



Australian Government
Great Barrier Reef
Marine Park Authority

GREAT BARRIER REEF REGION STRATEGIC ASSESSMENT

Supplementary Report



The Great Barrier Reef Marine Park Authority acknowledges the continuing sea country management and custodianship of the Great Barrier Reef by Aboriginal and Torres Strait Islander Traditional Owners whose rich cultures, heritage values, enduring connections and shared efforts protect the Reef for future generations.

None of the recommendations in the report, if implemented, are intended to have the effect of extinguishing native title.



Australian Government

Great Barrier Reef
Marine Park Authority

GREAT BARRIER REEF REGION STRATEGIC ASSESSMENT

Supplementary Report

© Commonwealth of Australia

Published by the Great Barrier Reef Marine Park Authority 2014

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced by any process without the prior written permission of the Great Barrier Reef Marine Park Authority.

Requests and enquiries concerning reproduction and rights should be addressed to Communications, Great Barrier Reef Marine Park Authority, PO Box 1379, Townsville Queensland 4810

Disclaimer

While reasonable efforts have been made to ensure that the contents of this publication are factually correct, the Great Barrier Reef Marine Park Authority does not make any representation or give any warranty regarding the accuracy, currency or suitability for any particular purpose of the source material contained in this publication. Readers should consult the source material referred to and, where necessary, seek appropriate advice about the suitability of the publication for their needs. To the extent permitted by law, the Great Barrier Reef Marine Park Authority shall not be liable for any loss, damage, cost or expense that may be occasioned directly or indirectly through the use of or reliance on the contents of this publication.

National Library of Australia Cataloguing-in-Publication entry

Great Barrier Reef region strategic assessment : supplementary report / Great Barrier Reef Marine Park Authority.

ISBN 978 192212 651 1

Includes bibliographical references.

Marine parks and reserves--Queensland--Great Barrier Reef--Management.
Environmental impact analysis--Queensland--Great Barrier Reef Region.
Great Barrier Reef (Qld.)—Management.

Great Barrier Reef Marine Park Authority.

333.780994

This publication should be cited as:

Great Barrier Reef Marine Park Authority 2014, *Great Barrier Reef Region Strategic Assessment: Supplementary report*, GBRMPA, Townsville.

Further information is available from:



Australian Government

**Great Barrier Reef
Marine Park Authority**

2-68 Flinders Street East (PO Box 1379)

Townsville Queensland 4810

Telephone +617 4750 0700

Fax +617 4772 6093

Website www.gbrmpa.gov.au

Table of contents

Glossary of commonly used terms and acronyms	v
1 Introduction	1
1.1 Purpose of the Supplementary Report.....	1
1.2 Structure of the report.....	1
1.3 Endorsement criteria and terms of reference.....	1
2 Background	3
2.1 World Heritage concerns	3
2.2 Undertaking the assessment	3
2.3 The Strategic Assessment Report	5
2.4 The Program Report	6
3 Independent review of management effectiveness	7
3.1 Background.....	7
3.2 Process	7
3.3 Summary.....	8
4 Independent peer review of draft Strategic Assessment Report and Program Report.....	10
4.1 Background.....	10
4.2 Process	10
4.3 Summary.....	10
5 Public consultation	12
5.1 Joint consultation	12
5.2 Public consultation process	12
5.3 Survey and submission process	12
5.4 Number of submissions received.....	12
5.5 Key themes for both assessments.....	12
5.6 Submissions on Great Barrier Reef Region (marine) component.....	13
5.6.1 Survey submissions.....	13
5.6.2 Written submissions	18
5.7 Detailed feedback received.....	21
6 Addendum to the Great Barrier Reef Region Strategic Assessment.....	22
6.1 Summary of amendments made to the reports.....	22
6.2 Amendments in Chapters 1 through 13 of the Strategic Assessment Report.....	24
Chapter 1: Introduction.....	24
Chapter 2: Assessment approach	24
Chapter 3: Current management.....	27
Chapter 4: Matters of national environmental significance in the Great Barrier Reef Region	32
Chapter 5: Drivers and activities	36
Chapter 6: Impacts on the values.....	43
Chapter 7: Current condition and trend	58
Chapter 8: Management effectiveness – an independent review	65
Chapter 9: Demonstration case studies	65
Chapter 10: Resilience and Risk.....	68
Chapter 11: Projected condition	71
Chapter 12: Recommended changes to management.....	73
Chapter 13: How the Program protects matters of national environmental significance (Previously Adaptive management).....	76
Appendices	77
6.3 Changes to tables, figures and entire sections	78
Appendix 1 Responses to the assessment of management effectiveness	125
Appendix 2 Responses to the independent peer review of the assessment reports	135
Appendix 3 Responses to the submissions / report.....	175

List of figures

Figure 1	Great Barrier Reef World Heritage Area, Region and Marine Park	ix
Figure 2	Framework for assessing management effectiveness of protected areas ¹	7
Figure 3	Great Barrier Reef Region values and benefits – distribution of opinion	14
Figure 4	Condition of values – distribution scores	14
Figure 5	Impacts to the Reef – distribution of scores.....	15
Figure 6	Risks to the Reef – distribution of scores	15
Figure 7	Recommended improvements to the Authority’s management arrangements – distribution of scores.....	16
Figure 8	Recommended improvements to local, state and national government programs – distribution of scores.....	16

List of tables

Table 1	Resources used to inform and facilitate activities undertaken as part of the Great Barrier Reef Region Strategic Assessment process	4
Table 2	Summary of the independent review of Authority’s management effectiveness by management topic	9
Table 3	Key initiatives and measures to strengthen management – survey average scores	17
Table 4	Amendments in Chapters 1 through 13 of the Strategic Assessment Report	24
Table 5	Responses to assessment of management effectiveness.....	126
Table 6	Responses to the independent peer review of the assessment reports	136
Table 7	Responses to the Submissions / Report.....	177

Glossary of commonly used terms and acronyms

Action: Includes a project, a development, an undertaking, an activity or series of activities, and an alteration to any of these things. (Adapted from EPBC Act)

Adaptive management: A systematic process for continually improving management practices through learning from the outcomes of previous management. It includes a monitoring, evaluation, reporting, and improvement cycle. (Adapted from *A guide to undertaking strategic assessments*)

Attribute: Those aspects which underpin and support matters of national environmental significance.

Authority: Great Barrier Reef Marine Park Authority.

Avoiding impacts: Measures taken so that actions have minimal negative effect on the environment. (Adapted from *A guide to undertaking strategic assessments*)

Basin: An area of land where surface water channels to a hydrological network and discharges into the sea (for example, a whole river system). Within the Great Barrier Reef catchment, 35 basins have been defined, based on the major river systems. A basin can include small creeks and streams that discharge directly to the sea.

Benthic: The bottom of the seafloor which includes the collection of organisms living on or in the bottom.

Biodiversity: The variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part). It includes diversity within species and between species, and diversity of ecosystems. (EPBC Act and GBRMP Act)

Bycatch: Any animal, plant or marine product that was unintentionally caught (that is, not targeted) during commercial, recreational or traditional fishing activities, including Queensland's Shark Control Program. Bycatch can either be retained (see by-product) or discarded.

By-product: Any animal, plant or marine product that was unintentionally caught but retained during a commercial, recreational or traditional fishing activity.

Capital dredging: Dredging for navigation, to create a new or enlarged channel, port, marina or boat harbour areas. Dredging for engineering purposes, to create trenches for pipes, cables, immersed tube tunnels, to remove material unsuitable for foundations and to remove overburden for aggregate.

Carrying capacity: The number of individuals an ecosystem can support without having any negative effects. It also includes a limit of resources and pollution levels that can be maintained without experiencing high levels of change.

Coastal ecosystem: Inshore, coastal and adjacent catchment ecosystems that connect the land and sea, and have the potential to influence the health and resilience of the Great Barrier Reef.

Coastal reclamation: The process of creating new land where there was ocean, wetlands, or other waterbodies by filling the area with 'land fill' or infrastructure such as groynes and jetties.

Coastal zone: The area of land and sea in or adjacent to the Great Barrier Reef containing Queensland waters, plus adjacent inland areas either within five kilometres of the coast or less than 10 metres above sea level (whichever is the further).

Cultural keystone species: The species that play special cultural roles for Indigenous and local peoples and are the ones they depend upon most extensively to meet their needs for food, clothing, shelter, fuel, medicine, and other necessities of life. These are the species that become embedded in a community's cultural traditions and narratives, their ceremonies, dances, songs, and discourse. Cultural keystone species can vary widely from one region to another and from one culture to another.

Cumulative impact: The impact on the environment resulting from the effects of one or more impacts, and the interactions between those impacts, added to other past, present, and reasonably foreseeable future pressures.

Cumulative risk: The combined risks to the environment by multiple impacts.

Discarded catch: See non-retained catch.

Driver: An overarching cause of change in the environment. (*Australia State of the Environment Report 2011*)

Ecologically sustainable use: Use of natural resources within their capacity to sustain natural processes while maintaining the life-support systems of nature and ensuring the benefit of their use to the present generation does not diminish the potential to meet the needs and aspirations of future generations. (EPBC Act)

Ecosystem: A dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit. (EPBC Act)

Ecosystem-based management: An integrated approach to managing an ecosystem and matters affecting that ecosystem, with the main object being to maintain ecological processes, biodiversity and functioning biological communities. (GBRMP Act)

Ecosystem services: Actions or attributes of ecosystems of benefit to humans, including regulation of the atmosphere, maintenance of soil fertility, food production, regulation of water flows, water filtration, pest control and waste disposal. It also includes social and cultural services, such as the opportunity for people to experience nature. (*Australia State of the Environment Report 2011*)

Environment: Ecosystems and their constituent parts, including people and communities; natural and physical resources; the qualities and characteristics of locations, places and areas heritage values of places; and the social, economic and cultural aspects of the above. (EPBC Act and GBRMP Act)

Environmental Impact Statement: An EIS is a statement of the likely impacts of an action on the environment and how they may be managed, mitigated or offset. Similar to a Public Environment Statement (PER) but broader in scope. (Part 8, Division 6, EPBC Act)

EPBC Act: *Environment Protection and Biodiversity Conservation Act 1999.*

Extraction: The removal of any animal, plant or marine product through legal commercial, recreational or traditional fishing activities including Queensland's Shark Control Program.

Geomorphology: Scientific study of landforms and the processes that shape them. (*Australia State of the Environment Report 2011*)

GBRMP Act: *Great Barrier Reef Marine Park Act 1975.*

Great Barrier Reef catchment: The area adjacent to the Great Barrier Reef Region which drains into the Region.

Habitat: The environment occupied by an organism or groups of organisms. (Adapted from EPBC Act)

Halimeda: Green macroalgae which is responsible for distinctive circular deposits on parts of the Great Barrier Reef.

Heritage value: A place's natural and cultural environment having aesthetic, historic, scientific or social significance, or other significance, for current and future generations of Australians. (EPBC Act and GBRMP Act)

Impact: An event or circumstance which has an effect, either positive or negative, on a value.

Indigenous person: A person who is a member of the Aboriginal race of Australia; or a descendant of an Indigenous inhabitant of the Torres Strait Islands. (GBRMP Act)

Indigenous: For the purposes of the strategic assessment, the term 'Indigenous' should be read to apply specifically to Traditional Owners and Traditional Owner groups.

Indirect impact: An impact that is not the direct result of a particular action but has been made possible by that action. These include downstream or upstream impacts, as well as facilitated or consequential impacts resulting from further actions (including actions by third parties). (Adapted from *A guide to undertaking strategic assessments*)

Inshore: Enclosed coastal and open coastal water bodies which extend from the mean low water mark out to approximately 20 kilometres, but also includes areas further offshore that are habitats for recognised inshore specialist species.

Integrity: A measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. (*Operational guidelines for the implementation of the World Heritage Convention* paragraphs no. 88–95)

Listed migratory species: A migratory species that is native or included under a relevant international convention, which has been placed by the Environment Minister on the published list of migratory species. (Adapted from EPBC Act)

Listed threatened species: A native species which is extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent, as set out in the published list of threatened species established by the Environment Minister. (Adapted from EPBC Act)

Maintenance dredging: Dredging to ensure that previously dredged channels, berths or construction works are maintained at their designated dimensions.

Marine Park: Great Barrier Reef Marine Park.

Matters of national environmental significance: Those matters defined in the *Environment Protection and Biodiversity Conservation Act 1999.*

Mesophotic reefs: Corals found at water depths where light penetration is low.

Mitigating impacts: Measures put in place to reduce the level of impact arising from an action, including indirect and cumulative impacts. (Adapted from *A guide to undertaking strategic assessments*)

Morphology: The form and structure of animals and plants, without regard to their functions.

Net benefit: Having an overall positive impact on the environment of the Great Barrier Reef.

Non-retained (or discarded) catch: Marine life caught by commercial, recreational or traditional fishers which has been discarded. This includes targeted species discarded due to size or catch restrictions, low market value, 'catch and release' practices, or bycatch that has been unintentionally captured.

Outstanding universal value: Cultural and/or natural heritage which is so exceptional as to transcend national boundaries and to be of such significance to humanity as a whole to make it worthy of special protection. (Adapted from *Operational guidelines for the implementation of the World Heritage Convention*)

Offshore: Offshore water bodies extend from approximately 20 kilometres out to the edge of the Great Barrier Reef Marine Park boundary.

Offsetting impacts: Measures intended to compensate for the residual adverse impacts of an action on the environment. (Adapted from *Environment Protection and Biodiversity Conservation Act 1999, Environmental Offsets Policy, 2012*)

Palaeochannel: An ancient stream or riverbed, cut into the rock or soil and overlaid by sediment after the stream has changed its course or dried up.

Pelagic: Relating to or living in or on oceanic waters. The pelagic zone of the ocean begins at the low tide mark and includes the entire oceanic water column and living organisms that inhabit this zone for all or part of their life (for example, plankton, pelagic fish).

Poaching: The illegal take of any animal, plant or marine product from land that is not one's own or is under official protection. It also includes the illegal take of a protected species.

Protected species: A species that is a cetacean; a listed marine species, a listed migratory species, a listed threatened ecological community, or a listed threatened species; a species of marine mammal, bird or reptile that is prescribed as endangered wildlife, vulnerable wildlife or rare wildlife under the *Nature Conservation Act 1992* (Qld); a species declared to be a protected species for the purposes of this definition; a species declared to be a strictly protected species for the purposes of this definition. (GBRMP Act)

Precautionary principle: The principle that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage. (EPBC Act and GBRMP Act)

Pressure: An activity or group of activities that cause an impact on a value.

Program: The Authority's management arrangements, including future commitments, as described in the Program Report.

Public Environment Report: A PER is a statement of the likely impacts on the environment and how they may be managed, mitigated or offset. Similar to an Environmental Impact Statement (EIS) but narrower in scope. (Part 8, Division 5, EPBC Act)

Recreation: An independent visit for enjoyment that is not part of a commercial operation. It is distinct from tourism where a visitor pays to use a commercial operation. (*Recreation Management Strategy for the Great Barrier Reef Marine Park*)

Refugia: An area where an organism can survive during a period of unfavourable conditions.

Resilience: The capacity of an ecosystem to recover from disturbance or withstand ongoing pressures.

Region: Great Barrier Reef Region as defined in the *Great Barrier Reef Marine Park Act 1975*.

Retained catch: Marine life caught and kept by commercial, recreational or traditional fishers including targeted and non-targeted species.

Risk: The possibility of something happening that impacts on objectives. It is the chance to either make a gain or a loss and is measured in terms of likelihood and consequence. (*Australian Standard for Risk Assessment* (AS/NZS ISO 31000:2009))

Ship: Vessels greater than 50 metres in overall length or carrying specialised product regardless of length (for example, oil tankers, chemical or liquefied gas carriers).

SEWPaC: The former Commonwealth Department of Sustainability, Environment, Water, Population and Communities, now the Department of the Environment.

State Development Area: Defined areas established to promote economic development for industry, infrastructure corridors and major public works.

Take: The act of or attempt to remove, gather, catch, kill, destroy, dredge for, raise, carry away, bring ashore, interfere with and obtain (by other means) an animal, plant or marine product.

Taxa: Groups of one or more populations of organisms.

Threshold: The breaking point above which an ecosystem or a component of an ecosystem can no longer sustain natural processes and remain in a healthy condition (for example, the point at which there is a phase shift from coral-dominated or algal-dominated reefs).

Throughput: The quantity of cargo that is passed through a port in a given period (exports and imports).

Tourism: Commercial activities that provide transport, accommodation or services to people who are visiting the Region principally for enjoyment. (Derived from GBRMP Act)

Trading port: A trading port refers to a port that has an associated pilotage area as defined in schedule 5 of the Transport Operations (Marine Safety) Regulation 2004. In these areas, the regional harbour master has the authority to direct the master of a ship to navigate or operate a ship in a prescribed way.

Traditional Owner: An Indigenous person recognised in the Indigenous community or by a relevant representative Aboriginal or Torres Strait Islander body as having spiritual or cultural affiliations with a site or area in the Marine Park, or as holding native title in relation to that site or area; and who is entitled to undertake activities under Aboriginal or Torres Strait Islander custom or tradition in that site or area.

Traditional Owner group: The group of Traditional Owners who, in accordance with Aboriginal or Torres Strait Islander custom, speak for a site or area.

Trophic: Of or relating to nutrition.

Trigger value: A point which, if exceeded, would mean there was a significant risk of adverse effects on an ecosystem or a component of an ecosystem. Exceeding a trigger value would 'trigger' action to address contributing impacts and/or review the trigger value.

Turbidite: A type of sedimentary rock composed of layered particles that grade upward from coarser to finer sizes and are thought to have originated from ancient turbidity currents in the oceans.

Value: Those aspects or attributes of an environment that make it of significance.

Vulnerability: The degree to which a system, organism or community is susceptible to, and unable to cope with, an impact.

World Heritage Area: Great Barrier Reef World Heritage Area.

Wellbeing: The combination of economic prosperity, community liveability and environmental integrity, which is determined by the quality, quantity, distribution, use and preservation of economic, human, social and natural capital. (Commonwealth of Australia (2012) Sustainability Framework (Version 0 – April 2012). Department of Sustainability, Environment, Water, Population and Communities, Canberra, Australia)

Zones of influence: Areas where impacts have detectable effects on values.



Figure 1 Great Barrier Reef World Heritage Area, Region and Marine Park

1 Introduction

1.1 Purpose of the Supplementary Report

The Supplementary Report (this report) outlines how the three-month public consultation for the strategic assessment was undertaken and how views and comments expressed were considered in finalising the Great Barrier Reef Strategic Assessment Report and the Program Report.

This report also describes the key findings from two independent reviews commissioned to inform the strategic assessment process and provides the Authority's response to these findings.

1.2 Structure of the report

This report covers the following areas:

- **Chapter 1. Introduction:** outlines the purpose and structure of the Supplementary Report.
- **Chapter 2. Background:** provides an overview of the strategic assessment process, including development of the draft Strategic Assessment and Program Reports.
- **Chapter 3. Independent review of management effectiveness:** describes the process and findings of the independent *Assessment of Management Effectiveness for the Strategic Assessment of the Great Barrier Reef Region*.
- **Chapter 4. Independent (peer) review of the draft Strategic Assessment Report and draft Program Report:** describes the process and findings of the *Great Barrier Reef Region Strategic Assessment Independent Review Report*.
- **Chapter 5. Public consultation:** provides an overview of the public consultation process, the number of submissions received and a summary of issues raised.
- **Chapter 6. Addendum to the Great Barrier Reef Region Strategic Assessment Report:** details changes made to the draft Strategic Assessment. Changes made are linked to Appendices 1, 2 and 3.
- **Appendix 1. Responses to assessment of management effectiveness:** details the Authority's responses to the independent review of management effectiveness.
- **Appendix 2. Responses to independent peer review of the Assessment Reports:** details the Authority's responses to the independent (peer) review of the Strategic Assessment and Program Reports.
- **Appendix 3. Responses to the submissions/reports:** details the Authority's responses to submissions from public consultation.

Supporting documentation to this report will be described in each section and can be accessed through the Authority's website www.gbrmpa.gov.au.

1.3 Endorsement criteria and terms of reference

This report has been drafted to meet the Endorsement Criteria and terms of reference for the Great Barrier Reef Region Strategic Assessment. These are set out below.

Extract from the EPBC Act, Part 10 Strategic Assessments, Section 146 Agreement

7 ENDORSEMENT OF THE PROGRAM

7.1 The GBRMPA will submit to the Minister:

- (a) the Strategic Assessment Report (which was exhibited for public comment);*
- (b) the Supplementary Report (explaining how relevant public responses have been taken into account and addressed in the impact assessment and revised Program);*
- (c) the Program Report (incorporating any revisions in light of public comments);*
- (d) public comments received during the consultation relating to the Strategic Assessment Report and Program Report;*
- (e) any other documents required to support the GBRMPA's submission.*

Extract from the Great Barrier Reef Region Strategic Assessment terms of reference

7. Strategic Assessment Process

7.1

7.2 Community engagement

- a)
- b)
- c) *Provide the Minister with a report on the public submissions received on the draft Reports, together with proposed final drafts of the Strategic Assessment Report and Program Report, incorporating any revisions made in response to public comments.*

7.3 Independent review

- a) *Engage independent expertise to undertake an assessment of the effectiveness of the current Program to protect and manage the relevant matters of national environmental significance, including the Outstanding Universal Value of the Great Barrier Reef World Heritage Area.*
- b) *Arrange for the content of the draft Strategic Assessment Report to be peer reviewed by at least three appropriately qualified persons.*
- c) *Provide the Minister with the independent assessment of management effectiveness, the peer review comments and a report identifying how the findings of the independent assessment and peer review have been considered in the Strategic Assessment Report and the Program Report.*

2 Background

2.1 World Heritage concerns

At its meeting in June 2011, the World Heritage Committee raised concerns about how development was impacting on the Great Barrier Reef World Heritage Area. The comprehensive strategic assessment is part of the Australian Government's response to these concerns.

The comprehensive strategic assessment of the Great Barrier Reef World Heritage Area — carried out under Part 10 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) — analyses impacts affecting the World Heritage Area from activities on the land and on the water and evaluates the effectiveness of management arrangements to protect matters of national environmental significance.

2.2 Undertaking the assessment

The Great Barrier Reef Marine Park Authority (the Authority) undertook the marine component of the comprehensive strategic assessment. This component is termed the 'Great Barrier Reef Region strategic assessment'.

The strategic assessment for the Great Barrier Reef Region is complemented by a strategic assessment of the Great Barrier Reef Coastal Zone undertaken by the Queensland Government.

The Authority entered into an EPBC Act, Part 10 Strategic Assessments, Section 146 Agreement —which provided a basis for the assessment — with the then Minister for Sustainability, Environment, Water, Population and Communities on 16 February 2012.

The Authority subsequently developed terms of reference for the assessment in partnership with the Department of the Environment, which were approved by the then Minister on 30 August 2012. The terms of reference set out the requirements for the Strategic Assessment Report, including its development and contents.

Key steps in the process

Preparing the Great Barrier Reef Region Strategic Assessment Report was an extensive process that included a range of engagement activities with key stakeholders. The process involved:

- working closely and collaboratively with the Queensland Government, the Australian Government's Department of the Environment (formerly Department of Sustainability, Environment, Water, Population and Communities) and other relevant Australian Government agencies
- engaging stakeholders and the community throughout the strategic assessment process using the Authority's network of advisory committees, together with regional and issue-based meetings
- engaging with the wider community throughout the strategic assessment process using the Authority's website, news releases, advertisements and newsletters
- using engagement, communication and consultation methods consistent with, and building upon approaches employed in the Great Barrier Reef Outlook Report 2009, where relevant
- engaging independent expertise to assess the effectiveness of the Authority's current management arrangements and commissioning an independent peer review of the Strategic Assessment Report and Program Report
- using the best available information to undertake the strategic assessment, including scientific data, expert opinion, and Traditional Owner and community knowledge.

The consultation process is further discussed in Section 5.2.

Table 1 provides a matrix of how resources were used to inform and facilitate activities in the strategic assessment process.

All steps lead to the final aspect of the process — submission of the final Strategic Assessment Report, this Supplementary Report and the final Program Report to the Minister for the Environment for endorsement and subsequent approval of classes of action under the EPBC Act.

Table 1 Resources used to inform and facilitate activities undertaken as part of the Great Barrier Reef Region Strategic Assessment process

Activities undertaken in the Strategic Assessment Process								
Resources used	Assessment of Management Effectiveness	Writing Draft Strategic Assessment Report	Writing Draft Program Report	Public comment period	Peer review (Independent Review)	Writing Supplementary Report	Writing final Strategic Assessment Report	Writing the final Program Report
EPBC Act	Inform/facilitate	Inform/facilitate	Inform/facilitate	Inform/facilitate			Inform/facilitate	Inform/facilitate
GBRMP Act	Inform/facilitate	Inform/facilitate	Inform/facilitate				Inform/facilitate	Inform/facilitate
Section 146 Agreement		Facilitate	Facilitate	Facilitate		Facilitate	Facilitate	Facilitate
Terms of reference		Facilitate	Facilitate	Facilitate	Facilitate	Facilitate	Facilitate	Facilitate
Collaboration with Australian and Queensland Governments		Inform/facilitate	Inform/facilitate	Inform/facilitate		Inform/facilitate	Inform/facilitate	Inform/facilitate
GBRMPA planning, inputs and processes*	Inform	Inform	Inform					
Stakeholder engagement (external)		Inform	Inform					
Best available information		Inform	Inform				Inform	Inform
Management Effectiveness Report (external)		Inform				Inform		
Draft Strategic Assessment Report			Inform	Inform	Inform		Inform	
Draft Program Report				Inform	Inform			Inform
Peer Review Report (external)						Inform		
Public Submissions Report (external)						Inform		
Public comments						Inform		
Supplementary Report							Inform	Inform
Final Strategic Assessment Report								Inform
Final Program Report <i>A program describing the Authority's management arrangements to protect and manage matters of national environmental significance in the Region, including the outstanding universal value of the Great Barrier Reef World Heritage Area.</i>								
<i>*Planning, inputs and processes provided for the Assessment of Management Effectiveness are outlined in the Terms of Reference, Assessment of the Management Effectiveness by Independent Experts for the Great Barrier Reef World Heritage Area Strategic Assessment</i>								

Independent and peer reviews

Development of the draft Great Barrier Reef Strategic Assessment Report and draft Program Report was informed by an independent review of management effectiveness. The outcomes of this review are provided in Section 3.

Additionally, an independent peer review of the draft Great Barrier Reef Strategic Assessment Report and draft Program Report was commissioned by the Department of the Environment. This review occurred in parallel to the release of draft reports for public comment. Outcomes of this review are provided in Section 4.

The review is available on the Department's website at: <http://www.environment.gov.au/resource/great-barrier-reef-region-strategic-assessment-independent-review-report>.

Release of draft reports

On 1 November 2013, the Minister for the Environment and the Queensland Deputy Premier released draft documents of the comprehensive strategic assessment for public comment:

- Great Barrier Reef Coastal Zone Strategic Assessment 2013 – Strategic Assessment Report, Draft for consultation
- Great Barrier Reef Coastal Zone Strategic Assessment 2013 – Program Report, Draft for consultation
- Great Barrier Reef Region Strategic Assessment – Strategic Assessment Report, Draft for public comment
- Great Barrier Reef Region Strategic Assessment – Program Report, Draft for public comment.

Public consultation on the draft Great Barrier Reef Strategic Assessment Report and draft Program Report closed on 31 January 2014. During the 13-week public consultation period 6616 submissions were received. Outcomes of the public consultation process are summarised in Chapter 5.

Response to review recommendations and public submissions

The Authority's response to review recommendations and public submissions is outlined in Chapter 6.

2.3 The Strategic Assessment Report

The Great Barrier Reef Region Strategic Assessment Report (the Strategic Assessment Report) analyses impacts affecting the World Heritage Area from activities on the land and on the water and evaluates the effectiveness of management arrangements to protect matters of national environmental significance

Specifically, it assesses how the Authority's management arrangements (as described in the Program Report) consider and manage impacts on matters of national environmental significance under Part 3 of the EPBC Act, including the outstanding universal value of the World Heritage Area.

It also provides background to enable the Minister for the Environment to consider endorsing the Program.

To meet the terms of reference, the Strategic Assessment Report is delivered through individual steps, presented as chapters, with the outcomes of each chapter informing subsequent chapters:

- describing the Authority's current management arrangements (Chapter 3)
- outlining the extent that matters of national environmental significance are relevant to the Region and establishing the values, or in the case of the property's outstanding universal value, the attributes, that are relevant to them (Chapter 4)
- describing the drivers and activities relevant to the Region (Chapter 5)
- describing and assessing the past and present impacts affecting the values and attributes, and summarising the implications for the matters of national environmental significance (Chapter 6)
- assessing the current condition and trend of the values and attributes, and summarising the implications for the matters of national environmental significance, including benchmarking the outstanding universal value of the World Heritage Area (Chapter 7)
- presenting an independent assessment of the effectiveness of the Authority's current management arrangements (Chapter 8)
- illustrating in finer detail current management effectiveness through selected demonstration case studies (Chapter 9)
- providing an understanding of ecosystem resilience, assessing the future risks to the values and summarising the implications for the matters of national environmental significance (Chapter 10)
- projecting the future condition for matters of national environmental significance (Chapter 11)
- recommending changes to improve the effectiveness of management arrangements (Chapter 12)
- describing how proposed future management arrangements will support adaptive management of matters of national environmental significance (Chapter 13)
- how the program protects matters of national environmental significance (Chapter 14).

2.4 The Program Report

The Great Barrier Reef Region Program Report (the Program Report) provides the strategic direction for management of the Region by the Authority — it outlines how the Region will be managed by the Authority for the next 25 years.

Specifically, it describes the Authority's future management program to protect and manage matters of national environmental significance, including the outstanding universal value of the World Heritage Area.

The final Program Report is structured in two parts. Part A outlines the Authority's comprehensive management program. Part B outlines the Authority's environmental impact and assessment processes. Part B is the statutory component for which the Authority is seeking endorsement and subsequent approval of classes of action under Part 10 – Strategic Assessments, Section 146 of the EPBC Act.

3 Independent review of management effectiveness

3.1 Background

As part of the preparation of the Strategic Assessment Report, the Authority engaged independent expertise to assess the effectiveness of its management arrangements to protect matters of national environmental significance and the values and attributes of those matters within the Great Barrier Reef Region (the Region).

The independent assessment of management effectiveness was undertaken by Professor Marc Hockings (UniQuest Pty Ltd), Dr Andrea Leverington (UniQuest Pty Ltd) and Mr Brian Gilligan.

The review built upon the assessment of management effectiveness undertaken as part of the Great Barrier Reef Outlook Report 2009 and forms Chapter 8 of the Strategic Assessment Report.

3.2 Process

Management effectiveness evaluation is defined as the assessment of how well protected areas are being managed — primarily the extent to which they are protecting values and achieving objectives.

The effectiveness of the Authority's current management arrangements was assessed using the International Union for Conservation of Nature (IUCN) World Commission on Protected Areas evaluation framework (Figure 2). It focuses on six management elements — context, planning, inputs, processes, outputs, outcomes — and the links between them, to provide a comprehensive picture of management effectiveness for the Region.

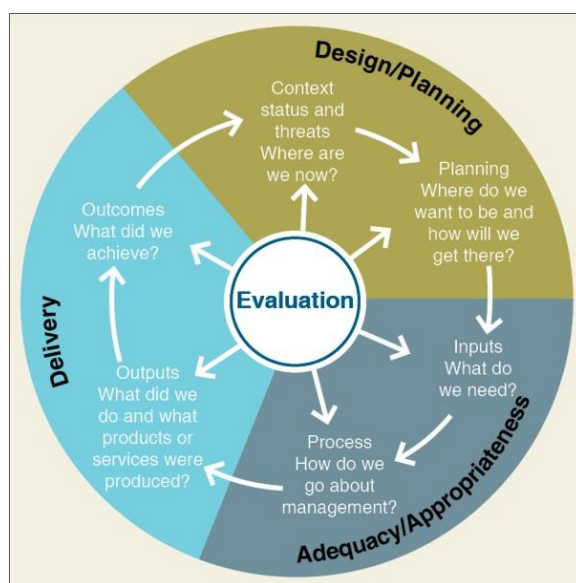


Figure 2 Framework for assessing management effectiveness of protected areas¹

The management arrangements considered in the independent review comprised those under the jurisdiction of the Authority. They included:

- statutory instruments, including Regulations, zoning plans, plans of management and permits
- non-statutory mechanisms including policies, position statements and guidelines
- partnership and collaborative arrangements with other Australian and Queensland government agencies
- partnerships with Traditional Owners in the management of marine resources
- partnership and stewardship programs, including education programs and engagement with local governments, communities, Indigenous persons and industry
- research and monitoring programs.

The assessment examined 15 priority management topics ranging in scale from localised issues that affect only a small proportion of the total area (for example, defence activities) to others which have implications across all or most of the Region (for example, climate change and extreme weather, recreation, coastal development).

No attempt was made to weight these components, and performance assessments need to be interpreted in the context of these scale differences.

The terms of reference for the independent review are in the Strategic Assessment Report, and the full report titled '*Assessment of Management Effectiveness for the Strategic Assessment of the Great Barrier Reef Region*' (March 2013) is available on the Authority's website at www.gbrmpa.gov.au.

3.3 Summary

- The independent assessment found the Authority is working towards effective management in all areas, and there have been considerable improvements in a number of areas since the Outlook Report 2009.
- The assessment recognised the difficulties for the Authority in achieving positive outcomes on the ground, given the spatial and temporal scales of the threats facing matters of national environmental significance and the diminishing resource base to implement actions.
- The assessment highlighted that the Authority required greater traction in threat reduction for an improvement in outcomes. This is dependent on the adoption of significant changes to current policies regarding coastal development, resource use and control of other human impacts, as well as sufficient resourcing to implement threat-reduction programs in the field.
- The assessment found the Authority's management of activities within the Region for which it has direct responsibility is effective. The significant management attention on tourism, which operates across much of the Region and is moderately complex, was identified as being effective, primarily because of the Authority's direct jurisdictional control.
- The independent assessment highlighted that management effectiveness challenges for the Authority were evident for those issues which are broad in scale and complex socially, biophysically and jurisdictionally (that is, port activities, shipping, climate change and extreme weather, coastal development, water quality protection, commercial and recreational fishing and Indigenous heritage) or those that are poorly resourced (for example, historic heritage).
- For the management topics of climate change and extreme weather, coastal development and water quality protection, the assessment identified particular management challenges in consistency of approaches across jurisdictions.
- For commercial and recreational fishing, the assessment identified particular challenges for the Authority in the areas of monitoring and compliance, especially as they relate to addressing potential cumulative impacts.
- For Indigenous heritage, the management challenges faced by the Authority are particularly in areas of understanding the context and processes to better incorporate Indigenous heritage across the Authority's management arrangements.
- Inputs, processes and outcomes were the elements of the management cycle where the Authority's current management arrangements were least likely to meet the endorsement criteria. Elements of context and planning in relation to biodiversity protection and water quality performed strongly, however the trend of this grade depended on the continuation of key programs.
- The independent assessment found the Authority generally has a good understanding of direct and indirect impacts and, where the Authority has a high level of control over activities, its effectiveness at avoiding, mitigating and adaptively managing impacts was effective or mostly effective. Its effectiveness at halting and reversing declines and enhancing the condition of relevant matters of national environmental significance was rated as less effective, especially for topics that originate beyond the Region and are jurisdictionally complex.
- The Authority's ability to address consequential and cumulative impacts, apply socio-economic and Indigenous knowledge, and set targets to benchmark performance was assessed as problematic for most management topics.

The overall assessment results are summarised in Table 2.1. The Authority's response to individual recommendations is provided in Appendix 1.

Table 2 Summary of the independent review of Authority's management effectiveness by management topic

Understanding the table							
Effective: 81 to 100 per cent of optimal condition	Mostly effective: 51 to 80 per cent of optimal condition	Partially effective: 21 to 50 per cent of optimal condition	Ineffective: zero to 20 per cent of optimal condition				
Management topic	Effectiveness of existing measures to protect and manage						
	Context	Planning	Inputs	Processes	Outputs	Outcomes	
						Overall	Biodiversity
Values							
Biodiversity							
Indigenous heritage							
Historic heritage							
Community benefits							
External impacts on values							
Climate change and extreme weather							
Water quality protection							
Coastal development							
Direct uses							
Tourism							
Fishing – commercial							
Fishing – recreational							
Recreation							
Port activities							
Shipping							
Defence activities							
Research activities							

4 Independent peer review of draft Strategic Assessment Report and Program Report

4.1 Background

The Commonwealth Department of the Environment commissioned consultants Sinclair Knight Merz (SKM) to complete an independent peer review of the draft Great Barrier Reef Region Strategic Assessment Report and Program Report.

A team of independent specialists carried out the review. They included: Dr Michael Huber, Senior Executive Marine Scientist, SKM; Dr John Gunn, Chief Executive Officer, Australian Institute of Marine Science; and Associate Professor Peter Valentine, James Cook University.

4.2 Process

The review team evaluated the draft Great Barrier Reef Region Strategic Assessment Report and Program Report against the following criteria:

- consistency with its terms of reference
- structure and cohesiveness of presentation
- breadth and depth of matters covered
- technical accuracy
- validity of conclusions drawn.

A comparative assessment of the Authority's Strategic Assessment (of marine regions and issues) and the Queensland Strategic Assessment (of the coastal zone) was also made, to identify any gaps or duplication in the management and protection of matters of national environmental significance.

4.3 Summary

A summary of outcomes from the independent peer review of the draft Strategic Assessment Report and Program Report is provided below:

Consistency with its terms of reference

The review team concluded that:

- The terms of reference for the Strategic Assessment had been addressed in significant detail throughout the Strategic Assessment Report and Program Report.
- Some aspects of the assessment process, such as the timeframe for public comment, had exceeded the requirements of the Terms of Reference, which improved the breadth of the issues considered.
- Some, mostly minor, specific requirements of the terms of reference had not been addressed in sufficient detail, including the description of management resources and how the proposed program addressed endorsement criteria.

Structure and cohesiveness of the reports

The review team concluded that:

- The Strategic Assessment Report successfully compiled a large amount of complex information, and was professionally presented and annotated.
- The integration of science throughout the documents was seamless and added significant credibility and confidence to the key findings.
- While jurisdictionally complex, management arrangements were well-described and provided a sound basis for the interpretation of forward commitments and assessment of their effectiveness.

Reviewers recommended a number of improvements to management responses and to enhance readability for a wide, international audience.

Breadth and depth of assessment

The review team concluded that:

- A successful balance had generally been achieved between the depth of the assessment across a variety of issues and the need to provide a concise report which could be understood by a variety of stakeholders.
- The breadth and depth of analysis was adequate and, with some improvements to direct the focus of future management actions, would be a highly successful element of the Strategic Assessment Report.

- Expanding the Authority's role in partnerships and collaboration may assist in improving the achievement of management outcomes in areas such as water quality.
- Some elements of the assessment were given limited attention without explanation, including the management of port activities, island management and managing for resilience in the face of climate change.
- The commitment to developing outcome-based targets in response to the identification of shortcomings in the effectiveness of current management activities was a highlight of the assessment process.
- There was no comprehensive discussion about resourcing the Program and current management arrangements, which undermines confidence in its ability to halt the decline of matters of national environmental significance.

Technical accuracy

The review team concluded that:

- Overall, the accuracy of the information presented was high, and summarised into a series of important discussions to link management of the Great Barrier Reef with scientific rigour.
- The Strategic Assessment Report was generally based upon the best available science, through the application of relevant literature and expert opinion in all relevant chapters.
- In some areas, uncertainty in the available evidence could be more comprehensively characterised and the strengths and weaknesses of data could be presented more explicitly. Conversely, where there was limited science available to guide the assessment, it would also be valuable to highlight this and seek to address knowledge gaps through implementation of the future Program.

Validity of conclusions

The review team concluded that:

- The Strategic Assessment Report has been successful in assessing the condition of the Great Barrier Reef and identifying gaps in the effectiveness of current management practices. However, it was unsuccessful in identifying an effective future management approach, beyond a small number of appropriately targeted and challenging new initiatives.
- The vast majority of forward commitments are new processes that will have difficulty achieving outcomes in the reef ecosystems of the World Heritage Area and collectively reflect an incremental improvement rather than a substantially strengthened response.
- While the Strategic Assessment Report has accurately characterised the Great Barrier Reef as in decline across a variety of matters of national environmental significance, it has not effectively demonstrated that the Program proposed to improve the condition of matters of national environmental significance would be successful. The need for urgent and substantial action was not evident.

Comparative assessment of both reports

The review team found that:

- The draft management arrangements of both the Authority and the Queensland Government shared a commitment to give greater consideration to matters of national environmental significance in the implementation of their respective management activities.
- When considered collectively, several areas of strength and alignment are evident; such as the management of tourism, the prioritisation of limited field management activities, and the application of spatial tools and science to inform management decisions.
- Weaknesses and gaps in the programs primarily relate to the coastal interface, where issues such as water quality and connectivity, which stretch across a variety of land uses, habitats and jurisdictions are not effectively managed.
- Some aspects of the Great Barrier Reef's management, such as administering approvals under the EPBC Act, were not described or assessed in either the Authority's or the Queensland Government's Strategic Assessment Reports.
- There were opportunities to significantly strengthen both Strategic Assessments through more detailed collaboration, and cross referencing between the documents, to present an integrated approach to the management of matters of national environmental significance.
- While there were some small areas of duplication, it was the gaps of climate change, extreme weather and water quality that required the most attention.

The full report titled the '*Great Barrier Reef Strategic Assessment, Independent Review Report*' (dated 3 February 2014), is available on the Authority's website at www.gbrmpa.gov.au.

The Authority's response to review recommendations is provided in Appendix 2.

5 Public consultation

5.1 Joint consultation

The Authority and the Queensland Government implemented a joint process for public consultation on the Great Barrier Reef Region and Great Barrier Reef Coastal Zone draft Strategic Assessment Report and Program Report.

The consultation phase was between 1 November 2013 and 31 January 2014 — a total of 13 weeks. The period was lengthened from the minimum 28-day timeframe outlined in the terms of reference to take into account public interest, the length and complexity of the reports and the Christmas holiday period.

5.2 Public consultation process

A memorandum of understanding between the Authority and the Queensland Government was developed to facilitate a complementary and coordinated approach to the public release of the draft Strategic Assessment Report and Program Report, and the receipt and analysis of submissions.

In addition, the Authority and the Queensland Government prepared a comprehensive communication and engagement plan to outline how information on the public consultation process and draft strategic assessment reports would be communicated. It identified key messages and audiences as well as appropriate communication tools.

Websites, mail-outs, print and electronic advertising were among the key publicity tools for the joint process. The Authority also used the e-newsletter Reef in Brief, its website, Local Marine Advisory Committee and stakeholder meetings, social media (Facebook and Twitter), and a Reef HQ display.

Hard copies of draft reports were displayed in: 31 libraries (30 in Queensland and one in Canberra); six Queensland Government offices; and five Authority offices. Printed copies and CDs were also produced.

The Authority coordinated information sessions in six locations along the Queensland coast. Presentations, stakeholder workshops and other briefings were also held. The Authority also distributed news releases and provided interviews to media outlets about the regional community information sessions and produced banners, flyers, posters, videos, and social media content.

5.3 Survey and submission process

Consultants GHD were commissioned to facilitate a number of components of the public consultation process. This included the:

- development of a standalone website that gave the public access to draft strategic assessment reports and supporting information, in conjunction with an online/postal survey for feedback and a portal for the electronic lodgement of submissions
- management of submissions received during public consultation, including hard copy lodgement of submissions via a nominated postal address, and the distribution of copies of submissions to the Authority, the Queensland Government and the Australian Department of the Environment
- analysis of submissions and preparation of a summary report synthesising information received during the public consultation process.

The full report titled the '*Great Barrier Reef Strategic Assessment – Public Consultation on Draft Reports*' (April 2014) is available on the Authority's website at www.gbrmpa.gov.au.

5.4 Number of submissions received

During the 13-week public consultation period, there were 6616 submissions received in total. Of these 6010 submissions were campaign-style emails which contained similar content.

5.5 Key themes for both assessments

Public submissions were analysed and issues grouped into a number of 'themes'.

The key theme raised in public submissions for both the coastal zone and marine zone components of the Strategic Assessment Report was 'management effectiveness'. This covered issues relating to current management, measures to strengthen foundational management, key initiatives and implementation and governance.

Comments on activities focussed largely on port activities, although shipping, industrial development and fishing were also common sub-themes. Comments on impacts focussed on direct use impacts particularly dredging, spoil

disposal and resuspension of dredged material. There were also many submissions addressing climate change, catchment run-off and degradation of coastal ecosystems.

Suggested amendments to reports were wide-ranging, and covered such aspects as feedback on overall report structure and content, requests for the inclusion of targets, as well as specific data suggestions. There were also comments on values that related to both components — particularly with regard to species and habitats.

Comments on the proposed long-term sustainability plan tended to be requests for information regarding the way it will be prepared, emphasising a need for funding and further consultation, and that a scientific and balanced approach be undertaken.

5.6 Submissions on Great Barrier Reef Region (marine) component

Many submissions for the marine component of the strategic assessment commented on management effectiveness.

It was recognised that the Great Barrier Reef Marine Park is generally well managed, with good outcomes resulting from working with industry (for example, improvement to water quality).

The complexity of managing the marine environment, particularly when many threats to it are outside of the scope of direct responsibility of the Authority, was highlighted.

There were a number of recommendations, suggestions and support for management improvement ranging from broadening partnership to increasing compliance.

5.6.1 Survey submissions

Three hundred and seventy three (373) online surveys were completed during the public consultation period. Of these, 348 were submitted from Australia. Just over half of the survey submissions came from Queensland.

The survey was designed to facilitate feedback on specific areas of the draft Strategic Assessment Report and Program Report. Specific questions required respondents to indicate their level of agreement on a scale of 1 to 5. The scoring system used was:

- strongly disagree = 1
- disagree = 2
- neutral = 3
- agree = 4
- strongly agree = 5

To provide a greater resolution of detail than average scores, analysis of the resultant opinions was presented within graphs that highlighted the distribution of respondents' opinions.

More information on survey submissions is provided in the report, '*Queensland Government and Great Barrier Reef Marine Park Authority Great Barrier Reef Strategic Assessment - Public Consultation on Draft Reports*'.

A summary of survey results for a number of key elements of the Great Barrier Reef Region Strategic Assessment Report is provided below.

Values and benefits

The survey found that the majority of Great Barrier Reef Region values and benefits were considered to be very important (Figure 3).

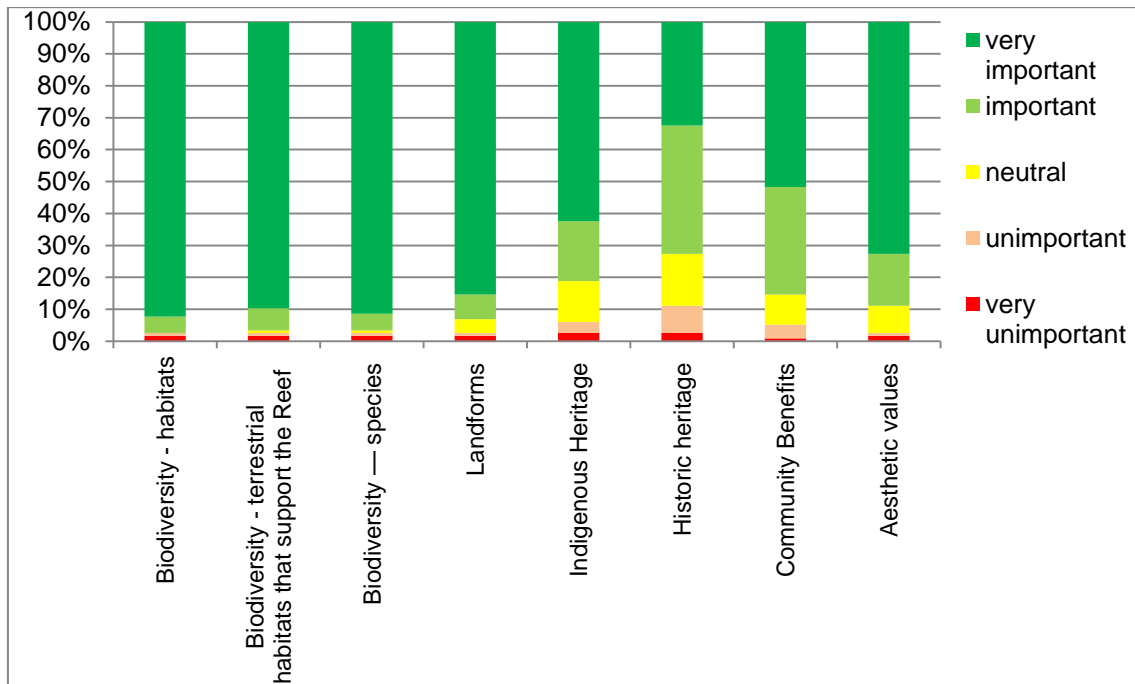


Figure 3 Great Barrier Reef Region values and benefits – distribution of opinion

Condition of values

On average, survey respondents agreed with the Authority’s assessment of the condition of values, with little variation across the average scores for each of the different values. Figure 4 below confirms that there was a spread of opinion across all values about whether respondents agreed, had neutral opinion or disagreed with gradings.

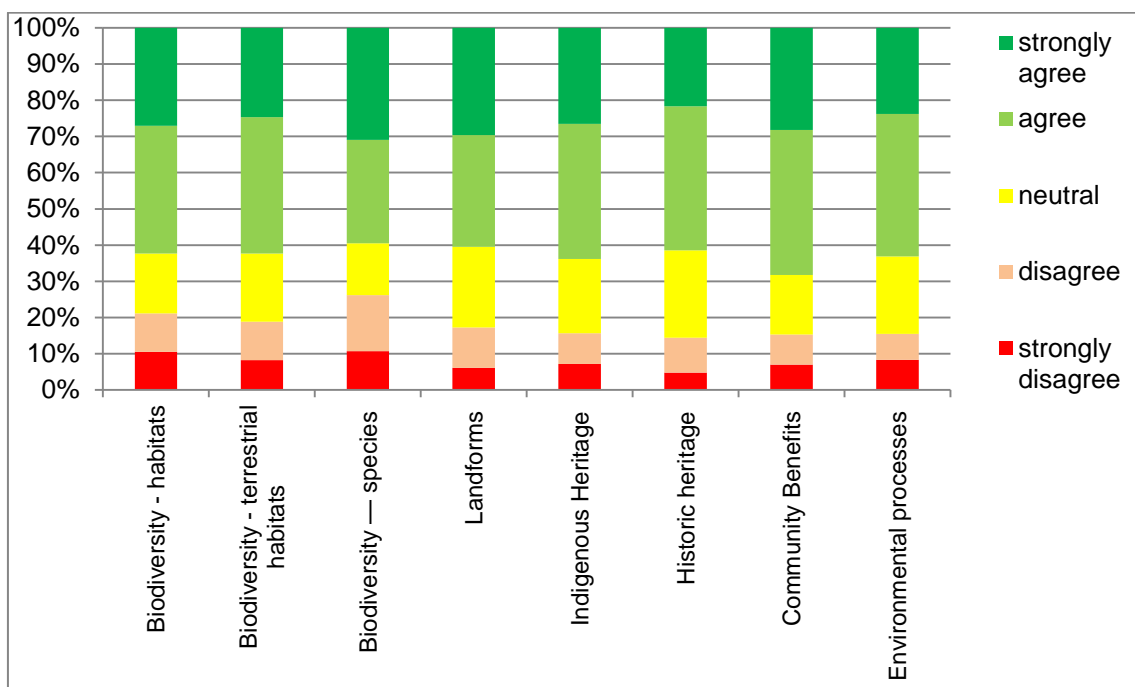


Figure 4 Condition of values – distribution scores

Impacts to the Reef

The survey asked to what extent respondents agreed with the Authority’s grading of impacts on values to the Reef, as identified in the Strategic Assessment Report. Figure 5 below shows that on balance, more respondents agreed than disagreed with gradings about impacts affecting values of the Reef across all categories.

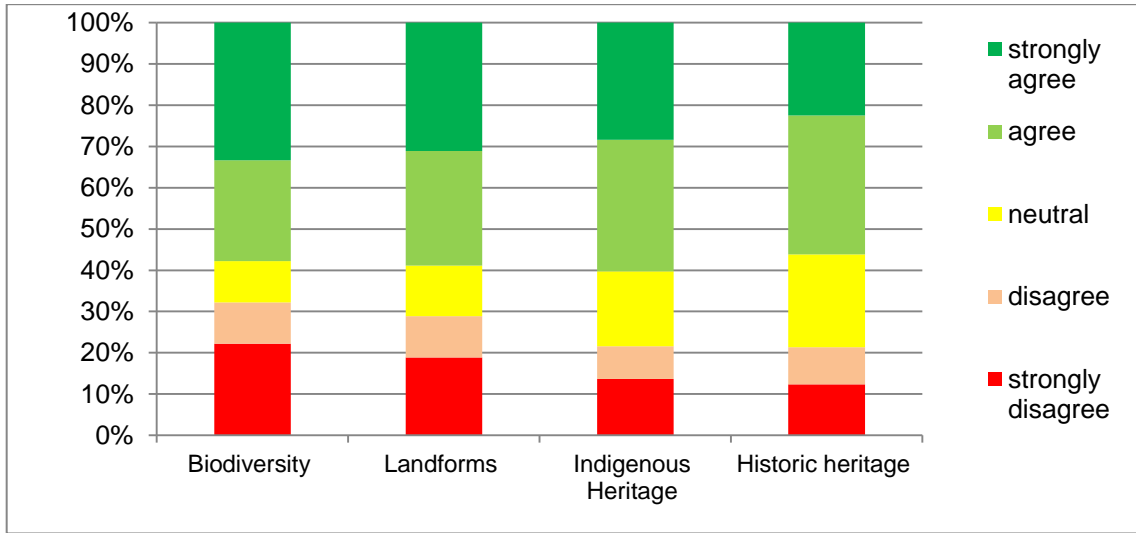


Figure 5 Impacts to the Reef – distribution of scores

Risks to the Reef

The survey asked to what extent respondents agreed with the Authority’s grading of future risks to the Reef, as identified in the Strategic Assessment Report. The distribution of responses in Figure 6 showed that respondents generally agreed with gradings about future risks to the Reef.



Figure 6 Risks to the Reef – distribution of scores

Recommended improvements to the Authority’s management arrangements

The survey asked respondents how strongly they agreed with the list of recommended improvements to the way the Authority protects and manages the Reef. The distribution of scores in Figure 7 showed that there was a considerable proportion of respondents who expressed strong agreement with the proposed recommended improvements.

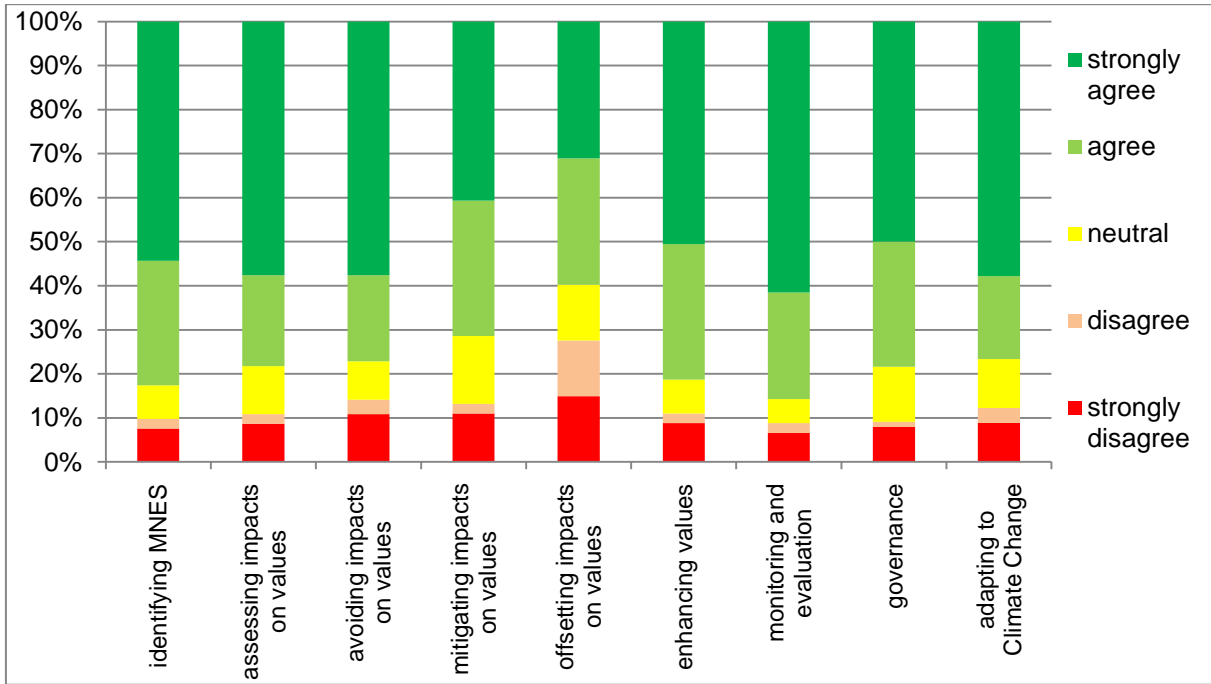


Figure 7 Recommended improvements to the Authority's management arrangements – distribution of scores

Recommended improvements to local, state and national government programs

Respondents generally agreed that the proposed recommended improvements were of value (Figure 8). While average scores ranged from 3.3 to 4.0, a higher proportion (over 20 per cent) of individual respondents strongly disagreed that proposed improvements for managing direct use ports and shipping activities would provide enhanced benefits.

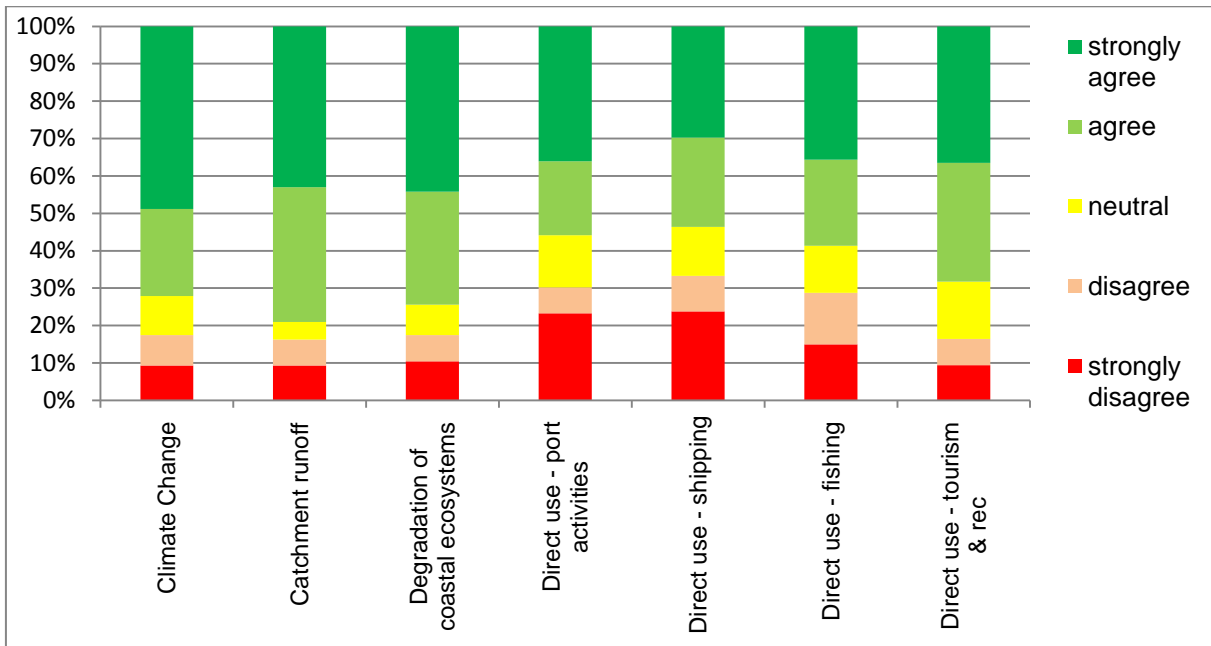


Figure 8 Recommended improvements to local, state and national government programs – distribution of scores

Key initiatives and measures to strengthen the Authority's management

The survey asked respondents how strongly they agreed with key initiatives and measures to strengthen management as outlined in the Authority's draft Program Report. On average, respondents agreed with proposed initiatives and measures (Table 3).

Table 3 Key initiatives and measures to strengthen management – survey average scores

Initiatives/measures	Average score (where >3.0 indicates important values)
New initiatives	
Outcomes and targets	3.9
Cumulative impact assessment policy	4.0
Net benefit policy	3.7
Reef Recovery program	4.2
Integrated monitoring and reporting program to support adaptive management	4.2
Measures to strengthen management	
Identifying matters of national environmental significance	4.3
Regionally-based standards for ecosystem health	4.2
Strengthened guidelines	4.3
Streamlining, harmonising and enhancing tools	4.0
Improving assessment of matters of national environmental significance	4.2
Supporting recovery and building resilience	4.2
Improving certainty	4.1
Strengthening protection of heritage values	4.1
Improving compliance	4.2
Improving incident response capacity	4.3
Engagement	4.2
Influencing drivers and activities affecting the Region	4.2
Supporting best practice and stewardship	4.3
Improving consultation arrangements	4.2
Improving identification and understanding of matters of national environmental significance	4.3
Identifying Indigenous heritage values	4.1
Developing an historic heritage database	3.9
Improving understanding of community benefits	4.1
Improving alignment and coordination of research priorities	4.2
Increasing emphasis on use of modelling	3.8

5.6.2 Written submissions

An overview analysis of written submissions was also undertaken by consultants GHD. To complement the interpretation of this information, the Authority undertook a more detailed analysis, where the theme of each submission's comments was classified in accordance with the themes of the Strategic Assessment Report, that is:

- values
- drivers and activities
- impacts (and their management).

The combined results are provided below, along with the collated views specifically relating to current management arrangements, and those relating to the strategic assessment process itself.

Values

Many submissions highlighted concerns about the condition of values important to the Great Barrier Reef World Heritage Area — specifically, the current condition and knowledge of ecosystems within the Region.

A number of respondents suggested that the Australian and Queensland governments required a greater emphasis and commitment to resources for inshore and catchment ecosystem repair, rehabilitation, and restoration and ongoing management (such as for pest management or more marine park areas).

Values where submissions suggested improved management or recognition was required include:

- Indigenous values — specifically:
 - Identifying, recognising and incorporating Traditional Owner and Indigenous values and knowledge into planning and management
 - Management of culturally important animals (such as improved monitoring on the impacts of hunting on dugong and turtle)
 - Supporting management actions to improve Indigenous employment opportunities (such as through sustainable tourism in Indigenous communities)
- Biodiversity values — specifically:
 - Protection of important habitats (which support important species), such as coastlines, waterways, wetlands, coastal closed rainforest and scrub communities
 - Management of impacts arising from proposed development intensification, including the:
 - monitoring of environmental values in the Cape York region
 - protection of significant biodiversity values in the Fitzroy River Delta
 - management of linkages between the Wet Tropics terrestrial and marine natural assets.

Drivers and activities

Many submissions highlighted concerns about direct use of the Great Barrier Reef World Heritage Area by port-related activities. Specific concerns included:

- the further expansion of port activities
- the risks to the Reef from increased shipping
- the Australian Government's decision to allow dredging, and the Authority's decision to allow the disposal of dredge material, and the impacts this could have on the Reef (many submissions expressed concern regarding a perception that the Authority had a conflict of interest in making the decision to allow the dumping of dredge material in the Great Barrier Reef World Heritage Area)
- the effectiveness of proposed port management strategies in minimising impacts on the Great Barrier Reef World Heritage Area.

Some submissions noted the benefits of port expansion, the role shipping plays in maintaining the Australian economy, and observations that impacts on the Great Barrier Reef were not extensive.

There were also many comments about the tourism industry, generally noting that tourism was important for regional employment and the economy, and that the long-term viability of tourism in Queensland relies on maintaining healthy natural assets.

Additionally, a number of submissions suggested that the Authority required a stronger focus on climate change and the management of impacts arising from it.

Impacts and their management

Many of the written submissions voiced opposition to port and shipping activities. In addition to this opposition and concern, many also included suggestions for improvements to the management of impacts arising from ports and shipping activities. These included:

- suggestions that a rationalisation of port activities (so impacts are confined and cost-benefits consider environmental externalities) was required

- acknowledgement of the high standards in place for shipping and the measures in place to manage and minimise the impacts and risks from shipping
- suggestions that any new shipping regulation must be undertaken with a focus on risk management.

A number of submissions expressed advocacy for supporting strategies to manage impacts arising from a range of activities. These included general support for:

- a strategic approach to port activities
- the North-East Shipping Management Plan as a coordinated means of managing shipping
- general support for changes in the management of ship anchorage, provided changes are developed and implemented in a manner that takes account of current operational arrangements
- improved fisheries management, including for sustainable recreational fishing
- the Reef Guardian program (particularly the Reef Guardian Council program) as an effective stewardship tool.

Many submissions included comments regarding cumulative impact assessment, offsets and net environmental benefit.

Respondent's suggestions for improvements to the cumulative impact assessment policy/ processes included:

- a sharpened focus to the main threats and risk to the Reef
- assurances that it was 'fit for purpose'
- a whole-of-Reef approach.

A number of respondents advised that underwater noise, the likely increase in extreme weather, the need to build resilience in ecosystems and regional approaches should also be considered in the cumulative impact assessment process.

Generally, submissions were not supportive of the current management of offsets and suggested that net benefit strategies should be guided by cumulative impact assessment. Many respondents expressed a view that offsets represent an unacceptable net loss of biodiversity and were of the opinion that they are not adequate to protect the Reef. Additionally, there was general support for a more coordinated approach to the consideration, application and management of offsets.

Some respondents considered that restoration of habitat and enhanced protection of the Region's ecosystems should not be part of the offsetting programs. Conversely, others believed management actions associated with offsets should be focused on the key threats to the Great Barrier Reef.

Many submissions considered that the proposed net environmental benefit strategy should be guided by an assessment of cumulative impacts on the Great Barrier Reef World Heritage Area, rather than by a case by case project-level assessment of impacts.

Current management arrangements

A large number of submissions provided comment (both supportive and critical) and suggested changes to the management of the Great Barrier Reef World Heritage Area and the Queensland catchment (in relation to the Great Barrier Reef World Heritage Area).

Supportive comments within submissions included:

- expressions that the Great Barrier Reef Marine Park is generally well managed (for example, through zoning)
- views that the current regulatory framework of the Australian and Queensland governments is comprehensive and includes stringent regulations and processes to minimise environmental impact
- support for the streamlining of development assessment processes (such as through coordinated government processes)
- recognition of 'Reef Plan' outcomes in developing constructive industry partnerships, implementing best management practice and achieving positive water quality outcomes
- general support for the proposed Long-term Sustainability Plan.

Critical comments in submissions included:

- expressions that current management practices are not adequate for the protection of the Great Barrier Reef World Heritage Area
- perceptions that there is a lack of integration between Australian and Queensland governments planning and protection for the Great Barrier Reef World Heritage Area
- expressions that recent changes to Queensland laws have reduced safeguards for coastal zones, facilitated development, and reduced protection of the outstanding universal value of the Great Barrier Reef World Heritage Area
- concerns that the effectiveness of proposed Queensland strategies and planning (to protect the Great Barrier Reef World Heritage Areas) is unknown

- a lack of confidence in the assessment process for proposed developments (including perceptions that decision making lacks transparency)
- perceptions that development decisions are weighted toward economic values rather than environmental values
- opinions that cost-benefit analysis on proposed developments do not consider externalities (such as the environment and other industries)
- concerns that the security of government resources (funding, personnel, data) is inadequate and variable — in particular for compliance funding and to support the aggregation of species and habitat data, and biophysical information
- expressions that significant resources had been spent in delivering Reef Plan, but that outcomes were minimal or undermined by decisions to allow discharge of poor water quality (for example, from industrial development), and by decisions to allow dredge material to be disposed of in the Great Barrier Reef World Heritage Area
- suggestions that greater recognition is needed for the principles of ecologically sustainable development
- perceived conflicts in the use of both the Great Barrier Reef Marine Park and coastal zone
- opinions that ecological sustainable development should be considered in light of the community's willingness to pay for greater environmental management and protection, at the cost of economic outcomes.

Suggestions to enhance existing management arrangements included support for:

- the use of strategic approaches to planning, such as the development and implementation of catchment plans, recovery plans, and strategic planning for marine infrastructure
- updating and enhancing vulnerability assessments, including improving information on thresholds for resilience, and seabird and shorebird monitoring and reporting
- the greater use of partnerships and collaboration, rather than focus on government-developed programs
- the reduction of pollution through the use of better management interventions and additional investment into Reef Plan
- the implementation of adaptive management frameworks
- improved communication of cultural and heritage values
- enhancement of the Authority's influence on coastal planning and development decisions
- existing programs (such as Reef Recovery, Reef Plan and Water Quality Improvement Plans)
- the retention of Australian Government oversight in the assessment and decision-making process of proposed developments in Queensland
- increased compliance and enforcement measures and resultant penalties for environmental harm
- the assessment of developments that affect the Great Barrier Reef to be assessed independently, to be focused on mitigating environmental and cultural impacts, and to use management measures such as environmental and cultural buffer zones
- the important role local government plays as a key stakeholder in protecting the Great Barrier Reef - including land use planning, enforcement and compliance, water quality monitoring, and raising community awareness and education
- basing the Long-term Sustainability Plan on partnerships and for active participation in the decision making process
- ensuring that the Long-term Sustainability Plan has clear purpose and direction (to halt and reverse the decline in the health of the Great Barrier Reef), and is outcomes-based in assessing management effectiveness
- the transmission of the Great Barrier Reef values to future generations.

Strategic Assessment

The strategic assessment process attracted positive comments and criticisms (including a perceived lack of trust, independence and transparency in the process). Some submissions expressed disappointment with the consultation and stakeholder engagement that was conducted.

Other criticisms represented a disappointment that rather than identifying specific management interventions, the strategic assessment provided the framework for further planning. Some respondents were of the view that the Strategic Assessment Report, Program Report and future commitments:

- do not identify the strong management actions required to address key threats;
- do not appear sufficient to halt the declining condition of matters of national environmental significance
- do not appear sufficient to maintain all of the natural heritage values.

Additionally, suggestions were made for the inclusion of outcomes-focused targets to enable the increased understanding of required actions and future monitoring of Program effectiveness.

A number of submissions perceived a disparity between the Great Barrier Reef Strategic Assessment and the Great Barrier Reef Coastal Zone Strategic Assessment, specifically relating to the scientific basis underpinning these reports.

5.7 Detailed feedback received

Comments within public submissions were grouped into one of six categories. The categories are broadly based on the structure of the draft Strategic Assessment Report.

1. **Values:** the primary focus of the Strategic Assessment is the consideration of impacts from activities on matters of national environmental significance and related values. This category contains only those comments in submissions that referred to a value without reference to specific activities or impacts. Any submissions that related to impacts from specific activities were dealt with under Sections 3 and 4.
2. **Climate change:** relates to comments in submissions focusing on global warming, cyclone impacts, increased sea temperature, altered ocean currents, ocean acidification and rising sea level.
3. **Impacts of activities in the catchment:** includes comments in submissions relating to various water quality impacts, such as agriculture, aquaculture and urban and industrial development.
4. **Impacts of activities in the Region:** includes comments in submissions relating to ports and shipping, tourism, fishing (commercial and recreational), recreation and defence.
5. **Management:** the largest section — has been organised to reflect the order of management initiatives in the Program Report: key initiatives, measures to strengthen management and forward commitments, including the Reef 2050 Long-term Sustainability Plan.
6. **Editorial comments per chapter:** Where submissions included a suggested editorial change, they were responded to in chronological order. Any amendments that were made to the strategic assessment reports in response to these suggestions are presented in Table 4 (Section 6.2), which is cross referenced to the relevant submission number, in Table 11 (Appendix 3).

Detailed responses to public submissions are provided in Appendix 3.

6 Addendum to the Great Barrier Reef Region Strategic Assessment

Comments made in public submissions, together with independent peer review recommendations, were considered in finalising the reports. This section summarises amendments made to Chapters 1-13 in the Strategic Assessment Report.

Amendments range from correcting factual errors and missing references to substantive revisions of entire sections.

Amendments will be incorporated into a final Strategic Assessment Report. At the time of incorporating these amendments, minor style corrections, editorial changes and improvements to readability will be undertaken as needed.

6.1 Summary of amendments made to the reports

Chapter 1 (Introduction)

Chapter 1 remains largely unchanged.

Chapter 2 (Assessment approach)

Additional section on the independent peer review and public consultation processes has been added.

Chapter 3 (Current management)

Amendments include adding examples of how the Authority seeks to address activities that occur outside the Marine Park and inclusion of additional information on the Authority's statutory management arrangements. Further information on the Authority's permission system has been added.

Chapter 4 (Matters of national environmental significance)

A number of amendments to ensure that information supporting the descriptions of attributes and processes that underpin matters of national environmental significance are based on the best available scientific information.

Examples of more substantial changes include the response to a comprehensive review by Professor David Hopley on matters relating to significant ongoing geological processes as per World Heritage Convention criteria (vii). This was addressed by including suggested amendments to the text, most of which related to Chapter 4.

In addition, the descriptions of some attributes that underpin matters of national environmental significance were corrected or clarified. Bioturbation has been added to the list of significant environmental processes that support matters of national environmental significance.

Chapter 5 (Drivers and activities)

This chapter is the first part of the assessment of impacts on matters of national environmental significance. Amendments included the addition of further information and supporting evidence on drivers and activities.

Examples include additional information on urban storm water management (in relation to catchment run-off), implications of legislative changes and the regulation of defence activities. In addition, a small number of edits were made to address factual errors or to clarify statements.

Chapter 6 (Impacts on the values)

This chapter forms the second part of the assessment of impacts on matters of national environmental significance. The most substantial amendments to this chapter were made in sections describing the impacts of dredging, dredge material disposal and re-suspension.

Amendments included adding caveats on current modelling outcomes and more explicit wording around knowledge gaps. A caveat was added about the impacts of fishing due to the considerable uncertainty in estimates of non-retained catch and the lack of contemporary estimates of total extraction.

Tables 6.6-6.11 were updated to reflect the IUCN approach of highlighting data deficiency (DD) by adding the standard abbreviation of 'DD' where this was applicable. This ensures a clear separation between 'no-impact' of an activity versus a knowledge gap (DD). This differentiation highlights the importance of the precautionary principle when assessing the impacts of these activities on matters of national environmental significance.

A number of clarifications and corrections were made where supporting scientific evidence was available. Impacts on geomorphological attributes were expanded and corrected according to Professor Hopley's review.

Chapter 7 (Current condition and trend)

The major change made to this chapter is an explicit statement that the condition and trend of most key attributes — for which there is an adequate level of certainty (for example, coral reefs, seagrass meadows, open waters, corals, turtles, seabirds and dugongs) — is poor and declining in at least one of the four regions.

Chapter 8 (Management effectiveness – an independent assessment)

This chapter summarises the independent review of the Authority's management effectiveness. Amendments are limited to minor points of clarification.

Chapter 9 (Demonstration and case studies)

This chapter summarises eight demonstration case studies that were undertaken to assess in greater detail, current management arrangements to protect and manage relevant matters of national environmental significance. Amendments to the dugong demonstration case have been made in response to a review by Professor Helene Marsh. Only a few amendments to clarify points and to correct a factual error were made to the other demonstration cases.

