwealth Marine Reserve

- Retain and/or expand the MNPZ to include the Bremer Canyon in order to protect diversity and nursery/feeding/calving grounds for southern right whales and Australian sea lions.
- Remove oil and gas mining/exploration as an allowable activity within the CMR through oil and gas exclusion zoning, or rezone to SPZ (Oil and Gas Exclusion).
- The current reserve network should be retained and the oil and gas exclusion zone expanded to cover the entire Mentelle Basin.
- The MNPZ should be extended to cover the entire reserve.

- The continued growth of the tourism industry is reliant on a diversity of high-quality experiences like those found in the Bremer Canyon. The MNPZ at Bremer Bay should now be extended southwards over the rest of the Bremer CMR to secure this major new regional tourism asset for the region.
- Establish a marine sanctuary over the Bremer Canyon, which would support a whale watching and research industry in the canyon, and protect a unique and poorly understood marine environment.
- Alter the operation of the MNPZ (IUCN II) to allow recreational fishing, or change the zone to an HPZ.
- Any proposals to close recreational fishing will adversely affect towns nearby the Bremer CMR; allow recreational fishing in the IUCN II zone.
- Change part of the MNPZ into a Special Purpose scallop zone (IUCN VI) to allow fishers to selectively trawl these areas.

Geographe Commonwealth Marine Reserve

- Support the existing zoning and in particular the MNPZ to maintain and protect biological diversity and whale calving areas, and advocate for extension of this zone to include multiple habitat and depth zones to link inshore habitats with deeper water and protect transient species.
- Maintain or increase MNPZs in the Geographe CMR and change the zoning plan to completely remove gillnetting and longlining from the marine reserve.
- Increase protection for marine habitats, marine life, birdlife and whales in the CMR by increasing the area of MNPZs or excluding oil and gas exploration/mining and seabed mining.
- The Geographe CMR does not align with the state-based Ngari Capes Marine Park and should include recreational fishing as a permitted activity in MNPZs.
- In Geographe Bay CMR, inconsistent zoning and allowed gear type arrangements between existing Western Australian state marine parks and the proposed CMR network are unworkable and nonsensical.
- The boundaries of the CMR zones should be aligned with adjoining state reserves.
- Alter the operation of the MNPZs (IUCN II) to allow recreational fishing, or change the zones to HPZs.
- Change SPZ to MUZ to exclude demersal trawl, gillnet and demersal longline. There is no room for any fishing in Geographe Bay other than properly managed recreational fishing.
- Remove gillnetting (to mitigate whale bycatch/entanglement), trawling and longlining as allowable activities within the CMR.
- Remove the westernmost MNPZ, which is used by holiday/seasonal recreational fishers.
- Change the zoning in the central portion of the CMR to GUZ (IUCN VI) to make seasonal demersal trawling for scallops an allowable activity.
- Amalgamate the SPZs and MUZs into a single zone that allows demersal gillnet and longlining.

Perth Canyon Commonwealth Marine Reserve

- Expand the MNPZs, particularly at the head of the canyon, and remove mining/exploration as an allowable activity in the CMR to protect the feeding grounds of blue and sperm whales.
- Alter the zoning and/or boundary arrangements for the MNPZ at the head of the canyon to allow recreational fishing and sport/game fishing. Alternatively move the zone to the head of the south-westernmost canyon.
- Alter the zoning for the MNPZ at the head of the canyon to an RUZ (IUCN II) to allow recreational/game fishing or change it to an HPZ.
- The Perth Canyon CMR should include recreational fishing as a permitted activity in the MNPZs and relocate the small MNPZ to a canyon head which has less activity.
- Remove gillnetting and longlining as an allowable activity within the entire CMR.
- There is concern about loss of access for commercial fisheries, including commercial pelagic longlining.
- Remove oil and gas mining/exploration as an allowable activity within the CMR.
- Change the larger western MNPZ into an HPZ and move the larger zone southward to the bottom of the reserve.

Two Rocks Commonwealth Marine Reserve

- Alter the operation of the MNPZ (IUCN II) to allow recreational fishing, or change the zone to an HPZ.
- The placement of the MNPZ was questioned as lacking an identifiable objective, as it could have been placed anywhere along the eastern edge.
- At Two Rocks, the MNPZ should be expanded over the shelf to protect a fuller diversity of depth habitats.
- Note the value of MNPZs to the dive tourism industry. This zone should be doubled in size.
- MNPZs within the Two Rocks CMR could help the South-west dive tourism industry expand by up to 150%.
- Include recreational fishing as a permitted activity in MNPZs.

Jurien Commonwealth Marine Reserve

- The MNPZ appears to be superimposed over an existing experimental fishery closure and does not appear to be a high priority bathymetrically complex area.

Abrolhos Commonwealth Marine Reserve

- Expand the MNPZ near the Houtman Canyon to include adjacent west coast canyons.
- The logic behind the main MNPZ was unclear; however, it did cover the Houtman Canyon.
- Remove oil and gas mining/exploration as an allowable activity within the CMR.
- Change the MUZ into an MNPZ.
- Move the MNPZ north of Abrolhos Islands into two possible northern locations to facilitate the rock lobster and demersal scalefish and mackerel operators.

- The HPZ should be extended south and east in a straight north–south line to reduce the impacts on the shark fishery. The triangle zone left between the HPZs and MNPZs should be changed to an MUZ. The area east of the MNPZ should be changed to an MUZ.

TEMPERATE EAST COMMONWEALTH MARINE RESERVES NETWORK

Entire region

Feedback on the Temperate East Network in its entirety, without specifying a particular CMR within the network, included:

- With only approximately 1.6% of the continental shelf area and 8% of continental slope area and Tasman front area incorporated in reserves, all of these areas should be MNPZs to protect these ecosystems and aggregation sites for dogfish and other sharks and rays. At least one seamount from each of the four major clusters of the Tasmanid Seamounts should be MNPZ.
- Increase the MNPZs throughout the bioregion, particularly those encompassing the continental shelf, canyons and seamounts that appear under-represented.
- Increasing MNPZs in the network will enable effective assessment of management, provide valuable scientific reference sites and better protect biodiversity.
- Demersal trawling is a destructive and indiscriminate fishing method and should be excluded from all reserves.
- Auto-longlining should be prohibited on Taupo and Barcoo seamounts.
- There is support for the existing zoning arrangements, in particular the economic benefits to tourism and dive operators of the MNPZs.
- Existing no-take areas are far too limited, being less than 5%, and the coverage of these areas should be much greater, particularly on the continental shelf area. MNPZs should cover 30% of each reserve.
- Oils, gas and seabed mining operations/exploration should be prohibited in the entire region.
- Accessible and credible citizen science projects would be positive engagement with the community.
- Alter the operation of the MNPZs (IUCN II) to allow recreational fishing.
- An impact of the Coral Sea zoning is that it will shift effort back into the Temperate East but because of the update of vessels in the Temperate East there is no ability to shift the effort because of the current zoning. Zoning affecting longline fishing will put pressure on limited swordfish stocks.
- As longline fishing is carried out under an ecologically sustainable management plan and does not interact with the seabed, and abatement measures are in place to avoid interaction with other sea life, longlining should be permitted in all reserves.
- Auto-longlining should be permitted in the region consistent with the South-east CMR Network Management Plan and the AFMA ruling that auto-longlining in MPZs will be permitted. Longlining should also be allowed in all zones as it does not impact the benthic habitat.
- The commercial fishing industry has adapted to the proposed zoning in the set-aside management plans, and further increases in protections would have a detrimental effect on commercial fishers and their families.
- The commercial fishing industry requires certainty that zoning will not change within the 10-year period with the flexibility to conduct new risk assessments for new gear types. Current FGRAs do not appear to be suitable to inform decision-making without

significant refinement. Changes to current zoning would require extensive additional consultation with industry.

Gifford Commonwealth Marine Reserve

- Demersal trawl should be permitted on the Gifford Seamount to allow commercial fishing of Alphonsino.
- The lack of an MNPZ is an omission that must be rectified. The entire reserve should be upgraded to an MNPZ.

