



**Australian Government**



**Queensland Government**

# Reef 2050 Plan— Investment Baseline

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## 1. Introduction

### 1.1 Reef 2050 Plan

The *Reef 2050 Long-Term Sustainability Plan* (Reef 2050 Plan) provides an overarching 35 year strategy for management of the Great Barrier Reef. The Reef 2050 Plan will coordinate actions and guide adaptive responses to the protection and management of the Reef to 2050.

The Reef 2050 Plan incorporates 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. The Reef 2050 Plan responds to the challenges facing the Reef and presents actions to protect its Outstanding Universal Value, health and resilience while allowing ecologically sustainable development and use. It will directly boost the health and resilience of the Reef so that it is best able to cope with effects of climate change.

Tangible outcomes, objectives and measurable targets have been identified across seven themes in the Reef 2050 Plan—biodiversity, ecosystem health, heritage, water quality, community benefits, economic benefits and governance—to form an integrated management framework.

The Reef 2050 Plan prescribes greater coordination, efficiency and effectiveness of actions and describes how all levels of government, non-government organisations, industry and community groups can work together to strengthen and develop initiatives for the Reef.

### 1.2 Investment Framework

Supporting Reef protection and management activities is a priority for both the Australian and Queensland governments. The Australian and Queensland governments will ensure an adequate and efficient allocation of resources to implement the Reef 2050 Plan and achieve outcomes.

The Reef 2050 Plan will be underpinned by a robust investment framework, harnessing and coordinating public and private investment to maximise outcomes for the Reef.

The investment framework is being developed and implemented in a phased approach and is being guided by the following principles:

- **additionality and complementarity**—investments will build on and align with existing efforts
- **clear outcomes**—investments are focused on delivering results to achieve Plan outcomes
- **cost-effectiveness**—investments will be well-planned and cost-effective
- **collaboration and partnerships**—investments will consider opportunities for co-investment, strategic collaboration and partnership
- **evidence-based and scientifically robust**—investments will be informed by the best available scientific and expert knowledge.

The first phase of the investment framework is the investment baseline. The investment baseline provides a snapshot of current investment and work presently being undertaken by both government and non-government sectors, as well as identifying the span of activities where funds are being used to deliver outcomes for the Reef.

A priority for governments is to ensure that existing financial and other resources are efficiently harnessed and directed to activities which support Reef 2050 Plan outcomes. Investment quantum and priorities will adapt and respond to ensure effective delivery of the outcomes over the next 35 years.

## 2. Investment baseline

### 2.1 Scope

This investment baseline provides an overview of the level of investment committed to Reef activities based on an assessment of funding in 2014-15. The baseline provides information on major investments across program areas. It does not detail expenditure on every individual program that may contribute to implementation of the Reef 2050 Plan. The information provided is based primarily on actual investments in 2014-15.

There are a diverse range of organisations that contributed resources to the Reef during 2014-15 and this initial baseline provides a snapshot of major Reef investment activities. The data captured provides a guide to current investment and assists in identifying the gaps in reporting, ensuring we can build a robust investment framework into the future.

## 2.2 Funding for Reef protection and management

The breadth of commitment and investment in the Great Barrier Reef is substantial and delivered through a range of partners, including traditional owners, industry, farmers, philanthropic organisations, government agencies and members of the local community

### 2.2.1 Past investment

Support for Reef protection and management activities has long been a priority for the Australian and Queensland governments. The *Great Barrier Reef Marine Park Act 1975* and the Great Barrier Reef Marine Park Authority were established 40 years ago.

Over the past four decades, the Australian and Queensland governments, along with traditional owners, 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 (see Figure 1).

These investments have delivered significant results. For example, science shows the coordinated collective water quality investments of governments, industry and landholders have significantly reduced pollutant loads entering the Reef over the past 10 years.

Funding of research in key areas has enhanced understanding of the Reef system and improved management responses to key threats. 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 has significantly increased 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.

Figure 1: Great Barrier Reef Funding initiatives for management and research (1981-2019)



Note: Reef 2050 (Reef Programme, Reef Trust and other activities) includes funding for the following elements (earlier funding programmes had similar goals):

- water quality grants and partnerships
- systems repair and urban grants to enhance the reefs resilience to climate change
- water quality monitoring, reporting, research and development
- crown-of-thorns starfish control research and management
- land and sea country Indigenous partnerships
- GBRMPA: critical operational support
- protecting threatened and migratory species, including turtles and dugong.

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## 2.2.2 Current investment

In 2014-15, over \$485 million was invested in the Great Barrier Reef

Current Government investment is guided by the best available scientific information, including how to best measure impacts on the Reef, identify emerging risks, refine targets and objectives, inform policy and management strategies and assess the performance of management responses.

The knowledge base from an extensive amount of on-ground work, science, research and monitoring undertaken over the past four decades is drawn on to prioritise interventions and to ensure the greatest outcomes possible for the Great Barrier Reef. Understanding how pressures act cumulatively on the Great Barrier Reef ecosystem and its biodiversity is key in determining the appropriate decision support tools and methods to address impacts.

The current level of resourcing for Reef management is substantial. Financial and other resources are being directed to a range of Reef activities via a range of partners, including traditional owners, industry, natural resource management groups, governments and the community. In an operating environment where multiple partners are addressing complex issues in a dynamic system, the baseline will assist in identifying the span of activities and investment being made currently towards achieving the Reef 2050 Plan's outcomes. This will help ensure complementarity of investments and provide the mechanism to further integrate activities and better target delivery to ensure maximum benefit for the Reef.

A summary of Reef investments is outlined in Table 1. This funding supports a variety of activities across management, research and on-ground delivery.

**Table 1: Reef investments from government and non-government sources in 2014-15**

Source	(\$m)	Focus
Australian Government	137.4	Management, Research, On-ground delivery
Queensland Government	78	Management, Research On-ground delivery
Local government	228.9*	Management, Research, On-ground delivery
Other non-government	41.3**	On-ground delivery
Total	485.6	

\* Data is an estimate only as local government organisations reported data expenditure differently.

\*\*Data is an estimate only as some organisations were unable to provide a complete response for inclusion in the baseline.

## Management

Significant funding supports management of the Great Barrier Reef Marine Park and World Heritage Area. Management of the Reef relies on a number of Australian and Queensland government agencies to regulate access and to control or mitigate impacts associated with activities. These agencies use a combination of management tools including zoning plans, plans of management, permits and policies. They employ various management approaches including education, incentives, planning, environmental impact assessment, monitoring, stewardship and enforcement.

An example of one of these tools is the Australian and Queensland governments' joint program of field management which is delivered collaboratively by the Great Barrier Reef Marine Park Authority and Queensland Parks and Wildlife Service.

The Joint Field Management Program undertakes operations and routine day-to-day activities in the Great Barrier Reef Marine Park, the adjacent Great Barrier Reef Coast Marine Park and island national parks.