Chapter 10 (Resilience and risk)

This chapter looks at cumulative impacts on key values of biodiversity. There were two amendments made to this chapter. The first was the inclusion of seabirds as a key value, and the second related to an amendment to the statement about the Region's resilience. The statement makes it explicit that there is a loss of resilience not only a concern regarding this loss.

Chapter 11 (Projected condition)

Amendments include qualifications to highlight that models were preliminary in nature and were constrained by data limitations and knowledge gaps. These data limitations and knowledge gaps form the basis of the *Science information needs for an integrated research, monitoring and reporting program*, which is one of the key initiatives outlined in the Program Report.

Chapter 12 (Recommended changes to management)

Amendments to recommendations include the addition of four new recommendations. These include recommendations in relation to: managing impacts of dredging and dredge spoil disposal; fisheries management; enhancing alignment between the Authority's permission system and EPBC Act assessment and approval processes; and, establishing a Great Barrier Reef Advisory Group. Minor changes were made to the recommendation to implement the integrated research, monitoring and reporting program. Queensland Government changes to recommendations (now commitments) have also been included.

Chapter 13 (Adaptive management)

This chapter demonstrates how the principles of ecological sustainable development have been applied in the Authority's management program together with its adaptive management processes.

It has undergone significant amendment, and includes new sections on how the Authority's:

- comprehensive management program meets strategic assessment criteria
- permission system meets the requirements of the EPBC Act
- strategic assessment process addresses relevant World Heritage Committee recommendations.

6.2 Amendments in Chapters 1 through 13 of the Strategic Assessment Report

Table of corrections, clarifications and changes to the *Great Barrier Reef Region Strategic Assessment, Strategic Assessment Report, Draft for public consultation*. Each addendum (ADD) is cross referenced to the relevant suggestion or comment from the independent peer review (IPR) or public consultation submissions (PR). Note that internal revisions do not have an addendum number.

Table 4 Amendments in Chapters 1 through 13 of the Strategic Assessment Report

Text in red, identifies corrections, clarifications and changes made.

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
Chapter 1: Introduction				
Minor corrections	Internal			
Chapter 2: Assessment approach				
2.7.4	Internal	Detailed consideration of the available evidence informs the assessment of the current condition and trend of the Region's key values and attributes including relevant matters of national environmental significance (see Chapter 7). The assessment of condition is graded relative to the best available knowledge about likely original condition. The outcomes are presented separately for key values and attributes, including more detailed analysis of the condition and trend of values and attributes of particular concern. Each assessment is comprehensively referenced.	Detailed consideration of the available evidence informs the assessment of the current condition and trend of the Region's key values and attributes including relevant matters of national environmental significance (see Chapter 7). The assessment of condition is graded relative to the best available knowledge about likely original condition. Where limited information is available, evidence of the condition of supporting ecosystems and processes was taken into consideration in assessing condition and trend. The outcomes are presented separately for key values and attributes, including more detailed analysis of the condition and trend of values and attributes of particular concern. Each assessment is comprehensively referenced.	
2.7.4	Internal	The assessment of terrestrial habitats that support the Great Barrier Reef is also presented for four areas: northern inland (N.In.), northern coastal (N.C.), southern inland (S.In) and southern coastal (S.C.) (Figure 2.3). Again, the north-south dividing line is around Port Douglas. The coastal areas are defined as being a maximum of five	The assessment of terrestrial habitats that support the Great Barrier Reef is also presented for four areas: northern inland (N.In.), northern coastal (N.C.), southern inland (S.In) and southern coastal (S.C.) (Figure 2.3). Again, the north-south dividing line is around Port Douglas. The coastal areas are defined as being a maximum of five kilometres from the coastline or where land reaches	

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		kilometres from the coastline or where land reaches the height of 10 metres Australian Height Datum, whichever is furthest from the coast. The inland area is the remainder of the Great Barrier Reef catchment.	the height of 10 metres Australian Height Datum, whichever is furthest from the coast. The inland area is the remainder of the Great Barrier Reef catchment. <i>An overview statement is also provided for each grouping of values and attributes. In assessing overall condition and trend not all components were given equal weighting. For example, greater weight was given to habitats and species that are critical in supporting a range of other habitats and species.</i>	
2.12	Internal	<p>2.12 Independent review</p> <p>A range of relevant experts, including members of the Reef Water Quality Protection Plan Independent Science Panel, reviewed the joint technical framework to ensure the methods used in the strategic assessments for the Great Barrier Reef Region and the adjacent coastal zone were coordinated, robust and effective.</p> <p>Independent reviewers also assessed the effectiveness of the Authority's current management arrangements (see Section 2.7.6 above).</p> <p>In addition, in accordance with the terms of reference, the draft Strategic Assessment Report will be peer reviewed by at least three appropriately qualified persons.</p> <p>The outcomes of the independent assessment of management effectiveness and the peer review comments, together with the Authority's response, will be provided to the Minister for consideration.</p>	<p>2.12 Independent peer review of the draft Strategic Assessment and draft Program Report</p> <p>In accordance with the terms of reference the draft Strategic Assessment Report was peer reviewed. Consultants Sinclair Knight Merz (SKM) were commissioned to evaluate the draft Great Barrier Reef Region Strategic Assessment Report and draft Program Report against the following criteria:</p> <ul style="list-style-type: none"> • consistency with its Terms of Reference • structure and cohesiveness of presentation • breadth and depth of matters covered • technical accuracy • validity of conclusions drawn. <p>A comparative assessment of the Authority's Strategic Assessment (of marine regions and issues) and the Queensland Strategic Assessment (of the coastal zone) was also made, to identify any gaps or duplication in the management and protection of matters of national environmental significance.</p> <p>The full report titled the <i>Great Barrier Reef Strategic Assessment, Independent Review Report</i> (dated 3 February 2014), and the Authority's response (the Supplementary Report) are available on the Authority's website at www.gbrmpa.gov.au.</p>	
2.13	Internal		<p>New section providing an overview of the public consultation and comments received.</p> <p>2.13 Public Comment</p> <p>The Authority and the Queensland Government implemented a joint process for</p>	

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			<p>public consultation on the Great Barrier Reef Region and Great Barrier Reef Coastal Zone draft Strategic Assessment and draft Program Reports.</p> <p>Consultation ran from 1 November 2013 to 31 January 2014. The period was lengthened from the minimum 28-day timeframe outlined in the terms of reference to take into account public interest, the length and complexity of the reports and the Christmas holiday period.</p> <p>Consultants GHD were commissioned to facilitate a number of components of the public consultation process. This included the:</p> <ul style="list-style-type: none"> • development of a standalone website that gave the public access to draft strategic assessment reports and supporting information, in conjunction with an online/postal survey for feedback and a portal for the electronic lodgement of submissions. • management of submissions received during public consultation, including hard copy lodgement of submissions via a nominated postal address, and the distribution of copies of submissions to the Authority, the Queensland Government and the Australian Department of the Environment • analysis of submissions and preparation of a summary report synthesising information received during the public consultation process. <p>A total of 6616 submissions were received during the 13-week public consultation period.</p> <p>The full report titled the <i>Great Barrier Reef Strategic Assessment – Public Consultation on Draft Reports</i> (dated April 2014), and the Authority’s response (the Supplementary Report) are available on the Authority’s website at www.gbrmpa.gov.au.</p> <p>The outcomes of the independent assessment of management effectiveness, the independent peer review, and the public consultation, together with the Authority’s response (the Supplementary Report) and the final Program report will be provided to the Minister for endorsement consideration.</p>	

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
Chapter 3: Current management				
3.3	ADD-1	Through its management arrangements, the Authority generally seeks to directly address activities that occur in the Marine Park and to influence activities outside this area that affect or may affect the Marine Park. Section 7(1A) of the Act states that a matter shall be taken to relate to the Marine Park if it relates to either the use or management of an area that would or might affect the Marine Park or the use of a place outside the Marine Park for a purpose relating to the Marine Park.	<p>Through its management arrangements, the Authority generally seeks to directly address activities that occur in the Marine Park and to influence activities outside this area that affect or may affect the Marine Park. Section 7(1A) of <i>the Act</i> states that a matter shall be taken to relate to the Marine Park if it relates to either the use or management of an area that would or might affect the Marine Park or the use of a place outside the Marine Park for a purpose relating to the Marine Park.</p> <p>Examples of how the Authority seeks to address activities that occur outside this area include:</p> <ul style="list-style-type: none"> • position statements to document the Authority's view on matters outside its jurisdiction but which have an effect on the Marine Park, and • stewardship programs which seek to influence societal attitudes and behaviours that affect the Marine Park. <p>In regard to actions that may pollute water in a manner harmful to animals and plants in the Marine Park, Section 66(2)(e) of the GBRMP Act provides the capacity to regulate or prohibit these actions, whether they are within the Marine Park or elsewhere.</p>	IPR-12, PR-E192
3.5	ADD-2	Great Barrier Reef Marine Park (Aquaculture) Regulations 2000 regulate the discharge of waste from aquaculture operations outside the Marine Park which may affect animals and plants within the Marine Park.	<i>Great Barrier Reef Marine Park (Aquaculture) Regulations 2000</i> regulate the discharge of waste from aquaculture operations outside the Marine Park which may affect animals and plants within the Marine Park. (Note: It is the Great Barrier Reef Marine Park Authority's intention to rescind the <i>Great Barrier Reef Marine Park (Aquaculture) Regulations 2000</i> as equivalent levels of protection for the plants and animals in the Marine Park is provided through the <i>Environment Protection and Biodiversity Conservation Act 1999</i>).	IPR-13
3.5	ADD-3	<i>Coastal Protection and Management Act 1995</i> <i>Environmental Protection Act 1994</i> <i>Fisheries Act 1994</i>	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Coastal Protection and Management Act 1995</i> <i>Environmental Protection Act 1994</i>	IPR-14, PR-E192

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		<p>Local Government Act 1993</p> <p>Marine Parks Act 2004</p> <p>Land Act 1994</p> <p>Mineral Resources Act 1989</p> <p>Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004</p> <p>Native Title (Queensland) Act 1993</p> <p>Nature Conservation Act 1992</p> <p>State Development and Public Works Organisation Act 1971</p> <p>Sustainable Planning Act 2009</p> <p>Transport Operations (Marine Pollution) Act 1995</p> <p>Transport Operations (Marine Safety) Act 1994</p> <p>Transport Infrastructure Act 1994</p> <p>Vegetation Management Act 1999</p> <p>Water Act 2000</p> <p>Workplace Health and Safety Act 1995</p>	<p>Fisheries Act 1994</p> <p>Local Government Act 1993</p> <p>Marine Parks Act 2004</p> <p>Land Act 1994</p> <p>Mineral Resources Act 1989</p> <p>Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004</p> <p><i>Marine Parks Regulation 2006</i></p> <p><i>Mineral Resources Act 1989</i></p> <p>Native Title (Queensland) Act 1993</p> <p>Nature Conservation Act 1992</p> <p><i>Queensland Heritage Act 1992</i></p> <p>State Development and Public Works Organisation Act 1971</p> <p>Sustainable Planning Act 2009</p> <p><i>Torres Strait Islander Cultural Heritage Act 2003</i></p> <p>Transport Operations (Marine Pollution) Act 1995</p> <p>Transport Operations (Marine Safety) Act 1994</p> <p>Transport Infrastructure Act 1994</p> <p>Vegetation Management Act 1999</p> <p>Water Act 2000</p> <p>Workplace Health and Safety Act 1995</p>	
3.5 (Former 3.6) (Table 3.1)	ADD-4	Table 3.1 Management tools employed to protect and manage the Great Barrier Reef Region and relevant matters of national environmental significance.	Table 3.1 Management tools employed by the Authority to protect and manage the Great Barrier Reef Region and relevant matters of national environmental significance.	IPR-15
3.5 (Former 3.6) (Table 3.1)	ADD-5	<p>Guidelines</p> <p>Coral transplantation</p> <p>Emergency disposal of foreign fishing vessels</p>	<p>Guidelines</p> <p>Coral transplantation</p> <p>Emergency disposal of foreign fishing vessels</p>	IPR-15

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		<p>Management of artificial reefs in the Great Barrier Reef Marine Park</p> <p>Managing visitation to seabird breeding islands</p> <p>Permits Information Bulletin — no structure sub-zones</p> <p>Use of hydrodynamic numerical modelling for dredging projects in the Great Barrier Reef Marine Park</p>	<p>Management of artificial reefs in the Great Barrier Reef Marine Park</p> <p>Managing visitation to seabird breeding islands</p> <p>Permits Information Bulletin — no structure sub-zones</p> <p>Use of hydrodynamic numerical modelling for dredging projects in the Great Barrier Reef Marine Park</p> <p>EPBC Act referral guidelines for the outstanding universal value of the Great Barrier Reef World Heritage Area</p>	
3.5 (Former 3.6) (Table 3.1)	Internal	Permits (including environmental impact assessment)	The permission system	Internal revision
3.5 (Former 3.6) (Table 3.1)	ADD-6	<p>Partnerships:</p> <p>Great Barrier Reef Intergovernmental Agreement 2009 between the Australian and Queensland governments</p> <p>High Standard Tourism program with Ecotourism Australia</p> <p>Management agreement with the Department of Defence on the implementation of the strategic environmental assessment of defence activities in the Marine Park.</p> <p>Marine Strandings Hotline</p> <p>Memorandum of understanding with the Department of the Environment, Water, Heritage and the Arts relating to the integration and application of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the <i>Great Barrier Reef Marine Park Act 1975</i></p> <p>Memorandum of understanding with Queensland ports on port activities in or adjacent to the Great Barrier Reef Marine Park (2009)</p> <p>Local Marine Advisory Committees</p> <p>Reef Advisory Committees</p>	<p>Partnerships:</p> <p>Great Barrier Reef Intergovernmental Agreement 2009 between the Australian and Queensland governments</p> <p>Fisheries Queensland undertakes much of the fisheries management within the Marine Park under an agreement with the Commonwealth Government.</p> <p>The Paddock to Reef monitoring program which is a commitment under the Reef Water Quality and Protection Plan (Reef Plan).</p> <p>High Standard Tourism program with Ecotourism Australia</p> <p>Management agreement with the Department of Defence on the implementation of the strategic environmental assessment of defence activities in the Marine Park.</p> <p>Marine Strandings Hotline</p> <p>Memorandum of understanding with the Department of the Environment, Water, Heritage and the Arts relating to the integration and application of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and the <i>Great Barrier Reef Marine Park Act 1975</i></p> <p>Memorandum of understanding with Queensland ports on port activities in or adjacent to the Great Barrier Reef Marine Park (2009)</p> <p>Local Marine Advisory Committees</p>	IPR-15

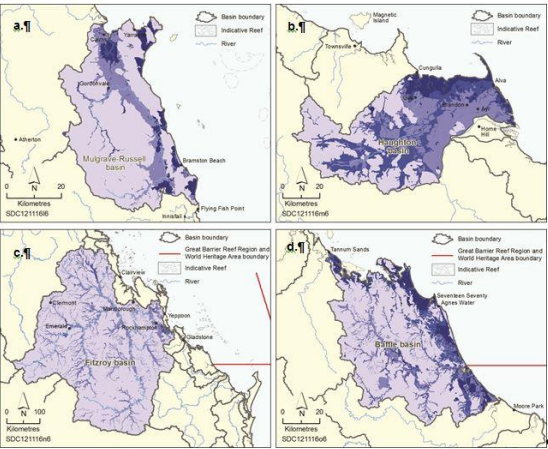
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			Reef Advisory Committees																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
3.5 (Former 3.6) (Table 3.1)	Internal	Compliance	Field management and compliance	Internal revision																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.6	ADD-7		Addition of text to section 3.6 – 3.6.1 and 3.6.2 Refer to section 6.3 for full version of the new sections	Internal revision																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
3.7	ADD-8	<table border="1"> <thead> <tr> <th rowspan="2">Management tool</th> <th colspan="13">Management topic</th> </tr> <tr> <th>Biodiversity protection</th> <th>Indigenous heritage</th> <th>Historic heritage</th> <th>Community benefits</th> <th>Climate change and extreme weather</th> <th>Water quality protection</th> <th>Coastal development</th> <th>Tourism</th> <th>Fishing — commercial</th> <th>Fishing — recreational</th> <th>Recreation</th> <th>Port activities</th> <th>Shipping</th> <th>Defence activities</th> <th>Research activities</th> </tr> </thead> <tbody> <tr> <td>Regulatory</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Acts and Regulations</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Zoning plans</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Plans of management</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Permits</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Traditional Owner agreements</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Compliance</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Site infrastructure</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Fees and charges</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Non-regulatory</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Policy</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Partnerships</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Stewardship and best practice</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Education and community awareness</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Research and monitoring</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Reporting</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> </tbody> </table>	Management tool	Management topic													Biodiversity protection	Indigenous heritage	Historic heritage	Community benefits	Climate change and extreme weather	Water quality protection	Coastal development	Tourism	Fishing — commercial	Fishing — recreational	Recreation	Port activities	Shipping	Defence activities	Research activities	Regulatory																Acts and Regulations	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Zoning plans	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Plans of management	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Permits	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Traditional Owner agreements	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Compliance	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Site infrastructure	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Fees and charges	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Non-regulatory																Policy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Partnerships	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Stewardship and best practice	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Education and community awareness	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Research and monitoring	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Reporting	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	<table border="1"> <thead> <tr> <th rowspan="2">Management tool</th> <th colspan="13">Management topic</th> </tr> <tr> <th>Biodiversity protection</th> <th>Indigenous heritage</th> <th>Historic heritage</th> <th>Community benefits</th> <th>Climate change and extreme weather</th> <th>Water quality protection</th> <th>Coastal development</th> <th>Tourism</th> <th>Fishing — commercial</th> <th>Fishing — recreational</th> <th>Recreation</th> <th>Port activities</th> <th>Shipping</th> <th>Defence activities</th> <th>Research activities</th> </tr> </thead> <tbody> <tr> <td>Regulatory</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Acts and Regulations</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Zoning plan</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Plans of management</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>The permission system</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Traditional Owner agreements</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Field management and compliance</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Site infrastructure</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Fees and charges</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Non-regulatory</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Policy</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Partnerships</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Stewardship and best practice</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Education and community awareness</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Research and monitoring</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> <tr> <td>Reporting</td> <td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td> </tr> </tbody> </table> <p>*commercial harvest fisheries only</p>	Management tool	Management topic													Biodiversity protection	Indigenous heritage	Historic heritage	Community benefits	Climate change and extreme weather	Water quality protection	Coastal development	Tourism	Fishing — commercial	Fishing — recreational	Recreation	Port activities	Shipping	Defence activities	Research activities	Regulatory																Acts and Regulations	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Zoning plan	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Plans of management	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	The permission system	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Traditional Owner agreements	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Field management and compliance	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Site infrastructure	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Fees and charges	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Non-regulatory																Policy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Partnerships	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Stewardship and best practice	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Education and community awareness	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Research and monitoring	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Reporting	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	IPR-16
Management tool	Management topic																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Biodiversity protection	Indigenous heritage	Historic heritage	Community benefits	Climate change and extreme weather	Water quality protection	Coastal development	Tourism	Fishing — commercial	Fishing — recreational	Recreation	Port activities	Shipping	Defence activities	Research activities																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Regulatory																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Acts and Regulations	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Zoning plans	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Plans of management	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Permits	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Traditional Owner agreements	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Compliance	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Site infrastructure	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Fees and charges	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Non-regulatory																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Policy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Partnerships	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Stewardship and best practice	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Education and community awareness	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Research and monitoring	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Reporting	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Management tool	Management topic																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Biodiversity protection	Indigenous heritage	Historic heritage	Community benefits	Climate change and extreme weather	Water quality protection	Coastal development	Tourism	Fishing — commercial	Fishing — recreational	Recreation	Port activities	Shipping	Defence activities	Research activities																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Regulatory																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Acts and Regulations	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Zoning plan	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Plans of management	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
The permission system	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Traditional Owner agreements	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Field management and compliance	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Site infrastructure	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Fees and charges	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Non-regulatory																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Policy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Partnerships	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Stewardship and best practice	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Education and community awareness	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Research and monitoring	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Reporting	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3.10.1 (Traditional use of marine)	Internal	Other management activities that Traditional Owners may identify in their agreement implementation plan include restoring and maintaining waterways and coastal ecosystems; maintaining and protecting significant heritage values including sites; sharing and documenting	Other management activities that Traditional Owners may identify in their agreement implementation plan include restoring and maintaining waterways and coastal ecosystems; maintaining and protecting significant heritage values including sites; sharing and documenting traditional ecological knowledge,	Internal revision																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

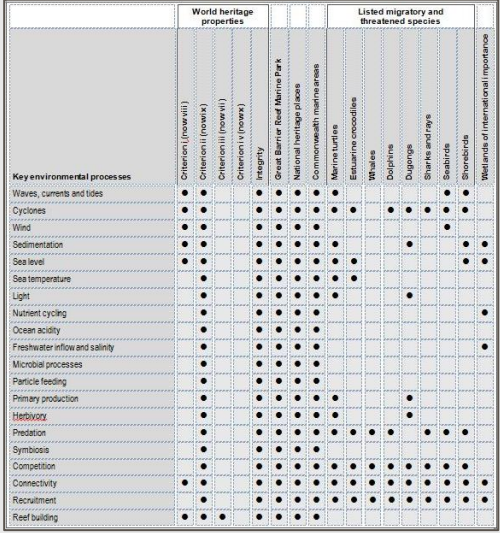
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
resources agreements)		traditional ecological knowledge, culture and language; and research and monitoring of sea country including through partnerships with managing agencies and leading scientific institutions.	culture and language; and research and monitoring of sea country including through partnerships with managing agencies and leading scientific institutions. By accrediting Traditional Owner agreements, governments have a clear pathway towards understanding important Traditional Owner issues and to address shared matters.	
3.10.1 (former 3.11.1 – Benefits of zoning text box)	ADD-9	Sharks, dugongs and turtles: These species are harder to protect because they are slow growing and slow breeding. They are also highly mobile, moving in and out of protected zones. Despite this, available evidence shows zoning is benefiting these species. ^{14,17,18} For effective management of mobile species, zoning needs to be complemented by measures to protect populations outside the reserve zones. ^{14,19,20,24}	Sharks, dugongs and turtles: These species are harder to protect because they are slow growing and slow breeding. They are also highly mobile, moving in and out of protected zones. Despite this, available evidence shows zoning is benefiting these species, although additional protection is still needed. ^{14, 21} For effective management of mobile species, zoning needs to be complemented by measures to protect populations outside the reserve zones. ^{14,18,19,20,}	IPR-17
3.10.3 (formerly 3.11.3)	Internal	Education and communication are recognised as essential to managing the Reef and preserving it for future generations. The Authority communicates through its website, traditional media outlets, social media, its regional offices, awareness campaigns, community events and a range of other avenues. Through Reef HQ Aquarium — the Australian Government’s national education centre for the Great Barrier Reef — thousands of people each month receive messages about the Reef, risks to its resilience and what can be done to protect it. The aquarium is located in Townsville and managed by the Authority.	Education and communication are recognised as essential to managing the Reef and preserving it for future generations. The Authority communicates through its website, traditional media outlets, social media, its regional offices, awareness campaigns, community events and a range of other avenues. Through Reef HQ Aquarium — the Australian Government’s national education centre for the Great Barrier Reef — thousands of people each month receive messages about the Reef, risks to its resilience and what can be done to protect it. The Reef HQ Aquarium, located in Townsville and managed by the Authority, provides people of all ages and physical abilities the chance to see and gain an appreciation for a living coral reef ecosystem, what makes it special and why it needs to be protected. More than 3.5 million local, national and international visitors have visited the facility since it opened in 1987, and visitation continues to increase. Since 2009, the facility’s reef videoconferencing program has showcased the living reef to more than 700 locations nationally and internationally, directly engaging more than 55,000 people. The Authority’s website is a key communication tool for the agency — it conveys information about our work; the marine environment, health and threats to the Reef; provides news and education resources; and also conveys information that’s available for consultation. On average, there are over 500,000 visits to the site each year from around the world. While online traffic slightly varies each year about 30–40 per cent of users are return visitors. Mobile browsing, using	Internal revision

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			smartphones and tablets, is increasing rapidly.	
3.12	ADD-10	The Shoalwater and Corio Bays Area is a listed wetland of international importance and is partly within the Region.	The Shoalwater and Corio Bays Area and Bowling Green Bay are listed wetlands of international importance and are partly within the Region.	PR-E192
Chapter 4: Matters of national environmental significance in the Great Barrier Reef Region				
4.2.1	ADD-11	This includes the Region's biodiversity, geomorphological features, aspects of Traditional Owner connections to the area, its environmental processes and its aesthetic value	This includes the Region's biodiversity, geomorphological features, aspects of Traditional Owner connections to the area, its environmental processes, its superlative natural phenomena and its aesthetic value	IPR-18 PR-E192
4.3.4	ADD-12	The Reef environment contributes much to the community's wellbeing, both locally and more indirectly throughout Australia and the world. The Reef's biodiversity, geomorphological features, heritage values and natural beauty supports people economically, provides them with food and enriches their lives.	The Reef environment contributes much to the community's wellbeing, both locally and more indirectly throughout Australia and the world. The Reef's biodiversity, geomorphological features, heritage values and natural beauty supports people economically, provides them with food, protection and enriches their lives.	IPR-20
4.6.3	ADD-13	Blue, fin and sei whales are baleen whales . All are wide-ranging oceanic species and, in general, spend summers in higher latitudes and winters in warmer tropical waters.	Blue, fin and sei whales are all wide-ranging oceanic species that, in general, spend summers in higher latitudes and winters in warmer tropical waters.	IPR-21
4.8.2	ADD-14	Paragraph has been added to the end of section	A key feature of the Bowling Green Bay Area is Cape Bowling Green. During the last low sea level period the Burdekin River flowed out to sea via Bowling Green Bay. ^{44,154} It diverted from its present course at Kelly Mount, flowing directly north into the Bay, past Cape Cleveland and out to open water through the exposed coral reefs. The Burdekin reverted back to its present course about 4000 years ago; resulting in what is now Australia's longest (20 kilometres) free-standing sand spit, Cape Bowling Green. The course of the Burdekin River is also important as it delivered enormous sediment loads which built up the 100 beach ridges connecting Cape Cleveland to the mainland, the second-most extensive beach ridge sequence on the Great Barrier Reef coast.	PR-REP001
4.9	ADD-15	Taking a longer time period, over the past 100,000 years sea levels have risen and fallen many times, shifting the position of reef growth on	Taking a longer time period, over the past 100,000 years sea levels have risen and fallen many times, shifting the position of reef growth on the continental	PR-REP001

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		the continental shelf. ⁴⁷ However, it is believed that sea level has been fairly constant for the past 6500 years, resulting in today's well-defined depth profile across virtually all the Marine Park's reefs. ⁴⁴ Sea level is now rising in Australian waters, especially in northern areas.	shelf. ⁴⁷ Most modern reefs of the Great Barrier Reef formed as sea level crept over the shelf margin 9000 years ago and coral recruits settled and re-colonised on ancient reefs. ⁴⁴ However, variations in relative sea level have resulted in very different evolutionary histories for coral reefs over the period of Holocene growth. While <i>global</i> sea level reached its present position 6,500 years ago, the loading on the continental margin caused subsidence and <i>relative</i> sea level reached its present position much later. In contrast, sea level on the inner shelf reached its present level 6,500 years ago	
4.9	ADD-16	Light attenuation in the water column is determined by depth and the amount of sediment in the water	Light attenuation is a measure of decrease in light availability per metre and thus influenced by the amount of sediment, dissolved substances and plankton in the water	IPR-22
4.9	ADD-17	Nutrient cycling plays a critical role in maintaining biodiversity. Most nutrient concentrations (for example nitrogen and phosphorus) in the open ocean are very low — they are effectively nutrient deserts. ¹⁶⁶ Low concentrations of nitrates, in particular, severely limit productivity. Open ocean coral reefs accommodate nutrient deficiency by having a high level of nutrient cycling. ¹⁶⁶ For reefs nearer land, additional nutrients are derived from terrestrial sources.	Nutrient cycling plays a critical role in maintaining biodiversity. Most nutrient concentrations (for example nitrogen and phosphorus) in the open ocean are very low — and with the exception of upwelling areas , they are effectively nutrient deserts. ¹⁶⁶ Low concentrations of nitrates, in particular, severely limit productivity. Open ocean coral reefs in non-upwelling areas accommodate nutrient deficiency by having high levels of nutrient cycling. ¹⁶⁶ For reefs nearer land, additional nutrients are derived from terrestrial sources.	IPR-23
4.9	ADD-19	Carbon dioxide from the atmosphere dissolves in the surface waters of the ocean where it stays as dissolved gas, or gets taken up by organisms	Carbon dioxide from the atmosphere dissolves in the surface waters of the ocean where it stays in dissolved form , or gets taken up by organisms.	IPR-24
4.9	ADD-18	Insert paragraph between primary production and microbial processes	Marine sediments undergo vertical mixing through a process known as bioturbation. Bioturbation is the process by which sediment macro-biology mix surface sediments. Bioturbation can promote sediment oxidation and promote nutrient conversion. Bioturbation can help to both consolidate and bind unconsolidated sediments, and can partially unconsolidate bound surface sediments.	PR-E194
4.9	ADD-20	Competition for all resources, including space, nutrients and food is always intense in tropical marine ecosystems. This is partly because they are diverse, so that individual species have many others to	Competition for all resources, including space, nutrients and food is always intense in tropical marine ecosystems. This is partly because they are diverse, so that individual species have many others to compete with, and also because	IPR-25

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		<p>compete with, and also because the habitats are three-dimensional. Water, far more than air, is a medium that allows for high levels of biological interaction and nutrient transfer, and therefore competition. Competition between corals and algae for space is a fundamental process on coral reefs.¹⁸⁶ For coral reefs to be maintained in the ecosystem there must be continual settlement and growth of juvenile corals. This recruitment may be hampered if a reef becomes overgrown by algae.¹⁸⁷</p>	<p>the habitats are three-dimensional. Competition between corals and algae for space is a fundamental process on coral reefs.¹⁸⁶ For coral reefs to be maintained in the ecosystem there must be continual settlement and growth of juvenile corals. This recruitment may be hampered if a reef becomes overgrown by algae.¹⁸⁷</p>	
4.9	Internal	Added text between competition and connectivity	<p>On long time scales, evolution is an important part of natural systems such as the Great Barrier Reef, operating in both time and space.¹⁸⁹ Speciation, mutation and adaptation are all important components of evolution. Extinction of populations and species is another ecosystem process, caused by reductions in population size or genetic variation, and often associated with the removal or modification of habitats.¹⁹⁰</p> <p>Reef building is both a geomorphological and an ecological process including calcification by living coral, erosion, deposition and accretion.¹⁹¹ Only a small proportion of a coral reef is living coral — the remainder is coral-based pavement, boulders, fragments, beach-rock accretions and sediment. Cyclone wave action can break coral and mobilise vast amounts of sediment so that reef shapes change and cays appear and disappear.⁴⁴ Coral-based sediment fills in depressions and can consolidate and accrete to form soft rock.⁴⁴</p> <p>Erosion can occur through physical processes such as waves, wind and currents; chemical processes such as ocean acidification; or biological processes such as bioerosion. Erosion during previous periods of lower sea levels has influenced the shape of the continental shelf and slope, which in turn modifies behaviour of currents and upwellings.¹⁹² Today, as coral reefs are growing they are also being eroded, usually through physical abrasion (such as by waves) and bioerosion (by molluscs, marine worms, sponges, crustaceans, echinoderms and fish). Fish are the most effective bioeroders, with one adult humphead parrotfish consuming more than five tonnes of structural reef carbonate per year.¹⁹³ This biological activity results in the breakdown of the reef substratum and nutrient cycling.¹⁹⁴ Erosion is also a major process in shaping the Marine Park's coastline.</p>	

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			On a geological timescale, tectonic forces such as continental drift, friction, subsidence and the vertical movement of the seafloor, have played a role in shaping the Australian continent, its mountain ranges and its continental shelf	
4.9 (The importance of connectivity)	ADD-21	Connectivity is important to every aspect of the Reef, including processes as different as nutrient flows, migration, larval dispersal and gene flow.	Connectivity is important to every aspect of the Reef, including processes as different as nutrient flows, migration, larval dispersal and gene flow. Species or habitats with low natural connectivity are likely to be especially vulnerable to disturbance or local extinctions.	IPR-26
4.9	ADD-22	 <p>Figure 4.16: Connections between catchment basins and the Great Barrier Reef Region The maps show (a) Mulgrave-Russell, (b) Haughton, (c) Fitzroy and (d) Baffle basins within the Great Barrier Reef catchments. The darker blue areas are of higher importance to the healthy functioning of the Great Barrier Reef ecosystem, supporting its biodiversity and ecological processes, and providing connectivity. The analysis²⁰² takes into account values such as habitats, likelihood of erosion, highest astronomical tide, and land use for the Mulgrave-Russell^{201,202}, Haughton^{202,203}, Fitzroy^{202,203}, and Baffle²⁰² basins. It represents the surface level only and does not include groundwater.⁴</p>	This figure has been amended and forms part of a new Section 4.10; Chapter 4, Strategic Assessment Report. For full text, see section 6.3 below.	PR-E192

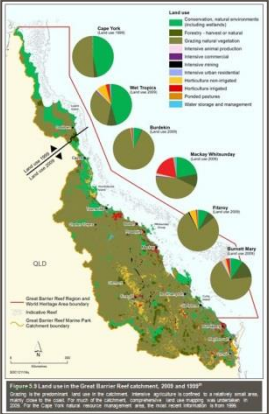
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number																																																																																																																																																																																																																																																																																																																
4.10 (Table 4.9)	ADD-23	 <table border="1"> <thead> <tr> <th rowspan="2">Key environmental processes</th> <th colspan="3">World heritage properties</th> <th rowspan="2">Great Barrier Reef Marine Park</th> <th rowspan="2">National heritage places</th> <th rowspan="2">Commonwealth marine areas</th> <th colspan="5">Listed migratory and threatened species</th> <th rowspan="2">Wetlands of international importance</th> </tr> <tr> <th>Criterion I (new list)</th> <th>Criterion II (new list)</th> <th>Criterion III (new list)</th> <th>Mantasaurus</th> <th>Etmopterus carcharias</th> <th>Whales</th> <th>Dolphins</th> <th>Dugongs</th> <th>Sharks and rays</th> <th>Seabirds</th> <th>Shorebirds</th> </tr> </thead> <tbody> <tr><td>Waves, currents and tides</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Cyclones</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Wind</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Sedimentation</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Sea level</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Sea temperature</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Light</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Nutrient cycling</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Ocean acidity</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Freshwater inflow and salinity</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Microbial processes</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Particle feeding</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Primary production</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Habitat</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Predation</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Symbiosis</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Competition</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Connectivity</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Recruitment</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> <tr><td>Reef building</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td><td>•</td></tr> </tbody> </table>	Key environmental processes	World heritage properties			Great Barrier Reef Marine Park	National heritage places	Commonwealth marine areas	Listed migratory and threatened species					Wetlands of international importance	Criterion I (new list)	Criterion II (new list)	Criterion III (new list)	Mantasaurus	Etmopterus carcharias	Whales	Dolphins	Dugongs	Sharks and rays	Seabirds	Shorebirds	Waves, currents and tides	•	•	•	•	•	•	•	•	•	•	•	•	•	Cyclones	•	•	•	•	•	•	•	•	•	•	•	•	•	Wind	•	•	•	•	•	•	•	•	•	•	•	•	•	Sedimentation	•	•	•	•	•	•	•	•	•	•	•	•	•	Sea level	•	•	•	•	•	•	•	•	•	•	•	•	•	Sea temperature	•	•	•	•	•	•	•	•	•	•	•	•	•	Light	•	•	•	•	•	•	•	•	•	•	•	•	•	Nutrient cycling	•	•	•	•	•	•	•	•	•	•	•	•	•	Ocean acidity	•	•	•	•	•	•	•	•	•	•	•	•	•	Freshwater inflow and salinity	•	•	•	•	•	•	•	•	•	•	•	•	•	Microbial processes	•	•	•	•	•	•	•	•	•	•	•	•	•	Particle feeding	•	•	•	•	•	•	•	•	•	•	•	•	•	Primary production	•	•	•	•	•	•	•	•	•	•	•	•	•	Habitat	•	•	•	•	•	•	•	•	•	•	•	•	•	Predation	•	•	•	•	•	•	•	•	•	•	•	•	•	Symbiosis	•	•	•	•	•	•	•	•	•	•	•	•	•	Competition	•	•	•	•	•	•	•	•	•	•	•	•	•	Connectivity	•	•	•	•	•	•	•	•	•	•	•	•	•	Recruitment	•	•	•	•	•	•	•	•	•	•	•	•	•	Reef building	•	•	•	•	•	•	•	•	•	•	•	•	•	Full scale see section 6.3	PR-REP001
Key environmental processes	World heritage properties			Great Barrier Reef Marine Park	National heritage places	Commonwealth marine areas				Listed migratory and threatened species						Wetlands of international importance																																																																																																																																																																																																																																																																																																				
	Criterion I (new list)	Criterion II (new list)	Criterion III (new list)				Mantasaurus	Etmopterus carcharias	Whales	Dolphins	Dugongs	Sharks and rays	Seabirds	Shorebirds																																																																																																																																																																																																																																																																																																						
Waves, currents and tides	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Cyclones	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Wind	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Sedimentation	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Sea level	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Sea temperature	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Light	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Nutrient cycling	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Ocean acidity	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Freshwater inflow and salinity	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Microbial processes	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Particle feeding	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Primary production	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Habitat	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Predation	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Symbiosis	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Competition	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Connectivity	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Recruitment	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							
Reef building	•	•	•	•	•	•	•	•	•	•	•	•	•																																																																																																																																																																																																																																																																																																							

Chapter 5: Drivers and activities

5.2.2	ADD-25	The Earth's climate has always been changing. Ice ages ending, glaciers melting and sea levels changing are natural phenomena, as is climate variability from year to year	The Earth's climate has always been changing. Ice ages ending, glaciers melting and sea levels changing are natural phenomena.	IPR-28
5.2.2 (The science of climate change box)	ADD-26	Figure 5.2 shows atmospheric concentrations since the 1960s and the increasing annual mean growth rate in carbon dioxide from one of the global observatories.	Figure 5.2 shows atmospheric concentrations since 1958 and the increasing annual mean growth rate in carbon dioxide from one of the global observatories.	IPR-29
5.2.2	ADD-28	Figure 5.2 Mean atmospheric concentrations and the annual mean increase of carbon dioxide, 1960 to 2013	Figure 5.2 Mean atmospheric concentrations and the annual mean increase of carbon dioxide, 1958 to 2013	IPR-30

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
5.2.2 (Implications for the Region's values)	ADD-29	The future implications for biodiversity values depend on the rate and extent of increases in greenhouse gas concentrations because this is the factor driving the change.	The future implications for biodiversity values depend on the rate and extent of increases in greenhouse gas concentrations because this is the factor driving the change. Although change in ecosystem state is likely to be a gradual process, there is evidence to suggest that the reduced resilience of ecosystems increase their vulnerability to catastrophic events. For example, a severe cyclone may push a coral reef beyond a tipping point, beyond which it is unable to rebound.	IPR-32
5.2.2 (Figure 5.3)	ADD-30	Figure 5.3. Projected trends in climate change variables and the Region's biodiversity values The average monthly global carbon dioxide concentration reached 396 parts per million (ppm) in March 2013. ¹ A concentration of 550ppm carbon dioxide is predicted to be reached by about 2100. ^{2,3} Concentrations could potentially exceed this value, resulting in even more serious effects on the Region's ecosystem.	Figure 5.3. Projected trends in climate change variables and the Region's biodiversity values The average monthly global carbon dioxide concentration reached 396 parts per million (ppm) in March 2013. ¹ A concentration of 550ppm carbon dioxide is predicted to be reached by about 2100. ^{2,3} Concentrations could potentially exceed this value, resulting in even more serious effects on the Region's ecosystem. In certain scenarios, tipping points for ecosystems can occur suddenly in response to a severe disturbance, hence causing a rapid change.	IPR-32
5.2.4	Internal	The estimated total population of the Great Barrier Reef catchment was 1,138,532 people as at 30 June 2011, which is approximately 25 per cent of Queensland's total population of 4,474,098	The estimated total population of the Great Barrier Reef catchment was 1,165,115 people as at 30 June 2012, which is approximately 25 per cent of Queensland's total population.	Internal revision
5.2.5	ADD-32	Development of antifouling alternatives that are lower in tributyltin (TBT) and copper reduce shipping impacts.	Development of antifouling alternatives that do not contain tributyltin (TBT) and have lower concentrations of copper, reduce shipping impacts	PR-E107
5.2.5	ADD-31	Additional dot point	To improve catchment water quality and ecosystem health outcomes, the design of urban stormwater management devices are being improved and applied by local government to new developments.	PR-E192
5.3	ADD-33	agriculture aquaculture urban development industrial development (including mining) port activities (undertaken in both the catchment and the Region)	agriculture aquaculture urban development industrial development and resource extraction port activities (undertaken in both the catchment and the Region)	PR-E192

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
5.3	ADD-24	The summary includes an examination of trends and indirect impacts on the Region's values	The summary includes an examination of trends and indirect impacts on the Region's values. A more comprehensive analysis of these activities is presented in the Queensland Government Coastal Zone Strategic Assessment.	IPR-27
5.3.1	ADD-34	Recently, the Queensland Government proposed a suite of changes to the Vegetation Management Act which includes repealing regulations that apply to clearing high value regrowth on freehold and Indigenous lands, and promoting self-assessment of areas that contain remnant or high value regrowth. ⁷⁵	<p>Work over many years has identified that prior to the implementation of the Vegetation Management Act; broadscale clearing was having a significant impact on water quality flowing to the Great Barrier Reef. A 2008 scientific consensus report on water quality in the Great Barrier Reef⁷⁵ identified that this legislation was responsible for reducing the extensive land clearing of previous decades and had been a critical element in governments beginning to address the impacts of land use on water quality in the Great Barrier Reef as reported from the 1970s.</p> <p>Recently, the Queensland Government proposed a suite of changes to the Vegetation Management Act which includes repealing regulations that apply to clearing high value regrowth on freehold and Indigenous lands, allowing broadscale clearing for 'high value' intensive agricultural production, and promoting self-assessment of areas that contain remnant or high value regrowth.⁷⁵(Queensland Government 2013b, Vegetation Management Framework Amendment Bill 2013, Queensland Government, Brisbane.)"</p>	IPR-34 PR-E192

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
5.3.1 (Figure 5.9)	ADD-35		<p>Full scale at section 6.3</p> <p>“Horticulture non-irrigated” to “Intensive agriculture non-irrigated” and</p> <p>“Horticulture irrigated” to “Intensive agriculture irrigated”</p>	PR-E192
5.3.2	ADD-36	<p>The potential impacts on the Great Barrier Reef environment associated with land-based aquaculture facilities include: increased loads of sediment and nutrients (nitrogen and phosphorus) in discharged wastewater; clearing or modifying coastal habitats; modifying hydrologic processes; disturbing acid sulphate soils; introducing marine species; genetic pollution; and introducing disease.⁹²</p> <p>The Great Barrier Reef Marine Park (Aquaculture) Regulations were introduced in 2000 to ensure the discharge of waste from land-based aquaculture facilities did not significantly impact the plants and animals of the Marine Park.”</p>	<p>(Added to start of section)</p> <p>There are approximately 700 hectares of prawn ponds currently in production adjacent to the Great Barrier Reef.</p> <p>(Added to Impacts)</p> <p>While the load of sediment and nutrients discharged to waterways leading to the Great Barrier Reef are relatively small in comparison to those derived from other agricultural sources (for example grazing, cane farming, horticulture), their impact locally can be significant.</p> <p>Significant work is currently underway investigating waste treatment methods that can reduce the load of sediment and nutrients discharged by these facilities. Settlement ponds are already being utilised by new farming ventures to treat this waste, whilst further work investigating the commercial feasibility of algal bioremediation is also underway.</p> <p>The major sustainability issue is the same as for other industrial or agricultural activity that discharges sediment and nutrients to Great Barrier Reef waters. Given that the majority of the inshore waters in the southern two-thirds of the Great Barrier Reef Marine Park already exceed their assimilative capacity, the</p>	IPR-35

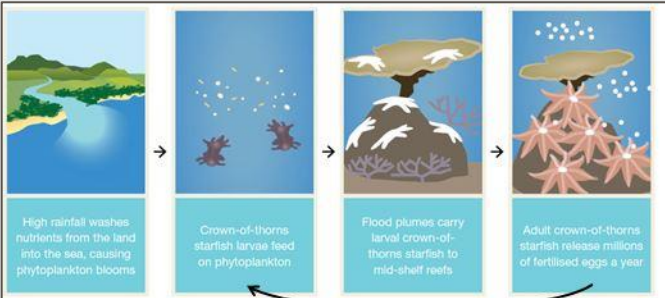
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			<p>ability for these waters to assimilate additional loads of sediment and nutrients discharged by these facilities is limited.</p> <p>Actions to offset environmental impacts and deliver net benefits have been proposed as mechanisms to allow the expansion of this industry while meeting the long-term goals that by 2020 the water quality entering the reef from broadscale land use has no detrimental impact on the health and resilience of the Great Barrier Reef.</p> <p>The Great Barrier Reef Marine Park (Aquaculture) Regulations were introduced in 2000 to ensure the discharge of waste from land-based aquaculture facilities did not significantly impact the plants and animals of the Marine Park. In 2005, the then Minister for the Environment and Heritage accredited Queensland Law as providing the requisite degree of protection for the plants and animals of the Great Barrier Reef Marine Park. Based on this accreditation, Queensland is now solely responsible for the assessment and approval of all land-based aquaculture facilities that discharge waste to waterways that lead to the Marine Park.</p>	
5.3.3	ADD-37	Local councils continue to work to minimise the amount of pollutants entering the Region's waters from urban areas, however these areas remain a localised source of nutrients, pesticides and litter entering the marine system	Local government is primarily responsible for managing large sewage treatment plants in urban areas along the Great Barrier Reef coast, and has the responsibility of permitting smaller sewage treatment facilities in peri-urban areas. Local councils continue to work to minimise.....	PR-E192
5.3.4	ADD-38	<p>5.3.4 Industrial development</p> <p>For the purpose of this report, industrial development refers to the construction, operation or expansion of commercial industries, excluding agriculture, ports, tourism, fishing and aquaculture. Historically, there have been extensive small-scale mining operations through much of the catchment, including gold, tin, nickel and uranium mines.¹⁰⁴ Much of the supporting infrastructure for mining and industry is located in coastal areas and, in the past two decades, major State Development Areas have been declared in Gladstone (1993), Townsville (2003), Abbot Point (2008) and Gladstone–Curtis Island (2008).¹⁰⁵ State Development Areas are defined areas established to promote economic development in Queensland.</p>	<p>5.3.4 Industrial development and resource extraction</p> <p>For the purpose of this report, industrial development refers to the construction, operation or expansion of commercial industries, excluding agriculture, ports, tourism, fishing and aquaculture. Historically, there have been extensive small-scale mining operations through much of the catchment, including gold, tin, nickel and uranium mines.¹⁰⁴ At present, very limited mining occurs within the Great Barrier Reef coastal zone and no mining occurs in the Great Barrier Reef World Heritage Area. A more detailed discussion of ongoing mining activities in the coastal zone of the World Heritage Area can be found in section 5.2.5 of the Coastal Strategic Assessment Report. Much of the supporting infrastructure for mining and industry is located in coastal areas and, in the past two decades, major State Development Areas have been declared in Gladstone (1993), Townsville (2003), Abbot Point (2008) and Gladstone–Curtis Island (2008).¹⁰⁵</p>	PR-E192

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			State Development Areas are defined areas established to promote economic development in Queensland.	
5.3.5	ADD-39	This finding is similar to a recent study by the Queensland Department of State Development, Infrastructure and Planning that found Queensland's three major coal ports (Hay Point, Gladstone and Abbot Point) operated at only 52 per cent of their combined capacity in 2011–12 ¹¹² and that Abbot Point only operated at one quarter of its total capacity.	This finding is similar to a recent study by the Queensland Department of State Development, Infrastructure and Planning that found Queensland's three major coal ports (Hay Point, Gladstone and Abbot Point) operated at only 52 per cent of their combined capacity in 2011–12 ¹¹² and that Abbot Point only operated at one quarter of its total capacity. However, it should be noted that the industry was heavily impacted by severe weather and flooding between 2011 and 2012, hence these numbers may under represent the capacity.	PR-E220
5.3.5	ADD-40	Dredging to improve vessel access and the installation, operation and maintenance of infrastructure is affecting habitats and species. ^{114,115} Ports and associated access channels have been dredged since their establishment, well before the Marine Park was declared	Ports and associated access channels have been dredged since their establishment, well before the Marine Park was declared.	IPR-36
5.3.5	ADD-41	The dredging itself, plus the disposal of dredge material and its later resuspension, can have direct effects on the environment.	The dredging itself, plus the disposal of dredge material and its later resuspension, can have direct effects on ecosystems, such as coral reefs and other habitats. Examples include removal of existing habitats..... <small>Ertemeijer et al. (2012) and Foster et al. (2011)</small>	IPR-37
5.4.2	Internal	Total tourism visitation to the Great Barrier Reef Marine Park in 2011 was 1.842 million. ¹²⁴ Tourism visitation rose gradually over the 10 years prior to 2005 and has subsequently declined by about eight per cent per year. The declines have been attributable to a range of factors, including the high exchange rate of the Australian dollar, increased competition from international destinations, extreme weather events and the global financial crisis. In 2012, there were signs of a recovery in tourism visitation, however it was patchy in its extent. Visitation to the Whitsundays — previously a strongly performing region — is still depressed. ¹²⁴	Total tourism visitation to the Great Barrier Reef Marine Park in 2011 was 1.842 million. ¹²⁴ Tourism visitation rose gradually over the 10 years prior to 2005 and has subsequently declined by about eight per cent per year. The declines have been attributable to a range of factors, including the high exchange rate of the Australian dollar, increased competition from international destinations, extreme weather events and the global financial crisis. In 2012, there were signs of a recovery in tourism visitation, however it was patchy in its extent.	
5.4.3	ADD-42	Prawns make up most of the trawl fishery's catch (85 per cent by weight of the targeted catch in 2010). ¹²⁹ The fishery also retains and markets scallops, Moreton Bay bugs, squid and various incidentally	Prawns make up most of the trawl fishery's retained catch (85 per cent by weight of the targeted catch in 2010). ¹³⁰ Like most prawn trawl fisheries, the total weight of bycatch caught in the Queensland fisher is unknown but in 1998	PR-E181

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		captured by-product species such as some species of fish, crabs, octopus and cuttlefish. Bycatch (catch that is unintentionally caught) in the trawl fishery can comprise hundreds of species, many of which are caught very infrequently. ¹³⁰	it was estimated as likely to exceed 25,000 tonnes annually, and can comprise hundreds of species, a majority of which are caught very infrequently. ¹³¹ In 2002, the estimated annual weight of retained catch was approximately 10,000 tonnes. ^{132 133}	
5.4.5	ADD-43	This does not include visits by independent travellers from outside the catchment (such as retired, long-term holiday makers ('grey nomads') and cruising yachtsmen).	This does not include visits by independent travellers from outside the catchment (such as retired, long-term holiday makers ('grey nomads') and cruising yachtsmen).	PR-E192
5.4.6	ADD-44	As a result of the comprehensive management arrangements in place, incidents involving ships are relatively infrequent, with annual totals of 10 or fewer in recent years, and no obvious trend.	As a result of the comprehensive management arrangements in place, incidents involving ships are relatively infrequent, with annual totals of 10 or fewer in recent years.	PR-E132
5.4.7	ADD-45	The United States of America has recently shifted its global military focus to enhance its capabilities in the Asia-Pacific region. ¹⁸⁶ As a result, combined training exercises between Australian and U.S. forces are expected to increase in frequency and intensity. Shoalwater Bay and other sites in the Region will therefore increase in importance for major exercises such as Talisman Sabre. While U.S. forces operate under Australian Defence Force instructions during combined training exercises, any visiting foreign force increases the complexity of communications and therefore the risk of impacts.	The United States of America has recently shifted its global military focus to enhance its capabilities in the Asia-Pacific region. ¹⁸⁶ As a result, combined training exercises between Australian and U.S. forces are expected to increase in frequency and intensity. Shoalwater Bay and other sites in the Region will therefore increase in importance for major exercises such as Talisman Sabre. The Authority provided environmental impact advice on the 2013 tour, and to date the exercises have shown no substantial environmental impacts. While U.S. forces operate under Australian Defence Force instructions during combined training exercises, any visiting foreign force increases the complexity of communications and therefore the risk of impacts.	PR-E132
5.4.7	ADD-46	However, by their nature, defence activities do pose risks which must be continually monitored and managed. The potential impact of greatest concern is the introduction of marine pests. The Australian Defence Force employs stringent quarantine measures to reduce this risk. ¹⁹⁰	However, by their nature, defence activities do pose risks which must be continually monitored and managed. In September 2005, a workshop – Assessment of the risks of Defence activities in the Great Barrier Reef World Heritage Area was held. Using the Australian Standard risk assessment protocol it was found that the potential impact of greatest concern was the introduction of marine pests through ballast water or hull fouling. The Australian Defence Force employs stringent quarantine measures to reduce this risk. ¹⁹⁰	IPR-38; PR-E132
5.4.7	ADD-47	Defence activities in the Region directly contribute to the training and operation of Australia's defence services. In addition, the acquisition of Shoalwater Bay in 1965 has provided environmental benefits. The land	Defence activities in the Region directly contribute to the training and operation of Australia's defence services. In addition, the acquisition of Shoalwater Bay in 1965 has provided environmental benefits. The land component remains largely	PR-E132

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number						
		component remains largely undisturbed and is able to maintain natural environmental processes. It also supports high biodiversity, including internationally significant migratory species and wetlands, and has stunning landscape features. ¹⁸⁷ Operational activities can also help, directly and indirectly, to achieve management objectives for the Region including hydrographic surveys, and fisheries and border protection patrols.	undisturbed and is able to maintain natural environmental processes. It also supports high biodiversity, including internationally significant migratory species and wetlands, and has stunning landscape features. ¹⁸⁷ Defence has contributed to research efforts by conducting population surveys of key species in both Shoalwater Bay and the Coral Sea. Operational activities can also help, directly and indirectly, to achieve management objectives for the Region including hydrographic surveys, charting, ocean surveillance, maritime search and rescue, defence aid to the civil community , fisheries and border protection patrols.							
Chapter 6: Impacts on the values										
6.2.1 (Table 6.1)	ADD-48	<table border="1"> <tr> <td>Dumping and resuspension of dredge material</td> <td>Sea dumping of dredge material including smothering, loss and modification of seabed habitats and resuspension</td> <td>Regional</td> </tr> </table>	Dumping and resuspension of dredge material	Sea dumping of dredge material including smothering, loss and modification of seabed habitats and resuspension	Regional	<table border="1"> <tr> <td>Dumping and resuspension of dredge material</td> <td>Sea dumping of dredge material including smothering, loss and modification of seabed habitats and resuspension</td> <td>Local</td> </tr> </table>	Dumping and resuspension of dredge material	Sea dumping of dredge material including smothering, loss and modification of seabed habitats and resuspension	Local	PR-E194, PR-E220
Dumping and resuspension of dredge material	Sea dumping of dredge material including smothering, loss and modification of seabed habitats and resuspension	Regional								
Dumping and resuspension of dredge material	Sea dumping of dredge material including smothering, loss and modification of seabed habitats and resuspension	Local								
6.2.1 (Table 6.1)	Internal	<table border="1"> <tr> <td>Extraction — death of discarded species</td> <td>Death of non-retained species from fishing, collecting, hunting, scientific sampling and Queensland's Shark Control Program</td> <td>Regional</td> </tr> </table>	Extraction — death of discarded species	Death of non-retained species from fishing, collecting, hunting, scientific sampling and Queensland's Shark Control Program	Regional	<table border="1"> <tr> <td>Extraction — death of discarded species</td> <td>Death of non-retained species from fishing, collecting, hunting, scientific sampling and Queensland's Shark Control Program</td> <td>Reef-wide</td> </tr> </table>	Extraction — death of discarded species	Death of non-retained species from fishing, collecting, hunting, scientific sampling and Queensland's Shark Control Program	Reef-wide	Internal revision
Extraction — death of discarded species	Death of non-retained species from fishing, collecting, hunting, scientific sampling and Queensland's Shark Control Program	Regional								
Extraction — death of discarded species	Death of non-retained species from fishing, collecting, hunting, scientific sampling and Queensland's Shark Control Program	Reef-wide								
6.2.1 (Table 6.1)	ADD-49	Exposure of potential acid sulphate soils	Exposure and subsequent oxidation of potential acid sulphate soils	PR-E192						

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
6.2.1 (Table 6.1)	ADD-50	Add between Marine debris and Modifying supporting terrestrial habitats.	<div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-between;"> <div style="background-color: #e0e0e0; padding: 5px;">Mining</div> <div style="background-color: #e0e0e0; padding: 5px;">Local</div> </div> <p style="color: red; text-align: center;">Whilst mining of the Great Barrier Reef was halted 50 years ago and subsequent coral growth has obliterated most impacts, mining on high and low islands for guano based phosphate rock has a continuing impact. In addition, many of the significantly important beach ridge sequences are seen as a source of building materials by developers</p> </div>	PR-REP001
6.3	ADD-51	The resultant loss and modification of habitats has led to significant increases in pollutants, principally nutrients and sediments, entering the Great Barrier Reef lagoon ²⁰ which has reduced the ecosystem's ability to bounce back after impacts (resilience), especially in southern inshore areas. ²¹	The resultant loss and modification of habitats has led to significant increases in pollutants, principally nutrients and sediments, entering the Great Barrier Reef lagoon. ²⁰ Modelling and ongoing monitoring of habitats indicates a reduction in the ecosystem's ability to bounce back after impacts (resilience), especially in southern inshore areas. ²¹ Wooldrige (2009) Water quality and coral bleaching thresholds: Formalising the linkage for the inshore reefs of the Great Barrier Reef, Australia. <i>Marine Pollution Bulletin</i> 58 (5), 745-751. Marine Monitoring Programme Report 2011, 2012, 2013)	IPR-40
6.4.1 (Cyclone activity)	Internal	As cyclone activity is influenced by environmental conditions such as sea surface temperature, climate change predictions suggest an increase in the intensity of cyclones in Queensland, and therefore an increase in the frequency of severe tropical cyclones (categories three, four and five) and an extension of their southern range.	As cyclone activity is influenced by environmental conditions such as sea surface temperature, climate change predictions suggest an increase in the intensity of cyclones in Queensland and an extension of their southern range.	Internal revision
6.4.1 (Ocean acidification section)	ADD-52	It is predicted that ocean acidification will ultimately affect most marine life through habitat destruction, food web deterioration and disruption of physiological processes. In addition, the effects of global warming and ocean acidification may magnify each other ⁵⁶ and may not occur	The effects of global warming and ocean acidification may magnify each other ⁵⁶ and may not occur uniformly from place to place and over time. ⁵⁷	IPR-42

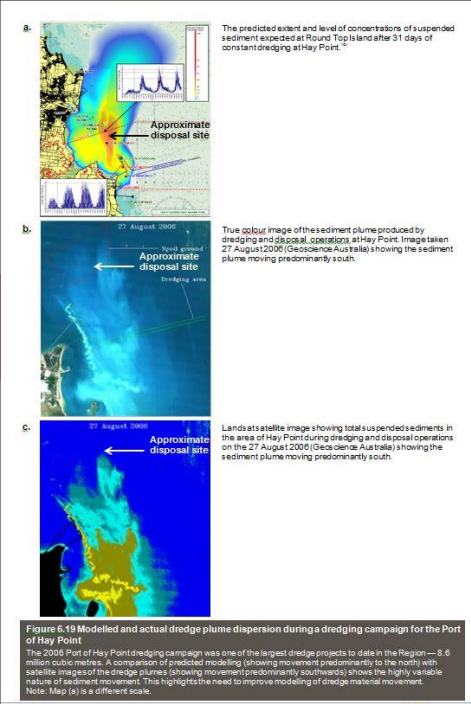
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		uniformly from place to place and over time. ⁵⁷		
6.4.2 (catchment run-off)	ADD-53	Sediments from the catchment are mostly transported to the Region via coastal rivers during the wet season.	Sediments from the catchment are transported to the Region via coastal rivers and floodplains during the wet season.	PR-E220
6.4.2 (Increased freshwater inflow)	ADD-54	Increased freshwater inflow during flood events also carries with it pulses of nutrients, sediments, pesticides and other pollutants from catchment run-off, which has significant effects on inshore Great Barrier Reef habitats and species. ⁷⁵	Increased freshwater inflow during flood events also carries with it pulses of nutrients, sediments, pesticides and other pollutants from catchment run-off, which has significant effects on Great Barrier Reef habitats and species. ⁷⁵	PR-E199
6.4.2 (Increased freshwater inflow)	ADD-55	Freshwater input is generally higher in the southern half of the Region, corresponding with the larger catchments	Freshwater input is generally higher in the region south of Cooktown, corresponding with the larger catchments	PR-E199
6.4.2 (Figure 6.10)	ADD-56	 <p>Figure 6.10 Role of nutrients in the population dynamics of crown-of-thorns starfish Crown-of-thorns starfish are a major cause of loss of coral cover. There is evidence that their populations are significantly affected by the concentration of nutrients and, therefore, the amount of phytoplankton in Great Barrier Reef waters.</p>	Full scale at Section 6.3	PR-E199

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
6.4.2 (Figure 6.13)		Figure 6.13 Risk areas of additive PSII herbicide residues modelled in the Great Barrier Reef Region ¹³²	Figure 6.13 Areas of exposure to PSII herbicide residues modelled in the Great Barrier Reef Region ¹⁴⁵	
6.4.2 (Urban and industrial discharge)	ADD-57	Wastewater is treated at a treatment station before it is discharged to creeks or rivers or reused over land, and some (but not all) impurities are removed.	Wastewater is treated at a treatment station before it is discharged to creeks or rivers or reused over land, and some (but not all) contaminants are removed	PR-E192
6.4.3 (Acid sulphate soils)	ADD-58	Potential acid sulphate soils often form where seawater (containing sulphides) mixes with land sediments that contain iron oxides and organic matter in a waterlogged condition without oxygen.	Potential acid sulphate soils often form where seawater (containing sulphate ions) mixes with land sediments that contain iron oxides and organic matter in a waterlogged condition without oxygen.	IPR-44 PR-E192
6.4.3 (Artificial barriers to riverine and estuarine flow)	ADD-59	The loss of 30 to 60 per cent of estuarine and brackish water habitats, largely saltmarshes and mud flats, ²⁰ is likely to have had effects on shorebirds and fish productivity and survival, particularly through the disruption of tidal systems.	The loss and modification of estuarine and brackish water habitats, largely saltmarshes and mud flats, ²⁰ is likely to have had effects on shorebirds and fish productivity and survival, particularly through the disruption of tidal systems. Nine per cent of estuaries have been lost in the Great Barrier Reef catchment since European settlement, while up to 30 per cent of the saltmarsh habitats have been modified.	IPR-45
6.4.3 (Atmospheric pollution)	ADD-60	Air pollution from coal dust can occur anywhere coal is handled, conveyed or open to erosion by the wind. ¹⁶⁸ Coal dust tends to float ¹⁶⁹ and can therefore remain on the water's surface, potentially reducing the amount of sunlight reaching seagrasses and corals and being captured by filter-feeding organisms. Coal dust particles can also aggregate and settle, potentially smothering benthic habitats. While trace elements can leach from coal particles into seawater — some of major concern include arsenic, mercury, lead, sulphur and boron ¹⁷⁰ — Australian coal has relatively low trace element concentrations. ¹⁶⁸	Air pollution from coal dust can occur anywhere coal is handled, conveyed or open to erosion by the wind. ¹⁶⁸ Coal dust tends to float ¹⁶⁹ and can therefore remain on the water's surface. Although the risk is low, there is a potential it may reduce the amount of sunlight reaching seagrasses and corals and be captured by filter-feeding organisms. Coal dust particles can also aggregate and settle, potentially smothering benthic habitats. While trace elements can leach from coal particles into seawater — some of major concern include arsenic, mercury, lead, sulphur and boron ¹⁷⁰ — Australian coal has relatively low trace element concentrations. ¹⁶⁸	PR-E220
6.4.3 (Coastal reclamation)	ADD-61	Land disposal of dredge material including reclamation can have localised effects on habitats critical to the Great Barrier Reef's health. Between 2000 and 2012, the total volume of material disposal to land (that is, areas above highest astronomical tide) from dredging activities occurring in the Great Barrier Reef Marine Park was 67,000 cubic metres. The volume of dredge material disposed to land from	For some of the major ports in the last few years, dredge material has been used for reclamation works in ports areas. For example, 14 million cubic metres of dredge material has been disposed to the Fisherman's Landing reclamation area in Gladstone Harbour as part of the development of Gladstone's port facilities. Land disposal of dredge material, including reclamation can have localised effects on habitats critical to the Great Barrier Reef's health.	IPR-46

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		operations within the World Heritage Area is much larger. For some of the major ports in the last few years, the dredge material has been largely used for reclamation works in ports areas. For example, 14 million cubic metres of dredge material has been disposed to the Fisherman's Landing reclamation area in Gladstone Harbour as part of the development of Gladstone's port facilities.		
6.4.4 (Dredging)	ADD-62	The effects of dredging activities are well documented and include: seabed disturbance ¹⁷⁸ ; removal or modification of habitats ^{179,180} ; loss of species, including benthic organisms ¹⁸¹ and injury or mortality to species of conservation concern ^{178,182}	The effects of dredging activities are well documented and include: seabed disturbance ¹⁷⁸ ; removal or modification of habitats ^{179,180} ; loss of species, including benthic organisms ¹⁸¹ and injury or mortality to species of conservation concern ^{178,182} . (Erfemeijer et al 2012)	IPR-47; PR-E192; PR-E194; PR-AAA1; PR-398
6.4.4 (Dredging)	ADD-63	The effects of dredging activities are well documented and include: seabed disturbance ¹⁷⁸ ; removal or modification of habitats ^{179,180} ; loss of species, including benthic organisms ¹⁸¹ and injury or mortality to species of conservation concern ^{178,182} ; changes in species behaviour ¹⁸³ ; degradation of water quality ^{179,184} including increased turbidity levels ¹⁸⁰ ; changes to hydrodynamics and coastal hydrology ¹⁸⁰ ; increased underwater noise ¹⁸⁵ ; and an increased risk of oil spills ¹⁸³ .	The effects of dredging activities are well documented and include: seabed disturbance ¹⁷⁸ ; removal or modification of habitats ^{179,180} ; loss of species, including benthic organisms ¹⁸¹ and injury or mortality to species of conservation concern ^{178,182} ; changes in species behaviour ¹⁸³ ; degradation of water quality ^{179,184} including increased turbidity levels ¹⁸⁰ ; changes to hydrodynamics and coastal hydrology ¹⁸⁰ ; increased underwater noise ¹⁸⁵ ; and an increased risk of oil spills ¹⁸³ . However, there is an acute lack of region-specific knowledge and more research and monitoring is required to establish adequate baselines and region-specific impacts.	IPR-48; PR-E192; PR-E194; PR-AAA1; PR-398
6.4.4 (Dumping and resuspension of dredge material)	ADD-64	Increases in turbidity are predominantly caused by fine sediments. Fine sediments can potentially travel large distances (more than 100 kilometres) ¹³⁷ and remain suspended for long periods of time ¹⁹⁰ , affecting the light available for photosynthesis of marine plants over significant areas of the Region's inshore waters. The exact fraction of finer sediment in dredge material will vary. On average, about 30 per cent of capital dredge material is known to be finer sediments such as silts and clays, ¹⁹⁰ while riverine inputs typically contain a higher proportion of finer sediments (approximately 70 per cent) ¹³⁷ .	Increases in turbidity are predominantly caused by fine sediments. Fine sediments can potentially travel large distances (more than 100 kilometres) (Trimarchi, S. and Keane, J. 2007, Port of Hay Point apron areas and departure path capital dredging project: environmental review, Ports Corporation of Queensland Limited, Brisbane) affecting the light available for photosynthesis of marine plants over significant areas of the Region's inshore waters. Monitoring and modelling of turbidity due to river plumes show that suspended materials can travel over large distances, although this in part reflects the buoyant nature of lower salinity water in the plume (Bainbridge, Z.T., Wolanski, E., Alvarez-Romero, J.G., Lewis, S.E. and Brodie, J.E. 2012, Fine sediment and nutrient dynamics related to particle size and floc formation in a Burdekin River flood plume, Australia, <i>Marine pollution bulletin</i> 65(4): 236; Fabricius, K.E., De'ath, G., Humphrey, C., Zagorskis, I. and Schaffelke, B. 2013, Intra-annual variation in turbidity in response to terrestrial runoff on near-shore coral reefs of the Great Barrier Reef, <i>Estuarine Coastal and Shelf Science</i> 116: 57-65).	IPR-49; PR-E192; PR-E194; PR-AAA1; PR-398

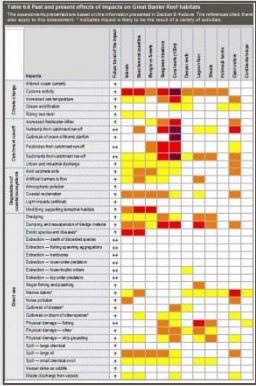
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			The exact fraction of finer sediment in dredge material will vary. On average, about 30 per cent of capital dredge material is known to be finer sediments such as silts and clays, (Sinclair Knight Merz Pty Ltd and Asia-Pacific Applied Science Associates 2013, Improved dredge material management for the Great Barrier Reef Region, Great Barrier Reef Marine Park Authority, Townsville) while riverine inputs typically contain a higher proportion of finer sediments (approximately 70 per cent). ¹³⁷	
6.4.4 (Dredging)	ADD-65	Modelling and monitoring of riverine plumes clearly demonstrate that suspended sediments travel over large distances.¹⁸⁷ Consequently, it is not surprising that a recent modelling study, Improved dredge material management for the Great Barrier Reef Region, has found dredge material placed at sea has the potential to migrate over greater spatial and temporal scales than previously understood. ¹⁹⁰	A recent modelling study, “Improved dredge material management for the Great Barrier Reef Region”, has found dredge material placed at sea has the potential to migrate over greater spatial and temporal scales than previously understood, due in part to repeated resuspension and deposition. ¹⁹⁰ A recent modelling study, <i>Improved dredge material management for the Great Barrier Reef Region</i> , has found dredge material placed at sea has the potential to migrate over greater spatial and temporal scales than previously understood. ¹⁹⁰	IPR-50; PR-E192; PR-E194; PR-AAA1; PR-398
6.4.4 (Dumping and resuspension of dredge material)	ADD-66	The localised effects at the sea dumping site are well documented and are similar to those listed above for dredging. Major impacts include the burial or smothering of benthic fauna and flora ^{179,184} , degradation of water quality ¹⁸¹ , and losses and modification of habitat ¹⁸⁰ . As at January 2012, the combined area of dredge spoil disposal grounds in the Great Barrier Reef World Heritage Area where localised effects are concentrated was 66 square kilometres. Less well understood are the broader regional and cumulative effects of sea dumping on inshore biodiversity. There is evidence that material disposed at existing dredge disposal grounds does not remain within the defined disposal area ^{187,188} and that previous modelling of predicted sediment plumes has significantly underestimated the dispersal and direction of sediments and thus the full extent and potential magnitude of potential impacts (Figure 6.19). While dredging and sea dumping do not introduce additional loads of sediments or nutrients to the Great Barrier Reef World Heritage Area, these activities remobilise, redistribute and resuspend sediments and nutrients. It is the effect of the redistribution and resuspension of significant quantities of fine sediments which is a key concern. Increases in turbidity result in decreases in light penetration, affecting	Major impacts of sea dumping include the burial or smothering of benthic fauna and flora ^{179,184} , degradation of water quality ¹⁸¹ , and losses and modification of habitat ¹⁸⁰ . As at January 2012, the combined area of dredge spoil disposal grounds in the Great Barrier Reef World Heritage Area where localised effects are concentrated was 66 square kilometres. Less well understood are the broader regional and cumulative effects of sea dumping on inshore biodiversity and more work is required to understand these effects, and their consequences for management. There is evidence that material disposed at existing dredge disposal grounds does not remain within the defined disposal area ^{187,188} and that previous modelling of predicted sediment plumes may have significantly underestimated the dispersal and direction of sediments and thus the full extent and potential magnitude of potential impacts (Figure 6.19). While dredging and sea dumping do not introduce additional loads of sediments or nutrients to the Great Barrier Reef World Heritage Area, these activities remobilise, redistribute and resuspend sediments and nutrients. It is the effect of the redistribution and resuspension of significant quantities of fine sediments which is a key concern. Increases in turbidity result in decreases in light penetration, affecting seagrass habitats and species such as dugongs and marine turtles which rely on seagrass as a food source. ¹⁸⁰ This is particularly	IPR-51 PR-E192; PR-E194; PR-AAA1; PR-398

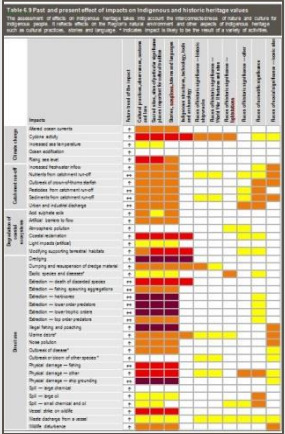
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		<p>seagrass habitats and species such as dugongs and marine turtles which rely on seagrass as a food source.¹⁸⁰ This is particularly significant if these effects happen during periods critical for seagrass survival, growth and reproduction. Increased turbidity also affects coral growth, structure and survival.^{184,189}</p> <p>Increases in turbidity are predominantly caused by fine sediments. Fine sediments can potentially travel large distances (more than 100 kilometres and remain suspended for long periods of time, affecting the light available for photosynthesis of marine plants over significant areas of the Region's inshore waters. The exact fraction of finer sediment in dredge material will vary. On average, about 30 per cent of capital dredge material is known to be finer sediments such as silts and clays, while riverine inputs typically contain a higher proportion of finer sediments (approximately 70 per cent</p> <p>Modelling and monitoring of riverine plumes clearly demonstrate that suspended sediments travel over large distances. Consequently, it is not surprising that a recent modelling study, <i>Improved dredge material management for the Great Barrier Reef Region</i>, has found dredge material placed at sea has the potential to migrate over greater spatial and temporal scales than previously understood. The study was a screening-level sensitivity analysis of the relative merits, if any, of potential alternative material disposal areas and was intended for comparative purposes only. It was the first to incorporate the effects of regional oceanic currents in modelling dredge material and found they are a key factor in the migration or resuspension of dredge material over the long term (12 months). The study also highlighted inter-annual variations of large-scale currents at each of the five ports examined (Figure 6.20), which in turn would influence sediment migration patterns. While the study had a number of limitations (for example, modelled plumes were not field validated and plumes were modelled for an energetic year) and its outcomes cannot be used in project-specific assessments, it highlighted the need for future modelling to take into consideration large-scale currents (and their inter-annual variability) and greater temporal and geographic scales to better predict the extent of dredge material dispersion.</p>	<p>significant if these effects happen during periods critical for seagrass survival, growth and reproduction. Increased turbidity also affects coral growth, structure and survival.^{184,189}</p> <p>Increases in turbidity are predominantly caused by fine sediments. Fine sediments can potentially travel large distances (more than 100 kilometres) affecting the light available for photosynthesis of marine plants over significant areas of the Region's inshore waters. Monitoring and modelling of turbidity due to river plumes show that suspended materials can travel over large distances, although this in part reflects the buoyant nature of lower salinity water in the plume.</p> <p>The exact fraction of finer sediment in dredge material will vary. On average, about 30 per cent of capital dredge material is known to be finer sediments such as silts and clays, while riverine inputs typically contain a higher proportion of finer sediments (approximately 70 per cent).¹³⁷</p> <p>A recent modelling study, <i>Improved dredge material management for the Great Barrier Reef Region</i>, has found dredge material placed at sea has the potential to migrate over greater spatial and temporal scales than previously understood, due in part to repeated resuspension and deposition.¹⁹⁰ The study was a screening-level sensitivity analysis of the relative merits, if any, of potential alternative material disposal areas and was intended for comparative purposes only. It was the first to incorporate the effects of regional oceanic currents in modelling dredge material and found they are a key factor in the migration or resuspension of dredge material over the long term (12 months). The study also highlighted inter-annual variations of large-scale currents at each of the five ports examined (Figure 6.20), which in turn would influence sediment migration patterns. While the study had a number of limitations (for example, modelled plumes were not field validated and plumes were modelled for an energetic year) and its outcomes cannot be used in project-specific assessments, it highlighted the need for future modelling to take into consideration large-scale currents (and their inter-annual variability) and greater temporal and geographic scales to better predict the extent of dredge material dispersion.</p> <p>In order to improve scientific understanding of the effects of dredging and offshore spoil disposal on the Great Barrier Reef, the Authority, in partnership with the Australian Institute of Marine Science, is convening an Expert Panel to develop and publish a synthesis statement outlining what is known, what is</p>	

