



Australian Government



Queensland Government

Reef 2050 Long-Term Sustainability Plan

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Foreword

Australians are passionate about the Great Barrier Reef.

It is one of the world's greatest natural assets.

Our vision is to ensure the Great Barrier Reef continues to improve on its Outstanding Universal Value every decade between now and 2050 to be a natural wonder for each successive generation.

Traditional Owners have cared for the Reef for thousands of years and Australia is committed to its ongoing protection.

The *Reef 2050 Long-Term Sustainability Plan* is based on science and the lessons learnt from managing the Reef over the past four decades.

The recently released *Great Barrier Reef Outlook Report 2014* confirmed the Reef system as a whole retains its Outstanding Universal Value. The Outlook Report 2014 also identified the challenges facing the Reef. The Australian and Queensland governments have responded and are delivering the most significant changes in management of the Reef since the establishment of the Great Barrier Reef Marine Park 40 years ago.

Over the past four years Australia has responded to all recommendations of the World Heritage Committee, and indeed has gone further. The comprehensive strategic environmental assessment combined with the Outlook Report 2014 provides a solid scientific foundation for this *Reef 2050 Long-Term Sustainability Plan*. The Plan focuses on actions to address key threats and directly boost the health and resilience of the Reef so that it is best able to cope with effects of climate change—the single biggest threat to coral reefs worldwide.

In the past 18 months the number of capital dredging proposals to place dredge material in the Marine Park has been reduced from five to zero. Now the Australian Government is placing a permanent ban on disposal of material in the Great Barrier Reef Marine Park from capital dredging projects. In addition the new Queensland Government will legislate to restrict capital dredging for the development of new or expansion of existing port facilities to within the regulated port limits of Gladstone, Hay Point/Mackay, Abbot Point and Townsville, and prohibit the sea-based disposal of dredge material from these sites in the Great Barrier Reef World Heritage Area.

The Australian and Queensland governments will ensure sufficient financial and other resources are available to implement the Plan and achieve outcomes. The Australian Government is investing \$200million over five years to improve the resilience of the Reef, including supporting delivery of the Reef Water Quality Protection Plan. In particular, the new \$40 million Reef Trust will fund water quality improvements, habitat restoration and species recovery, important for enhanced Reef health. In addition to maintaining its \$35 million a year expenditure on water quality initiatives, the Queensland Government has committed an additional \$100 million over five years towards water quality initiatives, scientific research and helping business transition to better environmental practices in the primary production and fishing industries. Government investment in the Reef over the next 10 years is projected to be more than \$2 billion. The Plan will be underpinned by a robust investment framework, harnessing and coordinating public and private investment to maximise outcomes for the Reef. It will build on our work over the past 40 years.

Governments, industry, and local, regional and global communities will continue to work in partnership to ensure the Reef remains a global icon into the future. Governments have escalated their efforts with the recently elected Queensland Government appointing a Minister for the Great Barrier Reef.

In developing the Plan, we acknowledge the significant contributions of Traditional Owners, environmental groups, community organisations, peak industry groups, scientists and other interested people who committed time and effort as members of the Partnership Group and during stakeholder consultation.

We also acknowledge the Great Barrier Reef Marine Park Authority for its independent management, technical and scientific advice, and thank the International Union for the Conservation of Nature and the UNESCO World Heritage Centre for their technical advice in developing the Plan.

The Plan changes the path for the future. It is frank in acknowledging the pressures and forthright in setting out the actions judged necessary to maintain and enhance the Outstanding Universal Value of the Great Barrier Reef World Heritage Area. This Plan will work. The commitment is absolute.

The Hon Greg Hunt MP

Australian Minister for the Environment

The Hon Dr Steven Miles MP

Queensland Minister for Environment and Heritage Protection
and Minister for National Parks and the Great Barrier Reef

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Executive summary

The overarching vision of the Reef 2050 Long-Term Sustainability Plan is:

To ensure the Great Barrier Reef continues to improve on its Outstanding Universal Value every decade between now and 2050 to be a natural wonder for each successive generation to come.

The iconic majesty of the Great Barrier Reef makes it one of the natural wonders of the world and a significant part of Australia's national identity.

Proudly, this massive reef system is loved by Australians and the more than 1.9 million visitors who come to see it each year from across the globe. The Great Barrier Reef was inscribed on the World Heritage List in 1981.

Wherever we live, and whatever our interests, we share the same goal—to protect and manage the Great Barrier Reef for current and future generations.

This is no small task. The maze of 3000 coral reefs and 1050 islands is spread over 348,000 square kilometres, an area roughly the same size as Japan or Italy.

As well as its Outstanding Universal Value, the Great Barrier Reef supports almost 70,000 full-time jobs and is worth \$5.2 billion a year to the Australian economy in the tourism industry alone. Over \$40 billion of exports leave its ports every year.

Pressures and progress

Since before its world heritage listing, the Great Barrier Reef Region has been a multiple-use area, supporting a range of commercial and non-commercial uses, including major port operations on the adjacent coastline.

Some activities, such as commercial turtle harvesting and whaling, have been stopped and others, in the case of drilling for oil on the Reef, were never allowed to start.

Parts of the Reef are under pressure. The *Great Barrier Reef Outlook Report 2014*, prepared by the Great Barrier Reef Marine Park Authority, assessed factors influencing ecosystem health and heritage values. It concluded the system as a whole retains the qualities contributing to its Outstanding Universal Value. In the northern third the ecosystem is in good condition, while in the southern two-thirds, cumulative impacts have resulted in deterioration in some areas. Of these impacts, the Report found the effects of climate change, land-based run-off, coastal land-use change and some aspects of direct use were the most significant.

The Australian and Queensland governments have responded to all recommendations of the World Heritage Committee and indeed have gone further. The Australian Government is placing a permanent ban on disposal in the Great Barrier Reef

Marine Park of material from capital dredging projects. The new Queensland Government will legislate to restrict capital dredging for the development of new or expansion of existing port facilities to within the regulated port limits of Gladstone, Hay Point/Mackay, Abbot Point and Townsville, and prohibit the sea-based disposal of this dredge material in the Great Barrier Reef World Heritage Area.

In addition, further funding will be provided by the Queensland Government for restoration, water quality initiatives, scientific research and helping business transition to better environmental practices in the primary production and fishing industries.

A strong track record

Over the 40 years since the *Great Barrier Reef Marine Park Act 1975* was passed by the Australian Parliament, management of the Reef has evolved and adapted as new information on threats has come to light. Through tools such as Acts and regulations, zoning plans, environmental impact assessments, compliance actions and investment partnerships, the Australian and Queensland governments, local governments, Traditional Owners, industry, research bodies and community organisations have worked to protect the Reef. For example, the quality of water leaving the catchments has improved, with the annual sediment load reduced by 11 per cent, pesticides by 28 per cent, and nitrogen by 10 per cent compared to a 2009 baseline. An investment of \$2 billion over the next 10 years is projected.

The foundation exists for a positive future for the World Heritage Area. The *Reef 2050 Long-Term Sustainability Plan* builds on this and, for the first time, provides a solid basis for integration of actions to protect the Reef over the next three and a half decades.

Developing the Plan

The Australian and Queensland governments have comprehensively responded to the 2011 World Heritage Committee request for a coordinated and comprehensive long-term plan.

Built on the best available science, this Plan was developed with input from scientists, communities, Traditional Owners, industry and non-governmental organisations.

Inherent in the effective long-term management of the Great Barrier Reef are the cultural and economic aspirations of the Indigenous communities of Queensland where strong connections with country continue. The cultural and ecological knowledge of Traditional Owners will be essential in delivering this Plan.

What the Plan does

The *Reef 2050 Long-Term Sustainability Plan* provides an overarching strategy for management of the Great Barrier Reef. It coordinates actions and guides adaptive management to 2050. The Plan responds to the challenges facing the Reef and presents actions to protect its values, health and resilience while allowing ecologically sustainable development and use.

It addresses the findings of the Great Barrier Reef Marine Park Authority's Outlook Report 2014 and builds on the comprehensive strategic environmental assessment of the World Heritage Area and adjacent coastal zone completed in 2014. This body of work was the most complex and comprehensive analysis of environmental management arrangements ever undertaken in Australia.

The biggest identified long-term threat, climate change, is a global problem. It requires a global solution which is why Australia is an active participant in international efforts and has in place significant domestic plans and targets to mitigate

and adapt to climate change.

Developing ecosystem resilience in the face of a variable and changing climate is a key principle of the Plan. By improving water quality, maintaining biodiversity, and ensuring port development and shipping has minimal impact on the Reef, the Plan is building the Reef's resilience and targeting activities over which governments and other stakeholders have control.

