# Executive summary

In response to a range of concerns raised by a number of parties about the 40 new Commonwealth marine reserves (CMRs) established in 2012, the Australian Government initiated a review of the design and management of these reserves. Key concerns were the adequacy of consultation and the scientific evidence underpinning the establishment of the reserves. The Expert Scientific Panel (ESP) was subsequently appointed to review the science of reserve design and advise the Government on how to strengthen the science underpinning reserve management into the future. In parallel, the Bioregional Advisory Panel (BAP) was appointed to conduct a broad consultation process to ensure all affected stakeholders had the opportunity to put forward their views and to advise on possible alternative reserve design within the CMR outer boundaries and options for reserve management. The BAP used advice from the ESP to assist in this task.

The ESP's findings to assist the work of the BAP and its recommendations to the Australian Government have been informed by an extensive literature review, evidence presented through the BAP public submission and stakeholder survey processes, and direct consultation with marine scientists from a range of organisations around Australia and marine reserve managers.

The ESP's review of the science and associated findings and recommendations fell into three broad areas, which are reflected in this summary and in the content of this report.

**Looking back (chapter 2)**

The ESP is satisfied that the marine bioregional planning programme, which was based on the Integrated Marine and Coastal Regionalisation of Australia and complemented by scientific workshops, peer-reviewed publications and literature reviews, was a sound basis and drew upon the best available information for designing the CMR networks.

The ESP is also satisfied that the process that underpinned the 2010 Fishing Gear Risk Assessments (FGRAs) was sound but that the findings will need to be updated as new information becomes available.

The ESP recognises that, while the best available scientific knowledge and tools were utilised in designing the CMR estate in line with the Goals and Principles for the Establishment of a National Representative System of Marine Protected Areas (NRSMPA) in Commonwealth waters, socio-economic factors were also significant considerations in finalising the location and zoning of the reserves.

**Current state of knowledge (chapter 3)**

The zoning and associated management arrangements that the Australian Government adopted, which are based on International Union for Conservation of Nature (IUCN) standards and guidelines, provide a robust approach for achieving the objectives of the NRSMPA in Commonwealth waters. However, it must be informed by appropriate science, and the ESP notes that the knowledge base is growing.

There is a large body of scientific literature that clearly demonstrates the value of no-take zones (Marine National Park Zones and Sanctuary Zones in CMRs) for biodiversity conservation and as scientific reference sites to measure change within and outside the CMR estate. While no-take zones are arguably the most effective biodiversity conservation measure, they are but part of a suite of spatial management approaches in the multiple-use CMR estate. In addition, Habitat Protection Zones play an important role in accommodating a range of uses while at the same time providing effective protection for habitats by prohibiting those activities that damage habitat or are otherwise inconsistent with management objectives.

New scientific information assisted the ESP in addressing issues raised in the BAP consultations, assessing the conservation values for a number of CMRs and the revision of several of the 2010 FGRAs. ESP findings in relation to new information were communicated to the BAP for consideration in developing zoning options within the CMR outer boundaries.

**Looking to the future (chapter 4)**

A robust adaptive management approach is required if management investment for the CMR estate is to be effective and efficient. Well-targeted, long-term scientific research, monitoring and evaluation are essential. Baseline information is critical for measuring environmental change and management effectiveness. Initial baselines must be established and data collected as soon as possible across the estate before this opportunity is lost. While Australia's current marine research capabilities and infrastructure should be harnessed for this purpose, significant new and ongoing investment will be needed to provide adequate coverage of the vast CMR estate.

New and existing marine research and monitoring data must be maintained for the long term and be readily accessible to the scientific community, reserve managers and other relevant users. This will contribute to the adaptive management of CMRs and the management of Australia's Exclusive Economic Zone in general.

Opportunities exist for public–private partnerships to increase investment and realise the benefits of marine research and monitoring in CMRs. CMR management must tap into these opportunities through effective collaboration, strong governance mechanisms and good strategic planning.

Citizen science also provides unique opportunities for involving users in monitoring and management and delivering cost-effective ways of collecting appropriate data. Citizen science can complement formal research programmes or be integrated into them depending on circumstances.