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			<p>scientifically contentious, and what are the key gaps in our knowledge, focusing on the biophysical effects on the environment. The synthesis statement should enhance the foundation for the ongoing development of policy and guidelines for best practice management and assessment of dredging and dredge material disposal.</p>	
<p>6.4.4 (Dumping and resuspension of dredge material; Figure 6.19)</p>	<p>ADD-67</p>		<p>Figure removed. Text added to provide greater detail on dredge material dispersal (see ADD-66 above).</p>	<p>IPR-52; PR-E192; PR-E194; PR-AAA1;E220 ; PR-398</p>
<p>6.4.4</p>	<p>ADD-68</p>	<p>Less well understood are the broader regional and cumulative effects</p>	<p>Less well understood are the broader regional and cumulative effects of sea</p>	<p>IPR-52;</p>

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
(Dumping and resuspension of dredge material)		of sea dumping on inshore biodiversity. There is evidence that material disposed at existing dredge disposal grounds does not remain within the defined disposal area ^{187, 188} and that previous modelling of predicted sediment plumes has significantly underestimated the dispersal and direction of sediments and thus the full extent and potential magnitude of potential impacts....	dumping on inshore biodiversity and more work is required to understand these effects, and their consequences for management. There is evidence that material disposed at existing dredge disposal grounds does not remain within the defined disposal area ^{187,188} and that previous modelling of predicted sediment plumes may have significantly underestimated the dispersal and direction of sediments and thus the full extent and potential magnitude of potential impacts Less well understood are the broader regional and cumulative effects of sea dumping on inshore biodiversity. There is evidence that material disposed at existing dredge disposal grounds does not remain within the defined disposal area ^{187, 188, 190} and that previous modelling of predicted sediment plumes may have significantly underestimated the dispersal and direction of sediments and thus the full extent and potential magnitude of potential impacts. A comparison of predicted vs measured TSS (total suspended sediments) at sensitive receptors to the north and south of dredging at Hay Point demonstrates that TSS was underestimated at both sites; significantly at the southern site....	PR-E192; PR-E194; PR-AAA1;E220 ; 398
6.4.4 (Extraction-death of discarded catch; Figure 6.22)	ADD-71	Figure 6.22 A breakdown of commercial fisheries non-retained catch, Great Barrier Reef, 2007199 Trawling is responsible for most of the commercial non-retained catch. The continuing interactions between the net fishery and species of conservation concern are of ecological concern. The species and groups of species listed in the figure are those most commonly caught but not retained. Species of conservation concern are in bold type. <i>Syngnathids</i> includes seahorses and pipefish.	Figure 6.22 A breakdown of commercial fisheries non-retained catch, Great Barrier Reef, 2007199 Trawling is responsible for most of the commercial non-retained catch. The continuing interactions between the net fishery and species of conservation concern are of ecological concern. The species and groups of species listed in the figure are those most commonly caught but not retained. Species of conservation concern are in bold type. <i>Syngnathids</i> includes seahorses and pipefish. There is considerable uncertainty in estimates of non-retained catch for fisheries operating in the Great Barrier Reef World Heritage Area, and no contemporary estimates of total extraction (retained and non-retained catch).	PR-E181
6.4.4 (Mining)	ADD-70	Insert section on this impact above Marine debris	Mining Whilst mining of the Great Barrier Reef was halted 50 years ago and subsequent coral growth has concealed most of these impacts on the coral reefs, mining islands for guano-based phosphate rock has had a long-lasting impact. In addition, many important beach ridge sequences have been seen (and still are) as a source of building materials by developers. Daly and Griggs' (2006)²²⁹ identified the following locations in the Region that have been mined in	PR-REP001

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			<p>the past:</p> <ul style="list-style-type: none"> <i>Guano removal:</i> Raine Island, Michaelmas Cay, Upolu Cay, Oyster Cay, Holbourne Island, Tryon Island, North-west Island., North Fairfax Island, Lady Musgrave Island, Lady Elliott Island. In some cases the geomorphology and vegetation was completely changed and bird nesting sites have been destroyed. <i>Coral mining:</i> Snapper Island, Alexandra Reef, Oyster Cay, Upolu Cay, Green Island, Sudbury Cay, Jessie Island, Hutchinson Island, King Reef, Beaver Reef, unnamed cay off Lucinda, Sandpiper Reef. <p>Sand mining and the destruction of beach ridges is common along the Queensland coast. These ridges not only have aesthetic value but can contain important geomorphological information about the last 6,000 years. Two of the most important beach ridge sequences are the 100 ridges south of Cape Cleveland near Townsville and the 604 ridges at Cowley Beach near Innisfail.</p>	
6.4.4 (Marine debris)	ADD-72	There is a massive amount of man-made material accidentally or deliberately released into the marine environment.	There is a massive amount of anthropogenic material accidentally or deliberately released into the marine environment.	PR-E192
6.4.4 (Vessel strike on wildlife)	ADD-69	Go slow areas and transit lanes have been declared in some areas where there is high vessel traffic and large populations of marine turtles or dugongs, such as near Hinchinbrook Island.	Voluntary go slow areas and transit lanes have been declared in some areas where there is high vessel traffic and large populations of marine turtles or dugongs, such as near Hinchinbrook Island. However, compliance to these voluntary measures remains low, especially among frequent users of the Hinchinbrook area. <small>(Andersson, M (2008), Hinchinbrook Area Boaters' opinions of and compliance with dugong conservation initiatives. Independent Study Project (ISP) Collection Paper S61)</small>	IPR-54

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
6.4.5 (Table 6.6)	ADD-73	<p>Table 6.6 Past and present effects of impacts on Great Barrier Reef habitats</p> 	Full scale at Section 6.3	IPR-55; PR-E192, PR-255, PR-353, PR-E220, Pr-E171; Pr-E130; Pr-E124
6.4.5 (Table 6.7)	ADD-74	Table 6.7 Past and present effects of impacts on Great Barrier Reef species and groups of species	Full scale in Section 6.3	IPR-55; PR-E192, PR-255, PR-353, PR-E220, Pr-E171; Pr-E130; Pr-E124
6.4.5 (Table 6.9)	ADD-75	Table 6.9 Past and present effects of impacts on Indigenous and historic heritage values	Full scale in Section 6.3	IPR-55; PR-E192, PR-255, PR-353, PR-E220, Pr-E171; Pr-E130; Pr-E124

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
				
6.5	ADD-76	<p>Deepwater geomorphological features (90 to 300 metres deep) off the southern Great Barrier Reef may have been affected by physical damage from fishing activities (deep sea trawling), however there is limited knowledge about the effects.³⁰⁴</p> <p>Alterations to channels in river deltas from dredging have the potential to remove or rearrange sediment deposits that make up the geomorphological feature.³⁰⁴</p> <p>Increased freshwater inflow, particularly during flood events, has had an effect on islands and shorelines and river deltas within the Region. It also affects the health of coral reefs and seagrass meadows. Extreme weather events in the summer of 2010–11 resulted in increased freshwater inflow. The worst effects were on some inshore reefs close to the mouths of major rivers and on the mainland sides of islands.³⁰⁵</p>	<p>Deepwater geomorphological features (90 to 300 metres deep) off the southern Great Barrier Reef may have been affected by physical damage from fishing activities (deep sea trawling), however there is limited knowledge about the effects.³⁰⁴</p> <p>Alterations to channels in river deltas and paleochannels from dredging have the potential to remove or rearrange sediment deposits that make up the geomorphological feature.³⁰⁴</p> <p>Increased freshwater inflow, particularly during flood events, has had an effect on islands and shorelines and river deltas within the Region. It also affects the health of coral reefs and seagrass meadows. Extreme weather events in the summer of 2010–11 resulted in increased freshwater inflow. The worst effects were on some inshore reefs close to the mouths of major rivers and on the mainland sides of islands.³⁰⁵</p>	PR-E192
6.6.1	ADD-77	<p>There can be sea burial sites, sacred sites and sites of other cultural significance in the areas where dredging is undertaken and, previously,</p>	<p>Traditional Owners have adapted to the changing environment as the current Great Barrier Reef was formed. When sea level was much lower, Traditional</p>	

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		inadequate consultation with Traditional Owners has meant some of these values have been affected	Owners inhabited what is now the sea floor of the Great Barrier Reef. Any disturbance of the sea floor is considered to impact Indigenous cultural and heritage values. There can be sea burial sites, sacred sites and sites of other cultural significance in the areas where dredging is undertaken and, previously, inadequate consultation with Traditional Owners has meant some of these values have been affected	
6.8.1	ADD-78	While model links are qualitative — they represent only the ‘sign’ of the effects (that is, positive, negative or nil) — they, nonetheless, provide a rigorous means to formally assess a system’s dynamics and its response to disturbances	While model links are qualitative — they represent only the ‘sign’ of the effects (that is, positive, negative or nil) — they, nonetheless, provide a useful means to formally assess a system’s dynamics and its response to disturbances	IPR-56
6.8.2	ADD-79	Mapping approaches show the spatial distribution of interactions between values and impacts. As an initial step to understanding cumulative impacts across the Region, standard geographic information system analysis, where individual impact gradients are standardised, has been undertaken for both coral reefs and water quality. “	Mapping approaches show the spatial distribution of interactions between values and impacts. As an initial step to understanding combined or cumulative impacts across the Region, standard geographic information system analysis, where individual impact gradients are standardised, has been undertaken for both coral reefs and water quality as described in Brodie et al. 2013. ³³⁸	IPR-57
6.8.2 (Table 6.31)	ADD-80	Figure 6.31 Key water quality impacts in the Region (part 1) (from Waterhouse <i>et al.</i> (2013) ³³⁴) Key water quality impacts analysed are: part 1 — (a) total suspended solids, 2 milligrams per litre exceedance (2002–2012); (b) total suspended solids, 6 milligrams per litre exceedance (2002–2012); (c) total suspended solids exposure (2007–2011); (d) chlorophyll concentrations, 0.45 micrograms per litre exceedance (2002–2012);	Figure 6.31 Key water quality exposures in the Region (part 1) (from Brodie et al. (2013) ³³⁸) Key water quality parameters analysed are: part 1 — (a) total suspended solids, 2 milligrams per litre exceedance (2002–2012); (b) total suspended solids, 6 milligrams per litre exceedance (2002–2012); (c) total suspended solids exposure (2007–2011); (d) chlorophyll concentrations, 0.45 micrograms per litre exceedance (2002–2012);	IPR-58; PR-398, PR-351
6.8.2 (Table 6.32)	ADD-81	Figure 6.32 Key water quality impacts in the Region (part 2) (from Waterhouse <i>et al.</i> (2013) ³³⁴) Key water quality impacts analysed are: part 1 — (a) total suspended solids, 2 milligrams per litre exceedance (2002–2012); (b) total suspended solids, 6 milligrams per	Figure 6.32 Key water quality exposures in the Region (part 2) (from Brodie et al. (2013) ³³⁸) Key water quality parameters analysed are: part 1 — (a) total suspended solids, 2 milligrams per litre exceedance (2002–2012); (b) total suspended solids, 6 milligrams per litre exceedance	IPR-58; PR-398, PR-351

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		litre exceedance (2002–2012); (c) total suspended solids exposure (2007–2011); (d) chlorophyll concentrations, 0.45 micrograms per litre exceedance (2002–2012);	(2002–2012); (c) total suspended solids exposure (2007–2011); (d) chlorophyll concentrations, 0.45 micrograms per litre exceedance (2002–2012);	
6.8.2 (Table 6.33)	ADD-82	Figure 6.33 Combined key water quality impacts (from Waterhouse et al. (2013) ³³⁴) Combined assessment of: total suspended sediments (exceedance of 2 milligrams per litre and 6 milligrams per litre thresholds, 2002–2012, and average annual surface exposure, 2007–2011); nutrients (chlorophyll exceedance of 0.45 micrograms per litre thresholds, 2002–2012, and dissolved inorganic nitrogen average annual surface exposure, 2007–2011), PSII herbicide exposure, 2010–2011, and crown-of-thorns starfish initiation zone	Figure 6.33 Combined key water quality exposures (from Brodie et al. (2013) ³³⁸) Combined assessment of: total suspended sediments (exceedance of 2 milligrams per litre and 6 milligrams per litre thresholds, 2002–2012, and average annual surface exposure, 2007–2011); nutrients (chlorophyll exceedance of 0.45 micrograms per litre thresholds, 2002–2012, and dissolved inorganic nitrogen average annual surface exposure, 2007–2011), PSII herbicide exposure, 2010–2011, and crown-of-thorns starfish initiation zone.	IPR-58; PR-398, PR-351
6.8.3	ADD-84	6.8.3 Outcomes of cumulative impact assessments	6.8.3 Assessment of outcomes arising from cumulative impacts	IPR-60
6.8.3	ADD-83	The preliminary qualitative models for coral reefs and seagrass meadows show some cause-and-effect relationships are relatively simple, while others are far more complex involving a large number of network pathways and feedbacks. While it is recognised that the models are preliminary, they demonstrate the ways in which different components are likely to interact and the consequences that changes in the system are likely to have on some of the Region's values.	The preliminary qualitative models for coral reefs and seagrass meadows show some cause-and-effect relationships are relatively simple, while others are far more complex involving a large number of network pathways and feedbacks. While it is recognised that the models are preliminary, they demonstrate the ways in which different components are likely to interact and the consequences that changes in the system are likely to have on some of the Region's values. It is however acknowledged that these models require validation through further monitoring and experimental studies before they provide a complete picture of cumulative impacts.	IPR-59
6.9.1	ADD-85	The impacts assessed have also had some effect on the integrity of the World Heritage Area. While all elements necessary to express its outstanding universal value remain largely intact and the area continues to be an adequate size to ensure complete representation of its features and processes, there have been adverse effects on the property.	The impacts assessed have also had some effect on the integrity of the World Heritage Area. While all elements necessary to express its outstanding universal value remain largely intact and the area continues to be an adequate size to ensure complete representation of its features and processes, there have been adverse effects on the property, such as a 50 per cent average decline in coral cover since 1987³⁶.	IPR-61
6.9.2	ADD-86	Cumulatively these impacts, along with the other listed severe impacts	Cumulatively these impacts, along with the other listed severe impacts such as	PR-E192

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		such as cyclones and those associated with coastal development, mean the southern two-thirds of the Marine Park is experiencing the greatest impacts. ⁹⁶	cyclones and those associated with coastal development, mean the southern two-thirds of the Marine Park is experiencing the greatest impacts.	
6.9.5	ADD-87	The most severe impacts to listed migratory and threatened species include climate-related impacts (increased sea temperature and cyclone activity), impacts that affect nesting, feeding and breeding habitats such as clearing and modifying supporting terrestrial habitats (which may also increase light and noise impacts) and direct impacts from activities that pose a threat to survival (for example, illegal fishing and poaching, death of discarded species and extraction of top order predators).	The most severe impacts to listed migratory and threatened species include climate-related impacts (increased sea temperature and cyclone activity), impacts that affect nesting, feeding and breeding habitats such as clearing and modifying supporting terrestrial habitats (which may also increase light and noise impacts) and direct impacts from activities that pose a threat to survival (for example, marine debris, chemical and oil spills and wildlife disturbance).	PR-E192
6.11	ADD-88	6.11 Summary of outcomes	6.11 Summary of conclusions	IPR-63
6.11	ADD-89	The effects of dredge spoil disposal can be widespread	The effects of dredge spoil disposal may be more widespread than previously understood .	PR-E192
6.11 (Table 6.11)	ADD-90	Table 6.11 Summary of the past and present effects of impacts on the Regions values	Full scale at Section 6.3	IPR-63; PR-329, PR-365, PR-E248, PR-E192, PR-255, PR-353, PR-E220, PR-E171; PR-E130; PR-E124

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		<p>Table 6.11 Summary of the past and present effects of impacts on the Region's nature</p>		

Chapter 7: Current condition and trend

7.1 (Table 7.1)	Internal	Information on condition and trend of habitats is highly variable with some well known (e.g. shallow coral reefs) and others poorly known, particularly habitats in remote areas or deep waters (e.g. <i>Halimeda</i> banks). The habitats of the northern third of the Great Barrier Reef are believed to remain in very good condition and are able to support dependent species. Southern habitats, especially those inshore, have deteriorated, particularly seagrass meadows and coral reefs.	Information on condition and trend of habitats is highly variable with some well known (e.g. shallow coral reefs) and others poorly known, particularly habitats in remote areas or deep waters (e.g. <i>Halimeda</i> banks). Habitats such as coral reefs, seagrass meadows and open waters which are critical in supporting a range of other habitats and species have deteriorated in the southern two thirds of the Region, especially inshore. This has resulted in an overall grade of poor for that area. The habitats of the northern third of the Great Barrier Reef are believed to remain in good or very good condition and are able to support dependent species.	
7.1 (Table 7.1)	ADD-93	Lagoon floor: The lagoon floor generally consists of soft sand and mud and supports a wide range of species. While a large-scale study of the Region's lagoon floor has provided a comprehensive and extensive snapshot of the habitat, there is no long-term monitoring. Although the habitat is likely to be in good condition overall, there are some known impacts of trawling in some areas. Recent extreme weather is likely to have damaged lagoon floor habitats, but no assessments have been	Lagoon floor: The lagoon floor generally consists of soft sand and mud and supports a wide range of species. While a large-scale study of the Region's lagoon floor has provided a comprehensive and extensive snapshot of the habitat, there is no long-term monitoring. Some areas that have experienced impacts from trawling are likely to be in poor condition, albeit recovering . Recent extreme weather is likely to have damaged lagoon floor habitats, but no assessments have been made.	IPR-65; PR-398

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		made.		
7.1 (Table 7.1)	Internal	Limited confidence in condition and trend of Halimeda banks	Changed confidence to anecdotal to align with outlook	Alignment Outlook 2014
7.1 (Table 7.2)	Internal	There have been losses in rainforest habitats throughout the catchment, in particular the Wet Tropics, Fitzroy and Burnett–Mary regions. The loss of rainforest has averaged 38 per cent across the catchment	There have been losses in rainforest habitats throughout the catchment, in particular the Wet Tropics, Fitzroy and Burnett–Mary regions. Since pre-European levels, an average 38 per cent has been lost across the catchment. <i>There has been no recoded loss of rainforest since the inscription of the wet tropics on the World Heritage list in 1988, at which time logging was completely banned.</i>	Alignment Outlook 2014
7.1 (Table 7.3)	Internal	There is only condition and trend information for a limited number of species and species groups; hence the assessment of some components is highly uncertain.	There is only condition and trend information for a limited number of species and species groups; hence the assessment of some components is highly uncertain <i>and often inferred from the condition of supporting habitats and processes.</i>	Internal revision
7.1 (Table 7.3)	ADD-94	Coral diversity and abundance has substantially decreased on inshore reefs south of Cooktown	<i>Although there is an urgent need for more long-term monitoring of inshore reefs, there is consensus</i> that coral diversity and abundance has substantially decreased on inshore reefs south of Cooktown	IPR-115
7.1 (Table 7.3)	Internal	Trend for Plankton and microbes is stable	Change trend to declining	Alignment Outlook 2014
7.1 (Table 7.3)	Internal	Trend for Bony fish is stable throughout region	Change trend to declining in N.I. and S.I.	Alignment

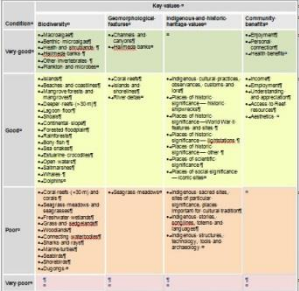
Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
7.3)				Outlook 2014
7.1 (Table 7.3)	Internal	There are 134 species of sharks and rays recorded, including some listed threatened and migratory species.	There are 136 species of sharks and rays recorded, including some listed threatened and migratory species.	Alignment Outlook 2014
7.1 (Table 7.3)	Internal	Condition good and trend deteriorating for Sea snakes	Change to poor condition and stable trend	Alignment Outlook 2014
7.7.1	ADD-100	Confidence in condition of seabirds is adequate	Confidence in condition of seabirds is limited	IPR-70
7.1 (Table 7.3)	Internal	Limited confidence in condition and trend of shore birds	Change confidence to anecdotal to align with outlook	Alignment Outlook 2014
7.1.1	ADD-91	At the scale of the Great Barrier Reef Region, most of its habitats and species are assessed to be in good to very good condition, although for many, a lack of accurate information means the assessment is principally based on limited evidence and anecdotal information.	Although most habitats and species are assessed to be in good to very good condition, at the scale of the Great Barrier Reef Region, a lack of accurate information means the assessment is principally based on limited evidence and anecdotal information. The condition of key habitats, which have adequate certainty, such as coral reefs, seagrass meadows and open waters, all show poor and declining conditions in the southern parts of the Region. Southern mangrove forests are the only habitat with a good and stable condition and trend grading that is supported by adequate high-quality evidence and high level consensus. Corals, turtles and dugongs are the only species associated with an adequate grading of certainty. All of these are in poor or very poor condition and declining in at least one of the four regions. All these species and habitats affect the broader value of the Region, and if these declines are not arrested, they are likely to have broadscale impacts.	IPR-64; PR-398; PR-E194
7.1.1	ADD-92	At the scale of the Great Barrier Reef Region, most of its habitats and	Although most habitats and species are assessed	IPR-64;

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		species are assessed to be in good to very good condition, although for many, a lack of accurate information means the assessment is principally based on limited evidence and anecdotal information.	All these species and habitats affect the broader value of the Region, and if these declines are not arrested, they are likely to have broadscale impacts.	PR-398
7.1.2	Internal	The decline in coral cover has been most severe on reefs south of latitude 20 degrees, particularly since 2006. Since that time, coral cover has reduced from about 35 per cent to eight per cent. Over a shorter timeframe and with less available data to assess trends, data from the Authority's marine monitoring program of inshore reefs adjacent to the developed central and southern areas of the catchment, indicates that on average cover has declined by 34 per cent since 2005	The decline in coral cover has been most severe on reefs south of latitude 20 degrees, particularly since 2006. Since that time, coral cover has reduced from about 35 per cent to eight per cent. Over a shorter timeframe and with less available data to assess trends, data from the Authority's marine monitoring program of inshore reefs adjacent to the developed central and southern areas of the catchment, indicates a decline in coral reef health since 2006.	Internal revision
7.1.3	ADD-95	Ongoing monitoring shows: 67 per cent of monitoring sites have reduced seagrass abundance; 50 per cent of sites exhibit shrinking meadow area; many sites have limited or no seed production; indications of light limitation at 63 per cent of sites; nutrient enrichment at 33 per cent of sites; and 90 per cent of sites with either high or elevated nitrogen. ³⁴ Little is known about the abundance and condition of subtidal and deepwater seagrass meadows. The limited information available suggests declines in the abundance of these meadows and that these habitats can be affected by severe cyclones	Ongoing monitoring shows: 67 per cent of monitoring sites have reduced seagrass abundance; 50 per cent of sites exhibit shrinking meadow area; many sites have limited or no seed production; indications of light limitation at 63 per cent of sites; nutrient enrichment at 33 per cent of sites; and 90 per cent of sites with either high or elevated nitrogen. ³⁴ However, recent data collected through Seagrass-Watch indicates a recovery in the Townsville area since early to mid-2012. Little is known about the abundance and condition of subtidal and deepwater seagrass meadows. The limited information available suggests declines in the abundance of these meadows and that these habitats can be affected by severe cyclones	PR-E194
7.1.5	ADD-96	Although there is very limited mortality of inshore dolphins in gillnets (including nets associated with the Queensland Shark Control Program), the nets are recognised as a serious threat to these species due to the extremely low levels of human-induced mortality that the populations can withstand	Although there are limited reports of mortality of inshore dolphins in gillnets (including nets associated with the Queensland Shark Control Program), the nets are recognised as a serious threat to these species due to the extremely low levels of human-induced mortality that the populations can withstand	PR-E181
7.1.6	Internal	However, dugong populations south of Cooktown have been mostly declining for decades with an estimated population of only 600 animals between the Daintree River and the southern limit of the Region in 2011, compared with an estimate of 2059 from the previous survey in 2005	However, dugong populations south of Cooktown have been mostly declining for decades with an indexed population estimate of only 600 animals between the Daintree River and the southern limit of the Region in 2011, compared with an indexed estimate of 2059 from the previous survey in 2005	Helene Marsh revision of Section 9.3 in Chapter

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
				9.
7.2 (Table 7.5)	ADD-97	Overview: Recent advances in mapping technology have provided unprecedented high resolution imagery of the underwater landscapes and geological features of the Great Barrier Reef. There has been no significant change to the geomorphology since the end of the last sea level rise 6500 years ago. Geomorphological features close to the populated coast are likely to have been impacted relatively more due to increased human activity and development in this area. The effects of future climate change impacts on geological features are unknown but are likely to be negative	Overview: Recent advances in mapping technology have provided unprecedented high resolution imagery of the underwater landscapes and geological features of the Great Barrier Reef. Glacio-hydroisostatic processes have resulted in several metres of sea level variation over the past 6,500 years. However, those close to the populated coast are likely to have been impacted more due to increased human activity and development in this area. The effects of future climate change impacts on geological features are difficult to predict but are most likely negative.	PR-REP001
7.3 (Table 7.7)	Internal	Places of historic significance — historic shipwrecks: There is a comprehensive understanding of the historic shipwrecks of the Region (i.e. those greater than 75 years). Known wrecks have been systematically recorded as part of the Australian National Shipwrecks Database, with some 470 historic shipwrecks recorded within the Region – Good and Stable	Places of historic significance — historic shipwrecks: There are more than 1300 known historic shipwrecks (i.e. those greater than 75 years) in the Region. Of these only six are protected. Known wrecks have been systematically recorded as part of the Australian National Shipwrecks Database. However the majority are poorly recorded or their locations remain unknown., - Poor - stable	Alignment Outlook 2014
7.3 (Table 7.7)	Internal	Places of historic significance — lightstations: The locations and values of lightstations, including the lighthouses and ancillary structures, are well known. Heritage values are being maintained or restored at lightstations where there is a permanent presence, such as on Low Isles and Lady Elliot Island. However, some other sites are deteriorating. Good - deteriorating	Places of historic significance — lightstations: The locations and values of lightstations, including the lighthouses and ancillary structures, are well known. Heritage values are being maintained or restored at Commonwealth lightstations where there is a permanent presence, such as on Low Isles and Lady Elliot Island. However, certain sites have deteriorated due to poor construction materials. Good - stable	Alignment Outlook 2014
7.5 (Table 7.10)	ADD-98	Dumping of dredge material also affects sedimentation processes with resuspension plumes likely to travel considerably further than previously thought	Dumping of dredge material also affects sedimentation processes with resuspended sediments potentially travelling considerably further than previously thought	IPR-68
7.5 (Table 7.10)	Internal	Condition of sedimentation very good in N.I. Trend stable in S.I. and S.O.	Condition changed to good in N.I. Trend changed to deteriorating in S.I, and S.O	Alignment Outlook 2014

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
7.5 (Table 7.10)	Internal	Trend for nutrient cycling stable in all four regions	Change trend to deteriorating in all four regions	Alignment Outlook 2014
7.5 (Table 7.10)	Internal	Trend for particle feeding is stable in S.I. and S.O.	Change trend to deteriorating in S.I. and S.O.	Alignment Outlook 2014
7.5 (Table 7.10)	Internal	Particle feeding: Based on knowledge of some particle-feeding species, the process is assumed to be healthy and stable. Some species of prawns are targeted by the trawl fishery. Turbidity increases the rate of particle feeding undertaken by corals	Particle feeding: Particle feeding is undertaken by a range of organisms including corals, sponges, crustaceans and holothurians. The decline of coral cover in the southern two thirds of the Region is likely to have had a negative impact on this process. Some species of prawns are targeted by the trawl fishery.	Alignment Outlook 2014
7.5 (Table 7.10)	Internal	Predation good and stable in S.I.	Change to poor and no clear trend in S.I.	Alignment Outlook 2014
7.5 (Table 7.10)	Internal	Confidence levels for recruitment adequate	Change all confidence levels for recruitment to limited	Alignment Outlook 2014
7.6 (Table 7.11- Habitats for conservation of biodiversity)	Internal	Overview: There are significant concerns about some key habitats, particularly seagrass meadows and coral reefs, and some species such as dugongs, some marine turtles and some dolphins. These concerns are not as great in far northern areas, which remain relatively intact. Populations of humpback whales, estuarine crocodiles, loggerhead turtles and green turtles (southern stock) are recovering from historical declines. There have been no records of species extinction, though there is concern that speartooth shark has not been recorded in or near the Region since 1982	Overview: There are significant concerns about some key habitats, particularly coral reefs and seagrass meadows, the latter of which is significant for species such as dugong and turtles. Many of the key habitats and species, for which the Great Barrier Reef was inscribed on the World Heritage List (coral reefs, seagrasses, islands, open waters, dugongs, turtles, whales, dolphins and seabirds) are in poor and declining condition especially in the southern two thirds of the property. The concerns are not as great in far northern areas, which remain relatively intact. Populations of humpback whales, estuarine crocodiles, loggerhead turtles and green turtles (southern stock) are recovering from historical declines. There have been no records of species extinction, though there is concern that speartooth shark has not been recorded in or near the Region since 1982	Alignment Outlook 2014

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
7.6 (Table 7.11)	Internal	There remain more than 400 species of hard coral and at least 150 species of soft corals, sea fans and sea pens, living in a complex reef system. There has been a serious decline in hard coral cover in the southern two-thirds of the Region.	Although there is no published evidence of loss of species associated with coral reefs, there has been a serious decline in hard coral cover, and deterioration of coral reef habitats in the southern two-thirds of the Region	Alignment Outlook 2014
7.6 (Table 7.11)	Internal	Condition relating to excerpt: <i>'The world's most complex expanse of coral reefs... Contain some 400 species of corals in 60 genera' under criterion (x) is Good and deteriorating</i>	Rating changed to poor and declining	Alignment Outlook 2014
7.6.2	ADD-99	There has been no significant change to geomorphological features since the end of the last sea level rise 6500 years ago. Those close to the developed coast are likely to have been relatively more affected more due to increased human activity and coastal development. The effects of climate change impacts on geomorphological features are unknown but are likely to be negative.	Glacio-hydroisostatic processes have resulted in several metres of sea level variation over the past 6,500 years. However, geomorphological features close to the populated coast are likely to have been impacted more due to increased human activity and development in this area. The effects of future climate change impacts on geological features are difficult to predict, but the geomorphology of reef islands is predicted to be vulnerable to climate change scenarios.	PR-REP001
7.7.5	ADD-101	Additional point to bullet list under 7.7.5	While there is a good understanding of nutrient cycling in general, a better understanding of nutrient and carbon cycling, especially in relation to factors such as crown-of-thorns starfish outbreaks and small and large scale effects of ocean acidification, remains pertinent.	IPR-72
7.8	ADD-102	7.8 Summary of outcomes	7.8 Summary of conclusions	IPR-73
7.8	ADD-103	Most habitats and species are in good to very good condition overall. However, past and current impacts, including water quality, crown-of-thorns starfish outbreaks, increased sea temperature and recent extreme weather, have resulted in serious declines in the inshore biodiversity values of the southern two-thirds of the Region.	Although most habitats and species are graded as being in a good to very good condition at the scale of the whole Great Barrier Reef Region, many key habitats and species for which there is adequate information, were assessed to be in poor or very poor condition and declining. These include coral reefs, seagrass meadows, open oceans, dugongs, some marine turtles and seabirds. Past and current impacts, including water quality, crown-of-thorns starfish outbreaks, increased sea temperature and recent extreme weather, have resulted in serious declines in the inshore biodiversity values of the southern two-thirds of the Region	IPR-73; PR-E194; PR-398 PR-E199

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
7.8 (Table 7.14)	Internal	<p>Table 7.14 Current condition of key values</p> 	Full scale at Section 6.3	In response to above amendments
Chapter 8: Management effectiveness – an independent review				
8.6.3 (Figure 8.10)	ADD-104	Figure 8.10 Certainty provided for port operations by the Authority's management arrangements	Figure 8.10 Certainty provided for commercial port operations by the Authority's management arrangements	PR-E192
8.6.6	ADD-105	For agricultural activities, the assessors considered that Reef Plan, and the Authority's role in that plan, provides an effective, integrated approach to water quality improvement. However, the impact of changes to Queensland's Coastal Plan on downstream effects from land-based water quality is not known at this stage.	For agricultural activities, the assessors considered that Reef Plan, and the Authority's role in that plan, provides an effective, integrated approach to water quality improvement. The impact of changes to Queensland's Coastal Plan on downstream effects from land-based water quality is not known at this stage. <i>Assessors further noted that changes to the Queensland coastal planning policies 'have significant implications for the Great Barrier Reef Region because it removes many of the specific requirements placed on local government and potential developers to undertake best practice and to minimise environmental harm'.</i>	PR-E192
Chapter 9: Demonstration case studies				
9.1.1	ADD-106	<i>Environmental best practice port development: an analysis of international approaches</i> : This has identified international benchmarks in the management of environmental impacts of ports and their potential application in an Australian context	<i>Environmental best practice port development: an analysis of international approaches</i> ^(ref 4) : This has identified international benchmarks in the management of environmental impacts of ports and their potential application in an Australian context <i>4. GHD 2013, Environmental best practice port development: an analysis</i>	PR-E192

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			<i>of international approaches, Department of Sustainability, Environment, Water, Population, and Communities, Canberra, Australia.</i>	
9.3	ADD-108		A revision of this section has been provided by Prof Helene Marsh from James Cook University. It includes some clarification of life history characteristics, the inshore restriction of traditional hunting and the relatively small proportion of total dugong habitat this applies to, corrections regarding the restrictions of population estimates using aerial surveys, and corrections regarding causes and timings of population declines. The amended section will be included in the final version of the Strategic Assessment report.	PR-E235
9.3.2 (Figure 9.1)	ADD-109	Profile of the annual estimated mean numbers of dugongs (log-linear model and 95 per cent confidence intervals) caught in the Queensland Shark Control Program from six shark netting contract areas at 47 beaches between Cairns and the Gold Coast for the period 1962 to 1999. The average number of dugongs caught per beach ranged from zero to five dugongs per month (green symbols), and showed a strong overall decline . ¹⁵ The estimated rate of decline averages 8.7 per cent per year. There is no statistical evidence that the changes to the program introduced after the 1992 review of practices ¹⁷ changed the pattern of declining catches up to 1999.	Profile of the annual estimated mean numbers of dugongs (log-linear model and 95 per cent confidence intervals) caught in the Queensland Shark Control Program from six shark netting contract areas at 47 beaches (green dots) between Cairns and the Gold Coast for the period 1962 to 1999. ¹⁵ The estimated rate of decline averages 8.7 per cent per year. There is no statistical evidence that the changes to the program introduced after the 1992 review of practices ¹⁷ changed the pattern of declining catches up to 1999.	IPR-83
9.4.2	ADD-110	The major drivers of loss of coral cover on a Reef-wide scale are: <ul style="list-style-type: none"> • Outbreaks of the crown-of-thorns starfish (<i>Acanthaster planci</i>).⁵⁵ Large-scale crown-of-thorns starfish outbreaks were first recorded in the 1960s.⁵⁶ Since then, there have been three major outbreaks (1962 to 1976, 1978 to 1990, 1993 to 2005⁵⁷). • Direct impacts of cyclones.^{4, 55} For example, cyclone Hamish was a major factor in reducing the average coral cover on southern offshore reefs in the Swains region of the World Heritage Area from 35 per cent in 2006 to 8 per cent.⁵³ • Declining water quality in the Great Barrier Reef lagoon — including an increase in nutrients, pollutants, sediment and freshwater — from catchment run-off, urban and industrial discharge and dredge material disposal.^{51,52,58} Coral disease has 	The major drivers of loss of coral cover on a Reef-wide scale are: <ul style="list-style-type: none"> • Outbreaks of the crown-of-thorns starfish (<i>Acanthaster planci</i>).⁵⁵ Large-scale crown-of-thorns starfish outbreaks were first recorded in the 1960s.⁵⁶ Since then, there have been three major outbreaks (1962 to 1976, 1978 to 1990, 1993 to 2005⁵⁷). • Direct impacts of cyclones.^{4, 55} For example, cyclone Hamish was a major factor in reducing the average coral cover on southern offshore reefs in the Swains region of the World Heritage Area from 35 per cent in 2006 to 8 per cent.⁵³ • Declining water quality in the Great Barrier Reef lagoon — including an increase in nutrients, pollutants, sediment and freshwater — from catchment run-off, urban and industrial discharge and dredge material disposal.^{51,52,58} Coral disease has also emerged as a chronic problem for many southern 	IPR-84

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		<p>also emerged as a chronic problem for many southern inshore reefs after flood events.⁵⁹</p> <ul style="list-style-type: none"> Increasing sea surface temperatures, which have induced coral bleaching.^{60,61} 	<p>inshore reefs after flood events.⁵⁹</p> <ul style="list-style-type: none"> Increasing sea surface temperatures, which have induced coral bleaching.^{60,61} <p>Many of these drivers act in synergy and are highly interconnected. For example, climate change predictions include increased intensity and frequency of cyclones, increased nutrients is likely to be linked to crown-of-thorns starfish outbreaks, and thermal stress tolerance in corals is reduced with degraded water quality, both of which are linked to increased disease susceptibility. Hence it is critical to improve the management of direct anthropogenic impacts to reduce the overall stress on coral reefs in the Region, noting that once coral reefs reach a tipping point towards non coral dominated ecosystems, it is very unlikely they will ever recover.</p>	
9.4.3	ADD-111	Coral cover has declined throughout the Region, this is despite high community interest and concern for corals, comprehensive partnership programs with industry stakeholders, and increased efforts by managers to enhance coral reef resilience (particularly through improving water quality).	Average coral cover has declined throughout the Region, this is despite high community interest and concern for corals, comprehensive partnership programs with industry stakeholders, and increased efforts by managers to enhance coral reef resilience (particularly through improving water quality).	IPR-85
9.4.3	ADD-112	The reviewers considered Biodiversity outcomes to be partially effective. <i>Although the inshore coral reefs south of Cooktown have experienced declines over the past [27] years, those north of Cooktown have remained relatively stable.</i>	The reviewers considered Biodiversity outcomes to be partially effective. <i>Although coral reefs south of Cooktown have experienced declines over the past [27] years, those north of Cooktown have remained relatively stable.</i>	PR-E199
9.8.4	ADD-113	<p>Enhancing protection and restoration</p> <p>Taking action to improve water quality represents one of the best opportunities to improve the condition of the Great Barrier Reef World Heritage Area, while providing improved resilience to other impacts such as those related to a changing climate. There is a need for increasing emphasis on a whole-of-ecosystem approach to restoring catchment ecosystem health and connectivity, including wetland ecological functions.</p>	<p>Enhancing protection and restoration</p> <p>Taking action to improve water quality represents one of the best opportunities to improve the condition of the Great Barrier Reef World Heritage Area, while providing improved resilience to other impacts such as those related to a changing climate. There is a need for increasing emphasis on a whole-of-ecosystem approach to restoring catchment ecosystem health and connectivity, including wetland ecological functions. The Reef 2050 Long-term Sustainability Plan will integrate and coordinate management actions needed to restore, maintain and enhance the Region's values.</p>	IPR-89

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
9.11	ADD-107	Added bullet point at start of partnership list.	Enhancing effectiveness of partnerships between policy makers, regulators and researchers, to ensure maximum value of research investments	IPR-81
Chapter 10: Resilience and Risk				
10.1	Internal	<p>Understanding resilience</p> <p>Ecosystem resilience refers to but rather the capacity of an ever-changing, dynamic system to return to a healthy state.</p> <p>Tropical marine ecosystems threats is crucial to the long-term protection of the Reef's values</p> <p>A key aspect of resilience is the cumulative interactions between impacts—different impacts may combine.....as those caused by climate change.</p>	<p>Understanding ecosystem resilience</p> <p>Ecosystem resilience refers to but rather the capacity of an ever-changing, dynamic system to return to a healthy state.</p> <p>Tropical marine ecosystems threats is crucial to the long-term protection of the Reef's values</p> <p>The resilience of an ecosystem is determined by a range of variables. Loss of ecosystem resilience is rarely attributed to a single cause, but is typically the consequence of impacts from different activities and drivers, and their accumulation through time or space. Different impacts may combine..... as those caused by climate change.</p>	Internal revision
10.2.9	Internal	<p>Sharks and rays</p> <p>Most species of sharks and rays have life-histories which make them less resilient than many reef fish. Some species, especially inshore species such as sawfishes and reef species such as the grey reef and white tip reef sharks, have declined severely due to fishing and habitat loss; their low reproductive rates mean populations are not resilient in the face of these impacts. Some species are highly mobile, potentially making them vulnerable to loss of inshore habitats despite their wide range. However, other species of sharks are thought to be at lower risk because their growth rates are able to balance the effects of the impacts on their populations.</p>	<p>Most species of sharks and rays have life-histories which make them less resilient than many bony fishes. Some species, especially those that inhabit inshore areas such as sawfishes and coral habitats such as grey reef and white tip reef sharks, have declined severely due to fishing and habitat loss; their low reproductive rates mean populations are not resilient in the face of these impacts. Some highly-mobile species use inshore habitats at critical parts of their life cycle making them vulnerable. However, other species of sharks are thought to be at lower risk because their growth rates are able to balance the effects of the impacts on their populations.</p>	Internal revision
10.2.10	ADD-114	Insert a new section under 10.2	<p>10.2.10 Seabirds</p> <p>Life-history traits of offshore and pelagic-foraging seabirds make them susceptible to a number of pressures. These traits include being long-lived; slow growth rates of young with high parental care; low reproductive output; high habitat and trophic specificity (most significantly, these species rely on a particular foraging behaviour that determines specificity in their diet and limits</p>	PR-E243

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			their ability to increase the rate of provision when food resources become scarce). Seabirds have a major influence on island ecosystems, including the transfer of nutrients from pelagic and offshore areas to islands and reefs. Seabirds are also key upper trophic level predators in the marine ecosystem and their demographics and reproduction are strongly influenced by changing marine conditions. Furthermore, seabirds are expected to be directly or indirectly impacted by a majority of the impacts identified in Table 10.3.	
10.3	ADD-115	While the Great Barrier Reef Region may be one of the most resilient tropical marine ecosystems in the world ^{16,63} , there is concern that its resilience is being seriously, and increasingly rapidly, eroded	While the Great Barrier Reef Region may be one of the most resilient tropical marine ecosystems in the world ^{16,63} , its resilience is being seriously, and increasingly rapidly, eroded	IPR-90
10.7 (Table 10.3)	Internal	Consequence of Ocean acidification: Major	Consequence of Ocean acidification: Catastrophic	Alignment with Outlook 2014
10.7 (Table 10.3)	Internal	Consequence of Rising sea level: Moderate Risk rating: High	Consequence of Rising sea level: Major Risk rating: Very high	Alignment with Outlook 2014
10.7 (Table 10.3)	ADD-115A Consequence rating is an internal amendment	Nutrients from catchment run-off: Ongoing improvements in catchment management are likely to reduce nutrient loads in catchment run-off in the future. However, there is likely to be a significant lag time between changes in agricultural practice and measurable water quality improvements in the Region. It is projected that nutrients will continue to enter and remain in the Region over the next 25 years with potentially catastrophic consequences on biodiversity. Consequence: Catastrophic	Nutrients from catchment run-off: Ongoing improvements in catchment management are likely to reduce nutrient loads in catchment run-off in the future. However, there is likely to be a significant lag time between changes in agricultural practice and measurable water quality improvements in the Region. It is projected that nutrients will continue to enter and remain in the Region over the next 25 years with potentially catastrophic consequences on biodiversity. Risks associated with changes to the Vegetation Management Act include the potential intensification of coastal agricultural development, with subsequent increases in pollutant loads: however, the full impact of these changes is unknown as the Queensland regulatory reform process is continuing. Consequence: Major	IPR-34 Alignment with Outlook 2014

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
10.7 (Table 10.3)	ADD-115A Consequence rating is an internal amendment	Sediments from catchment run-off: Although improved practices and restoration of riparian vegetation in many catchment areas has reduced sediment load, sediment will continue to be transported to and remain in the Region. Similar to nutrients from catchment run-off, improvements in agricultural practices may take some time to become evident in water quality within the Region due to the lag time of sediments passing through the system and into sinks within the marine system. Projected increased rainfall variability may also contribute to sediment loads through the erosion of top soils during flood events. Consequences of sedimentation for marine life will depend on the concentration and duration of exposure, however there are likely to be major effects on biodiversity. Consequence: Catastrophic	Sediments from catchment run-off: Although improved practices and restoration of riparian vegetation in many catchment areas has reduced sediment load, sediment will continue to be transported to and remain in the Region. Similar to nutrients from catchment run-off, improvements in agricultural practices may take some time to become evident in water quality within the Region due to the lag time of sediments passing through the system and into sinks within the marine system. Projected increased rainfall variability may also contribute to sediment loads through the erosion of top soils during flood events. Consequences of sedimentation for marine life will depend on the concentration and duration of exposure, however there are likely to be major effects on biodiversity. Risks associated with changes to the Vegetation Management Act include the potential intensification of coastal agricultural development, with subsequent increases in pollutant loads: however, the full impact of these changes is unknown as the Queensland regulatory reform process is continuing. Consequence: Major	IPR-34 Alignment with Outlook 2014
10.7 (Table 10.3)	Internal	Dredging: Continued development of new ports and port expansions would require capital and ongoing maintenance dredging. While maintenance dredging is expected to occur at least one or more times in a year, capital dredging is not expected to occur annually. The consequence for biodiversity within the footprint of the dredging site would be serious and possibly irreversible. Likelihood: Likely (maintenance) / Possible (capital) Consequence: Minor (maintenance) / Moderate (capital) Risk rating: Medium	Dredging: Continued development of new ports and port expansions would require capital and ongoing maintenance dredging. While maintenance dredging is expected to occur at least one or more times in a year, capital dredging is not expected to occur annually. Whereas the consequence of dredging on a broad scale is considered minor, the consequence for biodiversity within the footprint of the dredging site would be serious and possibly irreversible and pose a high risk at a very local scale. Likelihood: Likely Consequence: Minor Risk rating: Medium	Alignment with Outlook 2014
10.7 (Table 10.3)	Internal	Dumping and resuspension of dredge material: The dumping of dredge material is not continuous; however the frequency of dumping and re suspension of dredge material (from both capital and maintenance dredging) is likely to increase with continued development of new ports and port expansions. The resuspension of significant volumes of sediment could affect the condition of values over a broad scale adding further pressure to already declining inshore	Dumping and resuspension of dredge material: The dumping of dredge material is not continuous; however the frequency of dumping and resuspension of dredge material (from both capital and maintenance dredging) is likely to increase with continued development of new ports and port expansions. The resuspension of significant volumes of sediment could affect the condition of values over a broad scale adding further pressure to already declining inshore ecosystems.	Alignment with Outlook 2014

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		ecosystems. Likelihood: Likely (maintenance) / Possible (capital) Consequence: Minor (maintenance) / Moderate (capital) Risk rating: Medium	Likelihood: Likely Consequence: Moderate Risk rating: High	
10.12 (Table 10.8)	Internal	“Outbreak of crown-of-thorns” in wrong row	Change to a “Likely “Likelihood	
Chapter 11: Projected condition				
11.1	Internal	The current condition and trend of the values and attributes relevant to matters of national environmental significance are assessed in Chapter 7. The condition of many of the values relevant to matters of national environmental significance has declined. Many values are assessed as being in poor or very poor condition and this declining trend is continuing. In addition, it is assessed that the condition of some of the values rated as being in good condition is deteriorating. The overall condition of only two elements — estuarine crocodiles and humpback whales — is assessed as having improved. The values of most concern generally occur in the southern two-thirds of the Great Barrier Reef Region and coincide with areas where connections between coastal and marine systems have been interrupted or modified and where the condition of supporting ecological processes is deteriorating.	The current condition and trend of the values and attributes relevant to matters of national environmental significance are assessed in Chapter 7. Information on condition and trend is limited to a relatively small number of attributes. For many, the assessment is based on limited evidence and anecdotal information or is inferred from the condition of supporting habitats and processes. Most values and attributes are assessed as being in good or very good condition at the scale of the Region. However in the southern two-thirds of the Region, a number of habitats (such as coral reefs, seagrass meadows and open waters) and environmental processes which are critical in supporting a range of other values are assessed as being in poor or very poor condition There are four examples of species showing good recovery after past serious declines: humpback whales, estuarine crocodiles, loggerhead turtles and green turtles (southern stock). The values of most concern generally occur in the southern two-thirds of the Great Barrier Reef Region and coincide with areas where impacts on the Region’s environment are compounding.	Internal revision
11.6 (Former 11.5)	ADD-116	Amend the first paragraph of 11.6 (formerly 11.5) Future scenarios: As outlined in previous chapters, drivers, activities, past and current impacts and future risks do not operate independently, but are intertwined in a complex web of cumulative effects. The qualitative	Swap order of 11.5 and 11.6. Amend the first paragraph of 11.6 Future scenarios: As outlined in previous chapters, drivers, activities, past and current impacts and future risks do not operate independently, but are intertwined in a complex web of cumulative effects. The qualitative models used in Chapter 6 to assess	IPR-92

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		models used in Chapter 6 to assess cumulative impacts on coral reefs, seagrass and dugong can also be employed to account for and predict how future drivers and activities are likely to have an effect throughout the entire network of ecosystem interactions. Recognising the models are preliminary and subject to further expert review, they are a first step in an examination of the likelihood of changes in condition as a result of future changes in some of the most serious impacts. This type of analysis can enhance understanding of likely projected condition and Inform recommendations to improve future management	cumulative impacts on coral reefs, seagrass and dugong can also be employed to account for and predict how future drivers and activities are likely to have an effect throughout the entire network of ecosystem interactions. Such models can guide the development of targets for management actions required to halt and reverse deteriorating conditions of values. Recognising the models are preliminary and subject to further expert review, they are a first step in an examination of the likelihood of changes in condition as a result of future changes in some of the most serious impacts. This type of analysis can enhance understanding of likely projected condition and inform recommendations to improve future management.	
11.6.2 (Former 11.5.2)	ADD-117	The projected condition grade for each key value and attribute relevant to matters of national environmental significance (matters of national environmental significance) is a grade of best fit across all elements of the value. If a number of the elements are likely to have a 'poor' projected condition then the group is assigned this grade, even if some are likely to have a better projected condition.	The projected condition grade for each key value and attribute relevant to matters of national environmental significance (matters of national environmental significance) is a grade of best fit across all elements of the value. If a number of the elements are likely to have a 'poor' projected condition then the group is assigned this grade, even if some are likely to have a better projected condition. Note that the projected condition of some values is based on limited data and knowledge, and as such should be treated with caution.	IPR-93
11.6.2 (Table 11.1)	ADD-118	Bony fish: While most fish populations are considered to be in very good or good condition, some targeted species are under significantly more pressure in southern areas, with some especially vulnerable. The combination of fishing pressure, coastal habitat degradation, climate change and extreme weather may undermine this for some species.	Bony fish: While most fish populations are currently considered to be in very good or good condition, some targeted species are under significantly more pressure in southern areas, with some especially vulnerable. The combination of fishing pressure, coastal habitat degradation, climate change and extreme weather may undermine this for some species. Also, considering the predicted poor or very poor condition of key habitats for bony fish, it is likely that the future condition of this group is poor.	IPR-94
11.5.2 (Table 11.1)	Internal	Projected condition of Sea snakes is good	Changed projected condition of Sea snakes to poor	Alignment Outlook 2014
11.5.2 (Table 11.3)	Internal	Projected condition of historic shipwrecks is good There is a comprehensive understanding of the historic shipwrecks of the Region (i.e. those greater than 75 years). Known wrecks have been systematically recorded as part of the Australian National	Change projected condition of historic ship wrecks to poor There are more than 1300 known historic shipwrecks (i.e. those greater than 75 years) in the region. Of these only six are protected. Known wrecks have been systematically recorded as part of the Australian National Shipwrecks Database.	Alignment Outlook 2014

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
		Shipwrecks Database, with some 470 historic shipwrecks recorded within the Region. They are likely to remain in good condition.	However the majority are poorly recorded or their locations remain unknown	
11.5.2 (Table 11.3)	Internal	Projected condition of lightstations is poor While some lightstations are maintained or restored, others are deteriorating. The materials used and construction techniques of some make them vulnerable to deterioration. Increased cyclones and rising sea level are likely to present an increasing risk to these structures	Change projected condition of lightstations to good The four Commonwealth heritage listed lightstations are being maintained and restored under heritage management plans. There is strong ongoing management for these sites. Increased cyclones and rising sea level are likely to present an increasing risk to these structures	Alignment Outlook 2014
Chapter 12: Recommended changes to management				
12	Internal	The recommendations guide development of the accompanying Program Report for the Region which sets out the Authority's future management. Public consultation on the strategic assessment provides the community with an opportunity to comment on the proposed recommendations. Their subsequent implementation would be subject to normal government legislative and policy development processes.	The recommendations guide development of the accompanying Program Report for the Region which sets out the Authority's future management. Their subsequent implementation would be subject to normal government legislative and policy development processes.	Internal revision
12.3.1	ADD-119A	The recommended improvements to the Authority's management arrangements are outlined in Table 12.1.	The recommended improvements to the Authority's management arrangements are outlined in Table 12.1. The Authority will work in partnership with Traditional Owners and stakeholders in implementing recommendations.	Internal revision
12.3.1 (Table 12.1)	Internal	Explicitly incorporate consideration of all values relevant to matters of national environmental significance, including elements of the property's outstanding universal value, into the Authority's programs, plans and policies	REC1: Explicitly incorporate consideration of all matters of national environmental significance, including attributes of the property's outstanding universal value, into the Authority's programs, plans and policies	Internal revision
12.3.1 (Table 12.1)	ADD-119	REC3: Work closely with Australian and Queensland Government agencies to help identify values of the Great Barrier Reef World Heritage Area that are not easily represented and measured such as aesthetic value	REC3: Work closely with Australian, Queensland and local Government agencies to help identify values of the Great Barrier Reef World Heritage Area that are not easily represented and measured such as aesthetic value	PR-E169

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
12.3.1 (Table 12.1)	ADD 120A		<p>Strengths: A focus on the Marine Park as a matter of national environmental significance means that values relevant to other MNES are implicitly considered in decision making.</p> <p>Weaknesses: There is a need for clearer alignment of the Authority's permission system with the requirements of the EPBC Act.</p>	Internal revision
12.3.1 (Table 12.1)	ADD-120	New recommendation in relation to strengths and weaknesses above	REC8A: Implement measures to enhance alignment between the Authority's permission system and EPBC Act assessment and approval processes to ensure that activities will not result in unacceptable impacts to matters of national environmental significance.	Internal revision
12.3.1 (Table 12.1)	Internal		<p>Strengths: Existing incidence response plans are in place for ship groundings, oil and chemical spills, coral disease and crown of thorns outbreaks and major coral bleaching events</p> <p>Weaknesses: There is no dedicated role within the Authority to coordinate a response in the event of a ship grounding, large oil or chemical spills or major natural disasters</p>	Alignment with Authority's priority program
12.3.1 (Table 12.1)	Internal	New recommendation in relation to strengths and weaknesses above	REC10A: Improve and strengthen the Authority's arrangements for coordinating the response to major incidents, such as ship groundings, large oil or chemical spills or major natural disasters.	Alignment with Authority's priority program
12.3.1 (Table 12.1)	ADD-121A		<p>Strengths: The Authority has an existing Dredging and Spoil Disposal Policy for the Great Barrier Reef Marine Park</p> <p>Weaknesses: There is a need for a cross-jurisdictional policy consistent with the findings of the Strategic Assessment, including consideration of cumulative impacts and delivery of net benefits</p>	Internal revision
12.3.1 (Table 12.1)	ADD-121	New recommendation in relation to strengths and weaknesses above	REC11A: Facilitate the development of a whole-of-government policy to provide a strategic and consistent approach to the sustainable management of dredging and dredge spoil disposal in the Great Barrier Reef World Heritage Area	Internal revision

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
12.3.1 (Table 12.1)	ADD-122A		<p>Strengths: All commercial fisheries have made significant progress towards achieving better sustainability outcomes in the Region over recent years.</p> <p>Weaknesses: Some issues remain and there is a need to continue to work with the Queensland Government and other relevant partners to improve environmental outcomes.</p>	Internal revision
12.3.1 (Table 12.1)	ADD-122	New recommendation in relation to strengths and weaknesses above	REC17A: Work with the Queensland Government to provide technical and policy advice on actions to secure the long-term ecological, social and economic sustainability of Great Barrier Reef Region fisheries.	Internal revision
12.3.1 (Table 12.1)	ADD-123	REC31: Implement an integrated monitoring and reporting program to support adaptive management for the Great Barrier Reef World Heritage Area, including more explicit reporting on the condition and trend of matters of national environmental significance	REC31: Establish an integrated monitoring and reporting program to support adaptive management for the Great Barrier Reef World Heritage Area, including more explicit reporting on the condition and trend of matters of national environmental significance to enable decisions about use to be made and the performance of activities to be monitored against regulatory objectives, outcomes for matters of national environmental significance and relevant guidelines and standards, including ecosystem thresholds	IPR-100
12.3.1 (Table 12.1)	ADD-124A		<p>Strengths: Existing partnerships and cooperative arrangements with all levels of government, as well as Traditional Owners, industry sectors and other stakeholders</p> <p>Weaknesses: There is currently no independent advisory body for the Great Barrier Reef that brings together the diverse cross-section of stakeholders in one group</p>	Internal revision
12.3.1 (Table 12.1)	ADD-124	New recommendation in relation to strengths and weaknesses above	REC 34A: Establish a peak Great Barrier Reef Advisory Group made up of Traditional Owners, scientific, conservation and industry experts to provide high level advice on the implementation of the Authority's management program	Internal revision
12.4 (Table 12.2)	Internal	Updated and new recommendations reflected in alignment table.	<p>REC1: Explicitly incorporate consideration of all matters of national environmental significance, including attributes of the property's outstanding universal value, into the Authority's programs, plans and policies</p> <p>REC3: Work closely with Australian, Queensland and local Government agencies to help identify values of the Great Barrier Reef World Heritage Area</p>	Internal revision

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			<p>that are not easily represented and measured such as aesthetic value</p> <p>REC8A: Implement measures to enhance alignment between the Authority's permission system and EPBC Act assessment and approval processes to ensure that activities will not result in unacceptable impacts to matters of national environmental significance</p> <p>REC10A: Improve and strengthen the Authority's arrangements for coordinating the response to major incidents, such as ship groundings, large oil or chemical spills or major natural disasters.</p> <p>REC11A: Facilitate the development of a whole-of-government policy to provide a strategic and consistent approach to the sustainable management of dredging and dredge spoil disposal in the Great Barrier Reef World Heritage Area</p> <p>REC17A: Work with the Queensland Government to provide technical and policy advice on actions to secure the long-term ecological, social and economic sustainability of Great Barrier Reef Region fisheries.</p> <p>REC31: Establish an integrated monitoring and reporting program to support adaptive management for the Great Barrier Reef World Heritage Area, including more explicit reporting on the condition and trend of matters of national environmental significance to enable decisions about use to be made and the performance of activities to be monitored against regulatory objectives, outcomes for matters of national environmental significance and relevant guidelines and standards, including ecosystem thresholds</p> <p>REC 34A: Establish a peak Great Barrier Reef Advisory Group made up of Traditional Owners, scientific, conservation and industry experts to provide high level advice on the implementation of the Authority's management program</p>	
12.4 (Table 12.2)	Qld	Queensland Government recommended improvements	Refer to section 6.3 for full version of the changes	Qld
Chapter 13: How the Program protects matters of national environmental significance (Previously Adaptive management)				
Chapter 13	ADD-125	Revised chapter	Chapter 13 has been substantially revised to provide an improved line of sight between the findings in the Strategic Assessment Report and the final program Report.	Internal revision

Section	Addendum number	Old Text	New Text	Recommendation / comment reference number
			The full chapter is included under section 6.3 within this (the Supplementary) Report	
Appendices				
Appendix 6		New appendix	Refer to <i>Great Barrier Reef Region Strategic Assessment – Strategic Assessment Report</i> for full appendix. Matters of national environmental significance protected under the EPBC Act that could be impacted	Internal revision
Appendix 7		New appendix	Refer to <i>Great Barrier Reef Region Strategic Assessment – Strategic Assessment Report</i> for full appendix. Permission system case studies	Internal revision
Appendix 8		New appendix	Refer to <i>Great Barrier Reef Region Strategic Assessment – Strategic Assessment Report</i> for full appendix. Terms of Reference – concordance table	Internal revision

6.3 Changes to tables, figures and entire sections

Each major amendment is headed by its addendum (ADD) number as per Table 4 in Section 6.2.

ADD-7. New sections 3.6.1 and 3.6.2 in Chapter 3

3.6.1 Spatially explicit management tools

The Authority utilises a range of spatially-explicit planning instruments. These include:

- at a Reef-wide scale, the Great Barrier Reef Marine Park Zoning Plan, including designated Shipping Areas
- at a regional scale, plans of management and Traditional Owner Agreements
- at a local scale, designated Special Management Areas, site specific management arrangements and site infrastructure.

Zoning Plan

The *Great Barrier Reef Marine Park Zoning Plan 2003* is the primary planning instrument for the conservation and management of the Marine Park.

The Zoning Plan aims, in conjunction with other management mechanisms, to protect and conserve the biodiversity of the Great Barrier Reef ecosystem, while providing opportunities for the ecologically sustainable use of, and access to, the Great Barrier Reef Region by current and future generations.

The objects of the Zoning Plan are:

- to regulate the use of the Marine Park so as to:
 - protect the ecosystem within the Great Barrier Reef Region; and
 - ensure the use is ecologically sustainable use; and
 - manage competing usage demands; and
- to protect areas in the Marine Park that are of high conservation value; and
- to protect and conserve the biodiversity of the Marine Park, including ecosystems, habitats, populations and genes; and
- to regulate activities that exploit the resources of the Great Barrier Reef Region so as to:
 - minimise the adverse effect of those activities on the Great Barrier Reef; and
 - ensure the ecologically sustainable use of the resources; and
- to protect the world heritage values of the Great Barrier Reef World Heritage Area; and
- to provide for the ecologically sustainable use of marine resources by Traditional Owners consistent with their traditional practices; and
- to reserve some areas of the Great Barrier Reef Region for public enjoyment and appreciation; and
- to preserve some areas of the Great Barrier Reef Region in a natural state, undisturbed except for the purposes of scientific research that cannot be undertaken elsewhere in the Marine Park.

The Zoning Plan divides the Great Barrier Reef Marine Park into eight zones (Figure 3.2). It sets out the purposes for which each zone may be used or entered without permission, and the purposes for which each zone may be used or entered only with the written permission of the Authority. The General Use Zone provides for the widest range of activities, while the Preservation Zone is the most restricted. The Commonwealth Islands Zone provides for the use or entry of areas of the Marine Park above mean low water on Commonwealth Islands. There are complementary zoning arrangements in adjacent areas under Queensland jurisdiction, within the Great Barrier Reef Coast Marine Park.

The Zoning Plan:

- provides for the protection of representative areas of biodiversity and other areas of high conservation value by assigning protective zoning to a range of habitats and other special or unique sites. It also provides for a range of commercial, recreational and research opportunities, and for the continuation of traditional activities
- expressly acknowledges the rights and interests of Indigenous Australians by providing for the management of the traditional use of marine resources, including traditional hunting, in accordance with Aboriginal and Torres Strait Islander custom and tradition
- acknowledges the contributions of scientific research to the management and understanding of the Great Barrier Reef, through the establishment of a system of Scientific Research Zones to facilitate research around scientific research stations
- provides for the management of remote natural areas of the Marine Park, and the designation of special management areas and shipping areas, as well as additional purposes, such as Commonwealth activities, for which zones may be used or entered. It also provides for emergency responses in relation to incidents such as risks to human life, pollution threats or vessel groundings in combination with other management arrangements, provides a high level of certainty about where and how extractive use, including fishing, may be undertaken.

In accordance with section 37 of the GBRMP Act, the Authority may amend a Zoning Plan if it (or its most recent amendment) has been in operation for at least seven years.

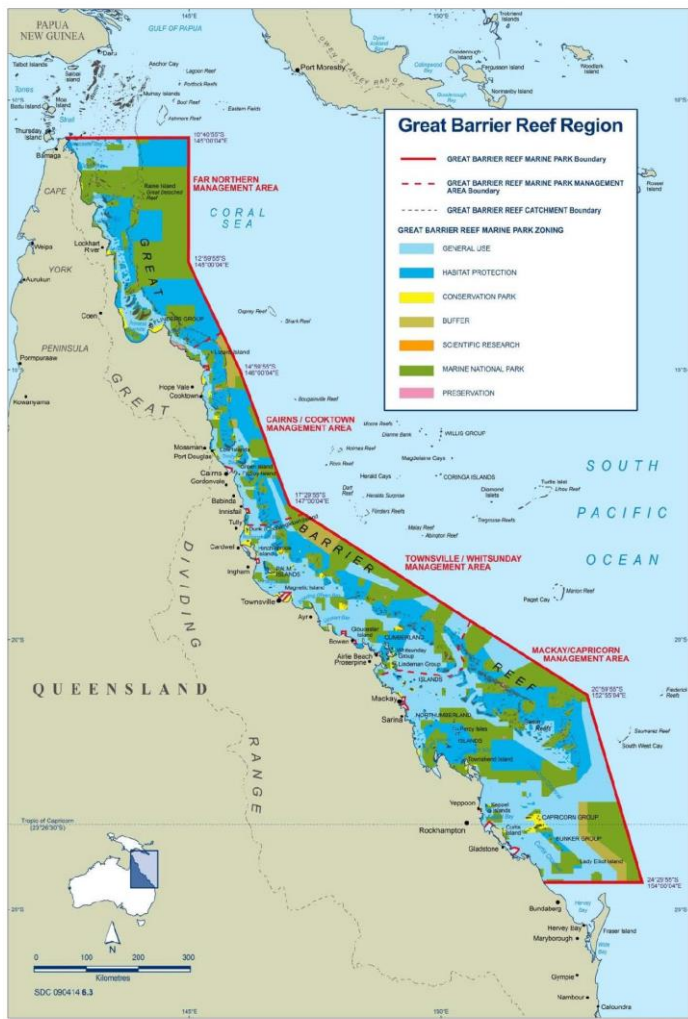


Figure 3.2 The Great Barrier Reef Zoning Plan

The Reef-wide Zoning Plan protects biodiversity values through a network of no-take zones for 33 per cent of its area and for at least 20 per cent of each bioregion. It provides for the spatial control of use, and sets out specific arrangements for activities consistent with the principles of ecologically sustainable use.

Plans of management

Plans of management complement the Zoning Plan and impose controls on the granting of permissions. They address issues specific to an area, species or community in greater detail than can be accomplished by the broader Reef-wide zoning plans.

Plans of management are generally prepared for intensively used areas, particularly 'at-risk' groups of islands and reefs, and for the protection of species of conservation concern or ecological communities.

There are four plans of management for areas in the Marine Park, covering about eight per cent of the Marine Park. The plans for the Cairns Area, the Whitsundays and Hinchinbrook set out detailed management arrangements applying to all users of these areas, with a focus on protecting key natural values and allowing a range of uses. The Shoalwater Bay (Dugong) Plan of Management aims to manage activities in the bay that threaten its dugong population or impact on its seagrass meadows. The objects of plans of management are:

Objects of the plans of management — GBRMP Act Section 39Y

- (a) to ensure, for particular areas of the Marine Park in which the Authority considers that nature conservation values, cultural and heritage values, or scientific values, are, or may be, threatened, that appropriate proposals are developed to reduce or eliminate the threats;
- (b) to ensure management for the recovery and continued protection and conservation of species and ecological communities that are, or may become:
 - (i) extinct; or
 - (ii) extinct in the wild; or
 - (iii) critically endangered; or
 - (iv) endangered; or
 - (v) vulnerable; or
 - (vi) conservation dependent;
- (c) to ensure that activities within areas of the Marine Park are managed on the basis of ecologically sustainable use;
- (d) to provide a basis for managing the uses of a particular area of the Marine Park that may conflict with other uses of the area or with the values of the area;
- (e) to provide for the management of areas of the Marine Park in conjunction with community groups in circumstances where those groups have a special interest in the areas concerned;
- (f) to enable people using the Marine Park to participate in a range of recreational activities.

Plans of management are not subject to the sunset provisions of subsection 54(2) of the *Legislative Instruments Act 2003*, and may be amended from time to time.

Traditional Owner agreements

Formal Traditional Use of Marine Resources Agreements (TUMRAs) describe how Traditional Owner groups work with Australian and Queensland governments to manage traditional use activities in sea country. Indigenous Land Use Agreements (ILUAs) are agreements between one or more native title groups and other people or parties about the use and management of land and waters.

The agreements address issues such as the sustainable take of culturally significant species, and supporting Traditional Owner cultural practice in the conservation and management of the Great Barrier Reef. The agreements incorporate traditional and contemporary scientific knowledge and environmental management for the ongoing protection of the Great Barrier Reef. TUMRAs are used by Traditional Owners as a formal tool to conserve and protect species and ecosystems critical to the health of people, culture and country.

Agreements can incorporate specific management strategies for the conservation and sustainable use of key species, as well as habitats. Other management activities that Traditional Owners may identify in their agreement implementation plan include restoring and maintaining waterways and coastal ecosystems; maintaining and protecting significant heritage values including sites; sharing and documenting traditional ecological knowledge, culture and language; and research and monitoring of sea country, including through partnerships with managing agencies and leading scientific institutions.

There are currently seven TUMRAs covering about 13 per cent of the Region. They include coverage over traditional sea country estates of Wuthathi; Lama Lama; Yuku-Baja-Muliku; Yirrgandyji; Girringun; Woppaburra; and Port Curtis Coral Coast.

TUMRAs and ILUAs operate for a set time, after which the agreements and their timeframes are renegotiated.

Supporting community-based management of sea country — Lama Lama people

Traditional Use of Marine Resources Agreements — a management tool available to Traditional Owners — recognise traditional lore, customary rights and traditional ecological knowledge in managing sea country through a formal partnership arrangement with the Authority and the Queensland Government. The agreements are developed by Traditional Owners to conserve biodiversity and protect their cultural and natural heritage values. The process of developing a marine resources agreement is managed by Traditional Owners, with support from the Authority, involving extensive consultation and negotiation within the Traditional Owner group. Through the structured planning process, the group documents its structure, governance, history, lore, custom and aspirations for managing sea country.

The Authority supports implementation of Traditional Use of Marine Resources Agreements by helping communities to develop implementation and compliance plans. In some areas, such as the Giringun region and Port Curtis Coral Coast, these plans have been incorporated into and implemented on country through Commonwealth-funded Indigenous ranger programs.

In 2013 — after a three year development phase — Lama Lama Traditional Owners had a Traditional Use of Marine Resources Agreement accredited with the Authority and the Queensland Government. The group looks forward to putting many of its plans into action through the partnership arrangement with the Authority.

"This is an exciting time as we work to implement our ideas and thoughts to manage our sea country resources in the best possible way, not only for current Lama Lama people but for our future generations as well."



Lama Lama Traditional Owners, at Maarpa Island

During the development of their agreement, the Lama Lama people outlined how they plan to manage sea country resources such as turtle and dugong, and identified and documented culturally important areas of their sea country. Community meetings provided opportunities for Lama Lama Traditional Owners to come together, reach consensus and discuss aspirations for management of their sea country including hunting, conservation measures, science partnerships, future priorities and economic opportunities.

Meetings on sea country provided an important opportunity for the group, as elders and children have been able to visit various culturally significant sites within Princess Charlotte Bay. Children were shown the Marpa (Cliff) Islands and rock art on Ronganhū. They also explored the islands and talked about custom and culture.

The Authority supported the Lama Lama Traditional Owners' recent successful application for a Fisheries

Research and Development Corporation Indigenous Development Scholarship. The scholarship will sponsor a Lama Lama representative to visit a Pacific Island community to exchange information and learn about its ways of sea country management, traditional ecological knowledge, partnerships other communities have established with groups such as conservation volunteers; and how communities have established turtle and dugong ecotourism. Recognising the value of the knowledge exchange trip, the Authority is sponsoring an additional two Lama Lama Traditional Owners to join the trip. The information can then be shared with the broader Lama Lama community. The Authority will be the host organisation and will provide mentoring as well as technical and financial support. The scholarship will also sponsor five Lama Lama land and sea rangers to visit the Torres Strait Regional Authority's Land and Sea Management Unit to complete their coxswain training, with technical and mentoring support from the Authority.



Lama Lama children playing at Maarpa Island

Establishing relationships with James Cook University researchers has also been identified as a priority for the Lama Lama Traditional Owners. The possibility of researching inshore dolphins has already been investigated and resulted in the university providing dolphin identification training to the group. It has also led to a plan to bring a research vessel to Port Stewart to work with the rangers to undertake research on Lama Lama sea country.

Site specific management arrangements

Site specific management arrangements are localised plans for use of a particular site. They guide decision makers and the public. They are a form of policy, developed by the Authority under section 7(4) of the GBRMP Act. They are not legislative instruments.

Site specific management arrangements identify significant values of the specific site and describe current management arrangements for these sites, concentrating on managing specific use issues and cumulative impacts at the site.

Review of site specific management arrangements falls within the formal control process undertaken by the Authority (see Section 6.2.13).

Site infrastructure

On-ground infrastructure is installed to manage use and protect the values of individual sites throughout the Marine Park. For example, facilities such as moorings, no anchoring areas and transit lanes support sustainable use of popular sites within planning areas and elsewhere. Site infrastructure is installed and maintained by the Authority and the Queensland Government through the joint Field Management Program.

3.6.2 System-based regulatory tools

The Authority utilises a range of system-based regulatory tools in its management of the Great Barrier Reef. These include its Permission System, fees and charges, audit and compliance, and statutory monitoring, evaluation and reporting programs.

Permissions

Permissions facilitate opportunities for use of the Marine Park, and are a tool to reduce impacts, separate potentially conflicting activities, collect data for planning and monitor potentially damaging activities. They are issued mainly for tourism activities, dredging and dredge material disposal, and infrastructure (for example, jetties and marinas). Harvest (dive-based) fishery operations within the Marine Park require a Marine Park permit, as do netting activities (other than bait netting) in the Special Management Area within Princess Charlotte Bay. Any developmental fishery program would also require a permit from the Authority.