Tangible outcomes, objectives and measurable targets have been identified across seven themes — biodiversity, ecosystem health, heritage, water quality, community benefits, economic benefits and governance—to form an integrated management framework.

They build on existing targets such as those in the *Reef Water Quality Protection Plan 2013* and focus on activities which will safeguard the Outstanding Universal Value of the Reef.

The Plan prescribes greater coordination, efficiency and effectiveness of all Reef programs and activities. It describes how all levels of government, non-government organisations, industry and community groups can work together to strengthen and develop initiatives for the Reef.

Implementation

The Australian and Queensland governments will ensure sufficient financial and other resources are available to implement the Plan and achieve outcomes. The Australian Government is investing \$200 million over five years to improve the resilience of the Reef, including supporting delivery of the Reef Water Quality Protection Plan. In particular, the new \$40 million Reef Trust will fund water quality improvements, habitat restoration and species recovery, important for enhanced Reef health. The Queensland Government has committed an additional \$100 million over five years towards water quality initiatives, scientific research and helping business transition to better environmental practices in the primary production and fishing industries. Government investment in the Reef over the next 10 years is projected to be more than \$2 billion.

The Plan will be underpinned by a robust investment framework, harnessing and coordinating public and private investment to maximise outcomes for the Reef. Specific implementation plans will be important to drive local and regional action, address locally significant threats and encourage community participation.

Monitoring, reporting and review

A Reef-wide Integrated Monitoring and Reporting Program is being implemented to monitor the success of the Plan and inform adaptive management. It is directly linked to the outcomes and targets identified in the Plan.

Annual reporting will highlight progress in delivering the Plan. A full review of the Plan will occur every five years to ensure it remains current, consistent with scientific advice and relevant in addressing pressures on the Reef.

Given the scale and innovative approach adopted by the *Reef 2050 Long-Term Sustainability Plan*, an initial mid-term review will be completed by 2018.

Going forward

The Australian and Queensland governments acknowledge that successfully protecting Australia's natural environment, including the Reef, is an ongoing obligation—it requires long-term planning and commitment.

This Plan will guide long-term protection and management of the Reef and ensure the Great Barrier Reef continues to be

among the best managed and protected world heritage areas in the world. Both governments will continue to work with their partners on this important task on behalf of the global community.

1. Introduction

1.1 The Great Barrier Reef

The Great Barrier Reef is an Australian icon and one of the most precious ecosystems on Earth.

Stretching more than 2300 kilometres along the Queensland coast (Figure 1) and covering an area of 348,000 square kilometres, it contains a maze of reefs, islands and other habitats that support a unique and diverse array of species.

The Great Barrier Reef is a place of great significance to its Traditional Owners, the first nation peoples of the area. They maintain a unique and continuing connection to the Reef and adjacent coastal areas. This connection to their land and sea country has sustained Traditional Owners for millennia—spiritually, culturally, socially and economically.

The Great Barrier Reef is strongly valued by the national and international community and is critical to the cultural, economic and social wellbeing of the more than one million people who live in its catchment and to Australians more generally. Generations have marvelled at its wonders and it is seen as quintessentially Australian.

The outstanding environment of the Great Barrier Reef, combined with people’s connection to it, mean there is a united drive for it to be protected and maintained for generations to come.

1.2 Great Barrier Reef World Heritage Area

The Great Barrier Reef was inscribed on the World Heritage List in 1981 in recognition of its Outstanding Universal Value.

The extent of the World Heritage Area is shown in Figure 1 and a summary of the differences between its boundaries and those of the Great Barrier Reef Region and Marine Park is provided in Appendix A. For simplicity, throughout this Plan, the Great Barrier Reef World Heritage Area is referred to as ‘the World Heritage Area’.

The Great Barrier Reef was inscribed for all four of the natural criteria specified in the *Convention concerning the protection of the world cultural and natural heritage*¹ (World Heritage Convention). In summary, these criteria are:

- superlative natural beauty
- outstanding geological, geomorphic or physiographic features
- outstanding examples of ecological and biological processes
- the most important and significant natural habitats for biological diversity.



Figure 1: Map of the Great Barrier Reef and catchment

The Great Barrier Reef World Heritage Area includes all waters seaward of the low water mark, including those

around 12 trading ports, and about 1050 islands.

The *Statement of Outstanding Universal Value*² for the Great Barrier Reef World Heritage Area that was adopted by the World Heritage Committee summarises the Reef's attributes. It is provided at Appendix B.

Given the broad scope of the criteria under which the Reef was listed, almost all attributes of its environment contribute to its Outstanding Universal Value. This includes the Region's biodiversity, geomorphology, Traditional Owner connections, ecological processes, aesthetic values and natural phenomena.

In seeking inscription on the World Heritage List, the Australian Government, on behalf of the people of Australia, assumed an obligation to ensure the identification, protection, conservation, presentation and transmission of the World Heritage Area for current and future generations.

In the 150 years since European settlement, generations of visitors have marvelled at the Reef's wonders, a rich fishery has been established, harbours have been built and maritime trade routes marked. In 1981, when the Reef was world heritage listed, and still today, a wide range of activities occur, including tourism, fishing, recreation, traditional use, research, defence, shipping and ports. Its environment helps bring billions of dollars to Australia's economy each year and supports almost 70,000 jobs.

Catchment land use practices and the flow-on effects of European settlement were acknowledged in the official 1981 nomination of the Great Barrier Reef for world heritage status:

The major portion of the Reef is in a reasonably pristine condition. The ecosystem of the Reef is subject to some pressures from recreational pursuits and commercial fishing, siltation through natural run-off from coastal streams, in a few areas agricultural and industrial discharges from the mainland, and sea-based discharges.

The subsequent International Union for the Conservation of Nature (IUCN) evaluation report noted that there were ongoing risks to the proposed world heritage area but went on to recommend that the nomination be accepted, saying:

The Australian Government is to be congratulated for including virtually the entire Great Barrier Reef in the proposed 350,000 square kilometre site. This is clearly the only way to ensure the integrity of the coral reef ecosystems in all their diversity.

Australia's iconic world heritage sites have a deep resonance in the hearts and minds of local, Australian and international communities. It is in the interests of all that the long-term sustainability of the Reef is assured.

1.3 Pressures on the Great Barrier Reef: The Outlook Report 2014

Every five years, the Great Barrier Reef Marine Park Authority prepares an Outlook Report for the Great Barrier Reef. This is a regular and authoritative statement about the Reef's values and its management. Underpinned by the best available scientific information, the Report provides an independent assessment of the health, condition, use, management arrangements and long-term outlook for the Reef.

The *Great Barrier Reef Outlook Report 2014*³ found that the property continues to meet all the world heritage criteria. Natural beauty, ecological and biological processes and habitats for biodiversity were assessed to be in **Good** condition at the scale of the Region. Major stages of the Earth's evolutionary history—comprising those attributes relating to the area's geology and geomorphology—was assessed as **Very good**. The property's integrity was assessed to be **Good**. Declines in some species and habitats and some ecosystem processes, especially in inshore areas of the southern two-thirds of the

property, were identified.

The Outlook Report 2014 concludes:

The system as a whole retains the qualities contributing to its Outstanding Universal Value as recognised in its listing as a world heritage property. The assessments of biodiversity and ecosystem health show that the northern third of the Great Barrier Reef Region has good water quality and its ecosystem is in good condition. In contrast, key habitats, species and ecosystem processes in central and southern inshore areas have continued to deteriorate from the cumulative effects of impacts.

The findings of the Outlook Report 2014 have informed development of this Plan. A summary of these findings is at Appendix C.

The Outlook Report 2014 assessed the risk of current and potential threats to the Reef's ecosystem and heritage values. The outcomes are summarised in Appendix D.

The highest risks, grouped into the four major influencing factors that are covered in this Plan, are:

Long-term, system-wide

- **Climate change**—sea temperature increase; altered weather patterns; ocean acidification; and sea level rise. Future predictions indicate sea level rises and temperature increases will continue, the pH of the ocean will gradually decline and weather will be more severe. These changes are likely to significantly affect most components of the Reef's ecosystem and heritage values.

Immediate, system-wide

- **Land-based run-off**—nutrients from run-off (including links to outbreak of crown-of-thorns starfish); sediments from run-off; pesticides from run-off; and marine debris. The quality of water entering the Reef has deteriorated over the past 100 years. Inshore areas are particularly at risk from poor water quality. Agricultural practices in the catchment are improving and there have been reductions in the nutrient, sediment and pesticide loads from the catchment. There is likely to be a significant lag before overall water quality improvements are measured in the Region. Marine debris continues to affect the ecosystem—including species of conservation concern.