Norfolk Commonwealth Marine Reserve

- The area known as 'the box' 40 nm x 67 nm around Norfolk Island needs to be recognised in the management plan, included on maps, managed by the Norfolk Island Fishing Association and dedicated for the use of Norfolk Island. Future zoning for the box should not prohibit potential future aquaculture activities from being developed.
- The single large-scale MUZ around Norfolk Island is inadequate for the protection of the shallow water habitats and ecosystems fringing Norfolk Island, Phillip Island and Nepean Island (the Norfolk group).
- The Green Zone for the northern section of the Norfolk CMR should be extended much further south to ensure a selection of seamounts, some of which rise to within 1000 m of the surface and to ensure that a good representation of the continental slope and shelf as well as abyssal depths are protected as this area.
- Provision will be required in the management plan for the discharge, disposal or release of industrial or domestic waste from the island into the surrounding ocean.
- Clarity is needed for the use of permits/class approvals for activities around and between the islands such as commercial tourism (fishing), commercial aviation such as aerial sightseeing, anchoring of commercial shipping etc.
- The HPZ should be upgraded to an MNPZ.
- The efficacy of the MNPZ would be enhanced if the zone was expanded south to protect a selection of seamounts.
- The large MUZ for Norfolk Island and other closer islands is insufficient and specific zones should be implemented for areas such as Ball Bay, Emily Bay and Slaughter Bay lagoons etc.
- The MNPZ should be extended over the Norfolk seamounts.
- The HPZ and MNPZ were issues given they prohibited harvesting of deepwater crustaceans. Access should be allowed to commercially fish crustaceans in these waters down to 800 m to 1000 m.
- The large MNPZ should be reduced to cover one seamount or canyon rather than many, with the remaining zoned as MUZ.

Lord Howe Commonwealth Marine Reserve

- The RUZ should be upgraded to MNPZ. A New MNPZ should be created in the southern region of the reserve.
- The MNPZ around Middleton Reef should be extended south to include Elizabeth Reef and the continental slope, in order to protect black cod populations.
- The MNPZ should not be reduced as it is particularly important for recreational activities such as diving and ecotourism.

- The local community on Lord Howe Island remains opposed to spearfishing in the adjacent waters.
- Spearfishing should be allowed around Lord Howe Island and Elizabeth and Middleton Reefs.
- No specific scientific evidence was provided for the extension of the MNPZ near Middleton Reef.
- Demersal trawl should be permitted on the Middleton Seamount to allow commercial fishing of Alphonso. The MNPZ could be changed to an HPZ.
- The restrictions on fishing near the Elizabeth and Middleton Reefs should be minimised or commercial fishers should be able to retrieve their gear if it drifts into the zone.
- Longline fishing should be allowed around the in zones outside the Elizabeth and Middleton Reef IUCN II zone.
- Leave the current arrangement with the Middleton and Elizabeth Reef Park, to reduce further unnecessary difficulties being placed on remaining ETBF operators.
- Trapping should be allowed in the 10 nm to 12 nm around Lord Howe Island.

Central Eastern Commonwealth Marine Reserve

- The five seamounts and guyots north and south of the Derwent Seamount should be changed from HPZs to MNPZs to protect the habitat and species such as Harrison's dogfish.
- The western half of the MUZs should be changed to an MNPZ.
- Currently only three of the 15 Tasmanid Seamounts are protected from commercial fishing. An increased number of these seamounts should be protected to ensure connectivity. It is also known that individual seamounts do differ with respect to their biodiversity.
- The restrictions on fishing near the Derwent Hunter Seamount and other seamounts should be minimised or commercial fishers should be able to retrieve their gear if it drifts into the zone.
- The two HPZs in the Central Eastern CMR were issues given they prohibited harvesting of deepwater crustaceans. Access should be allowed to commercially fish crustaceans in these waters down to 800 m to 1000 m.

Solitary Islands Commonwealth Marine Reserve

- The MNPZ over Pimpnel Rock should be expanded north, south and west of the rock to adhere to the IUCN criterion that IUCN II zones should be 'large natural or near natural areas set aside to protect large-scale ecological processes'.
- The gap between the western arm of the Central Eastern CMR and the NSW Solitary Islands Marine Park should be closed by expanding the proposed Marine National Park zoned western portion of the Central Eastern CMR to the west, with the proposed SPZ (IUCN VI) subsumed by the higher category IUCN II zoning.
- An additional block of IUCN II zone should be added north, south and west of Pimpnel Rock extending eastwards to 153°32'E.
- The MUZ should be upgraded as it is inappropriate to site/surround an MNPZ with an area of such low protection.

- The SPZ of the reserve is highly productive for commercial trawl fishing and lobster, trap and line fishing grounds, and excluding these activities would have significant impact on the industry.
- Spearfishing should be allowed in the MNPZ over Pimpernel Rock as it is not a threat to the grey nurse shark or black cod populations.

Cod Grounds Commonwealth Marine Reserve

- Spearfishing should be allowed in the MNPZ as it is not a threat to the grey nurse shark or black cod populations.

Hunter Commonwealth Marine Reserve

- The lack of an MNPZ is an omission that must be rectified.
- The southern half of the reserve and a section of the north-east area should be zoned MNPZ.
- The Hunter reserve has been designated with the most minimal Marine National Park zoning, despite including productive waters on the continental shelf and Biologically Important Areas for humpback whales. Zoning within the reserve should be reviewed to address this gap in protection.
- In the Hunter CMR a new MNPZ IUCN II should be created whose southern boundary extends east–west at 32o50’S and northern boundary extends east–west at 32o35’S.
- A new Marine Park Zone should be created at the north-western corner of the Hunter reserve with the new boundaries defined by being two new sides parallel with existing boundaries. The new northern boundary line is to start at 153o25’E.
- The Hunter reserve consists only of MUZ (IUCN VI) and SPZ (IUCN VI). This is inadequate and some area of this large reserve should be afforded higher protection. This reserve is ideally placed to increase the protection for continental slope and the abyssal plains.
- The MUZs and SPZs offer inadequate protection and should be upgraded to increase protection for the continental slope and abyssal plains.
- The SPZ of the reserve is highly productive for commercial trawl fishing and lobster, trap and line fishing grounds, and excluding these activities would have significant impact on the industry.

Jervis Commonwealth Marine Reserve

- Lacks an MNPZ that would enhance the protection of shelf rocky reefs.
- The southern half of the reserve should be zoned MNPZ.
- The boundaries of Jervis Reserve should be extended to the limit of coastal waters, and a new MNPZ should be created at the south of the Jervis CMR by creating a northern boundary to the reserve east–west at 35o12’S.
- The MUZs and SPZs offer inadequate protection and should be upgraded to increase protection for the continental slope and abyssal plains.
- The reserve should be changed to at least an HPZ to provide minimum protection for the area without impacting commercial fishers.
- Commercial longlining and trawling should be prohibited in the reserve to protect against bycatch and habitat degradation.

- Longlining should be prohibited in the SPZs and MUZs to avoid bycatch of non-target species.

CORAL SEA

Entire region and Coral Sea Commonwealth Marine Reserve

Feedback on the region in its entirety, including the Coral Sea CMR, included:

- There is support for the existing zoning arrangements as per the management plan as these were negotiated with all parties and represented a good compromise.
- There is support for the existing zoning arrangements for the reserve.
- Implement the existing marine zoning immediately at a minimum and preferably expansion of the green zones in key iconic locations such as Osprey Reef to secure the area for the lucrative prestige yacht tourism industry and support businesses that visit the region to dive and snorkel on the reefs of the Coral Sea.
- The MNPZs represents a compromise between globally significant conservation values and a desire to keep certain areas within the reserve open to commercial and/or recreational fishers. The broad structure of this compromise was first outlined in 2011 with the release of the draft plan for the Coral Sea CMR where it was largely welcomed by both commercial and recreational fishers.
- The existing zoning has reasonably taken into account the diverse interests of stakeholders such as ecotourism operators, recreational fishers and associated businesses, and the wider tourism industry of the area, as well as those advocating for protection of the marine environment who are in agreement that the current zoning provides a good level of protection for a diverse range of marine life and ecosystems which will ensure the sustainability of both recreational and commercial interests into the future. Dive tourism is an important industry that is expected to more than double, and the reserve will be a world-class drawcard.
- Maintain current protections with minimal amendments as dive tourism operations can generate between \$11 million and \$15 million annually. Making changes other than minor improvements to the level of marine national park protection risks destabilising the balance of the zoning arrangements.
- The MNPZs meet the minimum Australian science community recommendations for protection for the Biologically Important Areas of endangered (IUCN red list) green turtles and for seven of the seabirds that breed and feed in the Coral Sea.
- Retain the existing zoning and enhance protection for the currently unprotected reefs with high levels of uniqueness, which should be given high protection. These include Boot and Ashmore reefs, Tregrosse Reef, Wreck Reefs, Frederick Reef and Calder Bank, Willis Islets, Queensland Plateau Inner Reefs (including Flinders Reefs, Flora Reef, Holmes Reefs, Heralds Surprise and Dart Reef).
- Recreational scuba does not impact on marine ecosystems. The considerable economic benefits of domestic and international dive tourists, who most value intact ecosystems and lots of fish, and whose activity is sustainable and non-extractive, should be recognised.
- Mooring sites should be provided in the CMR for spearfishing and other tourism operators.
- Access to lagoons for safe anchorage is a safety issue for recreational fishers and spearfishers.