As part of the permitting process, there is formal environmental impact assessment under the Act for evaluating the likely possible risks or impacts to the environment from a proposed activity or development. Common activities where a detailed assessment process is undertaken include, but are not limited to, the construction and operation of pontoons, jetties, moorings, pipelines and marinas, as well as dredging. The assessment criteria include ecological, social and economic considerations, Traditional Owner interests, as well as current and future use of the proposed location. These assessments will continue to be informed by the best available information using contemporary assessment methods including, where appropriate, modelling and mapping to understand the cause-and-effect relationships of impacts on values. A detailed description of the Authority's Permission System is provided in Part C of the Program Report.

Joint Queensland Government–Authority permits are issued for activities which operate across jurisdictions. Fisheries licences are issued by the Queensland Government.

New permissions are generally granted for one year. This allows time to establish the operation, and provides the applicant and the Authority an opportunity to review the operation.

Existing permission holders who apply to continue the same operation and satisfy the assessment requirements are generally granted a permission for six to 15 years, depending on the activities to be conducted and the level of environmental certification they have achieved from a third party certification body.

Permission assessment and decision process

The Great Barrier Reef Marine Park Regulations 1983 (the GBRMP Regulations) describe how permissions apply to the conduct of activities in the Great Barrier Reef Marine Park, and set out the statutory requirements for permissions including:

- applications for a permission, including advertising of applications
- consideration of applications, including mandatory and discretionary considerations when deciding whether or not to grant a permission
- granting and refusing permissions
- form, term and condition of permissions
- transfer, modification, suspension and revocation of permissions
- offence provisions.

For each permit application made, the Authority undertakes an assessment of the nature and scale of activities and makes a determination based on the acceptability of those activities on the environment.

There are four key phases in the permission assessment and decision process: scoping, assessment, decision, auditing and compliance. A brief description of each of these steps is provided below, and in more detail within Chapter 13.

Site specific management arrangements

Site specific management arrangements are localised plans for use of a particular site. They guide decision makers and the public. They are a form of policy, developed by the Authority under section 7(4) of the GBRMP Act. They are not legislative instruments.

Site specific management arrangements identify significant values of the specific site and describe current management arrangements for these sites, concentrating on managing specific use issues and cumulative impacts at the site.

Review of site specific management arrangements falls within the formal control process undertaken by the Authority (see Section 6.2.13).

Site infrastructure

On-ground infrastructure is installed to manage use and protect the values of individual sites throughout the Marine Park. For example, facilities such as moorings, no anchoring areas and transit lanes support sustainable use of popular sites within planning areas and elsewhere. Site infrastructure is installed and maintained by the Authority and the Queensland Government through the joint Field Management Program.

3.6.2 System-based regulatory tools

The Authority utilises a range of system-based regulatory tools in its management of the Great Barrier Reef. These include its Permission System, fees and charges, audit and compliance, and statutory monitoring, evaluation and reporting programs.

Permissions

Permissions facilitate opportunities for use of the Marine Park, and are a tool to reduce impacts, separate potentially conflicting activities, collect data for planning and monitor potentially damaging activities. They are issued mainly for tourism activities, dredging and dredge material disposal, and infrastructure (for example, jetties and marinas). Harvest (dive-based) fishery operations within the Marine Park require a Marine Park permit, as do netting activities (other than bait netting) in the Special Management Area within Princess Charlotte Bay. Any developmental fishery program would also require a permit from the Authority.

As part of the permitting process, there is formal environmental impact assessment under the Act for evaluating the likely possible risks or impacts to the environment from a proposed activity or development. Common activities where a detailed assessment process is undertaken include, but are not limited to, the construction and operation of pontoons, jetties, moorings, pipelines and marinas, as well as dredging. The assessment criteria include ecological, social and economic considerations, Traditional Owner interests, as well as current and future use of the proposed location. These assessments will continue to be informed by the best available information using contemporary assessment methods including, where appropriate, modelling and mapping to understand the cause-and-effect relationships of impacts on values. A detailed description of the Authority's Permission System is provided in Part C of the Program Report.

Joint Queensland Government–Authority permits are issued for activities which operate across jurisdictions. Fisheries licences are issued by the Queensland Government.

New permissions are generally granted for one year. This allows time to establish the operation, and provides the applicant and the Authority an opportunity to review the operation.

Existing permission holders who apply to continue the same operation and satisfy the assessment requirements are generally granted a permission for six to 15 years, depending on the activities to be conducted and the level of environmental certification they have achieved from a third party certification body.

Permission assessment and decision process

The Great Barrier Reef Marine Park Regulations 1983 (the GBRMP Regulations) describe how permissions apply to the conduct of activities in the Great Barrier Reef Marine Park, and set out the statutory requirements for permissions including:

- applications for a permission, including advertising of applications
- consideration of applications, including mandatory and discretionary considerations when deciding whether or not to grant a permission
- granting and refusing permissions
- form, term and condition of permissions
- transfer, modification, suspension and revocation of permissions
- offence provisions.

For each permit application made, the Authority undertakes an assessment of the nature and scale of activities and makes a determination based on the acceptability of those activities on the environment.

There are four key phases in the permission assessment and decision process: scoping, assessment, decision, auditing and compliance. A brief description of each of these steps is provided below, and in more detail within Chapter 13.

The purpose of the **scoping phase** is to proactively discuss the initial concepts of a proposed action in order to explain regulatory arrangements and identify potential mitigations. For actions which may have a significant impact on the Marine Park, including matters of national environmental significance, reference is made to relevant GBRMP Act and EPBC Act guidance material. A permit application assessment fee and accompanying permit application form are provided, and must contain sufficient information to enable a clear understanding of the intended action.

The purpose of the **assessment phase** is to enable an informed decision on whether or not a permit will be granted to undertake an action within the Great Barrier Reef Marine Park. During the assessment phase, the Authority considers criteria outlined in the GBRMP Regulations, and relevant GBRMP Act and EPBC Act guidance material.

The purpose of the **decision phase** is to grant or refuse a permission based on information provided within the assessment phase. A permission may be granted with conditions consistent with the objects of the GBRMP Act, including the principles of ecologically sustainable development and the protection of matters of national environmental significance.

The purpose of the **audit and compliance phase** is to monitor the environmental performance of permitted activities against permit conditions. Where the results of performance monitoring conditions have not been met, compliance action may be undertaken.

The Environment Protection and Biodiversity Conservation Act 1999

Certain activities also require assessment and approval under the EPBC Act. The EPBC Act provides the legal framework for the protection and management of nationally and internationally important flora, fauna, ecological communities, and heritage places. These are defined under the EPBC Act as matters of national environmental significance. The EPBC Act also protects, among other matters, the environment on areas of Commonwealth land and marine environment. Both of these categories of 'protected matters' are the subject of this strategic assessment (protected matters are defined in Part 3, the EPBC Act).

An action — including some actions for which permits are sought under the GBRMP Act — will require approval from the Minister for the Environment if the action has, will have, or is likely to have, a significant impact on matters protected under Part 3 of the EPBC Act. There is an onus on the proponent (person responsible for the action) of an activity to refer the action to the Minister for the Environment if it is likely that there will be a significant impact on one or more of these matters. This is typically done on a project-by-project basis.

The Department of the Environment's EPBC Act Significant Impact Guidelines 1.1³ describe the meaning of 'significant impact'. Under the guidelines, a significant impact is one which could be considered to be important, notable or of consequence, in terms of the context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. To be likely, it is sufficient that a significant impact on the environment is a real and not a remote chance or possibility.

The EPBC Act Significant Impact Guidelines 1.1 identify the key considerations that should inform whether or not a proposed action should be referred. These considerations include whether protected matters are present in the area of interest, whether they may be impacted (directly or indirectly), and whether there are measures that could be taken to avoid or mitigate any impacts to reduce those impacts to below the significance threshold. Consideration should also be given to the sensitivity, value and quality of the environment, as well as the intensity, duration, magnitude and geographic extent of the impacts. There are a range of assessment processes which must then be followed for actions determined as having significant impacts.

Public comment is invited on both initial referrals as well as draft environmental impact assessments. In addition, proponents must publish their referrals and assessments, including their responses to public comments, and the Minister for the Environment must publish decisions and provide statements of reasons, if requested.

The EPBC Act also provides for compliance and enforcement of requirements. The Department of the Environment undertakes positive enforcement mechanisms through information sharing and promotion, and also conducts investigations and pursues enforcement where breaches of the legislative requirements may occur. The Minister for the Environment may revoke approvals or issue additional conditions to ensure there are not unacceptable impacts on matters protected under Part 3 of the EPBC Act.

Inter-Government administrative arrangements for permits

The Authority and the Queensland Parks and Wildlife Service (QPWS) operate a joint application and permit assessment process for the determination of permissions under the GBRMP Act and *Marine Parks Act 2004* (Qld). Responsibilities at various stages are shared between the Authority and QPWS, however, the Authority takes the lead role in processing applications and preparing decision documentation. The flow chart shown in Figure 3.3 depicts the respective responsibilities and timeframes.

The Authority and the Queensland Government may elect to conduct separate marine park permit processes for development proposals where, for example, a project is declared a 'coordinated project' under the *Queensland State Development and Public Works Organisation Act 1971*. This generally applies to complex or significant infrastructure development proposals involving multiple approvals and potentially significant environmental effects.

The Authority provides the Department of THE Environment with advice on referrals for actions outside the Great Barrier Reef catchment to determine if the action is likely to have a significant impact on relevant matters of national environmental significance in or adjacent to the World Heritage Area.

If an action is deemed to require approval under the EPBC Act (that is, deemed to be a 'controlled' action) the Authority provides advice to the Department throughout the assessment process.

Since 2001, the Authority has provided advice on over 250 EPBC Act referrals and assessments.

In November 2009, the Great Barrier Reef Marine Park became a Matter of National Environmental Significance under the EPBC Act. To facilitate an integrated and streamlined application and assessment process under the EPBC Act and the GBRMP Act, a Memorandum of Understanding between the Department of the Environment and the Great Barrier Reef Marine Park Authority was established to enable:

- the integration of environmental impact assessments and approval requirements under both the *Great Barrier Reef Marine Park Act 1975* and the *Environment Protection and Biodiversity Conservation Act 1999*
- consistent and legally effective decision making
- compliance to the statutory responsibilities of the Minister, the Department of the Environment and the Authority
- efficient and cost effective legislative administration.

Administrative processes for permit application and assessment between the Department of the Environment and the Authority are outlined in Figure 3.4.

Policy

Developed by the Authority under section 7(4) of the GBRMP Act, policies guide decision makers and the public. They are not legislative instruments.

They detail the way in which the Authority intends to manage the Marine Park or perform its other functions, and the way in which the Authority considers that the Act or other legislative instruments apply.

There are three broad categories of guidance documents:

- **Policies:** give effect to the Authority's responsibilities, functions and powers outlined in the GBRMP Act, for example, managing environmental impacts.
- **Position Statements:** outline the Authority's position on issues where the Authority has a strong interest, but does not have legislative powers, for example, emerging risks from shipping.
- **Guidelines:** generally support the Authority's policies or position statements, and outline the Authority's process on certain issues, for example, managing visitation to seabird breeding islands.

A comprehensive list of policies, position statements and guidelines are presented in Table 3.1. Guidance documents are reviewed every four years and, if needed, updated more regularly to reflect the best available science and management, consistent with maintenance of high environmental standards.

A formal control process within the Authority regulates the development, amendment, revocation and approval of external policies and plans. Where policies or plans are likely to have a regulatory impact on business or the not-for-profit sector (such as changes to service charges, subsidies, compliance costs, restriction on competition), a 'Regulatory Impact Statement' is developed in consultation with the Office of Best Practice Regulation. Prior to the preparation of final drafts, every new or significantly reviewed external policy or plan is additionally required to be made available for public comment for a minimum period of 28 days.

This formal control process enables the review of external policies and plans every four years or sooner, as prompted by changes in legislation, standards, whole of government policy, advancements in scientific knowledge and/or advancements in better environmental management practices.

Table 3.2 outlines key policies relevant to the assessment of environmental impacts of activities on the Region's values, including matters of national environmental significance.

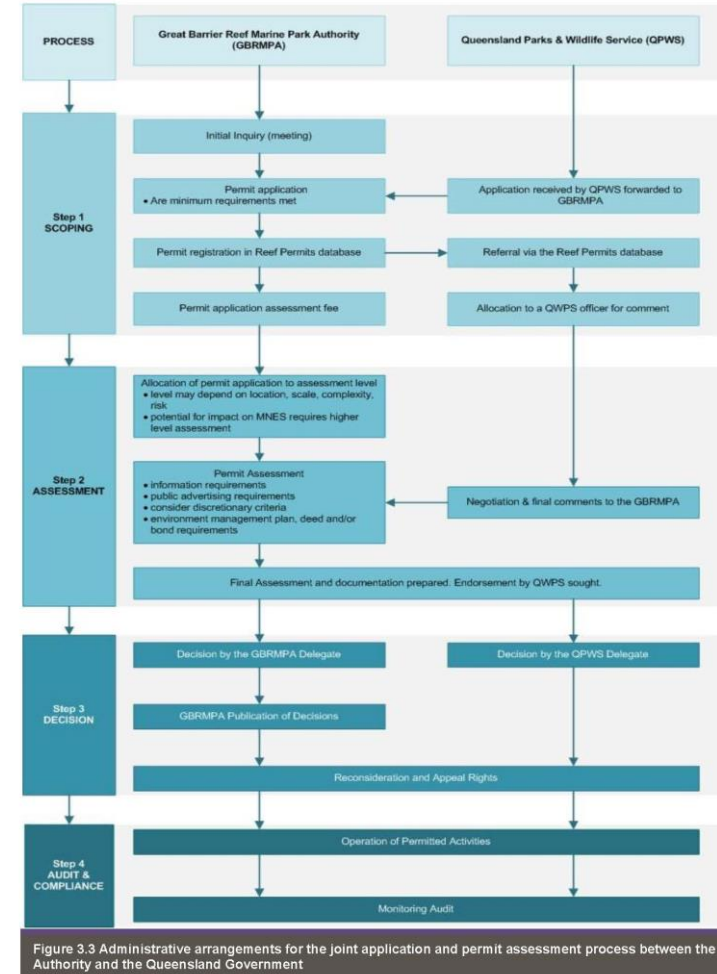


Figure 3.3 Administrative arrangements for the joint application and permit assessment process between the Authority and the Queensland Government

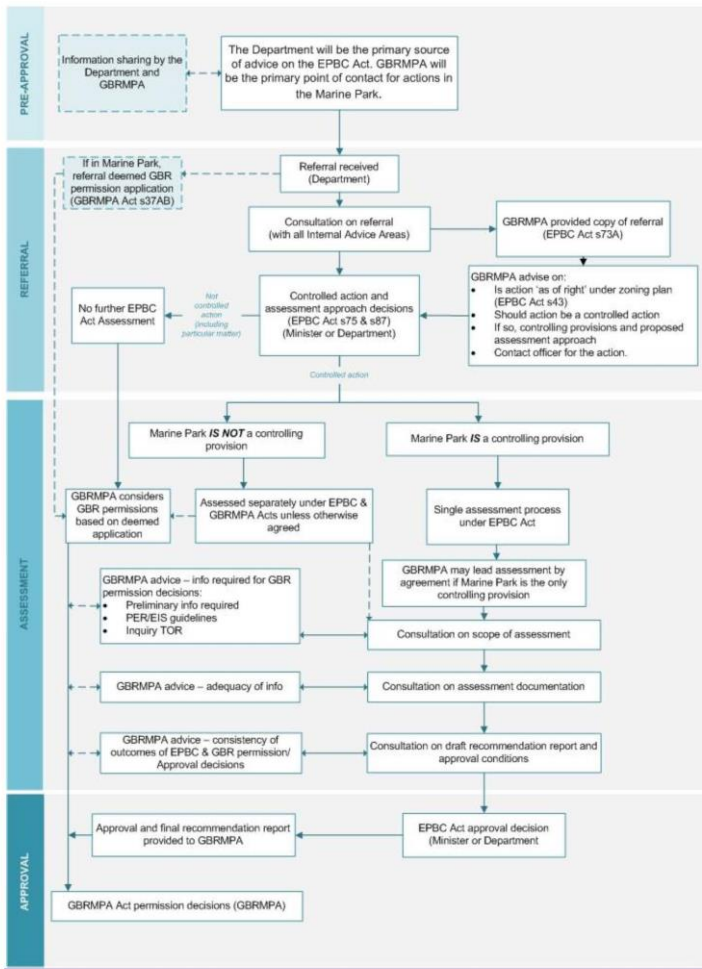


Figure 3.4 Administrative arrangements for environmental assessments under the GBRMP Act and EPBC Act

Table 3.2 Program guidance documents and *Environment Protection and Biodiversity Conservation Act 1999* Part 3 (matters of national environmental significance)

DOCUMENT	DESCRIPTION OF CONTENT
POLICIES	
Environmental Impact Management Policy	<p>Sets the framework for assessment, mitigation and management of environmental impacts associated with development activities in the Marine Park and the World Heritage Area.</p> <p>It provides a transparent, consistent and contemporary approach to environmental impact management of major developments in the Great Barrier Reef Marine Park. The Authority has developed the policy based on historical Marine Park Authority decisions, best available scientific and management information, and community consultation.</p>
Environmental Assessment and Management Risk Assessment Guidelines	<p>Provides guidance on the systematic application of risk assessment to inform decisions about the impacts human activities may have on the environment.</p> <p>The Authority has developed this guidance based on the requirements of the Australian and international risk management standard.</p>
Dredging and Spoil Disposal Policy	<p>Provides a transparent, consistent and contemporary approach to environmental impact management of dredging and spoil disposal in the Great Barrier Reef Marine Park. The Authority has developed the policy based on best available scientific and management information, and community consultation.</p> <p>Guides assessment of the impact of dredging and spoil disposal in accordance with the Environmental Impact Management Policy.</p>
Structures Policy	<p>Provides a transparent, consistent and contemporary approach to environmental impact management of structures in the Great Barrier Reef Marine Park. The Authority has developed the policy based on historical Marine Park Authority decisions, best available scientific and management information, and community consultation.</p> <p>Guides assessment of the impact of structures in accordance with the Environmental Impact Management Policy.</p>
Sewage Discharges from Marine Outfalls to the Great Barrier Reef Marine Park Policy	<p>Considered when assessing the impact of sewage discharges in accordance with the Environmental Impact Management Policy.</p> <p>Purpose is to minimise the potential impact of treated sewage discharges from marine outfalls in the Great Barrier Reef Marine Park. The Policy has been developed in consultation with the Queensland Government, and is complementary with the state policy where it applies to the discharge of treated sewage via marine outfalls to the Marine Park.</p>
Moorings in the Marine Park	<p>Considered when assessing the impact of moorings in accordance with the Environmental Impact Management Policy.</p> <p>The purpose of this policy is to detail the Authority's framework for the consistent and effective use and management of moorings in the Marine Park.</p> <p>The issues covered by the policy include availability of moorings, site planning requirements, standard mooring buoys, design, installation, maintenance, relocation and removal of moorings, moorings best practice and permit related matters.</p>
Managing Scientific Research in the Marine Park	<p>Considered when assessing the impact of scientific research in accordance with the Environmental Impact Management Policy.</p> <p>The issues covered by this policy include: umbrella and institutional permits; permit duration; native title; permit fees; scientific research in the Scientific Research Zone; the Buffer Zone; the Marine National Park Zone; and the Preservation Zone.</p>
Managing Activities that include the direct take of a Protected Species from the Marine Park	<p>Considered when assessing the impact of collection of protected species in accordance with the Environmental Impact Management Policy.</p> <p>The issues covered by this policy include: assessment considerations such as the conservation status of the species; zoning of the area of take; relevance to the conservation management of the Marine Park; permission information; provision for sick, injured or at risk animals; guidelines; photography; filming or sound recording; and public display for education; tourism interpretation; research and broodstock collection for aquaculture.</p> <p>The direct take of a Protected Species for the purpose of traditional use of marine resources is not addressed in this policy.</p>

DOCUMENT	DESCRIPTION OF CONTENT
POSITION STATEMENTS	
Translocation of Species in the Great Barrier Reef Marine Park	Considered when assessing activities under the Environmental Impact Management Policy that may involve translocation of species. The desired outcome of this position statement is to reduce the risks associated with translocation-related activities in the Marine Park through a process of risk management, including a case-by-case activity risk assessment, and requiring the development of a translocation proposal for each relevant permit application.
Aquaculture	Considered when assessing the impact of aquaculture activities in accordance with the Environmental Impact Management Policy. The position statement provides a brief background on actual and potential impacts of aquaculture operations in the Marine Park, and a guiding statement of the approach that the Authority will take in assessing applications for aquaculture operations.
GUIDELINES	
Permits Information Bulletin — No Structures Sub-zones	Considered when assessing the impact of structures in accordance with the Environmental Impact Management Policy. The objective of No Structure Sub-zones is to ensure that some areas of the Great Barrier Reef Marine Park remain: a) in a natural state, largely unaltered by human works b) free from structures and permanently-moored facilities, except for approved vessel moorings, approved management, research and monitoring facilities and approved navigational markers which are essential for the protection, wise use, understanding and enjoyment of the Marine Park.
Water Quality Guidelines for the Great Barrier Reef Marine Park	Considered when assessing activities under the Environmental Impact Management Policy that may impact water quality. These guidelines have been established to support initiatives to halt and reverse the decline in the quality of water entering the Great Barrier Reef. The guidelines confirm the values of the World Heritage Area and recognise the protection of the ecological systems of the Great Barrier Reef World Heritage Area from water-borne contaminants as one of the critical issues for management.
The use of Hydrodynamic Numerical Modelling for Dredging Projects in the Great Barrier Reef Marine Park	Provides guidance on the use of three-dimensional hydrodynamic numerical models in the Great Barrier Reef Marine Park. These guidelines have been established to inform proponents about the specific hydrodynamic modelling and dredge plume modelling expected to be undertaken in order to predict the extent, intensity and persistence of dredge-generated sediment plumes, and the extent, severity and duration of the resultant impacts to benthic habitats.

Fees and charges

Three main fees and charges apply in the Marine Park:

- The cost of assessing an application for a permit for commercial activities is partly recovered through payment of a permit application assessment fee.
- The environmental management charge applies to some commercial activities operating under a permit issued by the Authority. The revenue is applied to Marine Park management.
- Bonds (usually as a bank guarantee) may be held by the Authority to cover the risks associated with a proposed activity. It primarily relates to recovery, restoration and/or removal of an activity/structure, and is designed to act as a financial incentive for a permission holder to meet required performance levels.

Compliance

Compliance activities — both through education and enforcement — encourage adherence to legal requirements such as those contained in permits, plans of management and zoning, helping to ensure balanced and sustainable use of the Marine Park. The Field Management Program, jointly undertaken by the Authority and the Queensland Government, plays a key role in compliance activities in the Region, including in relation to fishing. A cooperative multi-agency approach allows a broad range of legislation and compliance tools to be used, with vessel and aerial surveillance activities by all agencies coordinated by the Field Management Compliance Coordination Unit. The Authority works closely with Traditional Owners in relation to traditional use of marine resources and in managing any risks associated with poaching of species of conservation concern (for example, dugongs and marine turtles), including through Indigenous community compliance liaison officers⁴. Informal activities such as under the community-based Eyes and Ears Incident Reporting program also help inform compliance actions.

Field management operations

Field management activities, as part of the joint Australian and Queensland government Field Management Program, underpin regulatory approaches. They are a significant proportion of the Authority's work program and are at the frontline of efforts to protect the Great Barrier Reef and ensure use remains ecologically sustainable. Activities that support environmental regulation include: on-ground visitor management; visitor infrastructure and facilities (for example, moorings and reef protection markers); compliance; monitoring and assessment of habitats and vulnerable species; and incident response (for example, extreme weather events and shipping incidents).

Statutory reporting

The Authority has a number of statutory, national and international obligations to report on the Great Barrier Reef, its condition and management arrangements. Analysis and reporting also provides direction for strategic planning within the Authority. Examples of reporting include:

- an annual report to the Parliament of Australia
- five-yearly reporting, including on reef condition, resilience and management effectiveness, through the *Outlook Report* (see below)
- responses to government priorities for example, this strategic assessment
- international reporting obligations such as contributing to world heritage reporting.

Great Barrier Reef Outlook Report — GBRMP Act, Section 54

- The Authority must prepare and give to the Minister a report in relation to the Great Barrier Reef Region every five years. The first report must be given to the Minister by 30 June 2009.
- The report must be prepared in accordance with the regulations (if any).

Content of report

- The report must contain the following matters:
 - an assessment of the current health of the ecosystem within the Great Barrier Reef Region and of the ecosystem outside that region to the extent it affects that region;
 - an assessment of the current biodiversity within that region;
 - an assessment of the commercial and non-commercial use of that region;
 - an assessment of the risks to the ecosystem within that region;
 - an assessment of the current resilience of the ecosystem within that region;
 - an assessment of the existing measures to protect and manage the ecosystem within that region;
 - an assessment of the factors influencing the current and projected future environmental, economic and social values of that region;
 - an assessment of the long-term outlook for the ecosystem within that region;
 - any other matter prescribed by the regulations for the purposes of this paragraph.

Great Barrier Reef Outlook Report — GBRMP Regulations, Section 116A

- For paragraph 54(3)(l) of the Act, an assessment of the heritage values of the Great Barrier Reef Region is prescribed as a matter that must be contained in the Great Barrier Reef Outlook Report.
- An **assessment of the heritage values**, of the Great Barrier Reef Region, includes the following:
 - an assessment of the current heritage values of the region;
 - an assessment of the risks to the heritage values of the region;
 - an assessment of the current resilience of the heritage values of the region;
 - an assessment of the existing measures to protect and manage the heritage values of the region;
 - an assessment of the factors influencing the current and projected future heritage values of the region;
 - an assessment of the long-term outlook for the heritage values of the region.
- In this regulation:

heritage values, of the Great Barrier Reef Region, include the following values for the region:

 - the Commonwealth heritage values;
 - the heritage values;
 - the Indigenous heritage values;
 - the national heritage values;
 - the world heritage values.

The importance of connectivity

Connectivity between and within species and habitats is a key process in the Great Barrier Reef ecosystem. Connections may occur over short periods, from generation to generation, over seasons or in cycles. There are connections between estuarine and inshore habitats and those further offshore; north-south connections between habitats; connections between open water and seabed habitats; and larger scale connections to environments outside the Region such as the Hervey Bay area and further south, Torres Strait and the Coral Sea. Connectivity is important to every aspect of the Reef, including processes as different as nutrient flows, migration, larval dispersal and gene flow. Species or habitats with low natural connectivity are likely to be especially vulnerable to disturbance or local extinctions.

Migration is a key component of connectivity on a broad scale. A number of listed species live in the Reef for only part of the year or for part of their life — this includes the humpback whale, green, loggerhead and hawksbill turtles, and some seabirds. Some fish species, like marlin, are also highly mobile and travel well beyond the Region for parts of their life cycle.¹⁹⁶ Conservation threats to these migratory species often occur well beyond the Region. For example, some marine turtles that nest or forage in the Region may be injured or killed in areas hundreds, and even thousands, of kilometres away.^{92,102} Other species, such as dugongs, can move along the coast, especially if they are in search of food, after impacts in their regular feeding areas.^{197,198,199}

Larval corals and fishes disperse widely between reefs, usually carried by water movement, and often strongly influenced by larval behaviour.²⁰⁰ There is now definitive evidence of the larvae of two coral reef fish species transferring from areas that have been closed to fishing to adjacent fished areas. This illustrates the benefits of no-take (green) zones for reef fish conservation and sustainable harvesting.²⁰¹

The life cycles of many fish include movement between marine habitats and adjacent estuaries, pools and floodplain habitats. These species depend on these habitats remaining healthy, connected and accessible. Within the marine environment there are ecological connections between mangroves and seagrass meadows adjacent to coral reefs, including for some reef fish populations.²⁰²

Connectivity between habitats can also increase the resilience of the Reef ecosystem. For example, connectivity between mangroves and coral reefs provides benefits for herbivorous fish populations which contribute to coral reef resilience by grazing on algae.²⁰³

The loss and modification of coastal wetlands and the deterioration of connecting water bodies has reduced or severed the connectivity between marine and adjacent freshwater habitats. This makes the role of the protected wetland systems such as the Shoalwater and Corio Bays Area and the Cape Bowling Green Bay Area wetlands of international importance even more important.

Birds play a key role in connecting different ecosystems, both locally and across the oceans. On a local scale, birds distribute plant species. For example, about 63 per cent of the plant species on Milman Island in the northern Great Barrier Reef are believed to have been introduced by birds.²⁰⁴ One key species is the pied imperial pigeon which roosts on islands within the Reef at night and feeds in mainland forests during the day. Migratory waders, some of which travel from as far afield as Siberia, provide connectivity to ecosystems across the globe. As with migratory marine species, populations of waders overwintering in Australia are affected by factors in other parts of their migratory journey.

Traditional Owners describe the importance of connectivity as part of their association with their land and sea country. It encompasses the biological connectivity vital to a healthy marine environment and the cultural connectivity that links them to the natural environment.

*“Cultural value is how it is all connected and makes us connected to country”*²⁰⁵

4.10 Realising connectivity in the landscape

The Great Barrier Reef and adjacent catchment encompasses a variety of ecosystem types that are connected both spatially and temporally. The Authority has built on the information presented in the *Informing the Outlook for Great Barrier Reef Coastal Ecosystems Report*⁸⁸ and the *Coastal Ecosystem Assessment Frameworks*²⁰⁶ to map catchment coastal ecosystem areas most important for supporting the biodiversity and ecological processes of the World Heritage Area and Marine Park due to their proximity to, and connection with the ecosystems of the Great Barrier Reef (Figure 4.16).

The Authority has developed a method to categorise coastal ecosystems into distinct components based on the services and functions provided to the World Heritage Area and Marine Park²⁰⁷. The method enables an assessment of the Reef's ecological functions supported by coastal ecosystems, the risks to these functions, and the cumulative impacts at work across the catchment that are affecting the long-term health of the Great Barrier Reef over a range of scales.

The following steps were used in considering terrestrial ecosystems and their relationship to the World Heritage Area and Marine Park:

- identifying coastal ecosystems in the catchment using the *Coastal Ecosystems Assessment Framework*²⁰⁶
- describing the relationship between coastal ecosystems within an area to those adjacent to and downstream of that area

- identifying the environmental assets and characteristics, including biophysical, ecological and hydrological processes
- consideration of surface and groundwater recharge and discharge, and areas of high biodiversity value
- identifying and mapping land use constraints, natural hazards, important ecosystem types, waterways and stream orders
- identifying areas that support the Reef's biodiversity and ecological functions or contain native vegetation.

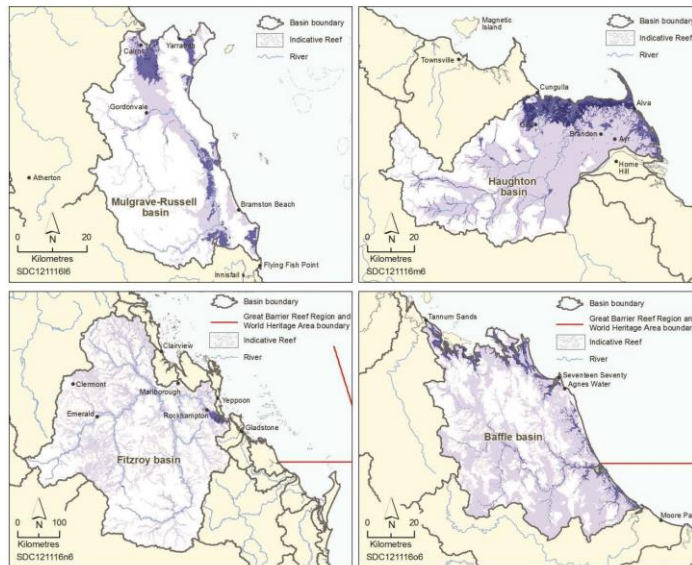


Figure 4.16 A method for identifying and prioritising coastal ecosystem functional connections to the Great Barrier Reef World Heritage Area and the Great Barrier Reef Marine Park

The maps, clockwise from top left, show (a) Mulgrave–Russell, (b) Houghton, (c) Fitzroy and (d) Baffle basins within the Great Barrier Reef catchment.

The analysis²⁰⁷ takes into account values such as habitats, likelihood of erosion, highest astronomical tide, and land use for the Mulgrave–Russell^{208,209}, Houghton^{210,211}, Fitzroy^{212,213} and Baffle^{214,215} basins. It represents the surface level only and does not include groundwater. The darker areas of the catchment shown here are of higher importance to the healthy functioning of the Great Barrier Reef ecosystem, supporting its biodiversity and ecological processes, because of their proximity to and connectivity with the Great Barrier Reef. The analysis takes into account wetlands and areas that are frequently inundated or flooded, as well as areas influenced by tidal processes including sea level changes and storm surges. It represents the surface level hydrology only and does not include groundwater.

4.11 Connections between matters of national environmental significance

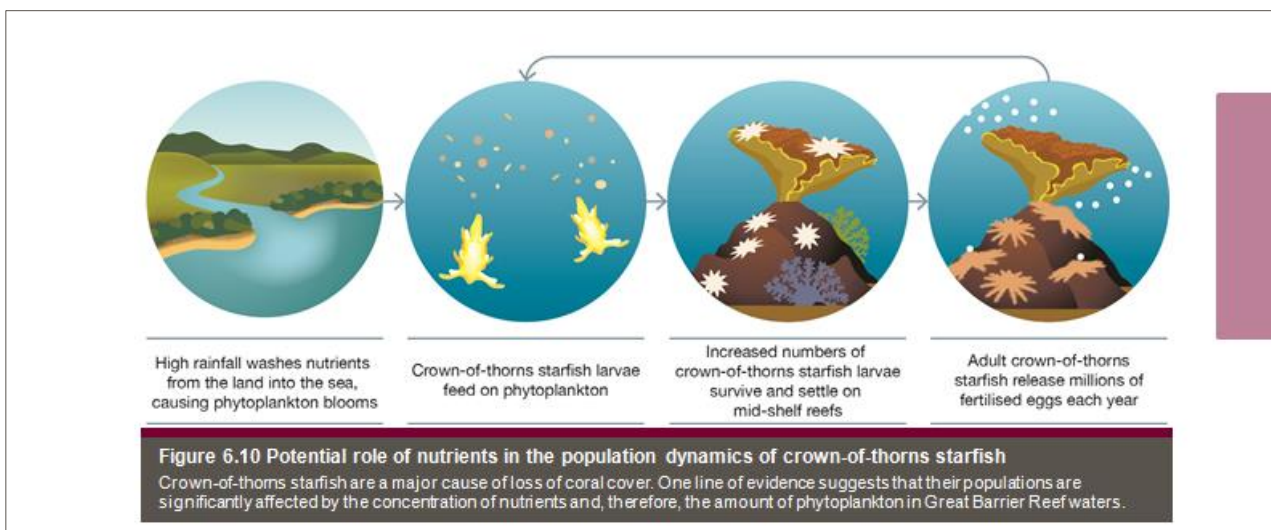
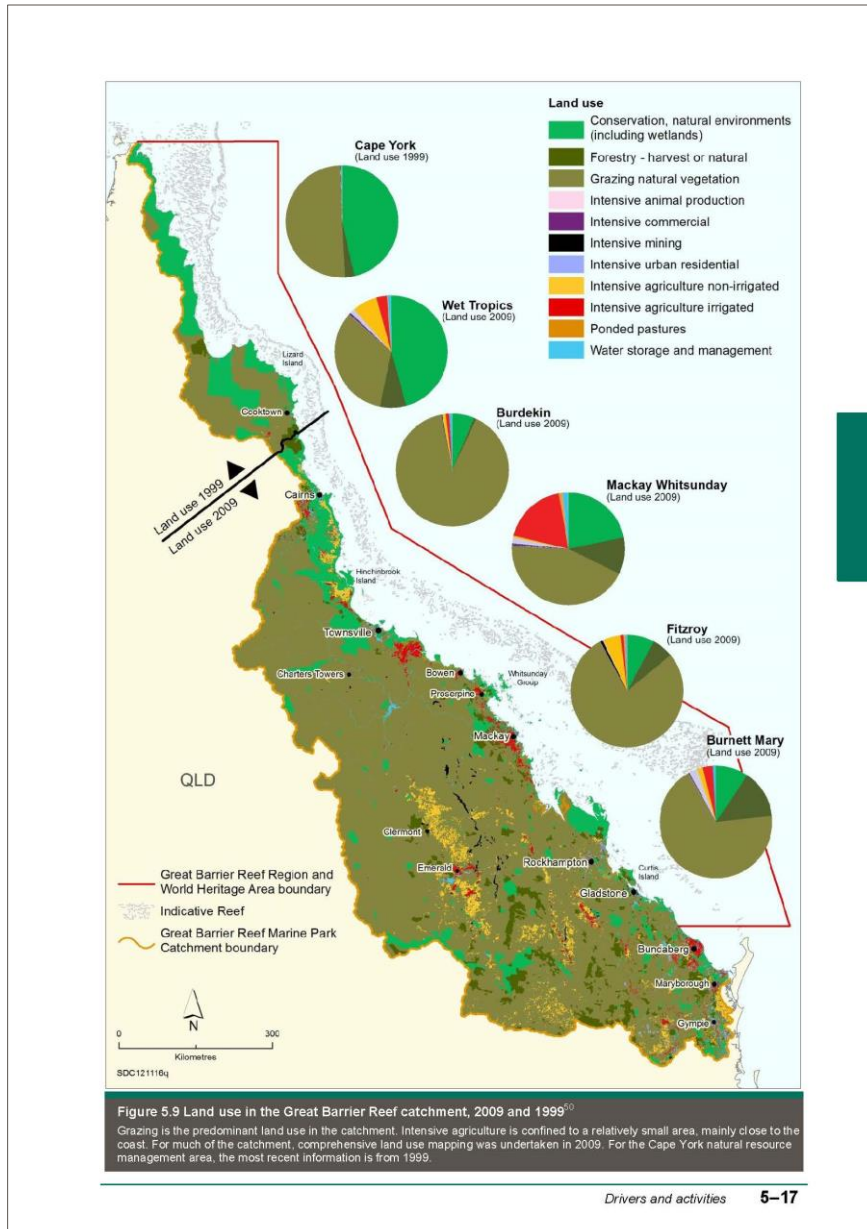
As outlined above, the matters of national environmental significance, defined and protected under the EPBC Act, range from individual listed threatened and migratory species to the entire Great Barrier Reef Marine Park and World Heritage Area. The Marine Park and World Heritage Area provide critical habitat and ecosystem processes that support the life cycles of listed species. Conversely, listed species are important natural attributes of the Marine Park's environment and the outstanding universal value of the world heritage property. Accordingly, there is substantial overlap and connections between the matters of national environmental significance relevant to the Region. In addition, the matters of national environmental significance and the values that relate to them do not occur in isolation, but are embedded within complex and dynamic systems. They are distributed throughout the Region; there is no part that does not contain values of national significance.

Table 4.9 Key environmental processes relevant to matters of national environmental significance
 For the World Heritage Area, connections are based on the Statement of Outstanding Universal Value¹. For listed species, processes that have a major supporting role in maintaining the species are shown (for example, the role that beaches play in the nesting of listed marine turtles). For wetlands of international importance, the connections shown are those discussed in the Ramsar Convention information sheet.^{2,3}

Key environmental processes	World heritage properties				Listed migratory and threatened species											Wetlands of international importance	
	Criterion I (now viii)	Criterion II (now ix)	Criterion III (now vii)	Criterion IV (now x)	Integrity	Great Barrier Reef Marine Park	National heritage places	Commonwealth marine areas	Marine turtles	Estuarine crocodiles	Whales	Dolphins	Dugongs	Sharks and rays	Seabirds		Shorebirds
Waves, currents and tides	•	•			•	•	•	•	•							•	•
Cyclones	•	•			•	•	•	•	•	•		•			•	•	•
Wind	•	•			•	•	•	•	•							•	
Sedimentation	•	•			•	•	•	•	•				•				•
Sea level	•	•			•	•	•	•	•								•
Sea temperature	•	•			•	•	•	•	•	•							
Light		•			•	•	•	•	•				•				
Nutrient cycling		•			•	•	•	•	•								•
Ocean acidity		•			•	•	•	•	•								
Freshwater inflow and salinity		•			•	•	•	•	•								•
Microbial processes		•			•	•	•	•	•								
Particle feeding		•			•	•	•	•	•								
Primary production		•			•	•	•	•	•				•				
Herbivory		•			•	•	•	•	•				•				
Predation		•			•	•	•	•	•	•	•		•	•	•		
Symbiosis		•			•	•	•	•	•								
Competition		•			•	•	•	•	•	•	•	•	•	•	•	•	
Connectivity	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•
Recruitment		•			•	•	•	•	•	•	•	•	•	•	•	•	•
Reef building	•	•	•		•	•	•	•	•								
Tectonic forces	•	•	•		•	•	•	•	•								

4.12 Summary of outcomes










- The seven matters of national environmental significance relevant to the Great Barrier Reef Region are interconnected and overlapping. They range from individual listed threatened and migratory species to the entire Great Barrier Reef Marine Park and world heritage property.
- The matters of national environmental significance are distributed throughout the Region, and there is no part that does not contain values relevant to them.
- A total of 62 key values relevant to the matters of national environmental significance in the Region are identified. Twenty key environmental processes are also identified.
- The key values and attributes are combined into one comprehensive set which forms the basis of the assessments throughout the report. They are grouped into four broad categories: biodiversity, including the Region's habitats and species; geomorphological features; Indigenous and historic heritage values; and community benefits derived from the environment.



6.4.5 Assessment of impacts on biodiversity

A detailed assessment of the effects the above impacts have had or are currently having on the key biodiversity values identified in Chapter 4 is presented in Table 6.6 and Table 6.7.

The assessment is of past and present effects on indicators, with an indication of future trend. It is recognised that this assessment is generalised and that effects on individual values are not evenly distributed across all the components that make up a value or across the Region.

Understanding Table 6.6 and Table 6.7	
Grading statements	
	No effect: No known interaction or the interaction is considered insignificant.
	Data deficient: Effects are unknown.
	Very low effect: Any effects attributable to the impact are minor or localised, with no observable effects on the values.
	Low effect: The effects of the impact are observable in some locations or to some species, but only to the extent that limited additional intervention would be required to maintain the values.
	High effect: The effects of the impact are obvious in many locations or for many species to the extent that significant additional intervention would be required to maintain the values.
	Very high effect: The effects of the impact are widespread to the extent that the values are severely compromised.
Trend	
	Increasing: The intensity and/or spatial extent of the impact is increasing.
	Stable: The intensity and/or spatial extent of the impact is staying about the same.
	Decreasing: The intensity and/or spatial extent of the impact is decreasing.

This process is used as the first step to identify the impacts having the most effect on the Region's values. It is these impacts that are the focus of exploring cumulative impacts.

The future risk that these impacts present to the Region's values is assessed in Chapter 10.

Table 6.6 Past and present effects of impacts on Great Barrier Reef habitats

The assessments presented are based on the information presented in Section 6.4 above. The references cited there also apply to this assessment. * indicates impact is likely to be the result of a variety of activities.

Impacts	Future trend of the impact	Habitats									
		Islands	Beaches and coastline	Mangrove forests	Seagrass meadows	Coral reefs (<30m)	Deeper reefs	Lagoon floor	Shoals	Hellfire banks	Open waters
Climate change											
Altered ocean currents	→										
Cyclone activity	→										
Increased sea temperature	→										
Ocean acidification	→										
Rising sea level	→										
Catchment run-off											
Increased freshwater inflow	→										
Nutrients from catchment run-off	↔										
Outbreak of crown-of-thorns starfish	→										
Pesticides from catchment run-off	↔										
Sediments from catchment run-off	↔										
Urban and industrial discharge	→										
Degradation of coastal ecosystems											
Acid sulphate soils	→										
Artificial barriers to flow	→										
Atmospheric pollution	→										
Coastal reclamation	→										
Light impacts (artificial)	→										
Modifying supporting terrestrial habitats	→										
Direct use											
Dredging	→										
Dumping and resuspension of dredge material	→										
Exotic species and diseases*	→										
Extraction — death of discarded species	↔										
Extraction — fishing spawning aggregations	↔										
Extraction — herbivores	↔										
Extraction — lower order predators	↔										
Extraction — lower trophic orders	↔										
Extraction — top order predators	↔										
Illegal fishing and poaching	→										
Marine debris*	→										
Noise pollution	→										
Outbreak of disease*	→										
Outbreak or bloom of other species*	→										
Physical damage — fishing	↔										
Physical damage — other	→										
Physical damage — ship grounding	→										
Spill — large chemical	→										
Spill — large oil	→										
Spill — small chemical or oil	→										
Vessel strike on wildlife	→										
Waste discharge from vessels	→										
Wildlife disturbance	→										

Table 6.7 Past and present effects of impacts on Great Barrier Reef species and groups of species

The assessments presented are based on the information presented in Section 6.4 above. The references cited there also apply to this assessment. * indicates impact is likely to be the result of a variety of activities.

Impacts	Future trend of the impact	Species and groups of species																
		Mangroves	Seagrasses	Macroalgae	Benthic microalgae	Corals	Other invertebrates	Plankton and microbes	Bony fish	Sharks and rays	Sea snakes	Marine turtles	Estuarine crocodiles	Seabirds	Shorebirds	Whales	Dolphins	Dugongs
Climate change																		
Altered ocean currents	→																	
Cyclone activity	→																	
Increased sea temperature	→																	
Ocean acidification	→																	
Rising sea level	→																	
Catchment run-off																		
Increased freshwater inflow	→																	
Nutrients from catchment run-off	↔																	
Outbreak of crown-of-thorns starfish	→																	
Pesticides from catchment run-off	↔																	
Sediments from catchment run-off	↔																	
Urban and industrial discharge	→																	
Degradation of coastal ecosystems																		
Acid sulphate soils	→																	
Artificial barriers to flow	→																	
Atmospheric pollution	→																	
Coastal reclamation	→																	
Light impacts (artificial)	→																	
Modifying supporting terrestrial habitats	→																	
Direct use																		
Dredging	→																	
Dumping and resuspension of dredge material	→																	
Exotic species and diseases*	→																	
Extraction — death of discarded species	↔																	
Extraction — fishing spawning aggregations	↔																	
Extraction — herbivores	↔																	
Extraction — lower order predators	↔																	
Extraction — lower trophic orders	↔																	
Extraction — top order predators	↔																	
Illegal fishing and poaching	→																	
Marine debris*	→																	
Noise pollution	→																	
Outbreak of disease*	→																	
Outbreak or bloom of other species*	→																	
Physical damage — fishing	↔																	
Physical damage — other	→																	
Physical damage — ship grounding	→																	
Spill — large chemical	→																	
Spill — large oil	→																	
Spill — small chemical or oil	→																	
Vessel strike on wildlife	→																	
Waste discharge from a vessel	→																	
Wildlife disturbance	→																	

incident that involved digging up of remains.³²⁰ Bindal Traditional Owners have also reported that Ross Creek fish traps have disappeared due to reclamation, meaning it is no longer possible to pass on this traditional practice to future generations.³¹⁷ Another example is at Clump Point near Mission Beach — a culturally important story place. Part of the story involves the shape of the bay and headland; changes due to development mean the storyline is broken and the significant cultural site has been affected.³²¹

Traditional Owners have adapted to the changing environment as the current Great Barrier Reef was formed. When sea level was much lower, Traditional Owners inhabited what is now the sea floor of the Great Barrier Reef. Any disturbance of the sea floor is considered to impact Indigenous cultural and heritage values. There can be sea burial sites, sacred sites and sites of other cultural significance in the areas where **dredging** is undertaken and, previously, inadequate consultation with Traditional Owners has meant some of these values have been affected.³²² For example, places where access channels are dredged for island resorts or communities are usually also common access points for Traditional Owners, identified and used for thousands of years. In addition, dredging activities can disturb cultural practices and sacred sites. For example, Traditional Owners raised concerns about dredging impacts on local plants and animals in Cleveland Bay.³¹⁹ Furthermore, it is reported that any prehistoric archaeological remains in that port area would likely have been destroyed by the prolonged and repeated dredging.³¹⁹

For Traditional Owners, the reefs of the Great Barrier Reef have many stories associated with them. Cultural practices and lore linked with story places are 'broken' or affected if there is a **ship grounding** on those reefs. Particular examples include Piper Reef where the *Peacock* ran aground in 1996³²³ and the *Doric Chariot* in 2002.³²⁴ Piper Reef is an important story place for its Traditional Owners and these groundings are likely to have affected the cultural heritage of the site. Sudbury Reef, where the *Bungu Terati Satu* ran aground in 2000,³²⁵ is not only a story place but an important cultural place where young men go for traditional rite of passage.³²⁶

Cyclones change land and seascapes, changing places of significance to Traditional Owners' and affecting Indigenous structures. Subsistence limits on marine resources are affected, potentially resulting in moratoria on Traditional Owner hunting and temporary changes to cultural practices.³²⁷ Cyclones have also had effects on important cultural sites. For example, cyclone Charlie (1988) and cyclone Aivu (1989) destroyed about 50 per cent of the archaeological sites recorded at Upstart Bay in 1987.³²⁸ The recent increases in **freshwater inflow** have affected areas that Traditional Owners use for subsistence. The effects on seagrass meadows and cultural keystone species, such as marine turtles and dugongs, have resulted in Traditional Owners deciding to apply moratoria on hunting while the habitats recover or while the animals are in poor condition.^{327,329} That, in turn, means places important for cultural tradition may not be visited, or stories and songlines might not be practiced or passed down to younger generations, because those aspects are directly related to fishing, collecting or hunting activities.

Traditional Owners have observed impacts on Indigenous heritage values from **rising sea levels**. For example, the fish traps in Girringun country in the Cardwell area are being affected.³³⁰ Once culturally significant sites are affected, then stories and songlines are compromised and customary practice has to be changed.

Understanding Table 6.9	
Grading statements	
	No effect: No known interaction or the interaction is considered insignificant.
	Data deficient: Effects are unknown.
	Very low effect: Any effects attributable to the impact are minor or localised, with no observable effects on the values.
	Low effect: The effects of the impact are observable in some locations or to some heritage sites or values, but only to the extent that limited additional intervention would be required to maintain the values.
	High effect: The effects of the impact are obvious in many locations or for many heritage sites or values to the extent that significant additional intervention would be required to maintain the values.
	Very high effect: The effects of the impact are widespread to the extent that the values are severely compromised.
Trend	
	Increasing: The intensity and/or spatial extent of the impact is increasing.
	Stable: The intensity and/or spatial extent of the impact is staying about the same.
	Decreasing: The intensity and/or spatial extent of the impact is decreasing.

Table 6.9 Past and present effect of impacts on Indigenous and historic heritage values

The assessment of effects on Indigenous heritage takes into account the interconnectedness of nature and culture for Indigenous people. It reflects effects on the Region's natural environment and other aspects of Indigenous heritage such as cultural practices, stories and language. * Indicates impact is likely to be the result of a variety of activities.

Impacts	Future trend of the impact	Cultural practices, observations, customs and lore							Sacred sites, sites of particular significance, places important for cultural tradition		Stories, songlines, totems and languages		Indigenous structures, technology, tools and archaeology		Places of historic significance — historic shipwrecks		Places of historic significance — World War II features and sites		Places of historic significance — lightstations		Places of historic significance — other		Places of scientific significance		Places of social significance — iconic sites	
		↑	↔	↓	↑	↔	↓	↑	↔	↓	↑	↔	↓	↑	↔	↓	↑	↔	↓	↑	↔	↓	↑	↔	↓	
Climate change	Altered ocean currents	↑																								
	Cyclone activity	↑																								
	Increased sea temperature	↑																								
	Ocean acidification	↑																								
	Rising sea level	↑																								
Catchment run-off	Increased freshwater inflow	↑																								
	Nutrients from catchment run-off	↔																								
	Outbreak of crown-of-thorns starfish	↑																								
	Pesticides from catchment run-off	↔																								
	Sediments from catchment run-off	↔																								
	Urban and industrial discharge	↔																								
	Acid sulphate soils	↑																								
Degradation of coastal ecosystems	Artificial barriers to flow	↑																								
	Atmospheric pollution	↑																								
	Coastal reclamation	↑																								
	Light impacts (artificial)	↑																								
	Modifying supporting terrestrial habitats	↑																								
	Dredging	↑																								
	Dumping and resuspension of dredge material	↑																								
	Exotic species and diseases*	↑																								
	Extraction — death of discarded species	↔																								
	Extraction — fishing spawning aggregations	↔																								
Direct use	Extraction — herbivores	↔																								
	Extraction — lower order predators	↔																								
	Extraction — lower trophic orders	↔																								
	Extraction — top order predators	↔																								
	Illegal fishing and poaching	↑																								
	Marine debris*	↑																								
	Noise pollution	↑																								
	Outbreak of disease*	↑																								
	Outbreak or bloom of other species*	↑																								
	Physical damage — fishing	↔																								
	Physical damage — other	↑																								
	Physical damage — ship grounding	↔																								
	Spill — large chemical	↑																								
Spill — large oil	↑																									
Spill — small chemical and oil	↑																									
Vessel strike on wildlife	↑																									
Waste discharge from a vessel	↑																									
Wildlife disturbance	↑																									

Table 6.11 Summary of the past and present effects of impacts on the Region's values
 This table is a summary of the past and present effects of impacts on attributes as shown in Table 6.6, Table 6.7, Table 6.8 and Table 6.9. Where the effects are different across attributes, the highest effect is shown.

Effect on values	Impacts affecting the Region's values			
	Biodiversity (habitats and species)	Geomorphological features	Indigenous heritage	Historic heritage
Unknown	<ul style="list-style-type: none"> Atmospheric pollution 		<ul style="list-style-type: none"> Atmospheric pollution Ocean acidification Outbreak or bloom of other species Spill — large chemical 	
Very low	<ul style="list-style-type: none"> Light impacts (artificial) Ocean acidification Outbreak or bloom of other species Rising sea level Vessel strike on wildlife Waste discharge from a vessel Spill — small chemical and oil 	<ul style="list-style-type: none"> Acid sulphate soils Coastal reclamation Ocean acidification Pesticides from catchment run-off Physical damage — fishing Physical damage — other Physical damage — ship grounding 	<ul style="list-style-type: none"> Exotic species and diseases Increased sea temperature Light impacts (artificial) Spill — large oil Spill — small chemical and oil Waste discharge from a vessel 	<ul style="list-style-type: none"> Atmospheric pollution Coastal reclamation Extraction — herbivores Extraction — lower order predators Extraction — lower trophic orders Extraction — top order predators Modifying supporting terrestrial habitats Outbreak of disease Outbreak or bloom of other species Physical damage — ship grounding Waste discharge from a vessel
Low	<ul style="list-style-type: none"> Acid sulphate soils Coastal reclamation Dredging Extraction — lower trophic orders Noise pollution Outbreak of disease Physical damage — other Physical damage — ship grounding Spill — large oil Urban and industrial discharge Wildlife disturbance 	<ul style="list-style-type: none"> Artificial barriers to flow Cyclone activity Dredging Dumping and resuspension of dredge material Increased freshwater flow Increased sea temperature Modifying supporting terrestrial habitats Nutrients from catchment run-off Outbreak of crown-of-thorns starfish Sediments from catchment run-off 	<ul style="list-style-type: none"> Acid sulphate soils Altered ocean currents Artificial barriers to flow Dumping and resuspension of dredge material Extraction — fishing spawning aggregations Extraction — top order predators Increased freshwater inflow Marine debris Noise pollution Nutrients from catchment run-off Outbreak of crown-of-thorns starfish Outbreak of disease Pesticides from catchment run-off Sediments from catchment run-off Urban and industrial discharge Wildlife disturbance 	<ul style="list-style-type: none"> Cyclone activity Dumping and resuspension of dredge material Exotic species and diseases Illegal fishing and poaching Increased freshwater flow Marine debris Noise pollution Nutrients from catchment run-off Outbreak of crown-of-thorns starfish Pesticides from catchment run-off Physical damage — other Sediments from catchment run-off Spill — large oil Spill — small chemical and oil Urban and industrial discharge Wildlife disturbance

Effect on values	Impacts affecting the Region's values				
	Biodiversity (habitats and species)	Geomorphological features	Indigenous heritage	Historic heritage	
High	<ul style="list-style-type: none"> Artificial barriers to flow Dumping and resuspension of dredge material Exotic species and diseases Extraction — death of discarded species Extraction — fishing spawning aggregations Extraction — herbivores Extraction — lower order predators Extraction — top order predators Illegal fishing and poaching Increased freshwater inflow Increased sea temperature Marine debris Modifying supporting terrestrial habitats Pesticides from catchment run-off Physical damage — fishing 		<ul style="list-style-type: none"> Coastal reclamation Cyclone activity Extraction — death of discarded species Modifying supporting terrestrial habitats Physical damage — fishing Physical damage — other Rising sea level Vessel strike on wildlife 		
Very high	<ul style="list-style-type: none"> Cyclone activity Nutrients from catchment run-off Outbreak of crown-of-thorns starfish Sediments from catchment run-off 		<ul style="list-style-type: none"> Dredging Extraction — herbivores Extraction — lower order predators Extraction — lower trophic orders Illegal fishing and poaching Physical damage — ship grounding 		
Effect on value	Unknown	Very low	Low	High	Very high

References

- Great Barrier Reef Marine Park Authority 2009a, *Great Barrier Reef Outlook Report 2009*, GBRMPA, Townsville.
- Department of Sustainability, Environment, Water, Population and Communities 2012, *A guide to undertaking strategic assessments*. Environment Protection and Biodiversity Conservation Act 1999. DSEWPC, Canberra.
- Marsh, H., De'ath, G., Gribble, N.A. and Lane, B. 2005, Historical marine population estimates: triggers or targets for conservation? The dugong case study, *Ecological Applications* 15(2): 481-492.
- Limpus, C.J. 2009a, *A biological review of Australian marine turtle species. 2 Green turtle, Chelonia mydas (Linnaeus)*, Environmental Protection Agency, Brisbane.
- Limpus, C.J. 2009, *A biological review of Australian marine turtle species. 3 Hawksbill turtle, Eretmochelys imbricata*, Environmental Protection Agency, Brisbane.
- Noad, M.J., Dunlop, R.A., Paton, D. and Knies, H. 2011, *Abundance estimates of the east Australian humpback whale population: 2010 survey and update*, University of Queensland, Brisbane.
- Noad, M.J., Dunlop, R.A., Cato, D. and Paton, D. 2008, *Abundance estimates of the east Australian humpback whale population: Final report for the Australian Department of the Environment, Water, Heritage and the Arts*, University of Queensland, Brisbane.
- Daley, B. 2005, *Changes in the Great Barrier Reef since European settlement: Implications for contemporary management*, PhD thesis, James Cook University, Townsville.
- Pitcher, C.R., Doherty, P., Arnold, P., Hooper, J., Gribble, N.A., Bartlett, C., Browne, M., Campbell, N., Cannard, T., Cappo, M., Carlini, G., Chalmers, S., Cheers, S., Chetwynd, D., Colegax, A., Coles, R., Cook, S., Davie, P., De'ath, G., Devereux, D., Done, B., Donovan, T., Ehrke, B., Ellis, N., Ericson, G., Fellegara, I., Forcey, K., Furey, M., Gledhill, D.,

Table 7.14 Current condition of key values
 The table is a summary of the assessment of condition presented above. Where the condition of a value is different for different areas of the Region, the poorest grade is shown.

Condition	Key values			
	Biodiversity	Geomorphological features	Indigenous and historic heritage values	Community benefits
Very good	<ul style="list-style-type: none"> • Heath and shrublands • <i>Halimeda</i> banks 	<ul style="list-style-type: none"> • Channels and canyons • <i>Halimeda</i> banks 		<ul style="list-style-type: none"> • Enjoyment • Personal connection • Health benefits
Good	<ul style="list-style-type: none"> • Islands • Beaches and coastlines • Mangrove forests and mangroves • Deeper reefs (>30 m) • Lagoon floor • Shoals • Continental slope • Rainforests • Estuarine crocodiles • Whales • Macroalgae • Benthic microalgae • Other invertebrates • Plankton and microbes • Bony fish 	<ul style="list-style-type: none"> • Coral reefs • Islands and shorelines • River deltas 	<ul style="list-style-type: none"> • Indigenous cultural practices, observances, customs and lore • Places of historic significance — World War II features and sites • Places of historic significance — lightstations • Places of historic significance — other • Places of scientific significance • Places of social significance — iconic sites 	<ul style="list-style-type: none"> • Income • Employment • Understanding and appreciation • Access to Reef resources • Aesthetics
Poor	<ul style="list-style-type: none"> • Freshwater wetlands • Sea snakes • Sharks and rays • Marine turtles • Open waters • Seabirds • Shorebirds • Forested floodplain • Saltmarshes • Dolphins 	<ul style="list-style-type: none"> • Seagrass meadows 	<ul style="list-style-type: none"> • Indigenous sacred sites, sites of particular significance, places important for cultural tradition • Indigenous stories, songlines, totems and languages • Indigenous structures, technology, tools and archaeology • Places of historic significance — historic shipwrecks 	
Very poor	<ul style="list-style-type: none"> • Connecting waterbodies • Coral reefs (<30 m) and corals • Dugongs • Grass and sedgeland • Seagrass meadows and seagrasses • Woodlands • Forests 			

References

1. Knowlton, N. and Jackson, J.B.C. 2008, Shifting baselines, local impacts, and global change on coral reefs, *PLoS Biology* 6(2): e54.
2. Pauly, D. 1995, Anecdotes and the shifting baseline syndrome of fisheries, *Trends in Ecology and Evolution* 10(10): 430.
3. Bellwood, D.R., Hughes, T.P., Folke, C. and Nyström, M. 2004, Confronting the coral reef crisis, *Nature* 429: 827-833.
4. De'ath, G., Fabricius, K.E., Sweatman, H. and Puotinen, M. 2012, The 27-year decline of coral cover on the Great Barrier Reef and its causes, *Proceedings of the National Academy of Sciences* 109(44): 17995-17999.
5. Fernbach, M. and Naim, K. 2007, *Reef recollections: An oral history of the Great Barrier Reef*, Great Barrier Reef Marine Park Authority, Townsville.
6. Wachenfeld, D. 1997, Long-term trends in the status of coral reef-flat benthos: the use of historical photographs, in *Proceedings of the State of the Great Barrier Reef World*

Table 9.3 Matching demonstration case studies to management tools

Management tool	Dugongs	Corals	Islands	Princess Charlotte Bay	Cairns Planning Area	Mackay/Whitsunday — water quality improvement	Keppel Bay	East Coast Trawl Fishery
Act and Regulations	•	•	•	•	•	•		
Zoning Plan	•	•	•	•	•	•	•	•
Plans of management	•	•	•	•	•	•		
Permits		•	•	•	•	•	•	
Traditional Owner agreements	•		•	•			•	
Compliance	•	•	•	•		•		•
Site infrastructure		•	•		•	•	•	
Fees and charges					•			
Policy	•				•	•		
Partnerships	•	•	•	•	•	•		•
Stewardship and best practice	•	•	•	•	•	•	•	•
Education and community awareness	•	•	•		•	•	•	
Research and monitoring	•	•	•		•	•	•	•
Reporting	•	•	•			•		

9.3 Dugongs

9.3.1 Significance

The Great Barrier Reef World Heritage Area is home to a globally significant population of dugongs, which was one of the reasons why it was inscribed on the World Heritage List in 1981.⁷ Dugongs, together with the seagrass habitats upon which they depend, contribute to the recognition of the Reef’s outstanding universal value, including its significant ongoing ecological and biological processes, and significant natural habitats for the conservation of biological diversity.

Dugongs are of great cultural, spiritual and social importance, especially to the Reef’s Traditional Owners. These large marine mammals are a matter of national environmental significance as a listed migratory species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and are listed as a marine species under that Act. Dugongs are listed as vulnerable under the *Nature Conservation Act 1992* (Qld) and as a protected species under the Great Barrier Reef Marine Park Regulations 1983.

Dugongs are found in the coastal waters of some 40 countries and territories, but their status is either declining, locally extinct, or unknown in most of their range.⁸ Australia’s northern waters (from Moreton Bay in southern Queensland to Shark Bay in Western Australia) contain approximately one quarter of the world’s dugong habitats. Australia is the only developed country with a significant dugong population, and with extensive areas of coastline at relatively low risk from coastal development.^{9,10}

9.3.2 Key issues

Dugongs feed almost exclusively on seagrass and they must consume large quantities each day to fulfil their energy requirements.¹¹ The dugong’s preference for inhabiting inshore areas exposes them to a range of human-related marine and land-based activities.¹⁰

As long-lived, slow-breeding animals, dugongs have slow rates of recovery from population declines. Survival of adult dugongs must be more than 90 per cent each year to maintain a population.¹² Population simulations based on adult survival estimates from manatees (the most closely related group of species) and empirical reproductive data from dugongs in the Torres Strait estimate the maximum population growth rate to be up to six per cent annually; in most cases the population growth rate will be much less than this.^{13,14}

Dugong life history suggests that the impact of mortality will typically be more significant than habitat loss. However these two categories of threat are related; habitat loss can lead to starvation and mortality. The greatest impacts on dugong populations in the World Heritage Area vary with location. Along the urban coast the most

serious impacts are habitat loss and degradation including impacts from: cyclone activity and extreme weather; nutrients, pesticides and sediment from catchment run-off; clearing or modifying of coastal habitats; coastal reclamation; direct impacts of dredging, dumping and resuspension of dredge material.¹⁰ Dugongs are also affected directly by disease, their incidental capture in nets (death of discarded species from the commercial net fishery and the Queensland Shark Control Program), marine debris, boat strike, illegal fishing and poaching, and hunting for traditional use to varying degrees.¹¹ Along the coast of Cape York, mortality from Indigenous hunting and incidental drowning in commercial gill nets are the main impacts, however, hunting is restricted to inshore waters around settlements and a very high percentage of dugong habitat in the region is not subject to hunting.

Commercial harvesting, which began in Queensland in 1847, took a significant toll on the species, particularly south of Cairns, where virtually all of the operations were based apart from some operations at Indigenous communities to supply oil for medicinal use. While commercial dugong harvesting was a cottage industry, there were large harvests of the animals, especially in the late 1800s to 1930s. In some years more than 100 dugongs were harvested from Moreton Bay (south of the Region).¹² Harvesting was banned in Queensland in 1969, however, government-sponsored operations based in a few Indigenous communities continued until the mid-1970s.

The introduction and widespread use of monofilament fishing nets from about the 1960s also resulted in a significant incidental capture of dugong, prompting the progressive introduction of Dugong Protection Areas, coastal zoning and changes to net designs and gear over the past 20 years.

Despite management actions to protect them, dugong population numbers in the World Heritage Area south of Cooktown have not recovered. In fact, the numbers of dugongs continued to decline between the early 1960s and 1990s. By the 1990s, it was suggested dugong numbers had declined by more than 90 per cent along the coast of Queensland south of Cooktown.^{13,16,17} Evidence of decline was derived retrospectively from their incidental catch in the Queensland Shark Control Program between 1962 and 1999, during which time at least 837 dugongs were killed.¹⁸ The trends in the average number of dugongs caught in nets at 47 beaches showed a decline of 8.7 per cent per year between 1962 and 1999 (Figure 9.1), which was assumed to reflect the rate of population decline from all causes.^{17,19} Initiatives began in 1992 to reduce this impact.¹⁸ Baited hooks on drumlines have replaced shark nets in many localities. Drumlines still catch the targeted shark species, but catch few dugongs or cetaceans.

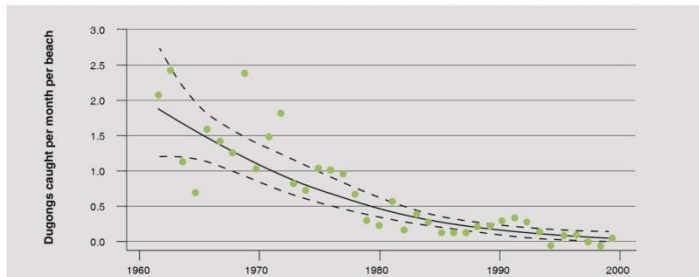


Figure 9.1 Dugongs caught in the Queensland Shark Control Program, 1962-1999

Profile of the annual estimated mean numbers of dugongs (log-linear model and 95 per cent confidence intervals) caught in the Queensland Shark Control Program from six shark netting contract areas at 47 beaches (green dots) between Cairns and the Gold Coast for the period 1962 to 1999.¹⁶ The estimated rate of decline averages 8.7 per cent per year. There is no statistical evidence that the changes to the program introduced after the 1992 review of practices¹⁸ changed the pattern of declining catches up to 1999, however the power to detect any change would be weak.

Aerial surveys suggested there were about 2000 dugongs in the World Heritage Area south of Cooktown in 2005 and that the decline had halted.²⁰ This estimate is a standardised relative index of dugong abundance and is less than the actual abundance. Although this was only a small fraction of pre-European levels, the population was thought to have stabilised.^{5,20,21,22} However, widespread destruction of seagrass meadows (from heavy flooding and cyclone Yasi in 2010–11, coupled with two preceding years of higher than average rainfall and the chronic impact of poor water quality),^{23,24} led to a further decline as dugongs died²⁵ or emigrated from the affected areas. The standardised index of dugong relative abundance gained from aerial surveys in 2011 showed a decline to approximately 600 animals in waters between the Daintree River and the southern limit of the World Heritage Area.²⁶ The condition of the southern population is assessed as poor and declining (with good confidence in both assessments).^{5,20,21,22} In contrast, dugong populations south of the World Heritage Area in Hervey Bay and Moreton Bay have not declined since the previous aerial surveys in 2005.²⁶

North of Cooktown, the current status of dugongs is considered to be good with a stable population trend (with good confidence in both assessments).^{17,19,27,28,29} In 2006, standardised index of relative abundance of dugongs between Cooktown and Cape York was approximately 8800.¹⁹ Outside the World Heritage Area to the north, the relative abundance of the population in the Torres Strait is estimated to be greater than 14,000 individuals.¹⁹

9.3.3 Current management and its effectiveness

Dugongs have been a focus of management agencies for many decades, with high level leadership from the Great Barrier Reef ministerial forum. In the 1980s, the Authority's zoning plans protected some important dugong habitats in Marine National Park (green) zones and Preservation (pink) zones. The level of protection was increased significantly in 1997 in response to the long-term decline in the dugong population south of Cooktown and the ongoing and unsustainable levels of interactions between dugongs and fishing nets and shark control nets.³⁰ These measures established 16 Dugong Protection Areas under Queensland fisheries legislation which imposed spatial and fishing gear restrictions and prohibited the use of some types of fishing nets.³¹ Additionally, changing shark control nets to drumlines has reduced the number of interactions with dugongs.

Soon after, measures to protect seagrass habitats from trawling were introduced, as well as netting restrictions and net attendance rules to reduce the incidental capture of dugong within the East Coast Inshore Fin Fish Fishery. The use of nets in the Queensland Shark Control Program was also reviewed¹⁸ and modified.³² Other management arrangements were introduced by the Department of Defence for activities in the Shoalwater Bay Defence Training Area.³³ While there is limited traditional hunting of dugong as a native title right, some Traditional Owners have voluntarily adopted reduced levels of hunting under Traditional Use of Marine Resources Agreements, with some clans choosing not to hunt this species at all.

Dugong habitats were explicitly taken into consideration when the Great Barrier Reef Marine Park was rezoned in 2003.³⁴ As a result, approximately 96 per cent of high conservation value dugong habitats are highly protected from extractive industries,^{35,36} and 24 per cent of known shallow water seagrass meadows are included in highly protected green zones which prohibit unpermitted extractive activities.³¹ While it had been recognised for some time that shallow water seagrass meadows within Dugong Protection Areas are important to dugong and are at risk from declining water quality,³⁵ it is now also recognised that deeper water seagrass meadows are used by dugongs as a refuge and when preferred shallow water meadows are affected by floods or cyclones.³⁵ While a decline in shallow inshore seagrass meadows south of Cooktown is recorded, there are major gaps in our understanding of the condition, abundance and distribution of deeper water seagrass meadows, which are likely to be more important to dugongs than previously supposed. Major efforts to improve water quality through the *Reef Water Quality Protection Plan* (Reef Plan) are expected to have positive outcomes for seagrass in the medium term.^{34,40}

The independent review of the Authority's assessment of management effectiveness concluded:

- **Context** is effective. *Evidence presented on legal status and reasons for designation of dugong as a matter of national environmental significance, status and trend in dugong population numbers and distribution; nature, extent and impact of threatening processes; stakeholder interests all indicate that the context of dugong conservation and management is well understood by the Authority.*
- **Planning** is mostly effective. *The demonstration case provides evidence of multiple levels of planning for dugong conservation over a 40-year period starting with the cessation of a commercial dugong fishery in 1969 and with a turtle and dugong conservation strategy first prepared in 1994. Dugong Protection Areas date back to 1997 and recovery plans [Qld] to 1999. Other plans, policies, regulations and strategies have been developed and implemented by Commonwealth and state agencies to address the major anthropogenic impacts on dugong. Protection and enhancement of dugong habitat has been addressed through the rezoning and water quality improvement plans. Management of impacts of coastal activities on the extent and condition of seagrass beds remains as an area where improved planning and regulation could improve prospects for the species.*
- **Inputs** are only partially effective. *Resources for key management actions (for example, mitigating impacts of coastal land management), field management (surveillance and compliance, emergency response) and monitoring of dugong populations and habitat condition are either currently inadequate or not secure in the long term.*
- **Process** is mostly effective. *Plans and strategies developed for dugong management are generally being implemented. An effective partnership with Indigenous people is being developed and the number of Traditional Use of Marine Resources Agreements is being extended to cover the main areas of relevance. The ways in which the plans and strategies are being implemented is appropriate. The methods used in surveillance and enforcement are of a high standard, but field management capacity to ensure a high level of compliance is lacking.*
- The delivery of **outputs** is mostly effective; however implementation of relevant plans is being hampered by a shortage of resources.
- Achieving desired **outcomes** overall is partially effective. *Concerns relating to the cumulative impacts of climate change and extreme weather and increased development in coastal ecosystems limit the effectiveness of planning and management measures introduced to conserve dugong populations in the Region. Biodiversity outcomes for dugong management are partially effective. Consideration of the southern population of dugong in the Great Barrier Reef Region alone would lead to a conclusion that*

management had been ineffective in conserving the species. However, the fact that the larger northern population is considered to be stable and in good condition means that the overall biodiversity assessment should be rated as partially effective.

9.3.4 Outcomes and potential improvements

Dugong numbers today are the result of cumulative impacts and actions over a long time.¹⁰ Temporal changes in local and regional dugong population estimates are compounded by large-scale dugong movements. This is a challenge for management because trends in numbers can take decades to detect with a high degree of statistical confidence, and it may take decades to gauge the effectiveness of management strategies. Indeed it may be impossible to detect the effect of management because of the confounding effects of extreme weather events.

Ongoing and effective management action in the World Heritage Area is required to protect dugong populations and, most critically, to halt and reverse the decline in the southern populations. Effective management will depend on minimising not only short-term or acute impacts, but also cumulative or chronic impacts that may seem insignificant in isolation. The influence of climate change and proposed urban and industrial expansion throughout the Region means greater engagement of all levels of government and the community will be needed to achieve recovery of dugongs. Because dugong movements can be substantial, habitat connectivity and integrity are critical, and management efforts must be coordinated across local, state, national and international levels to ensure dugongs are protected throughout their range.