Along the Great Barrier Reef coast, local governments play a significant role in land-use planning, development assessment, management of stormwater run-off, sewage treatment, ecosystem health and biodiversity conservation. 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.

## Research

A range of bodies have been active in undertaking research including Australian and Queensland government agencies, the Australian Institute of Marine Science, academic institutions and research organisations.

Research plays a key role in informing investment in Reef activities and will continue to be a key component of the adaptive management approach to protect and manage the Great Barrier Reef. There are a range of research strategies (e.g. the *Great Barrier Reef Marine Park Authority Science Strategy and Information Needs 2014-2019*, *Reef Water Quality Protection Plan Research, Development and Innovation Strategy 2013 – 2018* and *Reef Water Quality Protection Plan Investment Strategy 2013 – 2018*) that underpin the delivery of Reef activities by Australian and Queensland government agencies and guides research investment.

The Australian and Queensland government's have successfully established a broad reaching network of delivery partners that has enabled the effective leveraging of additional resources that can be allocated to research activities aimed at protecting the Reef. For example, government funding provided to the Great Barrier Reef Foundation has leveraged substantial private sector funding. In addition, research undertaken through the Australian Government's National Environment Science Programme includes a requirement for funding recipients to commit a level of co-investment (cash and in-kind contributions) equivalent to or greater than the amount of government funding they receive.

#### **Great Barrier Reef Foundation: Resilient Reefs Successfully Adapting to Climate Change**

The Great Barrier Reef Foundation is an Australian not for profit organisation that supports research to protect, enhance and preserve coral reefs. Through investment of \$12.5 million from the Australian Government (over four years 2013–14 to 2016–17) towards the research portfolio 'Resilient Coral Reefs Successfully Adapting to Climate Change', the Foundation was able to leverage an additional \$3 million from the Queensland Government, \$8 million from the private sector and \$19 million of co-contributions from research and management agencies. This represents a five-fold return on the original investment.

### *On-ground delivery*

On-ground actions are supported through a range of programs across government, industry and community groups. The major focus of on-ground investment to date has been addressing poor water quality by working with the agricultural sector and regional natural resource management organisations to improve land management through a combination of mechanisms including grants, industry led best management practice programs, extension, education and farm planning.

The Australian Government provides funding to regional natural resource management organisations in the Reef catchments to address sustainable environment and sustainable agriculture priorities. These include improving the management and sustainability of agriculture and the natural resource base, promoting innovation in Australian agriculture, maintaining ecosystem services and protecting the conservation estate, which will subsequently lead to improving the health and resilience of the Great Barrier Reef.

The Queensland Government invests in on-ground grants for natural resource management in the catchments adjacent to the Reef. The Queensland Government has invested in the establishment of industry-led best management practice programs for the cane and grazing industries and extension services to assist these industries in priority areas where land management practice improvements are most needed to improve Reef water quality.

### 3. Government investment

Government investment is projected to be \$2 billion over the next decade

Currently the Australian and Queensland governments are contributing around \$200 million a year to support the resilience of the Reef. This investment provides high quality outcomes, delivered by multiple partners through a number of different activities (Table 2).

Investment by governments is projected to be more than \$2 billion over the next 10 years.

**Table 2: Government financial support for the Reef in 2014–15 (taken from the State Party Report on the state of conservation of the Great Barrier Reef World Heritage Area, with the exception of the Australian Maritime Safety Authority where actual costs were higher due to an expenditure increase in 2014-15).**

Government / agency	(\$m)	Category	Focus
Australian Government Department of the Environment:  Reef investments including the Reef Trust and Reef Programme	55	Management  Research  On-ground delivery	Programmes and projects to address the threats of declining water quality and climate change to the Great Barrier Reef World Heritage Area and to enhance the Reef’s resilience through ecosystem rehabilitation and species protection. Key components include: <ul style="list-style-type: none"> <li>• funding on-ground water quality, systems repair, urban and species protection activities.</li> <li>• water quality monitoring and reporting.</li> <li>• research and development for water quality improvements and enhancing the Reef’s resilience.</li> <li>• crown-of-thorns starfish control and research.</li> <li>• Land and Sea Country Indigenous Partnerships Program.</li> </ul>
Australian Institute of Marine Science	15.1	Research	Research that supports both the protection and sustainable use of marine ecosystems.
Australian Maritime Safety Authority	31.8	Management  On-ground delivery	Promoting maritime safety and protection of the marine environment, preventing and combating ship-sourced pollution in the marine environment, providing infrastructure to support safety of navigation in Australian waters, and providing a national search and rescue service to the maritime and aviation sectors.

Government / agency	(\$m)	Category	Focus
Australian Research Council Centre for Excellence for Coral Reef Studies	2	Research	Integrated research for sustainable use and management of coral reefs.
Great Barrier Reef Marine Park Authority	30	Management On-ground delivery Research	Management of the Great Barrier Reef Marine Park. Services to protect and manage the Reef including permitting, field management, biodiversity conservation, Reef stewardship, marine monitoring, heritage protection, compliance and education.
Maritime Safety Queensland	28	Management On-ground delivery	Promoting maritime safety and the protection of the marine environment, preventing and combating ship-sourced pollution in the marine environment, and providing infrastructure to support safety of navigation in Queensland waters.
National Environmental Research Programme / National Environmental Science Programme	3.5	Research	Provision of science through the Tropical Ecosystems Hub of the National Environmental Research Programme on issues of concern for the management, conservation and sustainable use of the World Heritage listed Great Barrier Reef and its catchment.
Queensland Department of the Environment and Heritage Protection	13	Management On-ground delivery Research	Programmes including research, development of industry-led best management practice programs, wetlands protection, coastal planning and regional waterway report cards.
Queensland Department of Natural Resources and Mines	16	Management Monitoring On-ground delivery	Water resource planning, vegetation management, water monitoring, regional Natural Resource Management investment program.
Queensland Department of Science, Information Technology, Innovation and the Arts	1	Management	Catchment loads monitoring program, water quality modelling, remote sensing, wetlands assessment.

Government / agency	(\$m)	Category	Focus
Queensland Department of Agriculture, Fisheries and Forestry	11	Management Research On-ground delivery	Best management practice extension in agriculture. Fisheries protection and management in the Great Barrier Reef region.
Queensland Department of the Premier and Cabinet	9	Management On-ground delivery	Reef Water Quality Protection Plan coordination (function transferred to the Department of Environment and Heritage Protection from 11 May 2015). Queensland's contribution to field management of the Great Barrier Reef Marine Park (delivered by Queensland Parks and Wildlife Service).
<b>Total</b>	215.4		

## 3.2 Australian Government investment

### 3.2.1 Department of the Environment

Through the Australian Government Reef Programme and Reef Trust, approximately \$55 million was invested in Reef activities in 2014-15, primarily through delivery of on-ground actions.