- The proposed zoning in the reserve will prohibit charter fishing operators and therefore force operators out of business. The zoning should allow for charter operators to continue their activities, including spearfishing.
- The impact on recreational and charter (game) fishers is minimised by the inclusion of the HPZs, closer to the continent, that allow these activities to occur.
- Permits should be available to allow small-scale tourism vessels to catch and consume, or for spearfishing in MNPZs, but not game or commercial fishing.
- The MNPZ should allow live-aboard tourism operators the ability to take enough fish to feed their crew/passengers given the need for self-sufficiency in these remote areas.
- Preferential treatment should be considered for displaced charter vessels for government contracts in the reserves.
- That IUCN Category II reserves should be accessible for recreational and charter fishing with special management plans in place if there are zones that require additional protection.
- If the reefs in the Coral Sea are adequately protected, then there is an opportunity for the dive tourism industry to increase direct sales by an estimated \$9 million each year, with critical flow-on effects for the economy of north Queensland.
- The closure of the Coral Sea MNPZ to charter and recreational fishing would provide minimal conservational benefit especially to the highly migratory species targeted by catch-and-release game fishers, but would erode a world famous sport fishing industry and the associated economic returns (AUD\$20 million).
- Catch-and-release 'gold zones' could be implemented for key reefs in the Coral Sea, with a range of management strategies for each reef, to enable continued charter fishing operations.
- To offset the impacts on recreational fishers, there should be a recreational fishing trust fund established to provide education, research and infrastructure such as secure moorings, fish-attracting devices and artificial reefs.
- The Coral Sea should be defined as a 'no go' destination for game fishing to ensure it retains a high level of pristine condition.
- Lack of scientific basis for excluding ecologically sustainable spearfishing from MNPZs.
- Catch-and-release sport fishing is compatible with sustainable resource management and should be permitted in MNPZs.
- A new zone type should be created that allows for 'catch-and-release' sport fishing encompassing the major recreational sport fishing zones such as Kenn, Wreck, Frederick, Osprey and Diamond islets. This zone would be based on international fisheries models such as the Alaskan management policy for salmon and halibut.
- Split zoning of reefs in the Coral Sea would allow for protection while permitting the aquarium fish and coral industry to continue. An MNPZ on the reefs would force the industry to close down.
- An essential component of a Coral Sea CMR Management Plan and its ongoing resourcing should be a research and monitoring program to address key features/conservation values and uncertainties.

- Establish a Cairns-based marine reserve management capacity, with long-term funding, to deliver on the management actions and strategies identified under the Coral Sea and North CMR management plans.
- Organisations are offering to take a lead role in coordinating development of partnerships between agencies to improve communication and collaborative efforts, and to harmonise and clarify fisheries management and marine reserve management arrangements.
- The management plan will need to consider existing moorings put in place by charter fishing operators.
- Any future changes to the zone boundaries need to take into account new science such as seafloor data that could help to minimise potential damage to newly discovered geomorphic features, such as seamounts, knolls, canyons and benthic communities.
- There is a need for integrated management strategies between departments (the Department of the Environment and the Great Barrier Reef Marine Park Authority) managing the Coral Sea and the Great Barrier Reef.
- People have dumped things at Osprey, Shark and Vema reefs, and channel markers like those at Solitary Islands Marine Park and imposing an environmental management charge or recreational fishing license may be a good idea for ongoing management.
- There is a need for the establishment, and maintenance of larger and improved enforcement strategies such as additional monitoring programs.
- By focusing on the areas needing high levels of protection and potentially lowering protection elsewhere, the needs of a broader range of stakeholders may be accommodated. Rather than single large reserves, some scientists believe that networks of no-take areas better balance conservation needs with fisheries.
- Improve adaptive management and annual communications. Consider a five-year review time frame for the management plans and an 'annual report card' communication strategy with communities, industry, local government, regional development bodies, and others.
- It is imperative that a stakeholder consultation and reference group be established to provide comprehensive and relevant input into management recommendations both in the establishment and in the operational phases of the management plans.
- There is a need for standard monitoring protocols and methodology, and detailed knowledge of baseline conditions and temporal sampling to determine natural change.
- A coordinated, collaborative approach to gathering, managing and releasing marine environmental data needs to be developed. The results of research and monitoring must include all the raw data and especially metadata, and must be publicly accessible to enable examination and independent analysis.
- The Government should provide support to existing community science programs in the Coral Sea and consider the establishment of additional community science programs to increase the capacity of regional stakeholders to have ongoing engagement with the management of the Coral Sea CMR.
- There is a need for the development of a fair and transparent process for permitting scientific research in the region.

- Management plans for marine reserves should attract dedicated management budgets that will support activities such as surveillance and enforcement. These activities may not otherwise have been funded and provide an opportunity to reduce the existing illegal fishing, not create new illegal fishing as some parties have suggested. Furthermore, these surveillance activities are often conducted in collaboration with Coastwatch and may present opportunities to increase border security.
- The reserve is a high-seas reserve that will require substantial surveillance to ensure compliance and stop poaching from foreign fishing vessels if the commercial fishing fleet is no longer permitted in the area.
- Ship movements, particularly east coast coal exports, are a risk not addressed in the management plan.
- Clearer classification of how the various preservation categories will influence shipping channels, and greater restrictions on shipping with vessel tracking requirements, are needed for sensitive environmental areas.
- Any changes to permissible shipping routes or practices in the reserve could adversely affect the logistics chain for Hay Point coal exports. Shipping arrangements are covered by the North-East Shipping Management Plans.
- The CMR Review should define a process to permit clean port related dredged material from inshore areas to be relocated into deep offshore waters such as the MUZ of the reserve.
- A future research priority should be the impact and mitigation of petroleum exploration on biodiversity, which may be able to facilitate future exploration in sedimentary basins including the Townsville Basin.
- An assessment regarding the impacts of commercial fishing practices and transiting shipping on the MNPZ should be undertaken.
- There is strong community support for a ban on demersal and midwater trawling, seafloor mining and oil and gas exploration.
- The net social and economic value of the Coral Sea CMR is estimated to be \$1.2 billion, with positive effects outweighing restrictions for recreational and commercial fishers.
- Protection from seabed mining and oil and gas mining is needed to protect the Coral Sea and adjacent GBRMP from oil spills and the impacts of these activities.
- The Coral Sea CMR contains Australia's largest MNPZ, which extends over 51% of the CMR. This is one of the few places in the world where such a large marine sanctuary for relatively intact tropical marine life can be established, making the conservation values of the area of global significance.
- The HPZ (seamount) is a thoughtfully devised solution to protect the seamounts, and the southern half of this zone could be extended to the west.
- Protection needs to be extended to incorporate in-shore areas to protect from shipping, dredging and dumping.
- Increase protection of the unique seamounts in the southern Coral Sea by prohibiting longlining.
- The MNPZ should be improved and expanded, with longlining removed north of 22°S and around Wreck Reef.