Impacts of greatest significance to dugongs south of Cooktown are habitat loss and degradation from cyclone activity and extreme weather; sediment, nutrient and pesticides from catchment run-off; modification of supporting terrestrial habitats; coastal reclamation; dredging and dumping and resuspension of dredge material; disease; vessel strike and vessel disturbance; death from incidental capture in nets (commercial net fishery and shark control program); and marine debris. North of Cooktown, seagrass is exposed to fewer water quality-related impacts. There, impacts to dugongs include incidental capture in nets (commercial net fishery), illegal fishing and poaching, and hunting for traditional use, habitat loss and degradation from cyclone activity and extreme weather and disease.

Mapping^{35,36} and qualitative models⁴¹ have been used to aid understanding of cumulative impacts on dugongs. The condition for dugong populations is projected to decline to very poor in the southern World Heritage Area, and to remain good in the north in coming decades. Model outputs based on a possible increase in the intensity of storms and ocean warming predict a likely downward trend in dugong populations, even with a possible reduction in nutrients and sediments (based on Reef Plan targets), unless direct human-induced dugong mortality from all sources is reduced at the same time. To enable population recovery in the World Heritage Area south of Cooktown, modelling⁴² suggests an annual human-induced mortality limit of less than 10, with a target of zero.^{17,20} This target will be very difficult to achieve — for example, five dugong deaths from human activities were reported south of Cooktown in 2011.⁴³ Sustainable limits for human-induced mortality have been estimated to be between 56 and 112 for dugongs in the World Heritage Area north of Cooktown (with recommendations to strive for the lower limit).¹⁹

Enhancing protection and restoration

A critical management action for dugongs across their range in the Great Barrier Reef is to maintain, enhance and restore the health of seagrass meadows, which they rely on for food. Risks to the main seagrass meadows in Dugong Protection Areas from poor water quality were identified in 2001, based on the best knowledge at that time. This issue is being addressed by actions under Reef Plan.⁴⁴ The importance of landscape connectivity between terrestrial and marine systems for maintaining healthy Great Barrier Reef inshore biodiversity has been recognised⁴⁵ with increased investment by the Australian Government under Reef Rescue 2013–2018.⁴⁵

Minimising impacts

It is also critical that impacts on dugongs and their habitat are reduced and minimised. Strengthening a number of ongoing management actions is important and the wider community can play a more prominent role in formulation and implementation of management arrangements to recover dugong populations. For example, continuously improving net fishing techniques, with the cooperation of fishers, technology and practices (such as, codes of practice) is important to reduce drowning in fishing nets.

Community action and compliance activities at a local and regional scale are needed to help reduce and minimise mortality or ill health of dugongs (for example, from vessel strike, marine debris, disease, noise and interference). Traditional Use of Marine Resources Agreements will continue to act as a valuable tool to facilitate sustainable traditional hunting and support the role of Indigenous communities and rangers in compliance and enforcement activities.

In addition, supporting the objectives of the Queensland Government's current net buyback program to reduce fishing effort in the East Coast Inshore Fin Fish Fishery is important, given remaining concerns about set mesh netting, the potential for the mortality of vulnerable species in nets, and some failures to report these interactions in the Lockhart River and Princess Charlotte Bay areas. Another potential initiative could include a revision of apparatus used in the Queensland Shark Control Program to further reduce risks to dugongs, while meeting the public safety imperative.

Improving adaptive management

Adaptive management requires an ongoing commitment to regular monitoring, evaluation and review of the abundance and distribution of dugong and seagrass to understand trends. A greater understanding of cumulative impacts, including impacts of extreme weather, should lead to an improvement in the adequacy of measures to avoid or mitigate impacts in important dugong areas. This could even include investigating ways of restoring and rehabilitating seagrass meadows.

Continuous improvement of best practice standards for all activities likely to affect dugong (for example, in relation to vessel operation, vessel waste management, recreational use, tertiary sewage treatment and re-cycling, urban storm water management, and erosion and sediment control) will help ensure activities are undertaken to the highest standard, based on the most up-to-date information. Part of this continuous improvement is the implementation of new technologies to reduce illegal fishing and increase compliance with fisheries management arrangements, as well as the synthesis of information on trends and regional and local differences. Traditional Use of Marine Resources Agreements and other Indigenous management tools such as community management plans will continue to be a valuable tool, providing for the exchange and incorporation of traditional ecological knowledge into management.

Continued commitment to scientific and community-based monitoring, reporting and stewardship programs will allow management agencies to understand the effectiveness of their actions. Such programs may include those with a focus on understanding movements of dugongs and condition of seagrass — providing real-time information to managers, industry and the public; long-term, structured, large-scale aerial surveys — providing information on population abundance, distribution and trends; and a better understanding of existing and emerging impacts on dugongs (for example, noise).

9.4 Corals

9.4.1 Significance

Corals contribute to the recognition of the Reef's outstanding universal value for all four of the natural criteria for World Heritage listing: exceptional natural beauty, significant geomorphic features, significant ongoing ecological and biological processes, and significant natural habitats for the conservation of biological diversity.

The Great Barrier Reef is the largest coral reef ecosystem in the world, stretching 2600 kilometres along the north-eastern coast of Australia. Coral reefs themselves cover an area of about 26,000 square kilometres and make up seven per cent of the Great Barrier Reef Marine Park. The Reef is also one of the world's most diverse ecosystems. A network of more than 2900 separate reefs forms 30 distinct reef bioregions (see Figure 4.4 in Chapter 4), comprising a total of 10 per cent of all the world's coral reefs.⁴⁶ The Reef's habitat complexity is founded on about 410 species of hard coral, which support a rich diversity of reef-associated species.⁵

The coral reef environment supports a range of Reef-dependent industries and uses, and directly underpins the community's cultural, social and economic wellbeing. The economic contribution to the Australian economy generated by tourism, recreation, commercial fishing and scientific research in the Reef catchment and the World Heritage Area in 2012 was \$5.7 billion. It also supported about 69,000 full-time equivalent jobs.⁴⁷

Globally, coral reefs are under serious pressure — 75 per cent of the world's coral reefs are currently threatened by local and global pressures, more than 90 per cent of the world's reefs will be threatened by 2030 and nearly all of them could be at risk in less than 40 years.⁴⁸

9.4.2 Key issues

Despite the Great Barrier Reef being recognised as one of the best managed coral reef ecosystems in the world,⁴⁹ research and anecdotal information indicates there have been substantial changes to coral cover and species composition on inshore fringing reefs dating from at least the 1920s⁵⁰ (see Section 7.1.2 for an example and discussion of the decline of inshore reefs) and a 40 per cent decline in the past 27 years.^{51,52,53} While there is debate over the exact extent, cause and severity of this loss,⁵¹ there is no doubt that coral cover overall and specifically in some regions is declining.

Long-term monitoring by the Australian Institute of Marine Science since 1986 shows average hard coral cover across the Great Barrier Reef has declined from 28 per cent to 13.8 per cent — two-thirds of that loss has occurred since 1998.⁵⁴ A majority of the loss has been recorded since 2006 in central and southern regions of the Great Barrier Reef. North of Cooktown, coral reefs are in good condition, with hard coral cover remaining relatively stable over the past 27 years. The status of coral reefs in the Region reflects the pattern of extreme weather events, coastal development and water quality. There is no long-term data on the condition and trend of deep water (more than 30 metres) reefs.⁵⁵

The major drivers of loss of coral cover on a Reef-wide scale are:

- Outbreaks of the crown-of-thorns starfish (*Acanthaster planci*).⁵⁶ Large-scale crown-of-thorns starfish outbreaks were first recorded in the 1960s.⁵⁷ Since then, there have been three major outbreaks (1962 to 1976, 1978 to 1990, 1993 to 2005⁵⁸).
- Direct impacts of cyclones.^{5,50} For example, cyclone Hamish was a major factor in reducing the average coral cover on southern offshore reefs in the Swains region of the World Heritage Area from 35 per cent in 2006 to 8 per cent.⁵⁴

- increased understanding and appreciation of the Reef's outstanding universal value will assist in building support for the Region's protection
- fostering further uptake of best practice and stewardship within the Reef's tourism industry, building on the continuing success of the High Standard Tourism program
- improved planning and site infrastructure in existing and emerging high use areas to avoid potential conflicts of use across a range of uses, and manage predicted increase in recreational use
- promoting a strategic approach to the development and operation of marinas and other access infrastructure along the Great Barrier Reef coast
- improving understanding of tourism and recreational use and the benefits derived, including through supporting implementation of a long-term socio-economic monitoring program.

12.4 Recommendations of the coastal zone assessment

As part of the complementary strategic assessment of the adjacent coastal zone, the Queensland Government has made a number of commitments to improve management. Some of these overlap and are consistent with the Authority's recommendations; for example, development of an outcomes-based framework, a long-term sustainability plan, an integrated monitoring program, and improved understanding and management of cumulative impacts. The alignment between the two sets of recommendations is presented in Table 12.2.

As illustrated in the recommended improvements set out in Section 12.3 above, the Authority is committed to continuing its close partnership with Queensland Government agencies in achieving improved outcomes for the Great Barrier Reef.

Table 12.2 Alignment between the recommended improvements of the Authority and the Queensland Government

There is strong alignment between the recommended improvements of the Authority, as set out in this Chapter, and those of the Queensland Government in the strategic assessment of the adjacent coastal zone. The different jurisdictions and different terms of reference mean that some recommendations are relevant to only one assessment.

Authority recommended improvements	Queensland Government recommended improvements
Identifying matters of national environmental significance	
REC1: Explicitly incorporate consideration of all matters of national environmental significance, including attributes of the property's outstanding universal value, into the Authority's programs, plans and policies	COM1: The Queensland Government will complete regional plans in the Great Barrier Reef coastal zone where there is a gap, and continue to update other regional plans to ensure they respond to the latest information and pressures COM10: The Queensland Government will use the Australian Government's 'Protected Matters Search Tool' in conducting planning and making environmental impact statement (EIS) assessment decisions related to EPBC Act protected matters
REC2: Improve spatial mapping capabilities to support planning and assessment decision making, including the range of values mapped and public availability	COM6: The Queensland Government is committed to working with the Australian Government, including the Authority, to develop MNES guidelines for proponents to consider when assessing impacts on MNES during the EIS processes under the Program COM8: The Queensland Government will develop an offsets register to spatially identify areas used as offsets under Queensland legislation, and priority areas for future offsets
REC3: Work closely with Australian and Queensland government agencies to help identify values of the Great Barrier Reef World Heritage Area that are not easily represented and measured such as aesthetic values	COM6: The Queensland Government is committed to working with the Australian Government, including the Authority, to develop MNES guidelines for proponents to consider when assessing impacts on MNES during the EIS processes under the Program
REC4: Collaborate with Traditional Owners to undertake an assessment of the Indigenous heritage values of the Region	COM14: The Queensland Government will require project proponents to apply the Australian Government's guidelines for consulting with Indigenous people in relation to cultural heritage and the management of traditional use. The Australian Government's guidelines will be developed in cooperation with Queensland's and the state will also explore ways to streamline Indigenous consultation processes between the two governments
REC5: Develop and implement knowledge management systems for Indigenous and historic heritage information, including a protocol for managing culturally sensitive information and improved information sharing arrangements	

Authority recommended improvements	Queensland Government recommended improvements
REC6: Improve understanding of the role that the Great Barrier Reef plays in the life of the community	
Assessing impacts on matters of national environmental significance	
REC7: Work closely with Australian and Queensland government agencies to improve understanding and management of cumulative impacts from activities within and adjacent to the Region, and provide clearer guidance on how proponents and decision makers should address cumulative impacts in assessments	COM15: The Queensland Government will work with the Australian Government, including the Authority, to develop guidelines for proponents to consider when assessing cumulative impacts on matters of national environmental significance in the Great Barrier Reef World Heritage Area
REC8: Streamline assessment processes across jurisdictions, and seek to have a more coordinated approach to community consultation	COM9: The Queensland Government will develop a Direct Benefit Management Plan for the Great Barrier Reef World Heritage Area consistent with the accredited Queensland Offsets Framework COM23: The Queensland Government will continue to work closely with the Authority to increase the implementation of complementary actions across protected area jurisdictions, including the streamlining of assessment and joint permitting processes, the formulation of joint park user policies, and discouraging repeat offending
REC8A: Implement measures to enhance alignment between the Authority's permission system and EPBC Act assessment and approval processes, to ensure that activities will not result in unacceptable impacts to matters of national environmental significance	
Avoiding impacts on matters of national environmental significance	
REC9: Improve alignment between the Authority's and the Queensland Government's protected area and tourism management arrangements, and look for opportunities to streamline	COM2: The Queensland Government will maintain and work to add to its protected area estate, and continue to provide funding for protected area management in the Great Barrier Reef coastal zone
REC10: Develop and implement plans of management in areas of the Great Barrier Reef Marine Park that have high growth for recreation and other uses	COM11: The Queensland Government will ensure that stringent conditions addressing matters of national environmental significance and outstanding universal value will be incorporated into approval recommendations COM24: The Queensland Government will continue to fund and support ongoing joint field management activities with the Australian Government, including the Authority
REC10A: Improve and strengthen the Authority's arrangements for coordinating the response to major incidents, such as ship groundings, large oil or chemical spills or major natural disasters	COM32: The Queensland Government is committed to reducing the risk of shipping incidents and potential pollution of the marine environment, including implementing its responsibilities as part of the North-East Shipping Management Group
REC11: Support development of a Queensland ports strategy that concentrates port development around long-established major ports in Queensland, and encourage port master planning	COM4: The Queensland Government will introduce legislation to implement key actions of the Queensland Ports Strategy. The legislation will concentrate development at five Priority Port Development Areas and introduce port master planning which will incorporate environmental considerations and community engagement. The Queensland Ports Strategy also prohibits dredging within and adjoining the Great Barrier Reef World Heritage Area for the development of new, or the expansion of existing port facilities outside Priority Port Development Areas, for the next 10 years
REC11A: Facilitate the development of a whole of government policy to provide a strategic and consistent approach to the sustainable management of dredging and dredge spoil disposal in the Great Barrier Reef World Heritage Area	
REC12: Promote a strategic approach to the development and operation of marinas and other access infrastructure along the Great Barrier Reef coast	COM11: The Queensland Government will ensure that stringent conditions addressing matters of national environmental significance and outstanding universal value will be incorporated into approval recommendations
REC13: Review and update the Great Barrier Reef Marine Park Heritage Strategy to guide management actions to strengthen recognition and protection of heritage values	

Recommended changes to management 12-13

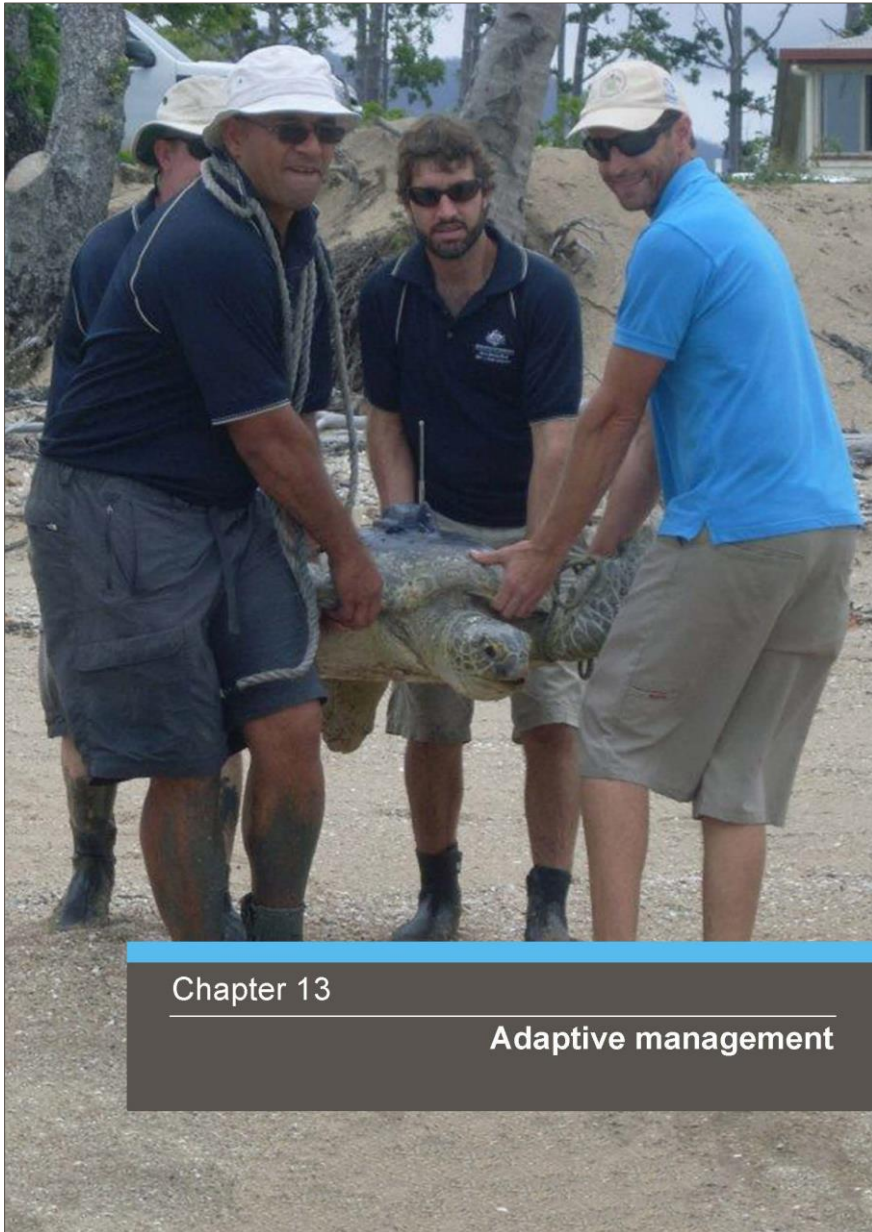
Authority recommended improvements	Queensland Government recommended improvements
REC14: Promote, recognise and encourage stewardship and best practice efforts by community, industry and government	COM18: The Queensland Government is providing \$12 million over three years in grants under the Everyone's Environment Grants program COM19: The Queensland Government will provide \$30 million of natural resource management funding to the Reef for biodiversity, wetlands, water quality, coastal risk, sustainable agriculture, and weeds and pest management projects over the next five years. This will support the sustainable management of natural resources and help protect significant natural assets
REC15: Support increased investment in site infrastructure to protect matters of national environmental significance in the Great Barrier Reef Region	COM2: The Queensland Government will maintain and work to add to its protected area estate, and continue to provide funding for protected area management in the Great Barrier Reef coastal zone
REC16: Improve compliance through more effective surveillance and compliance activities, access to latest technology, increased coordination across jurisdictions, and strengthened powers to prevent repeat offending	COM23: The Queensland Government will continue to work closely with the Authority to increase the implementation of complementary actions across protected area jurisdictions, including the streamlining of assessment and joint permitting processes, the formulation of joint park user policies, and discouraging repeat offending
REC17: Support a collaborative, Reef-wide management strategy for islands and contribute to its development and implementation	COM24: The Queensland Government will continue to fund and support ongoing joint field management activities with the Australian Government, including the Authority
REC17A: Work with the Queensland Government to provide technical and policy advice on actions to secure the long-term ecological, social and economic sustainability of Great Barrier Reef Region fisheries	COM18: The Queensland Government will ensure that fisheries are managed for the purpose of ecological sustainability, supported by the ongoing collection of commercial and recreational data through various monitoring programs
Mitigating impacts on matters of national environmental significance	
REC18: Update and strengthen the Great Barrier Reef water quality guidelines to address a broader range of habitats and species and account for cumulative impacts	COM3: The Queensland Government will undertake on-ground actions which will deliver long-term benefits for threatened species
REC19: Improve the effectiveness of the Authority's hydrodynamic guidelines as a decision-making tool by requiring consideration of a greater range of environmental factors, and regularly reviewing them to reflect improvements in understanding	COM11: The Queensland Government will ensure that stringent conditions addressing matters of national environmental significance and outstanding universal value will be incorporated into approval recommendations
REC20: Support research on critical ecosystem thresholds, with a focus on inshore biodiversity and associated ecosystems	COM12: The Queensland Government will prioritise actions to recover species, taking into account national recovery plans,

12-14 Great Barrier Reef Region Strategic Assessment | Strategic Assessment Report

Authority recommended improvements	Queensland Government recommended improvements
<p>REC21: Improve understanding and the Authority's management of the impacts of noise on species, particularly at-risk and inshore species</p>	<p>threat abatement plans and conservation advice</p> <p>COM18: The Queensland Government is providing \$12 million over three years in grants under the Everyone's Environment Grants program</p> <p>COM19: The Queensland Government will provide \$30 million of natural resource management funding to the Reef for biodiversity, wetlands, water quality, coastal risk, sustainable agriculture, and weeds and pest management projects over the next five years. This will support the sustainable management of natural resources and help protect significant natural assets</p> <p>COM20: The Queensland Government will continue to support programs that improve the outstanding universal value of the Wet Tropics World Heritage Area</p> <p>COM21: The Queensland Government will continue to support the Queensland Wetlands Program to deliver a range of new mapping, information and decision-making tools and products to enable local, state and federal government agencies, landowners, regional natural resource management bodies and conservation groups to protect and manage wetlands into the future</p> <p>COM22: The Queensland Government is committed to providing 40 new Indigenous Land and Sea Rangers in Queensland over three years, bringing the total number of Indigenous Land and Sea Rangers to 80</p> <p>COM24: The Queensland Government will continue to fund and support ongoing joint field management activities with the Australian Government, including the Authority</p> <p>COM28: The Queensland Government will work with the Australian Government, including the Authority, to develop a Reef 2050 — Long Term Sustainability Plan for the Great Barrier Reef World Heritage Area by the end of 2014, and ensure its implementation</p> <p>COM33: The Queensland Government is committed to funding of \$55 million over the next five years to develop, promote and install best management practice systems to improve Reef water quality</p>
<p>REC22: Reduce crown-of-thorns starfish outbreaks by continuing to improve water quality and through a long-term control program</p>	<p>COM34: The Queensland Government will continue to fund and support the Reef Water Quality Protection Plan and the associated Paddock to Reef monitoring program to help achieve the long-term goal of no detrimental impact from the quality of water entering the Great Barrier Reef. Consideration will be given to the inclusion of other pollutants, other than broadscale land use, during the Plan's next review in 2018</p>

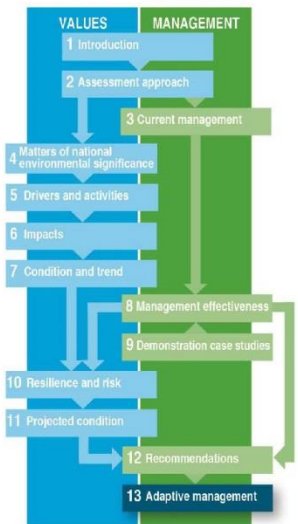
Authority recommended improvements	Queensland Government recommended improvements
Offsetting impacts on matters of national environmental significance	
<p>REC23: Develop a policy and supporting mechanisms to facilitate strategic and collaborative implementation of offsets across jurisdictions</p> <p>REC24: Inform implementation of Australian and Queensland government offsets policies and restoration programs by identifying actions that will maximise the delivery of environmental benefits to the Region</p>	<p>COM7: The Queensland Government will apply the Australian Government Offsets Policy until the Queensland Offsets Framework is accredited by the Australian Government. Offset guidelines that deliver net benefits will be prepared for application by planning and development decision-makers in consultation with the Australian Government</p> <p>COM8: The Queensland Government will develop an offsets register to spatially identify areas used as offsets under Queensland legislation and priority areas for future offsets</p> <p>COM9: The Queensland Government will develop a Direct Benefit Management Plan for the Great Barrier Reef World Heritage Area consistent with the accredited Queensland Offsets Framework</p>
Enhancing matters of national environmental significance	
<p>REC25: Establish a management framework with clear outcomes and targets for the protection of values and the management of impacts, including cumulative impacts</p> <p>REC26: Develop and implement a long-term sustainability plan for the Great Barrier Reef World Heritage Area in cooperation with Australian and Queensland government agencies to better coordinate programs designed to manage and improve the condition of the Reef</p> <p>REC27: Strengthen engagement with all relevant partners to facilitate actions that maintain and enhance the condition of values and reduce impacts, particularly in relation to climate change, catchment run-off, degradation of coastal ecosystems and direct use</p> <p>REC28: Develop a comprehensive management framework and an Indigenous heritage strategy for Traditional Owner use and management of the Great Barrier Reef</p> <p>REC29: Adopt regionally-based cooperative approaches to protect inshore biodiversity hotspots — supporting local actions and encouraging cooperation</p> <p>REC30: Improve alignment and coordination of strategic research priorities, and strengthen partnerships between the Authority and research institutions to facilitate the delivery of critical research needs</p>	<p>COM19: The Queensland Government will provide \$30 million of natural resource management funding to the Reef for biodiversity, wetlands, water quality, coastal risk, sustainable agriculture, and weeds and pest management projects over the next five years. This will support the sustainable management of natural resources and help protect significant natural assets</p> <p>COM21: The Queensland Government will continue to support the Queensland Wetlands Program to deliver a range of new mapping, information and decision-making tools and products to enable local, state and federal government agencies, landowners, regional natural resource management bodies and conservation groups to protect and manage wetlands into the future</p> <p>COM28: The Queensland Government will work with the Australian Government, including the Authority, to develop a Reef 2050 — Long Term Sustainability Plan for the Great Barrier Reef World Heritage Area by the end of 2014, and ensure its implementation</p> <p>COM29: The Queensland Government will work with the Australian Government, including the Authority, to develop an outcomes-based framework for the Great Barrier Reef World Heritage Area as part of the Reef 2050 — Long Term Sustainability Plan</p> <p>COM30: The Queensland Government will work with the Australian Government, including the Authority, to establish an integrated monitoring framework and program for the Great Barrier Reef World Heritage Area as part of the Reef 2050 — Long Term Sustainability Plan</p>
Monitoring and evaluation	
<p>REC31: Establish an integrated monitoring, reporting and adaptive management program for the Great Barrier Reef World Heritage Area, including more explicit reporting on the condition and trend of matters of national environmental significance, to enable decisions about use to be made and the performance of activities to be monitored against regulatory objectives, outcomes for matters of national environmental significance and relevant guidelines and standards, including ecosystem thresholds</p> <p>REC32: Maintain and improve monitoring, investigation and data management relating to critical species and habitats</p>	<p>COM13: The Queensland Government will prioritise actions to recover species, taking into account national recovery plans, threat abatement plans and conservation advice</p> <p>COM16: The Queensland Government will ensure that fisheries are managed for the purpose of ecological sustainability, supported by the ongoing collection of commercial and recreational data through various monitoring programs</p>

Authority recommended improvements	Queensland Government recommended improvements
<p>REC33: Support implementation of a long-term social and economic monitoring program to improve understanding of changing use, investment and values</p>	<p>COM17: The Queensland Government will incorporate reporting on matters of national environmental significance into Queensland State of the Environment reporting</p> <p>COM30: The Queensland Government will work with the Australian Government, including the Authority, to establish an integrated monitoring framework and program for the Great Barrier Reef World Heritage Area as part of the Reef 2050 — Long Term Sustainability Plan</p> <p>COM31: The Queensland Government will continue to work with industry and other stakeholders in Gladstone Harbour, through the Gladstone Healthy Harbour Partnership, to ensure open and accountable management of Gladstone Harbour, including annual reporting on ecosystem health and future actions underpinned by rigorous monitoring and science</p> <p>COM34: The Queensland Government will continue to fund and support the Reef Water Quality Protection Plan and the associated Paddock to Reef monitoring program to help achieve the long-term goal of no detrimental impact from the quality of water entering the Great Barrier Reef. Consideration will be given to the inclusion of other pollutants, other than broadscale land use, during the Plan's next review in 2018</p>
Governance	
<p>REC34: Contribute to the development of improved governance arrangements for the management and coordination of development activities that affect the Great Barrier Reef</p>	<p>COM26: The Queensland Government will report to the Australian Government regarding proposed developments that may impact upon world heritage properties to ensure Australia's international obligations continue to be met</p> <p>COM27: The Queensland Government will report annually to the Great Barrier Reef Ministerial Forum on implementation of the Reef 2050 — Long Term Sustainability Plan</p>
<p>REC34A: Establish a peak Great Barrier Reef Advisory Group, made up of Traditional Owners, scientific, conservation and industry experts, to provide high level advice on the implementation of the Authority's management program</p>	
Adapting to climate change	
<p>REC35: Communicate the implications of climate change impacts for the Great Barrier Reef, and the critical need to halt increasing concentrations of global greenhouse gases and restore them to levels that will support growth, recruitment and recovery processes of the Great Barrier Reef ecosystem</p>	
<p>REC36: Ensure the impacts of climate change and extreme weather are appropriately considered in the Authority's management decisions</p>	
<p>REC37: Encourage reduction of greenhouse gas emissions in the Great Barrier Reef Region in partnership with industry and communities</p>	
<p>REC38: Support initiatives to build the capacity of management agencies and Reef users to adapt and respond to climate change and extreme weather events</p>	<p>COM28: The Queensland Government will work with the Australian Government, including the Authority, to develop a Reef 2050 — Long Term Sustainability Plan for the Great Barrier Reef World Heritage Area by the end of 2014, and ensure its implementation</p>



Chapter 13

Adaptive management



13.6	Monitoring and reporting	13–34
13.6.1	Monitoring	13–34
13.6.2	Review and public reporting	13–34
13.6.3	Adapting to new information	13–34
13.6.4	Parties responsible for monitoring and reporting	13–35
13.7	Addressing the endorsement criteria	13–35
13.8	Program review, modification and continuous improvement.....	13–42
13.8.1	Review and continuous improvement of Program Report Part B	13–42
13.8.2	Review and continuous improvement of Program Report Part C	13–42
References.....		13–42

Table of contents

13	How the program protects matters of national environmental significance..	13–3
13.1	Background	13–3
13.2	Comprehensive management program (Part B)	13–4
13.3	The Permission System (Part C).....	13–6
13.3.1	Benefits of approving the Permission System	13–6
13.3.2	Activities under the program.....	13–6
13.3.3	Permission System objectives and outcomes	13–7
13.3.4	Permission System process	13–8
13.3.5	Summary of program commitments	13–20
13.3.6	Permission System alignment with the EPBC Act	13–21
13.4	Applying the principles of ecologically sustainable development	13–25
13.5	Adaptive management.....	13–29
13.5.1	Addressing risk	13–29
13.5.2	Addressing uncertainty	13–29
13.5.3	Implementing adaptive management to protect and manage matters of national environmental significance	13–30
13.5.4	Addressing World Heritage Committee recommendations.....	13–31

Cover page image: Field Management vessel in the Great Barrier Reef Marine Park.

Extract from Great Barrier Reef Region strategic assessment terms of reference

6.2 Principles of ecologically sustainable development

Describe how the principles of ecologically sustainable development have been applied in the proposed program. The principles of ecologically sustainable development as described in section 3A of the Environment Protection and Biodiversity Conservation Act 1999 are:

- a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- c) the principle of intergenerational equity — that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making
- e) improved valuation, pricing and incentive mechanisms should be promoted.

6.3 Adaptive management

- a) identify the key adaptive management measures in the proposed program that address uncertainties and risks inherent in the decision-making process
- b) describe how the adaptive management measures will be implemented to ensure the relevant matters of national environmental significance, including the outstanding universal value of the Great Barrier Reef World Heritage Area, are effectively protected and managed over the life of the program.

6.4 Monitoring and reporting

- a) describe the monitoring, review and public reporting process that will be used to examine whether the program adequately protects and manages the relevant matters of national environmental significance, including the outstanding universal value of the Great Barrier Reef World Heritage Area, and the framework for measuring success
- b) describe the processes for adapting the program in response to new information
- c) nominate the parties responsible for undertaking the monitoring, review and reporting and for implementing any actions arising.

6.5 Review, modification or abandonment

- a) identify and analyse likely circumstances and procedures that may result in the review, modification or abandonment of the program. This is to include a discussion of how any commitments under the program would continue to be met under these situations.

13 How the program protects matters of national environmental significance

13.1 Background

The purpose of this chapter is to demonstrate how the Authority's program:

- provides for the protection of the Great Barrier Reef Region, including matters of national environmental significance
- applies the principles of ecologically sustainable development
- utilises an adaptive management approach
- conducts monitoring and reporting.

The final section focuses on program review, modification and continuous improvement.

The constantly changing nature of the Great Barrier Reef requires that the Authority's management program is sufficiently focused to consistently deliver results, yet agile enough to seamlessly shift and respond to issues when necessary. This adaptive management approach is embedded in the operations of the Authority, and forms a basis for our future program.

The Authority's future management arrangements are presented in three parts (Part A, B and C) of the Program Report. The program takes into account comments received from public consultation and independent reviews:

- **Part A** provides an overview of the Authority's program; describes the significance of the Great Barrier Reef; and outlines the strategic assessment process and key findings.
- **Part B** describes the Authority's comprehensive management arrangements and future commitments to protect and manage the environment, biodiversity and heritage values of the Region.
- **Part C** identifies the Authority's environmental assessment and decision-making process (the Permission System) and explains how the Marine Park, including matters of national environmental significance, is protected.

13.2 Comprehensive management program (Part B)

The *Great Barrier Reef Marine Park Act 1975* (the GBRMP Act) and Regulations govern the protection and management of the Great Barrier Reef Region. The Act establishes an objectives-based regulatory framework, the main object of which is to provide for the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region.

The other objects, so far as is consistent with the main object, are to:

- allow ecologically sustainable use of the Great Barrier Reef Region
- encourage engagement in the protection and management of the Great Barrier Reef Region
- assist in meeting Australia's international responsibilities in relation to the environment and protection of world heritage.

These objectives, together with the Authority's commitment to ensure activities carried out do not have an unacceptable impact by avoiding, mitigating and offsetting impacts on matters of national environmental significance protected under the EPBC Act, underpin the Authority's comprehensive management program.

To support attainment of the program's objectives, including the protection of world heritage values, the Authority has committed to the adoption of a comprehensive outcomes-based management approach. This framework explicitly identifies the desired outcomes for the Region's values including each matter of national environmental significance, and attributes and ecosystem processes relevant to matters of national environmental significance (see Chapter 4).

The life of the program is 25 years.

The Authority's comprehensive management program is built around three program areas:

- **Environmental regulation** — the Authority is the primary environmental regulator for the protection of the Great Barrier Reef. It utilises a range of spatially explicit planning instruments and system-based management tools such as Regulations, the Zoning Plan, plans of management, permits, compliance and statutory reporting.
- **Engagement** — the Authority recognises that protection of the Great Barrier Reef requires local, national and international effort. It works with Traditional Owners, the Australian and international community, business, industry and local government, together with Australian, Queensland and international government agencies to influence best practice and find pragmatic solutions to secure the future health of the Reef.
- **Knowledge, integration and innovation** — the Authority strives to access and capture the best available science from a network of science providers, both nationally and internationally, as well as drawing on traditional ecological knowledge and information from the wider community.

Based on the findings of the strategic assessment, the Authority has committed to a number of measures to strengthen its comprehensive management program. These are set out in Table 13.1.

Table 13.1 Implementation of measures to strengthen management and forward commitments

Over the next five years, the Authority will focus its management efforts on the implementation of a suite of measures to strengthen foundational management. Measures are designed to strengthen the protection and, where relevant, restoration of the Region's values including matters of national environmental significance.

	Within 12 months	Within two years	Within five years	Ongoing	Annually	Five-yearly
New initiatives						
Outcomes and targets	•					
Offset guidelines and net benefit policy	•					
Cumulative impact assessment guidelines	•					
Reef recovery program				•		
Integrated monitoring and reporting program			•			
Measures to strengthen management						
Environmental regulation						
Regionally-based standards for ecosystem health			•			
Dredging and dredge material disposal policy	•					
Strengthened guidelines (e.g. water quality)		•				
Measures to enhance alignment of permission system with EPBC Act assessment processes	•					
Streamlining, harmonising and enhancing management tools		•				
Improving assessment of matters of national environmental significance				•		
Further develop operational activities that support recovery and build resilience				•		
Improving certainty for planning and management			•			
Strengthening protection of heritage values			•			
Improving compliance				•		
Improving incident response capacity				•		
Engagement						
Influencing drivers and activities affecting the Region				•		
Supporting best practice and stewardship				•		
Improving consultation arrangements		•				
Establishment of a peak Reef advisory committee	•					
Knowledge, innovation and integration						
Improving identification and understanding of matters of national environmental significance				•		
Improving identification of Indigenous heritage values			•			
Developing an historic heritage database		•				
Improving understanding of community benefits			•			
Improving alignment and coordination of research priorities	•					
Increasing emphasis on use of modelling			•			
Better integration of knowledge into management			•			
Forward commitments						
Reef 2050 Long-Term Sustainability Plan	•					
Adaptive management — review cycles					•	•
Governance (Ministerial Forum)					•	

13.3 The Permission System (Part C)

The Authority's Permission System is established under the GBRMP Act. The GBRMP Act and its Regulations govern the protection and management of the Great Barrier Reef Region. The Act provides the Authority's head of power to regulate certain activities in the Region. In managing the Marine Park and carrying out its functions, the Authority must have regard to, and seek to act in a way that is consistent with, the objects of the Act, the principles of ecologically sustainable use and the protection of the world heritage values of the Great Barrier Reef World Heritage Area (subsection 7(3) of the GBRMP Act).

The Permission System draws upon and operates within the context of the Authority's spatially explicit and systems-based regulatory tools.

The primary planning instrument under the GBRMP Act is the *Great Barrier Reef Marine Park Zoning Plan 2003* (the Zoning Plan). The Zoning Plan divides the Great Barrier Reef into eight zones, setting out which activities can occur in each zone. Each zone has specific conservation and management objectives for the protection of the environmental values of that zone.

The GBRMP Regulations provide for a system of permits which are required for specified activities likely to impact on the environmental values of each zone. For each permit application, the Authority undertakes an assessment of the nature and scale of activities, and makes a determination based on the acceptability of impacts from those activities on the environment.

As part of the strategic assessment process, the Authority is seeking approval of activities under the program in accordance with the provisions of Part 10 of the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

13.3.1 Benefits of approving the Permission System

The Marine Park is jurisdictionally complex, with overlapping tenures and responsibilities for management. Following a strategic assessment, the Minister for the Environment may endorse the program and approve actions, or classes of actions to be undertaken in accordance with the endorsed program. As part of the decision about whether to approve actions or classes of actions under the program, the Minister for the Environment must inform other Ministers with administrative responsibilities relating to the actions of the proposed approval, and invite comments including about economic and social matters relevant to those actions.

If approved, activities under the program are deemed to have been assessed and approved under the EPBC Act, and further consideration is not needed under this legislation.

A key benefit of the approval of actions taken in accordance with an endorsed program is the streamlining and reduced duplication of assessment processes while maintaining strong environmental safeguards.

The strategic assessment found that one of the strengths of the Authority's current management arrangements was that a focus on the Marine Park as a matter of national environmental significance means that values relevant to other matters of national environmental significance are implicitly considered in decision making. The implementation of recommendation 1 will further improve this approach:

REC1: Explicitly incorporate consideration of all matters of national environmental significance, including attributes of the property's outstanding universal value, into the Authority's programs, plans and policies.

The strategic assessment also found that although the Intergovernmental Agreement (between the Australian and Queensland governments) provides a strong foundation for complementary joint permit assessment and approval processes, there is currently significant duplication in assessment processes across jurisdictions. The complexity of processes presents significant challenges to public engagement in decision making. An approval of actions under Part 10 of the EPBC Act would support recommendation 8 to:

REC8: Streamline assessment processes across jurisdictions and seek to have a more coordinated approach to community consultation.

13.3.2 Activities under the program

The Great Barrier Reef Marine Park is a multiple-use area. It provides for a range of ecologically sustainable commercial, recreational and research opportunities and for the continuation of traditional activities.

The GBRMP Act includes provisions which **prohibit mining** operations (which includes prospecting or exploration for, as well as recovery of, minerals) in the Great Barrier Reef Region, unless authorisation to carry out the operations is granted by a permission under the Regulations, for the purpose of research or investigations relevant to the conservation of the Marine Park.

Approval of activities under the program will be subject to alignment with any approval bilateral agreement under Part 5 of the EPBC Act that may be in effect for the program area.

An updated assessment bilateral agreement between the Australian and Queensland governments was signed on 13 December 2013 through which the Queensland Government is accredited to undertake environmental assessments of any proposed actions that may impact the Great Barrier Reef. In addition, the two governments

are negotiating an approval bilateral agreement to accredit Queensland Government processes for assessment and approval of proposed actions under the EPBC Act. This agreement aims to reduce duplication of environmental assessment and approval processes between the Commonwealth and Queensland, while maintaining high environmental standards.

The intent of the Authority seeking approval of classes of action is also to maximise opportunities for streamlining and reducing potential regulatory duplication, while maintaining high environmental standards.

Activities covered under the Permission System are:

- all activities requiring a permission under the Zoning Plan
 - aquaculture operations
 - harvest and development fisheries
 - research (other than limited impact research)
 - tourism programs and developments
 - educational programs (other than limited impact educational programs)
 - vessel or aircraft charter operations
 - navigating a managed vessel or aircraft
 - operating a facility, including
 - discharging waste from a facility
 - installation, operation and decommissioning of a facility
 - moorings
 - operating a landing area or a facility for aircraft
 - carrying out works, including:
 - dredging
 - dumping of spoil
 - reclamation
 - beach protection works
 - harbour works
 - taking animals and plants that pose a threat to human life or safety, marine ecosystems of the Marine Park or use or amenity of a part of the zone or adjacent area.

The activities under Part 5 of the Zoning Plan are not intended to be covered by this program.

The Authority will continue to implement joint management arrangements for the area of shared jurisdiction with the Queensland Government and in accordance with the Great Barrier Reef Intergovernmental Agreement.

If the Authority receives a permit application which is likely to have a significant impact on a matter of national environmental significance which is not covered by the above classes of activities in the strategic assessment, the Authority will provide applicants with the earliest possible advice of this and direct them to the EPBC Act assessment pathways administered by the Department of the Environment, or the Queensland Government where an accredited process exists or delegated authorities.

13.3.3 Permission System objectives and outcomes

The objectives of the Permission System are that all activities permitted under the Permission System must be carried out in a way that ensures the impacts to the Marine Park, including matters of national environmental significance, and the broader environment, are of an acceptable level and are carried out in a manner that is consistent with the objectives of the GBRMP Act and the principles of ecologically sustainable use. If a proposed project or activity would have an unacceptable impact on the Marine Park, including a matter of national environmental significance, the Authority would not grant a permit for the project or activity to proceed under the Permission System.

The objective of the Permission system is to ensure the values of the Region are transmitted in good and very good condition. In assessing and managing impacts, the approach to date has been to avoid, mitigate and offset significant residual impacts. This would be sufficient if the attributes critical to the Marine Park, including matters of national environmental significance, were in good or very good condition and the ecosystem's ability to recover from disturbance was high.

However, the majority of these attributes in the inshore southern two-thirds of the Region have been assessed to be in either poor or declining condition, and there is increasing evidence that the ecosystem's ability to recover from disturbance is being lost. Furthermore, the strategic assessment found that it is not only significant residual impacts of development actions, but the cumulative effect of all impacts which are affecting the condition of the Marine Park, including matters of national environmental significance and relevant attributes and environmental processes.

Consequently, the Authority's management program includes measures to 'offset' all residual impacts in order to maintain the current condition of attributes and environmental processes supporting matters of national environmental significance. Furthermore, as many of the attributes and environmental processes have been assessed to be in poor or declining condition, additional measures are proposed to not only 'offset' residual impacts but to deliver an overall net improvement in the condition of the Marine Park.

The matters relevant to this strategic assessment and the program's overarching commitment to outcomes of environmental protection are outlined in Table 13.2.

Table 13.2 The Authority's commitment to safeguard matters of national environmental significance

Matter of national environmental significance	Outcome
All matters of national environmental significance	Matters of national environmental significance are protected and conserved.
World heritage properties	The outstanding universal value of the Great Barrier Reef World Heritage property is identified, protected, conserved, presented and transmitted to future generations.
Great Barrier Reef Marine Park	The outstanding universal value of the Great Barrier Reef Marine Park, as a world heritage property, is identified, protected, conserved, presented and transmitted to future generations. The environmental, biodiversity and heritage values of the Great Barrier Reef Marine Park are protected and conserved for the long term, consistent with the objects of the Act.
National heritage places	The outstanding value to the nation of national heritage properties is identified, protected, conserved, presented and transmitted to future generations of Australians.
Commonwealth marine areas	The ecosystem functioning and integrity of Commonwealth marine areas are maintained or enhanced in full conformity with relevant marine bioregional plans.
Listed migratory species	The survival and conservation status of listed migratory species and their critical habitat is promoted and enhanced, consistent with Australia's international obligations.
Listed threatened species and ecological communities	The survival and conservation status of listed threatened species and ecological communities is promoted and enhanced, including through the conservation of habitat critical to the survival of a species or community and other measures contained in any recovery plans, threat abatement plans or conservation advice.
Wetlands of international importance	The ecological character of each Ramsar wetland is maintained, and the conservation and wise and sustainable use of the wetland is promoted for the benefit of humanity in a way that is compatible with maintenance of the natural properties of the ecosystem. This is to be achieved through the implementation of ecosystem approaches, within the context of sustainable development.

13.3.4 Permission System process

The Authority assesses permit applications against the requirements of the Permission System. The Authority is obliged to take into account all relevant considerations in exercising its decision-making power. Relevant considerations include:

- the Authority's environmental regulation requirements
- the additional commitments outlined in the program to maintain and enhance protection of matters of national environmental significance
- the Authority's commitments to consider and manage impacts on matters of national environmental significance to be implemented via the Permission System as set out in Table 9 of the Program Report.

Under the GBRMP Act the protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region takes primacy over social and economic considerations. Consequently, the decision framework is governed by the requirement to first protect the environment and matters of national environmental significance and, second, to support sustainable use.

The Authority's assessment under the Permission System involves experienced assessment teams and specialists evaluating applications with reference to all relevant internal and external sources of information. This includes applicable legislation, scientific reports, international agreements, management plans and relevant policies, guidelines and standards. When permit applications relate to matters of national environmental significance that occur in the Marine Park, the Authority's assessments have regard to and are undertaken consistently with the EPBC Act's statutory and policy documents related to those matters of national environmental significance.

Each permit application is subject to an assessment in line with Authority policy and includes scoping, assessment, decision, and audit and compliance steps as outlined in Figure 13.1.

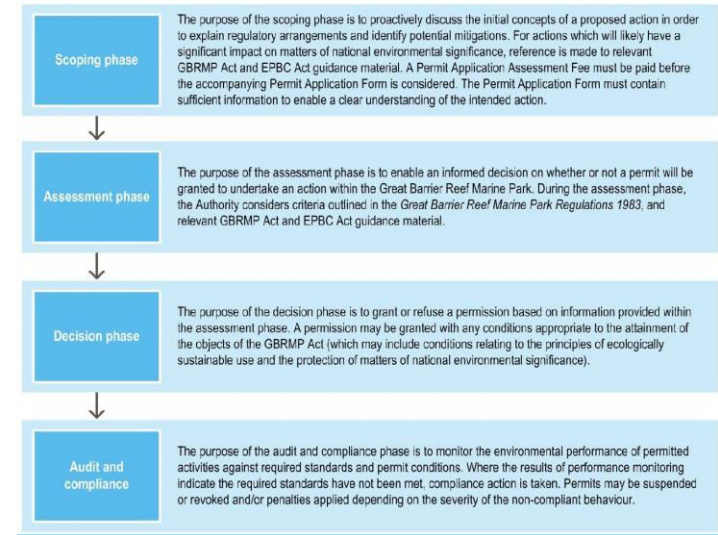


Figure 13.1 The four key steps in the permission assessment and decision process

Examples of how application of the Permission System protects matters of national environmental significance are provided in Appendix 7 – Permission System Case Studies.

An overview of how the Permission System ensures the appropriate level of consideration and management of impacts for each matter of national environmental significance is provided in Table 13.3. This table outlines how the steps in the Authority's Permission System and the program's commitments align with the EPBC Act assessment process.

Table 13.3 Steps in the Authority's Permission System and EPBC Act assessment and decision-making process

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
Step 1: Scoping phase			
Initial inquiry	<p>An applicant may approach the Authority to discuss initial concepts, designs, alternatives and potential mitigation of impacts for any proposed activity or development which may impact on the Great Barrier Reef Marine Park and require a permit.</p> <p>Where permits may be required from other government agencies, the Authority recommends a whole-of-Government meeting be held to identify the scope of the proposed activity. Discussions will include consideration of matters of national environmental significance (MNES). The Authority has committed to developing guidance for applicants which explain requirements relating to MNES. The guidance will assist applicants in meeting the information requirements necessary for MNES.</p>	<p>The Authority's Environmental Impact Management Policy.</p> <p>Under the program, the Authority will:</p> <ul style="list-style-type: none"> develop guidelines to assist applicants to determine whether an action is likely to have significant impact on the Great Barrier Reef Marine Park MNES. The Authority will seek to have these guidelines approved by the Minister. 	<p>Equivalent to EPBC Act 'pre-referral meeting' where regulatory arrangements are explained to applicants.</p> <p>MNES and outstanding universal value (OUV) will be specifically included in Authority programs, plans and policies.</p>
Tests of 'significant impact'	<p>The Authority will develop and implement referral guidelines to assist in the determination on whether a proposed action is likely to have a significant impact on the Great Barrier Reef Marine Park and other matters of national environmental significance.</p> <p>The Authority will update its policy documents for permittees and internal assessment officers to ensure relevant EPBC Act guidelines are considered.</p>	<p>GBRMP Act section 7(4), policy documents.</p> <p>Under the program, the Authority will require:</p> <ul style="list-style-type: none"> consideration of relevant EPBC Act policy documents by applicants, including relevant significant impact guidelines, in the scoping phase of the permission assessment and decision process consideration of prudent and feasible alternatives, which may have a lower impact on the environment by applicants, and amend its policy documentation to include reference to this requirement. 	<p>The EPBC Act advisory documents include significant impact guidelines for MNES, and OUV of the Great Barrier Reef World Heritage Area.</p>
Permit application	<p>An applicant must complete a Permit Application Form and pay a Permit Application Assessment Fee.</p> <p>In order to be granted a permit to undertake an activity, the applicant is required to establish that the environmental impacts of the proposed activity are acceptable.</p> <p>The application must provide sufficient information to enable a clear understanding of the intended activity.</p> <p>The Authority undertakes the following processes at this stage:</p> <ul style="list-style-type: none"> The permit application is lodged with the Authority in both hard form and electronically. The application undergoes an initial check to ensure it meets minimum legal requirements (including EPBC Act 	<p>GBRMP Regulations r88A (standard permission) and Division 2A 3 (special permissions) require applications to be made in a form approved by the Authority.</p> <p>Fees are set out in regulation 128 of the GBRMP Regulations.</p> <p>Under the program, the Authority will amend its Permit Application Form to include a section which specifically addresses MNES.</p>	<p>MNES and OUV will be included within Authority programs, plans and policies.</p>

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
	<p>requirements relating to MNES).</p> <ul style="list-style-type: none"> A determination of the Permit Application Assessment Fee is undertaken. An acknowledgement letter is sent to the applicant, this includes details of assessment procedures and likely timeframes for assessment. A native title notification is sent if required. 		
Step 2: Assessment phase			
Allocation of assessment level — nature and scale	<p>Permit applications are allocated to an assessment level, depending on the scale of the project, the degree and duration of impacts and other factors such as public interest and sensitivity of the environment.</p> <p>The level of complexity of the permit is determined against the Authority's Environmental Impact Management Policy by the delegate. The level of assessment is also determined at this stage, for example by an Environmental Impact Statement (EIS).</p> <p>The level of permit assessment is determined based on the nature and scale of the activity which is proposed. Considerations may include, but are not limited to:</p> <ul style="list-style-type: none"> The size of the project. The duration/timeframe of the project. The adequacy and completeness of the information in the permit on the relevant impacts of the action. The duration (temporary or ongoing) and reversibility of impacts. The current environmental situation at the action location and/or area of impact. Consideration of outcomes if approved in its current form. Consideration of potential to carry out activity in a manner that reduces impacts. The level of knowledge and certainty of involved risks (and how to improve knowledge). The environmental elements that are likely to be affected by the activity. The extent to which potential relevant impacts have already been or will be assessed under Queensland Government processes (including through the local or state government planning process). The degree of public concern associated with the proposal, or with similar proposals having comparable likely impacts on the environment. What further information is required from the applicant? Are there gaps in information or insufficient information to provide a high level of certainty about the project? An initial assessment of the costs and benefits, including environmental costs and benefits, to the community and the 	<p>The Authority's Environmental Impact Management Policy.</p> <p>Under the program, the Authority will:</p> <ul style="list-style-type: none"> update the Great Barrier Reef Marine Park Regulations 1983 to explicitly outline the levels of assessment under the Permission System develop guidance material to outline the levels of assessment and the general requirements for applicants. 	<p>The EPBC Act enables the identification of whether approval of an action is required.</p> <p>Actions likely to have a significant impact on a MNES protected under the EPBC Act would fall into Level 3 or 4 where options include EIS and Public Environmental Review assessments.</p>

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
	<p>person proposing to take the action of further data collection about, and analysis of, the relevant impacts of the proposal.</p> <ul style="list-style-type: none"> • What type/level of monitoring would be required to ensure compliance? • Would an Environmental Management Plan be required to implement and manage onsite impacts? • Would an Advisory Committee be required to advise on environmental impacts? • Is an Environmental Site Supervisor required to supervise environmental controls? • Would a deed of agreement need to be entered into for the protection of the environment, and would a bond be required to be paid as part of the deed of agreement to cover the risks associated with the activity? <p>The assessment level is chosen on the basis that it will provide the information needed to satisfactorily answer the assessment questions. Larger scale projects with longer timeframes and a greater nature and scale of impacts will require more detailed assessment.</p> <p>After allocation, all permits are immediately registered on the permit assessment database.</p> <p>Indicatively, the level of environmental impact management tools utilised are as follows:</p> <ul style="list-style-type: none"> • Level 1 assessments may require compliance monitoring. • Level 2 assessments may require a site inspection, standard Deed and a Bond. • Level 3 assessments may require a site inspection (and issues-based site inspections), an Environmental Management Plan (and an Advisory Committee), a standard Deed and a Bond. • Level 4 assessments may require a site inspection (and issues-based site inspections, and reactive site inspections and monitoring consultant(s)), an Environmental Management Plan (and an Advisory Committee and Environmental Site Supervisor), a specific Deed, and a Bond. <p>All activities with a likely significant impact on MNES will undergo a Level 3 or 4 assessment (or equivalent) which requires an EIS or PER be prepared and assessed for the activity.</p> <p>Deeds are required for permitted commercial activities, and establish terms and conditions related to the permit, and identify indemnities, bonds and insurance requirements.</p> <p>Bonds seek to ensure that costs associated with rectification of environmental damage are borne by the operator.</p>		

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
Permit assessment	<p>Equivalent to the EPBC significant impact test, a permit assessment determines whether EPBC referral would be triggered by the actions proposed in the Permit Application.</p> <p>The environmental management tools and permit conditions generally become more robust as the assessment level scale increases.</p> <p>Permits may be assessed solely on the permit documentation. This type of assessment is typical for smaller scale assessments. Activities with significant impacts on MNES would not be assessed at this level.</p> <p>During the assessment process, a Public Environment Report may be requested to ensure sufficient information on the impacts of the action on MNES is available to inform decision-making.</p> <p>A Public Environment Report has the same meaning as within Division 5, Part 8 of the EPBC Act.</p>	<p>The Authority's Environmental Impact Management Policy.</p> <p>Each MNES will be identified separately in the assessment process.</p> <p>GBRMP Regulations r88A, GBRMP Regulations r88E and r128(3).</p> <p>The Authority's Environmental Impact Management Policy.</p> <p>Each MNES will be explicitly identified and explicitly assessed.</p>	<p>The EPBC Act provides for different levels of assessment of controlled actions, commensurate with the nature and scale of the impacts on EPBC protected matters.</p> <p>Smaller scale assessments are the equivalent to assessment of a referral under Part 7 of the EPBC Act where the activity is not determined to have a significant impact on a MNES.</p> <p>Division 5, Part 8 of the EPBC Act.</p>
Environmental Impact Statement	<p>During the assessment process, an EIS may be requested to ensure sufficient information on the impacts of the action on MNES is available to inform decision-making.</p> <p>An EIS has the same meaning as within Division 6, Part 8 of the EPBC Act.</p>	<p>GBRMP Regulations r88E and r128(4).</p> <p>Each MNES will be explicitly identified and impacts on them must be explicitly assessed.</p>	<p>Division 6, Part 8 of the EPBC Act.</p>
Consultation	<p>During the assessment process, the Permit Application may be referred to relevant parties for comment (for example applications with the potential to impact fisheries would be referred to the Commonwealth and State departments responsible for management of fisheries).</p> <p>Applications that may have a significant impact on MNES will be available for public consultation via the Authority's website.</p> <p>All applications with significant impacts will be publically advertised.</p>	<p>The Authority's Environmental Impact Management Policy.</p> <p>Internal procedures and guidelines.</p> <p>Authority's website.</p> <p>Relevant policies will be updated to explicitly state that permit applications for an action where granting a permission may restrict the reasonable use by the public of a part of the Marine Park will be advertised for public comment through either EIS or PER assessment.</p> <p>Relevant policies will be updated to explicitly state that appropriate consultation will be undertaken with persons or organisations, including Australian and Queensland government agencies, whose functions, interests or activities could be impacted by the proposed activity.</p>	<p>C174 of Division 1, Part 7, of the EPBC Act.</p>
Advertising application	<p>During the assessment process, the Permission System provides for public notification and consultation where an action may restrict the reasonable use by the public of a part of the Great Barrier Reef Marine Park.</p>	<p>GBRMP Regulation r88D provides for the advertising of applications.</p> <p>The Authority will publish notification of all permit applications on the internet</p>	<p>Divisions 4, 5 and 6 Part 8 of the EPBC Act.</p>

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
	All activities likely to have a significant impact on a MNES will be advertised. Consultation will occur on EIS and PER documents for no less than 30 days.	as soon as practicable after receiving a permit application.	
Mandatory and discretionary criteria	<p>The Authority will make decisions consistent with the Objects of the GBRMP Act which includes the main object at section 2A(1) to 'provide for the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region'. This necessarily includes MNES.</p> <p>During the assessment process, the permit application is assessed in accordance with mandatory and discretionary criteria outlined within the GBRMP Regulations. These include relevant Australian and Queensland Government environmental management laws, and conservation advices.</p>	<p>GBRMP Regulations r88Q (mandatory considerations) and r88R (discretionary considerations).</p> <p>Some activities (for example the taking of Protected Species, r88S) require additional criteria to be met.</p> <p>Assessments of impacts will have regard to the full range of MNES information sources.</p> <p>Under REC1 of the Great Barrier Reef Strategic Assessment Report, the Authority has committed to explicitly incorporate consideration of all values relevant to matters of national environmental significance, including elements of the property's outstanding universal value, into the Authority's programs, plans and policies</p>	Subdivision b, Division 1, Part 9 of the EPBC Act.
Assessment of risk	<p>The Authority's Environmental Impact Assessment Policy and Environmental Assessment and Management Risk Assessment Guidelines (developed in accordance with the Australian Standards Environmental Risk Management Handbook HB203.2006) provide guidance in the assessment of risk, including analysis of the likelihood and consequence of identified hazards being realised to obtain a Hazard Risk Grade.</p> <p>During the assessment process, hazards are identified and a risk assessment (of consequence and likelihood) is determined.</p> <p>At a minimum, a Risk Profile is completed to document the risk assessment process.</p> <p>The risk assessment process requires sufficient information to be included in order to enable a decision to be made on each MNES, which will be individually identified in the assessment.</p> <p>Additional risk management instruments utilised with permits include Deeds and Bonds.</p>	<p>Marine Park (reg 88Q(a) of the GBRMP Regulations</p> <p>Where an action is likely to have a significant impact on a matter protected under the EPBC Act within the Marine Park, the Authority will:</p> <ul style="list-style-type: none"> require applicants to consider the impacts of actions on MNES and relevant attributes and environmental processes as described in the Strategic Assessment Report and as amended in accordance with the Authority's policy review procedures require applicants to consider impacts (including direct, indirect and cumulative impacts) arising from the action in the context of all impacts affecting the matter consider any relevant international conventions and Australian-Queensland Government agreements in assessing and determining permissions under its Permission System consider all relevant plans, policies, 	

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
		documents and guidance (as specified in Table 9 of the Program Report) in assessing and determining permissions under its Permission System.	
Step 3: Decision phase			
Acceptable level	<p>Applicants must demonstrate that the environmental impacts and risks of the activity will be of an acceptable level.</p> <p>The Authority will update its policy documents to provide guidance on the key considerations for determining 'acceptability' of direct, indirect and cumulative impacts on MNES.</p> <p>The Authority will comply with the commitments in Table 9 of the Program Report.</p>	<p>GBRMP Act section 7(4), policy documents.</p> <p>Under the program the Authority will develop and implement:</p> <ul style="list-style-type: none"> guidelines for the application of Great Barrier Reef offsets to maintain or improve the condition of MNES and relevant attributes and environmental processes, where impacts cannot be avoided or mitigated. The guidelines will seek to deliver an outcome equivalent to, or better than, the outcome that would apply if the EPBC Act Environmental Offsets Policy was applied a Great Barrier Reef net benefit policy (that will be updated from time to time) to enhance the condition of the Marine Park, including MNES and relevant attributes and environmental processes. 	Includes, but is not limited to, an evaluation of whether an activity has, will have or is likely to have unacceptable impacts on MNES.
Granting and refusing permissions	<p>The Authority may grant or refuse a permission based on the assessment. Permission may be granted with any conditions appropriate to the attainment of the objects of the GBRMP Act and the protection of MNES.</p> <p>The Authority will not grant a permit for an activity inconsistent with regulatory objectives set out under the GBRMP Act, as outlined in Table 9 of the Program Report.</p>	<p>GBRMP Regulations r88X and r88ZE.</p> <p>The Program's commitments to MNES (see Table 9 of the Program Report)</p> <p>The Authority will strengthen its system for monitoring and managing compliance risks associated with permit conditions. It will review and make any necessary improvements to internal policies, procedures, training protocols and mechanisms to systematically enhance the effectiveness of its compliance and auditing process. This will include specific reference to MNES.</p>	Part 9 of the EPBC Act.

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
Step 4: Audit and compliance phase			
Permitted activities	An activity that has been granted permission must be carried out in accordance with the GBRMP permit and any conditions made. Conditions will be applied to ensure an unacceptable impact does not occur on MNES.	GBRMP Regulations, Division 2A.5 and 2A.6.	
Environmental Management Plans	For actions which may have a significant impact on the Marine Park, including MNES, an Environmental Management Plan (EMP) will be required to specify the strategies to minimise the potential impacts. EMPs generally include the identification of environmental impacts, how on-water activities will be managed to reduce these impacts, a monitoring program, emergency response plans and any relevant issue-based plans. The EMP is developed in close consultation with the Authority's assessing officer and may be modified throughout the assessment phase.	The Authority's Environmental Impact Management Policy will be updated to ensure EMPs address MNES.	
Environmental Site Supervisor	The Environmental Site Supervisor and Monitoring Consultant must be independent of (with no conflicts of interest), and funded by the applicant. The Authority will select and directly contract the Environmental Site Supervisor and Monitoring Consultant. These positions may be engaged for the whole project or any relevant phases. Supervisors have a direct 'on the ground' role in ensuring activities are carried out in accordance with conditions and EMPs. Supervisors will additionally consider MNES under the endorsed program. Supervisors would be appointed where there is a higher risk of activities to MNES, to ensure mitigation measures are applied.	The Authority's Environmental Impact Management Policy.	MNES and OUV will be specifically included in Authority programs, plans and policies.
Advisory Committee	An Advisory Committee may be established for a project to provide advice to the Authority. The Advisory Committee may include representatives from government, the applicant, community, the Environmental Site Supervisor, and experts in the fields of science and management. Under the program, MNES is an explicit consideration. Advisory Committees in future may include expertise specifically relevant to MNES.	The Authority's Environmental Impact Management Policy.	MNES and OUV will be specifically included in Authority programs, plans and policies.
Performance outcomes and performance standards	The Authority will audit environmental performance of some permitted activities and developments and, if environmental performance or compliance does not meet required standards, then penalties and/or remediation may be required. MNES will be included in audits following the approval of the program.	The Authority's Environmental Impact Management Policy. The Authority's Outcomes Framework.	Environmental performance outcomes and standards must take account of all relevant information, including (but not limited to) management guidance, standards relevant to MNES under the EPBC Act, and the program's commitments in Table 9 of the Program

Permission System — Step components	Description	Authority Mechanism	EPBC Act, MNES
			Report. MNES and OUV will be specifically included in Authority programs, plans and policies.
Compliance	The Authority will determine the need for a Bond and/or a Deed to provide ongoing indemnity and, where necessary, to ensure there is an ongoing contractual obligation to protect the environment if the permit lapses. These would be applied where there is a higher risk of activities to MNES.	GBRMP Act, Part VAA The Joint Field Management Program (Great Barrier Reef Intergovernmental Agreement – Schedule C) undertakes compliance activities through both education and enforcement in order to encourage adherence to legal requirements.	If environmental performance or compliance does not meet required standards for protection of MNES and OUV, penalties and/or remediation will be required.
Incident response	Increasing use of the Region and the likelihood of increased extreme weather events will require the Authority and its management partners to have a strong capacity to respond to incidents. MNES will be relevant considerations of any incident response measures.	The Authority has a cooperative compliance management and surveillance program involving Australian and Queensland government agencies. These include the Queensland Department of National Parks, Recreation, Sport and Racing; Border Protection Command; Queensland Boating and Fisheries Patrol; Queensland Police Service; Commonwealth Director of Public Prosecutions; Australian Federal Police; Australian Maritime Safety Authority; and Maritime Safety Queensland.	A partnership approach with the Australian and Queensland governments enables the Authority to promote protection of MNES and OUV to a broader monitoring group, and deliver greater incident management coverage for the Region.

An overview of how the Permission System permit application content requirements align with the EPBC Act assessment requirements is described in Table 13.4.

Required information	Content requirements
Details of the applicant	In order to be granted a permit to undertake an activity, an application must provide details of the applicant, including a history of environmental performance regarding matters of national environmental significance.
Summary of the proposal	GBRMP Reg 88A (standard) and Reg 2A.3 (applications for special permissions) require applications to be made in a form approved by the Authority. In order to be granted a permit to undertake an activity, an application must provide enough information so permit assessors can clearly understand what the intended activity is. The application must contain a description of each of the activities that will be carried out, including a description of works to be undertaken and facilities to be used to carry out the activity, the location of the activities, and proposed timetables for carrying out the activities. The application forms will include a section to address impacts on matters of national environmental significance to assist with the assessment.

Required information	Content requirements
Description of prudent and feasible alternatives considered	The Authority recommends applicants and interest groups to discuss initial concepts, designs, alternatives and potential mitigation of impacts for any proposed activity or development which may impact on the Great Barrier Reef Marine Park and require a permit. Alternatives to activities with a significant impact on matters of national environmental significance will be required.
Description of the existing environment that may be affected by the proposal	The application must contain a description of the characteristics of the existing environment that may be affected by the proposal and details of sensitivities of that environment, including attributes and environmental processes relevant to matters protected under the EPBC Act. The description should cover the zone of influence likely to be affected by the proposed activity and must be sufficient to inform consideration of the nature and scale of the impacts by the Authority in its assessment (for example, species/populations that may potentially be affected by upstream and downstream impacts such as water quality or noise effects).
Description of sensitivities	The application must contain a description of sensitivities of the impacted environment, including matters of national environmental significance protected under the EPBC Act and relevant attributes and environmental processes.
Description of environmental impacts and risks	Chapter 6 of the Strategic Assessment Report describes the impacts of activities on values. Consistent with the Authority's Environmental Impact Management Policy, applicants need to consider direct, indirect and cumulative impacts appropriate to the nature and scale of activities for which permission is sought. If a proposal is regarded as having the potential for significant environmental impact under the EPBC Act, then applicants are advised inclusion of an Environmental Impact Statement or Public Environment Report may be required. The Authority has committed to specifically including matters of national environmental significance and outstanding universal value in Authority programs, plans and policies.
Evaluation of impacts (direct, indirect and cumulative) and risks	In order to be approved, an application for an activity under the Permission System is required to contain an evaluation of all the impacts, including direct, indirect and cumulative impacts and risks, including relative level of certainty. The application must further demonstrate that impacts and risks are consistent with the desired outcomes for the protection of matters of national environmental significance. Assessment guidelines will include information on condition and trend of all matters of national environmental significance. Chapter 7 of the Strategic Assessment Report assesses the current condition and trend for the Region's values and processes. Part B of the Program Report outlines the comprehensive management program based on outcomes and targets. The desired outcome for each value is informed by the assessment of its current condition and trend as evaluated in the strategic assessment. This approach recognises that the condition and trend of each value and process varies across the Region. The outcome for each value and process is a combination of the strategic assessment findings on condition and trend, and the international and national obligations to protect them. For example, if a value is assessed to be good condition, the outcome is that its condition is maintained and enhanced. However, if a value is assessed to be in poor condition, the outcome is that its condition is restored to good condition. If the trend of the value is assessed to be declining, the outcome is that the decline is halted and reversed. There will be improvement in the collection, management, analysis and interpretation of information derived from the Authority's Permission System and compliance monitoring.
Performance outcomes, standards and measurement criteria	The setting of environmental performance outcomes and performance standards must take into account all relevant information which includes, but is not limited to, management guidance and standards relevant to all EPBC Act protected matters. These have to be benchmarked against regulatory objectives, outcomes for matters of national environmental significance and relevant GBRMP Act and EPBC Act guidelines and standards. An Advisory Committee may be established for a project to provide advice to the Authority. The Advisory Committee may include representatives from government, the applicant, community, the Environmental Site Supervisor, and experts in the fields of science and management. The Authority will determine the need for a cash bond or bank guarantee and a Deed of Agreement to provide ongoing indemnity and, where necessary, to ensure there is an ongoing contractual obligation to protect the environment if the permit lapses. Civil

Required information	Content requirements
	penalties are available for offences. The Authority will audit environmental performance of some permitted activities and developments and, if environmental performance or compliance does not meet required standards, then penalties and/or remediation may be required. MNES and OUV will be specifically included in Authority programs, plans and policies.
Description of environmental monitoring and reporting standards	For certain activities, including any that are likely to have a significant impact on MNEES, the Authority requires development of an Environmental Management Plan (EMP). Where an EMP is required for implementation of an activity it is set out as a condition of a Marine Parks Permit. As a minimum, the EMP needs to address: <ul style="list-style-type: none"> • what values of the Marine Park may be impacted by the activities • how the applicant will manage actions to minimise those impacts • what the applicant will do to ensure that all staff and clients know what they should be doing to meet the requirements of the EMP, including who is the responsible person for key actions • how it will be determined if actions are working in accordance with the conditions of the EMP and Permit conditions • how adaptive management principles will be applied to improve the EMP. At a minimum, the EMP elements should include: <ul style="list-style-type: none"> • <i>Activity or Issue</i> — Description of the activity being managed or considered. • <i>Potential Impacts</i> - Description of the potential effects of the activity on all environmental issues. • <i>Aim</i> — What the EMP element hopes to achieve for environmental issues. • <i>Management strategies</i> — How all activity will be managed to achieve the aim • <i>Performance indicators</i> — What will be measured to show that the aim is being met • <i>Responsibility</i> — Who will be the person nominated to manage this element • <i>Monitoring and Reporting</i> - How and when the performance indicators will be measured to test whether the aim has been achieved • <i>Corrective Action</i> — The action to be taken and by whom, if a performance requirement is not met • environmental performance standards and measures for the activities to be carried out, benchmarked against regulatory objectives, outcomes for matters of national environmental significance and relevant GBRMP Act and EPBC Act guidelines and standards • environmental monitoring and reporting standards to be employed to measure environmental performance, appropriate to the type of activities.
Legislative requirements	Permit applications will be considered on a case by case basis, with consideration given to the objectives of the zone in which the proposed conduct will take place, as set out in the Zoning Plan. In making decisions that are consistent with the Objects of the GBRMP Act, the Authority must consider the potential impacts of the conduct proposed to be permitted by the permission on the environment and on the social, cultural and heritage values of the Marine Park or a part of the Marine Park. Content of the EMP must be consistent with the nature and scale of the activity, and have regard to the mandatory and discretionary considerations under GBRMP Regulations 88Q and 88R.
Additional requirements	<i>Deed of Agreement</i> — Once a permit is issued, depending on the type and scale of the proposed activity, it is likely to be subject to a Deed of Agreement to cover the risks associated with the proposed activity. <i>Bond</i> — If a bond is required, the amount determined will be specified in the Deed of Agreement. The permittee will be required to secure with the Authority a bank guarantee for the bond amount. <i>Insurance</i> — The Authority sets out minimum insurance requirements under the Deed of Agreement. The Authority recommends permittees seek independent insurance advice concerning the level and type of cover that is appropriate for its specific operation and its associated activities. <i>Site Supervision</i> — Site supervision is an essential component of the management of projects that have the capacity to have significant impacts on the Marine Park and its users. It is also used as a tool to enable the flexible management for certain activities (for example, filming to provide access to or allow activities at a sensitive location in the presence of a nominated site supervisor).

13.3.5 Summary of program commitments

As outlined in Table 13.3, the following program commitments are made under the program:

A clear understanding of legislative requirements, including criteria for determining whether an action is likely to have a significant impact, together with consideration of prudent and feasible options at an early stage, will maximise prospects of the proposed development proceeding in an environmentally acceptable way. Accordingly, the Authority will:

- require consideration of relevant EPBC Act policy documents by applicants, including relevant significant impact guidelines, in the scoping phase of the permission assessment and decision process
- require consideration of prudent and feasible alternatives which may have a lower impact on the environment by applicants, and amend its policy documentation to include reference to this requirement
- develop guidelines to assist applicants to determine whether an action is likely to have significant impact on the Great Barrier Reef Marine Park matters of national environmental significance. The Authority will seek to have these guidelines approved by the Minister.

The Authority will amend its Permit Application Form to include a section which specifically addresses matters of national environmental significance.

The Authority will seek to pursue amendments to the Great Barrier Reef Marine Park Regulations 1983 to explicitly outline the levels of assessment under the Permission System.

The Authority will update its permissions guidance material to outline the general information requirements for applicants according to the level of assessment.

The Authority will seek to pursue amendments to the GBRMP Regulations (in particular, regulation 128) to ensure continued application of fees for the Authority's assessment of activities that are covered by an approval granted under section 146 of the EPBC Act (Part 10 – Strategic Assessments).

The Authority will publish notification of all permit applications on the internet as soon as practicable after receiving a permit application.

The Authority will seek to pursue amendments to the GBRMP Regulations (in particular, regulation 88D) to require advertising of applications where the granting of a permission may restrict the reasonable use by the public of a part of the Marine Park or is likely to have a significant impact on the Marine Park, including on matters of national environmental significance

Relevant policies will be updated to explicitly state that appropriate consultation will be undertaken with persons or organisations, including Australian and Queensland government agencies, whose functions, interests or activities could be impacted by the proposed activity.