Immediate, local/regional

- **Coastal land use change**—clearing and modifying coastal habitats and artificial barriers to flow. Changes to coastal habitats and reductions in connectivity as a result of land use change affect the Region's ecosystem.
- **Direct use**—illegal fishing, collecting and poaching; incidental catch of species of conservation concern; marine debris; incompatible activities by different user groups; effects on discarded catch; retained take of predators; disposal and resuspension of dredge material; and retained take from unidentified or unprotected spawning aggregations. Some remaining impacts of fishing continue to affect the Reef's values. Increasing port activities directly affect local areas and uncertainty remains around ecosystem effects. Increasing regional populations and economic development will likely increase direct use and therefore the likelihood of impacts.

The Outlook Report 2014 notes that many management measures implemented in the Great Barrier Reef and beyond are making a positive difference. It highlights the need to maintain and enhance the current strong foundational arrangements to manage direct use. It also demonstrates that factors external to the Great Barrier Reef, such as climate change, coastal land use change and land-based run-off play a significant role in determining its condition. It was particularly noted that the capacity to address cumulative impacts requires additional effort.

The Outlook Report 2014 notes that all actions, whether big or small, to reduce the threats to the Reef will help restore condition and will improve its outlook. Everyone's efforts combined will make the Reef more able to recover from the

legacy of past actions and better able to withstand those predicted to threaten its future.

2. About the *Reef 2050 Long-Term Sustainability Plan*

2.1 Purpose

The Outlook Report 2014 makes it very clear the Reef is under pressure. There has been considerable progress to date and there is more to be done. This *Reef 2050 Long-Term Sustainability Plan* sets out what Australians, as custodians for the international community, want the future of the Great Barrier Reef World Heritage Area to be and how this will be achieved. Protecting the Reef's Outstanding Universal Value and its natural integrity and cultural values is a critical priority for the Australian and Queensland governments. This Plan is the governments' commitment to working in partnership with industry and the community to make this happen.

Development of the Plan responds to a series of requests from the World Heritage Committee in relation to recognising and protecting Outstanding Universal Value. Appendix E maps how this Plan specifically responds to these requests.

2.2 Scope

Building on the strong foundation of legislated protection and cooperative management of the Reef that has been in place since the 1970s, this Plan provides an overarching strategy for management of the Great Barrier Reef World Heritage Area to 2050.

The Plan coordinates actions to better guide management of the World Heritage Area and associated management activities in its adjacent catchment. It includes areas under the jurisdictions of both the Australian and Queensland governments.

The Plan addresses the management of all values within the World Heritage Area, from species and habitats to Indigenous values and historic heritage. There is a focus on protecting those attributes that contribute to the Outstanding Universal Value of the World Heritage Area.

2.3 Timeframe

The Plan sets out broad outcomes for the World Heritage Area through to 2050, with objectives for progress by 2035. Specific actions to deliver the targets are described for the five years until 2020.

The Plan will be reviewed and updated every five years in response to future Outlook Reports, taking into account new information about the Reef environment, the results of implemented actions and the effectiveness of management interventions.

2.4 Structure

The major components of the Plan are:

- Section 3, Management—a description of the current management arrangements, including the coordinated action and initiatives being undertaken by governments, Traditional Owners, industry, researchers and the community to address

key threats and improve the Reef's resilience. These are the foundational arrangements for future protection and management of the World Heritage Area.

- Section 4, Actions for the future—an outline of the next steps in protection and adaptive management of the World Heritage Area for future generations, including a long-term vision and an Outcomes Framework that will guide action between now and 2050.
- Section 5, Implementing the Plan—a description of implementation arrangements.
- Section 6, Monitoring, reporting and review—an outline of future adaptive management arrangements, including the Integrated Monitoring and Reporting Program and the Plan's review cycle.

A glossary of commonly used terms and references are provided at the end of the Plan. Supporting material is provided in the appendices.

2.5 Developing the Plan

A wealth of knowledge and experience has been brought together to develop the Plan (Figure 2) including:

- the findings and outcomes of the comprehensive strategic environmental assessment for the Great Barrier Reef World Heritage Area and adjacent coastal zone, including public submissions and comments received as part of the process
- the findings of the *Great Barrier Reef Outlook Report 2014*
- government policies, initiatives, actions and legislation
- contributions by current partners in Reef protection and management such as Traditional Owners, local government, industry sectors, research organisations, natural resources management bodies and community organisations
- the public comments received on the draft Plan
- technical advice from the IUCN and the World Heritage Centre, including the 2012 Mission Report.

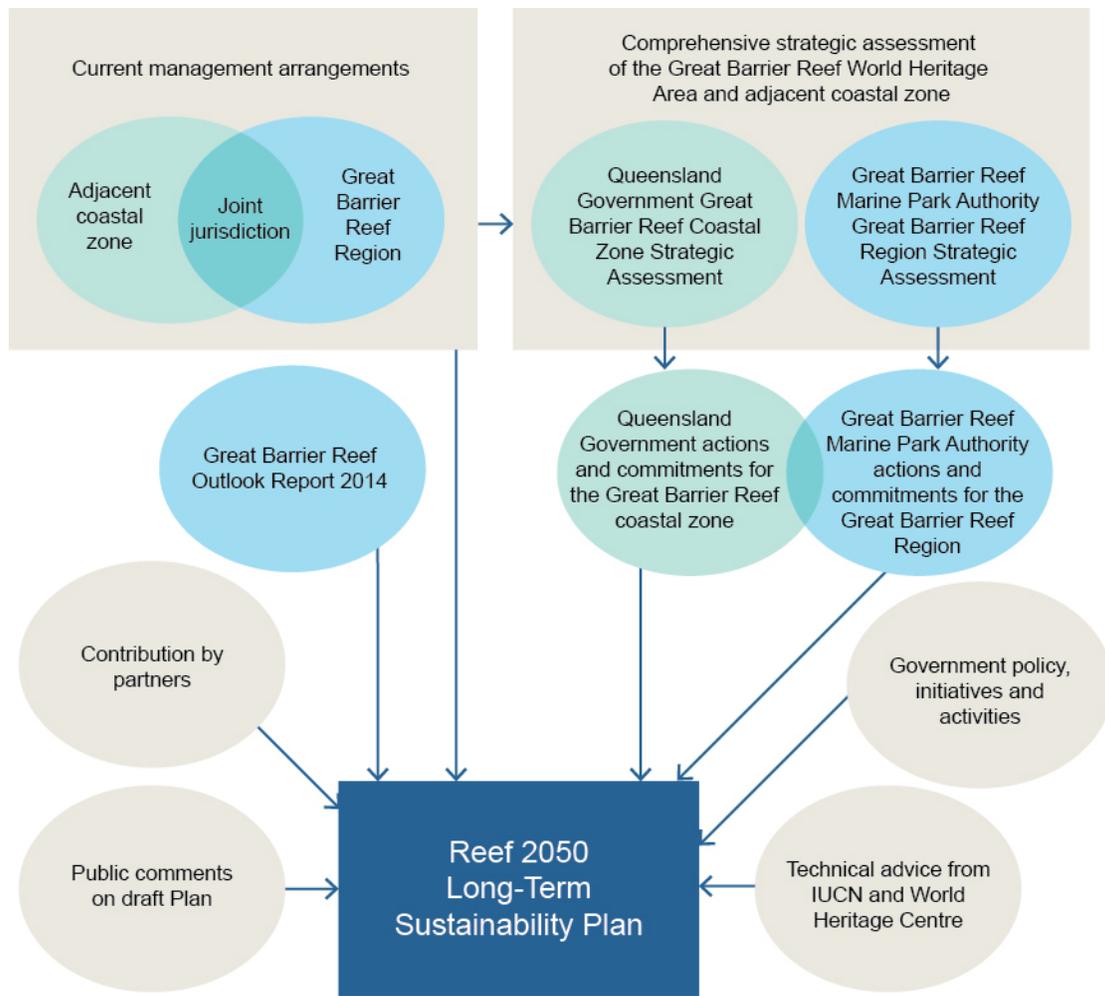


Figure 2: Inputs in developing the *Reef 2050 Long-Term Sustainability Plan*

To build on the solid base provided by the comprehensive strategic environmental assessment and to recognise the crucial role of Traditional Owners, industry, researchers and the community, a Partnership Group was established in June 2014 to help develop the Plan. The group was jointly chaired by Australian and Queensland government Environment Ministers. It brought together representatives of government, Traditional Owners, key industry organisations, scientists and interest groups including:

- AgForce (grazing sector)
- Association of Marine Park Tourism Operators (tourism sector)
- Australian Committee of International Union for Conservation of Nature (conservation sector—international)
- Australian Institute of Marine Science (science community)
- Great Barrier Reef Marine Park Authority
- Local Government Association of Queensland (local councils)
- Ports Australia (ports sector)

- Queensland Conservation Council (conservation sector—state)
- Queensland Farmers’ Federation (agricultural sector)
- Queensland Resources Council (resources and mining sector)
- Queensland Seafood Industry Association (commercial fishing sector)
- Regional Natural Resource Management Groups Collective (regional natural resource management bodies)
- Traditional Owner communities
- World Wildlife Fund for Nature (conservation sector—international).