The Australian Government has committed \$300 million over five years (2013–18) to support improvement in the quality of water entering the Great Barrier Reef, targeted removal of crown-of-thorns starfish, coastal ecosystem protection and restoration and urban water quality planning.

#### *Reef Programme*

The Reef Programme is the Australian Government's primary contribution to delivering on the Reef Water Quality Protection Plan - a joint agreement between the Australian and Queensland governments to halt and reverse the decline in water quality entering the Great Barrier Reef from agricultural landholdings in the catchment.

The five-year program is delivering over \$161 million to actions focused on protecting the Reef by improving the quality of water flowing into the Great Barrier Reef lagoon and enhancing the Reef's resilience.

Under Reef Programme, land managers who receive a water quality grant are required to invest up to 50 per cent of the total costs for improvement. In practice, the program leverages an average of around \$1.60 private co-investment for every \$1 disbursed.

Reef Programme funding supports:

- the uptake of improved land management practices by landholders, and reducing the discharge of nutrients, sediments and pesticides into the Reef, including costs associated with the purchase of new farming equipment, training and education and farm planning and management changes.
- undertaking water quality monitoring and reporting and research and development to track the progress of investment against the broader program objectives.
- improving the management of wetland and riparian areas and the quality of urban water flows into the Great Barrier Reef lagoon through coastal restoration activities and biodiversity repair works.
- crown-of-thorns starfish control by tourism operators to protect high value tourism sites by removing crown-of-thorns starfish on those reefs.
- traditional owners in sea country management through the administration of the Land and Sea Country Partnerships Program.
- research on resilient reefs, delivered through the Great Barrier Reef Foundation, to help inform approaches for the corals to successfully adapting to climate change.
- management and protection activities through the Great Barrier Reef Marine Park to build the resilience of the Reef.
- the Gladstone Healthy Harbour Partnership to help address environmental challenges and assist with the future environmental management of Gladstone Port.
- the protection of green turtle populations on Raine Island through stabilisation works and monitoring and surveillance activities delivered through the Queensland Parks and Wildlife Service.

## Reef Trust

The Reef Trust was established in 2014 with an initial contribution of \$40 million as one mechanism to support the delivery of the Reef 2050 Plan with a focus on achieving targeted water quality improvements, habitat restoration and species recovery. This was boosted in 2015 with an additional Australian Government contribution of \$100 million, bringing total funding in the Reef Trust to \$140 million.

The Reef Trust has been designed to consolidate investment from a range of sources and focus delivery on outcomes for the Great Barrier Reef. The Reef Trust moves away from more traditional funding methods, (typically grant-style arrangements) towards alternative approaches to optimise cost-effectiveness, with a strong on-ground, targeted delivery focus.

Investments through the Trust are disbursed in a phased approach through annual investment strategies. The first two phases of investment identify ten projects being delivered worth up to \$29.9 million over 2014–15 to 2017–18. These projects provide cost-effective, targeted investment to address the greatest threats to the Reef relating to water quality, ecosystem health and biodiversity.

Seven projects are being delivered under the first phase of Reef Trust investment over 2014–15 to 2017–18. This includes:

- \$5.3 million for the Dugong and Turtle Protection Plan, to enhance the protection of marine turtles and dugongs in Far North Queensland and the Torres Strait, including:
  - the Specialised Indigenous Ranger Programme (\$2.0 million).
  - an investigation into environmental crime by the Australian Crime Commission (\$2.0 million).
  - the coordination of marine debris clean-up by the Great Barrier Reef Marine Park Authority (\$0.7 million).
  - investment in the Cairns and Fitzroy Island Turtle Rehabilitation Centre (\$0.3 million through phase one, and an additional contribution of \$0.3 million).
- \$2.0 million for crown-of-thorns starfish control, to manage crown-of-thorns starfish predation on high value tourism reefs and maintain coral cover. This includes training divers in crown-of-thorns starfish management techniques, improving surveillance and contributing to the development of an integrated management approach to reduce damage to coral from future outbreaks.
- \$3.0 million for the grazing land sediment reduction project in the Burdekin and Fitzroy regions to improve water quality in the Great Barrier Reef by engaging graziers to enhance their productivity and profitability while reducing the impact on the environment.

- \$1.7 million for the delivery of successful tenders through a competitive tender for nutrient reduction in the Wet Tropics region cane industry.

#### **The Reef Trust Tender- Wet Tropics**

The Reef Trust Tender – Wet Tropics Programme targeted the greatest water quality risk to the Great Barrier Reef: nitrogen discharge from the Wet Tropics region. The Programme provided financial incentives to sugar cane farmers in the Wet Tropics to improve their nitrogen use efficiency and farm sustainability. It used an innovative market-based approach called a competitive tender to allocate funding in a cost effective manner and maximise outcomes for the Reef.

Funding will be provided to farmers over four years (2014-15 to 2017-18) for enhanced fertiliser management practices on 22 farms. The projects will result in a significant reduction of nitrogen fertiliser applied to participating farms and will help contribute to ambitious targets for cutting nitrogen runoff to the Reef. The benefits are expected to extend well beyond the four-year period, including demonstrating best and innovative practices across the industry.

The second phase of Reef Trust investments includes:

- \$5.4 million to address gully erosion in priority grazing landscapes across the Reef by providing financial incentives to apply low cost, effective gully remediation techniques guided by the latest available scientific information.
- \$3.0 million to run a competitive tender in the Burdekin region to target nitrogen discharge from cane farming, building on the Wet Tropics tender run in the first phase of Reef Trust investment.
- building on crown-of-thorns starfish control programmes with \$7.0 million for tactical control to protect high value tourism reefs, informed by the latest research and monitoring.

## *National Environment Research Programme/National Environmental Science Programme*

In 2014-15, \$3.5 million was invested in funding for Great Barrier Reef related research through the National Environmental Research Programme. In particular, the Tropical Ecosystems Hub has been reviewing issues of concern for the management, conservation and sustainable use of the World Heritage listed Great Barrier Reef and its catchments, tropical rainforests including the Wet Tropics World Heritage Area, and the terrestrial and marine assets underpinning resilient communities in the Torres Strait. This research will be highly relevant and transferred to end-users.

The Hub has managed a total of 38 research projects and two communications and knowledge brokering projects, addressing the following themes:

- Assessing Ecosystem Condition and Trend –to provide a clear understanding of the ecological condition and trends of environmental assets of the Great Barrier Reef, the Torres Strait, and the Wet Tropics rainforest which is fundamental to ecologically sustainable use of those assets, as well as appropriate management.
- Understanding Ecosystem Function and Cumulative Pressures –to build on research on the primary risks and threats to the environmental assets of Queensland. These pressures do not occur in isolation and it is clear that a greater understanding of the cumulative and synergistic impact of these pressures is required for improved management. Changing climate, extreme natural events, changes in natural resource use and population growth are some of the pressures facing these ecosystems.
- Managing for Resilient Tropical Systems – to provide knowledge and options to assist key decision makers in government, industry and the community in managing the complex ecosystems of the Great Barrier Reef, the Wet Tropics rainforests (including the World Heritage Area) and the Torres Strait.