Where an action is likely to have a significant impact on a matter protected under the EPBC Act within the Marine Park, the Authority will:

- require applicants to consider the impacts of actions on matters of national environmental significance and relevant attributes and environmental processes, as described in the Strategic Assessment Report and as amended in accordance with the Authority's policy review procedures
- require applicants to consider impacts (including direct, indirect and cumulative impacts) arising from the action in the context of all impacts affecting the matter
- consider any relevant international conventions and Australian-Queensland Government agreements in assessing and determining permissions under its Permission System
- consider all relevant plans, policies, documents and guidance in assessing and determining permissions under its Permission System.

The Authority will develop and implement:

- guidelines for the application of Great Barrier Reef offsets to maintain or improve the condition of matters of national environmental significance and relevant attributes and environmental processes, where impacts cannot be avoided or mitigated. The guidelines will seek to deliver an outcome equivalent to, or better than, the outcome that would apply if the EPBC Act Environmental Offsets Policy was applied.
- a Great Barrier Reef net benefit policy (that will be updated from time to time) to enhance the condition of the Marine Park, including matters of national environmental significance and relevant attributes and environmental processes.

Based on these findings, and in addition to previously identified commitments, the Authority commits to progressively strengthening (and, from time to time, amending) its policies, guidance material and support tools for assessing and determining permissions as follows:

- Amend policies and guidance material (that will be updated) used in the determination of permissions so they explicitly require the consideration of impacts on matters of national environmental significance and relevant attributes, including:
 - biodiversity and environmental processes
 - Indigenous and historic heritage values

- community benefits derived from the environment, including those not easily represented or measured (such as aesthetic values).
- Develop and maintain regionally-based standards for ecosystem health (including water quality) that support best management practices, and may be used to inform:
 - the assessment of individual, indirect and cumulative impacts on matters of national environmental significance and relevant attributes
 - actions to mitigate impacts and cumulative impacts on matters of national environmental significance and relevant attributes
 - outcomes-based decision making and considerations for determining 'acceptability' based on the commitments in Table 9 of the Program Report of impacts on matters of national environmental significance.
- Develop guidelines (that will be updated) requiring consideration of regionally-based standards for ecosystem health to improve the assessment of impacts and cumulative impacts to the Region's values, including matters of national environmental significance and outstanding universal value.
- Facilitate development of a dredging and dredge material disposal policy.
- Improve the hydrodynamic modelling guidelines (that will be updated) so they take account of longshore drift, resuspension and inter-annual current variability.
- Develop guidance material (that will be updated) to assist in determining the acceptability of impacts. Criteria shall include consistency of assessment outcomes with regulatory objectives, outcomes for matters of national environmental significance and relevant GBRMP Act and EPBC Act guidelines and standards.
- Develop guidance material (that will be updated) to be used in the determination of permissions to require the consideration of the impacts of underwater noise, particularly on at-risk species and inshore species.
- Develop guidelines (that will be updated) to improve the collection, management, analysis and interpretation of information derived from the Authority's Permission System and compliance monitoring. The information will be used to better inform adaptive management strategies.
- Develop and/or strengthen knowledge and information management tools (including spatial mapping tools, hydrological connectivity tools and systems for managing Indigenous and historic heritage information) so their use can enhance understanding of:
 - the effects of impacts of actions on matters of national environmental significance
 - measures to avoid, mitigate and offset
 - actions to deliver net benefits and best practice adaptive management.
- Develop specific advice documents (that will be updated from time to time) for notifications under Part 5 of the Zoning Plan to make reference to consideration of the matters of national environmental significance under the EPBC Act.

The Authority will consider relevant Department of the Environment policy documents, guidelines, plans of management and other online data sources available on the Department's website in its assessment and decision-making process.

The Authority will integrate relevant components of the Department of the Environment's EPBC Act assessment templates and manuals into its assessment documents as they are reviewed and updated.

The Authority will strengthen its system for monitoring and managing compliance risks associated with permit conditions. It will review and make any necessary improvements to internal policies, procedures, training protocols and mechanisms to systematically enhance the effectiveness of its compliance and auditing process. This will include specific reference to matters of national environmental significance.

Update the Environmental Impact Management Policy to enable the effective integration of all the commitments above.

The Authority will work with Queensland Government agencies and the Department of the Environment to establish administrative arrangements including, but not limited to, reporting and communication mechanisms, information and data, environmental assessment and decision-making processes.

The Authority will investigate and implement opportunities through its ongoing regulatory reform processes to:

- enhance the effectiveness of its Permission System to achieve objectives and outcomes for the protection and management of the Marine Park, including matters of national environmental significance
- harmonise requirements with relevant Commonwealth and state legislation and reduce regulatory burden.

13.3.6 Permission System alignment with the EPBC Act

The strategic assessment considered the *Framework of Standards for Accreditation*, prepared in 2014 by the Department of the Environment. This Framework was developed to assist state and territory governments to streamline their environmental assessment and approval processes with those of the Commonwealth through bilateral agreements. Bilateral agreements are a separate process under the EPBC Act to strategic assessments;

however, the Framework does provide a plain English description of baseline requirements under the EPBC Act, many of which are applicable.

In particular, the Framework provides guidance in relation to protection of matters of national environmental significance under the EPBC Act, which are addressed in this report, and also includes guidance on risk-based assessment, assessment and approvals policy, and transparency of processes and decisions.

Table 13.5 compares the outcomes achieved by the Authority's Permission System against the requirements of the EPBC Act, noting that the Authority has committed to explicitly incorporate consideration of all attributes relevant to matters of national environmental significance, including the property's outstanding universal value, into the Authority's programs, plans and policies.

Table 13.5 Comparison of the EPBC Act requirements and the Permission System	
EPBC Act regulatory requirement	The Permission System
<p>Referral</p> <p>A person proposing to take an action that will have or is likely to have a significant impact on a matter of national environmental significance protected under the EPBC Act must refer their proposal to the Department of the Environment, for a decision by the Minister on whether further assessment is required.</p> <p>Outcome(s):</p> <ul style="list-style-type: none"> Matters that are referred under the EPBC Act will be assessed for a decision on whether further assessment is required. There is a risk that actions with the potential to significantly impact on protected matters may not be referred and may not be assessed for approval. Deliver certainty and efficiency by systematically identifying actions that are likely to have a significant impact on a matter of national environmental significance. Compliance actions may apply to a person who takes (or intends to take) such an action without approval. <p>Once a proposed action is referred under the EPBC Act the Minister must decide whether the action is:</p> <ul style="list-style-type: none"> not a controlled action (NCA) not controlled provided it is conducted in a particular manner (NCA FM) controlled action (CA — requires assessment) clearly unacceptable (cannot proceed). 	<p>All activities</p> <p>The Zoning Plan is the primary planning instrument for the conservation and management of the Marine Park. The Zoning Plan has regard to the objects set out in subsection 32(7) of the GBRMP Act, taking into account the World Heritage values of the Marine Park and the principles of ecologically sustainable development.</p> <p>Activities that will have or are likely to have a significant impact on the Marine Park, including MNES, would also require a Marine Park Permit which would be assessed under the Permission System.</p> <p>The provisions of the Zoning Plan are enforced by section 38A to 38E of the GBRMP Act (which set out offences relating to use or entry of a zone for purposes that are not permitted, or in contravention of permission requirements or conditions) and sections 38M to 38MB of the GBRMP Act (which set out offences in relation to the use of ships). Contravening notification requirements or directions of the Authority is also an offence.</p> <p>Under reg 88Q(a) of the GBRMP Regulations, the Authority must consider the potential impacts of the conduct proposed to be permitted by the permission on the environment and on the social, cultural and heritage values of the Marine Park or a part of the Marine Park. This relevantly includes matters of national environmental significance.</p> <p>The Authority has committed to develop specific advice document(s) that stakeholders should consider in the preparation of their Permit Applications, to make reference to consideration of the MNES under the EPBC Act.</p> <p>This advice will include references to relevant International Conventions and Agreements, Commonwealth and State Agreements, and EPBC Act guidance documents to be considered by stakeholders in preparing Permit Applications. The Authority has committed to undertaking an assessment of whether an activity is likely to have a significant impact on matters of national environmental significance. This will be implemented by progressively strengthening (and, from time to time, amending) policies, guidance material and support tools for assessing and determining permissions.</p>
<p>Assessment</p> <p>Not all referred actions require further assessment (see Approvals below). For those actions that do require further assessment, a level of assessment is set. The Minister for the Environment considers the scale and nature of impacts, the complexity of the issues, and the degree of public concern. The level of assessment can range from assessment on the referral information already submitted to a public inquiry.</p> <p>Once the method of assessment is determined, the EPBC Act and Regulations provide further details about the process, including additional content requirements (if any) and the public comment process.</p> <p>If an action is deemed controlled, further assessment is required, including an opportunity for public comment.</p>	<p>Assessment</p> <p>The Permission System's regulatory objective and outcomes-based approach ensures that the level of assessment is commensurate with the nature and scale of the activity, and its risk-based approach ensures it is appropriate to the potential impacts and risks to the Marine Park, including MNES.</p> <p>The Authority recommends applicants and interest groups discuss initial concepts, designs, alternatives and potential mitigation of impacts for any proposed activity or development which may impact on the Great Barrier Reef Marine Park and require a permit.</p> <p>In order to be granted a permit to undertake an activity, an application must provide enough information so permit assessors can clearly understand what the intended activity is.</p> <p>The Authority has committed to specifically including MNES in</p>

EPBC Act regulatory requirement	The Permission System
<p>Outcome(s):</p> <ul style="list-style-type: none"> The level of assessment is appropriate to the nature, scale, and potential impacts and risks to matters protected under the EPBC Act. Efficiency and transparency by employing assessment approaches that reflect the risk of the proposed action and provide sufficient information for a decision maker to make an informed decision. 	<p>Authority programs, plans and policies.</p> <p>The Authority assigns an assessment level to each permission application. The assessment level is based on the potential level of impact and the level of information required to adequately address mandatory and discretionary considerations, and is outlined in the Great Barrier Reef Marine Park Authority Environmental Impact Management Policy.</p> <p>The Permit application is assessed in accordance with the GBRMP Regulations which include mandatory and discretionary criteria. These include relevant Australian and Queensland government laws relating to the management of the environment and conservation advices.</p> <p>Some activities (for example take of Protected Species (88S)) require additional criteria to be met).</p> <p>Assessments of impacts will have regard to the full range of MNES. Information sources used in assessments will be included in the Authority's assessment report.</p>
<p>Approvals</p> <p>The Department of the Environment or relevant state agency prepares a report for the Minister, and the Minister (or delegate) makes a decision on whether or not to approve the action. In making this decision, the Minister for the Environment considers the impacts of the proposed action on matters protected by the EPBC Act, social and economic matters, as well as other matters for consideration as set out under the EPBC Act. If that decision is to approve the action, the Minister for the Environment may place conditions on the approval.</p> <p>Outcome(s):</p> <ul style="list-style-type: none"> Actions that could have an unacceptable impact on MNES protected under the EPBC Act are not allowed to proceed. Actions that could have a significant impact on MNES protected under the EPBC Act are assessed and, if approved, are regulated to manage such impacts and ensure development proceeds in accordance with the principles of ecologically sustainable development. Deliver certainty, transparency and legally robust decisions by undertaking environmental assessment that adequately addresses all matters of national environmental significance, and making approval decisions based on recognised principles of environmental policy, as set out in the Intergovernmental Agreement on the Environment 1992. 	<p>Decision Phase</p> <p>Applicants must demonstrate that potential impacts and risks to the Marine Park, including MNES and the broader environment, will be consistent with the objects of the GBRMP Act in their permit application and Environmental Management Plan.</p> <p>Content of the EMP must be consistent with the nature and scale of the activity, and have regard to the mandatory and discretionary considerations under GBRMP Regulations 88Q and 88R.</p> <p>The Authority may grant or refuse a permission based on the assessment. A permit may be granted with any conditions appropriate to the attainment of the objects of the GBRMP Act, including the principles of ecologically sustainable use, and the protection of matters of national environmental significance.</p> <p>An Environmental Management Plan (EMP) will be required for activities that may have an unacceptable impact on the Marine Park, including MNES. The EMP outlines the proposed activity, its possible impacts on the Marine Park and specifies strategies to minimise potential impacts.</p> <p>The Authority will audit environmental performance of some permitted activities and developments and, if environmental performance or compliance does not meet required standards, then penalties and/or remediation may be required.</p>
<p>Transparency</p> <p>Actions referred to the Department of the Environment under the EPBC Act are published on that Department's website and there is a public invitation to comment. Public comments must be taken into account in both referral and approval decisions.</p> <p>Notifications of key stages of the assessment are posted on the website, including a notice of all decisions (for example referral, approval decisions). All decisions are subject to judicial review.</p> <p>Conditions on approvals are published on the Department of the Environment's website, as are all approved documents. The Minister may condition approvals to require publication of additional documents or reports such as monitoring plans.</p> <p>Outcome(s):</p> <ul style="list-style-type: none"> Systems are transparent and offer appropriate opportunities for public engagement, and decisions are legally robust. 	<p>Transparency</p> <p>The Great Barrier Reef Marine Park Authority is an independent statutory authority established by the GBRMP Act. As an independent regulator, the Authority's decision-making processes are based entirely in law. This is a robust regulatory system, which provides confidence to the Australian community that the regulator will not make decisions on any basis other than those enshrined in law that has passed both houses of Parliament.</p> <p>Applications that may have a significant impact on MNES will be available for public consultation via the Authority's website. The permit application is assessed by the permit assessor/project manager and referred to relevant parties for comment (for example applications with potential to impact fisheries would be referred to the Department of Agriculture and Fisheries Ctd).</p> <p>Regulation 88D of the GBRMP Regulations requires applications to be advertised if the Authority considers that granting of a permission may restrict the reasonable use by the public of a part of the Marine Park.</p> <p>This advertisement must be published in a newspaper circulating in the part of the State of Queensland adjacent to that part of the</p>

EPBC Act regulatory requirement	The Permission System
	<p>Marine Park in which the conduct, for which permission is being sought, is to be engaged in.</p> <p>The advertisement is to include an invitation for interested persons to make comment on the application within a period of not less than 30 days. The advertisement will also be published on the Authority's website.</p> <p>The Authority will seek to amend Regulation 88D of the GBRMP Regulations to require advertising of applications where the granting of a permission may restrict the reasonable use by the public of a part of the Marine Park or is likely to have a significant impact on the Marine Park, including on matters of national environmental significance.</p> <p>The Authority's management approach includes ensuring that decision making is transparent and accountable.</p> <p>The Authority's website can be used to search for specific details of permit applications and permit decisions. All current EPBC referrals, where the Authority is providing advice to the Department of the Environment, are available on the Authority's website, with links to relevant documentation currently hosted on the Department website. Following endorsement and approval, this information would be hosted on the Authority's website.</p> <p>Section 183 of the GBRMP Regulations requires for Notice of Certain Decisions on the Authority's website, including decisions on Permissions.</p> <p>GBRMP Regulations 184 allows for persons affected by certain decisions to obtain a statement of reasons from the Authority.</p> <p>Reconsideration of decisions by the Authority is available under GBRMP Regulations 186. Administrative Appeals Tribunal review of decisions after reconsideration is available under GBRMP Regulations 187.</p>
<p>Compliance and Enforcement</p> <p>The EPBC Act compliance framework includes a broad range of enforcement mechanisms for monitoring and/or managing potential non-compliance of both referred and non-referred actions. Compliance measures include post-approval reporting, monitoring with approval conditions and compliance auditing. Enforcement mechanisms to address non-compliance include revocation of approvals, civil and criminal penalties, remediation orders and enforceable undertakings.</p> <p>Outcomes(s):</p> <ul style="list-style-type: none"> • That all actions approved under the EPBC Act are undertaken in accordance with the relevant legislative and regulatory controls. • The community has confidence that actions with significant impacts are regulated effectively. 	<p>Compliance and Enforcement</p> <p>Approved activities must be carried out in accordance with a Great Barrier Reef Marine Park Permit and any conditions (GBRMP Regulations Division 2A.5 and 2A.6).</p> <p>The Authority will determine the need for a cash bond or bank guarantee and a Deed of Agreement to provide ongoing indemnity and, where necessary, to ensure there is an ongoing contractual obligation to protect the environment if the permit lapses (GBRMP Regulations 88ZE).</p> <p>Civil penalties are available for offences (GBRMP Act Part VAA).</p> <p>The Authority has a well-established inspection, compliance, monitoring and enforcement regime to ensure compliance with all legislative requirements. It schedules and conducts inspections according to a risk rating of the potential impacts of activities, and implements a graduated enforcement strategy to educate and promote compliance with the legislation (including the EPBC Act and protection of MNES).</p> <p>The Joint Field Management Program (Great Barrier Reef Intergovernmental Agreement — Schedule C) undertakes compliance activities — both through education and enforcement — to encourage adherence to legal requirements such as those contained in permits, plans of management and zoning.</p> <p>A partnership approach with Australian and Queensland government agencies and stakeholders enables the Authority to promote protection of the Marine Park, including MNES and OUV, to a broader monitoring group and deliver greater incident identification and response coverage for the Region.</p>

13.4 Applying the principles of ecologically sustainable development

The principles of ecologically sustainable development as described in section 3A of the EPBC Act are:

- Decision-making processes should effectively integrate both long-term and short-term environmental, economic, social and equitable considerations.
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- The principle of intergenerational equity — that the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.
- Improved valuation, pricing and incentive mechanisms should be promoted.

It is a requirement of the GBRMP Act that, in managing the Marine Park and performing its other functions, the Authority has regard to and seeks to act in a way that is consistent with the principles of ecologically sustainable development (Figure 13.2). The Authority, bound by the requirements of the GBRMP Act, will continue to apply these principles to its protection and management of the environment, biodiversity and heritage values of the Region.

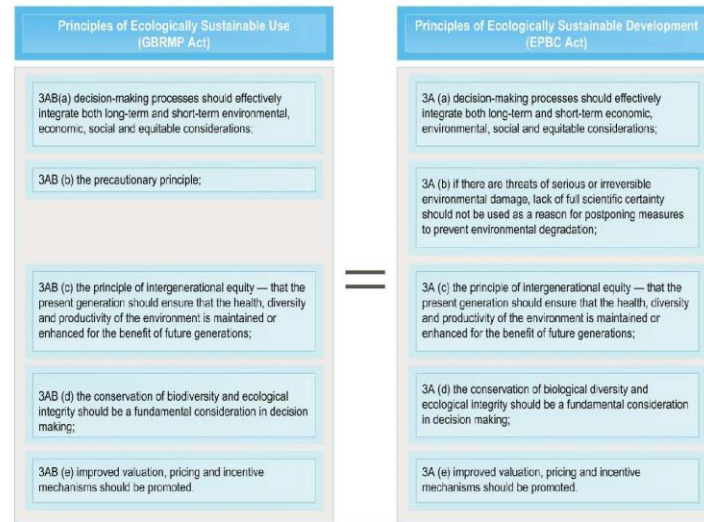


Figure 13.2 Principles of ecologically sustainable use
Principles of ecologically sustainable use outlined within the GBRMP Act, and the equivalent principles of ecologically sustainable development within the EPBC Act

The ways in which the principles of ecologically sustainable development will continue to be applied in the Authority's comprehensive management program (Part B) and it's Permission System (Part C) are summarised in Table 13.6.

Table 13.6 Applying the principles of ecologically sustainable development

Principles of ecologically sustainable development	Applying the principles of ESD in the Authority's comprehensive management program (Part B)	Applying the principles of EST in the Authority's Permission System (Part C)
a) Decision-making processes should effectively integrate long-term and short-term economic, environmental, social and equitable considerations.	<ul style="list-style-type: none"> Section 7(3) of the Act requires the Authority to perform its functions consistent with the principles of ecologically sustainable use. This includes consideration of these principles in the preparation of zoning plans, plans of management and permit decision-making. The potential impacts on the environment and on social, cultural and heritage values must be considered in all permit decisions. The effects on public appreciation, understanding and enjoyment of the Marine Park, as well as impacts on other activities may be considered in permit decisions. The Authority's Environmental Impact Management Policy requires consideration of impacts on environmental, economic and social values. Decision making is informed by the best available information and, where appropriate, stakeholders are engaged and public comment is sought (for example, during major permit assessments). There is explicit recognition of the importance of the Great Barrier Reef to its Traditional Owners and their cultural heritage. They are increasingly engaged in its management. The community benefits derived from the environment are explicitly recognised in the Program Report and, increasingly, the outcomes of integrated monitoring and modelling will be available for consideration in decision making, providing guidance on socio-economic benefits and impacts and likely future trends. Biodiversity, heritage values and community benefits derived from the environment are the foundations of the Authority's strategic planning. Minimum standards for public consultation are identified under the Act and in the Authority's policies to guide those involved in the Authority's decision-making processes. Cumulative impact assessment guidelines will incorporate this principle. 	<ul style="list-style-type: none"> Section 7(3) of the Act requires the Authority in performing its functions to have regard to, and seek to act in a way that is consistent with, the principles of ecologically sustainable use. This includes consideration of these principles in the preparation of zoning plans, plans of management and permit decision-making. The potential impacts on the environment and on social, cultural and heritage values of the Marine Park or part of the Marine Park must be considered in all permit decisions. The effects on public appreciation, understanding and enjoyment of the Marine Park, as well as impacts on other activities may be considered in permit decisions. The Authority's Environmental Impact Management Policy requires consideration of impacts on environmental, economic and social values. Decision making is informed by the best available information and, where appropriate, stakeholders are engaged and public comment is sought (for example, during major permit assessments). Minimum standards for public consultation are identified under the Act and in the Authority's policies to guide those involved in the Authority's decision-making processes. A cumulative impact assessment policy will incorporate this principle.
b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.	<ul style="list-style-type: none"> Section 7(3) of the Act requires the Authority to perform its functions consistent with the objects of the Act and the principles of ecologically sustainable use. This includes consideration of these principles in the preparation of zoning plans, plans of management and permit decision-making. Consideration of permit applications is based on the best available science. Where there is scientific uncertainty, the Authority seeks to harness 	<ul style="list-style-type: none"> Section 7(3) of the Act requires the Authority in performing its functions to have regard to, and seek to act in a way that is consistent with, the objects of the Act and the principles of ecologically sustainable use. This includes consideration of these principles in the preparation of zoning plans, plans of management and permit decision-making. Consideration of permit applications is based on the best available science. Where there is scientific uncertainty, the Authority seeks to harness

Principles of ecologically sustainable development	Applying the principles of ESD in the Authority's comprehensive management program (Part B)	Applying the principles of EST in the Authority's Permission System (Part C)
	<p>expert opinion, plus knowledge held by Traditional Owners and stakeholders, including through its advisory committees and through seeking public comment.</p> <ul style="list-style-type: none"> Risks and threats to the Great Barrier Reef are identified and assessed in the <i>Great Barrier Reef Outlook Report 2009</i>, which is updated every five years. Increasingly, outcomes of integrated monitoring and modelling will be available for consideration in decision making, providing guidance on likely future trends. Cumulative impact assessment guidelines will incorporate this principle and increase the rigour of environmental assessment processes. 	<p>expert opinion, plus knowledge held by Traditional Owners and stakeholders, including through its advisory committees and through seeking public comment.</p> <ul style="list-style-type: none"> A cumulative impact assessment policy will incorporate this principle and increase the rigour of environmental assessment processes.
c) The principle of intergenerational equity — that the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	<ul style="list-style-type: none"> Section 7(3) of the Act requires the Authority to perform its functions consistent with the principles of ecologically sustainable use. This includes consideration of these principles in the preparation of zoning plans, plans of management and permit decision-making. The Authority recognises the overall condition of the Great Barrier Reef has declined. Future management is focused on minimising further impacts and enhancing and restoring the values of most concern. A policy on delivering net benefits, including offsets, will contribute to the maintenance and enhancement of the health, diversity and productivity of the environment for future generations. Programs and actions are implemented to address remaining risks identified in the Outlook Report and improve the future outlook for the Reef. Regional and local actions facilitated by the Authority, including Traditional Use of Marine Resources Agreements and the Reef Guardian program, are an important element in enhancing health, diversity and productivity and often involve activities that engage a range of generations. Increasingly, the outcomes of integrated monitoring and modelling will be available for consideration in decision making, providing guidance on community benefits and likely future trends, and evaluating the delivery of net benefits. Cumulative impact assessment guidelines will incorporate this principle. An outcomes-based management approach and a net benefit policy will improve actions to maintain and enhance the condition of the Region's values for future generations. 	<ul style="list-style-type: none"> Section 7(3) of the Act requires the Authority to perform its functions consistent with the principles of ecologically sustainable use. This includes consideration of these principles in the preparation of zoning plans, plans of management and permit decision-making. A policy on delivering net benefits, and guidelines for the application of offsets in the Marine Park, will contribute to the maintenance and enhancement of the health, diversity and productivity of the environment for future generations. Increasingly, the outcomes of integrated monitoring and reporting will be available for consideration in decision making, providing guidance on community benefits and likely future trends, and evaluating the delivery of net benefits. A cumulative impact assessment policy will incorporate this principle. An outcomes-based management approach and a net benefit policy will improve actions to maintain and enhance the condition of the Region's values for future generations.
d) The conservation of biological diversity and ecological integrity	<ul style="list-style-type: none"> The main object of the Act includes providing for the long-term protection and conservation of the environment, biodiversity and heritage of the 	<ul style="list-style-type: none"> The main object of the Act includes providing for the long-term protection and conservation of the environment, biodiversity and

Principles of ecologically sustainable development	Applying the principles of ESD in the Authority's comprehensive management program (Part B)	Applying the principles of EST in the Authority's Permission System (Part C)
<p>should be a fundamental consideration in decision making.</p>	<p>Great Barrier Reef Region. This is the basis for the Authority's management arrangements.</p> <ul style="list-style-type: none"> • Zoning arrangements, which include about one-third of the Marine Park in no-take zones, are a vital component in conserving biological diversity and ecological integrity. Connectivity and protecting a representative area of all bioregions were key considerations in designating no-take zones. • A range of policies, including the <i>Great Barrier Reef Biodiversity Conservation Strategy</i>, guide the Authority's management relevant to the conservation of biological diversity. Additionally, the <i>Great Barrier Reef Climate Adaptation Strategy and Action Plan</i> assists the Authority to address the challenges of climate change in relation to biological diversity. • The potential impacts on the environment, including its biodiversity, and the objects of the zone where an activity will occur, are required to be considered in all permit decisions. • Any relevant recovery, conservation threat abatement plans or approved conservation advice under the EPBC Act may be considered in permit decisions. • Cumulative impact assessment guidelines and a net benefit policy will incorporate this principle. 	<p>heritage of the Great Barrier Reef Region. This is the basis for the Authority's management arrangements.</p> <ul style="list-style-type: none"> • Zoning arrangements, which include about one-third of the Marine Park in no-take zones, are a vital component in conserving biological diversity and ecological integrity. Connectivity and protecting a representative area of all bioregions were key considerations in designating no-take zones. • A range of policies, including the <i>Great Barrier Reef Biodiversity Conservation Strategy</i>, guide the Authority's management relevant to the conservation of biological diversity. Additionally, the <i>Great Barrier Reef Climate Adaptation Strategy and Action Plan</i> assists the Authority to address the challenges of climate change in relation to biological diversity. • The potential impacts on the environment, including its biodiversity, and the objects of the zone where an activity will occur, are required to be considered in all permit decisions. • All relevant recovery, conservation threat abatement plans or approved conservation advice under the EPBC Act may be considered in permit decisions. • A cumulative impact assessment policy and a net benefit policy will incorporate this principle.
<p>e) Improved valuation, pricing and incentive mechanisms should be promoted.</p>	<ul style="list-style-type: none"> • Socio-economic monitoring will be included in long-term core monitoring for the Region. • The Authority's management is informed by economic valuations of Reef-dependent activities. • Tourism operators are recognised and rewarded for being certified as meeting best practice standards, including with longer-term permits. • There is public recognition of participants in the Reef Guardian program and of Traditional Use of Marine Resources Agreements. • Cost recovery principles are applied in the Authority's management arrangements. • A framework will be developed to guide implementation of investments for net conservation benefits designed to increase the resilience of the Great Barrier Reef Region. • Cumulative impact assessment guidelines will incorporate this principle. 	<ul style="list-style-type: none"> • Socio-economic monitoring will be included in long-term core monitoring for the Region. • The Authority's management is informed by economic valuations of Reef-dependent activities. • Tourism operators are recognised and rewarded for being certified as meeting best practice standards, including with longer-term permits. • Cost recovery principles are applied in the Authority's management arrangements. • A framework will be developed to guide implementation of investments for net conservation benefits designed to increase the resilience of the Great Barrier Reef Region. This framework will support the Authority's advice to the Australian and Queensland governments on investments, including for Reef Trust. • A cumulative impact assessment policy will incorporate this principle.

13.5 Adaptive management

13.5.1 Addressing risk

The Authority adopts a risk-based approach in its management and decision making. The strategic assessment identifies existing and emerging impacts that are predicted to present the highest risks to the values relevant to matters of national environmental significance. The Authority's future management program is clearly focused on the highest risk impacts and the cumulative impact of medium and lower risks.

Section 54(3)(d) of the Act requires 'an assessment of the risks to the ecosystem' within the Region be included in each Outlook Report. This legislative requirement means the assessment of current impacts and future risks will be regularly updated. The risk assessment presented in the first Outlook Report in 2009 was undertaken using the Australian Standard for Risk Assessment, and has subsequently been a principal guide for the Authority in determining management priorities. The Authority also applies the standard in its environmental assessment and management and its permitting processes.

One key component of managing risks is having access to the most up-to-date information. The integrated monitoring and reporting program will substantially improve the knowledge base available to the Authority. Recognising the significance of the Great Barrier Reef to local communities and the nation, and the community benefits derived from the environment, the monitoring and reporting program has an expanded focus to better integrate information on social, cultural and economic values. The Authority also intends to expand the sources of information it uses in making decisions, so that traditional ecological knowledge and information held by the broader community are better considered. A commitment to the development of a heritage database, including a protocol to manage culturally sensitive information, will further improve consideration of cultural, social and economic values relevant to matters of national environmental significance.

Ongoing improvements in linkages with information providers and advances in information technology are likely to continue to greatly improve the ways in which the Authority and its management partners provide, access and integrate information used to address risk.

This strategic assessment has clearly demonstrated that impacts — whether the result of human activities or natural forces — do not operate in isolation or on a single value or in a specific area. It also shows consideration of cumulative impacts is one of the weakest aspects of the Authority's current management arrangements. A commitment in the Authority's management program is to integrate risk management and the consideration of cumulative impacts into regulatory frameworks through development of cumulative impact guidelines.

13.5.2 Addressing uncertainty

Inherently, there is a large amount of uncertainty surrounding protection and management of the Great Barrier Reef — an enormous, complex marine protected area which is managed for multiple use.

The Authority will continue to employ a range of tools to provide certainty with regard to where activities may occur and under what conditions they may proceed. These tools are outlined in the Program Report and include zoning plans, plans of management, permits, policies and guidelines. The resulting level of certainty provided for different activities in the Region is presented in Chapter 8 of this report. Where uncertainty exists, the Authority adopts a risk-based approach and applies the principles of ecologically sustainable use to its decision making. The use of these tools, approaches and principles is embedded in the Authority's governing legislation (the Act) and reflected in its policies. The Authority also deals with uncertainty by, where feasible, maintaining flexibility in its management approach, so that changing circumstances can be considered and reflected in management arrangements.

Uncertainty is also addressed by always seeking to improve the knowledge base available for decision making. The Authority will continue to be actively involved in determining research and monitoring priorities for the Region, and maintaining strong connections with the research community (including those undertaking voluntary monitoring) so that emerging information can be understood and applied to management. The Authority will also seek to improve the ways that it is informed by knowledge and understanding held by the Great Barrier Reef's Traditional Owners, stakeholders and the community (see Section 7 of the Program Report). This knowledge will continue to be acquired through ongoing liaison, specific workshops and the Authority's Reef Advisory Committees and Local Marine Advisory Committees.

For key matters that affect the Region, the Authority takes a leading role in improving understanding and defining the priorities for management action. For example, in the case of reducing impacts on the Region's values arising from clearing and modifying coastal habitats, the Authority:

- improved technical understanding of the role that coastal habitats play in providing ecosystem services to the Reef ecosystem, culminating in the report *Informing the outlook for Great Barrier Reef coastal ecosystems*¹
- is defining priorities for action by undertaking basin assessments to identify the coastal basins that remain intact and those that are slightly to moderately affected by human activity.

These bodies of work will guide the Authority's partnership activities with local and state government agencies, natural resource management bodies, Reef Guardian participants and local communities to actively manage and restore the functioning of coastal ecosystems critical to the health of the Great Barrier Reef.

In its future management, the Authority will adopt the systematic approach used in this report to the identification of the values relevant to matters of national environmental significance, and the drivers, activities and impacts affecting them (see Chapter 4, 5 and 6). It will also adopt a systematic approach to considering the cumulative effect of impacts on values (see Chapter 2, Table 2.1). This will include using models (qualitative or quantitative) to examine the relationships between multiple drivers, activities and impacts; for example, those that can affect key habitats such as coral reefs and seagrass meadows. Such tools can help the Authority deal with uncertainty by allowing consideration of multiple alternate models in situations where the cause-and-effect relationships between values and impacts are uncertain or contentious. They can also help tackle a key source of uncertainty — the cumulative effect of impacts. It is intended that ongoing use of modelling in the Authority's decision-making processes will be formalised through a guideline on cumulative impact assessment (see Section 6 of the Program Report).

13.5.3 Implementing adaptive management to protect and manage matters of national environmental significance

Through the ongoing foundational activities and the future improvements identified in the Program Report and the vital contributions of its partners, the Authority anticipates declines in key components of the Region's ecosystem can be halted and reversed and the desired outcomes achieved for values relevant to matters of national environmental significance. It is recognised that this will require a sustained and ongoing commitment of resources, and that such improvements in environmental condition may take decades to achieve.

Adaptive management has played a central role in the understanding and management of impacts in the Region in the last decade.^{2,3,4,5,6,7,8,9} The Authority recognises that to achieve the desired outcomes for a system as dynamic and complex as the Great Barrier Reef Region, an ongoing adaptive approach will be required.

In addition to its management through the permission system outlined above, the Authority will continue to adopt a comprehensive and coordinated approach to its management of impacts on matters of national environmental significance, operating at a number of levels (Figure 13.3) influencing drivers and activities:

- mitigating (reducing) impacts and pressures
- restoring, maintaining and enhancing the state or condition of the environment
- promoting appreciation of the community benefits derived from the environment.

Management responses directed towards drivers and activities are often the most effective as they act on the source of impacts and enable them to be avoided. Management actions that directly address impacts or pressures focus on reducing or mitigating the magnitude of the impact, and are fundamental to allowing use to occur within ecologically sustainable limits. Management actions that work directly to improve the condition of the environment once the impact has occurred are generally least effective and often most costly. Lastly, interventions which target community benefits are focused on promoting understanding and awareness of the benefits derived from the Region (for example, enjoyment and income) or of the World Heritage Area (for example, outstanding universal value).

Adaptive management that responds to changing circumstances requires an up-to-date and comprehensive understanding of the status and trend of values relevant to matters of national environmental significance, the impacts that may be affecting them and the benefits being derived from the environment. One of the Authority's new measures to strengthen management is an integrated monitoring and reporting program to standardise and integrate ecological, social and economic monitoring for the Great Barrier Reef as part of an adaptive management cycle (Section 13.4).

The Authority will continue to use its five-yearly preparation of the statutory *Great Barrier Reef Outlook Report* to examine the current status, future risks and likely outlook for the Region. The outcomes of each report will inform the Authority's future priorities and be the principle guide to adaptive management. Importantly, the 'management effectiveness' section will identify management topics that require improvement, and the 'outlook' section of each report will inform adaptive management by integrating current knowledge and modelling to produce a predicted future condition of the values relevant to matters of national environmental significance.

Annual strategic planning, taking into account emerging information and monitoring results, will inform finer-scale adjustments to management arrangements.

The Authority will also continue to review and update its science information needs every five years as part of the outlook report cycle.

The Authority will systematically and regularly evaluate its performance towards achieving the program's desired outcomes for the protection of matters of national environmental significance. Evaluating performance will allow the Authority to learn from its successes, improve continually as an organisation, adapt its management arrangements and better deliver on its statutory objectives.

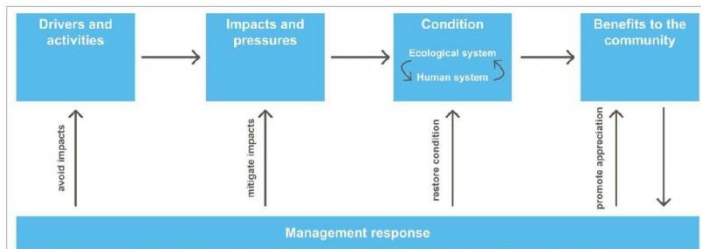


Figure 13.3 Pathways of management intervention

13.5.4 Addressing World Heritage Committee recommendations

The 35th session of the World Heritage Committee requested a monitoring mission be undertaken jointly by the World Heritage Centre (WHC) and the International Union for Conservation of Nature (IUCN). The reactive monitoring mission was undertaken from 6–14 March 2012 with the objective of assessing the state of conservation of the Great Barrier Reef World Heritage Area property and to contribute to the strategic assessment process.

The Authority has taken account of the recommendations of the WHC and IUCN in developing the strategic assessment and in outlining the Authority's future management program. Specific actions addressing each recommendation are provided in Table 13.7. The timeframe of the implementation of a number of these recommendations can be found in Table 13.1.

Table 13.7 Progress on the recommendations of the 2012 World Heritage Centre and International Union Conservation of Nature reactive monitoring mission

2012 World Heritage Centre and IUCN mission recommendations	Great Barrier Reef Region strategic assessment response
R1: Water quality	<ul style="list-style-type: none"> • REC18: Update and strengthen the Great Barrier Reef Marine Park water quality guidelines to address a broader range of habitats and species and account for cumulative impacts • REC19: Improve the effectiveness of the Authority's hydrodynamic guidelines as a decision-making tool by requiring consideration of a greater range of environmental factors, and regularly reviewing them to reflect improvements in understanding • REC22: Reduce crown-of-thorns starfish outbreaks by continuing to improve water quality and through a long-term control program
R2: No port development outside existing and long-established port areas	<ul style="list-style-type: none"> • REC11: Support development of a Queensland ports strategy that concentrates port development around long-established major ports in Queensland, and encourage port master planning
R3: Manage development in Gladstone Harbour and on Curtis Island	<ul style="list-style-type: none"> • REC11: Support development of a Queensland ports strategy that concentrates port development around long-established major ports in Queensland, and encourage port master planning
R4: Ensure that any development, including ports and associated infrastructure, is carried out consistently with the highest international standards of best practice	<ul style="list-style-type: none"> • REC3: Work closely with Australian, Queensland and local government agencies to help identify values of the Great Barrier Reef World Heritage Area that are not easily represented and measured such as aesthetic values • REC7: Work closely with Australian and Queensland government agencies to improve understanding and management of cumulative impacts from activities within and adjacent to the Region, and provide clearer guidance on how applicants and decision makers should address cumulative impacts in assessments
R5: Strategic assessments and long-term sustainability plan	<ul style="list-style-type: none"> • REC26: Develop and implement a long-term sustainability plan for the Great Barrier Reef in cooperation with Australian and Queensland government agencies to better coordinate programs designed to manage and improve the condition of the Reef

2012 World Heritage Centre and IUCN mission recommendations	Great Barrier Reef Region strategic assessment response
R6: Include in the future editions of the Outlook Report, commencing with the version to be published in 2014, a specific assessment of the condition, trends, threats and prospects for the outstanding universal value of the Great Barrier Reef World Heritage Area	<ul style="list-style-type: none"> • The Great Barrier Reef Marine Park Regulations have been amended to require future Outlook Reports to include an assessment of heritage values including, but not limited to, the outstanding universal value of the Great Barrier Reef World Heritage Area. • The <i>Outlook Report 2014</i> will contain a specific assessment of the condition, trends, threats and prospects for the outstanding universal value of the Great Barrier Reef World Heritage Area.
R7: No development to impact individually or cumulatively on the outstanding universal value of the property	<ul style="list-style-type: none"> • REC1: Explicitly incorporate consideration of all matters of national environmental significance, including attributes of the property's outstanding universal value, into the Authority's programs, plans and policies
R8: Prevent any approval of major projects that may compromise the outcomes of the strategic assessment, until it is completed No development to impact individually or cumulatively on the outstanding universal value of the property	<ul style="list-style-type: none"> • REC1: Explicitly incorporate consideration of all matters of national environmental significance, including attributes of the property's outstanding universal value, into the Authority's programs, plans and policies
R9: Ensure all components of the outstanding universal value of the Great Barrier Reef are clearly defined and form a central element within the protection and management system for the property	<ul style="list-style-type: none"> • REC1: Explicitly incorporate consideration of all matters of national environmental significance, including attributes of the property's outstanding universal value, into the Authority's programs, plans and policies
R10: Develop and adopt clearly defined and scientifically justified targets for improving the state of conservation of the outstanding universal value of the Great Barrier Reef World Heritage Area	<ul style="list-style-type: none"> • REC25: Establish a management framework with clear outcomes and targets for the protection of values and the management of impacts, including cumulative impacts
R11: Commission an independent review of the overall institutional and legal mechanisms that provide coordinated planning, protection and management of the Great Barrier Reef World Heritage Area as a whole	<ul style="list-style-type: none"> • An independent review of management effectiveness was conducted as part of the comprehensive strategic assessment. The program is one of the products of this review.
R12: Ensure increased resources for the protection and management of the property	<ul style="list-style-type: none"> • REC15: Support increased investment in site infrastructure to protect matters of national environmental significance in the Great Barrier Reef Region
R13: Take an integrated approach to planning, regulation and management of ports and shipping activity	<ul style="list-style-type: none"> • REC2: Improve spatial mapping capabilities to support planning and assessment decision making, including the range of values mapped and public availability • REC11: Support development of a Queensland ports strategy that concentrates port development around long-established major ports in Queensland, and encourage port master planning • REC11A: Support the development of a whole-of-government policy to provide a strategic and consistent approach to the sustainable management of dredging and dredge spoil disposal in the Great Barrier Reef World Heritage Area • REC12: Promote a strategic approach to the development and operation of marinas and other access infrastructure along the Great Barrier Reef coast
R14: Share best practices and success stories with other world heritage sites facing similar management challenges	<ul style="list-style-type: none"> • The Authority will continue its international engagement program to share knowledge on marine park management and related issues.
R15: Inform the committee of developments that may affect outstanding universal value	<ul style="list-style-type: none"> • The Authority will update the administrative agreement with the Department of the Environment to provide relevant information for reporting on OUV
Other actions to support recommendations	<ul style="list-style-type: none"> • REC4: Collaborate with Traditional Owners to undertake an assessment of the Indigenous heritage values of the Region • REC5: Develop and implement knowledge management systems for Indigenous and historic heritage information, including a protocol for managing culturally sensitive information and improved information sharing arrangements • REC6: Improve understanding of the role the Great Barrier Reef plays in the life of the community

2012 World Heritage Centre and IUCN mission recommendations	Great Barrier Reef Region strategic assessment response
	<ul style="list-style-type: none"> • REC9: Streamline assessment processes across jurisdictions and seek to have a more coordinated approach to community consultation • REC9: Improve alignment between the Authority's and the Queensland Government's protected area and tourism management arrangements and look for opportunities to streamline • REC10: Develop and implement plans of management in areas of the Great Barrier Reef Marine Park that have high growth for recreation and other uses • REC13: Review and update the <i>Great Barrier Reef Marine Park Heritage Strategy</i> to guide management actions to strengthen recognition and protection of heritage values • REC14: Promote, recognise and encourage stewardship and best practice efforts by community, industry and government • REC17: Support a collaborative, Reef-wide management strategy for islands and contribute to its development and implementation • REC17A: Work with the Queensland Government to provide technical and policy advice on actions to secure the long-term ecological, social and economic sustainability of Great Barrier Reef Region fisheries • REC20: Support research on critical ecosystem thresholds, with a focus on inshore biodiversity and associated ecosystems • REC21: Improve understanding and the Authority's management of the impacts of noise on species, particularly at-risk and inshore species • REC23: Develop a policy and supporting mechanisms to facilitate strategic and collaborative implementation of offsets across jurisdictions • REC24: Inform implementation of Australian and Queensland government offsets policies and restoration programs by identifying actions that will maximise the delivery of environmental benefits to the Region • REC27: Strengthen engagement with all relevant partners to facilitate actions that maintain and enhance the condition of values and reduce impacts, particularly in relation to climate change, catchment run-off, degradation of coastal ecosystems and direct use • REC28: Develop a comprehensive management framework and an Indigenous heritage strategy for Traditional Owner use and management of the Great Barrier Reef • REC29: Adopt regionally-based cooperative approaches to protect inshore biodiversity hotspots — supporting local actions and encouraging cooperation • REC30: Improve alignment and coordination of strategic research priorities and strengthen partnerships between the Authority and research institutions to facilitate the delivery of critical research needs • REC31: Establish an integrated monitoring and reporting program to support adaptive management for the Great Barrier Reef World Heritage Area, including more explicit reporting on the condition and trend of matters of national environmental significance, to enable the performance of activities to be monitored against regulatory objectives, outcomes for matters of national environmental significance and relevant guidelines and standards, including ecosystem thresholds • REC32: Maintain and improve monitoring, investigation and data management relating to critical species and habitats. • REC33: Support implementation of a long-term social and economic monitoring program to improve understanding of changing use, investment and values • REC34: Contribute to the development of improved governance arrangements for the management and coordination of development activities that affect the Great Barrier Reef • REC 34A: Establish a peak Great Barrier Reef Advisory Group made up of Traditional Owners, scientific, conservation and industry experts to provide high level advice on the implementation of the Authority's management program • REC35: Communicate the implications of climate change impacts for the Great Barrier Reef, and the critical need to halt increasing concentrations of global greenhouse gases and restore them to levels that will support growth, recruitment and recovery processes of the Great Barrier Reef ecosystem • REC36: Ensure the impacts of climate change and extreme weather are appropriately considered in the Authority's management decisions • REC37: Encourage reduction of greenhouse gas emissions in the Great Barrier Reef Region in partnership with industry and communities • REC38: Support initiatives to build the capacity of management agencies and Reef users to adapt and respond to climate change and extreme weather events

13.6 Monitoring and reporting

13.6.1 Monitoring

Monitoring provides information to track the condition and trend of the Region's values, as well as the status of the impacts and activities affecting those values. It allows early detection of trends and the assessment of future risks, as well as playing a fundamental role in evaluating management effectiveness. It is also critical to informing the development, refinement and application of maps and models that help managers understand trends and patterns in the Region. Monitoring data are used to meet statutory reporting requirements such as the Authority's five-yearly Outlook Report and its annual report, as well as other reporting obligations including communicating the outcomes of *Reef Water Quality Protection Plan* actions.

The integrated monitoring and reporting program, outlined in Section 8 of the Program Report, will underpin the monitoring, evaluation and public reporting process to be employed by the Authority. Once implemented, the program will provide important information for management, support the Authority's outcome-based management approach, and be a vital component of the Authority's adaptive management of the Region.

The integrated monitoring and reporting program identifies three types of monitoring required for management:

- long-term core monitoring programs — to assess the condition and trend of the Region's values and broadscale impacts, such as water quality, over many years
- short to medium-term, issue-specific monitoring — to examine the condition of, extent of impact on and recovery rate of species, habitats or community benefits
- compliance monitoring — to target the impacts of a development action (for example, construction of a marina or a dredging program) in accordance with conditions specified in a permit, licence or approval.

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. It will improve the scalability of data (from point source or local, to regional and Reef-wide scales) and synthesis of information from different sources. This will provide a more comprehensive and systematic understanding of the condition of values and scale of impacts.

13.6.2 Review and public reporting

Research and monitoring as well as community-derived data is captured, synthesised and presented every five years through preparation of the Outlook Report. The Outlook Report is a statutory reporting responsibility for the Authority, providing a regular and reliable assessment of the Great Barrier Reef and its management. The outcomes of the integrated monitoring and reporting program will be synthesised and comprehensively reported in future Outlook Reports. In this way, the Outlook Report will be the primary reporting mechanism of the integrated monitoring and reporting program.

There are good examples of monitoring programs already tightly integrated into adaptive management, such as the marine monitoring program which operates under Reef Plan, and the monitoring of the effectiveness of the Zoning Plan. These programs are reported more regularly than the Outlook Report cycle because they are linked to specific management objectives and feed directly into assessments of management effectiveness. However, for many monitoring programs, linkages to management effectiveness are not as explicit. Through the integrated monitoring and reporting program, links to management will be made clearer and the causal relationships between drivers, pressures, impacts and condition will be better understood. Data from monitoring programs will be able to be synthesised with other data and readily incorporated into adaptive management processes.

13.6.3 Adapting to new information

Research is fundamental to interpreting monitoring data and understanding the effects of impacts on values. In addition, research analysis of existing datasets to uncover patterns and relationships and develop unifying concepts such as on ecosystem health, resilience and sustainability, substantially contribute to adaptive management. Synthesising data and other information is also vital to informing ecological and social risk assessments and developing standards and guidelines for the management of impacts.

Information from research and monitoring will be critical to implementing and adapting the new initiatives outlined in the Program Report — for example, the development of thresholds for ecosystem health, and targets for management action. Research will also be needed to conceptualise and, in some cases, model how a system works and how the elements interact and respond to changing pressures.

Traditional ecological knowledge and local community knowledge shared with the Authority by Traditional Owners, stakeholders and members of the community play a central role in informing its adaptive management and decision making. Combined with scientific information, such knowledge informs development of management strategies and policies and, where feasible, will continue to be used to monitor and assess the effectiveness of management arrangements (see Section 7 of the Program Report). Furthermore, the integration of traditional and community knowledge with scientific knowledge can extend the time perspective of scientific knowledge and highlight potential subject areas for future studies.¹⁰

13.6.4 Parties responsible for monitoring and reporting

The Authority will be the lead agency responsible for the implementation of the integrated monitoring and reporting program, in partnership with research institutions, government agencies, Traditional Owners, Reef-based industries and members of the community.

Monitoring activities to inform adaptive management will be conducted by:

- research institutions and government agencies (as identified above) where monitoring is carried out by scientists, technicians and field staff
- Traditional Owners of the Great Barrier Reef who are actively involved in monitoring and protecting the health and biodiversity of their sea country. This monitoring provides a valuable link between traditional ecological knowledge and modern science. Examples include training in scientific and wildlife monitoring as part of a two-way information exchange between Traditional Owners, scientists and management agencies.
- Reef-based industries where monitoring may be a voluntary contribution to management, undertaken to meet a permit condition, or a compulsory reporting obligation
- Members of the community, typically on a voluntary basis and associated with a recognised community monitoring program.

While the Authority will be responsible for ensuring it continues to meet its statutory monitoring and reporting functions, a whole of government approach, across all levels of government, such as that described in the integrated monitoring and reporting program, is required to coordinate and integrate monitoring and reporting functions across the Great Barrier Reef and its catchments.

13.7 Addressing the endorsement criteria

When deciding whether to endorse the Program, the Minister must be satisfied that the Strategic Assessment Report adequately addresses the impacts to which the Agreement (Appendix 1) relates and that any recommendations by the Minister to modify the program have been responded to appropriately.

Table 13.8 describes how the Authority's comprehensive management program (Part B) and Permission System (Part C) meets the endorsement criteria as described in the Agreement (Appendix 1).

Table 13.8 Addressing endorsement criteria

Endorsement Criteria	Addressing the endorsement criteria in the Authority's comprehensive management program (Part B)	Addressing the endorsement criteria in the Authority's Permission System (Part C)
In determining whether or not to endorse the program, the Minister will have regard to the extent to which the program meets the objects of the EPBC Act. In particular, that it:		
a) Protects the environment, especially those aspects of the environment that are matters of national environmental significance.	<ul style="list-style-type: none"> The main object of the GBRMP Act is the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. Management focus on the Marine Park as a MNES means that values relevant to other MNES are implicitly considered in decision making. 	<ul style="list-style-type: none"> The Permission System ensures protection of the Great Barrier Reef Region, which necessarily includes matters of national environmental significance. The Authority commits to updating its policies to make explicit reference to consideration of matters of national environmental significance, including the outstanding universal value of the Great Barrier Reef World Heritage Area. The commitments in the Program Report, actions approved under Permission System, ensure protection of the Great Barrier Reef Region, which necessarily includes protection of matters of national environmental significance.
b) Promotes ecologically sustainable development through the conservation and ecologically sustainable use of natural resources.	<ul style="list-style-type: none"> Consistent with the main object of the GBRMP Act. Ecologically sustainable use of the Region is allowed for only if it is consistent with the main object of the GBRMP Act. Maintaining sustainable multiple use and community benefits derived from the environment is one of the four goals of the Authority. 	<ul style="list-style-type: none"> The Permission System is a key component of the Authority's regulatory approach to achieve the objects of the GBRMP Act. The main object of the GBRMP Act is the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. Ecologically sustainable use of the Region is allowed for only if it is consistent with the main object.
c) Promotes the conservation of biodiversity.	<ul style="list-style-type: none"> Consistent with the main object of the GBRMP Act. Protecting and restoring the Reef's ecosystem health and biodiversity is one of the four goals of the Authority. 	<ul style="list-style-type: none"> Consistent with the main object of the GBRMP Act. Part 13 of the EPBC Act provides mechanisms, including recovery plans, threat abatement plans, and conservation plans for migratory and marine species to promote the conservation of biodiversity. The commitments in the Program Report for the Permission System ensure that assessment of activities that are likely to have a significant impact on matters of national environmental significance will consider all of the above mechanisms.
d) Provides for the protection and conservation of heritage.	<ul style="list-style-type: none"> Consistent with the main object of the GBRMP Act. Safeguarding the Reef's heritage values is one of the four goals of the Authority. Implementation of: <ul style="list-style-type: none"> REC 5 to develop and implement knowledge management systems 	<ul style="list-style-type: none"> The main object of the GBRMP Act is the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. Consistent with 88Q(a) of the GBRMP Regulations, the Authority must consider the potential impacts of the conduct proposed on the environment and on the social, cultural and heritage values of the

Endorsement Criteria	Addressing the endorsement criteria in the Authority's comprehensive management program (Part B)	Addressing the endorsement criteria in the Authority's Permission System (Part C)
	<ul style="list-style-type: none"> for Indigenous and historic heritage information REC 13 to review and update the <i>Great Barrier Reef Marine Park Heritage Strategy</i> to guide management actions to strengthen recognition and protection of heritage values will support protection and conservation of heritage. 	<p>Marine Park or a part of the Marine Park — this includes Indigenous social, cultural and heritage values.</p> <ul style="list-style-type: none"> The commitments made under the Program Report will require the Authority to amend its policies and guidance material (that will be updated from time to time) which are used in the determination of permissions, so they explicitly require the consideration of matters of national environmental significance and relevant attributes, including Indigenous and historic heritage values; and to develop and/or strengthen knowledge and information management tools, including systems for managing Indigenous and historic heritage.
e) Promotes a cooperative approach to the protection and management of the environment.	<ul style="list-style-type: none"> Consistent with object 2A(b) of the GBRMP Act to encourage greater engagement in the protection and management of the Great Barrier Reef Region by interested persons and groups, including Queensland and local governments, communities, Indigenous persons, business and industry. Engagement is one of the three areas of the Authority's foundational management program. The Authority's management program focuses on enhancing protection measures within the Region, and influencing drivers and activities which affect the Region but fall outside of the Authority's jurisdictional control. The Authority recognises that protection of the Great Barrier Reef requires local, national and international effort. The Authority will continue to work with Traditional Owners, the community, business, industry, local government, plus Australian and Queensland government agencies to influence best practice and find pragmatic solutions to secure the future health of the Reef. The Authority will continue to undertake engagement through partnerships, providing advice, education and community awareness, stewardship and best practice, and consultation. 	<ul style="list-style-type: none"> The Permission System supports a cooperative approach to management, and includes joint permitting and a Joint Field Management Program with the Queensland Government. Any permit application which may restrict the reasonable use by the public of a part of the Marine Park will be placed on the Authority's website, and will require public advertising as outlined in reg 88D of the GBRMP Regulations. In accordance with reg 88Q(e) of the GBRMP Regulations, any written comments received about the application in response to the public advertisement are a mandatory consideration in the assessment of the permit application. Consistent with section 2A(2)(b) of the GBRMP Act to encourage engagement in the protection and management of the Great Barrier Reef Region by interested persons and groups, including Queensland and local governments, communities, Indigenous persons, business and industry; where a permit application will likely have significant impacts on matters of national environmental significance, the Authority will publicly advertise for written comments on the application. Advertising would be done in the same manner as required under reg 88D of the GBRMP Regulations, and the information sought that would be to inform consideration of applications in accordance with regs 88Q and 88R of the GBRMP Regulations.
f) Assists in the co-operative implementation of Australia's international environmental responsibilities.	<ul style="list-style-type: none"> Consistent with the main object of the GBRMP Act. Consistent with object 2A(c) of the GBRMP Act to assist in meeting Australia's international responsibilities in relation to the environmental management and protection of world heritage (especially Australia's responsibilities under the World Heritage Convention). 	<ul style="list-style-type: none"> The Permission System supports the objects of the GBRMP Act. The commitments made under the Program Report will require the Authority to update its current administrative arrangements with the Department of the Environment, including for the transfer of information required for reporting to the World Heritage Committee on implementation of Australia's international environmental

Endorsement Criteria	Addressing the endorsement criteria in the Authority's comprehensive management program (Part B)	Addressing the endorsement criteria in the Authority's Permission System (Part C)
	<ul style="list-style-type: none"> The <i>Great Barrier Reef Outlook Report</i> will contain a specific assessment of the condition, trends, threats and prospects for the outstanding universal value of the Great Barrier Reef World Heritage Area. 	responsibilities.
g) Recognises the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity.	<ul style="list-style-type: none"> Consistent with object 2A(b) of the GBRMP Act to encourage greater engagement in the protection and management of the Great Barrier Reef Region by interested persons and groups, including Queensland and local governments, communities, Indigenous persons, business and industry. Consistent with 10(6A) of the GBRMP Act which requires at least one member of the Authority (also referred to as the Board) to be an Indigenous person with knowledge of, or experience concerning, Indigenous issues relating to the Marine Park. Safeguarding the Reef's heritage values, including Indigenous heritage, is one of the four goals of the Authority. Implementation of: <ul style="list-style-type: none"> REC4 to collaborate with Traditional Owners to undertake an assessment of the Indigenous heritage values of the Region; REC5 to develop and implement knowledge management systems for Indigenous and historic heritage information; REC13 to review and update the <i>Great Barrier Reef Marine Park Heritage Strategy</i> to guide management actions to strengthen recognition and protection of heritage values REC28 to develop a comprehensive management framework and an Indigenous heritage strategy for Traditional Owner use and management of the Great Barrier Reef will increase the role of Indigenous people in managing the Marine Park. 	<ul style="list-style-type: none"> The Permission System supports the objects of the GBRMP Act. Consistent with reg 88Q(a) of the GBRMP Regulations, the Authority must consider the potential impacts of the conduct proposed on the environment and on the social, cultural and heritage values of the Marine Park or a part of the Marine Park — this includes Indigenous social, cultural and heritage values. The commitments made under the Program Report will require the Authority to amend its policies and guidance material (that will be updated from time to time) which are used in the determination of permissions, so they explicitly require the consideration of matters of national environmental significance and relevant attributes, including Indigenous and historic heritage values.
h) Promotes the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with the owners of the knowledge.	<ul style="list-style-type: none"> Consistent with 10(6A) of the GBRMP Act which requires at least one member of the Authority (also referred to as the Board) to be an Indigenous person with knowledge of, or experience concerning, Indigenous issues relating to the Marine Park. The Authority has strong collaborative relationships with Traditional Owners, including through the development of Traditional Use of Marine Resources Agreements (TUMRAs) and the Indigenous Reef Advisory Committee. Implementation of: <ul style="list-style-type: none"> REC4 to collaborate with Traditional Owners to undertake an assessment of the Indigenous heritage values of the Region; REC5 to develop and implement knowledge management systems 	<ul style="list-style-type: none"> The Permission System supports the objects of the GBRMP Act. Consistent with reg 88Q(a) of the GBRMP Regulations, the Authority must consider the potential impacts of the conduct proposed on the environment and on the social, cultural and heritage values of the Marine Park or a part of the Marine Park — this includes Indigenous social, cultural and heritage values. The commitments made under the Program Report will require the Authority to develop and/or strengthen knowledge and information management tools including systems for managing Indigenous and historic heritage.

Endorsement Criteria	Addressing the endorsement criteria in the Authority's comprehensive management program (Part B)	Addressing the endorsement criteria in the Authority's Permission System (Part C)
	<ul style="list-style-type: none"> for Indigenous and historic heritage information; REC13 to review and update the <i>Great Barrier Reef Marine Park Heritage Strategy</i> to guide management actions to strengthen recognition and protection of heritage values; and REC28 to develop a comprehensive management framework and an Indigenous heritage strategy for Traditional Owner use and management of the Great Barrier Reef will increase the capacity to use Indigenous peoples' knowledge in managing the Marine Park.	
Without limiting the matters the Minister may consider when making the decision to endorse the program, the Minister will consider the manner in which the program:		
i) Identifies direct, indirect and cumulative impacts on matters of national environmental significance.	<ul style="list-style-type: none"> Reducing cumulative impacts is one of the four goals of the Authority. The Authority will use the outcomes-based management framework, cumulative impact assessment guidelines and net benefit policy to build upon and better integrate current initiatives to reduce threats, restore degraded habitats, improve water quality, and re-establish connectivity and functioning of coastal ecosystems. The Authority will systematically address the cumulative impacts on the Region's biodiversity, giving priority to inshore areas and those threats that have been identified for at-risk species, species groups and habitats. 	<ul style="list-style-type: none"> Consistent with reg 88Q(b) of the GBRMP Regulations, the Authority must consider options for monitoring, managing and mitigating the potential impacts of the conduct proposed in the permit application. Under the commitments made in the Program Report, where an action is likely to have a significant impact on a matter of national environmental significance protected under the EPBC Act, the Authority will require applicants to consider impacts (including direct, indirect and cumulative impacts) arising from the development action in the context of all impacts affecting matters of national environmental significance. The Authority has also committed to develop and implement cumulative impact assessment guidelines.
j) Avoids impacts on matters of national environmental significance.	<ul style="list-style-type: none"> Consistent with the main object of the GBRMP Act. Ecologically sustainable use of the Region is allowed for only if it is consistent with the main object of the GBRMP Act. 	<ul style="list-style-type: none"> Consistent with reg 88Q(b) of the GBRMP Regulations, the Authority must consider options for monitoring, managing and mitigating the potential impacts of the conduct proposed in the permit application.
k) Mitigates the impacts on matters of national environmental significance.	<ul style="list-style-type: none"> Where the Authority has a high degree of control over activities (for example, tourism, research, defence, recreation) its effectiveness to avoid, mitigate, offset, deliver net benefits and adaptively manage impacts was found to be effective, or mostly effective. 	<ul style="list-style-type: none"> Avoid — the Authority will give highest priority to avoiding impacts on the environment and on the social, cultural and heritage values of the Marine Park (including matters of national environmental significance and outstanding universal value). Avoidance measures must consider prudent and feasible alternatives to a proposed activity. These should include, but not be limited to, consideration of alternative sites and alternate approaches to carrying out the activity.
l) Offsets the impacts on matters of national environmental significance.	<ul style="list-style-type: none"> The Permission System and partnerships with users of the Marine Park was considered a strength in this area. The Authority will improve its management arrangements with: <ul style="list-style-type: none"> REC9 – REC17 focused on avoiding impacts on MNES; REC18 – REC12 focused on mitigating impacts on MNES; REC23 – 24 focused on offsetting impacts on MNES. 	<ul style="list-style-type: none"> Mitigate — potential impacts that cannot be avoided must be minimised. Mitigation measures must consider direct, indirect and

Endorsement Criteria	Addressing the endorsement criteria in the Authority's comprehensive management program (Part B)	Addressing the endorsement criteria in the Authority's Permission System (Part C)
		<p>cumulative impacts, and account for the likely spatial and temporal scales of impacts across the duration of the proposed activity.</p> <ul style="list-style-type: none"> • Offset — offsets will only be considered where impacts cannot be avoided or mitigated, and where residual impacts will not exceed standards or thresholds for ecosystem health. Requirements for offsets will apply to all residual impacts. Offsets will be required to deliver measurable conservation outcomes within the timeframes relevant to affected matters of national environmental significance and related attributes and environmental processes. • The commitments made under the Program Report will require the Authority to develop a Great Barrier Reef offset policy (that will be updated from time to time) to enhance the condition of values relevant to matters of national environmental significance.
m) Contributes to the enhancement of the existing environment and management of existing threats.	<ul style="list-style-type: none"> • Consistent with the main object of the GBRMP Act. • Ecologically sustainable use of the Region is allowed for only if it is consistent with the main object of the GBRMP Act. • Chapter 7 of the Strategic Assessment Report assesses the current condition and trend for the Region's values and processes. Section 1.3 of the Program Report outlines the management framework based on outcomes and targets. • The desired outcome for each value is informed by the assessment of its current condition and trend as evaluated in the strategic assessment. This approach recognises that the condition and trend of each value and process varies across the Region. • The outcome for each value and process is a combination of the strategic assessment findings on condition and trend and the international and national obligations to protect them. • For example, if a value is assessed to be good condition, the outcome is that its condition is maintained and enhanced. However, if a value is assessed to be in poor condition, the outcome is that its condition is restored to good condition. If the trend of the value is assessed to be declining, the outcome is that the decline is halted and reversed. • The Authority will improve its management arrangements with REC25 – REC30 focused on enhancing MNES. 	<ul style="list-style-type: none"> • Consistent with 88Q(a) of the GBRMP Regulations, the Authority must consider the potential impacts of the conduct proposed on the environment and on the social, cultural and heritage values of the Marine Park or a part of the Marine Park. • The Authority applies an avoid-mitigate-offset-net benefit-adaptive management hierarchy considered in the assessment of impacts of activities on matters of national environmental significance. • The commitments made under the Program Report will require the Authority to develop a Great Barrier Reef net benefit policy (that will be updated from time to time) to enhance the condition of values relevant to matters of national environmental significance.
n) Demonstrates adaption to reasonable climate change scenarios.	<ul style="list-style-type: none"> • The strategic assessment identified climate change as one of four categories of high risk impacts. • The Authority has limited jurisdictional responsibility for addressing climate 	<ul style="list-style-type: none"> • Consistent with 88Q(a) of the GBRMP Regulations, the Authority must consider the potential impacts of the conduct proposed on the environment and on the social, cultural and heritage values of the Marine Park or a part of the Marine Park; and 88Q(f) any other

Endorsement Criteria	Addressing the endorsement criteria in the Authority's comprehensive management program (Part B)	Addressing the endorsement criteria in the Authority's Permission System (Part C)
	<p>change in the broad sense. However, the Authority contributes significantly to the development of international best practice for managing responses to climate change and extreme weather issues as they relate to the Reef's marine ecosystems. This is chiefly done through research and monitoring, partnerships with research institutions, government agencies and stakeholder groups and education, community awareness and stakeholder engagement programs.</p> <ul style="list-style-type: none"> • The Authority has a lead role in facilitating awareness of the impacts from climate change and extreme weather and in building resilience in the Marine Park. • The Authority has an advisory role to other agencies in relation to mitigation and adaptation to climate change and extreme weather in the Region. • The <i>Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017</i> acknowledges the important role the Authority plays in informing national and international climate policy and providing knowledge to support effective management of inshore areas. • The Authority will improve its management arrangements with REC36 – REC39 focused on adapting to climate change. 	<p>matters relevant to the orderly and proper management of the Marine Park.</p> <ul style="list-style-type: none"> • The Authority recognises the increasing significance of climate change and extreme weather in the Region and as one of the four high risk impacts (climate change, catchment run-off, degradation of coastal ecosystems and direct use), it will require consideration in permit assessments. • The commitments made under the Program Report will require the Authority to update its assessment processes so that climate change impacts are appropriately considered in its decision-making processes.
o) Commitments in the program must be adequately resourced throughout its life	<ul style="list-style-type: none"> • The Authority will continue foundational management arrangements and strengthen management within the Authority by realigning its current business systems and processes. More effective use of existing resources and stronger cooperation with partner agencies will ensure the Authority is well placed to build on its existing management arrangements. • The Authority will embed the strengthened management measures within existing policies, plans and programs, where appropriate. It will stage implementation of the remaining measures, including its new initiatives, based on their priority and the availability of resources. 	<ul style="list-style-type: none"> • The Authority has committed to the implementation of the measures outlined in Part C of the Program Report. • The speed with which the commitments will be achieved will be based on priority and availability of resources.

13.8 Program review, modification and continuous improvement

The terms of reference for this strategic assessment require that the Authority identify and analyse likely circumstances that may result in the review or modification of the program. The arrangements described below complement adaptive management measures set out in Chapter 13.

13.8.1 Review and continuous improvement of Program Report Part B

Under the GBRMP Act, the Authority has an ongoing responsibility to protect and manage the Great Barrier Reef. Over the life of the proposed program and beyond, the Authority will continue to aim for best practice management of the Region, adapting to changing conditions and government priorities as required. The Authority will continue the adaptive management approach outlined above to fulfil its responsibilities and respond to change.

It is anticipated the outcomes-based management framework, described in the accompanying Program Report, will provide sufficient flexibility to deal with changing circumstances over the next 25 years, and allow for modification as required.

By virtue of the provisions of the Act, the Authority has a clear and continuing responsibility to protect the Great Barrier Reef for future generations.

13.8.2 Review and continuous improvement of Program Report Part C

There will be an initial review of the Permission System's progress in achieving objectives and outcomes for matters of national environmental significance 24 months following any approval of a class of actions, and submitted to the Department of the Environment within 18 months following endorsement. Subsequent program evaluation reviews will be aligned with the *Great Barrier Reef Outlook Report* (five yearly) and form part of the independent review of management effectiveness conducted for each *Outlook Report*.

The framework for the review will be agreed between the Authority and the Department of the Environment within six months following endorsement.

The purpose of the review will be to assess the performance of the Permission System against objectives and outcomes for matters of national environmental significance including ensuring that impacts are not unacceptable. Each review will include a detailed evaluation of a sample of all relevant decisions made by the Authority to ensure appropriate consideration has been given to matters of national environmental significance.

The review's findings will be provided to the Minister for the Environment and will be published on the Department of the Environment's and the Authority's websites. The review will enable the Authority to determine if refinements to management arrangements and standards are required, to ensure the commitments and objectives for matters of national environmental significance are being delivered by the Permission System.

References

1. Great Barrier Reef Marine Park Authority 2012, *Informing the outlook for Great Barrier Reef coastal ecosystems*, GBRMPA, Townsville.
2. Bennett, J., Lawrence, P., Johnstone, R. and Shaw, R. 2005, Adaptive management and its role in managing Great Barrier Reef water quality, *Marine Pollution Bulletin* 51(1-4): 70-75.
3. Day, J. 2008, The need and practice of monitoring, evaluating and adapting marine planning and management—lessons from the Great Barrier Reef, *Marine Policy* 32(5): 823-831.
4. Beeden, R., Maynard, J.A., Marshall, P.A., Heron, S.F. and Willis, B.L. 2012, A framework for responding to coral disease outbreaks that facilitates adaptive management, *Environmental Management* 49(1): 1-13.
5. Dobbs, K., Day, J., Skeat, H., Baldwin, J., Molloy, F., McCook, L.J., Johnson, M., Elliot, B., Skeat, A., Vohland, K., Wachenfeld, D. and Kenchington, R. 2011, Developing a long-term outlook for the Great Barrier Reef, Australia: a framework for adaptive management reporting underpinning an ecosystem-based management approach, *Marine Policy* 35(2): 233-240.
6. Eberhard, R., Waterhouse, J., Robinson, C., Taylor, B., Hart, B., Parslow, J. and Grayson, R. 2008, Adaptive management strategies for Great Barrier Reef water quality improvement plans, *Geographical Research* 46: 303-313.
7. Eberhard, R., Robinson, C.J., Waterhouse, J., Parslow, J., Hart, B., Grayson, R. and Taylor, B. 2009, Adaptive management for water quality planning—from theory to practice, *Marine and Freshwater Research* 60(11): 1189-1195.
8. Hughes, T.P., Gunderson, L.H., Folke, C., Baird, A.H., Bellwood, D.R., Berkes, F., Crona, B., Helfgott, A., Leslie, H., Norberg, J., Nyström, M., Olsson, P., Osterblom, H., Scheffer, M., Schuttenberg, H., Steneck, R.S., Tengö, M., Troell, M., Walker, B., Wilson, J. and Worm, B. 2007, Adaptive management of the Great Barrier Reef and the Grand Canyon World Heritage Areas, *Ambio* 36(7): 586-592.
9. McCook, L.J., Ayling, T., Cappel, M., Choat, J.H., Evans, R.D., DeFretas, D.M., Heupel, M., Hughes, T.P., Jones, G.P., Mapstone, B., Marsh, H., Mills, M., Molloy, F.J., Pitcher, C.R., Pressey, R.L., Russ, G.R., Sutton, S., Sweatman, H., Tobin, R., Wachenfeld, D. and Williamson, D. 2010, Adaptive management of the Great Barrier Reef: A globally significant demonstration of the benefits of networks of marine reserves, *Proceedings of the National Academy of Sciences* 107(43): 18278-18285.
10. Fernbach, M. and Nairn, K. 2007, *Reef Recollections: an oral history of the Great Barrier Reef*, Great Barrier Reef Marine Park Authority, Townsville.

Appendix 1

Responses to the assessment of management effectiveness

Responses to assessment of management effectiveness

This table provides a summary of the Authority's response to the main recommendations stemming from the assessment of management effectiveness, which forms the basis for Chapter 8 of the Strategic Assessment Report.

Table 5 Responses to assessment of management effectiveness

#	Theme	Independent reviewer recommendation	Authority Response
1	Resourcing	<p>Undertake a comprehensive assessment to determine the resourcing required for implementing key programs and seek a commitment from governments to secure these resources. Areas requiring particular attention in relation to available resources include:</p> <ul style="list-style-type: none"> • compliance and enforcement • field management • Great Barrier Reef and Torres Strait Vessel Traffic Service • environmental management charge and offsets policy development and auditing • Reef Guardians • comprehensive long-term biophysical, social and economic monitoring of the Region • Indigenous Sea Country Partnerships historic heritage including management of Commonwealth islands and coastal ecosystems • Reef Plan 	<p>Compliance and enforcement/field management Is funded on a 50:50 basis by the Australian and Queensland Governments as part of the joint field management program established under the Great Barrier Reef World Heritage Area Intergovernmental Agreement. The last review of base funding occurred in 2011 where it was noted that under static funding, the current levels of activity will progressively decline due to rising costs. Given the projected increasing levels of use, outcomes of the draft strategic assessment report, and independent review recommendations (particularly in relation to illegal activity) the Authority considers there is justification for seeking a further review of funding for the joint field management program. The Great Barrier Reef Ministerial Forum is, in accordance with the GBR Intergovernmental Agreement 2009, to review the base funding of the Field Management Program every five years. The last review was considered by Ministerial Forum in 2011. .</p> <p>Great Barrier Reef and Torres Strait Vessel Traffic Service The Australian Maritime Safety Authority manages the Great Barrier Reef and Torres Strait Vessel Traffic Service. The Great Barrier Reef Marine Park Authority relies on this service to reduce shipping threats to the Great Barrier Reef. The need for long term funding for this service is supported by the Authority.</p> <p>All remaining items The Authority will review funding options in the context of costings for program implementation and government budgetary processes.</p> <p>The Authority will continue to work with its Australian, Queensland and local government partners to ensure available funding is addressing key risks identified in strategic assessment report. It will continue to work with Traditional Owners, industry and the broader community to deliver regional and local programs to improve the condition of values.</p>
2	Resourcing	<p>Explore options for obtaining increased funding including:</p> <ul style="list-style-type: none"> • a review of intergovernmental resourcing levels • contributions to management charges such as expanding the GBRMPA's environmental management charge to other activities. This has the potential to equitably share the costs of managing and protecting the outstanding universal value of the Marine Park between the Australian public and those that derive a private benefit from activities permitted under the Great Barrier Reef Marine Park Zoning Plan 2003. Currently this potential is limited only to a small suite of users (for example, tourism and 	Refer point # 1 above.