The Partnership Group played a significant role in developing content, drafting and reviewing the Plan through meetings and a series of focused workshops.

In addition, the Great Barrier Reef Marine Park Authority’s Local Marine Advisory Committees provided valuable input on the issues and initiatives being undertaken by communities along the Reef coast. There was also engagement with the International Union for the Conservation of Nature and the World Heritage Centre experts to test the construct of the Plan against global best practice.

The Plan was released for public comment during September and October 2014 with 6809 submissions received. This included:

- 87 emailed or written submissions
- 41 online survey responses
- 6681 campaign-style submissions comprising:
 - World Wildlife Fund for Nature—6621 submissions
 - Cairns and Far North Environment Centre—54 submissions
 - recreational fishers—6 submissions.

During this time, the Plan’s targets and actions were also subject to scientific review. In addition, experts from key stakeholder groups worked through a ‘Program Logic’ process to more clearly articulate the relationships between outcomes, objectives, targets and actions.

3. Management

3.1 History of adaptive management

Management of the World Heritage Area is overseen by the Australian and Queensland governments based on science and driven by the community. As emerging threats have been identified, and research has enhanced understanding of their causes, governments have acted. Important initiatives include:

- establishment of the Great Barrier Reef Marine Park
- an extensive joint field management program delivering protective on-ground actions
- zoning to protect biodiversity and regulate activities within the marine parks
- significant water quality protection measures making real improvements to the quality of agricultural run-off.

Over the past four decades, the Australian and Queensland governments, along with industry, community organisations and individuals, have invested substantial resources in protecting and managing the Reef. This includes direct funding for management and on-ground activities, as well as research and pioneering new management techniques.

These investments have delivered significant results. Science shows the coordinated collective water quality investments of governments, industry and landholders have reduced pollutant loads into the Reef over the past 10 years. Funding of research in key areas has significantly enhanced understanding of the Reef system and improved management. For instance, investments from a range of partners and the Australian Government into more effective ways of addressing outbreaks of crown-of-thorns starfish have resulted in a new single injection control method that significantly increases the efficiency of control programs.

Together, the management arrangements developed and adapted, the initiatives implemented and the investments made over the past four decades have resulted in a protection and management framework that is internationally significant in scale, resources and effort.

3.1.1 Building on the strong foundation

Over recent years, the World Heritage Committee has raised concerns about the Great Barrier Reef World Heritage Area. Australia is working to ensure the Reef remains one of the best managed world heritage sites in the world. Key actions Australia has undertaken include:

- Completing a comprehensive strategic environmental assessment of the Great Barrier Reef World Heritage Area and adjacent coastal zone, the largest and most comprehensive examination ever undertaken in the world and a key contribution to this Plan. Commitments arising from this assessment include a cumulative impact assessment policy, a Reef recovery program to support regional communities in protecting the Reef and a world-leading Reef-wide integrated monitoring and reporting initiative.
- Amending Queensland's *State Development and Public Works Organisation Act 1971* and *Environmental Protection Act 1994* to meet Commonwealth standards for protection of world heritage properties.
- Amending Queensland's *Environmental Protection Act 1994* to formally recognise the Great Barrier Reef World Heritage Area, with maximum penalties for wilful environmental harm raised to over \$710,000 for individuals and

\$3.56 million for corporations, plus costs of restoration.

- Reducing the number of capital dredging proposals to place dredge material in the Great Barrier Reef Marine Park from five to zero.
- Banning disposal of material in the Great Barrier Reef Marine Park from capital dredging projects. This will be extended by the new Queensland Government to cover the balance of the World Heritage Area.
- Commissioning the **Independent Review of the Port of Gladstone** which identified a range of principles and measures to improve port governance and environmental management.
- **Making the Outstanding Universal Value of the Great Barrier Reef World Heritage Area a central concept in the Australian and Queensland governments' environmental legislation and planning systems. Queensland's planning policy and environmental decision-making system now require explicit consideration of matters protected under Australia's national environment law (including the Outstanding Universal Value of world heritage properties).**
- Investing millions of dollars in significant targeted research to address key information gaps relating to the future management of the Great Barrier Reef World Heritage Area. The findings provided valuable input into the comprehensive strategic assessment and this Plan.
- Investing almost \$32 million as part of the Australian Government's National Environment Science Programme to create a Tropical Water Quality Hub.
- Achieving continued improvement in the water quality entering the World Heritage Area as a result of a partnership between farmers and governments to stop fertilisers, chemicals and sediments running off farming land. Results to date show that land use practices are changing and resulting pollutant loads are declining and that Reef Plan's goal of halting and reversing the decline in the quality of water entering the Reef has been met. As at June 2013, the annual sediment load had been reduced by 11 per cent, pesticides by 28 per cent, and nitrogen by 10 per cent compared to a 2009 baseline. Improving water quality will continue to be a focus for Australia, supported by the \$40 million Reef Trust and an additional \$100 million from the Queensland Government as part of a projected investment of more than \$2 billion in the Great Barrier Reef over the next 10 years.

3.2 Governance of the World Heritage Area

The Great Barrier Reef is a large, complex system with longstanding multiple users. It is subject to diverse and wide-ranging influences that transcend jurisdictional boundaries. Management involves federal, state and local governments, Traditional Owners, industry, researchers, community organisations and individuals.

The Australian Constitution establishes the overarching legal authority for environmental management. In common with other federated nations, responsibility is divided between the national government and individual state governments. Within this constitutional structure, the Australian and Queensland governments have successfully worked together for over 40 years to protect, conserve and manage the Great Barrier Reef.

3.2.1 Legislation

A suite of complementary Australian and Queensland legislation (Figure 3) has been enacted to secure preservation for future generations of the Outstanding Universal Value and other natural, cultural and Indigenous values of the Great Barrier Reef, while allowing multiple-use activities to continue in an ecologically sustainable manner.

The principal Acts relevant to the World Heritage Area are the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) which puts into law Australia's obligations under the World Heritage Convention, the *Great Barrier Reef Marine Park Act 1975* (Cth) and the *Marine Parks Act 2004* (Qld).

Complementary management arrangements apply in Queensland waters through the *Marine Parks Act 2004*. Additional legislation is used to regulate other uses, for example commercial and recreational fisheries (including across the Great Barrier Reef Marine Park) and shipping.

A broad suite of laws applies in coastal and catchment areas to protect and manage the natural environment including native vegetation, native plants and animals, national parks and other protected areas, wetlands, waterways, water extraction, water quality, air quality and cultural heritage. Land development is subject to a planning system under the *Sustainable Planning Act 2009* (Qld) and an environmental impact assessment is required for any project which may have a significant environmental impact. Where matters of national environmental significance such as world heritage sites and the Great Barrier Reef Marine Park may be affected, the EPBC Act is triggered either directly or through bilateral agreement arrangements with the Queensland Government.

The Australian and Queensland government legislation underpins a range of management tools employed to protect and manage the World Heritage Area:

- zoning plans
- management plans
- permits and licences (including environmental impact assessment and measures to avoid, mitigate and offset impacts)
- Traditional Owner agreements
- compliance
- site infrastructure
- fees and charges
- policy (including strategies, policies, position statements, site management arrangements and guidelines)
- partnerships
- stewardship and best practice
- education and community awareness
- research and monitoring
- reporting.

Combined, the body of law comprehensively protects the Great Barrier Reef. Governments are regularly reviewing and updating legislation to ensure that new threats and issues are efficiently and effectively addressed as they arise.

3.2.2 Cooperative management

There is a strong and long-standing working relationship between successive Australian and Queensland governments in relation to protection and management of the Reef. It was first formalised in 1979 through the *Emerald Agreement* and was updated in 2009 through the *Great Barrier Reef Intergovernmental Agreement* signed by the Prime Minister of the Commonwealth of Australia and the Premier of the State of Queensland.