The Tropical Ecosystems Hub's research program builds on 18 years of Commonwealth funded research including the Marine and Tropical Research Facility and two Cooperative Research Centres. These investments improve regional environmental decision making and inform national, state and regional stakeholders through better understanding of the status and future trends of key species and ecosystems in Queensland; the social and economic interactions between Queensland communities and their regional environmental assets; the performance of existing management arrangements against their targets; and the options for adaptation and new management approaches to enhance ecological and social resilience in a changing environment.

The National Environmental Science Programme will further build on this work and play a significant role in improving understanding of the impacts of climate change on the Reef. This program is a long-term Australian Government 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.

### 3.2.2 The Great Barrier Reef Marine Park Authority

In 2014-15, the Authority invested approximately \$50 million in management of the Great Barrier Reef Marine Park. This includes \$8 million from the Queensland Government to the Joint Field Management Program which is matched by the Commonwealth. The remaining funding supports the Authority's core operations including permitting, field management, biodiversity conservation, Reef stewardship, marine monitoring, heritage protection, compliance and education.

Under the *Great Barrier Reef Marine Park Act 1975*, the Authority is responsible for the long term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. The Authority's key priorities for the next five years are informed by the Reef 2050 Plan, findings from the *Outlook Report 2014* and the *Great Barrier Reef Region Strategic Assessment Report*, which together provide the most comprehensive body of work on the Reef.

The Authority has established a strong and comprehensive set of management arrangements to protect the Reef and has adapted them over time in response to emerging issues and improved understanding.

Implementation of an outcome-based adaptive management framework allows capacity to respond to the dynamic nature of the Great Barrier Reef ecosystem. This includes work to develop an Integrated Monitoring and Reporting Program to measure performance against the outcomes and to guide adaptive management. This approach integrates data from a range of sources including monitoring and reporting activities, an understanding of the region's values, including matters of national environmental significance, Indigenous heritage values and socio-economic benefits.

The Authority is the primary environmental regulator for the protection of the Great Barrier Reef Region. It implements a range of management tools and approaches, sets the standards needed to achieve Reef management measures including zoning plans, plans of management, permits, economic mechanisms, education, compliance and enforcement.

Key environmental regulation activities include: streamlining and enhancing regulatory tools to improve compliance and reduce unnecessary burden while maintaining strong levels of environmental protection; developing offset guidelines and a net benefit policy to minimise impacts from activities and restore ecosystem health; continuing to work with traditional owners through the implementation of Traditional Use of Marine Resource Agreements and cooperative management approaches; and protection and management of heritage values in the Region.

Engagement activities include working with traditional owners, community, business, industry and government to influence best practice and identify pragmatic solutions to achieve long-term protection of the Reef. Extensive engagement underpins delivery of:

- a Reef recovery program involving the adoption of regionalised and cooperative management approaches to protect and restore biodiversity hotspots and support sustainable use.
- the crown-of-thorns starfish control program in partnership with the Association of Marine Park Tourism Operators.
- stewardship programs including the Reef Guardian program for schools, local government, fishers and farmers, and the High Standard Tourism Program.
- education and community awareness programs about the Great Barrier Reef, its protection and management.
- continuing international engagement and capacity building.
- a coordinated approach to community consultation and establishment of a peak Great Barrier Reef advisory group.

### 3.2.3 Australian Institute of Marine Science

The Australian Institute of Marine Science invested \$15.1 million in 2014-15 in research that supports both the protection and sustainable use of marine heritage. This included a dedicated Great Barrier Reef program which conducts interdisciplinary research to provide managers and policymakers with a better understanding of the Reef's vulnerability to climate change and ocean acidification, and its interactions with local and regional environmental stressors. The key objectives of this work include:

- addressing critical and high-priority issues surrounding the vulnerability and resilience of Australia's tropical coral reefs.
- developing innovative frameworks and tools for identifying optimal management and policy options under global, regional and local change.
- supporting management decisions that can enhance coral reef resilience effectively in the face of cumulative pressures and limited management resources.
- implementing integrated observing systems and robust long-term monitoring of key components of the Great Barrier Reef.

### 3.2.4 Australian Maritime Safety Authority

The Australian Maritime Safety Authority, together with the Great Barrier Reef Marine Park Authority and Maritime Safety Queensland, administer a suite of measures to regulate all ships and vessel activities in the region. In 2014-15, the Australian Maritime Safety Authority dedicated approximately \$31.8 million to promoting maritime safety and protection of the marine environment, preventing and combating ship-sourced pollution in the marine environment, providing infrastructure for safety of navigation in Australian waters, and providing a search and rescue service to the maritime and aviation sectors.

The three agencies share the common goals of protecting the marine environment from adverse consequences of shipping operations and providing for the safety of life of ships' crews, passengers and other users of the Great Barrier Reef. The agencies support and provide for efficient economic activity by shipping and minimising regulation of, and interference with, human activities in the region, consistent with meeting safety and environment protection goals and objectives.

A range of complementary measures are managed by the Australian Maritime Safety Authority, in collaboration with the other agencies, to provide for shipping in the Great Barrier Reef and include:

- management of the region as a Particularly Sensitive Sea Area by the International Maritime Organisation allowing Australia to introduce associated protective measures.
- management of an International Maritime Organisation ship reporting system whereby ships are required to report their position on a regular basis.

- oversight of a compulsory pilotage regime for ships transiting navigationally complex areas of the Reef with the pilot providing detailed local knowledge to assist safe passage.
- management of a coastal vessel traffic service allowing near real time monitoring of ship traffic to provide information to a ship's master on potential traffic conflicts and other navigational information.
- oversight of an emergency management towage system and associated response arrangements which includes the provision of a dedicated emergency towage vessel.
- an extensive aids-to-navigation network such as lights, buoys and satellite systems.

### 3.3 Queensland Government investment

The Queensland Government invested more than \$35 million into Reef water quality initiatives during 2014-15, with the administration and delivery of these split across a number of agencies. Queensland contributed to the Joint Field Management Program for the Great Barrier Reef Marine Park, maritime safety and fisheries management. In addition to this it committed another \$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. However, the majority of this funding will be allocated after 2014-15.

The Office of the Great Barrier Reef has been established in the Department of Environment and Heritage Protection to coordinate funding and programs to drive improved accountability for Reef outcomes.