#	Theme	Independent reviewer recommendation	Authority Response
		sewage discharge) and has not been extended to users that pose the greatest risk to and impact on the Marine Park.	
3	Biodiversity protection	Review draft Biodiversity Conservation Strategy and add more outcome-oriented targets.	Prior to this review, the draft <i>Biodiversity Conservation Strategy</i> had been released for public comment. Feedback from this public comment phase did not include requests for more outcome-orientated targets and were not included in the now published <i>The Great Barrier Reef Biodiversity Conservation Strategy 2013</i> . At this stage there is no scope to accommodate this recommendation, however, it will be considered when the Biodiversity Conservation Strategy is reviewed post-Outlook Report 2014 as part of the Authority's ongoing adaptive management approach...
4	Biodiversity protection	Prioritise knowledge gaps for status and trend of species and habitats, and publicise these to the research community, while encouraging research projects to address these gaps.	The Authority supports this recommendation. Key information gaps and processes to address them have been identified as part of the strategic assessment. Communication of priority information gaps to the research community will continue to be achieved through the Authority's web-based publication <i>Scientific Information Needs for the Great Barrier Reef 2009-2014</i> and the current draft " <i>Science information needs of an integrated research, monitoring and reporting program for the Great Barrier Reef World Heritage Area</i> ", which is due for release during the latter half of 2014.
5	Biodiversity protection	Consider long-term monitoring requirements in light of identified areas of biodiversity concern (for example, inshore coastal ecosystems).	The Authority supports this recommendation and will address it through the: <ul style="list-style-type: none"> • implementation an Integrated research, monitoring and reporting program for the Great Barrier Reef World Heritage Area as per recommendation 31 • continued support of long-term programs that monitor the status of key ecosystem attributes and high risk impacts as per recommendations 32, and 33.
6	Biodiversity protection	Identify any critical areas of habitats requiring more detailed planning for biodiversity conservation and prepare a plan of management for the area.	The Authority will continue to ensure that critical habitats within the Region are afforded the appropriate level of protection through its range of legislative and policy instruments.
7	Biodiversity protection	Develop offset policy to address issues such as the: <ul style="list-style-type: none"> • use of funds arising from offset arrangements • effectiveness of offset arrangements where the offsetting action is unlikely to deliver benefits for biodiversity but the impact being offset is more immediate • perceived lack of effectiveness of most management tools by respondents to the stakeholder survey to better understand why Local Marine Advisory Committee and Reef Advisory Committee members consider so many of the tools to be largely ineffective. 	The Authority has committed to the development of an offsets policy and a net benefit policy as part of the strategic assessment process (REC23 and 24).. These policies will provide a framework for the use of funds to offset residual impacts and guide the delivery of actions which will result in a net improvement to the condition of values in the Great Barrier Reef Region.
8	Indigenous heritage	Develop an Indigenous heritage strategy with clear objectives, actions and milestones.	The Authority supports the development of an Indigenous heritage strategy and has committed to updating the Great Barrier Reef Marine Park Heritage Strategy as per recommendation 13

#	Theme	Independent reviewer recommendation	Authority Response
9	Indigenous heritage	Develop appropriate mechanisms to allow Indigenous knowledge to be considered in decision making and planning across the range of the GBRMPA's influence.	The Authority supports this recommendation, including the development of a protocol for managing culturally sensitive information and a knowledge management system for the handling and appropriate use of Indigenous heritage information in decision-making as per recommendation 5.
10	Indigenous heritage	Consider mechanisms and models for implementation of co-management with Traditional Owners for sea country.	The Authority supports this recommendation and will continue to develop and implement Traditional Use of Marine Resource Agreements to further promote the sustainable use of marine resources and cultural practices. The Authority will also explore opportunities to expand the 'Sea Country Grants Program' with Traditional Owners and the Queensland Government, to build on established frameworks as part of recommendation 14 and 28 – however this is contingent on the availability of funding.
11	Historic heritage	Finalise the heritage database and identify gaps in knowledge.	The Authority commits to the ongoing development and updating of the heritage database in accordance with legislative requirements as per recommendation 13.
12	Historic heritage	Review and update the Heritage Strategy to focus on the protection of historic heritage and provide timeframes for implementation and targets.	The Authority will review and update the Great Barrier Reef Marine Park Heritage strategy (REC13; REC5) covering all components of heritage as required under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> and <i>Great Barrier Reef Marine Park Act 1975</i> .
13	Community benefits	Develop overarching strategy with realistic timeframes and targets for actions to tie existing work together to identify gaps in knowledge and provide management policies to maintain the range of different social, economic, heritage, cultural aesthetic values attributable to different Great Barrier Reef locations.	The Authority supports the intent of this recommendation, but due to the potential for duplication with other strategies, will look at integrating these considerations into existing policy documents. All agency policies require an implementation plan, documenting key milestones and works to be achieved by financial year if relevant.
14	Community benefits	Maintain and strengthen partnerships and encourage public participation and transparency in decision making through existing mechanisms.	The Authority supports this recommendation. It will: <ul style="list-style-type: none"> continue to engage with the community through its advisory committees, Reef Guardians programs, and other established avenues, ensure the requirements for stakeholder and community engagement are specified in its decision making processes (see for example REC14). This will provide consistency and certainty for the public and guide permit applicants on requirements to publicly advertise and assess potential impacts of proposed activities on social, cultural, heritage and economic values.
15	Community benefits	Implement measures for outreach to the broader constituency who are not engaged at present (for example organise an annual regional forum in conjunction with the relevant Local Marine Advisory Committee to review monitoring and research results, as well as planning and developments in the Region).	The Authority supports this recommendation and will examine measures for improved outreach through its communication and engagement programs. Commitments towards this can be found in relation to recommendations 14 and 36..

#	Theme	Independent reviewer recommendation	Authority Response
16	Community benefits	Document and consider environmental, social and economic costs and benefits of the GBRMPA's major management decisions on Reef dependent communities.	The Authority supports this recommendation and will ensure policy documents which guide the Authority's planning and assessment decision making incorporate these considerations.
17	Water quality protection	Continue to work with the Australian and Queensland Governments to strengthen efforts to improve water quality to build resilience and aid the recovery of coral reefs. Additionally, it is recommended that further resources be invested in catchments contributing nutrients to the source areas of crown-of-thorn outbreaks.	The Authority supports this recommendation and will continue its involvement in Reef Plan and basin assessments in partnership with other agencies and stakeholders (e.g. Reef Guardian Councils). It also supports additional investments in addressing nutrients, sediments and pesticides in the Great Barrier Reef more broadly, including water quality improvements in catchments adjacent to areas of primary crown-of-thorns starfish outbreaks as per recommendation 18.
18	Water quality protection	Ensure compliance of point source discharge with permit conditions, and consider a cross- jurisdictional program to improve water quality from point source discharges.	The Authority will continue to monitor compliance with permits conditions for point source discharges. The Authority also supports increased investment in water quality management infrastructure required to facilitate water quality improvements from point source discharges, such as sewage upgrades. This forms part of recommendations relating to monitoring and evaluation as well as recommendation 18.
19	Climate change and extreme weather	Amend policy and procedures documents and develop practical guidelines for relevant permit-holders and applicants, so all aspects of the GBRMPA's management include opportunities to monitor change, and contribute to adaptive management.	The Authority will give effect to the intent of this recommendation through the: <ul style="list-style-type: none"> • implementation of the Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012 - 2017 • revision and updating of policies and guidelines to incorporate climate change and extreme weather considerations as per recommendation 37.
20	Climate change and extreme weather	Establish a system to regularly report on relevant climate change indicators for underpinning adaptive management to provide robust scientific data on key indicators on the impacts of climate change.	Regular reporting of climate change indicators will occur through the: <ul style="list-style-type: none"> • implementation of an Integrated Monitoring Framework for the Great Barrier Reef World Heritage Area, including the Eye on the Reef Program (REC31) • implementation of the Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012 -- 2017 as per recommendation 36 – 39. • Great Barrier Reef Outlook Reporting cycle.
21	Coastal development	Improve governance of the management of coastal ecosystems across relevant state and Commonwealth jurisdictions by: <ul style="list-style-type: none"> • amending the Intergovernmental Agreement 2009 to include bilateral commitments to integrated marine and coastal planning • develop an intergovernmental program to address management of coastal ecosystems in relation to impacts on the Great Barrier Reef, based on the Reef Plan model. 	The Authority has developed a technical report on the protection of coastal ecosystems critical to the Reef's ecosystem functioning. This report, titled <i>Informing the Outlook for Great Barrier Reef Coastal Ecosystems</i> , provides information on the current status of the catchment and the threats it faces. Its implementation will be promoted through Australian, Queensland and local government coastal and catchment plans and policies. <p>Cross jurisdictional protection and restoration of coastal ecosystems will be included in the Reef 2050 Long-term Sustainability Plan for the Great Barrier Reef World Heritage Area. This plan will be overseen by the Ministerial Forum responsible for the implementation of the Intergovernmental Agreement 2009. Another key initiative is the Reef Recovery program, which aims to restore sites of high environmental value through regionally-based cooperative management approaches.</p>

#	Theme	Independent reviewer recommendation	Authority Response
22	Coastal development	Use the Reef Guardian Council program to develop a strategy with each council that identifies critical coastal ecosystem management issues in local government areas and establish goals, strategies and targets for management of these ecosystems.	The Authority will continue to work with Queensland Government, NRM bodies and its Reef Guardian councils to prioritise coastal, urban and wetland rehabilitation activities that improve water quality and GBR health as per current foundational management systems as detailed by recommendation 9-17A.
23	Coastal development	Conduct more detailed studies of coastal and marine linkages and potential for cumulative impacts of historic land use change at a catchment scale for priority catchments identified in the <i>Informing the Outlook for coastal ecosystems</i> report.	Under the Reef 2050 Long-term Sustainability Plan, the Authority will work with the Queensland Government to develop a coastal ecosystem framework that will assess cumulative impacts on Great Barrier Reef ecosystems (e.g. walking the landscape). This framework will build upon priorities identified in the <i>Informing the Outlook for coastal ecosystems</i> report and utilise knowledge from the 12 basin assessments completed by the Authority.
24	Ports	Finalise ports position statements to articulate GBRMPA's interest in the location and management of port infrastructure, reflecting the potential for ports development to negatively impact on matters of national environmental significance.	The development of a ports positions statement now sits with the Queensland Government. The Queensland Ports Strategy preserves and builds on the commitment of the draft Great Barrier Reef Ports Strategy to restrict any significant port development, within and adjoining the Great Barrier Reef World Heritage Area, to within existing port limits to 2022. It also supports development of port master plans that will incorporate environmental protection measures to protect the Great Barrier Reef. The Authority will continue to work with the ports and the Qld government to establish long term programs for channel construction and maintenance such that there are no significant impacts on the Great Barrier Reef Marine Park.
25	Ports	Actively participate in the decision making about coastal development and the location of port development and expansion.	The Authority has limited regulatory capacity to influence coastal development. It will however continue to provide advice to the Australian and Queensland governments on coastal development activities, including port expansions, with the potential to impact the Great Barrier Reef Region. It will also continue to work with the Queensland Government and local government authorities to improve the health and functioning of coastal ecosystems (see items 21-23 above).
26	Ports	Develop an offsets policy concerning port development and expansion, ensuring a demonstrable net environmental benefit.	See response to item 7 above. Where activities occur outside the Region, the Great Barrier Reef Marine Park Authority will continue its advisory role to the Australian and Queensland governments on measures to: <ul style="list-style-type: none"> • avoid, mitigate, offset and adaptively manage impacts, consistent with the Australian Government offsets policy • deliver net benefits to the condition of Great Barrier Reef Region's values.
27	Ports	Improve governance of the management of coastal ecosystems across relevant state and Commonwealth jurisdictions by amending the Intergovernmental Agreement 2009 to include bilateral commitments concerning port development, and develop an intergovernmental program to address management of port development in relation to impacts on the Region.	The Authority has developed the <i>Informing the Outlook for coastal ecosystems</i> report on the protection of coastal ecosystems critical to the Reef's ecosystem functioning (see item 21) and the draft Queensland Ports Strategy builds on the past draft Great Barrier Reef Ports Strategy (see item 24). The Authority will promote the implementation of positions set out in these documents through Australian, Queensland and local government plans and policies. The Authority will also seek to have the protection and restoration of coastal ecosystems

#	Theme	Independent reviewer recommendation	Authority Response
			included in the Reef 2050 Long-term Sustainability Plan for the Great Barrier Reef World Heritage Area. It is proposed that this plan will be overseen by the Great Barrier Reef Ministerial Forum responsible for the implementation of the Intergovernmental Agreement 2009.
28	Shipping	Develop a strategy and action plan to address potential shipping impacts (for example, introduced marine pests, physical damage, chemicals and other material spills, and increasing anchoring and transiting). The strategy needs to address the immediate response to impacts and the longer-term rehabilitation of the reef.	The draft North-East Shipping Management Plan outlines measures currently in place to manage the safety of shipping in the sensitive marine environments of Australia's north-east region and proposes options to further minimise the environmental impacts of these activities and related risks to the outstanding universal value of the Great Barrier Reef World Heritage Area in the years to come. The development of the North-East Shipping Management Plan is integral to the Reef 2050 Long-term Sustainability Plan for the Great Barrier Reef World Heritage Area. The North-East Shipping Management Plan has been developed by the North-East Shipping Management Group, taking into consideration a quantitative risk assessment by Det Norske Veritas (DNV) of current control measures and a range of possible future risk mitigation options. The North East Shipping Management group comprises senior representatives from the following agencies: Australian Maritime Safety Authority (AMSA), Great Barrier Reef Marine Park Authority (GBRMPA), Maritime Safety Queensland (MSQ), Department of Infrastructure and Regional Development, Department of the Environment, Department of Innovation and the Department of Agriculture. The work program associated with the North East Shipping Management Plan summarises the proposed actions to be taken over the coming years to improve the safety of shipping and protection of the marine environment in the north-east region. Implementation and monitoring will be guided by the North East Shipping Management Group, related working groups and key stakeholders
29	Shipping	Develop best practices in partnership with the shipping industry (for example reduced illumination lighting, waste management plans, carbon offsetting).	The Authority will continue to work with the Australian Maritime Safety Authority on initiatives to reduce the impacts of shipping on the Great Barrier Reef.
30	Recreation	Develop timeframes and implementation plan for existing strategy.	As part of the commitment set out in relation to recommendation 8A, the Authority will review its existing suite of strategies, including its recreation strategy in the light of the outcomes of the strategic assessment. All updated strategies will include an implementation plan with timeframes for specified actions.
31	Recreation	Undertake long-term survey to identify recreational use, values and changes over time to allow for proactive management in areas of high or conflicting use.	As part of the integrated monitoring framework, the Authority supports the National Environmental Research Program implementation of a long-term social and economic monitoring program to enable a spatial and non-spatial understanding of changing use, investment and values. This monitoring program will address knowledge gaps associated with recreational fishing and underpin pre-emptive management to protect values and ensure use is ecologically sustainable.
32	Tourism	Accelerate pre-emptive site planning in those areas such as the southern Great Barrier Reef where growth in tourism activities is occurring.	The Authority supports this recommendation. The strategic assessment has identified the need for improved site planning arrangements, including the Keppel Bay region.

#	Theme	Independent reviewer recommendation	Authority Response
33	Tourism	Review policies and effectiveness of permit conditions that govern tourism and influence the behaviour of tour operators and visitors to protect Great Barrier Reef values underpinning matters of national environmental significance.	The Authority will address this recommendation as part of its ongoing program of policy review implemented through the commitment to enhance the Authority's permission system as per recommendation 8A. The Authority is also examining the effectiveness of its current approach to tourism management with a view to streamlining existing measures and improving alignment between various statutory and policy instruments.
34	Tourism	Consider a compliance plan for ensuring operators are operating within their permit conditions.	Tourism operation compliance forms part of the Authority's overall compliance program. Permit monitoring and auditing is undertaken in accordance with the Authority's risk framework.
35	Tourism	Work with tourism operators to improve the quality of reef interpretation and presentation.	The Authority supports this recommendation and will examine cost-effective ways to work with the tourism industry to improve the quality of reef interpretation and presentation.
36	Defence activities	Ensure retention of the skills required to assess defence activities by increasing training and sharing of corporate knowledge to give confidence that the GBRMPA has the capacity to effectively manage defence activities into the future.	The Authority supports this recommendation. It will be addressed through existing performance planning and training systems for relevant agency staff. The Authority will also continue to work with the Department of Defence to ensure two-way training and information sharing.
37	Research activities	Update and strengthen the Reef Management System to monitor the level of actual research take, so it is better able to inform cumulative impact assessment processes for research activities, particularly around research stations.	The Authority is committed to the ongoing development of the Reef Management System and improving its capacity to monitor and report on cumulative impacts of activities, including research activities through: <ul style="list-style-type: none"> • full implementation of the reef management system database and exploration of its integration across all jointly managed issues within the Great Barrier Reef World Heritage Area • its continuation of joint-permit arrangements with the Queensland Government and ongoing improvements to its permits systems.
38 to 40	Research activities	<ul style="list-style-type: none"> • Review and update the Policy on Managing Scientific Research to include cumulative impacts. • Revise the limited impact collection limits in the Regulations to ensure the take limits are ecologically sustainable. • Develop environmental management plans for all scientific research zones. 	The Authority will revise its suite of measures for scientific research activities to ensure they consider the cumulative impacts of activities and remain ecologically sustainable as outlined by the integrated monitoring and reporting program commitments.
41	Commercial fishing	Deter and reduce illegal fishing through mechanisms such as real time vessel tracking capability on all commercial fishing vessels, improved technology such as the use of drones, increased number of patrol days, and enhanced education and communications with respect to zoning compliance.	The Great Authority supports these recommendations and commits (REC 14-17)to: <ul style="list-style-type: none"> • regular review of technology to ensure the most advanced technology is being implemented to facilitate compliance with legislative requirements • the implementation of real-time vessel tracking of the commercial fishing and other fleets to improve compliance • continue the delivery of education, communication and training to increase compliance with the Zoning Plan and public awareness and understanding of matters of national environmental significance and outstanding universal value.

#	Theme	Independent reviewer recommendation	Authority Response
			<ul style="list-style-type: none"> seek additional funding to expand on-water surveillance and compliance capacity in partnership with other jurisdictions. (Refer item 1).
42	Commercial fishing	Develop a formal forum for relevant fisheries within the Marine Park to align planning for fishing among jurisdictions to facilitate ecologically sustainable use (for example, ensuring implementation of vulnerability assessment recommendations where issues are identified within a commercial fishery).	The Authority supports the intent of this recommendation and has a current forum (via Schedule E to the Intergovernmental Agreement for the Great Barrier Reef) to facilitate ecologically sustainable fishing in the Great Barrier Reef World Heritage Area. The Authority recognises improvements can still be made and will continue to work with Australian and Queensland Government departments with responsibilities related to fishing to implement outcomes from its vulnerability assessments and the strategic assessment. This may involve the establishment of a joint Australian–Queensland Government fisheries forum, consistent with the provisions in Schedule E to the Intergovernmental Agreement, to coordinate the implementation of fisheries related management actions.
43 to 46	Recreational fishing	<p>Improve compliance with respect to illegal fishing through improved education and awareness, as well as increased patrols (recommendation 43).</p> <p>Consider a permit system to improve compliance (recommendation 44).</p> <p>Undertake long-term survey to identify recreational use and values, as well as changes over time, to allow for proactive management in areas of high or conflicting use (recommendation 45).</p> <p>Develop a system to monitor recreational activity, fishing effort, catch and location to support the development of strategies to deliver long-term ecologically, socially and economically sustainable recreational fishing (recommendation 46).</p>	<p>Under the 'Great Barrier Reef Intergovernmental Agreement' between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management".</p> <p>The Great Barrier Reef Marine Park Authority acknowledges the need to improve its understanding of recreational fishing within the Region, including changing patterns of use and total levels of fishing effort. This information is critical to the maintenance of sustainable fisheries resources, particularly given the trend in key drivers of fishing effort including increasing population growth and technological advances in equipment.</p> <p>The Authority recognises that fisheries management must be supported by an effective enforcement and education program and in the light of increasing use will seek additional funding to maintain and enhance compliance efforts with respect to illegal fishing (refer item 1).</p> <p>The Authority will work cooperatively with the relevant Australian and Queensland Government departments to implement a Great Barrier Reef recreational fishing monitoring program. This will include, but not be limited to:</p> <ul style="list-style-type: none"> seeking improvements to data sharing arrangements with fisheries managers to improve understanding of extractive use. ongoing support for the National Environmental Research Program implementation of a long-term social and economic monitoring program to enable a spatial and non-spatial understanding of changing use, investment and values. This monitoring program will address knowledge gaps associated with recreational fishing and underpin management measures to protect values and ensure use is ecologically sustainable.
47	Management tools	Establish a schedule for regular review and evaluation of plans, including recovery plans, policies and strategies.	The Authority will address this recommendation as part of its ongoing program of legislative and policy review. The Authority is committed to reviewing its current suite of policy documents in the light of strategic assessment outcomes with the view to streamlining existing measures and improving alignment between various statutory and policy instruments.

#	Theme	Independent reviewer recommendation	Authority Response
48 and 49	Management tools	<ul style="list-style-type: none">• Improve stakeholder knowledge of tools used by the GBRMPA through improved communication of management strategies and outcomes (recommendation 48).• Investigate the perceived lack of effectiveness of most management tools by respondents to the stakeholder survey to better understand why Local Marine Advisory and Reef Advisory Committee members consider so many of the tools to be largely ineffective (recommendation 49).	The Authority will take these findings back to its advisory committees for discussion with the aim to better understand their perceptions on the effectiveness of tools and seek advice on ways to improve understanding and awareness of management tools. Outcomes will be used to inform the Authority's communication and engagement programs and its ongoing program of policy review.

Appendix 2

Responses to the independent peer review of the assessment reports

Responses to the independent peer review of the assessment reports

Recommendations for improvements to the Strategic Assessment and Program Reports are outlined in the following table. In cases where the recommended actions included a change to the Strategic Assessment Report, a reference is made to an addendum number (ADD).

Table 6 Responses to the independent peer review of the assessment reports

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
DRAFT Program Report					
IPR-1.	General Comment	The Program Report could achieve greater consistency with the Terms of Reference by having a new section which describes the purpose and clear objectives of the Program.	Insert new section describing Program purpose and objectives.		<i>The final Program Report is divided into two sections. Part A describes the comprehensive management program including an introductory section on the purpose, background, challenges and way forward. Part B focusses on how the program, through the permission system, protects matters of national environmental significance and how this is consistent with the EPBC Act</i>
IPR-2.	11	Second bullet point: The first sentence notes the importance of action at the international level, but the remaining text does not identify engagement at this level. GBRMPA does have a long history of international collaboration and leadership. Continued and strengthened international efforts are needed to protect and restore the outstanding universal value of the World Heritage Area. The same comment applies to Section 4.2.	Explicitly identify engagement at an international level.		<i>The Authority's history of strong international collaboration together with its ongoing commitment to international engagement and capacity building has been included in the final Program Report.</i>
IPR-3.	13	GBRMPA has undertaken a range of activities internationally that are relevant to Sections 4.2 and 4.3. The focus of these may have been more on international assistance rather than management of the Great Barrier Reef, but could include specific international cooperation that addresses threats to the reef. Examples include climate change, and mortality of threatened species, such as turtles, outside Australia's jurisdiction. Such actions will require a whole-of-government response.	Consider the inclusion of international activities in the Program description. Section 3.3 is one appropriate place to stress that effort beyond the reef-wide scale (including the Great Barrier Reef catchment) is needed.		<i>The final program report includes a statement to this effect</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-4.	13	Even though not a GBRMPA instrument specifically, the <i>Interim Guidelines on the Outstanding Universal Value of the Great Barrier Reef World Heritage Area—for Proponents of Actions</i> are highly relevant to Section 4.1.9.	Refer to the Interim Guidelines and integrate in text.		<i>Reference to the EPBC Act referral guidelines for the Interim Guidelines on the Outstanding Universal Value of the Great Barrier Reef World Heritage Area has been included in the final program report.</i>
IPR-5.	18	Description of management framework is brief.	Some further clarification of the purpose, scope, stakeholder involvement and authority of the management framework would be valuable.		<i>This has been revised in the final program report.</i>
IPR-6.	24	Targets section: GBRMPA has taken into consideration the effectiveness assessment's conclusion that arrangements have largely been process- rather than outcome-focussed, and have committed to developing outcome-based targets. It is also appropriate that such targets are specific, measurable, achievable, relevant and time bound. The report is clear that the targets in Table 5 are preliminary, and will be developed further. A key consideration will be detailed understanding of what constitutes "measurable", in terms of the real uncertainty resulting from natural variability and measurement error in monitoring data, lag times to get a response, and so on.	Clarify that target setting will be a scientifically robust process that includes careful consideration of the types of data available to measure success and an understanding of system response times .		<i>The section on targets has been revised in the final program report and includes specific reference to the process for setting targets.</i>
IPR-7.	24	The discussion of targets also states that not enough is known regarding heritage values to set outcome-based targets so the targets will be action- rather than outcome-oriented. The same is probably also true for at least some of the biological value targets , and even where outcome-based targets can be set and should be the priority, there should also be targets developed for implementing	This may be inherent in the overall program development and implementation but could be made more explicit in Section 5.2.3.		<i>The final program report makes explicit the linkages between targets and key strategies and actions in the Reef Recovery program, including timeframes for implementation as outlined through the Reef 2050 long-term sustainability program..</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		specific actions to achieve the desired outcomes.			
IPR-8.	29	The statement “by improving transparency and providing certainty about assessment requirements ” could be expanded to explain how this will be done.	Describe the specific actions that will be used to achieve this (recognising this is a policy that will be developed).		<i>Greater transparency and certainty will be provided by providing structured lists of matters that must be considered and guidance on tools to be used in assessing cumulative impacts.</i>
IPR-9.	32	What is the justification for prioritising the areas mentioned for the Reef Recovery program? Many of the locations listed were demonstration cases. Would priorities change had different demonstration cases been chosen? Why Mackay-Whitsunday when this area has achieved the highest reduction in pollutant loads (case study) and water quality is identified as the main threat to reef resilience? Description of the Reef Recovery Program would benefit from more information on its intended scale and how this will be matched with the scale at which impacts occur.	Explain reasons for choosing these areas as priorities, and/or consider different demonstration cases. Provide more information on the intended scale of the Reef Recovery Program and how this aligns with the scale at which impacts occur.		<i>Areas were selected on the basis of their biodiversity and heritage values, an assessment of risk to values, including risks from cumulative impacts, and geographic spread. Further information on the Reef Recovery program is provided in the final Program Report.</i>
IPR-10.	Appendix 4	Impacts are not the same as risks	Correct wording		<i>The definition of impacts and risks in relation to this table are stated in the Strategic Assessment Report. An explanatory note has been added to the table.</i>
IPR-11.	Validity of conclusions	The Program Report does not identify sustaining and improving fisheries in relation to community benefits and direct uses.	Include in the Program Report.		<i>Correct. Community benefits are expressed in terms of criteria such as ‘employment, income, access to resources’ not specifically to sector groups such as tourism and fisheries.</i>
DRAFT Strategic Assessment Report					
IPR-12.	3-5	The application of the <i>Great Barrier Reef Marine Park Act 1975</i> outside of the boundary of the marine park could be further clarified.	Provide further details on the powers described in Section 3.3 of the Assessment Report, including examples of their application previously, or reasons why they have not been applied. Some analysis of the strengths and	ADD-1	<i>Additional information has been added to the text under section 3.3. An analysis of management tools and their application and effectiveness is provided in Chapter 8 and in section A of the final Program Report.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
			weaknesses of the existing legislation in addressing activities within the inshore areas or catchment of the Great Barrier Reef would improve the discussion.		
IPR-13.	3-8	The <i>Great Barrier Reef Marine Park Aquaculture Regulations 2000</i> are described as part of the Program, despite recent GBRMPA publications announcing the intention to repeal them.	Their current status and future plans for their implementation could be clarified.	ADD-2	<i>Text has been amended to clarify issue</i>
IPR-14.	3-9	<i>Marine Parks Regulation 2006</i> is not listed in Queensland legislation.	Add <i>Marine Parks Regulation 2006</i> to the list of Queensland legislation.	ADD-3	<i>Marine Parks Regulation has been added to the list of Queensland legislation</i>
IPR-15.	3-12, Table 3.1	The table caption does not say the content relates only to GBRMPA tools, though the callout to the table in the text does place focus on GBRMPA. Even so, the table does include some other instruments, for example permits issued under Queensland Marine Parks Regulations. Not including Reef Plan under partnerships seems a significant omission as it is a centrepiece of the overall management of the World Heritage Area (Reef Plan is included in Section 4.2.1 of the Program Report). Queensland's role in fisheries management, and the recently issued Interim Guidelines on the Outstanding Universal Value of the Great Barrier Reef World Heritage Area—for Proponents of Actions, are also important components that should be mentioned in the table.	Review table caption and content.	ADD-4 ADD-5 ADD-6	<i>Title and relevant parts of the table have been amended as per ADD-4-6</i>
IPR-16.	3, Table 3-2	GBRMPA issues joint permits for some coastal development projects which may extend beyond state waters (for example involving dredging, material placement activities or pontoons).	Add dot to the Table for permits and coastal development.	ADD-8	<i>Dot added for permits and coastal development in Table 3-2</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-17.	3-22	Sharks, dugongs and turtles – this section somewhat overstates the evidence provided by the cited papers for benefits of the 2003 zoning to sharks, dugongs, and turtles. Reference 14 (McCook <i>et al.</i> 2010) states that sharks have benefited, but also that these benefits are less than for more site-attached species. For dugongs, McCook <i>et al.</i> (2010) discuss the increased portion of critical habitat protected by the 2003 rezoning, however they do not provide evidence for beneficial effects; they also note that other protective measures are needed. McCook <i>et al.</i> (2010) treat turtles in a similar manner. Reference 17 (Marsh <i>et al.</i> 2005) does not address possible benefits of the rezoning for dugong, which would have been highly unlikely to occur on the short time scale between rezoning and the publication of this paper. Reference 18 (Gell and Roberts 2003) is a general review and provides no information regarding the effects of rezoning, in fact the paper was published before the rezoning was implemented.	Reconsider appropriate references for this section.	ADD-9	<i>Text and references have been amended</i>
IPR-18.	4-7	The reference simply to "aesthetic value" ignores the "superlative natural phenomena" component of criterion vii.	Include superlative natural phenomena component	ADD-11	<i>Superlative natural phenomena has been added to relevant sentence</i>
IPR-19.	4-8	Criterion ix provides a focus on biological and ecological processes (the only matters of national environmental significance that specifically refers to processes) but this is not sufficiently captured in the description nor in what needs to be protected as part of outstanding universal value. Activities that undermine such ecological and biological processes are of significant concern and should be included in discussions about impacts throughout the strategic assessment	While such processes may be implicit in the discussion, there would be value in making them explicit.		<i>It's important to remember that this is a summary only - 'processes' are certainly part of outstanding universal value but the Retrospective Statement of Outstanding Universal Value does not address processes as well as if we had written the Statement today using current 2014 knowledge. In 1981 the understanding about processes was poor, and hence the Retrospective Statement of Outstanding Universal Value is less descriptive than perhaps some would like. Note that the SA <u>does address processes</u> (e.g. pp. 7-34 to 7-37; 7-44 to 7-45; 10-22). <i>Another key table for processes can be found in the final Program report</i></i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		in addition to specific impacts on species for example. This is also implicit within the notion of "integrity" as used in World Heritage assessment and management.			
IPR-20.	4-23	The discussion of community benefits of the environment does not include regulating services such as coastal protection, nutrient/carbon sequestration. This may be because the discussion is largely based on public consultation and the importance of such services is probably not front-of-mind for the general public. However, regulating services do not seem to be considered in the report. In particular, nutrient cycling and the critical role of wetlands are not addressed. Nutrient cycling seems to be considered solely in terms of catchment inputs (e.g. Strategic Assessment page 7-36), but given that a large proportion of saltmarsh, for example, has been channelized are there opportunities to reduce nutrient inputs via salt marsh restoration?	Include regulating services in community benefits.	ADD-12	<p><i>As pointed out by the reviewers, this section is focused around outcomes from public consultation workshops, in which regulating services were not consistently identified. The Authority agrees that this does not diminish the value of this service as a community benefit.</i></p> <p><i>The word "protection" has been added as the support provided by the regulating services in community benefits, hence building that sentence more directly on the findings from the Millennium Ecosystem Assessment.</i></p>
IPR-21.	4-32	1 st sentence: Opening statement that these are baleen whales could be taken to imply that species discussed in subsequent paragraphs are not.	Revise wording	ADD-13	<i>Text amended</i>
IPR-22.	4-43	Light attenuation is the amount of decrease in light availability per metre, so depth does not necessarily determine light attenuation <i>per se</i> (light availability does depend on depth). Also, light attenuation is determined by concentrations of dissolved substances and plankton as well as sediment.	Clarify definition.	ADD-16	<i>Text has been amended to clarify definition</i>
IPR-23.	4-43	The statement that open oceans are effectively nutrient deserts refers primarily to central ocean gyres. Upwelling areas can	Clarify statement.	ADD-17	<i>Text has been amended to include upwelling.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		have relatively high nutrient concentrations (though still lower than inshore areas in the context of the Region). Note the reference to the influx of nutrient-rich upwelled water on page 4-16. This is an example of not referring to key cycling processes such as immobilisation by uptake/deposition and denitrification.			
IPR-24.	4-43	Most atmospheric carbon dioxide does not remain as dissolved gas, instead it mostly forms bicarbonate and carbonate ions.	Suggest saying "where it stays in dissolved form".	ADD-19	<i>Text has been amended as suggested</i>
IPR-25.	4-45	The statement that water as a medium allows more competition than air (presumably meaning the terrestrial environment) is difficult to support scientifically.	The statement does not appear to add any value – delete, or provide evidence.	ADD-20	<i>Sentence has been deleted</i>
IPR-26.	4-46	Connectivity: The concepts in the reports are critical to the context of the importance of maintaining connectivity (e.g. through the reserve network) and in understanding that impacts on one area can flow onto other areas and hence management needs to be on large spatial scales.	It would be worth briefly mentioning the flip side: that species or habitats with low natural connectivity are likely to be especially vulnerable. This can apply to species (e.g. inshore dolphins, live bearers, recent evidence that larvae of some reef fishes are not as dispersive as previously assumed) or to habitats that are spatially isolated by distance or current patterns.	ADD-21	<i>A sentence highlighting the link between species and ecosystem vulnerability and connectivity has been added.</i>
IPR-27.	5-overall	The Assessment Report focusses on the marine park in various sections, rather than the broader Great Barrier Reef Region. Some important aspects of management, such as port development, connectivity and water quality receive limited attention, without explanation.	Provide further information on management issues at the land and ocean interface, or explain why these are not addressed comprehensively (e.g. they are within the scope of the Queensland Coastal Zone Strategic Assessment). Cross referencing between the GBRMPA and	ADD-24	<i>The chapter is divided up into drivers and activities, where the five main drivers were identified by examining the Australia State of the Environment 2011 report, literature and scientific consultation. Factors such as connectivity and water quality are addressed within the scope of climate change and population growth. Section 5.3 lists the main activities within the catchment (outside the park and in the broader Great Barrier Reef Region), all of which relate to connectivity and water quality, and three of which are directly addressing port development. An amendment to the initial</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
			Queensland Strategic Assessments would be useful.		<p>paragraph under section 5.3 has been added to illustrate the delineation between the actions that fall within the coastal Strategic Assessment and the impacts (Chapter 6) which fall within the Marine Strategic Assessment.</p> <p>There is a substantial focus on impacts from ports, declining water quality and loss of connectivity throughout the Strategic Assessment Report. For example, 19 of the 40 impacts that are addressed in chapter 6 relate in one way or the other to declining water quality.</p> <p>Whilst it would be ideal to improve the cross referencing between the Great Barrier Reef Marine Park Authority Strategic Assessment and the Queensland Government Strategic Assessment, it is logistically impossible as the two are written in parallel with very limited opportunity, time and scope for coordination. Hence there will be both overlaps and a potential lack of detail in both reports.</p>
IPR-28.	5-4	There seems to be some confusion in the first paragraph of 5.2.2: Climate Change. "Climate variability from year to year" is an oxymoron. Climate is a term used to describe the continuing condition of a place with regard to the drivers of weather. While weather and seasons change from year to year, climate does not. Climate change occurs over much longer timelines. Hence the confusion around climate change in the popular media. Within a given climate there are often seasonal, yearly and decadal variations of weather.	Change wording to reflect definition of climate change.	ADD-25	Deleted the "climate variability from year to year" subclause from that sentence.
IPR-29.	5-4	The latest IPCC report (released since the assessment reports were prepared) revises some of the predictions in this section, which could be updated in the final report.	Update according to latest IPCC report.		Refer to Chapter 2, section 2.10, "The assessment is based on best available information as at June 2013".
IPR-30.	5-5	The Mauna Loa data series actually began in the late 1950s not the 1960s.	Correct dates	ADD-26 ADD-28	Dates have been corrected to 1958
IPR-31.	5-7	There would be value in discussing the prognosis even if atmospheric CO ₂ was to	Further analysis of CO ₂ scenarios and climate change would improve		Although the Authority agrees that further analysis would improve the documents, a limit of both time and resources make additional

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		plateau at 400 ppm. What lags would there be before the system stopped deteriorating further? Is there a tipping point beyond which some functions stop and some species vanish? In the scenario of a return to 350 ppm, how long a lag before recovery and what gaps would there be once recovery is reached?	the documents.		<i>analyses and literature reviews difficult at this point. A proper analysis of lag times and tipping point would need a proper review of current scientific literature, the latest Intergovernmental Panel on Climate Change (IPCC) report and analyses of current predictive models.</i>
IPR-32.	5-8	Treatment of climate change pressures (and indeed many other drivers) seems to suggest that all change will be gradual (e.g. Figure 5.3). This is not necessarily true, particularly when one considers that climate change is not the only driver/pressure and that interactions between climate change and other pressures may be compounding. There is plenty of evidence from coral reef systems in other parts of the world that reefs reach tipping points, from which they rarely rebound.	Revise assumption and associated text to consider non-linear and sudden changes.	ADD-29 ADD-30	<i>Revised text in section 2.2 and for Figure 5.3</i>
IPR-33.	5-9	There is little information presented on how GBRMPA is managing for resilience in the face of climate change.	Explain how management activities are focussed on improving resilience.		<i>Chapter 3 addresses current management and Chapter 8 provides a comprehensive analysis of management effectiveness. In both those chapters, extensive reference is made to our climate change action plan, which had a strong focus on managing resilience in the face of climate change. All management actions of the Great Barrier Reef Marine Park are done to support resilience.</i>
IPR-34.	5-22	Reference to the repeal of the <i>Vegetation Management Act 1999</i> in Queensland is made but no discussion of risks associated with that.	Insert discussion of repercussions of the repeal of this legislation.	ADD-34	<i>Risks associated with changes to the Vegetation Management Act include the potential intensification of coastal agricultural development, with subsequent increases in pollutant loads. Intensive agriculture, even at the best practices presently known, produces substantially more sediment and nutrient loss per hectare of land than grazing (up to 50 and 60 times/ha more respectively). To maintain improvements to Great Barrier Reef water quality it will be critical to ensure that any intensification of land use allowed by recent legislative changes is accompanied by appropriate environmental safeguards, such as the incorporation of A and B class management practices (ABCD management practice</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
					framework). http://www.reefplan.qld.gov.au/measuring-success/methods/management-practices.aspx) Chapter 5 deals with impacts (past and present), hence a discussion of risk does not belong in this chapter. An amendment has been made to table 10.3 in Chapter 10 (Resilience and risk) to include references to associated risks as described above.
IPR-35.	5-24	Aquaculture description does not include a description of sustainability issues.	Would be useful to briefly describe the environmental sustainability issues that previous aquaculture operations have had.	ADD-36	Additional information on this subject has been added to section 5.3.2
IPR-36.	5-29	1 st paragraph in Impacts: Use of reference 114 (Erftemeijer and Lewis 2006) as providing evidence for the unqualified statement "Dredging to improve ... is affecting habitats and species." is inappropriate. As the lead sentence of this paragraph, the statement implies widespread impacts of dredging, on a range of habitats and species (presumably meaning at a significant population level), within the Region. Erftemeijer and Lewis's review focused entirely on one specific group (seagrasses), reported that some dredging projects reported no significant long-term effects, concluded that the potential sensitivity of seagrasses to dredging-induced sedimentation is highly site-specific, and reported that improved mitigation measures (which have to a significant extent been applied to dredging in the Region) help prevent or minimise dredging impacts.	The sentence could be deleted without detracting from the message in the rest of the paragraph, and the <i>potential</i> for impact is addressed better in the paragraph that follows.	ADD-40	Sentence has been deleted
IPR-37.	5-29	2 nd paragraph under impacts: references for recent reviews of Erftemeijer <i>et al.</i> (2012) and Foster <i>et al.</i> (2012; reference 178 in Chapter 6) regarding dredging impacts on corals and reefs could be added.	Add these references.	ADD-41	References have been added

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-38.	5-55	Defence activities are only briefly summarised.	Provide reference or other justification for the statement that introduction of marine pests is the highest risk from all defence activities. In addition, should the use of active sonar, other defence-related shipping noise, and possibly fuel dumping from aircraft at least be mentioned with regard to defence, even if only to explain why they are not significant?	ADD-46	<i>Some additional reference and information regarding the source of these statements have been added</i>
IPR-39.	5-62	Year for reference 74 (Roff <i>et al.</i>) is cited incorrectly – the paper was formally published in 2013. This also occurs in other chapters.	Correct citations		<i>The citation has been corrected in RefWorks</i>
IPR-40.	6-11	2 nd paragraph, Indirect Legacy Impacts: This is an example of sweeping general statements being supported with very limited explicit supporting data. Reference 21 (Roff <i>et al.</i> 2013) concluded there was a phase shift at one location in North Queensland that is likely to be particularly exposed to increases in terrestrial runoff. The Roff <i>et al.</i> study by itself does not provide support for reduced resilience on a reef-wide scale, nor that such loss is, “particularly in southern areas.” The scientific consensus statement and supporting reviews provide more valid broad support.	Cite more references to support general statements.	ADD-51	<i>Amended text to be more precise and inserted reference to Wooldridge papers and MMP reports 2011-2013</i>
IPR-41.	6-17	The latest IPCC report (released since the assessment reports were prepared) revises some of the predictions in this section, which could be updated in the final report.	Update according to latest IPCC report.		<i>See response to IPR-29</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-42.	6-17	If the broad prediction that ocean acidification will “ultimately affect most marine life” is important it should be supported with reference citations. Most likely the sentence can be deleted without changing the key message.	Provide reference citations or delete sentence.	ADD-52	<i>Sentence has been deleted</i>
IPR-43.	6-21	Guidelines for chlorophyll concentrations are explained in this section, but there is no explanation of what management responses are implemented in response to an exceedance.	A description of how GBRMPA responds to exceedances of this type would provide clarification of current management practices.		<p><i>Section 8.4.2 deals with Great Barrier Reef Marine Park Authority's management tools in response to water quality protection. Chapter 6 focuses on identifying actual impacts rather than how they are managed.</i></p> <p><i>Extract from chapter 8:</i></p> <p><i>“The Authority has a lead role for the management activities that impact water quality within the Marine Park, as well as an advisory or partnership role with other agencies in relation to activities that occur outside the Region that may impact on the water quality in the Marine Park.</i></p> <p><i>The Authority's management of water quality is through legislation and permits for point source discharges into the Marine Park, as well as undertaking the marine monitoring functions of the Reef Water Quality Protection Plan (Reef Plan) ¹⁸. However, the most significant contribution to water quality decline in the Great Barrier Reef is from activities outside the Marine Park associated with agricultural practices. This limits the Authority's capacity to take direct action with respect to water quality decline. The non-point source discharges, such as run-off from agriculture, are managed through partnerships with the Queensland Government, the Department of the Environment land holders and industry groups, and through education and community awareness, stewardship and best practice.”</i></p>
IPR-44.	6-32	Acid sulphate soils. The seawater initially contains sulphate ion, not sulphides.	Correct text	ADD-58	<i>Text has been corrected</i>
IPR-45.	6-33	2 nd paragraph: Loss of estuarine habitats: It is unclear how brackish water habitats differ from estuaries. More importantly, the statement of loss is potentially misleading and not supported by the cited reference 20	Clarify difference between brackish water habitats and estuaries. Revise use of cited reference 20.	ADD-59	<i>Paragraph has been re-worded to be more accurate.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		(Informing the Outlook). Informing the Outlook says 9% of estuaries have been lost (pages 31, 78 and 116). Informing the Outlook does indicate (pages 80 and 100) that some 30% of saltmarsh habitat has been modified by bunding – this is not the same thing as habitat loss (i.e., change in spatial extent). There is a statement on page 69 of Informing the Outlook that >30% of saltmarsh has been lost, but this appears to refer to modification rather than actual loss. Informing the Outlook does not appear to provide any basis at all for the upper figure of 60% loss of estuarine habitat, nor the statement that mudflats are one of the major habitat types lost.			
IPR-46.	6-33	3 rd paragraph, coastal reclamation: Distinction of land disposal (initially defined as above HAT) and reclamation is inconsistent.	Clarify and make consistent	ADD-61	<i>Paragraph has been re-worded to avoid confusion.</i>
IPR-47.	6-35	Dredging	Erfteimeijer <i>et al.</i> 2012 (effects of dredging on corals) should be added to reference list for dredging impacts	ADD-62	<i>Reference has been added.</i>
IPR-48.	6-35	Reference is made to "the effects of dredging activities are well documented", but the bulk of our understanding (and particularly the studies referred to) are not particularly relevant to the tropical inshore and reefal communities of the Great Barrier Reef lagoon - e.g. the North Sea benthic communities and Indian coastal waters. The lack of information regarding the impacts of dredging on the inshore systems of the Great Barrier Reef (and indeed the hydrodynamics of the GBR lagoon) is an impediment to risk assessments. Elsewhere	In the context of this section of the Strategic Assessment, it would be worth noting the requirement for more research into region-specific impacts, and the development of adequate baselines and thorough monitoring of systems that will be affected by the proposed dredging activity in the GBRWHA.	ADD-63	<i>The text has been amended to highlight the lack of Great Barrier Reef specific knowledge/research.</i> <i>In response to the noting a requirement for more region specific impact, please refer to page 6-88 of this chapter, which states:</i> <i>"While the full extent of any effects on the Region's values is not well understood, uncertainty regarding the additional effects of sea dumping is a key concern, particularly given the potential for large volumes of proposed dredge material to be dumped and resuspended in areas of the Region already in poor condition."</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		in the Strategic Assessment, GBRMPA sets out the systematic approach they will use to evaluate and minimise risk. The case of dredge impacts is one in which it would be prudent to note the lack of system specific information, which limits the ability to undertake the kind of risk assessment required.			
IPR-49.	6-39	4 th paragraph: Reference 137 (Bainbridge <i>et al.</i> 2012) refers to the dispersion of a fresh water plume – this is probably not representative of the dispersion of fine sediment from sea dumping. Much of the information on transport from river plumes relates to initial transport in suspension, while the buoyant plume is spatially propagating relatively rapidly on the surface. Most of the transport of dredged material after dumping modelled in reference 190 (SKM APASA 2013) was via repeated deposition and resuspension – i.e., these are very different processes and the distinction between measured transport of river plumes and dispersion of dredged material from dump site needs to be clear. Reference 190 (SKM APASA 2013) did not in fact evaluate the duration of time material stays in suspension, much less conclude that fine sediment remain suspended for long periods of time. In fact, the analysis of suspended solids in that study shows very low levels of TSS resulting from sea dumping (as opposed to dredging). The basic message that dredge material potentially travels long distances is valid, but the discussion needs accurate context.	Revise use of cited references to provide accurate context.	ADD-64	<i>The final paragraph under Dredging in section 6.4.4 has been revised as suggested.</i>
IPR-50.	6-39	5 th paragraph: Direct comparison of river plume transport with dredge material	Delete first sentence.	ADD-65	<i>First sentence has been deleted and text modified</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		transport is not appropriate. River plumes carry sediment at the surface in a freshwater layer, the SKM APASA modelling dealt with transport via continuing resuspension/settlement.			
IPR-51.	6-39	The question of what happens to sea-dumped dredged material seems crucial to the major concerns about port development and maintenance dredging. The discussion given to this is currently inadequate.	A much greater discussion is needed along with presentation of implications for decisions about marine dumping of dredged materials.	ADD-66	<i>Given the state of knowledge, this is not really feasible. A short paragraph has been added under section 6.3.3 to indicate the need for greater synthesis, and the initiative being undertaken to address that.</i>
IPR-52.	6-40, Figure 6-19	The presentation of Figure 6.19 is potentially misleading. The prediction shown in Figure 6.19a was specifically to address worst conditions for Round Top Island, i.e., northward transport. There were other model outputs (e.g. worst condition for Victor Islet) that clearly predict much more extensive southward transport. Selecting a figure intended to assess impacts on a receptor to the north for comparison with imagery showing southern transport is not a balanced analysis of the information.	Present all appropriate figures in the reference or choose a better example. The message that model predictions are not always accurate is still valid.	ADD-67 ADD-68	<i>Text has been amended and figure 6.19 has been changed to clarify the point.</i>
IPR-53.	6-46	The "trophic" approach to examining the impacts of extraction ignores an important element of the ecology and vulnerability of the various species groups that are covered - that of their mobility.	Suggest that some coverage be given to species/groups/trophic levels that we know are mobile/pelagic versus those we know are sedentary/site attached, as they are more demersal/benthic. We'd expect to see different impacts on these two groups across a suite of pressures.		<i>While the Authority recognises the validity of this comment, it fails to see the added value of creating yet another division at this stage. The sections in the impacts chapter are carried through into other sections and form the basis of numerous tables such as those outlined in the resilience and risk chapter; hence there is merit in leaving the grouping as per the current trophic level divisions.</i>
IPR-54.	6-55	When discussing the impacts of vessel strike on wildlife, it is stated that "go slow areas and transit lanes have been declared in some areas where there is high vessel traffic and large populations of marine turtles and	Provide further clarification of the management arrangements in place to reduce boat strike on wildlife.	ADD-69	<i>A caveat has been added highlighting the findings from Andersson 2008. In general, the marine strandings reports (references number 252 and 282) indicate that boat strikes are infrequent and hence not considered an impact of major concern.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		dugong, such as near Hinchinbrook Island". This appears to be overstating current management arrangements, as the go slow areas are voluntary and have been reported to be of limited effectiveness in changing the behaviour of vessel operators (Andersson 2008).			
IPR-55.	6-56	In Tables 6.6 and 6.7, the grouping of "no effect" and "unknown" into a single category is inappropriate.	Following the precautionary approach, one would expect either to see the two categories separated, or for those where the effect is unknown to be placed in a data deficient category.	ADD-73, ADD-74; ADD-75	<i>Unknowns are now separated from "no effect" by the addition of a data field for "Data Deficient (DD)" for those impacts that lack information.</i>
IPR-56.	6-67	Following an introduction to the qualitative modelling approach taken to examine the response of a system to impacts, the report notes that "while model links are qualitativethey, nonetheless, represent a rigorous means to formally assess a system's dynamics and its response to disturbances". The method is only as good (or rigorous) as the data or expert opinion that generates the results. Rigour implies that there is a degree of repeatability, and this is not necessarily the case if data are not robust, or different groups of experts are used to develop a qualitative representation of the system.	It would be important either to make this qualifier, or to change the statement of worth from rigorous to useful.	ADD-78	<i>Have changed the wording from rigorous to useful.</i>
IPR-57.	6-71	GIS analysis methods are neither described nor cited from the literature, leaving the reader with little by which to gauge how robust/useful they are. A cumulative impact map is a key example.	Describe/cite GIS analysis methods, in particular the derivation of the cumulative impact map.	ADD-79	<i>The methods are described in more detail in Waterhouse et al 2013. A reference to this method has been added to the text under 6.8.2</i>
IPR-58.	6-76, Figures 6.31, 6.32, 6.33, 6.8.3	The analysis is actually of exposures, not impacts. Although the intensity levels used have been correlated to impacts, there is tremendous variation in sensitivity among	Clarify that these are not impacts, but exposures.	ADD-80 ADD-81 ADD-82	<i>Captions of figures changed from impacts to exposure.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		species and populations within species that are not taken into account in the analysis. Nor does the analysis consider cross-shelf gradients in sensitivity. Spatial predictions of high water quality impacts are likely to be misleading for soft-bottom communities. These analyses are clearly useful tools for risk assessment but it is important to be very clear that they are not impact predictions <i>per se</i> .			
IPR-59.	6-76, Figs. 6.31, 6.32, 6.33, 6.8.3	The work on cumulative impacts provides a useful initial framework but the need for validation through further monitoring and experimental studies should be made clear and be reflected in the proposed program. It would have been useful to test the spatial predictions of cumulative water quality stress against measured changes in condition, though it is recognised that there are limits on what could be achieved in the assessment. Recognising there are limits, it is somewhat surprising that spatial analysis in figures 6.29 and 6.30 is not linked in some way to the water quality analysis – readers may visually overlay Figure 6.30 and 6.33 and conclude impacts are high everywhere. Further steps using measured changes in condition would be useful to investigate whether it is appropriate to apply equal weighting to the different stressors, which could help in refining management priorities. Presumably these sorts of issues will be part of developing approaches to cumulative impact assessment but it may be useful to provide specific examples of research needs.	Clarify need for validation through further monitoring and experimental studies and include in proposed program. Link spatial analysis in figures to water quality analysis. Provide specific examples of research needs.	ADD-83	<i>The Strategic Assessment report will inform the integrated research, monitoring and reporting program for the Great Barrier Reef World Heritage Area. As stated on page 6-79 "Research is currently underway to build a more complete, dynamic understanding of cumulative impacts to guide future management actions to support the resilience of the Reef".</i> <i>Text has been amended to clarify the need for further validation and research at start of section 6.8.3.</i> <i>Specific research needs are currently being identified and developed through the integrated research, monitoring and reporting program.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-60.	6-79	The cumulative impacts section could be improved. The title of this section seems inappropriate. The text in this section discusses the outcomes of the cumulative impacts, not of the assessments.	It is recommended to state upfront: a) the immaturity of our understanding of how to quantify cumulative impacts, and b) how essential this understanding is if we are to progress from the current method of planning and executing a single intervention for a single impact. Consider the title Assessment of Outcomes arising from cumulative impacts.	ADD-84	<i>Chapter 13 and the final Program report contains substantial sections on the assessment and permit process and how this relates to the concept of cumulative impacts and the proposed cumulative impact guidelines. The title has been changed according to this suggestion.</i>
IPR-61.	6-81	The summary of impacts of the strategic assessment should directly state the key reductions in habitat: average 50% decline in coral cover along the entire reef (much larger decline in southern and central regions). Coral cover is an accepted proxy for the condition of coral reefs worldwide. The decline has impacts on the last three of the world heritage criteria. Similarly, the water quality reduction over the last decade (regardless of whether there is evidence that the Reef Plan and other actions are acting to stop the decline) has had and continues to have a very significant impact on ecological and biological processes, on the intrinsic natural beauty and on habitats for (inshore reef) biodiversity.	Include direct statements describing key reductions in habitat in the summary of impacts.	ADD-85	<i>The summary was intentionally written without quantifying reductions from impacts. However, a statement referring to the loss of coral cover has been inserted in the introductory paragraph in response to this comment.</i>
IPR-62.	6-83	Useful summary of the required information/knowledge/systems and links to management of the World Heritage Area. However, it is unclear how this long list of required information and the call for a major integrated monitoring program will be resourced. Currently the funding of science for the Great Barrier Reef is spread across a large number of program areas in State and Commonwealth Government (Department of	It is recommended to give greater focus and coordination to the major challenge of providing the highest priority/critical information required. This requires more than a list of topics within the Strategic Assessment. An Integrated Research and Development and Monitoring Strategy and Funded Program for the Great Barrier Reef		<i>Chapter 13 of the Strategic Assessment report has been revised in response to this and similar comments and to better reflect the final version of the Program Report. Please refer to the final version of Chapter 13 to address IPR-62. In particular the development of the integrated research, monitoring and reporting program is described in greater detail, especially in relation to how it forms part of the new target and outcome based management strategy.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		Education/ARC, Department of Industry, Department of Agriculture, Department of Environment, and Department of Defence).	World Heritage Area appears to be required, and should be articulated as a priority within the Strategic Assessment.		
IPR-63.	6-87	This section is a summary of the chapter's conclusions rather than dealing with outcomes. The summary does not highlight a sense of urgency. Having learned last year that the Great Barrier Reef had suffered an average of 50% decline in coral cover over the preceding 27 years, with central and southern regions having suffered much higher declines (north of Cooktown the picture is much better), and seen the biodiversity values of the inshore regions continue to decline, the "prognosis" for the Great Barrier Reef World Heritage Area under a business-as-usual scenario is at best poor. Table 6.11 is somewhat flawed in its representation of impacts on values as it continues with the logic used in tables 6.8 and 6.9 where Grading Statements are used to categorise impacts. The grouping of interactions that are "unknown" with those that are known to be insignificant or non-existent essentially is inappropriate. For example, the impact of ocean acidification on the Great Barrier Reef is currently poorly understood; at species, community and whole of ecosystem level. However, we know from direct measurement that calcification rates in corals that have been studied in detail are falling (in some cases dramatically). This may well be due to thermal or other environmental stressors, but it may also be that the significant drop in pH over the last 50 years is part of that impact. Similarly the impact of ocean acidification on foraminifera calcification has already been	Re-title chapter or change content to deal with outcomes. Highlight a sense of urgency in managing the Great Barrier Reef. Separate "unknown" impacts from "insignificant/non-existent" impacts.	ADD-88 ADD-90	<p><i>Title has been changed to "Summary of conclusions".</i></p> <p><i>In response to the urgency in the management of the Great Barrier Reef region, revised final chapters of the Strategic assessment report as well as the final version of the Program report outlines timeframes for the implementation of necessary policy and administrative actions which are required to allow more direct action. Program commitments such as the Reef 2050 long-term sustainability plan are also being implemented and will allow more remedial action once approved. Once these policy, administrative and project recommendation are approved, timeframes for the implementation of remedial actions can be stated with more certainty. The management urgency is reflected in the final program report and in amended sections of Chapter 13 as per above.</i></p> <p><i>The separation of unknown from non-existent has been clarified by adding a separate level for "unknown"</i></p>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		demonstrated for pelagic species, and recent work on benthic foraminifera that play a key role in sediment dynamics on coral cays and reefs suggest that they too are vulnerable under near-real time pH levels.			
IPR-64.	7-overall	The information gaps are presented as a list without prioritisation. The coverage is adequate for the purposes of the assessment, but there is a gap when summarising condition and trend, in that major declines in coral cover, seagrasses and inshore biodiversity are not stated to be currently affecting the broader values of the Region, and if these declines are not arrested are likely to have much more dire impacts. To counter the status and trends in these major habitat/ecosystem foundations, there is reference to the poorly understood/studied elements of the system such as plankton communities, primary productivity. The Assessment has most likely established its view of these communities on expert opinion rather than hard data, this may not be an adequate basis for reporting as it has been in this Chapter.	Prioritise information gaps. Highlight declining condition of the reef. Reconsider the use of expert opinion rather than data for the basis of assessment.	ADD-91 ADD-92	<i>Although information gaps are not listed in order of priority, the issue of lack of certainty, versus the well documented declines in key ecosystems and habitats (coral reefs, seagrasses and inshore biodiversity) is clarified across chapters, especially in Chapter 7 and the final Program report.</i>
IPR-65.	7-7	The lagoon floor is assessed to be in good condition. Given the amount of trawling that has taken place in the Great Barrier Reef lagoon, a 'poor' and 'improving' rank would seem more appropriate, due to the reduction in trawl pressure.	Reconsider the assessment of lagoon floor.	ADD-93	<i>Although the Authority agrees that <u>some areas</u> of the lagoon floor would be in a poor and improving condition due to: 1) past unsustainable levels of trawling as confirmed by Pitcher and co-workers and the fact that <u>some</u> benthos takes decades to recover (at best); 2) current intense trawl effort (in a proportion of the area), and 3) likely impacts from extreme weather. However, to be consistent with the way that 'good' versus 'poor' are being used in Strategic Assessment, the 'good' was considered to fit <u>the overall condition</u>.</i> <i>A caveat has been added to the text in Table 7.1 to better reflect this.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-66.	7-33	Understanding and appreciation. This point links to one other World Heritage obligation - that of "giving World Heritage a meaning in the life of the community". There are multiple reasons why this obligation delivers benefits, not least of which is the garnering of community support for programs to better protect and manage the Great Barrier Reef. It is worth highlighting this in the Program as it has had a low profile in the past. Along with better communication about Climate Change and the Great Barrier Reef, the outcome could be very positive.	Highlight community aspects of World Heritage listing.		<i>The Authority agrees with this sentiment and have made this more explicit in the final Program report</i>
IPR-67.	7-34 to 38	The section is highly variable in terms of the information content it provides, ranging from well-founded where data are adequate (e.g. freshwater input) to lacking where there is very little understanding or monitoring of the processes either by the Research and Development community or GBRMPA.	The determinations of trend and status are unlikely to be meaningful for those where data are inadequate, and in those cases the Assessment would be better listing them as data deficient.		<i>As the confidence levels are clearly stated, it ought to be evident to the reader that those grades are based on the caveat of being educated guesses and hence should be treated with caution. The Authority has opted to provide a grading also in these circumstances to provide a score that relates to the best of our current knowledge. For many of these processes (and indeed those of the less understood habitats and species) it is identified as a knowledge gap and treated as such.</i>
IPR-68.	7-35	Sedimentation. The reference to plumes and characterisation of likelihood do not accurately reflect the results of the cited study.	Text "resuspended <i>plumes likely to travel considerably further</i> " should be revised to "resuspended <i>sediments potentially travelling considerably further</i> ".	ADD-98	<i>Text has been amended according to suggested action.</i>
IPR-69.	7-41	"globally important breeding colonies of seabirds and marine turtles": the comment that there have been declines in some populations appears to fit the grading statement for good, rather than poor. What evidence is there for a declining trend?	Provide evidence for trend or revise comment.		<i>The trend reflects that of seabirds and marine turtles from table 7.3 and is referenced as such. The confidence in the condition and trend for these groups of species is considered mostly adequate.</i>
IPR-70.	7-47, 49, 52	7-52 states that monitoring of nesting seabirds is insufficient to reliably determine condition and trend, yet on p 7-47 and 7-49 the confidence of ratings for poor condition	Resolve conflicting information.	ADD-100	<i>The high confidence rating in table 7.11 is based on a combined confidence rating of condition and trend. As per table 7.3 the confidence relates primarily to the condition, while the understanding of the "trend" remains less robust. The latter is the</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		and declining trend are rated as having adequate high-quality evidence and a high degree of consensus.			<i>reason for the statement on page 7-52. The Authority has clarified this by highlighting that it is primarily the regular and long term monitoring of trend that is lacking.</i>
IPR-71.	7-49	National Heritage - there are five criteria "identified" as being relevant to the Great Barrier Reef. The Great Barrier Reef was not formally evaluated for National Heritage listing and it is likely that other attributes may achieve threshold if formally pursued (and these are just as well protected as World Heritage). Such an assessment could prove valuable in identifying a range of additional heritage attributes not currently acknowledged.	Consider a formal assessment of National Heritage criteria for the World Heritage Areas.		<i>The Authority agrees that other attributes may achieve threshold for National Heritage if such a listing was formally pursued and that such an assessment could prove valuable in identifying a range of additional heritage attributes not currently acknowledged. The Authority will consider this option in the context of potential benefits and the resources required to pursuing a listing.</i>
IPR-72.	7-54	Environmental processes: gaps should be identified with regard to nutrient and carbon cycling.	Review and correct if necessary.	ADD-101	<i>A bullet relating to nutrient and carbon cycling has been added.</i>
IPR-73.	7-54 to 55	As in Chapter 6, the use of the title Outcomes seems inappropriate. These are findings and conclusions, not outcomes of the Assessment. The first stated "outcome" suggests that most habitats and species are in good to very good condition, yet the second outcome statement discusses corals, seagrasses, marine mammals, sharks and some species of fish being in poor to very poor condition. That two of the major habitats on the Great Barrier Reef are in serious decline seems incompatible with the first outcome's statement. The reality seems more likely that where we know coral and seagrass communities are in decline, we don't have adequate monitoring of the abundance/status and trends of the communities that depend on the coral and seagrass habitat.	The first conclusion should be more cautious and focussed on the available information.	ADD-102 ADD-103	<i>Title changed to "Summary of conclusions". First bullet point adjusted as per introductory paragraph in section 7.1.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-74.	8-overall	There is a consistent theme within the management review that for management to be effective there needs to be an integrated and comprehensive monitoring program developed and funded. The Program Review supports this in setting an integrated monitoring program as one of its priority actions. However, the 5 year timeframe for this action does not seem appropriate. Given that what is not measured cannot be managed, a management strategy rethink would start with what the information/monitoring needs are to ensure that targets and actions are set with a measure of confidence, that they are the right targets and form a basis to demonstrate that progress towards the targets is being measured and made.	Given the concerns about a number of major components of the ecosystem, and the significant impact of any further declines on the social and economic values of the Region, it is recommended that a reprioritisation of the integrated monitoring program is an immediate priority.		<i>The integrated research, monitoring and reporting program forms an integral part of the Reef 2050 Long-term sustainability program which will <u>commence in 2014</u>, with the first program period <u>spanning for five years</u>. In relation to that, the Great Barrier Reef Marine Park Authority science needs for management publication is in draft form and represents the foundation for the development of the integrated monitoring framework for the Great Barrier Reef will guide priority research as stated in the.. "Science information needs for an integrated research, monitoring and reporting program for the GBRWHA 2014-2019". At present these programs rely on " along with partnership agreements with key research institutions and stakeholders., provides the basis for investing in and focussing research on matters relevant to the long-term protection and management of the reef. It is the intent that both strategic assessments will inform the Long-term Sustainability Plan for the future protection and conservation of the Great Barrier Reef ecosystem.</i>
IPR-75.	8-overall	The method for assessing management effectiveness differs considerably from that used by the Queensland Government in the Great Barrier Reef Coastal Zone Strategic Assessment.	Explain why the methods differ and the implications for presenting a 'whole of ecosystem' picture across both Strategic Assessments. Consider opportunities for greater alignment of the Queensland and GBRMPA Strategic Assessments prior to their finalisation.		<i>A Technical Assessment Framework was developed collaboratively between the Authority and Queensland Government to inform and coordinate both assessments (See Strategic Assessment Report Section 2.7.6). As outlined in section 8.2, the method employed by the Authority for the management effectiveness evaluation is based on the IUCN framework for evaluating management effectiveness, which was also used by the Outlook Report 2009 and is widely applied around the world.</i>
IPR-76.	8-overall	The agricultural sector is a key industry for the Great Barrier Reef, yet there are few suggestions for strengthening management of this industry. Partnerships and stewardships are highlighted as valuable mechanisms to manage the Great Barrier Reef, but there is no assessment of their effectiveness.	More specific discussion of the improved management arrangements relating to the agricultural sector is recommended. Provide an assessment of the effectiveness of partnerships and stewardships within the existing GBRMPA Program.		<i>The management effectiveness review was implemented as an independent review and as such, its outcomes and recommendations cannot be amended or changed at this point, nor can new criteria for assessment, such as stewardships and partnerships be added. However, this recommendation has been addressed through amendments to section 3.3., which now contains a much more detailed section on the Authority's jurisdiction in matters relating to agriculture (or other issues outside the Authority's direct control).</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-77.	8-29	It is surprising to see the "mostly effective" ratings for all of the outcomes except Biodiversity. This seems to say that GBRMPA has been doing their business effectively but have had relatively little effect on Biodiversity. Three of five biodiversity measures used in the review are declining, one is stable and only one (related to green zone health) is improving.	Given that Biodiversity Protection is a critical outcome for the protection of matters of national environmental significance, it is recommended that the Program Review provide sufficient new/improved approaches such that there is a high likelihood of achieving the required improvements in outcomes.		<i>The Strategic Assessment notes that the three highest risk impacts to biodiversity values within the Great Barrier Reef World Heritage Area are climate change, declining water quality and coastal development. None of these drivers are within the Authority's management jurisdiction and hence assessed for in this review. However, the assessed outcome of the management effectiveness for managing local and smaller scale impacts (direct use, tourism, zoning etc.) that fall within our jurisdiction was considered mostly effective. The Authority would like to note its disagreement with the statement that those efforts have had little effect on biodiversity as it is highly likely that biodiversity values would be worse off in their absence.</i>
IPR-78.	8-39	Given that ten ports are outside GBRMPA's "jurisdiction" there is a general issue about the complications of managing the Great Barrier Reef.	GBRMPA's jurisdiction needs further discussion.		<i>These matters are exhaustively discussed in Chapter 1, section 1.2.4 and Table 1.2 and Figure 1.4, which clearly outlines jurisdictional boundaries. Port locations, and thus jurisdiction are discussed in Table 5.2 in Chapter 5.</i>
IPR-79.	8-94	Concern around the statement made that "Grading for indicators around condition and trend and traditional knowledge were frequently made with limited evidence" support the earlier observations that GBRMPA does not have the required information base (monitoring, quantitative assessments etc.) on which to judge its own performance.	More appropriate treatment of areas with limited information.		<i>This has been addressed more appropriately in our amendments to Chapter 7 and in the final version of the Program Report</i>
IPR-80.	9-overall	Very useful approach to examining and responding to the multiple and varying issues identified in preceding chapters. Section 9.11 sets out the case for being proactive which is supported. Arguably, the greatest threat to a number of these case studies for which direct intervention is possible is in the area of water quality improvement through improved land use practices or just reduction in the extent of harmful practices. The fact that this is not	Clarify third bullet point in 9.11. Explicitly include importance of improved land use practices.		<i>This is addressed in the first bullet point under partnerships as it falls outside the direct management jurisdiction for the Great Barrier Reef Marine Park Authority.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		explicitly raised here is an omission.			
IPR-81.	9-overall	Strongly agree with the section on Partnerships and the conclusion that these are key.	There would be benefit in adding enhanced effectiveness of partnerships between policy makers, regulators and researchers, to ensure maximum value is extracted for each research and monitoring investment dollar.	ADD-107	<i>Added an initial bullet point under partnerships in accordance to suggested action.</i>
IPR-82.	9-overall	A good coverage of the issues relating to dugong management leads to a "conclusion" (although it is not labelled as such) that improving adaptive management of dugongs is important. Regular monitoring of seagrass condition, population assessments, cumulative impacts assessment, feasibility of restoration and rehabilitation of seagrass habitats are all mentioned as elements of an adaptive management approach. Yet despite the urgency of the need to protect southern dugongs, these actions all seem to be left to the later years of the Program Report. This is one example of potential future management actions within what is really a business as usual approach.	There should be a clearer articulation on the urgency to act on identified gaps in management effectiveness.		<i>The final version of the Program Report stresses the urgency of action.</i>
IPR-83.	9-8, Figure 9.1	The Y axis seems truncated or the data are wrong. The range mentioned in the legend is from zero to 5 (dugongs caught per beach) but the Y axis only goes to 3.0.	Caption could be corrected.	ADD-109	<i>The caption has been corrected to clear up the confusion between total and average numbers.</i>
IPR-84.	9-10 to 13	In relation to corals, it is suggested that upfront in the "Significance" section, it is made clear that without healthy coral communities, the Great Barrier Reef World Heritage Area would likely degrade/evolve (as other Coral Reefs throughout the world have done) into ecosystems dominated by algal communities where overall biodiversity,	Highlight risk of degradation/evolution from coral reef to algal community, and that this may occur as a tipping point. Also highlight risk of increased cyclone intensity with climate change, leading to a future need for better management of the	ADD-110	<i>A paragraph to this effect has been added following the listing of major drivers in the key issues section (9.4.2).</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		natural beauty, etc. will be significantly diminished. There is a body of literature within the resilience and coral reef ecology domains that suggest coral reefs reach a tipping point at which point they switch from coral dominated systems to algal domination. A description of such phenomena should be mentioned in this chapter, in part to balance some of the comments around the potential of reefs to recover after cyclones. One other issue linked to this point is that scattered throughout the Assessment and Program Reports there is a theme of blaming coral decline, seagrass decline and associated troubles for southern dugongs and turtles on an unusually high frequency of severe cyclones (i.e., natural events that GBRMPA can do nothing about). In other places (climate change risks/impacts for example) there is acknowledgement that climate change projections suggest that cyclone intensity will increase over the next few decades - in effect raising the risk that the recent impact of high intensity cyclones will continue, a trend that would suggest in future there will be a heightened requirement to deal more effectively with a variety of anthropogenic impacts - water quality, COTS, coastal degradation, if we are to avoid reaching a tipping point.	anthropogenic impacts to coral.		
IPR-85.	9-12	“Coral cover has declined throughout the Region.” could be interpreted as contradicting other statements. Coral cover has declined on average over the Region as a whole but that is not the same as a decline everywhere.	Clarify	ADD-111	<i>Agreed, has now been clarified.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-86.	9-13	This section gets to the heart of the challenge facing the managers of the World Heritage Area - our coral reefs are in decline and we need to take action to increase their resilience. However, statements such as those in this section - that declines will continue "over the coming decades" - do not reflect recent analyses of trends. Projections within the De'ath <i>et al.</i> (2012) coral decline paper suggest that declines of coral cover in the southern region will be faster than implied by "in coming decades". There is a lack of emphasis on the possibility that once coral cover gets below 5% we may well see these ecosystems tipping away from coral-dominated habitats.	Revise "in coming decades" comments in light of recent analyses of trends, and emphasise the risk of tipping points.		<i>That particular statement is an extract from an external review of management effectiveness and as such cannot be amended.</i>
IPR-87.	9-13	Section 9.4.4. The message that overarching climate change needs to be addressed through a whole-of-government response is critical and needs to be more prominent in the Program Report.	Give message more prominence.		<i>This is given prominence in the recommendations in the revised version of Chapter 12 and the final version of the Program report.</i>
IPR-88.	9-16	The comment about many islands having serious legacy impacts and the extent of impacts on the islands should be read in the context that World Heritage obligations include rehabilitation and this has been of very limited effectiveness.	Clarify rehabilitation intentions and effectiveness.		<i>The Queensland Government has an action in its draft program report for island management, REC 12: Support a collaborative, Reef-wide management strategy for islands and contribute to its development and implementation. As for water quality related mainland restorations, it is a costly process and one that requires coordination of efforts by the Great Barrier Reef Marine Park Authority and Queensland. To the best of our knowledge, an in-depth analysis of the effectiveness of restoration for the Great Barrier Reef World Heritage Area, taking into account priority issues such as nesting and roosting habitats is not available.</i>
IPR-89.	9-34	Enhancing protection and restoration. This section provides no specific information about what further actions are needed and why. What aspects of wetland function have been compromised? This is another	Actions are required, including a clear, targeted strategy for restoration ecology.	ADD-113	<i>The text has been amended in section 9.8.4 referring to the Reef 2050 Long-term Sustainability Plan which contains the details of this strategy.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		example that there does not appear to be a clear, targeted strategy to restoration ecology.			
IPR-90.	10-6 to 7	In this section we see the first attempt to examine the overall health of the reef and its "resilience", and this is well done. However, as noted frequently in the commentary for previous chapters, the conclusions regarding the state of the Great Barrier Reef are not adequately reflected in the presentation of risks, trends and case studies.	More recognition on the poor state of the Great Barrier Reef in the conclusions.	ADD-115	<i>Section 10.3 makes it very clear that there is strong concern over the state of the ecosystems in the Region. By changing the initial sentence to a statement that resilience IS being eroded, this concern is more clearly stated.</i>
IPR-91.	10-overall	"Maintaining the resilience of the Great Barrier Reef ecosystem will require major increases in effort to reduce local impacts and global climate change" is the most direct statement of the requirement for increased action by the Authority, Queensland and Commonwealth Governments. This statement is not linked to the possible consequences of not acting.	Link statement to consequences of inaction to provide a balanced analysis of the options.		<i>The final program report outlines a management program based on targets and outcomes, including thresholds to trigger further action.</i>
IPR-92.	11-overall	This Chapter is based largely on expert opinion-based modelling (qualitative and Bayesian belief networks) and while this methodology has great appeal as an approach for tackling complex problems/complex systems where data are not adequate to allow thorough analysis of trends in or interactions between system components, the extension of the model output into a table of future condition (and hence risk) of the Great Barrier Reef is questionable. More explanation of the method and uncertainties/possible biases (e.g. a relatively small group of "experts" was involved many of whom share a common history of working on the Great Barrier Reef).	Provide further details on the modelling method and explain or reconsider its validity for predicting future condition.	ADD-116	<i>As outlined at the beginning of chapter 11, the projected conditions are based on the outcomes and conclusions of previous chapters (Chapters 6, 7, 8, and 10). The qualitative models were not used to inform projected conditions, but rather to highlight what management actions can be taken in response to deteriorating projected conditions and how they are likely to affect future conditions. To avoid confusing these issues in the final version, the order of sections in chapter 11 has been amended, with the addition of section 11.5 Future scenarios, being moved to the end, hence setting the stage for possible management actions. The outcomes of those models did not inform the projected conditions.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-93.	11-overall	Similarly, the projected conditions of many of the other attributes (shoals, plankton etc.) are based on a very poor knowledge of current condition. To suggest that future condition can be predicted based on poor current knowledge is an inappropriate method/approach and contrary to the precautionary principle. The heterogeneity in projected states (as there was in the current condition and risks) seems to reflect how well the abundance and condition of the stated variable has been examined. Coral reefs, seagrass beds, dugong populations, turtle populations, and seabird populations have all been studied, and all (with the exception of those north of Cooktown) are in poor or very poor condition, and have poor projections. Where there is quantitative assessments of fish populations, a similar pattern is apparent (with the exception of coral trout). However, in many other variables where there is little or no population data, it is suggested that their condition and projected condition (albeit with limited confidence) is good.	More appropriate expression of condition is recommended for attributes with limited data.	ADD-117	<i>A cautionary note regarding the interpretation of projected condition for values with poor or limited current knowledge has been added to the table headings for table 11.1-11.4 It is stated clearly in the first sentence of the relevant values that there is a lack of certainty in the grading.</i>
IPR-94.	11-13 to 15	Perhaps as an example of the shortcomings of the qualitative/expert opinion based approach, the Chapter's analysis of projected condition includes some interesting anomalies. For example, while the experts agree that there are likely to be very poor outlooks for coral reefs (the critical habitat for the majority of bony fish species in the Great Barrier Reef World Heritage Area), sea grasses (habitat for adults and juveniles of a large number of bony fishes) and sharks (an important group of apex predators both on and off reefs), the outlook for bony fish is good. At best a major	Reconsider analysis approach and specifically, the conclusions in relation to bony fish.	ADD-118	<i>The text relating to the projected condition of bony fish has been amended to reflect this very relevant comment. The Authority recognises that this is an issue that reaches further than this particular connection between a deteriorating habitat and the condition of the species that depend upon it. Another pertinent example is the condition of microbes as being "good" and stable, while the condition of the habitat of open water is considered poor. As per previous comments, the amended version of the Report is more explicit about ratings that are based on solid data versus those that are based on consensus alone and many of these inconsistencies are a result of a current lack of rigorous data.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		reduction of coral and seagrass habitat would see a major species shift along the Great Barrier Reef.			
IPR-95.	12-overall	The lack of a statement around the timeframes that are being applied is of concern. Throughout the document there are various inferences/references to timeframes in the order of "next few decades", "next 25 years". However, the available data on declines in coral cover, seagrass, inshore biodiversity, dugongs, turtles and seabirds all suggest that unless the trends can be halted and reversed in the relatively near future (5-10 years), the risks of tipping into an irreversible state shift is high, particularly with the growing risks associated with climate change (noting that little of the declines recorded to date can be directly attributed to climate change).	Timeframes need to be more clearly defined and prioritised into the next 5-10 years for actions addressing key risks.		<i>There are defined and clear time frames in the final version of the Program Report.</i>
IPR-96.	12-overall	The assessment recommends providing a management framework that sets out outcomes and targets for the Region's values and progressively incorporates ecosystem thresholds as understanding improves. This recommendation could be interpreted as meaning that there will be no setting of outcomes and targets until our knowledge of the system is "improved or adequate".	If this is the meaning intended, it is contrary to the precautionary principle, and there should be an explicit statement to the effect that targets will be set based on the precautionary principle and refined as more knowledge becomes available.		<i>A clear and explicit statement on how targets are set and adjusted as our knowledge is improved is provided in the final version of the Program Report.</i>
IPR-97.	12-overall	This section deals with the recommended improvements to local, state and national Government Programs and is a useful articulation of how GBRMPA and various levels of government interact. The suggestion that "the key roles of the Authority is collaborating with and influencing its management partners to	There is a requirement for common acceptance of these actions/directions across these many layers of government if the shared goals are to be achieved.		<i>The Authority agrees and the comment is noted.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		improve environmental outcomes in the Region", raises the question of why the Commonwealth as a whole doesn't sign on to the enhanced processes suggested. The "where we could do better" paragraphs in this section include the following statement: "Consistent with the terms of reference, the following is a description of potential avenues for improvements in related local, state and national government programs. It is noted that any such recommended improvements are the view of the Authority and not necessarily those of the other relevant agencies."			
IPR-98.	12-5	The assertion that the assessment's focus on the Marine Park means that values relevant to other matters of national environmental significance are implicitly considered could be further justified or explained. It is clear that there are gaps. The recommendation will assist in addressing those gaps.	Reconsider or further justify the assertion.		<i>The Strategic Assessment found that one of the strengths of the Authority's current management arrangements was that a focus on the Marine Park as a matter of national environmental significance means that values relevant to other matters of national environmental significance are implicitly considered in decision making. The implementation of recommendation 1 will further improve this approach. However, as the recommendation notes, this link needs to be made more explicit in programs, plans and policies. The Authority refers the reviewers to Table 4.8 for a comprehensive list of the relevant values and attributes this comment relates to and how they are linked.</i>
IPR-99.	12-7	REC13 involves a review and update of the Great Barrier Reef Marine Park Heritage Strategy.	Consideration could also be given to formal assessment of the Great Barrier Reef National Heritage by the Australian Heritage Council.		<i>Please refer to the comments above against IPR_71 regarding National Heritage – All public submissions have been considered, including that of the Australian Heritage Council. Those responses are summarised within the public submission response section.</i>
IPR-100.	12-9	There seems to be a lack of action to be triggered by monitoring and evaluation. No indication is given of how such monitoring will be effective in protecting/managing the Great Barrier Reef.	Expand on monitoring triggers and consequences.	ADD-123	<i>Recommendations 31 and 32 have been amended in response to this comment.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-101.	Throughout	With regard to World Heritage, the Report suffers from inconsistency in discussing the meaning of World Heritage in the context of outstanding universal value. There is an apparent mixture of the terms "values", "attributes" and "elements" likely to cause confusion in the reader. The technical expression outstanding universal value is predicated on a number of attributes that contribute to the World Heritage site meeting specific criteria. These attributes underpin the outstanding universal value. Because of the inclusion of the word "value" in outstanding universal value (always singular), associated use of the term "values" when discussing attributes has caused much confusion with many examples of outstanding universal value being used in the plural and therefore confusing its meaning (not in this report). The World Heritage Committee uses "attributes" as a preferred description of the set of qualities that underpin outstanding universal value rather than "values" (see Operational Guidelines). In the Report a good example of appropriate language is in Table 10.7 on page 10-22 (the first box). Elsewhere, beginning page 4-7, there is less clarity. Indeed on page 4-7 the term "values" seems to be seen as identical to "attributes" but later this is not applied consistently. The report would be improved with a box in the section 4.2.1 that provided a clear statement about outstanding universal value, attributes, values and the logic behind the use of these terms in the report in the context of World Heritage.	Clarify language around outstanding universal value through definitions and review of application of key terms.		<p><i>The terms elements and attributes have been used in accordance with the Operational guidelines of the World Heritage Committee and in reference to their role as underpinning the outstanding universal value of the Great Barrier Reef World Heritage Area.</i></p> <p>The use of the term values reflects the wording used in the Great Barrier Reef Act. As the Authority has not confused the issue of values being related to the singular word outstanding universal value in any part of the document, the Authority feels the distinction of the use of these terms is clear enough.</p>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-102.	Throughout	The chapter summaries don't always present findings about the declining condition of the Great Barrier Reef explicitly.	Reconsider the presentation of key findings in the chapter summaries.		<i>The declining condition of the Great Barrier Reef is explicitly stated throughout the document and is properly highlighted in the final version of Chapter 12 and the final Program report.</i>
IPR-103.	Consistency with TOR	The area to be covered includes the Region plus areas outside that may affect the Region.	It is recommended that there be some additional assessment of the changes proposed to land use in the terrestrial catchments of the Great Barrier Reef and potential consequences of policy changes with regard to Queensland Government initiatives (especially reducing environmental assessment requirements and vegetation protections). Also, some additional analysis of the Cape York Regional Plan and consequences for the Great Barrier Reef World Heritage Area is advised. The far northern section of the Great Barrier Reef may be subject to increases in pressure following the proposed changes outlined in the new Cape York Plan. At the very least this needs to be flagged as a matter of concern in the next 25 years.		<i>Please refer to response to IPR – 89.</i>
IPR-104.	Consistency with TOR	The Strategic Assessment considers matters of national environmental significance in a thorough and comprehensive manner. The discussions about World Heritage and outstanding universal value are comprehensive and mainly clear with a few minor communication improvements needed. Occasionally boundary blurring might lead to confusion for the reader (reference to the Great Barrier Reef Marine Park in isolation from the area under assessment for example). The Assessment	Minor communication improvements are suggested to assist in making wider connections.		<i>The comment is noted. Improved consultation and stewardship programs are proposed in the final Program report Effort has been made to clarify these overlaps and blurred boundaries in Chapters 3, and 13 as well as in the final Program Report.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		considers almost all elements of World Heritage Area but occasionally misses opportunities for wider connections (limited recognition of the international cooperation context of World Heritage) and some World Heritage obligations could be more explicitly linked to the Assessment (for example giving World Heritage a function in the life of the community). There is very substantial overlap between the different matters of national environmental significance. The gap of a formal assessment of the Great Barrier Reef for National Heritage provides an opportunity for an initiative in the Program Report.			
IPR-105.	Consistency with TOR	Given the reliance on the (Draft) North-Eastern Shipping Management Plan to ensure no significant shipping impacts on the Great Barrier Reef occur, more information about this draft plan should be provided so that readers can assess whether this reliance is sufficient.	Provide more information about the (Draft) North-Eastern Shipping Management Plan.		<p><i>The North-East Shipping Management Plan is now in the final stages of development. The plan sets out the Australian Government's intentions to enhance ship safety in the Great Barrier Reef, Torres Strait and Coral Sea Regions. The plan has been developed by the North-East Shipping Management Group, taking into consideration a quantitative risk assessment by Det Norske Veritas (DNV) of current control measures and a range of possible future risk mitigation options. The NESM Group comprises senior representatives from the following agencies:</i></p> <ul style="list-style-type: none"> • <i>Australian Maritime Safety Authority (AMSA)</i> • <i>Great Barrier Reef Marine Park Authority (GBRMPA)</i> • <i>Maritime Safety Queensland (MSQ)</i> • <i>Department of Infrastructure and Transport (DIT)</i> • <i>Department of the Environment</i> • <i>Department of Resources, Energy and Tourism (DRET)</i> • <i>Department of Agriculture, Fisheries and Forestry (DAFF).</i> <p><i>The draft was available for public consultation in late 2013 and is expected to be finalised before June 2014 (http://www.amsa.gov.au/community/consultation/nesm-consultation.asp).</i></p> <p><i>As it is not yet in a final and endorsed format, inclusion of findings in the Strategic Assessment was not possible at the time of the draft publication.</i></p>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
IPR-106.	Consistency with TOR	There is limited discussion of how the Strategic Assessment has met the endorsement criteria in the Terms of Reference.	A table summarising how each endorsement criterion has been met would provide clarity to the assessment process and more clearly demonstrate consistency with the Terms of Reference.		<i>This is stated more explicitly in the final version of the Program Report</i>
IPR-107.	Consistency with TOR	Demonstration case studies were not published at the time of the review.	Publish demonstration case study reports with other Strategic Assessment documentation.		<i>Pending resource allocation, it is the Authority's intention to publish the demonstration case studies in 2014.</i>
IPR-108.	Breadth and Depth of Assessment	Nowhere is there a description of a trigger for action in any of the areas identified in the Program. For example (Program page 45) under Environmental Regulation, a five year target is "Regionally-based standards for ecosystem health". Existing guidelines are breached consistently for water quality for example (as described in the Report) but there are no regulatory consequences apparent. It is not made clear in the Program Report how the proposed improvements will provide better protection.	Clarify processes and outcomes for action triggers.		<i>Outcomes and triggers will be developed in accordance to part A of the program report. These outcomes and triggers will guide the permission system and be considered as part of a cumulative impact assessment for granting permits to activities under the zoning plan. The Authority is committed to ensure compliance and enforcement of activities in accordance with practices described in the Program and as outlined below.</i>
IPR-109.	Breadth and Depth of Assessment	In the case of improving compliance, there is no reference to how this will be achieved that is more than the attempts to improve compliance in the past. It is unlikely that such an outcome will occur in the absence of additional resources but there is no discussion about resourcing the Program (e.g. the five principal activities set out in the proposed Program). This gap potentially undermines confidence in the future of the Program and its capacity to deliver improved outcomes for outstanding universal value and other matters of national environmental significance.	Define Program resourcing.		<i>Program resources are defined in Section 3.10.5 of the Strategic Assessment Report and 9.3 in the Program Report. Compliance and enforcement/field management is funded on a 50:50 basis by the Australian and Queensland Governments as part of the joint field management program established under the Great Barrier Reef World Heritage Area Intergovernmental Agreement. The last review of base funding occurred in 2011 where it was noted that with static funding the current levels of activity will progressively decline due to increasing costs. Given the projected increasing levels of use, outcomes of the draft strategic assessment report, and independent review recommendations (particularly in relation to illegal activity) the Great Barrier Reef Marine Park Authority considers there is justification for seeking a further review of funding for the joint field management program. The Authority will review funding options in the context of its</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
					costings for the Program report and government budgetary processes.
IPR-110.	Breadth and Depth of Assessment	There is a missed opportunity to explore some specific actions that Australia might take on the international stage, under the guidelines of World Heritage. This would represent possibilities for the Convention to work as intended (international cooperation). How could GBRMPA (and Australia) influence the international threats to the GBRWHA outstanding universal value? International issues relevant to the Great Barrier Reef include climate change, pollution, shipping and the management of migratory species, marine turtles, whales, dugongs, shorebirds and seabirds. There is an opportunity to explore options around each of these at the international level (bilateral or under various treaties).	Explore some specific actions that Australia might take on the international stage, consistent with the World Heritage framework.		<p><i>Australia is currently taking opportunities on the international stage to showcase its work on 'operationalising outstanding universal value' (presented at two international fora to date) and is currently considering a possible side event at the next World Heritage Committee meeting to showcase this further.</i></p> <p><i>A number of the concepts discussed in the Strategic Assessment are also of international interest: for example:</i></p> <ul style="list-style-type: none"> <i>• The importance of understanding the direct, indirect and consequential impacts that are threatening the values in the property;</i> <i>• How these pressures can be assessed but more importantly, the cumulative impact of the various pressures,</i> <i>• How a risk assessment approach might also assist in more effective prioritization of management efforts.</i>
IPR-111.	Technical accuracy	It is insufficiently clear the extent to which key conclusions are based more on scientific consensus rather than high-quality data, for the issue of inshore reefs on the southern reef being particularly degraded. Two publications are repeatedly cited to support this conclusion: De'ath <i>et al.</i> (2012) and Roff <i>et al.</i> (2013). The decline reported by De'ath <i>et al.</i> (2012) was largely driven by a dramatic decrease in coral cover in the southern third of the reef, where the data used do not include any inshore reefs, and in the middle third of the reef (still the southern section in terms of the Strategic Assessment) trends for inshore vs. offshore reefs are not reported. The apparent phase change in an inshore reef reported by Roff <i>et al.</i> (2013) was reported from a single inshore site (Pelorus Island) relatively far to the north	There should be more discussion of the more recently established inshore reef monitoring program, and it should be clearer that the decline in inshore southern reefs reflects consensus rather than high-quality data on appropriate spatial and time scales.		<p><i>It is agreed that there should be more discussion relating to coral reefs, including clear statements regarding what the data and monitoring is telling us and what is more based on extrapolation and scientific consensus. This is one of the primary reasons that coral reefs were selected for an in-depth case study, where these matters are discussed in more detail and with more referencing. Section 4.2 in the coral reef demonstration case raises the issue of data versus consensus on inshore reefs and has made reference to both the MMP reports as well as the Browne et al paper from 2012.</i></p>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		that is directly off the mouth of the Herbert River. Thus, whilst these papers are consistent with the conclusion that inshore southern reefs are particularly degraded, they do not provide conclusive evidence on a regional scale. Regarding the palaeoecological phase shift reported for Pelorus Island, the conflicting view of Browne <i>et al.</i> (2012) that inshore turbid reefs have been stable on palaeoecological time scales is not acknowledged anywhere in the reports. It is still the best available science and this comment does not dispute the decline or the need for urgent action; it does, however show the urgent need for better data regarding trends in inshore reef condition. Chapter 7 of the Strategic Assessment does acknowledge that inshore reefs are relatively poorly studied, but this does not come through strongly overall.			
IPR-112.	Technical accuracy	The link between nutrients and COTS outbreaks is the best available science but it is essentially based on two papers (Brodie <i>et al.</i> 2005; Fabricius <i>et al.</i> 2010) by the same research team. The reports are a bit inconsistent in characterising the strength of the evidence (e.g. “emerging evidence” vs “strong evidence” in various places) but more importantly the assessment appears to accept the link between water quality and COTS without question. The finding that COTS are less abundant in green zones is mentioned in places but not emphasised. This does not detract in any way from the importance of improved water quality, but the assessment appears to a considerable extent to assume that improved water quality will solve the COTS problem. The assessment does refer to the potential direct	Describe the limitations in current understanding of COTS outbreaks in more detail, including alternative hypotheses. Evaluate alternative management options water quality improvements are not enough to control COTS. Identify knowledge gaps/research needs for COTS.		<p><i>One example of where Crown of thorns are addressed is under section 6.4.2 Catchment run off, where the link to nutrients is a reasonable topic to consider. However, the alternative hypothesis of decreased predation of juvenile starfish by fish in non-marine park zones is also mentioned. Hence the Authority deems that both main hypotheses are adequately considered.</i></p> <p><i>The integrated research, monitoring and reporting program which is directly based on the findings of the strategic assessment, includes improved understanding of population dynamic of crown-of-thorns starfish and triggers for outbreaks.</i></p>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		control of COTS outbreaks, but the assessment would benefit from a more systematic consideration of a "Plan B" if it turns out that water quality improvement is not enough. Given the importance of COTS, it is surprising that the assessment does not identify any knowledge gaps/research needs for COTS – does GBRMPA consider that current scientific understanding is adequate for management?			
IPR-113.	Validity of conclusions	The Conclusions of the Strategic Assessment follow logically from the evidence presented and are consistent with present understanding of the Great Barrier Reef. The Program Report seems particularly weak in identifying outcomes explicitly linked to reversing the deterioration in the Great Barrier Reef condition. All the proposed actions under the Program Report are appropriate and contribute to the prospect of better management but it is not clear that this will suffice to overturn the concerns identified in the Strategic Assessment. There seems to be a great deal of implicit expectations within the forward commitments.	Include stronger additional management actions as forward commitments.		<i>The last chapter of the Strategic Assessment Report has been substantially revised to provide a clearer line of sight between its outcomes and the Program as outlined in the Program Report. The final Program Report is structured around each future management action and program initiative. The final Program report contains a suite of explicit commitments in response to each recommendation and new initiative.</i>
IPR-114.	Validity of Conclusions	Overall: Given the decline in coral cover on the reef, there would seem to be an urgent need for more "restoration ecology" research – for example intensive monitoring of sites for recovery after COTS outbreaks or cyclone damage, testing the efficacy of COTS control, trialling restoration methods, and assessing priority areas to enhance resilience and more confident identification of approach to tipping points. De'ath <i>et al.</i> (2012) suggest that COTS control alone would be sufficient to allow coral recovery at	Highlight the need for restoration ecology research.		<i>The comment is noted and will be considered within the scope of the science information needs for the Integrated research, monitoring and reporting program for the GBRWHA 2014-2019.</i>