The Intergovernmental Agreement provides a clear and effective framework for facilitating cooperative management of the complex landscapes of the Reef.

Through implementation of the Intergovernmental Agreement, governments have agreed and are delivering a joint program of field management, joint action to halt and reverse the decline in the quality of water entering the Reef and action to

maximise the resilience of the Reef to climate change. Implementation is driven by the Great Barrier Reef Ministerial Forum, consisting of relevant Australian and Queensland government ministers.

The current focus and funding of the wide range of Australian and Queensland government agencies with responsibilities in relation to protection and management of the World Heritage Area are set out in Table 1 (see Section 5.2). In total, government agencies currently expend over \$200 million annually.

Along the Great Barrier Reef coast, local governments also play a significant role in land-use planning, development assessment, management of stormwater run-off, sewage treatment, ecosystem health and biodiversity conservation. Local governments are established under the *Local Government Act 2009* (Qld) and are accountable under the *Sustainable Planning Act 2009* (Qld) for their planning and development assessment activities.

Different issues require different management approaches. For some, regulation is the key, for others incentive-based programs, or industry-led delivery of best practice standards, education or market mechanisms are most effective. A strong record of community engagement and adaptive approaches has long been a feature of the Reef's management.

Partnership arrangements and stewardship programs have been established with Traditional Owners, industry sectors, local governments, natural resource management bodies, community groups and individuals. In addition, regional industries including tourism, fishing, agriculture, mining and port managers undertake key actions to reduce their impacts on the Reef.

Over recent years there has been increasing interest from the private sector in contributing to the future management and protection of the Reef, and partnership arrangements are emerging as a successful way of delivering outcomes. For example, innovative collaborative approaches in water quality are delivering significant achievements, while collaborative efforts in the research field are bringing together a range of interested parties to coordinate activities and pool resources and expertise.

3.2.3 International obligations

In its management of the Great Barrier Reef World Heritage Area, Australia has implemented its obligations under the World Heritage Convention including the specific obligations under Article 4:

Each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the... natural heritage referred to in Articles 1 and 2 and situated on its territory, belongs primarily to that State. It will do all it can to this end, to the utmost of its own resources and, where appropriate, with any international assistance and co-operation, in particular, financial, artistic, scientific and technical, which it may be able to obtain.

Management of the World Heritage Area is also guided by Australia's obligations under other relevant international conventions. These include:

- Convention on Biological Diversity, 1992
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973
- Convention on the Conservation of Migratory Species of Wild Animals, 1979
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971
- China–Australia Migratory Bird Agreement, 1986
- International Convention for the Prevention of Pollution from Ships, 1973
- Japan–Australia Migratory Bird Agreement, 1974
- Republic of Korea–Australia Migratory Bird Agreement, 2007

- United Nations Convention on the Law of the Sea, 1982
- United Nations Framework Convention on Climate Change, 1992
- The 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (known as the London Protocol).

3.3 Addressing key risks to the Reef

The highest risks to the Reef identified by the Outlook Report 2014 can be grouped into four influencing factors: the long-term risks associated with climate change and immediate considerations around land-based run-off; coastal land-use change; and direct use. For each of these, this Plan builds on a strong foundation of current actions.

3.3.1 Climate change—long-term, system-wide

The biggest long-term threat to coral reefs worldwide is climate change and the Great Barrier Reef is no exception. Damage to reefs as a consequence of climate change comes from ocean acidification, sea temperature increases, altered weather patterns (such as more intense storms) and rising sea levels. A concerted international effort to limit the effects of global climate change will provide the best protection for coral reefs. This Plan will provide the best insurance for the Great Barrier Reef against climate change by reducing direct and indirect threats and therefore increasing its resilience.

The Australian Government is committed to effective climate change mitigation and adaptation, both internationally and domestically. Australia has a proven track record of contributing to the international response to climate change. This is occurring through constructive participation in the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol; through practical cooperation with regional partner countries; and through supporting developing countries to take actions that reduce emissions, build climate resilience and foster economic growth. At COP20 in Lima in December 2014, Australia announced its pledge of \$200 million over four years to the Green Climate Fund. This pledge will advance climate action through leveraging private sector-led investment in the Indo-Pacific region, with a particular focus on investment in infrastructure, energy, forestry and emissions reduction programs. This builds on the successful Asia-Pacific Rainforest Summit to reduce deforestation in rainforests, leading to reduced carbon dioxide emissions and increased carbon sequestration.

Australia is committed to achieving a new global climate change agreement at the UNFCCC Conference of the Parties meeting in Paris at the end of 2015 that will see all countries commit to reduce emissions.

Mitigation The Australian Government is focused on undertaking practical mitigation actions.

At home, Australia is committed to reducing its emissions to five per cent below 2000 levels by 2020—this represents a reduction of 19 per cent from business-as-usual levels. Australia has more than met its emission reductions target for the first commitment period of the Kyoto Protocol while increasing real GDP by 88 per cent. Australia’s 2020 target will be delivered through a recently legislated \$2.55 billion Emissions Reduction Fund, which creates positive incentives to cut emissions, including through land sector activities, cleaning up power stations, capturing landfill gas and energy efficiency. The Fund also includes a safeguard mechanism to ensure that emissions reductions paid for by the Government are not offset by a significant rise in emissions elsewhere in the economy. The safeguard mechanism will commence in July 2016.

There will be ongoing monitoring and evaluation of the performance of the Emissions Reduction Fund to ensure its continuous improvement, with an operational review of the Fund to be conducted in late 2015. The Fund will support Australian businesses and households to improve practices and undertake investment to reduce emissions.

As part of work toward a new global climate agreement for the post-2020 period, Australia will review its international targets and settings, taking into account action by all major economies and Australia’s key trading partners.

At the state level, the Queensland Government will contribute to carbon emission reduction efforts by enhanced, practical regulatory controls on the clearing of remnant and high value regrowth vegetation and boosting support for the take-up of renewable energy technology.

Adaptation Australia supports climate change adaptation internationally through practical cooperation with regional partner countries, especially in the Pacific; and through supporting developing countries to take actions that reduce emissions, build climate resilience and foster economic growth.

The Australian Government supports science and practical steps to adapt to climate change at home. It has committed \$9 million over three years (2014–2017) to fund the National Climate Change Adaptation Research Facility to integrate its research into decision making by governments, businesses and households, emphasising support for managing the Australian coastal zone under climate change and sea-level rise.

The National Environmental Science Programme also plays a significant role in improving understanding of the impacts of climate change on the Reef. This program is a long-term commitment to environment and climate research with funding of \$142.5 million over six years. The outcomes of research hubs on tropical water quality, northern biodiversity and earth systems will support actions to build the resilience of the Reef.

The Queensland Government is developing a partnership-driven adaptation strategy to reduce risks to the State's economy, environment, infrastructure and communities from current and future climate impacts. This strategy will incorporate measures which contribute to the resilience of the Great Barrier Reef. In addition, Queensland coastal planning laws will be modernised to take into account the predicted effects of climate change. A number of local governments are already preparing coastal hazard management plans and other initiatives in response to the anticipated effects of climate change.

These actions build from or relate directly to actions in the *Great Barrier Reef Climate Change Adaptation Strategy and Action Plan (2012–2017)*⁴. This strategy outlines how the Great Barrier Reef Marine Park Authority, in collaboration with industry, science and community partners, will work to improve the resilience of the Reef so it is better able to cope with stress and reduce the impacts of climate change.

Pathway to recovery—building resilience and restoring ecosystem health

One of the important tenets of future management of the World Heritage Area is building its resilience in the face of current and future threats, for example climate change. This is reflected in many of the targets, actions and outcomes of this Plan.

Resilience refers to the capacity of an ecosystem to either resist (absorb) an impact or to recover from that impact.

Systems with a high level of integrity and diversity are more likely to have greater resilience and are therefore more likely to be able to resist and recover from impacts. Resilience is strongly linked to the scale and timing of adverse influences, as well as the degree of connectivity in the system. For example, an individual reef could be severely damaged, but as part of a connected and functional network, it retains the capacity to recover.

Work to build resilience must take into account the significant time lags in large natural systems. For example, improvements in land management practices have reduced nutrients entering streams and rivers, but it takes time for this to translate into improved marine condition (see Section 4.3).

The Australian and Queensland governments are providing resources for research and management activities to protect the World Heritage Area and make its ecosystems more resilient. Part of this funding supports the Great Barrier Reef Foundation's research framework to find better ways to measure, monitor and communicate the effects of climate change on coral reefs; and develop a range of adaptation options to address the effects of warming waters, more acidic oceans and measures to improve the resilience of habitats and species.