- Protection should be maintained in the biologically important area in the Coral Sea (Bellona Reef) that includes humpback whale breeding and calving areas.
- Increase environmental protection in the southern Coral Sea, where only seven out of 25 reefs are protected.
- In order to be effective, MNPZs should be a minimum of 100 km². Therefore the MNPZs for Coringa Islets, Magdelaine Cays, Bougainville Reef, Marion Reef and the Osprey group of reefs should be expanded to ensure effectiveness. Furthermore, the currently unprotected reefs with high levels of uniqueness should be given high protection. These include Boot and Ashmore reefs, Tregrosse Reef, Wreck Reefs, Frederick Reef and Calder Bank, Willis Islets, Queensland Plateau Inner Reefs (including Flinders Reefs, Flora Reef, Holmes Reefs, Heralds Surprise and Dart Reef).
- Increase the level of protection of reefs, shoals, cays and all seamounts by including them in proposed Marine National Park zoning as well as habitats crucial to the continued survival of shark species and nautilus.
- Simplify the zoning scheme and prohibit longlining down to 22°S and provide adequate structural adjustment assistance to commercial fishers. All zones above 22°S that are not MNPZs and the HPZ (seamounts) below should be designated CPZs. Retain the MUZ south of 22°S and change the GUZ in this area to an MUZ.
- Flexibility is needed for commercial fishing operations that drift into reserves when retrieving gear or where gear drifts into reserves.
- Commercial fishers should be able to set their lines within the yellow zones and let the lines drift/retrieve their lines wherever the current takes them as lines can drift 100 nm a day.
- Auto-longlining should be permitted in the reserve consistent with the South-east CMR Network Management Plan. It is inconsistent that demersal trawl is permitted, and provided a GUZ for this purpose but auto longlining is prohibited in the reserve.
- The eastern boundary of the MNPZ should be moved westerly to 150.00'E to allow commercial fishing in that area, opening up opportunities for the remaining commercial fishers while protecting the valuable spawning grounds. The general area east of 150.00'E should allow longline fishing whilst providing protection against fishing methods that interact with the seafloor. The area west of 150.00'E and north of 'area E' could be a no-take zone.
- The best outcome for a sustainable commercial fishing industry is to allow longline fishing in MNPZs as this form of fishing does not interact with or damage the benthic habitat.
- Tuna longlining does not affect the benthic conservation values of the marine reserves or reef habitats and therefore should be permitted within the reserve.
- A CPZ should replace the MNPZ as it provides protection to the seafloor habitats while allowing longlining and other commercial fishing operations that do not interact with the seafloor.
- Longlining should not be excluded as it is managed as a sustainable fishery under the statutory Eastern Tuna and Billfish Management Plan. Owners of statutory fishing rights would be eligible for compensation for loss of those rights if longlining is prohibited.
- Any restrictions within the Coral Sea for longline fishing will immediately close established, family owned and operated commercial fishing businesses. Longline

fishing is an interactive type of fishing method and the drift from ocean currents means fishers need to ensure sufficient space so lines do not drift into a marine park, thus creating a much larger area restricted to fishing.

- There is a need for increased protection for the southern portion of the reserve, especially the reefs located there, to ensure that preserved areas are not disjointed and unconnected.
- Undertake a supplementary, comprehensive and detailed socio-economic analysis including calculation of the future value of lost fishing opportunity; the impact on upstream and downstream businesses; the cumulative impact on the Cairns and Gulf regions; the community impacts on remote towns; and quantification of economic benefits from the marine reserves.
- There is no scientific basis for closing the 'green zones' to surface longlining in the ETBF. The fishery complies with the EPBC Act and adheres to the strict limitations of its total allowable catches regardless of where the fish are caught in the ETBF zone. Commercial fishers need flexibility on where they can fish in order to catch their quota of highly migratory species.
- There is a lack of support for the MNPZs in the reserve as there has, to date, been no scientific justification for the size of the zone and the area is a sustainably managed fishery.
- Prawn trawling has been proven not to be unacceptable within a CMR through research undertaken within the GBRMP. Therefore, zoning and management plans should allow demersal (trawl) fishing over a greater area to mitigate the impact on other operators of shifting fishing effort. Without access to this area, the commercial fishing business would become unviable and the only viable option would be for the Commonwealth to buy out the business.
- Restricting purse seining in the Coral Sea would limit the ability to develop new fisheries and impact Australia's food security.
- Continue access to the Coral Sea (including reefs), for trap, line and beche-de-mer fishing that although not currently viable may be a viable alternative in the future.
- Extend the GUZ further north (past Marion Reef) and east (past Saumarez Reef) to allow commercial fishers to expand to capture emerging international markets.
- The lack of access to the reserve by commercial ETBF fishers will result in businesses closing, with a flow-on effect for shore-based processing/supply businesses with high levels of capital investment. This will also result in a diminished supply of locally caught fresh seafood. Static zoning is not an adequate method for the protection or management of migratory pelagic species such as tuna that migrate over the international boundaries and are being caught in large numbers outside the reserve.
- Trolling should be allowed at Osprey, Shark and Vema reefs and the other reefs in the Coral Sea because it only targets pelagic fish. Demersal fishing should not be allowed. A zoning system that would allow only trolling in an area adjacent to reef edges should be considered (referring to old 'olive zones' used in zoning the GBR as an example).
- The MNPZ east of the HPZ should be changed to a CPZ to allow further access for commercial fishers and yachts.

- There should be a corridor from Cairns to Papua New Guinea that provides for troll and handline fishing. This would allow charter fishing while in transit to PNG and provide fishing access for yachts transiting the area.
- Change the zoning east of the 150° meridian to CPZ to allow pelagic fishing of the area as this method does not interfere with the seafloor.
- It would be better to have smaller MPAs for areas which are special, such as the wrecks of warships, and there are ways they could be protected without having an impact on commercial fisheries. Instead of having one vast MNPZ, it would be better with smaller, more focused, better identified areas.

Osprey Reef

- Interim protection should be provided to this reef during CMR Review, and protection should be increased as an outcome to protect the shark populations on the western side of the reef.
- The boundary of the MNPZ should be updated to fully protect this reef.
- Expand and improve upon MNPZ. Not only are these reefs a key piece of environmental infrastructure for tourism, they also have a different evolutionary history to most of the other reefs in the Coral Sea.
- Two other specific sites on Osprey Reef should also be included within an MNPZ. They are 'Around the Bend' and 'False Entrance', which are not only popular dive sites but also important sites for reef sharks. In particular, white tip and grey reef sharks at Osprey Reef have been shown to be highly site attached, making them vulnerable to targeted fishing. Protecting these areas under no-take MNPZs is important to secure these populations.
- Expand the MNPZ to the boundaries of the HPZ proposed in the 2011 draft zoning plan.
- Revise and expand the MNPZs to increase protection of reef.
- Extend the zoning boundary out 1.5 km to 2 km away from the reef edge, or as recommended in the scientific literature to protect shark species.
- Complete protection for Osprey Reef should be considered. The dive sites around Osprey, such as North Horn, are justifiably world famous. Australia competes for the tourist dollar and ensuring the robust protection of top dive sites, with a generous buffer, will ensure we continue to attract international tourists seeking to experience nature unencumbered by extractive activities.
- The zoning over Osprey Reef should be simplified with 500 m buffer to ensure the adequate protection of the important reef slopes.
- The MNPZ over Osprey, Shark and Vema reefs is a key piece of regional infrastructure. Expand the MNPZ to the 2011 draft zoning plan's HPZ boundary.
- The formerly proposed HPZ should be changed to a CPZ and the south-western face of Osprey Reef should have Marine National Park zoning.
- Keep the top third of Osprey as an MNPZ and change the bottom two-thirds to a CPZ, as long as access to the lagoon opening remains open. Moorings have been placed at Osprey and, while mooring is allowed within an MNPZ, it would prevent bait-fishing and there is no reason to stop that.

- Changing the zone in the bottom half of the reef to CPZ would allow the continued access for rotational sea cucumber harvesting.
- Split the zoning at Osprey, to allow for protection at the top half of Osprey while maintaining access to the lagoon for safety.
- Zoning boundaries along the reef edge, but excluding the reef itself, allowing spearfishing would be difficult to comply with for charter operators and not marketable to the customer base. Splitting the zoning over the reef may alleviate this issue.
- The zoning should be amended to be a conservation zone IUCN IV to allow spearfishing.
- Spearfishers, game fishers and associated charter operators require access to this reef as it, as opposed to Shark and Vema reefs, offers shelter and fishing opportunities in strong winds.
- There is damage to the dive tourism industry by game and commercial fishers at various reefs killing valuable fish species. Increase the MNPZ to 100 km².

Vema Reef

- Revise and expand the MNPZs to increase protection of reef.
- Expand and improve upon MNPZ. Not only are these reefs a key piece of environmental infrastructure for tourism but they also have a different evolutionary history to most of the other reefs in the Coral Sea.
- The MNPZ over Osprey, Shark and Vema reefs is a key piece of regional infrastructure. Expand the MNPZ to the 2011 draft zoning plan's HPZ boundary.
- Damage to the dive tourism industry by game and commercial fishers at various reefs killing valuable fish species. Increase the MNPZ to 100km².
- The zoning should be amended to be a Conservation Zone IUCN IV to allow spearfishing.

Shark Reef

- Revise and expand the MNPZs to increase protection of reef.
- Expand and improve upon MNPZ. Not only are these reefs a key piece of environmental infrastructure for the tourism, they also have a different evolutionary history to most of the other reefs in the Coral Sea.
- The zoning over Shark reef should be simplified with 500m buffer to ensure the adequate protection of the important reef slopes.
- There is damage to the dive tourism industry by game and commercial fishers at various reefs killing valuable fish species. Increase the MNPZ to 100 km².
- The MNPZ over Osprey, Shark and Vema Reefs is a key piece of regional infrastructure. Expand the MNPZ to the 2011 draft zoning plan's HPZ boundary.
- The formerly proposed HPZ should be changed to a CPZ.
- Shark and Vema reefs should be changed to CPZ.
- The zoning should be amended to be a conservation zone IUCN IV to allow spearfishing. A quarter-mile zone is needed on either side of the reef to be viable.