#### 3.3.1 Department of the Environment and Heritage Protection

The Office of the Great Barrier Reef within the Department of Environment and Heritage Protection invested approximately \$13 million of the Queensland Government's \$35 million expenditure into Reef water quality initiatives. The majority of this investment (\$10 million) was for the Reef Protection Program which involves the delivery of Best Management Practice programs, extension and the Reef Water Quality Science Program.

The Best Management Practice program established industry-led programs to support sustainable production for the cane and grazing industries. Investment has contributed to developing a package of support with the Australian Banana Growers' Council for a Banana Best Management Practice system. The programs involved encouraging landholders to adopt management systems that maximised Reef water quality improvements while enhancing business performance and resilience, as well as environmental outcomes.

The remaining funding provides for investment in a range of initiatives including setting of water quality objectives, environmental (including coastal) planning, and support for the Gladstone Healthy Harbour and Mackay Whitsundays Healthy Rivers to Reef Partnerships.

The Department of Environment and Heritage Protection will be responsible for administering the additional \$100 million of Queensland Government investment. Of this, \$10 million will be set aside to deliver a net fishery buy back scheme that is to be delivered by the Queensland Department of Agriculture and Fisheries.

#### **Gladstone Healthy Harbour Partnership**

The Gladstone Healthy Harbour Partnership brings together community, industry, science, government and statutory bodies to maintain and, where necessary, improve the health of Gladstone Harbour.

A key principle underpinning the Partnership is that more can be achieved through a cooperative and collaborative arrangement where resources are pooled. In 2014-15 the Queensland Government committed \$1.5 million to the Partnership on the understanding that partners would match this funding. The Australian Government provided \$0.5 million per annum and industry, local government and the community provided the remainder. This leveraging has resulted in more than \$3 million per annum for the Partnership.

Partners also work together to build on and integrate existing industry and research efforts to maximise and optimise the value of investment (both time and money). A similar approach is now being applied to the Mackay Whitsunday region to effectively coordinate water quality management across catchments and the Reef.

#### **3.3.2 Department of Natural Resources and Mines**

The Department of Natural Resources and Mines invested \$16 million into vegetation management (including riparian and ground cover mapping), water resource planning, and water (catchment loads) monitoring and modeling including projects under the Regional Natural Resource Management Investment Program.

##### *Queensland Natural Resource Management Investment Program*

The Queensland Government invested in on-ground grants through the Queensland Natural Resource Management Investment Program that will provide \$30 million over five years (2013-2016) (\$6 million per year) for natural resource management in the catchments adjacent to the Reef. Funded projects were administered through regional natural resource management bodies. The projects focused on activities that protect, improve and restore waterways and rangelands by addressing weeds and pests, and improving soil, vegetation and water quality at a river catchment or other landscape scale.

### 3.3.3 Department of Science, Information Technology and Innovation

The Queensland Department of Science, Information Technology and Innovation contributed approximately \$1 million for the 2014-15 financial year for science activities as part of the Queensland Government's \$35 million Reef water quality expenditure. This contribution, along with contributions from other Queensland Departments and the Australian Government, was used to deliver the science component of the Reef Water Quality Protection Plan Paddock to Reef Program. The science activities involved undertaking catchment water quality monitoring and modelling, as well as remote sensing of landscape indicators including ground cover, riparian vegetation, wetlands and gully erosion.

### 3.3.4 Department of Agriculture and Fisheries - Extension and education

The Queensland Department of Agriculture and Fisheries invested nearly \$4 million for the 2014-15 financial year as part of the Queensland Government's \$35 million expenditure. This included providing extension services to the cane and grazing industries to adopt more sustainable practices in priority areas where land management practice improvements are most needed to improve Reef water quality.

The Department invested \$7 million in other Reef related initiatives, primarily for fisheries protection and management in the Great Barrier Reef and its catchments.

### 3.3.5 Department of the Premier and Cabinet

The Queensland Department of the Premier and Cabinet invested nearly \$1 million for the 2014-15 financial year as part of the Queensland Government's \$35 million expenditure to coordinate the Reef Water Quality Protection Plan implementation. This function transferred to the Queensland Department of Environment and Heritage Protection on 11 May 2015. In addition, the Department coordinated the Queensland Government's contribution to Joint Field Management of the Great Barrier Reef World Heritage Area. Funding is provided through the Department of the Premier and Cabinet.

### 3.3.6 Maritime Safety Queensland

The Queensland Government's Maritime Safety Queensland invested \$28 million in activities related to the protection of the Reef. This included minimising vessel-sourced waste, responding to marine pollution, providing essential maritime services such as navigation aids and vessel traffic services, and improving maritime safety for shipping through regulation and education. Many of these activities were undertaken in collaboration with the Australian Maritime Safety Authority and Great Barrier Reef Marine Park Authority as outlined above.

### 3.3.7 Queensland Parks and Wildlife Service

The Queensland Department of National Parks, Sport and Racing implemented the \$8 million Queensland Government investment component of the Joint Field Management Program with the Great Barrier Reef Marine Park Authority. The Joint Field Management Program provides for compliance management, species management, climate change, facilities management, natural and cultural resource protection, and Indigenous engagement within the Great Barrier Reef Marine Park (Commonwealth) and the Great Barrier Reef Coast Marine Park (Queensland).

#### **Raine Island Recovery Project**

Raine Island is the world's largest green turtle rookery. During the nesting season, as many as 60,000 female green turtles swim thousands of kilometres from their feeding grounds in Indonesia, Papua New Guinea, the Torres Strait and the West Pacific, to this tiny island to lay their eggs.

The Raine Island Recovery Project demonstrates a successful partnership approach to improving outcomes for endangered species and ecosystems in the Great Barrier Reef. Partners including the Queensland Department of Environment and Heritage Protection and the Queensland Parks and Wildlife Service, the Great Barrier Reef Marine Park Authority, and traditional owners support the project through in-kind contributions and direct funding. In 2014, the partnership was extended to the Australian Government Department of the Environment providing a commitment of \$400 000 to support the Project.

In 2015, an additional \$5.4 million dollars over 5 years was provided by BHP Billiton to support the on-going implementation of the Project. Other government departments, universities and research organisations also collaborate on the project with the invaluable support of volunteers. The project is considered world class and involves significant intervention works, monitoring and adaptive management to improve nesting success of the green turtle as well as seabird populations.

### 3.4 Local Government investment

The Reef benefits from a significant contribution of funds from local governments. A partial analysis of investment by councils conducted in 2015, found that 15 of the 27 local governments within the Great Barrier Reef catchment were spending a total of \$228.9 million in 2014–15 on activities that directly contributed to the protection and management of the Great Barrier Reef. This included investment in activities such as improving sewage treatment and water quality, rehabilitating waterways and coastal areas, managing vegetation and pests, sustainable agriculture initiatives and local community education and awareness activities (Table 3).