3.3.2 Land-based run-off—immediate, system-wide

Over the past 30 years, issues relating to water quality have been a focus of management. Throughout the 1980s and early 1990s the focus was strongly on minimising rubbish and sewage disposal within the Marine Park, particularly from coastal communities, island resorts, tourism infrastructure and vessels. By 2002 the sewage facilities of island resorts were improved to tertiary level treatment standards. In parallel, the Queensland Government supported the upgrade of sewage treatment plants discharging into coastal waters that enter the Marine Park, with the aim of achieving tertiary treatment standard by 2010. Almost \$620 million has been invested in upgrading sewage treatment plants in the three largest coastal communities adjacent to the Reef—Townsville, Cairns and Mackay. In total, upgraded facilities remove an estimated 834 tonnes of nutrients annually (approximately 80 per cent of the original total nutrient load from this source) that would have otherwise entered the World Heritage Area.

In the early 1990s management attention also turned to the impacts of the significant sediment and nutrient loads in floodwaters following severe storm and cyclonic activity. In the early 2000s an independent panel of experts determined there was overwhelming evidence that run-off from rural land-based activities were negatively affecting the quality of water entering the Reef. More than 150 years of land-use practices in the catchment had led to increases in the nutrient (including nitrogen and phosphorous), sediment and pesticide loads entering the Reef's waters.

There is evidence that increased nutrients in open water can increase the frequency of crown-of-thorns starfish outbreaks, can make corals more sensitive to temperature stress and can result in effects like algal blooms which affect the health of the Reef. Increasing sediment loads can have far-reaching effects on Reef values, including increased turbidity and smothering seagrasses and corals. Pesticides (including herbicides) from run-off have been detected in inshore areas of the World

Heritage Area and are of concern as they can have a negative impact on marine plants and animals.

The Reef Water Quality Protection Plan was adopted in 2003 to coordinate projects and partnerships in a collaborative effort to halt and reverse the decline in water quality entering the Reef from broadscale land use. It was updated in 2009 and 2013⁵.

Additionally, water quality improvement plans and natural resource management plans help to guide investments in changes to land use practices and restoration. These plans are informed by the Great Barrier Reef Marine Park Authority's *Informing the outlook for Great Barrier Reef coastal ecosystems*⁶ report which identified critical ecosystem functions and processes.

Measures to address declining water quality have been underpinned by an extensive body of science most recently documented in the *2013 Scientific Consensus Statement—Land use impacts on Great Barrier Reef water quality and ecosystem condition*⁷ and the Outlook Report 2014.

Work to decrease land-based run-off in the Reef's waters is now well advanced. Under the Reef Water Quality Protection Plan, significant efforts have been made by landholders, regional natural resource management organisations, agricultural industry bodies, conservation groups and government agencies to implement improved land management practices throughout the Reef catchments in order to decrease the flow of nitrogen, pesticides and sediments to the Reef. The significant uptake of improved practices by land managers, such as through the Project Catalyst partnership, is highlighted in Section 5.2.

Yearly report cards indicate significant progress towards achieving the Reef Water Quality Protection Plan's goals and targets. As at June 2013, the annual sediment load had been reduced by 11 per cent, pesticides by 28 per cent, and nitrogen by 10 per cent compared to a 2009 baseline.⁸ Overcoming the impacts of 150 years of land use change is predicted to take many years.

New initiatives, including an additional \$100 million provided by the Queensland Government, and the Australian Government's new Reef Trust, respond to ongoing water quality concerns in the World Heritage Area. These initiatives will support a growing suite of actions across government, agricultural sectors, researchers and community organisations.

Long-term coral monitoring by the Australian Institute of Marine Science suggests that if crown-of-thorns starfish outbreaks can be reduced, coral cover will increase, despite the impacts of storms, cyclones and bleaching events, reinforcing the need for continuing action to reduce fertiliser run-off that could trigger outbreaks.

The Australian Government is also continuing a crown-of-thorns starfish control program, investing \$10.5 million from 2012 to 2015 to protect high value reefs and increase knowledge of crown-of-thorns starfish biology. The program includes coordinating control activities, providing training for industry divers and community members, and undertaking industry communication and awareness-raising activities. The aim is to maintain coral cover on targeted reefs at greater than the 20 per cent considered essential for reef health and resilience.

3.3.3 Coastal land-use change—immediate, local/regional

Under Australia's federal structure, the Queensland Government has responsibility for land tenure, resources management and land-use planning in the coastal zone and catchments. As outlined in Section 3.2.1, there are a range of laws which cover all aspects of environmental protection, planning and development assessment in Queensland.

Through the coastal zone component of the comprehensive strategic environmental assessment^{9, 10}, the Queensland Government committed to ensuring that development in the Great Barrier Reef coastal zone occurs in an ecologically sustainable manner and that negative impacts on Outstanding Universal Value are avoided. This included the following enhancements to its current management:

- add to the coastal zone protected area estate

- require port master planning that considers potential marine-based as well as land-based environmental impacts
- meet the standards required by the EPBC Act for protection of matters of national environmental significance
- develop a *Direct Benefit Environmental Offsets Management Plan* to maximise the Reef's health and resilience.

In addition, the Queensland Government will:

- strengthen vegetation management laws to protect remnant and high value regrowth native vegetation (including in riparian zones)
- strengthen coastal planning laws based on the best available science, making allowance for expected sea level rise, protecting ecologically important areas such as wetlands and prohibiting development in high-hazard greenfield areas
- ensure ecologically sustainable regulation of water extraction in catchments leading to the Great Barrier Reef.

The Australian and Queensland governments are taking action to limit the impact of ports and port development on the Great Barrier Reef.

When the current Australian Government was elected in September 2013 there were five capital dredging projects either planned or under active assessment that proposed to dispose of dredge material in the Marine Park. The Australian Government has reduced that number to zero (see Appendix F). To ensure this position continues, the Australian Government will use its regulatory powers to permanently ban the disposal of capital dredge material in the Great Barrier Reef Marine Park. In addition the new Queensland Government will, through current and new legislation:

- Protect greenfield areas by restricting new port development in and adjoining the Great Barrier Reef World Heritage Area to within current port limits. These port limits are long-established and fixed in regulations under the *Transport Infrastructure Act 1994* (Qld).
- Restrict capital dredging for the development of new or expansion of existing port facilities to within the regulated port limits of Gladstone, Hay Point/Mackay, Abbot Point and Townsville.
- Ensure that any new development inside these port limits is also consistent with the Great Barrier Reef Marine Park Act, the Queensland Marine Parks Act, their regulations and zoning plans.
- Prohibit the sea-based disposal of material into the Great Barrier Reef World Heritage Area generated by port-related capital dredging.
- Mandate the beneficial reuse of port-related capital dredge spoil, such as land reclamation in port development areas, or disposal on land where it is environmentally safe to do so.
- The Queensland Government will require all proponents of new dredging works to demonstrate their project is commercially viable.
- Establish a maintenance dredging framework which identifies future dredging requirements, ascertains appropriate environmental windows to avoid coral spawning and protect seagrass, and examines opportunities for beneficial reuse of dredge material or on-land disposal where it is environmentally safe to do so.
- Require master plans at the major ports of Gladstone, Hay Point/Mackay, Abbot Point and Townsville which optimise infrastructure and address operational, economic, environmental and social relationships as well as supply chains and surrounding land uses.
- Support on-land disposal or land reclamation for capital dredge material at Abbot Point.
- Not support trans-shipping operations that adversely affect the Great Barrier Reef Marine Park.

- Further protect the Fitzroy Delta, including North Curtis Island and Keppel Bay which are clearly outside the Gladstone port area, through:
 - extension and strengthened conservation zoning in the Great Barrier Reef Coast Marine Park
 - extension of the existing Fish Habitat area
 - establishment of a new net-free zone under fisheries legislation
 - additional protections in associated intertidal and terrestrial areas.

Further port re-development other than capital dredging may occur at Port Alma subject to environmental assessment and appropriate conditions.

Port planning and port operations in and around the World Heritage Area continue to be improved through industry commitment to improve practices, implementation of new Queensland Government policies, the principles developed through the Independent Review of the Port of Gladstone¹¹, and partnership models such as the Gladstone Healthy Harbour Partnership (see Section 5.3). As a consequence, port development in the World Heritage Area and the adjacent coastal zone will be strictly controlled. Further, these initiatives incorporate a best practice approach to port planning, ensuring Outstanding Universal Value is an intrinsic consideration in port management and governance, optimisation of long-established port footprints, transparent decision making and meaningful engagement with affected stakeholders.