Bougainville Reef

- The boundary of the MNPZ should be updated to fully protect this reef.
- Expand and improve upon MNPZ. This reef is home to a spawning aggregation of endangered Maori wrasse and it is the only biologically important whale shark aggregation site in eastern Australia.
- Expanding this small marine sanctuary to include all of the mapped whale shark aggregation site would be a major improvement to the protection of whale sharks and would bring the boundaries into line with the recommendations of recent scientific research.
- Revise and expand the MNPZs to increase protection for endangered Maori wrasse and the only mapped biologically important whale shark aggregation site in eastern Australia.
- There has been damage to the dive tourism industry by game and commercial fishers at various reefs killing valuable fish species. Increase the MNPZ to 100 km².
- The MNPZ should be a minimum of 100 km² and include buffer zones. Expand the MNPZ to include the entire mapped whale shark aggregation site.
- Change the zoning on the eastern edge to allow spearfishing and allow charter/recreational fishing in the lagoon area as this reef is an important stopover point for charter fishing operators.

Marion Reef

- The boundary of the MNPZ should be updated to fully protect this reef.
- Expand and improve upon MNPZ at Marion Reef, which will increase protection of reef, cay and herbivorous fish of the Marion Plateau, which is one of the KEFs of the Coral Sea.
- To include the whole reef and associated banks, terraces, aprons and fans, including a buffer zone of sand and deep water around the reef, the MNPZ should be expanded to the boundaries of the HPZ proposed in the 2011 draft zoning plan.
- While the Marine National Park zoning of the interior of the reef is an extremely positive development, the decrease in the proposed level of protection for the exterior of the reef seems very undesirable. It should have CPZ (but commercial fishing of any sort should not be permitted).
- The zoning should be amended to be a conservation zone IUCN IV to allow spearfishing.
- There has been damage to the dive tourism industry by game and commercial fishers at various reefs killing valuable fish species. Increase the MNPZ to 100 km² and include buffer zones.
- A special management area encompassing the southern component of Marion is required to allow for recreational fishing activities.
- Marion Reef zoning should match the zoning for Frederick and Wreck reefs—MUZ to allow for recreational/charter fishing.
- The reef is a priority fishing reef for hand-collection of sea cucumber. Fishers would consider split zoning (MNPZ and CPZ) to allow continued access to sea cucumber at the southern end of the reef.

Kenn Reefs

- The zoning should be amended to be a conservation zone IUCN IV to allow spearfishing and trap and line fishing.
- There is no justification to extend the HPZ to include this reef. Both reefs should remain MNPZs.
- The Kenn Reefs system is an important area for recreational anglers and a special management area is required to encompass the area, including an area 10 km surrounding the reefs.

Holmes Reefs

- An MNPZ over this unprotected reef would have significant economic benefit and mitigate against the potential loss of other dive sites due to natural or manmade disasters.

Flinders Reefs

- An MNPZ over this unprotected reef would have significant economic benefit and mitigate against the potential loss of other dive sites due to natural or man-made disasters.

Lihou Reef

- There would be substantial benefit from having a relatively small section of the MNPZ boundary extend to the south-west, such that the relevant section of the boundary becomes a line between the south-west corner of the existing Coringa-Herald National Nature Reserve and the south-west corner of the existing Lihou Reef National Nature Reserve (that is, a more-or-less diagonal line between those two points).
- A special management area to allow recreational fishing should be established over the southern section of Lihou Reef. This would allow for sustainable recreational fishing and tourism activities as well as safe anchorage for operators.

Coringa-Herald

- The boundary of the MNPZ should be updated to fully protect this reef.
- The MNPZ should be a minimum of 100 km² and include buffer zones. An extension of the marine sanctuary southwards in this area from 17°11' to 17°26' will bring the boundaries into line with the recommendations of recent scientific research at almost negligible costs to users.
- There would be substantial benefit from having a relatively small section of the MNPZ boundary extend to the south-west, such that the relevant section of the boundary becomes a line between the south-west corner of the existing Coringa-Herald National Nature Reserve and the south-west corner of the existing Lihou Reef National Nature Reserve (that is, a more-or-less diagonal line between those two points).

Dianne Banks, Moore Reef, Willis Island

- Willis Islets CPZ contains 99% of the Coral Sea's biologically important breeding habitats for red-footed boobies and 79% of the biologically important breeding habitats for wedge-tailed shearwaters. However, the Government's desire to maintain access to the area for the Coral Sea aquarium fishery has led to it becoming a CPZ rather than an MNPZ.

Appendix H: Network-level changes in representation of conservation features in Sanctuary Zone, Marine National Park Zone and Habitat Protection Zones

Table H1 Changes from recommended zoning in the North CMR Network

Type of conservation feature	Name of conservation feature	CMR in which the change will occur	Change to conservation feature
Provincial Bioregion	Northwest Shelf Transition	Oceanic Shoals	Newly included in MNPZ (IUCN II) and HPZ (IUCN IV)
	Northeast Shelf Transition	West Cape York	Newly included in HPZ (IUCN IV)
	Northern Shelf Province	West Cape York	
		Gulf of Carpentaria	
		Limmen	
		Wessel	
		Arafura	
Meso-scale Bioregion	Oceanic Shoals	Oceanic Shoals	Newly included in MNPZ (IUCN II) and HPZ (IUCN IV)
	Pellew	Limmen	Newly included in MNPZ (IUCN II) and HPZ (IUCN IV)
	Torres Strait	West Cape York	Newly included in HPZ (IUCN IV)
	West Cape York		
	Carpentaria	West Cape York	
		Wessel	
	Karumba-Nassau	Gulf of Carpentaria	
	Arnhem Wessel	Wessel	
	Arafura	Wessel	
		Arafura	
	Cobourg	Arafura	
	Bonaparte Gulf	Oceanic Shoals	
	Tiwi		
Depths by	Northwest Shelf Transition Coast	Oceanic Shoals	Newly included in

Provincial Bioregion	to Shallow Shelf Transition		MNPZ (IUCN II) and HPZ (IUCN IV)	
	Northwest Shelf Transition Shallow Shelf			
	Northwest Shelf Transition Shallow Shelf to Deep Shelf Transition			
	Northeast Shelf Transition Coast to Shallow Shelf Transition	West Cape York	Newly included in HPZ (IUCN IV)	
	Northern Shelf Province Coast	Limmen		
	Northern Shelf Province Coast to Shallow Shelf Transition	West Cape York		
		Gulf of Carpentaria		
		Limmen		
		Wessel		
	Arafura			
Northwest Shelf Transition Coast	Oceanic Shoals			
Key Ecological Features	Plateaux and saddle north-west of the Wellesley Islands	Gulf of Carpentaria	Newly included in MNPZ (IUCN II)	
	Carbonate bank and terrace system of the Van Diemen Rise	Oceanic Shoals	Newly included in MNPZ (IUCN II) and HPZ (IUCN IV)	
	Gulf of Carpentaria basin	Wessel	Newly included in HPZ (IUCN IV)	
	Gulf of Carpentaria coastal zone	Gulf of Carpentaria		
		Limmen		
Biologically Informed Seascapes	Timor mid-shelf (North Cluster 6)	Oceanic Shoals	Newly included in MNPZ (IUCN II) and HPZ (IUCN IV)	
	Timor outer-shelf (North Cluster 8)			
	Cootamundra Shoals area (North Cluster 19)			
	South-west and East Carpentaria coast (North Cluster 13)	Limmen		
	South-west and East Carpentaria nearshore (North Cluster 18)			
	Eastern Carpentaria Basin (North Cluster 1)	West Cape York		Newly included in HPZ (IUCN IV)
		Arafura		
		Oceanic Shoals		
Joseph Bonaparte Gulf/Beagle Gulf (North Cluster 2)	Oceanic Shoals			