In addition to investment in direct Reef protection, local governments' invest in indirect works that co-benefit the Great Barrier Reef. For example, sewerage treatment has important public health and waste management objectives but also must meet water quality standards to ensure protection of the Reef. These investments play a critical role in mitigating the impact of human settlements adjacent to the Reef and are important to be considered within the investment baseline.

#### **Whitsunday Regional Council**

The Whitsunday Regional Council recently completed the construction and upgrade of the Proserpine and Cannonvale wastewater treatment plants, with the plants becoming operational in February and May 2014 respectively. The \$45 million project was part funded by the Queensland Government (which contributed \$15.6 million) and completed in partnership with Tenix (a private company). The plants were designed to cater for anticipated increases in population while meeting the most stringent effluent discharge requirements to protect the Great Barrier Reef. The new facilities have contributed to nutrient removal with reductions of nitrogen and phosphorus in effluent by up to 96%. The plants feature state-of-the-art technology including enhanced processing technology, advanced biological and chemical nutrient removal, mechanical sludge dewatering and odour control.

The figures in Table 3 are indicative only as councils used different approaches to report capital and recurrent expenditure and not all councils wholly within the Great Barrier Reef catchment were surveyed. Additionally, capital expenditure can fluctuate from year to year. Further work is required to develop a data collection framework for future reporting as part of the Reef 2050 Plan Investment Framework. Properly accounting for local governments' relevant activities and expenditure is vital to presenting a complete picture of investment that contributes to protecting and managing the Great Barrier Reef.

**Table 3: Council nominated expenditure on Great Barrier Reef protection, 2014-15**

Expenditure	Capital exp (\$M)	Recurrent Exp (\$M)	Total** (\$m)	Focus
Water quality	\$92.8	\$54.7	148.9	Actions include water quality monitoring, wastewater management, urban stormwater treatment, sediment and erosion control and management.
Ecosystem health	\$30.5	\$35.7	68.8	Waterway rehabilitation, waste avoidance and management, litter management, vegetation clearing compliance, coastal rehabilitation, illegal dumping and fishway maintenance.
Biodiversity	\$0.012	\$2.3	5.5	Vegetation and pest management, natural resource management, wetland rehabilitation, erosion control and weed management.
Heritage	\$0	\$0.55	0.6	Land planning and management.
Community benefits	\$0.4	\$1.4	2.0	Awareness and engagement, environmental education, sustainable agriculture initiatives, National Water Week activities, employment fostering programs, capacity building and partnerships development.
Economic benefits	\$1.3	\$1.3	2.6	Management of coastal hazards and adaptation strategies.
Governance	\$0.012	\$0.5	0.5	Management of development application assessments (erosion and sediment control plans, water quality and coastal environment issues), site inspections, monitoring and reporting associated with Reef Guardian Councils.
<b>Total</b>	<b>\$124.9</b>	<b>\$96.5</b>	<b>228.8*</b>	

\*Data is an estimate only as local government organisations reported data expenditure differently.

\*\*Numbers in table may not sum correctly due to rounding being applied.

## 4. Non-government investment

### 4.1 Private and philanthropic investment

The private and philanthropic sector includes industry groups, landholders (e.g. graziers, dairy farmers and vegetable growers), private business, natural resource management groups, non-government organisations and philanthropic organisations. This sector contributes significantly to Great Barrier Reef protection and enhancement, including through awareness raising, community education, on-ground works, monitoring, planning and research. For example, the Great Barrier Reef Foundation play an important role in accessing private investment to achieve Reef outcomes, primarily in the research space.

#### **e-Reefs**

The Great Barrier Reef Foundation is working with a range of partners to deliver eReefs – a cutting-edge project which will deliver near real time water quality results for the Reef. Using the latest technologies to collate data, and new and integrated modelling, eReefs will produce powerful visualisation, communication and reporting tools. It will provide for the Reef information akin to that provided by the Bureau of Meteorology for weather, and will allow Reef managers to better understand the changes that need to be made on land to improve Reef water quality, prevent impacts such as crown-of-thorns starfish outbreaks and build the Reef's resilience.

The project is a collaboration, which brings together funding from the Bureau of Meteorology, CSIRO, the Science and Industry Endowment Fund, BHP Billiton Mitsubishi Alliance and the Queensland and Australian Governments. The Queensland Government recently announced it would provide \$3 million over 3 years to support eReefs, which leverages the \$11 million investment made by the Australian Government, the Science Industry Endowment Fund and the private sector through the BHP Billiton Mitsubishi Alliance in the eReefs project.

A study of many private and philanthropic organisations active in Reef activities in 2014-15 indicated that direct cash contributions were approximately \$27.8 million with an additional estimated \$13.5 million of in-kind contributions, totalling over \$41.3 million (Table 4). Co-contributions to Commonwealth grant programs formed a significant part of total investment, making up \$16.41 million of the total \$41.3 million for 2014-15.

The study identified that investment activities were dominated by water quality improvement (\$31.5 million) with other investment focusing on governance (\$4.13 million) and biodiversity protection (\$2.09 million). The majority of private and philanthropic investment was provided by landholders (\$18.9 million), large businesses (\$10 million) and small businesses (\$6.08 million). Investment was predominantly focused on on-ground works (\$27.69 million), monitoring (\$6.53 million) and research (\$4.03 million).

The non-government investment detailed in Table 4 represents a snapshot of investment by the private and philanthropic sector. Further investigation will be undertaken to obtain a more comprehensive picture of investment by these sectors when developing the investment framework.

#### **Cane grower co-investment**

In the O'Connell River catchment in the Mackay Whitsunday region, cane production dominates the agricultural landscape. Cane growers in the catchment provided private co-contributions to the Australian Government's Reef Programme grants aimed at reducing the levels of sediment, nutrients and pesticides leaving their land. In this case, cane growers constructed sediment retention structures and holding ponds to withhold sediment, excess nutrients and pesticides. Cane grower's private co-investment focused on the provision of materials, excavation and site preparation for replanting and ongoing site maintenance. This investment contributes to reduced sediment, nutrient and pesticides leaving their land and entering the Reef.

**Table 4: Non-government investment on Great Barrier Reef Protection, 2014-15.**

<b>Expenditure</b>	<b>Cash (\$m)</b>	<b>In-Kind (\$m)</b>	<b>Total (\$m)**</b>	<b>Focus</b>
Water quality	\$21.80	\$9.70	\$31.50	Agricultural and urban water quality.
Ecosystem health	\$0.01	\$0.66	\$0.7	Waterway health management including bank stabilization.
Biodiversity	\$1.51	\$0.59	\$2.1	Weed control, crown-of-thorns starfish research, and habitat restoration and protection activities.
Heritage	\$0.00	\$0.00	\$0.0	Includes in-kind contributions of approximately \$2000 for a cultural heritage conservation project.
Community benefits	\$0.60	\$0.33	\$0.9	
Economic benefits	\$0.00	\$2.00	\$2.0	Site stewardship associated with tourism activities.
Governance	\$3.92	\$0.21	\$4.1	Planning activities such as water quality improvement plans.
<b>Total</b>	<b>\$27.83</b>	<b>\$13.48</b>	<b>\$41.3*</b>	

\*Data is an estimate only as some agencies organisations were unable to provide a complete response for inclusion in the baseline.