Ports and dredging

As an island nation, Australia relies heavily on its maritime links. In 2012-13, ports in and adjacent to the World Heritage Area accounted for 20 per cent of the total throughput of all Australian ports combined, with a value of \$40 billion.

Ports have been operated along the Great Barrier Reef coast since well before its world heritage listing and are included within its boundaries. The footprint of port areas is small, covering less than 0.1 per cent of the World Heritage Area.

By global standards, shipping movements in the Great Barrier Reef are low. For example, on any given day there are 40 to 50 ships transiting through the 348,000 square kilometre Great Barrier Reef World Heritage Area. By comparison there are around 140 ship movements per day within 20 kilometres of the 11,434 square kilometre Wadden Sea World Heritage Area.¹⁵

The importance of ensuring port activities are ecologically sustainable, particularly dredge projects and the disposal of dredge material, is recognised by all levels of government and by the ports industry.

Ports on the Great Barrier Reef coast are major hubs for the export of Australian products including coal, minerals, sugar and other agricultural products, and liquefied natural gas. Imports to Australia through these ports include clothing, food, cars, household goods, fuel and machinery.

The ports of Gladstone (18 berths), Townsville (9 berths), Hay Point (6 berths) and Abbot Point (2 berths) are tiny compared to the megaports of China, Singapore, Europe and the United States which each have 75 to 250 shipping berths, and will remain tiny by comparison after current expansion plans are completed.

The Outlook Report 2014 found the direct and flow-on effects of port activities, including dredging and the disposal of dredge material, generally occur in areas that are already under pressure from an accumulation of impacts. While port activities have a significant localised effect, these activities pose a relatively lower threat to the health of the broader World Heritage Area compared to, for example, the broadscale impacts from land-based run-off.

3.3.4 Direct use—immediate, local/regional

There are multiple activities within the Great Barrier Reef World Heritage Area, collectively referred to as ‘direct use’. These include marine tourism, defence activities, fishing, ports, recreation, research and educational activities, shipping and the use of marine resources by Traditional Owners. Direct use was one of the first influencing factors addressed through application of the Great Barrier Reef Marine Park Zoning Plan restrictions in 2003. At this time the green zones increased from 4.7 per cent to 33 per cent of the property.

These uses are managed through a variety of tools, including zoning plans, plans of management and permits. The tools are designed to ensure activities are ecologically sustainable and the World Heritage Area continues to provide a diverse range of community and economic benefits to current and future generations. Management is focused on addressing the threats of highest risk.

Fisheries in the Great Barrier Reef World Heritage Area are extensively regulated under Australian and Queensland

government legislation. The *Great Barrier Reef Marine Park Zoning Plan 2003* excludes commercial, charter and recreational fishing from one-third of the Marine Park, with trawling excluded from about two-thirds. There is strong evidence that this has resulted in consistently more and larger coral trout and other target fish in zones protected from fishing. Increased reproduction in these no-take zones also appears to benefit fish populations in the entire ecosystem, in turn benefiting overall ecosystem health and resilience. Other regulatory requirements include compulsory licensing for commercial and charter fishers, total allowable catch limits and quotas for commercial operators, possession limits, size limits, restrictions of fishing apparatus, and seasonal closures for all fishers. Significant commercial fisheries also require vessel monitoring systems to be fitted.

The environmental performance of fisheries is assessed under the EPBC Act. The Australian Government Department of the Environment undertakes these assessments on behalf of the Minister for the Environment, in accordance with the *Guidelines for the Ecologically Sustainable Management of Fisheries—second edition*. The assessments include consideration of the impacts of fisheries on marine species protected under Part 13 of the EPBC Act, as well as evaluating fisheries for the purpose of export approval under Part 13A.

The sources of **marine debris** are wide and varied. To address this threat, managers adopt a multi-pronged approach. This includes the regulation of waste from vessels and urban environments, together with a range of partnership activities with local government, industry and community groups. Marine debris is identified as a key threatening process under the EPBC Act.

There has been commercial **shipping** in the Reef area for around 150 years. At Australia's request, the Great Barrier Reef is designated a Particularly Sensitive Sea Area by the International Maritime Organisation, the first in the world. Extensive and stringent navigation and pollution prevention controls are in place to manage the threats from shipping. These include:

- high quality electronic navigation charts and aids to navigation
- pilotage requirements
- two-way routes and other ship routing measures
- vessel traffic services that monitor ship movements 24 hours a day and intervene if ships move beyond defined limits such as designated shipping areas
- emergency response assets and arrangements including emergency towage assets and oil spill response equipment.

Despite increasing ship movements through the World Heritage Area, the comprehensive management measures have substantially reduced the frequency of shipping incidents. The forward-looking *North-East Shipping Management Plan*¹² is designed to further improve shipping management.

North-East Shipping Management Plan

The *North-East Shipping Management Plan*, released in late 2014, builds on existing arrangements to provide an integrated approach to shipping management in the Great Barrier Reef World Heritage Area, Coral Sea and Torres Strait regions. The Plan gives explicit consideration to the Outstanding Universal Value of the World Heritage Area.

The plan notes that the number of shipping incidents is also very low and existing measures are significantly reducing risks. It identifies additional measures to further reduce the risks, including:

- The middle Inner Route (parallel to the Queensland coast between Cairns and Gladstone) and southern area of the Great Barrier Reef will be a major focus with regard to pilotage requirements. Coastal pilotage already operates north of Cairns.
- Increased resources for State port control inspections and further focus on areas related to navigational risk (such as fatigue, passage planning and navigational equipment). This program commenced in 2011 with the phased addition of three new specialist marine surveyors to be based in ports in the north-east region.
- Using emerging ship tracking technology to provide early alerting of ship breakdowns including a 'traffic organisation service'. A new decision support tool has been developed and operators trained. In addition, Automatic Identification System coverage continues to be reviewed to address poor or reduced areas of coverage.
- Working with industry to introduce (ahead of international timelines) the need for ships trading to ports in the region to be equipped with Electronic Chart Display And Information Systems (ECDIS) and have bunker oil tanks fitted in protective locations. From July 2015, existing tankers over 3000 gross tonnes will be required to carry ECDIS and from July 2016 to July 2018 the requirement will apply to cargo ships of 10,000 gross tonnes and above.

The Australian and Queensland governments are working closely with environmental groups and industry bodies to monitor the effectiveness of these risk reduction measures.

Progress on implementation will be reported to the Great Barrier Reef Ministerial Forum in late 2015.

3.4 Comprehensive strategic environmental assessment

After two years of analysis, comprehensive strategic environmental assessment reports for the Great Barrier Reef World Heritage Area and adjacent coastal zone^{9, 10, 13, 14} were endorsed by the Australian Minister for the Environment under the EPBC Act in August 2014.

The comprehensive strategic environmental assessment analysed impacts affecting the Reef from activities on both land and water, assessed the effectiveness of existing management arrangements and identified improvements to strengthen management of the World Heritage Area.

The strategic environmental assessment process has informed development of this Plan and the commitments underpin many of the Plan's actions.

Comprehensive strategic environmental assessment—key actions to manage pressures

Strong foundational management will continue along with new commitments from the comprehensive strategic environmental assessment to strengthen Reef management including:

- **strong joint management** initiatives including:
 - a management framework focused on **clear outcomes** for the future of the Reef’s values and driven by specific measurable targets
- **better guidance** for development activities including:
 - **cumulative impact guidelines** and **regional standards** to improve assessment and management of cumulative impacts from all activities within and adjacent to the Region
- **enhanced management, recovery and monitoring** programs including:
 - a **net benefit policy** to guide decision making and actions required to deliver an overall or ‘net’ improvement to ecosystem health and the condition of the Region’s values
 - a program of **regionally-based Reef recovery actions** to support restoration of critical habitats, functioning of coastal ecosystems and ecologically sustainable multiple use
 - a **Reef-wide integrated monitoring and reporting program**, which is an important part of evaluating performance and guiding adaptive management across the life of the program
 - Reef Water Quality Protection Plan
- **improved planning** for coastal urban areas, industry and ports including:
 - concentrating port development around existing long-established ports in Queensland, and port master planning at major ports
- **rigorous environmental impact statement assessment process** for projects including:
 - **stringent conditions** addressing matters of national environmental significance and Outstanding Universal Value to be incorporated into approval recommendations.

4. Actions for the future

4.1 Vision

The vision for the Great Barrier Reef World Heritage Area is:

To ensure the Great Barrier Reef continues to improve on its Outstanding Universal Value every decade between now and 2050 to be a natural wonder for each successive generation to come.