	Timor-Arafura shelf-break (North Cluster 10)		
	Arnhem Land/Kimberley coast (North Cluster 15)		
	Arafura mid-shelf (North Cluster 3)	Wessel	
		Arafura	
	South-west Carpentaria inner shelf (North Cluster 7)	Limmen	
	Melville/Coburg nearshore (North Cluster 11)	West Cape York	
		Arafura	
		Oceanic Shoals	
	North region inner shelf (North Cluster 12)	West Cape York	
		Gulf of Carpentaria	
		Limmen	
		Oceanic Shoals	
	Western Torres Strait (North Cluster 14)	Limmen	
	Northern Carpentaria-Arnhem inner shelf (North Cluster 16)	West Cape York	
		Wessel	
		Arafura	
		Oceanic Shoals	
	Carpentaria sand patches (North Cluster 20)	Gulf of Carpentaria	
		Limmen	
Seafloor types	Plateau	Gulf of Carpentaria	Newly included in MNPZ (IUCN II)
	Pinnacle	Oceanic Shoals	Newly included in MNPZ (IUCN II) and HPZ (IUCN IV)
		West Cape York	Newly included in HPZ (IUCN IV)
	Wessel		
	Reef	West Cape York	
	Shelf	West Cape York	
		Gulf of Carpentaria	
Limmen			
Arafura			

		Oceanic Shoals	
	Basin	Wessel	
	Sill		
	Bank/shoals	Wessel	
		Oceanic Shoals	
	Terrace	Wessel	
		Oceanic Shoals	
	Deep/hole/valley	Arafura	
		Oceanic Shoals	
	Tidal sandwave/sandbank	Oceanic Shoals	

Table H2 Changes from recommended zoning in the North-west CMR Network

Type of conservation feature	Name of conservation feature	CMR in which the change will occur	Change to conservation feature
Meso-scale Bioregion	Canning	Kimberley	Newly included in HPZ (IUCN IV), no longer included in SZ (IUCN Ia)/MNPZ (IUCN II)
	Pilbara (nearshore)	Dampier	Newly included in HPZ (IUCN IV)
	Northwest Shelf	Kimberley	
Depths by Provincial Bioregion	Timor Province Deep Continental Slope	Argo-Rowley Terrace	Newly included in SZ (IUCN Ia)/MNPZ (IUCN II)
	Central Western Transition Deep Mid-Slope	Gascoyne	Newly included in HPZ (IUCN IV)
	Central Western Transition Shallow Mid-Slope		
	Northwest Shelf Transition Shallow Shelf to Deep Shelf Transition	Kimberley	
	Northwest Shelf Province Coast	Dampier	No longer included in HPZ (IUCN IV)
Seafloor types	Plateau	Kimberley	Newly included in HPZ (IUCN IV)

Table H3 Changes from recommended zoning in the South-west CMR Network

Type of conservation feature	Name of conservation feature	CMR in which the change will occur	Change to conservation feature
Depths by Provincial Bioregion	Southwest Transition Deep Upper Slope to Shallow Mid-Slope Transition	Perth Canyon	Newly included in MNPZ (IUCN II) and HPZ (IUCN IV)
	Southwest Transition Shallow Mid-Slope		
	Southwest Transition Deep Mid-Slope		Newly included in HPZ (IUCN IV)
	Southwest Transition Deep Upper Slope		
Biologically Informed Seascapes	Western shelf (South-west Cluster 20)	South-west Corner	No longer included in MNPZ (IUCN II)

Table H4 Changes from recommended zoning in the Temperate East CMR Network

Type of conservation feature	Name of conservation feature	CMR in which the change will occur	Change to conservation feature
Depths by Provincial Bioregion	Central Eastern Shelf Transition Coast to Shallow Shelf Transition	Solitary Islands	Newly included in MNPZ (IUCN II)
	Norfolk Island Province Abyssal Plain above Calcite Compensation Depth	Norfolk	Newly included in MNPZ (IUCN II)
	Norfolk Island Province Shelf Edge		Newly included in MNPZ (IUCN II) and HPZs (IUCN IV)
	Norfolk Island Province Shelf Edge to Shallow Upper Slope Transition		Newly included in MNPZ (IUCN II) and HPZs (IUCN IV)
	Central Eastern Province Abyssal Plain below Calcite Compensation Depth	Hunter	Newly included in HPZs (IUCN IV)
	Central Eastern Province Deep Upper Slope		
	Central Eastern Province Deep Upper Slope to Shallow Mid-Slope Transition		
	Central Eastern Province Continental Rise		
	Jervis		
	Hunter		

		Central Eastern	
	Central Eastern Province Deep Continental Slope	Jervis	
		Hunter	
		Central Eastern	
	Central Eastern Province Deep Mid-Slope	Jervis	
		Hunter	
		Central Eastern	
	Central Eastern Province Shallow Mid-Slope	Jervis	
		Hunter	
		Central Eastern	
	Norfolk Island Province Coast to Shallow Shelf Transition	Norfolk	
	Norfolk Island Province Deep Shelf		
	Norfolk Island Province Deep Shelf to Shelf Edge Transition		
	Norfolk Island Province Shallow Shelf		
	Norfolk Island Province Shallow Shelf to Deep Shelf Transition		
	Norfolk Island Province Shallow Upper Slope		
Key Ecological Features	Canyons on eastern continental slope	Jervis	Newly included in HPZs (IUCN IV)
		Hunter	
		Central Eastern	
	Norfolk Ridge	Norfolk	
Seafloor Types	Ridge	Norfolk	Newly included in MNPZ (IUCN II)
	Bank/shoals		Newly included in HPZs (IUCN IV)
	Shelf		
	Canyon	Jervis	Newly included in HPZs (IUCN IV)
Hunter			
Central Eastern			

Table H5 Changes from recommended zoning in the Coral Sea CMR

Type of conservation feature	Name of conservation feature	Change to conservation feature in Coral Sea CMR	
Provincial Bioregion	Central Eastern Transition	Newly included SZ (IUCN Ia)/MNPZ (IUCN II) and in HPZs (IUCN IV)	
Depths by Provincial Bioregion	Central Eastern Transition Continental Rise	Newly included in SZ (IUCN Ia)/MNPZ (IUCN II) and in HPZs (IUCN IV)	
	Central Eastern Transition Deep Continental Slope		
	Central Eastern Transition Deep Mid-Slope		
	Central Eastern Transition Deep Upper Slope		
	Central Eastern Transition Deep Upper Slope to Shallow Mid-Slope Transition		
	Central Eastern Transition Shallow Mid-Slope		
	Central Eastern Transition Shallow Upper Slope		
	Central Eastern Transition Shallow Upper Slope to Deep Upper Slope Transition		
	Kenn Transition Coast		Now wholly included in SZ (IUCN Ia)/MNPZ (IUCN II), no longer included in HPZs (IUCN IV)
	Kenn Transition Coast to Shallow Shelf Transition		
	Kenn Transition Deep Shelf		
	Kenn Transition Deep Shelf to Shelf Edge Transition		
	Kenn Transition Shallow Shelf		
	Kenn Transition Shallow Shelf to Deep Shelf Transition		
	Kenn Transition Shelf Edge		
	Kenn Transition Shelf Edge to Shallow Upper Slope Transition		
	Cape Province Coast	Newly included in HPZs (IUCN IV)	
	Cape Province Coast to Shallow Shelf Transition		
	Cape Province Deep Mid-Slope		
	Cape Province Deep Shelf		

	Cape Province Deep Shelf to Shelf Edge Transition	
	Cape Province Deep Upper Slope	
	Cape Province Deep Upper Slope to Shallow Mid-Slope Transition	
	Cape Province Shallow Mid-Slope	
	Cape Province Shallow Shelf	
	Cape Province Shallow Shelf to Deep Shelf Transition	
	Cape Province Shallow Upper Slope	
	Cape Province Shallow Upper Slope to Deep Upper Slope Transition	
	Cape Province Shelf Edge	
	Cape Province Shelf Edge to Shallow Upper Slope Transition	
	Central Eastern Transition Abyssal Plain above Calcite Compensation Depth	
	Central Eastern Transition Continental Rise	
	Central Eastern Transition Deep Continental Slope	
	Central Eastern Transition Deep Mid-Slope	
	Central Eastern Transition Deep Upper Slope	
	Central Eastern Transition Deep Upper Slope to Shallow Mid-Slope Transition	
	Central Eastern Transition Shallow Mid-Slope	
	Central Eastern Transition Shallow Upper Slope	
	Central Eastern Transition Shallow Upper Slope to Deep Upper Slope Transition	
	Northeast Transition Abyssal Plain above Calcite Compensation Depth	
Seafloor types	Deep/hole/valley	Newly included in HPZs (IUCN IV)

Appendix I: Coral Sea reefs

Table I1 Comparison of areas of zone types between proclaimed and recommended zoning for reefs in the Coral Sea CMR