\*\* Numbers in table may not sum correctly due to rounding being applied.

## 4.2 Offsets

The Australian Government's approach to managing impacts on the Reef uses a hierarchy of 'avoid, mitigate and offset'. While avoiding and mitigating impacts will remain the primary focus of management efforts, these approaches are not sufficient on their own. Offsets are measures that compensate for the residual impacts of an action on the environment, after avoidance and mitigation measures are taken.

Environmental offsets are a tool to assist with compensating for significant residual impacts to the Great Barrier Reef and have the potential to improve the integrity and resilience of the Outstanding Universal Value. A key principle underpinning the use of offsets is achieving a net benefit in the condition of the relevant values and processes within the World Heritage property.

Where appropriate, offsets are considered during the assessment phase of an environmental impact assessment under Commonwealth or State environment legislation. Offsets can help to achieve long-term environmental outcomes for those matters protected under the relevant legislation, while providing flexibility for proponents seeking to undertake an action that will have residual impacts on those protected matters.

The Great Barrier Reef Marine Park Authority is developing guidelines for the application of Great Barrier Reef offsets to maintain and improve the condition of the Reef's values. The offsets policy will be built around the net environmental benefit approach and will acknowledge that proposals with unacceptable impacts will not be approved. Offsets will be based on both scientifically robust and transparent information that sufficiently analyses and documents the benefit that will be achieved.

Offsets can be delivered by a range of mechanisms, including market-based mechanisms and contracting third party providers. Offsets may be paid into the Australian Government's Reef Trust which is intended to pool funding from a range of sources, including environmental offset funds that target specific residual significant impacts on the Great Barrier Reef. Offsets delivered through the Reef Trust must provide an environmental conservation benefit and improve or maintain the specific attributes or values that are impacted by any development action. Work to incorporate offset funding into the Reef Trust has started, with arrangements expected to be finalised in 2015.

## 5. Alignment of investment with the Outcomes Framework

The Reef 2050 Plan is a key driver in delivering future investment

### 5.1 Addressing targets and objectives

Government programs and investment have been targeted to the improvement of water quality and environmental health over many years, while allowing ecologically sustainable use and development. As such, current investments are already contributing to delivering on the outcomes of the Reef 2050 Plan (Table 5). An initial analysis below indicates current investment is addressing many of the key risks underpinning the actions, targets and objectives outlined in the Reef 2050 Plan. This can be demonstrated in water quality where the years of work and investment are showing significant results in terms of reductions in pollutants entering the Reef.

**Table 5: Investment alignment with Reef 2050 Plan outcomes**

Current baseline investment 2014-15	Ecosystem health	Biodiversity	Heritage	Water quality	Economic benefits	Community benefits	Governance
Australian Institute of Marine Science - research and monitoring that supports both the protection and sustainable use of our marine ecosystems.	●	●	●	●		●	●
Australian Maritime Safety Authority - activities promoting maritime safety and protection of the marine environment, preventing and combating ship-sourced pollution, providing infrastructure to support safety of navigation, and providing a national search and rescue service to maritime and aviation sectors.	●	●	●	●	●	●	●
Australian Government Department of the Environment Reef Programme - activities address decline in water quality through agricultural practice change, coastal ecosystem protection and restoration, and urban water quality planning.	●	●	●	●			●
Australian Government Department of the Environment Reef Trust - activities address the threats of declining water quality and enhancing the Reef's resilience through ecosystem rehabilitation and species protection.	●	●		●			
Australian Research Council Centre for Excellence for Coral Reef Studies - integrated research for sustainable use and management of coral reefs.	●	●	●	●	●	●	

Current baseline investment 2014-15	Ecosystem health	Biodiversity	Heritage	Water quality	Economic benefits	Community benefits	Governance
Great Barrier Reef Marine Park Authority - activities to protect and manage the Great Barrier Reef Marine Park including permitting, field management, biodiversity conservation, Reef stewardship, marine monitoring, heritage protection, compliance and education.	●	●	●	●	●	●	●
Maritime Safety Queensland - promoting maritime safety and the protection of the marine environment, preventing and combating ship-sourced pollution in the marine environment, and providing infrastructure to support safety of navigation in Queensland waters.	●	●	●	●	●	●	●
National Environmental Research Programme/ National Environmental Science Programme - provision of science through the Tropical Ecosystems Hub of the National Environmental Research Programme on issues of concern for the management, conservation and sustainable use of the World Heritage listed Great Barrier Reef and its catchment.	●	●	●	●	●	●	
Queensland Department of the Environment and Heritage Protection - programmes including education and outreach, research, and development of industry-led best management practice programmes, coastal planning and management.	●	●	●	●	●		
Queensland Department of Natural Resources and Mines - on-ground water quality, systems repair, hydrological monitoring and reporting.	●	●	●	●	●	●	●
Queensland Department of Science, Information Technology, Innovation and the Arts - Queensland Department of Science, Information Technology, Innovation and the Arts - water quality report card modelling.	●	●	●	●			●
Queensland Department of Agriculture, Fisheries and Forestry - best management practice extension in agriculture and fisheries protection and management in the Great Barrier Reef region.	●	●	●	●	●	●	
Local governments - water quality monitoring, wastewater management, urban stormwater treatment, sediment and erosion control and management, natural resource management, land planning, environmental education, capacity building and partnership development.	●	●	●	●	●	●	●
Private investment- agricultural and urban water quality, water quality improvement plans, waterway health management (including bank stabilization), weed control, crown-of-thorns research, habitat restoration and protection, community involvement, site stewardship.	●	●		●	●	●	●

## 5.2 Gap analysis

Alongside the work being undertaken as part of the prioritisation of actions in the Reef 2050 Plan, further analysis of current investment in the Reef will be undertaken. This work will look into the nature of the activities being supported through current investment streams with a view to identifying any gaps in terms of actions to be delivered over the coming years. The analysis will consider the independent reviews of management effectiveness undertaken for the 2009 and 2014 Outlook Reports and the comprehensive strategic assessment of the Great Barrier Reef World Heritage Area and adjacent coastal zone. Additional work will aim to capture details of investment by the private and philanthropic sectors. This gap analysis will help decision-makers in annual policy and budgetary planning processes.

Initially the gap analysis will inform the development of the investment framework and it is anticipated that gap analysis will then be undertaken regularly to ensure that efforts are being directed and coordinated in a way which maximises outcomes under the Reef 2050 Plan.