4.2 The way forward

The *Reef 2050 Long-Term Sustainability Plan* is a major step to ensuring the future health of the Great Barrier Reef World Heritage Area. It builds on the existing strong foundation of management, and is based on the principles of cooperative management underpinned by comprehensive knowledge.

For the first time, actions across government, industry, Traditional Owners, researchers and the community will be fully integrated to ensure that current and future threats to the Reef are addressed in an effective, efficient and appropriate manner. Regional and local approaches, based on both local and expert knowledge, will be central to protecting and managing the Reef's values and the community benefits they support.

Deficiencies and gaps identified in the assessment of effectiveness in the Outlook Report 2014 and the comprehensive strategic environmental assessment are addressed through the initiatives outlined in this Plan. Additional activities have also been developed with the Partnership Group to tackle outstanding issues and enhance protection of the Reef's values such as ecosystem health and biodiversity. The Plan coordinates existing activities and new initiatives by nominating targets, objectives and outcomes to deliver enhancements to the Outstanding Universal Value of the World Heritage Area each successive decade between now and 2050.

The current management arrangements described in Section 3 will continue under this Plan.

4.3 Structure and themes

Central to this Plan is an Outcomes Framework with seven overarching themes— ecosystem health, biodiversity, heritage, water quality, community benefits, economic benefits and governance (Figure 4).

These themes reflect the priority areas for action identified by governments and partners. Together they will address the key risks to the Reef and will ensure ecologically sustainable use can continue.

Under each theme, there are the following components:

- **Actions**—identified components of work to be undertaken to meet the targets
- **Targets**—the results being aimed for by **2020**, a five-year time horizon; to facilitate delivery they are Specific,

Measurable, Achievable, Realistic and Time-bound (SMART)

- **Objectives**—linking targets to outcomes, expected to be achieved by **2035**, the medium term
- **an Outcome**—which must be achieved by **2050** to deliver the vision.

To ensure all the threats arising from human activity are addressed and that actions build on the strong foundation of protection and cooperative management, the Outcomes Framework has been developed using Program Logic methodology. The linkages from the threats, through foundational activities, actions, targets, objectives and the final outcome to be achieved are set out in theme-based diagrams throughout this section.

An analysis of the attributes of Outstanding Universal Value relevant to each theme and its mid-term objectives is presented in Appendix G. How the Plan will improve protection, maintenance and transmission of the World Heritage Area's Outstanding Universal Value is set out in Appendix H.

The lead organisations and partners for delivering each action are identified in Appendix I. The organisations listed against actions are responsible for implementing them and working with partners and community members to achieve the outcomes.

The themes themselves do not stand alone. Only by working towards the outcomes across all the themes will the threats be responded to, resilience strengthened and the vision delivered.

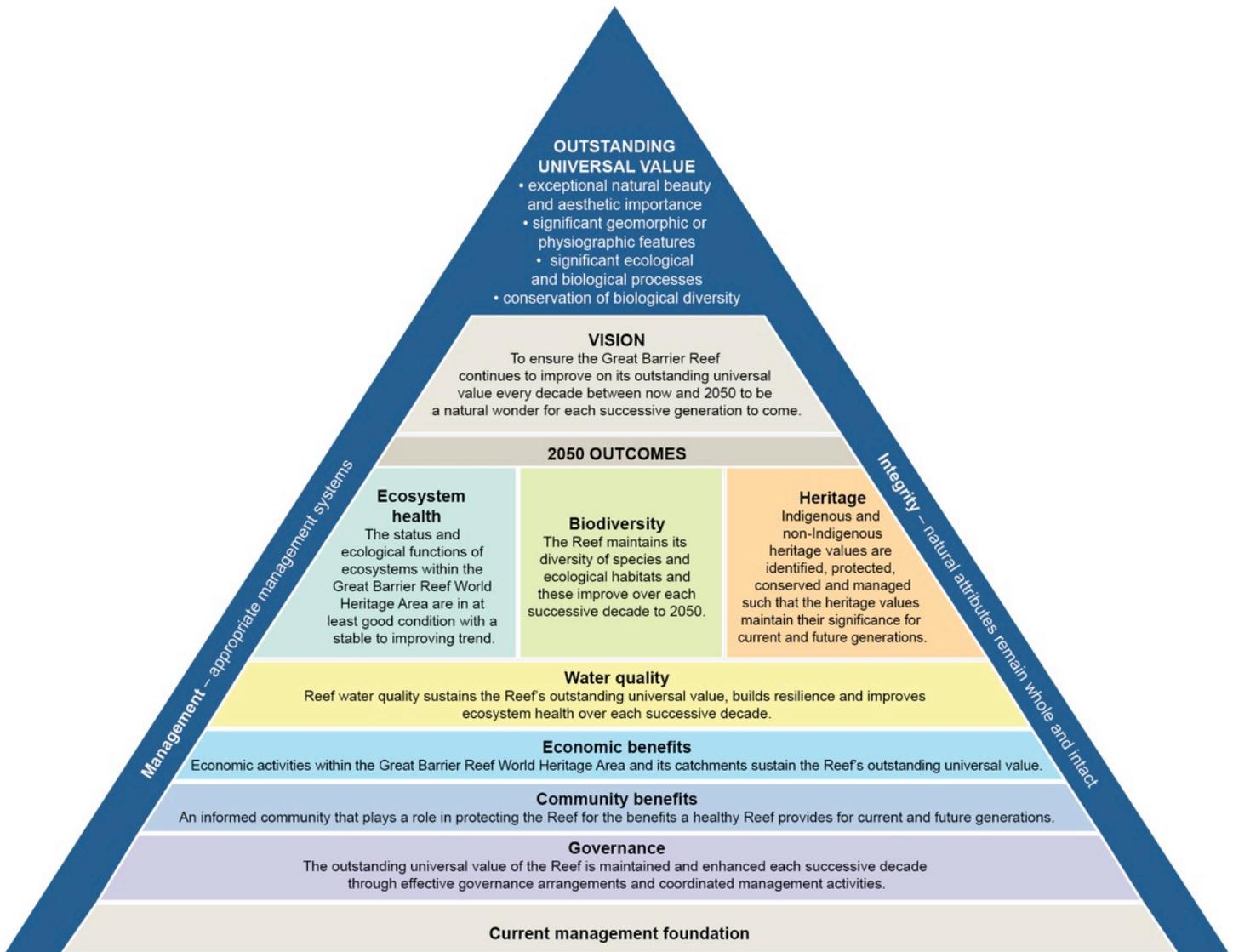


Figure 4: Protecting the Outstanding Universal Value of the Great Barrier Reef World Heritage Area

The vision for the Great Barrier Reef World Heritage Area will be achieved by building on the current management foundation with actions and outcomes under each of the seven identified themes. Combined, this will provide a robust management system for the World Heritage Area, maintain its integrity and protect its Outstanding Universal Value into the future.

Development of the targets and objectives takes into account the likelihood that there will be a significant lag time between actions to stabilise and reduce impacts and a measureable improvement in the condition of the Reef's ecosystem and heritage values. One example is the time between improvements in the quality of water flowing into the marine ecosystem and measurable improvements in water quality in the marine environment, with sediments and nutrients projected to continue affecting biodiversity for many years.

4.4 Principles in decision making

In making decisions about management and protection of the World Heritage Area, decision makers will have regard to the principles set out below.

Maintaining and enhancing outstanding universal value in every action

- Protecting the outstanding universal value of the World Heritage Area is the prime consideration when planning, development and management decisions are made.
- Values and ecological processes in poor condition are restored and values and ecological processes in good condition are maintained.
- Economic growth is sustainable and consistent with protecting outstanding universal value.

Basing decisions on the best available science

- Decisions are based on the full range of knowledge, including scientific understanding, Traditional Owner and community knowledge.
- Decisions take into consideration information on the current and emerging risks associated with climate change.
- Management is adaptive and continually improving, informed by the outcomes of monitoring programs.

Delivering a net benefit to the ecosystem

- Decisions are underpinned by the principles of ecologically sustainable development, including the precautionary principle.
- Impacts are avoided and residual impacts mitigated.
- Offsets are considered only where impacts cannot be avoided or mitigated.
- Actions that restore ecosystem health and resilience — delivering an overall improvement in the Reef's condition — are fostered.

Adopting a partnership approach to management

- Governance arrangements are transparent and accountable.
- Decisions continue to support a wide range of opportunities for sustainable economic, social and cultural activities, including traditional use.
- Management is cooperative, fostering stewardship and strong community support.
- Innovation in management is fostered.