In this report the ESP makes the following specific recommendations to Government:

**Managing the Commonwealth marine reserve estate effectively**

1. The Expert Scientific Panel recommends the adoption of an adaptive management approach for the Commonwealth marine reserve estate and that the first management planning cycle include a period for transition to this approach.

**Research in the Commonwealth marine reserve estate**

2. The Expert Scientific Panel recommends the development of a research, monitoring and evaluation framework that will support robust evidence-based decision-making in the management of the Commonwealth marine reserve estate. Such a framework should be designed in a way that it is consistent with that used for environmental reporting in Australia.

   The Expert Scientific Panel recommends the development and management of knowledge brokering between Parks Australia, state jurisdictions, private enterprise, the research community and citizen science.

**Information gaps identified by the Expert Scientific Panel review**

3. The Expert Scientific Panel (ESP) recommends the establishment of a series of baselines and development of benchmarks in each network across the Commonwealth marine reserve estate. Further, the ESP stresses that early baseline and benchmark establishment is critical to enable a sound assessment of the effectiveness of subsequent reserve management.

   The ESP further recommends that this be done in partnership with the marine research community.

   The ESP endorses the recommendation in the National Marine Science Plan 2015–2025 to '*establish and support a National Marine Baselines and Long-term Monitoring Program to develop a comprehensive assessment of our estate, and to help manage Commonwealth and State Marine Reserves'*. In addition the ESP encourages a Government commitment to maintaining investment in marine infrastructure and capabilities.

4. The Expert Scientific Panel recommends that the social and economic sciences be part of the research investment made to support management of the Commonwealth marine reserve estate.

**Effectiveness of zones**

5. The Expert Scientific Panel recommends that the Director of National Parks facilitate and encourage research and research collaborations that assist in the evaluation of the efficacy of different zone types.

**Threats and mitigation of threats**

6. The Expert Scientific Panel recommends that, in developing a research, monitoring and evaluation framework for the Commonwealth marine reserve estate, existing and potential threats be identified and prioritised. Some baseline and benchmark sites within the estate should be established to assist in detecting threats and their impacts.

**Requirements for managing effectively**

7. The Expert Scientific Panel recommends institutionalising a transparent approach to research and management within Parks Australia as part of building relationships with the research community.

   The Expert Scientific Panel considers the research and monitoring requirements framework set out in table 4.1 is sound and recommends it as an input to the development of a Parks Australia research and monitoring strategy for the Commonwealth marine reserve estate, with the reserves in the South-east Commonwealth Marine Reserves Network included in its scope.

**Managing the proposed research, monitoring, data and evaluation framework**

8. The Expert Scientific Panel strongly recommends that approvals and support for research and monitoring activities in the Commonwealth marine reserve estate require that the raw data and metadata obtained through these activities are made publicly accessible through the Australian Ocean Data Network to enable independent examination and analysis.

**Data acquisition and management**

9. The Expert Scientific Panel (ESP) recommends that existing marine research and monitoring data be maintained in the long term and that it is made readily accessible to the scientific community, reserve managers and other relevant users so that they may contribute to the adaptive management of Commonwealth marine reserves and the management of Australia's Exclusive Economic Zone.

   The ESP recommends that Parks Australia becomes an active contributor and core partner in the Australian Ocean Data Network.

   The ESP recommends the continuing support of the Integrated Marine Observation System (noting that the National Marine Science Plan also makes this recommendation) and the Australian Ocean Data Network as vital to the future success of the monitoring and management framework of the Commonwealth marine reserve estate.

   The ESP recommends that the Australian guidelines for the ethical conduct of research be emphasised in the collection and use of data.

**Facilitating the setting of research priorities**

10. The priority research investments that the Expert Scientific Panel recommends to the Government as making a significant contribution to the management of the Commonwealth marine reserve estate are:

    - the research, monitoring, data and evaluation framework should be established, together with baseline studies

- if a national strategy for the development of platforms and sensors is established then linking research planning for the Commonwealth marine reserve estate with it is important
- if the National Marine Science Plan 2015–2025 is adopted in some form then there should be clear linkages between its execution and the needs of the Commonwealth marine reserve estate.