## 6. Investment prioritisation

The investment baseline is the first step towards developing a comprehensive investment framework under the Reef 2050 Plan

An important component of the investment framework will be prioritising actions to ensure maximum benefit and efficiency and help inform the effective allocation of resources. It is important for governments that public investments are appropriately targeted to implement the Reef 2050 Plan.

There are a significant number of programs, activities and actions underway in management of the Great Barrier Reef, delivered by a wide range of people including traditional owners, industry, farmers, government agencies and members of the local community. Prioritising actions within the Reef 2050 Plan will be critical to optimising outcomes.

The prioritisation process will be informed by scientific advice and partner groups, including the Independent Expert Panel and the Reef 2050 Advisory Committee. This work will be supported by the best available science and will take into account timeframes for implementing individual measures and the benefits they will deliver. The outcomes of initial prioritisation work will be provided to the Great Barrier Reef Ministerial Forum in December 2015.

The process of prioritisation will be informed by the findings of Outlook Report 2014 and the comprehensive Strategic Assessment of the Great Barrier Reef World Heritage Area and adjacent coastal zone – including the independent reviews of management effectiveness. The National Environmental Science Programme has a role in supporting research which will help to inform the delivery of actions and the form of implementation. Work undertaken as part of developing water quality improvement plans in Reef catchments and scientific analysis underpinning Reef Water Quality Protection Plan will guide management responses.

To ensure momentum is not lost, those actions which are already underway will continue during the prioritisation process. In addition, the Independent Expert Panel may provide advice on other actions to be completed early.

In undertaking the prioritisation process, which will commence in mid-2015, matters to be included are:

- actions within the Reef 2050 Plan to address key threats identified in the Outlook Report 2014.
- development of an appropriate methodology for the prioritisation of actions informed by the best available science, and taking into account the feasibility or likelihood that actions can be carried out successfully under current conditions.
- the timeframe for implementation of actions, the objectives and targets to which they will contribute and the specific steps required to achieve them.
- the relationship between actions and possible groupings of actions that will deliver enhanced outcomes and efficiency of delivery.
- any other complementary benefits these actions will deliver, such as reducing carbon emissions, increasing jobs growth or social benefits.
- how the outcomes of the prioritisation process are best integrated into implementation plans and a process for their review and adaptation as new information and science emerges.
- capacity of agencies, organisations and industries responsible for implementing the actions.
- the expected timeframes for benefits to be realised.

The prioritisation of actions within the Reef 2050 Plan will enable governments and other organisations to ensure appropriate and timely resourcing for the Reef 2050 Plan to meet its targets and objectives.

The Queensland Government has established the Great Barrier Reef Water Science Taskforce, which has commenced work to identify priority areas for investment. The Taskforce will be working closely with the Reef 2050 Independent Expert Panel to ensure a consistent approach to prioritisation to maximise the effectiveness of both Australian and Queensland Government investment.

Over time, the prioritisation process will be informed by the Integrated Monitoring and Reporting Program underpinning the Reef 2050 Plan which will ensure an adaptive approach is taken to implementation as new information and science emerges.

## 7. Funding diversification

The current range of organisations and streams of investment supporting Reef activities demonstrates the breadth of commitment to ensuring the long-term health of the Reef. In particular, the growing interest in financing for Reef projects from the private sector and other non-government organisations indicates there is potential to expand the sources of investment supporting the Reef's resilience. The third phase of the Reef 2050 Plan's investment framework will be to facilitate greater opportunities for partnerships and private investment to work effectively alongside public investment.

This will include, by the end of 2015, identifying mechanisms for enabling diversification and innovation in funding approaches. This will include a focus on the Australian Government's Reef Trust which has been established to allow for funding diversification to support the delivery of the Reef 2050 Plan through opportunities for partnerships and private investment. Developing the best approaches and mechanisms for harnessing future investment will be informed by advice from business, financial and philanthropic experts.

## 8. Adaptive investment approach

### 8.1 Integrated Monitoring and Reporting Program

A comprehensive and up-to-date understanding of the Great Barrier Reef, its values, the processes that support it and the pressures that affect it is fundamental to protecting and restoring the Reef and making informed investment and management decisions.

To maximise its effectiveness, implementation of the Reef 2050 Plan will be informed by an integrated ecological, social and economic monitoring and reporting program. The program will measure and report progress towards achieving the outcomes, objectives and targets, and guide adaptive management.

The Program will include biophysical, heritage, social and economic monitoring relevant to management of the World Heritage Area. The primary focus will be on comprehensive and systematic monitoring and reporting within the World Heritage Area and its linkages to the adjacent catchment, including:

- the condition and trend of the Reef's values and environmental processes.
- nature and scale of individual and cumulative impacts and risks.
- ecosystem thresholds, environmental standards and trigger levels for the protection of values.
- the effectiveness of management actions to protect the Reef's values and ensure use remains ecologically sustainable.

The Program will improve the integration and coordination of existing monitoring programs through the development and implementation of standardised protocols for information collection, collation and data sharing. Modeling will be used to improve understanding of the cause-and-effect relationships between drivers, activities, impacts and the Reef's values. The scalability of data, from point source or local, to regional and Reef-wide scales, and synthesis and reporting of information from different sources, will also be improved.

The Reef 2050 Plan will be regularly updated and reviewed on a five-year cycle in line with future Outlook Reports. This will enable the Plan to respond to new information, changing circumstances and emerging issues. Information generated and coordinated through the Integrated Monitoring and Reporting Program will assist governments and other partners to refine management responses and confirm, vary or further specify investment priorities to help delivery on the Reef 2050 Plan's objectives.

## 9. Investment risks

While co-investment across multiple partners is critical to deal with such a complex and dynamic system as the Great Barrier Reef, it also presents challenges and risks. This includes the risk of duplication and inefficiency as well as uncertainty about long-term investment from multiple partners.

It is important to ensure that investment in ongoing management— led by the Great Barrier Reef Marine Park Authority and delivered in partnership with the Queensland government and other Australian Government agencies – is sufficient to sustain activities which are the foundation for additional support activated through the Reef 2050 Plan.

The Reef 2050 Plan has strong governance arrangements designed to help manage these risks, improve coordination and identify opportunities to better target investment to deliver the best possible outcomes, while minimising administrative burden.

## 10. Going forward

The investment baseline provides a snapshot of investment activities in 2014-15. Going forward, it will be important to build on the information collected and address any gaps to ensure the development of a robust investment framework. Key priorities over the next six months will be the investment prioritisation process for the Reef 2050 Plan that will include reviewing the allocation of resources to ensure maximum benefit and efficiency. It is expected initial work on this process will be completed by December 2015. In addition, work will commence on the diversification of investment sources to facilitate greater partnerships and private investment, alongside public investment. Initial mechanisms for identifying diversification and innovation in funding approaches are expected to be completed by the end of 2015.