Reef name	Proclaimed zoning area (km ²)					Recommended zoning area (km ²)			
	MUZ (IUCN VI)	HPZ (Coral Sea) (IUCN IV)	HPZ (Seamount) (IUCN IV)	CPZ (IUCN IV)	MNPZ (IUCN II)	HPZ (IUCN IV)	HPZ (Reefs) (IUCN IV)	MNPZ (IUCN II)	SZ (IUCN Ia)
Abington Reef		4				4			
Ashmore Reef	639					639			
Boot Reef	9					9			
Bougainville Reef					13		13		
Cairns Seamount		0.06				0.06			
Calder Bank			1			1			
Cato Reef			159				159		
Coringa Islets/ Magdelaine Cays		292			2,090		44	2 338	
Dart Reef				9			9		
Diane Bank				1,105			1 105		
Flora Reef		24				24			
Frederick Reef			89				89		
Herald Cays					65			65	
Heralds Surprise				11			11		
Holmes Reefs				204			81	124	
Kenn Reefs					276			276	
Lihou Reef					2,378				2 378
Malay Reef		42				42			
Marion Reef	31				870		464	437	
McDermott Bank		39				39			
Mellish Reef					36			36	
Moore Reefs				10			10		
North Flinders Reefs				806			806		
Osprey Reef		2			188		52	138	
Saumarez Reefs				750			750		
Shark Reef				7			7		
South Flinders Reefs				83				83	
Tregosse Reefs		3,725					3 725		
Unnamed reef 1					66			66	
Unnamed reef 2		21				21			
Unnamed reef 3		58					58		
Vema Reef					3		3		
Willis Islets				737			737		
Wreck Reefs			183					183	
Total area (km²)	680	4,207	431	3,723	5,984	779	8 124	3744	2378

Note: All figures are rounded to the nearest km² (and therefore can appear to not always add up to the totals supplied).

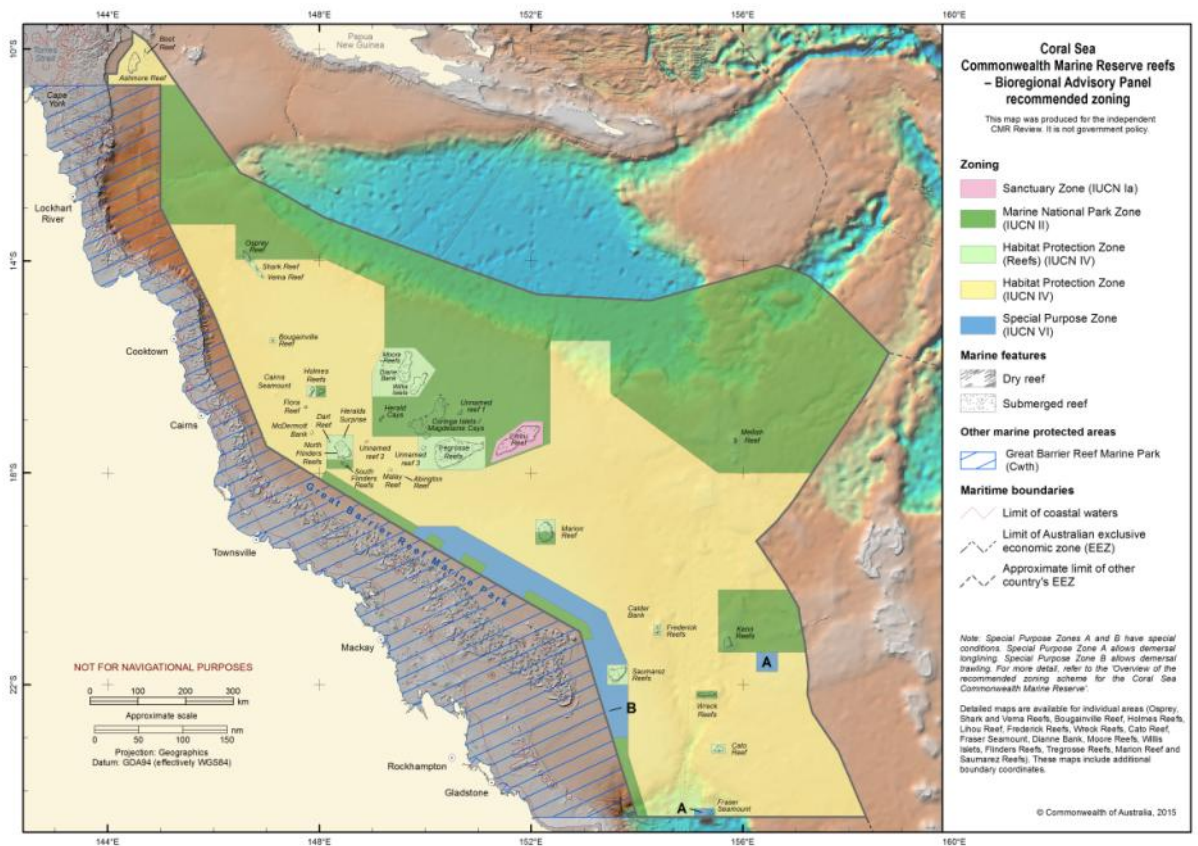


Figure I1 Recommended zoning for reefs in Coral Sea CMR

Table I2 Changes in representation of Coral Sea reefs in SZ, MNPZ and HPZs

Name of reef	Change to zoning
Lihou Reef	Newly included in SZ (IUCN Ia), no longer included in MNPZ (IUCN II)
Holmes Reefs	Newly included in MNPZ (IUCN II)
South Flinders Reefs	Newly included in MNPZ (IUCN II), no longer included in HPZs (IUCN IV)
Wreck Reefs	
Bougainville Reef	Newly included in HPZs (IUCN IV), no longer included in MNPZ (IUCN II)
Vema Reef	
Ashmore Reef	
Boot Reef	Newly included in HPZs (IUCN IV)
Marion Reef	

Glossary

Benthic/benthos	Refers to the bottom of the sea, the seafloor and including some sub-surface layers, as well as benthic marine organisms living on or within the seafloor.
Biologically Important Areas (BIAs)	Areas where individuals of a species are known to display biologically important behaviour such as breeding, foraging, resting and migration. These areas in a marine region are particularly important for the conservation of protected species.
Bioregion	An area that is defined by relatively homogenous and characteristic types of plants, animals and environmental conditions. In Commonwealth waters, those bioregions as defined in the IMCRA v4.0.
Bioregional Advisory Panel (BAP)	The Bioregional Advisory Panel of the Commonwealth Marine Reserves Review. It included five separate Regional Panels, one for each of the five marine regions (North, North-west, South-west and Temperate East, and the Coral Sea). Two co-Chairs worked across all panels, as well as the ESP.
Comprehensive, adequate and representative (CAR) principles	<p>These were identified as the principles in the ANZECC Guidelines for Establishing a National Representative System of Marine Protected Areas (1998), defined as:</p> <p><u>Comprehensive</u>—includes the full range of ecosystems recognised at an appropriate scale within and across each bioregion.</p> <p><u>Adequate</u>—has the required level of reservation to ensure the ecological integrity and viability of populations, species and communities.</p> <p><u>Representative</u>—areas that are selected for inclusion in MPAs should reasonably reflect the biotic diversity of the marine ecosystems from which they derive.</p>
Class approval	An approval to conduct a class of activities, within a particular industry sector, that already require approval, permits or licences from another government agency responsible for regulating that sector
Commonwealth Marine Reserve	Also known as ‘Commonwealth reserve’. A reserve established and managed under Division 4 of Part 15 of the EPBC Act, which must be assigned an IUCN category and may be subdivided into a number of different zones with different management objectives and IUCN categories.
Commonwealth waters	‘Commonwealth waters’ (also known as ‘Commonwealth marine area’) refers to any part of the sea, including the waters, seabed, and airspace, within Australia’s EEZ and/or over the continental shelf of Australia, excluding state and Northern Territory coastal waters. Generally, Commonwealth waters stretch from 3 nm from the territorial sea baseline to the outer limit of the EEZ, 200 nm from the baseline. The territorial sea baseline is normally the low water mark along the coast.
Demersal	Living on or near the bottom of the sea.

Director of National Parks (DNP)	The Director of National Parks as determined under section 514A of the EPBC Act, including any person to whom the Director has delegated powers and functions under the EPBC Act in relation to the Commonwealth marine reserves.
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The Australian Government's key environmental Act, which came into effect on 16 July 2000; includes any Act amending, repealing or replacing the Act.
Exclusive Economic Zone (EEZ)	The sovereign waters of a nation, recognised internationally under the United Nations Convention on the Law of the Sea as extending up to 200 nm from the shoreline.
Expert Scientific Panel (ESP)	The Expert Scientific Panel of the Commonwealth Marine Reserves Review. It comprised five members including a Chair to review the science supporting the current marine reserves. The two co-Chairs of the BAP were also members of the ESP.
Fishing Gear Risk Assessment (FGRA)	Expert assessment of the potential risk that a fishing gear type poses to the marine reserves' conservation objectives/values. A key input in the application of Principles 19 and 20 (see Goals and Principles) and decisions on whether fishing with that gear type is allowed or prohibited in a reserve or network.
Goals and Principles	The Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in Commonwealth Waters comprise four Goals and 20 Principles to guide the identification of areas suitable for inclusion in the NRSMPA. Together, they provide direction on how to ensure that all types of marine ecosystems and their biodiversity are represented within the national network of marine reserves.
Gross Value of Production (GVP)	A value obtained by multiplying the volume of catch (whole weight equivalent) by the average per unit beach price. In the case of a multispecies fishery, the fishery's GVP is the sum of the GVP of each species.
Indigenous Protected Area (IPA)	An area of Indigenous-owned land or sea where traditional owners have entered into an agreement with the Australian Government to promote biodiversity and cultural resource conservation.
Integrated Marine and Coastal Regionalisation of Australia (IMCRA or IMCRA v4.0)	A spatial framework for classifying Australia's marine environment into bioregions that form the basis for the development of a NRSMPA.
International Union for the Conservation of Nature (IUCN)	IUCN, established in 1948, is the world's largest global environmental organisation, with almost 1300 government and non-government organisation members and more than 15 000 volunteer scientists and experts in 185 countries. IUCN's work is supported by almost 1000 staff in 45 offices and hundreds of partners in public, non-government organisation and private sectors around the world.
IUCN category	Has the meaning given by section 346 of the EPBC Act and

	prescribed in Schedule 8 of the EPBC Regulations. There are six IUCN protected area categories, based on and differentiated by their key management objective, that are international standards for protected areas.
Key Ecological Feature (KEF)	<p>Large-scale ecological features that support distinct or important ecological communities at a regional scale. Where these features are considered to be of regional importance for either a region's biodiversity or its ecosystem function and integrity, they are known as KEFs. The criteria used to identify KEFs in a region are:</p> <ul style="list-style-type: none"> - a species, group of species or community with a regionally important ecological role, where there is specific knowledge about why the species or species group is important to the ecology of the region, and the spatial and temporal occurrence of the species or species group is known - a species, group of species or community that is nationally or regionally important for biodiversity, where there is specific knowledge about why the species or species group is regionally or nationally important for biodiversity, and the spatial and temporal occurrence of the species or species group is known - an area or habitat that is nationally or regionally important for enhanced or high biological productivity - aggregations of marine life - biodiversity and endemism.
Management Plan	Under the EPBC Act all Commonwealth reserves (terrestrial and marine) must have a management plan. Once a marine reserve has been proclaimed, the DNP must develop a management plan for the reserve as soon as practicable. Management plans are prepared by the DNP, with public input, and approved by the Minister for the Environment before being tabled in both Houses of Parliament for a period of 15 sitting days, during which a motion of disallowance can be moved. The plans provide for the protection and conservation of the reserve. They must set out how the reserve is to be managed, what activities will be allowed and how those activities are to be carried on. Management must be consistent with the relevant Australian IUCN Reserve Management Principles. Management plans have a maximum life of 10 years.
Marine Protected Area (MPA)	Any area of intertidal or sub-tidal terrain, together with its overlying water and associated plants, animals, historical or cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.
Minister	The minister administering the EPBC Act.

National Representative System of Marine Protected Areas (NRSMPA)	A CAR system of MPAs that contribute to the long-term ecological viability of marine and estuarine systems, maintain ecological processes and systems, and protect Australia's biological diversity at all levels.
Parks Australia	A division of the Department of the Environment that supports the DNP.
Pelagic	Associated with the surface or middle depths of the water column (for example, fish swimming freely in the open sea).
Primary conservation features	The collective term that includes Provincial Bioregions, Meso-Scale Bioregions, Depth Ranges by Provincial Bioregion, KEFs, Biologically Informed Seascapes and Seafloor Features
Proclamation	A proclamation by the Governor-General that is registered on the Federal Register of Legislative Instruments.
Provincial Bioregions	Large areas of the oceans with broadly similar characteristics that have been classified by scientists based on the distribution of fish and other marine species, seafloor types and ocean conditions.
Regional Panel	One of the five Regional Panels that formed part of the BAP. Each comprised three members selected by the Minister for their expertise and included one or both of the BAP co-Chairs.
Sea country	A term used to refer to a place of origin for Indigenous peoples; it may include bays, open ocean, beaches, dunes, reefs, coastal wetlands, or features of landscapes now submerged due to rising sea levels.
State/territory waters	State or territory waters are the coastal waters that extend from the territorial sea baseline for 3 nm seawards, and are under the jurisdiction of the adjacent Australian state or territory. The normal territorial sea baseline is the low water mark measured along the coast.
Upwelling	The phenomenon of deep ocean water rising to the surface, usually bringing nutrients that can increase biological productivity.
Zoning	The spatial definition and segregation of areas that are to be managed in a specific way for a specific purpose, consistent with the IUCN category and relevant management principles. Please refer to the activity matrices for each Commonwealth marine reserves network/reserve for specific details.

Acronyms

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AFMA	Australian Fisheries Management Authority
AMSA	Australian Maritime Safety Authority
ANZECC	Australian and New Zealand Environment and Conservation Council
BAP	Bioregional Advisory Panel
CAR	Comprehensive, Adequate and Representative
CBD	Convention on Biological Diversity
CMR	Commonwealth marine reserve
CPZ	Conservation Park Zone
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DNP	Director of National Parks
EEZ	Exclusive Economic Zone
ENGO	environmental non-government organisation
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
ESP	Expert Scientific Panel
ETBF	Eastern Tuna and Billfish Fishery
FGRA	Fishing Gear Risk Assessment
GBRMP	Great Barrier Reef Marine Park
GUZ	General Use Zone
GVP	gross value of production
HPZ	Habitat Protection Zone
ILUA	Indigenous Land Use Agreement
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IPA	Indigenous Protected Area
IUCN	International Union for Conservation of Nature
KEF	Key Ecological Feature
MBH	Marine Biodiversity Hub
MNPZ	Marine National Park Zone
MPA	Marine Protected Area
MUZ	Multiple Use Zone
NPF	Northern Prawn Fishery
NOI	Notice of Intent
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NRSMPA	National Representative System of Marine Protected Areas
NSW	New South Wales
NT	Northern Territory
RUZ	Recreational Use Zone
SA	South Australia
SESSF	Southern and Eastern Scalefish and Shark Fishery
SPZ	Special Purpose Zone
SZ	Sanctuary Zone
UNCLOS	United Nations Convention on the Law of the Sea
VMS	vessel monitoring system
WA	Western Australia

SPATIAL DATA SOURCES

- Beaman, R.J., 2010. Project 3DGBR: A high-resolution depth model for the Great Barrier Reef and Coral Sea. Marine and Tropical Sciences Research Facility (MTRSF) Project 2.5i.1a Final Report, MTRSF, Cairns, Australia, pp. 13 plus Appendix 1.
- CSIRO Marine and Atmospheric Research (2009): Predicted seabed assemblage patterns of marine fauna for the East, North, North-west and South-west Marine Regions
- Department of the Environment (2006): Integrated Marine and Coastal Regionalisation of Australia (IMCRA) v4.0
- Department of the Environment (2011): Bathomes in Australian waters
- Department of the Environment (2014): Australia's Network of Commonwealth Marine Reserves
- Department of the Environment (2014): Collaborative Australian Protected Areas Database
- Department of the Environment (2014): Marine Key Ecological Features
- Department of the Environment (2015): World Heritage Areas: Australia
- ESRI Australia Pty Ltd (1992): ARCWORLD World Dataset 1:3 million
- Geoscience Australia (2003): GEODATA TOPO 2.5M
- Geoscience Australia (2004): GEODATA TOPO 100k—Coastline
- Geoscience Australia (2004): Geomorphic Features of Australia's Exclusive Economic Zone
- Geoscience Australia (2005): Australian Bathymetry and Topography
- Geoscience Australia (2006): GEODATA TOPO 250k
- Geoscience Australia (2014): Australian Maritime Boundaries (AMB) v3.0