Independent Review Report (independent peer review) Recommendation				Authority response to recommendation (noting an addendum number will only be given if a correction, clarification or change is made)	
IPR Number	Page reference	Comment	Action	ADD Number	Response
		a reef scale, which is a testable hypothesis. The urgency of targeted research to apply to reef restoration does not come through sufficiently in the program report.			
IPR-115.	Validity of Conclusions	The decline of southern inshore reefs is rated as having high-quality evidence and high degree of consensus on page 7-11. Consensus is clear, but high-quality evidence more problematic. On page 7-51, the status and trends of inshore fringing reefs are identified as a key information gap.	Lack of data should not become a basis for inaction but the importance of actions to obtain better information for application to understanding resilience, recovery and restoration does not necessarily come through consistently. Consider revising text.	ADD-91, ADD-92, ADD-94	<i>Some changes to this effect have been made to Chapter 7. In addition the final program report outlines a new outcomes based management framework, where lack of data triggers actions via the proposed Integrated research, monitoring and reporting program.</i>
IPR-116.	Validity of Conclusions	There are a number of references to marine pests in the assessment, including identifying information on them as a key gap (page 6-84) and the assessment that marine pest management is a weakness (page 8-31). The only response in the Program Report, however, is to improve the capability to respond to incursions if they occur. The risk of marine pest incursions is likely to increase with reduced reef resilience, and the development of preventative measures seems to be a gap in the Program Report response. There are international guidelines (International Maritime Organisation) and national guidelines on biofouling management, for example, that could be the basis of GBRMPA policy.	Include further discussion and response for marine pests.	ADD-46	<i>Additional information regarding marine pests in relation to defence activities has been added to Chapter 5.</i>

Appendix 3

Responses to the submissions / report

Responses to the submissions / report

A summary of all substantive submissions received during the public consultation phase are presented in this table. In cases where the recommended actions or comments resulted in a change to the Strategic Assessment Report, a reference is made to an addendum number (ADD). These are all presented under Section 6.2

Table 7 Responses to the Submissions / Report

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
Risks to the region's values	
<p>Biodiversity values</p> <p>If high confidence data exists for listed threatened or migratory species (for example turtles) they should be assessed individually.</p> <p><u>Response</u></p> <p>In principle the Authority agrees with this suggestion, however, the resources and timing of the Strategic Assessment do not allow an analysis at this level of detail. The Authority's Vulnerability Assessments available on the Authority's webpage go into more species specific detail. Further, given the commonality of the threats facing species (habitat loss, unsustainable bycatch etc.) in many cases a species by species assessment would not lead to different management recommendations.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 348</i></p>	
<p>The maps and descriptions are not refined enough to highlight areas where flora, fauna and habitat of high environmental significance occur, especially with species and habitats where fine-scale mapping would be essential. Generate risk maps, including areas of rare (globally or locally) and/or vulnerable habitats or species.</p> <p><u>Response</u></p> <p>The maps included in the Strategic Assessment report are made with the best spatial data available as of June 30, 2013. However, the generation of spatial data on vulnerability is a key information gap and a priority within a range of future commitments, such as the cumulative impact assessment guidelines.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E169, E125</i></p>	
<p>More detail is required to address the issue of noise pollution which is rated as being a 'high risk' to biodiversity but a relatively long two-year time frame has been allocated to "strengthen guidelines". The Program Report states that the Authority will encourage and support research into noise impacts, but no timeframe is provided.</p> <p><u>Response</u></p> <p>Time frames to support and encourage research are immediate, and forms part of the "Science information needs for an integrated research, monitoring and reporting program for the GBRWHA 2014-2019". However the timing of access to the outcome of the research that has been encouraged lies with the implementing research institution. The strengthening of guidelines relies on the outcomes of the research.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E130</i></p>	
<p>It is not clear from Table 5 (Program Report) Preliminary targets for Great Barrier Reef values and impacts that any targets have been set to address the condition of</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>shorebirds which is Poor with a projected condition of Very Poor due to impacts associated with coastal development and climate change.</p> <p><u>Response</u></p> <p>At present, shorebirds are not considered as one of the key priority species; hence these are not included in Table 5. It is intended that the targets be collaboratively reviewed and updated every five years as part of the Authority's Outlook reporting cycle and Reef Plan reporting, as well as more frequently as understanding improves and circumstances change. Hence the list of priority species and habitats will be continuously under review.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E251</i></p>	
<p>There are concerns with some of the technical information on dugongs and coastal dolphins and the interpretation of that information (similar concern for other areas). Consider consulting with technical experts to review the relevant sections of the Strategic Assessment that incorporate technical information to ensure that the information is accurate and interpreted appropriately.</p> <p><u>Response</u></p> <p>Professor Helene Marsh has undertaken a technical review of matters relating to dugongs, which has been incorporated into the amendments for Chapter 9. Please refer to section 6.2.</p> <p>The information contained in the Strategic Assessment is by no means static and will be updated and reviewed continually as data, information and knowledge improves. The science information needs for the Integrated research, monitoring and reporting program will ensure a continuous improvement of technical information to underpin the Authority's management.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E235</i></p>	ADD-108
<p>The management of dugong populations needs to be identified as ineffective in the southern two thirds of the Great Barrier Reef, with population numbers plummeting and no recruitment occurring for a period following 2011 extreme weather events.</p> <p>Support for the research into methods of restoration and rehabilitation of seagrass beds.</p> <p>Support actions to reduce impacts to individuals from vessel strike. Protected areas must be well managed and monitored. These comments could also be applied to other marine fauna such as the Indo-Pacific and snubfin dolphins.</p> <p><u>Response</u></p> <p>The management effectiveness gradings are based on an independent review (Hockings et al 2013), hence not something the Authority can change.</p> <p>The Authority's Position Statement on conservation of dugongs in the Great Barrier Reef Marine Park (2007) identified reducing the number of dugongs killed or injured by boat strike as a priority action. The Authority recommends that boaters should keep a good lookout on the water, avoid shallow seagrass meadows and if shallow seagrass meadows cannot be avoided, speed should be reduced to below 10 knots. Voluntary vessel transit lanes and suggested speed restrictions have been established in the Hinchinbrook Plan of Management. In addition, legislative go slow areas have been established in Moreton Bay and Hervey Bay to aid in the protection of dugong and turtle in areas identified as their prime habitat. However, the Authority is aware that go slow areas often have high rates of non-compliance.</p> <p>It is noted that more information, research and data is needed for these species. Dugongs and snubfin dolphins are part of over a dozen priority species and groups of species currently undergoing in-depth Vulnerability Assessments.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E186</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Develop and implement a sea turtle, dugong, and snubfin protection and management plan to ensure the survival and recovery of all populations in the Great Barrier Reef World Heritage Area.</p> <p><u>Response</u></p> <p>The Authority is undertaking in-depth Vulnerability Assessments on all three of these groups of animals. However, when it comes to management plans the Authority places its focus on the activities which impact these groups of animals (habitat loss, unsustainable bycatch etc.). This is because many significant threats are common across a range of species and habitats.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E186</i></p>	
<p>Aesthetic values</p> <p>Develop stricter planning/development guidelines for new buildings in addition to remediation of existing infrastructure to enhance/minimise impact reef aesthetics.</p> <p><u>Response</u></p> <p>This falls outside the jurisdiction of the Authority and the scope of the Strategic Assessment.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 265</i></p>	
Climate change	
<p>Impact of climate change</p> <p>Climate change is the most significant threat to the Great Barrier Reef World Heritage Area. Future programs need to clearly highlight how climate change is being mitigated and the effects of climate change addressed. In particular, the conflict between Australia's emissions versus emissions caused by the export of gas and coal, need to be considered. Need to maintain advocacy at national and international level.</p> <p><u>Response</u></p> <p>In December 2007, Australia ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change, agreeing to limit annual carbon pollution to an average of 108 per cent of 1990 levels during the Kyoto period (2008 to 2012).</p> <p>Australia has also committed to reducing its emissions by between 5 and 15 or 25 per cent below 2000 levels by 2020. The five per cent target is unconditional. The up to 15 per cent and 25 per cent targets are conditional on the extent of international action. On 27 January 2010, Australia formally submitted its full target range to the Copenhagen Accord. The decision to maintain the full range is consistent with the approach taken by other countries.</p> <p>The Australian Government has also committed to a long-term target to cut pollution by 80 per cent below 2000 levels by 2050.</p> <p>The Great Barrier Reef Marine Park Authority operates through the <i>Great Barrier Reef Marine Park Act 1975</i> which provide for the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region through, among other tools, the establishment of the Marine Park. Other objects of the Act, relate to allowing ecologically sustainable use, encouraging engagement in the protection and management of the Great Barrier Reef Region, and assisting in meeting Australia's international responsibilities in relation to the environment and protection of world heritage. Recommendations 35 to 38 support the Australian Government carbon emissions target through the <i>Great Barrier Reef Marine Park Act 1975</i> by working with industry, the community and management agencies to highlight the impacts of climate change on the Great Barrier Reef and the industries and community it supports, and supports initiatives for adaptation and mitigation in the Great Barrier Reef Region.</p> <p>The Authority has a role to play in monitoring the impacts of climate change on the Marine Park, undertaking education programs on those impacts (past, present and future),</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>and implementing climate change adaptation strategies. However, we do not have a role in mitigation strategies or assessing emissions.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 68, E122, E134, E183, 208, E250, E252, E218, E209; E212</i></p>	
<p>More information is required in the Strategic Assessment and Program Report on the existing and emerging risks to the Great Barrier Reef from the effects of climate change, particularly how these effects directly and indirectly impact the Great Barrier Reef World Heritage Area.</p> <p><u>Response</u></p> <p>The Authority considers that the present and future impact of climate change is thoroughly covered within the report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E130</i></p>	
<p>Climate change adaptation and mitigation</p> <p>Further information is required with regard to Recommendation 37 and 38 ("mechanisms to encourage the reduction of greenhouse gases in partnership with industries and communities and adapting and responding to the effects of climate change"; "Support initiatives to build the capacity of management agencies and Reef users to adapt and respond to climate change and extreme weather events").</p> <p><u>Response</u></p> <p>The report notes the work the Authority has already undertaken to encourage reduction in emissions and capacity to adapt to climate change, for example with the tourism industry. These two recommendations reflect the intent to build on this work.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E251</i></p>	
<p>The Royal Australian Navy (RAN) continues to work closely with the US Navy in researching and trialling new and renewable fuels for ships and aircraft. Whilst the availability of advanced renewable fuels is limited in Australia, RAN will continue to work toward the introduction of alternative low-carbon fuels, as suitable replacements become commercially available and cost effective.</p> <p><u>Response</u></p> <p>The Great Barrier Reef Marine Park Authority is supportive of this initiative of the Royal Australian Navy, but does not consider this to be of sufficient direct relevance to the Marine Park to warrant inclusion.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E132</i></p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Impacts of activities in the catchment

Water quality general

Comment on water quality monitoring used (2010/2011) data. Is there anything more recent?

Response

Yes there is an annual update of trends and status of water quality in inshore waters through the Great Barrier Reef Marine Park Authority's Marine Monitoring Program. The latest reports are usually published within 12 months of data collection to provide an annual assessment of trends and status. The Strategic Assessment report is based on literature available as of June 30th 2013, at which time the 2011/2012 marine monitoring data was available. This report is cited in Chapters 6, 7 and 9. At times, when earlier data is reported it is likely to be in relation to specific temporal events.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: 245

Section 6.4.2 catchment runoff. It would be helpful to preface this section with the comment that freshwater inflows are a natural process that contribute nutrients and sediment, which are critical to inshore coastal environments, but that these have been modified by land use practices.

In section 6.4.2, if this is the same evidence as that used in Section 5.3.1 (using 2013 reference) then it is only at the paddock level, not at the catchment level and may be a premature statement.

Response

The intent of Chapter 6 is to discuss the individual and cumulative effects of all impacts on the ecological systems of the Great Barrier Reef World Heritage Area. Section 6.4.2 has focused on the impact of increased freshwater flows, however does generally note the importance of natural freshwater flows for the ecological systems of the Great Barrier Reef World Heritage Area. This natural versus modified freshwater flows will be considered further in projects under the Long-term Sustainability Plan/Reef Recovery Program:

Support for the Water Quality Improvement Plan development and revision

Understanding natural catchment detention of flows

Restoring the modified hydrographs and seasonality of streams and rivers in the Great Barrier Reef Region

The establishment of indicators and targets to monitor achievement of desired ecosystem states).

An additional section on connectivity in the landscape under section 4.9 includes more information that is relevant to this comment. Please refer to section 6.2.

Public submissions that referred to this issue: E192

ADD-22

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Are there any concerns about reduced freshwater inflows as a result of harvesting of water for human use?</p> <p><u>Response</u></p> <p>The issue of increased freshwater inflows is explored further in the Regional Sustainability Planning project C, the Great Barrier Reef Marine Park Authority's Coastal Ecosystem assessment framework (as an issue from modifying catchment coastal ecosystems), and will be considered further in projects under the Long-term Sustainability Plan/Reef Recovery Program:</p> <p>Support for the Water Quality Improvement Plan development and revision</p> <p>Understanding natural catchment detention of flows</p> <p>Restoring the modified hydrographs and seasonality of streams and rivers in the Great Barrier Reef Region.</p> <p>An additional section on connectivity in the landscape under section 4.9 includes more information that is relevant to this comment. Please refer to section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-22
<p>Chapter 6 Table 6.1 - the impact may be better described as "increased freshwater flow due to higher intensity rain events and/or reduced retention of rainfall in the catchment".</p> <p><u>Response</u></p> <p>The comment refers to an already abbreviated title, and is generally captured by the impact summary. The issue of increased freshwater inflows is explored further in the Regional Sustainability Planning project C, the Great Barrier Reef Marine Park Authority's Coastal Ecosystem assessment framework (as an issue from modifying catchment coastal ecosystems), and will be considered further in projects under the Long-term Sustainability Plan/Reef Recovery Program:</p> <p>Support for the Water Quality Improvement Plan development and revision</p> <p>Understanding natural catchment detention of flows</p> <p>Restoring the modified hydrographs and seasonality of streams and rivers in the Great Barrier Reef Region.</p> <p>An additional section on connectivity in the landscape under section 4.9 includes more information that is relevant to this comment. Please refer to section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-22
<p>Improve focus on the urban environment through Reef Plan Program, including additional funding for local government projects directly delivering on water quality benefits. Reef Plan needs a stronger focus on urban, industrial, and marine water quality including the importance of coastal wetlands, sewage treatment, stormwater, and near coastal groundwater.</p> <p><u>Response</u></p> <p>Urban discharges are a small portion of the total discharges to the Great Barrier Reef Marine Park, most of which are managed by local government.</p> <p>The Reef Water Quality Protection Plan 2005 Report to the Prime Minister and the Premier of Queensland and the Reef Water Quality Protection Plan audit report 2010 highlighted that local government has not been well engaged in the delivery of Reef Plan.</p> <p>Under the strategy to coordinate improvement of water quality management on public land in reef catchments the audit noted that, while some local governments were engaged, in particular those involved in the Reef Guardian Council program run by The Authority, many of the local governments in the Reef catchments were unable to participate in the study, and therefore assessment of land management strategies at the local scale was not able to be undertaken for these areas.</p> <p>As the outputs of this deliverable rely on voluntary uptake, the resources and capacity of some supporters, in particular some local governments, were found to be an impediment to full uptake.</p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

With regard to wetlands, considerable work has been completed under the Queensland Wetlands Program, and the importance of wetlands to improved outcomes for the Great Barrier Reef are still recognised in Reef Plan 2013, which includes an action to prioritise coastal, urban and wetland rehabilitation activities that improve water quality and Great Barrier Reef health in order to inform state, national and regional programs of work.

Further actions to be considered in the Long-term Sustainability Plan/Reef Recovery Plan to improve local government engagement and involvement in the development and implementation of measures to manage, rehabilitate and restore catchment ecosystem health for improved ecosystem function in the Great Barrier Reef include:

- The condition and trend in groundwater quality and quantity
- Natural catchment detention of flows
- Restoring the modified hydrographs and seasonality of streams and rivers in the Great Barrier Reef Region
- Identifying intact catchment areas and prioritising remaining natural systems
- Community infrastructure design for the protection of ecosystem function
- On-ground actions and ongoing management of the Great Barrier Reef catchment
- Identifying places of significance to community

Public submissions that referred to this issue: E183, E222, 077; E209

The report makes a compelling case that poor water quality continues to be a major threat to large areas of the Great Barrier Reef. What appears to be lacking, however, is a clear pathway to resolving this problem. While significant funds are being invested through Reef Plan and there is model-based evidence that water quality should be improving, there remains no comprehensive projection of the expected improvement as a function of cost or benefit.

Response

See response E192 above. The assessment of cost and benefits and modelled scenarios for improving water quality is undertaken as part of the delivery of Reef Plan. The cost and benefits of undertaking many of the practices that have improved water quality have been shown to be generally positive at the farm level for economic outcomes as well. It is important to remember that there is also a cost and benefit for other industries reliant on a healthy Reef, especially to the \$5 billion per year tourism industry and commercial and recreational fisheries, which would be affected if no action is taken to improve water quality.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E193

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Decrease in water quality from dredge spoil disposal cancels out the improvements from agricultural practices to decrease sediment loads, and these need to be addressed.</p> <p><u>Response</u></p> <p>The new inputs of sediment from the catchment and relocation of sediment by dredging are not directly comparable in the context of loads. Dredging and the resuspension of sediment is recognised as a significant issue that is assessed on a case by case basis to ascertain if it is appropriate in the location it is proposed, especially if it can be undertaken without having a significant impact on values in the marine environment.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 432</i></p>	
<p>Trends for water quality should be added to Table 5 of the Program Report.</p> <p><u>Response</u></p> <p>The final version of the Program report recognises the need to develop targets and thresholds with stringent expert advice. The trend-based outcomes management framework (see section B of the final Program Report) provides details on the development of desired state outcomes, thresholds and management targets. However, in line with current Reef Plan targets, a likely water quality threshold will be: 'the exceedance of the Authority's Guideline water quality trigger levels for Chlorophyll <i>a</i> and turbidity reduced to more natural levels by 2020'.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194</i></p>	
<p>Agriculture</p> <p>What is the cost-benefit value of managing runoff from agriculture within the Great Barrier Reef catchment (i.e. Strategic Assessment should consider including analysis of contaminant loads that model water quality for mitigated and unmitigated scenarios). The details of the modelling should be provided along with the assumptions included and the degree of certainty in the modelling (model confidence limits).</p> <p><u>Response</u></p> <p>The assessment of cost and benefits and modelled scenarios for improving water quality is undertaken as part of the delivery of Reef Plan. The cost and benefits of undertaking many of the practices that have improved water quality have been shown to be generally positive at the farm level for economic outcomes as well. It is important to remember that that there is also a cost and benefit for other industries reliant on a healthy Reef, especially to the \$5 billion per year tourism industry and commercial and recreational fisheries which would be affected if no action is taken to improve water quality.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Recent work indicates that current policy for adoption rates of best management practices in grazing and cane growing would not be sufficient to achieve Reef Plan water quality targets. Strategic Assessment should specifically outline how it will measure successful outcomes for the Great Barrier Reef ecosystems, and link these with required reductions in river pollutant loads and associated agricultural land use and management. Modelling showing water quality improvement should highlight that they are estimates only, potentially creating the perception that actual water quality to the Reef has already been shown to be improved.</p> <p><u>Response</u></p> <p>The Authority's Marine Monitoring Program monitors the status and trend in water quality and ecosystem health in the Great Barrier Reef and is not reliant on the outputs of modelled outcomes of practice changes. The Reef Plan 2013 review recognised this challenge and has introduced several new actions specifically to address this issue. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 399, E130</i></p>	
<p>The Authority needs to consider linkages between poor water quality and crown-of-thorns starfish outbreaks, commit to continued investment in measures to improve water quality (managing gully erosion, regulations, nutrient trading, policies and incentives), and research into health and resilience comparing shallow and deep water coral. Also, nutrient management, especially in the wet tropics, requires a transformational change if it is to achieve the present targets.</p> <p><u>Response</u></p> <p>This has been recognised by the government and is the focus of new investments under Reef Rescue and the Australian Government's Reef 2050 initiative and the reviewed Reef Plan 2013. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E110, E177, 396, E206, E075, 244</i></p>	
<p>On page 7 of the 'In brief' summary report, it is stated: "<i>In turn, high concentrations of nutrients in Reef waters are likely to promote continued, more-frequent outbreaks of the coral-eating crown-of-thorns starfish.</i>" This statement remains controversial after 30 years of research and discussion, notwithstanding its apparent acceptance by some scientists and other interest groups. My view as a scientist, who has undertaken research on crown-of-thorns starfish, for what it's worth, is that there IS a strong argument for the link between enhanced survival of larvae and, therefore, the intensity of outbreaks.</p> <p>However this does not equate to "There is strong scientific evidence that an increase in the frequency of crown-of-thorns starfish outbreaks is linked to increased nutrients in the open water. More nutrients lead to greater concentrations of phytoplankton, the food source of the planktonic larval stage of the starfish." (from the main report).</p> <p>There is NOT strong evidence that increased nutrients have caused an increase in the frequency of outbreaks. There is merely an argument for this relationship. In fact, the data presented show the area that represents the source of crown-of-thorns starfish outbreaks (around Cooktown) is NOT subjected to the extremes in nutrients from agricultural sources (refer to Figure 6.10). It is here that increased nutrient concentrations would be required to drive an increase in the frequency of outbreaks.</p> <p><u>Response</u></p> <p>As the crown of thorns issue is often raised as a potential downstream effect of water quality related impacts, the apparent connection between increased nutrients and outbreaks remains pertinent. The Assessment report does consider alternative causes (such as that of decreased predation of juvenile starfish by fish on reefs that are impacted by fishing) and explicitly state that the nutrient link is "apparent" rather than proven. The Authority will ensure that this caveat is carried through to summary reports and statements in the future.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 077</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Aquaculture</p> <p>The conclusion that prawn farm discharges have an equivalent or more serious impact than diffuse inputs of sediment, nutrients and chemicals from extensive agriculture is incorrect. The report does not provide a fair comparison to industries that do not treat discharges, which contain pesticides that continue to pose a risk to onshore corals. Furthermore, the potential impacts from aquaculture are poorly examined and an examination and recommendation regarding the regulation of aquaculture activities are an omission from the reports that need to be rectified. For example, the report has not taken into account research in intensive prawn ponds and the impacts of pond discharges on adjacent coastal environments.</p> <p><u>Response</u></p> <p>Key aspects that need to be considered with regard to the submission statement:</p> <p>The potential environmental impacts associated with the discharge of waste from these aquaculture facilities are likely to be locally significant.</p> <p>All new prawn farms developed since 2000 have incorporated waste treatment facilities which reduce the load of sediment and nutrients discharged to the receiving environment. Treatment facilities have not however been retrofitted to prawn farms built prior to 2000.</p> <p>Development of the industry will be reliant upon the ability of the receiving environment to assimilate these waste products discharged from these facilities to the Great Barrier Reef Marine Park.</p> <p>The Authority's commitment to strengthen the Great Barrier Reef water quality guidelines and research on critical ecosystem thresholds will consider the inclusion of the following matters:</p> <p>Defining total maximum daily loading for each waterway with all diffuse and point source pollutant loads not exceeding this amount.</p> <p>Nutrient and sediment trading, along with identification of the best available land use for production return, whilst remaining within the acceptable limit, will be required for future development to occur.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 382, E130, 331</i></p>	
<p>There has been no new development or approved new aquaculture ventures in the past 10 years. Aquaculture is stagnant due to old, outdated regulations and compliance restrictions. An assessment of actual impacts and potential impacts needs to be addressed.</p> <p><u>Response</u></p> <p>Key aspects that need to be considered with regard to the submission statement:</p> <p>There have been no new prawn farms anywhere in Australia for ten years.</p> <p>A number of farms in the Northern Territory have converted from prawn to barramundi farming due to the economics of these ventures.</p> <p>It is not proposed to include additional information in the Strategic Assessment addendum. However the following will be considered in the implementation of the Cumulative Impact Assessment guidelines and the Net Benefit policy, the strengthening of the Great Barrier Reef water quality guidelines and research on critical ecosystem thresholds:</p> <p>Development of the industry will be reliant upon the ability of the receiving environment to assimilate waste products discharged from these facilities to the Great Barrier Reef Marine Park.</p> <p>A total maximum daily loading for each waterway will need to be defined with all diffuse and point source pollutant loads not exceeding this amount.</p> <p>Nutrient and sediment trading, along with identification of the best available land use for production return, whilst remaining within the acceptable limit, will be required for future development to occur.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 331</i></p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Urban and Industrial development

The Fitzroy River delta faces significant risk from degraded water quality from land-based agricultural practices, flood plumes, sediment loads and industrial port developments. The Strategic Assessments and Program reports fail to deliver key management actions to prevent impacts from industrial port developments on the Fitzroy River delta.

Response

The Regional Sustainability Planning project C highlighted that better information is required for catchment managers to recognise ecosystem function linkages, and identify ways of maintaining and restoring the values of the Great Barrier Reef World Heritage Area.

The Great Barrier Reef Marine Park Authority's responsibility is described in the *Great Barrier Reef Marine Park Act 1975*, and includes the capacity to regulate actions outside the Marine Park that pollute water. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's primary piece of legislation for the management and protection of matters of national environmental significance. The Australian Government has proposed to accredit the Queensland Government to take primary responsibility for the assessment and approval of actions that potentially impact matters of national environmental significance under the EPBC Act. Under Queensland policy, there is draft guidance for the recognition of the matters of national environmental significance in Queensland planning processes.

The Great Barrier Reef Marine Park Authority's primary role in relation to matters of national environmental significance is to advise the Queensland and Australian governments on the measures required to manage and protect the ecosystem health for the Great Barrier Reef Marine Park and World Heritage Area as matters of national environmental significance. To do this effectively, the Great Barrier Reef Marine Park Authority will need to include the following in the Long-term Sustainability Plan/Reef Recovery Plan:

Information for catchment stakeholders that describes the value of catchment ecosystems in maintaining and restoring the health of the Great Barrier Reef, the current condition of catchment ecosystems and the catchment ecosystem thresholds for planners to apply to planning.

Information to describe the expected biodiversity and desired ecosystem states of the inshore environment.

The establishment of indicators and targets to monitor achievement of desired ecosystem states.

Support of on-ground actions that prioritise the maintenance, restoration and repair of catchment ecosystems and marine ecosystems to achieve ecosystem health thresholds and desired ecosystem states.

Public submissions that referred to this issue: E208

Section 6.4.2 urban and industrial discharge. Further information could be provided in this section, for example the number of authorised discharges (authorised under the *Environmental Protection Act 1994*), and whether there are any particular locations where a high proportion of point source discharges occur. It would be appropriate to examine whether new urban developments in the Great Barrier Reef catchment are employing these techniques, and the effectiveness of water sensitive urban design (WSUD) in reducing sediment and nutrient loads in stormwater.

Response

No proposed change to this section or addendum, however the collation of this information would be useful under the Outlook Report for the Great Barrier Reef. Specific projects would need to consider:

The Great Barrier Reef Marine Park Authority working with the Queensland Government to collate and validate point-source that discharge directly to the Great Barrier Reef Marine Park or into the Great Barrier Reef catchment areas.

Support local government to evaluate and implement water sensitive urban design and monitor its effectiveness. The project could build on existing coordination mechanisms that are in place between major Great Barrier Reef Catchment Councils (e.g. Reef Guardian Council program).

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E192

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 6.4.2 urban and industrial discharge. Potential impacts on water quality from large mines are not discussed. There is significant mining development in the Burdekin and Fitzroy basins.</p> <p><u>Response</u></p> <p>The discussion on mining in the Strategic Assessment is consistent with the Great Barrier Reef Outlook Report 2009. Supporting references suggest that impacts of mining activities have not been collated to allow a definitive analysis on contributions of mining activities to poor water quality.</p> <p>“Historically, there have been extensive small-scale mining operations throughout much of the Great Barrier Reef catchment. Rehabilitation of mining sites, including the quality of water coming from them, is now part of the management responsibility of the mining industry. Addressing the quality of water coming from mines and industrial sites is acknowledged as an essential component of a sustainable mining industry. The ongoing impacts of mine sites relate to the degraded quality of water flowing from mining voids and underground passageways (for example elevated concentrations of heavy metals, arsenic, salts, acid-leachate and sediments). These materials are known to contaminate underground water supplies and some have been detected on the Great Barrier Reef. Thus, environmentally-sound mine management and effective rehabilitation of mined areas is essential to the limiting of long-term threats” (GBRMPA, 2009).</p> <p>“There have been extensive small-scale mining operations through much of the Great Barrier Reef catchment, including gold, tin, nickel and uranium mines. Because of poor management in the past, the impacts often belied their size, particularly the alluvial mining within stream beds that released large quantities of sediment that rendered stream beds uninhabitable, with low fish diversity (e.g. Hurtle and Pearson 1990), and water quality of very low standard. Some operations also released toxicants which had severe effects, at least locally (e.g. arsenic associated with tin mining near Herberton). Currently, there are few such activities occurring. The major mines in the region are coal mines inland from Mackay and Rockhampton. Published reports on any impacts of mining activities are lacking” (Brodie et.al., 2009).</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.2. What happened to discussion of micro-contaminants – pharmaceuticals, industrial chemicals, metals etc.? [TropWATER] provided a report analysing this issue for the Strategic Assessment.</p> <p><u>Response</u></p> <p>The Unrecognised Pollutant Risks to the Great Barrier Reef by Berry KLE, O’Brien D, Burns K and Brodie J (TropWATER Report No. 13/23), was commissioned by the Great Barrier Reef Marine Park Authority to inform the Regional Sustainability Planning project C (RSP C). The RSP C project deliverables informed the direction of the Strategic Assessment reports, and will inform the direction of future project work under the Long-term Sustainability Plan. References to the Unrecognised Pollutant Risks to the Great Barrier Reef are contained in the draft RSP C deliverables.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Further consideration of ageing sewage treatment plants and the increase in service demand as catchment population grows.</p> <p><u>Response</u></p> <p>This issue could be considered as part of a collation of point-source discharges to the Great Barrier Reef Region under the Outlook Report for the Great Barrier Reef. Specific projects would need to consider:</p> <p>The Great Barrier Reef Marine Park Authority working with the Queensland Government to collate and validate point-source that discharges directly to the Great Barrier Reef Marine Park or into the Great Barrier Reef catchment areas.</p> <p>Support local government to evaluate and implement water sensitive urban design and monitor its effectiveness. The project could build on existing coordination mechanisms that are in place between major Great Barrier Reef Catchment Councils (e.g. Reef Guardian Council program).</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398</i></p>	
<p>The Program report does not contain ecologically relevant targets for pollution load, noting that Reef Plan 2013 targets are not well designed or have ecological relevance.</p> <p><u>Response</u></p> <p>The Authority monitors water quality and reports on the trends and status of this and ecosystem health against specific ecosystem health parameters. One of Reef Plan's goals is that by 2020 water quality entering the Reef from broadscale land use has no detrimental impact on the Great Barrier Reef's health and resilience. The present Reef Plan targets are measuring progress towards this goal. Further the Program Report proposes to strengthen that goal by establishing specific ecosystem outcomes.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	
<p>The management responses proposed for port and shipping activities appear to be disproportionate to the risks presented by the exercise of these activities. Further inconsistency arises when the management response for issues such as the discharge of urban stormwater, an activity which is consistently portrayed by The Authority as presenting a risk similar to that of port and shipping activities, has not been assessed and is not subject to the same level of management response.</p> <p><u>Response</u></p> <p>The Great Barrier Reef Marine Park Authority conducted a number of workshops with catchment stakeholders and experts to form a consensus on the status, trends and protected future of values of the Great Barrier Reef World Heritage Area. Experts involved included in species management, ecosystem health, cumulative impact assessment, water quality, geology, oceanography and spatial mapping. Stakeholder engagement was conducted through:</p> <p>Four expertise-based Reef Advisory Committees that provided advice on catchment and coastal, ecosystem, Indigenous, and tourism and recreation issues;</p> <p>Twelve community-based Local Marine Advisory Committees provided advice on management issues across the Region (Cape York, Douglas, Cairns, Cassowary Coast, Hinchinbrook, Townsville, Bowen–Burdekin, the Whitsundays, Mackay, Capricorn Coast, Gladstone and Burnett).</p> <p>Targeted engagement of Traditional Owner and stakeholder input were provided through a series of purpose-designed workshops and follow-up surveys. This targeted consultation achieved representation from a diverse range of interests including Traditional Owners; local government; ports, shipping and related development sectors; mining and resource sectors; research organisations; tourism operators; commercial fishers; recreational users including fishers; natural resource managers; farmers; conservation groups and the broader community.</p> <p>The Scientific consensus statement on water quality in the Great Barrier Reef, developed by water quality and marine experts, noted that:</p> <p>The current water quality management framework focuses on agriculturally derived (non-point source) pollution due to the relatively small contribution of point sources (such as intensive animal production, manufacturing and industrial processing, mining, rural and urban residences, waste treatment and disposal, ports and shipping) to overall suspended sediment, nutrient, pesticide and pollutant loads.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Point sources could be locally, and over short-time periods, highly significant, however they were adequately addressed under existing policy and legislative frameworks (2013).</p> <p>Through the consultation process described above, this consensus statement has been further refined, with the likelihood of all impacts (not just water quality) and their consequences evaluated to inform the development of the Great Barrier Reef Strategic Assessment. This comprehensive assessment of all impacts and their consequences has resulted in the risk assessment reflected in the Strategic Assessment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 365, E007, E173</i></p>	
<p>Queensland Government's proposal of removing Wild River Declarations from east coast rivers of Cape York and implement proposed Regional Plan for Cape York will not deliver the same high levels of protection from destructive development in river areas. In the case of the Stewart River, it is proposed that most of the basin be a General Use Area, with no restrictions on development. This policy direction by the Queensland Government poses a direct threat to the health of the upper areas of the Great Barrier Reef and should be taken into consideration within future Reef protection decisions.</p> <p><u>Response</u></p> <p>The Regional Sustainability Planning project C highlighted that better information is required for catchment managers to recognise ecosystem function linkages, and identify ways of maintaining and restoring the values of the Great Barrier Reef World Heritage Area.</p> <p>The Great Barrier Reef Marine Park Authority's responsibility is described in the <i>Great Barrier Reef Marine Park Act 1975</i>, and includes the capacity to regulate actions outside the Marine Park that pollute water. The <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) is the Australian Government's primary piece of legislation for the management and protection of matters of national environmental significance. The Australian Government has proposed to accredit the Queensland Government to take primary responsibility for the assessment and approval of actions that potentially impact matters of national environmental significance under the EPBC Act. Under Queensland policy, there is draft guidance for the recognition of the matters of national environmental significance in Queensland planning processes.</p> <p>The Great Barrier Reef Marine Park Authority's primary role in relation to matters of national environmental significance is to advise the Queensland and Australian governments on the measures required to manage and protect the ecosystem health for the Great Barrier Reef Marine Park and World Heritage Area as matters of national environmental significance. To do this effectively, the Great Barrier Reef Marine Park Authority will need to include the following in the Long-term Sustainability Plan/Reef Recovery Plan:</p> <p>Information for catchment stakeholders that describes the value of catchment ecosystems in maintaining and restoring the health of the Great Barrier Reef, the current condition of catchment ecosystems and the catchment ecosystem thresholds for planners to apply to planning.</p> <p>Information to describe the expected biodiversity and desired ecosystem states of the inshore environment.</p> <p>The establishment of indicators and targets to monitor achievement of desired ecosystem states.</p> <p>Support of on-ground actions that prioritise the maintenance, restoration and repair of catchment ecosystems and marine ecosystems to achieve ecosystem health thresholds and desired ecosystem states.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E250</i></p>	
<p>Beaches and Coastlines, Islands and Shorelines and Saltmarshes should be assigned a preliminary measurable target for improvement of condition. The projected condition for Beaches and Coastlines is Poor with a trend of Declining; this is also the case for Saltmarshes. While the projected condition for Islands and Shorelines is Good, the current trend for their condition is Declining, therefore targets for improvement for islands and shorelines will also be important</p> <p><u>Response</u></p> <p>The Strategic Assessment list the desired outcomes for the conditions of the Region's values and processes to be:</p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Beaches and Coastlines – NI is in very good condition and the desired outcome is that these values and processes be maintained. SI is in good condition and the desired outcome is to maintain and enhance these values. The trend in NI is stable, that the desired trend outcome is that these values are maintained and improved. The trend in SI is deteriorating, and the desired trend outcome is that the decline is halted and reversed.

Islands and Shorelines – are in good condition and the condition of these values is maintained and enhanced. The trend in NI, NO and SO islands are stable, and the desired trend outcome is that these values are maintained and improved. Islands in SI are deteriorating, and the desired trend outcome is that the decline is halted and reversed. The Strategic Assessment notes (9-21) that maintaining the natural, economic and social values of the Great Barrier Reef islands relies on a good knowledge of values, identifying changes and trends and managing threats to these values – however monitoring is constrained.

Saltmarshes (terrestrial ecosystems that support the Region) – are in poor condition and these values need to be restored to good. The trend is deteriorating, and the desired trend outcome is that the decline is halted and reversed.

Relevant preliminary targets for 2019 are: protection of remaining high quality terrestrial habitats that support the Reef is increased; connectivity of slightly to moderately disturbed terrestrial habitats that support the Reef is increased and their functioning is improved; the extent of riparian vegetation is increased and there is no net loss of the extent, and there is an improvement in the ecological processes and environmental values of natural wetlands.

This target applies to the Great Barrier Reef Marine Park Authority's Coastal Ecosystem assessment framework, which includes coastlines and beaches. To establish specific targets in relation to the values identified, the Regional Sustainability Planning project C highlighted that better information is required for catchment managers to recognise ecosystem function linkages, and to identify ways of maintaining and restoring the values of the Great Barrier Reef World Heritage Area. To provide better information, the Great Barrier Reef Marine Park Authority will need to include the following in the Long-term Sustainability Plan/Reef Recovery Plan:

Information for catchment stakeholders that describes the value of catchment ecosystems in maintaining and restoring the health of the Great Barrier Reef, the current condition of catchment ecosystems and the catchment ecosystem thresholds for planners to apply to planning.

Information to describe the expected biodiversity and desired ecosystem states of the inshore environment.

It is proposed that projects under the Long-term Sustainability Plan/Reef Recovery Plan include the condition assessment and target setting for the values noted above.

Public submissions that referred to this issue: E251

National and international obligations are not being met with regard to protection of migratory shorebirds, wetlands and nationally significant ecosystems in the Central Queensland Coast Bioregion. Council planning departments do not check for matters of national environmental significance matters of national environmental significance and need much more education and oversight and probably resources to ensure referable matters under the EPBC Act are addressed, especially where they affect the Great Barrier Reef Marine Park. How will the Authority manage this? What powers will they have to intercede when planning departments and regional Councils ignore their obligations?

Response

The Regional Sustainability Planning project C highlighted that better information is required for catchment managers to recognise ecosystem function linkages, and identify ways of maintaining and restoring the values of the Great Barrier Reef World Heritage Area.

The Great Barrier Reef Marine Park Authority's responsibility is described in the *Great Barrier Reef Marine Park Act 1975*, and includes the capacity to regulate actions outside the Marine Park that pollute water. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's primary piece of legislation for the management and protection of matters of national environmental significance. The Australian Government has proposed to accredit the Queensland Government to take primary responsibility for the assessment and approval of actions that potentially impact matters of national environmental significance under the EPBC Act. Under Queensland policy, there is draft guidance for the recognition of the matters of national environmental significance in Queensland planning processes.

The Great Barrier Reef Marine Park Authority's primary role in relation to matters of national environmental significance is to advise the Queensland and Australian governments on the measures required to manage and protect the ecosystem health for the Great Barrier Reef Marine Park and World Heritage Area as matters of national environmental significance. To do this effectively, the Great Barrier Reef Marine Park Authority will need to include the following in the Long-term Sustainability Plan/Reef

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Recovery Plan:</p> <p>Information for catchment stakeholders that describes the value of catchment ecosystems in maintaining and restoring the health of the Great Barrier Reef, the current condition of catchment ecosystems and the catchment ecosystem thresholds for planners to apply to planning.</p> <p>Information to describe the expected biodiversity and desired ecosystem states of the inshore environment.</p> <p>The establishment of indicators and targets to monitor achievement of desired ecosystem states.</p> <p>Support of on-ground actions that prioritise the maintenance, restoration and repair of catchment ecosystems and marine ecosystems to achieve ecosystem health thresholds and desired ecosystem states.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E212</i></p>	
<p>There is a need for a thorough, scientific assessment of any and all new developments including ports and expansions.</p> <p><u>Response</u></p> <p>This is recognised in recommended changes proposed by the Strategic Assessment and Program Report, including the strengthening of foundational programs such as water quality guidelines and the setting of regional ecosystem and water quality targets.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 274, E178</i></p>	
<p>Adopt a moratorium on any and all development in the Great Barrier Reef World Heritage Area until a strong, internationally supported, scientifically based protection and management scheme is imposed. Immediately adopt a moratorium on any and all sea dumping in the Great Barrier Reef World Heritage Area.</p> <p><u>Response</u></p> <p>The Great Barrier Reef Marine Park Authority was established under the <i>Great Barrier Reef Marine Park Act 1975</i>. The object of the Act is to provide for the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region (the Region being described by the Act). Other objects of the Act, so far as they are consistent with the main object, relate to allowing ecologically sustainable use, encouraging engagement in the protection and management of the Great Barrier Reef Region, and assisting in meeting Australia's international responsibilities in relation to the environment and protection of world heritage. The Great Barrier Reef Marine Park Authority uses Marine National Park zoning to prohibit certain activities in these areas to ensure key features and values in the Marine Park are protected. Development and activities in the Marine Park also undergo a rigorous assessment that considers:</p> <p>The potential impacts on the environment and on the social, cultural and heritage values of the Marine Park.</p> <p>Comment received in relation to public advertising of projects.</p> <p>Other matters that relate to the orderly and proper management of the Marine Park, such as cumulative impact and feasible alternatives to the project.</p> <p>Steps taken to prevent or minimise harm to the environment that might be caused by the project.</p> <p>The effect that a project may have on public appreciation, understanding and enjoyment of the Marine Park.</p> <p>The impact of the project on other users of the area.</p> <p>The capacity of the applicant to develop and manage the project, or is a suitable person to hold an approval.</p> <p>If approved by the Queensland and Australian governments, consideration of the terms and conditions of approval.</p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Policies and guidelines.: consideration of relevant international conventions to which Australia is signatory to, any agreements between the Australian and Queensland governments, or any legislation and planning in place that relates to the management of the environment or an area in the Marine Park.

Any other matters relevant to achieving the objects of the Act.

The Great Barrier Reef Marine Park Authority is confident that this robust management and assessment process ensures that impacts on the ecosystems of the Great Barrier Reef Marine Park are minimised.

Development and activities outside the Great Barrier Reef Marine Park may require assessment by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999* and the Queensland Government under a variety of legislative tools.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E186

Impacts of activities in the region

Port activities and impacts

Ban dredging and the disposal of dredge spoil within the Great Barrier Reef World Heritage Area and contain all port developments/expansions to existing port areas with limits to be placed on port expansions. Sea dumping to be an absolute last resort.

Response

Dredging takes place for the purposes of maintaining safe access channels for ships and vessels into ports, marina's and even boat ramps. Capital dredging for navigation purposes is to create new or enlarge existing channels, berth areas, swing basins, marinas and boat harbour areas. Maintenance dredging is undertaken to ensure that previously dredged channels, berths or construction works are maintained at their designated dimensions. To ban dredging within the World Heritage Area would essentially make existing shipping channels unsafe, and is therefore not an option. The Authority recognises the debate and community concern surrounding dredge spoil disposal within the World Heritage Area, and has therefore instigated a joint initiative between the Authority and the Australian Institute of Marine Science which will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef Region. Once the uncertainties surrounding the impacts of dredge spoil disposal are better understood then this can lead to policy development and directions. The Authority has a long-held strategic view that there should be fewer and better managed ports along the Great Barrier Reef coastline and that these developments should be confined to existing port areas.

When undertaking an assessment under the *Environmental Protection (Sea Dumping) Act 1981* the Authority follows the *National Assessment Guidelines for Dredging (2009)* which states that minimising pollution caused by ocean disposal is a key consideration. As such evaluating the alternatives to ocean disposal and identifying and implementing measure to prevent pollution are important first steps in the assessment process.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E006, E075, E123, E134, E135, E178, E213, 396, E177, E206, E218, E250, E221, 205, 273; E183; E171: E122

Strategic assessment does not adequately consider the principles of ecologically sustainable development (ESD) as they relate to port developments and associated dredging activities. This applies particularly in relation to the economic contributions made by port developments. Any obstructions to port expansions/development/operations (including conducting maintenance dredging) will significantly impact on Australia's economy.

Response

The Authority recognises that sustainable development is essential to the future of Queensland and Australia and supports limiting port development in the Great Barrier Reef Region to existing ports and working with them to obtain best practice environmental management. The Queensland Ports Strategy will ensure that port development is concentrated in Priority Development Areas, to improve efficiencies and minimise cumulative impacts.

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The comprehensive strategic assessment of the Great Barrier Reef World Heritage Area looked at the cumulative impacts of activities on the Reef's values, and the effectiveness of management arrangements to protect and manage those values. It was not intended to provide an economic appraisal of the importance of ports to Australia's economy. The Authority is aware of Australia's dependence on maritime trade and the significant economic and social importance of ports and their associated infrastructure. A number of Queensland's ports, including those in the Great Barrier Reef Region, are considered nationally significant for cargo throughputs and contributions to the national economy – accounting for some 197 of the 942 mega tonnes of cargo which travel through Australian ports.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194, E215</i></p>	
<p>Impacts from dredging and dredge disposal are overrated in the strategic assessment including point source impacts from port developments. The disposal of dredge spoil at sea will need to continue into the future and this needs to be clearly recognised in the SA with proper consideration of the environmental and economic constraints of land based disposal. Similarly, the risks of impacts from shipping need to be presented proportionally throughout the reports, as shipping risks are generally negligible.</p> <p><u>Response</u></p> <p>The Authority acknowledges that there is considerable debate around the scientific evidence and interpretation about the biophysical effects of dredging and offshore spoil disposal and the cumulative effects of these activities on the Great Barrier Reef Region. To address this issue, the Authority and Australian Institute of Marine Science (AIMS) have jointly commissioned a dredge synthesis project. It will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef region. The Expert Panel will develop and publish a synthesis statement outlining what is known, what (if anything) is scientifically contentious, and what are the key gaps in our knowledge. A number of key experts have been invited to participate, with the aim of bringing together a broad range and diversity of skills, experience and perspectives. The project will provide greater clarity about the effects of dredging, the modelling of those effects, and the knowledge gaps, and will provide a stronger foundation for development of best practice guidelines and for the assessment of proposed developments that involve dredging.</p> <p>Although the likelihood of a shipping incident is relatively low, the consequences of a release of oil in a fragile ecosystem would be high; as such the risk would not be negligible. The North East Shipping Management Plan (still in draft) addresses the current and future risks of shipping in the North-East region of Australia. The North-East Shipping Risk Assessment estimated the risk of shipping incident, mainly due to collisions and groundings, in the Great Barrier Reef, Torres Strait and Coral Sea region.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194, E215, E220, E228</i></p>	
<p>Prohibit all port expansions or additions and industrial developments, including river barge coal transport and coal transshipping, LNG, coal seam gas, coal and other fossil fuel or mineral processing facilities in ports in the Marine Park or the Great Barrier Reef World Heritage Area, particularly in the largely undeveloped areas such as Fitzroy River delta, Curtis Island, and Princess Charlotte Bay.</p> <p><u>Response</u></p> <p>Many of the LNG, coal seam gas, coal and other fossil fuel processing facilities in the Great Barrier Reef Region are not actually located within the geographical confines of the Great Barrier Reef Marine Park. There are only two existing ports within the Great Barrier Reef Marine Park; being the Port of Quintell Beach and the Port of Cooktown. The other ten Great Barrier Reef ports are located in areas that were excluded from the Marine Park. The Authority acknowledges that these 'excluded' ports are still within the confines of the Great Barrier Reef World Heritage Area and as such the Authority works closely with the Federal Department of the Environment to address all possible impacts on matters of national environmental significance.</p> <p>The Authority recognises that sustainable development is essential to the future of Queensland and Australia and supports limiting port development in the Great Barrier Reef Region to existing ports and working with them to obtain best practice environmental management.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E208, E250, E186; E183</i></p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

The recommendations do little to address the impacts from dredging and spoil disposal and reliance on the draft North-East Shipping Management Plan falls short of appropriate management. Include genuine recommendations and actions to address port and shipping management, including noise pollution rather than reference to draft plans which fail to address impacts adequately in their current form.

Response

The Authority acknowledges that there is considerable debate around the scientific evidence and interpretation about the biophysical effects of dredging and offshore spoil disposal and the cumulative effects of these activities on the Great Barrier Reef Region. To address this issue, the Authority and Australian Institute of Marine Science (AIMS) have jointly commissioned a dredge synthesis project. It will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef region. The Expert Panel will develop and publish a synthesis statement outlining what is known, what (if anything) is scientifically contentious, and what are the key gaps in our knowledge. A number of key experts have been invited to participate, with the aim of bringing together a broad range and diversity of skills, experience and perspectives. The project will provide greater clarity about the effects of dredging, the modelling of those effects, and the knowledge gaps, and will provide a stronger foundation for development of best practice guidelines and for the assessment of proposed developments that involve dredging

The draft North-East Shipping Management Plan outlines measure currently in place to manage the safety of shipping in the sensitive marine environments of Australia's north-east region and proposes options to further minimise the environmental impacts of these activities and related risks to the outstanding universal value of the Great Barrier Reef World Heritage Area in the years to come. The development of the North-East Shipping Management Plan is integral to the Reef 2050 Long-term Sustainability Plan for the Great Barrier Reef World Heritage Area due to be completed in June 2015. The North-East Shipping Management Plan has been developed by the North-East Shipping Management Group, taking into consideration a quantitative risk assessment by Det Norske Veritas (DNV) of current control measures and a range of possible future risk mitigation options. The North-East Shipping Management Group comprises senior representatives from the following agencies: Australian Maritime Safety Authority (AMSA), Great Barrier Reef Marine Park Authority (GBRMPA), Maritime Safety Queensland (MSQ), Department of Infrastructure and Regional Development, Department of the Environment, Department of Innovation and the Department of Agriculture. The work program associated with the North-East Shipping Management Plan summarises the proposed actions to be taken over the coming years to improve the safety of shipping and protection of the marine environment in the north-east region. Implementation and monitoring will be guided by the North-East Shipping Management Group, related working groups and key stakeholders.

The actual impacts on species behaviour from underwater noise in the region are not clearly understood and further information is needed. Through the North-East Shipping Management plan the Authority and the Department of the Environment will undertake further research and investigate appropriate measures to manage cumulative impacts from shipping in the Great Barrier Reef. This research will include noise and light pollution.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: 351, 398, E123, E130, E131, E167

Greenhouse gases emitted by coastal ships are a tiny fraction of road transport and as our population increases, we should focus on long term environmental solutions and the coastal infrastructure to make this happen. Transshipping solutions (where dredging is minimised or eliminated) and the environmental footprint on the waterfront is minimised, should be included.

Response

The Strategic Assessment acknowledged that the most severe past and present impacts include those related to climate change (sea temperature increase); catchment run-off, modifying supporting terrestrial habitats; and direct use (death of discarded species, dredging, dumping and resuspension of dredge material, illegal fishing and poaching). The Authority is supportive of options that minimise or eliminate dredging as long as they take place within existing port limits and as long as the new technology does not have perverse environmental outcomes. A detailed environmental impact assessment would identify any potential environmental impacts associated with transshipping solutions.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: 69

Public submission / comment and GBRMPA response**Addendum table
reference #
(if applicable)**

While coastal port development, including new and expanded facilities for coal export, has been explicitly addressed in the Report, we feel that the emphasis needs to be updated and strengthened. Sedimentation and water quality issues (including release of contaminants and acid sulphate soils in construction and dredging) that are emerging from construction of new ports, and maintenance dredging will rise considerably in future, with Dr Jon Brodie predicting 14 million tonnes a year of sediment pollution from dredging, which could easily be 2.5 times more than all of the existing agricultural, urban development and mining pollution reaching the reef at present. In addition, increased shipping passage and linked risks need to be more explicitly acknowledged and planned for. The potential impacts are certainly not “very localised” as your report has suggested, and need to be addressed at a large scale.

Response

The volumes of dredging and dredge spoil disposal predicted into the future are expected to increase. It is for this reason that the Authority is working with the Australian Institute of Marine Science to bring together a panel to examine the body of research that already exists on the biophysical impacts of dredging and dredge spoil disposal and to identify future research needs.

The impacts and risks of shipping and predicted increases in shipping into the future are addressed in the North-East Shipping Management Plan. This plan is currently in draft form and being finalised. The draft North-East Shipping Management Plan outlines measures currently in place to manage the safety of shipping in the sensitive marine environments of Australia’s north-east region and proposes options to further minimise the environmental impacts of these activities and related risks to the outstanding universal value of the Great Barrier Reef World Heritage Area in the years to come. The development of the North-East Shipping Management Plan is integral to the Reef 2050 Long-term Sustainability Plan for the Great Barrier Reef World Heritage Area due to be completed in June 2015. The North-East Shipping Management Plan has been developed by the North-East Shipping Management Group, taking into consideration a quantitative risk assessment by Det Norske Veritas (DNV) of current control measures and a range of possible future risk mitigation options. The North-East Shipping Management Group comprises senior representatives from the following agencies: Australian Maritime Safety Authority (AMSA), Great Barrier Reef Marine Park Authority (GBRMPA), Maritime Safety Queensland (MSQ), Department of Infrastructure and Regional Development, Department of the Environment, Department of Innovation and the Department of Agriculture. The work program associated with the North-East Shipping Management Plan summarises the proposed actions to be taken over the coming years to improve the safety of shipping and protection of the marine environment in the north-east region. Implementation and monitoring will be guided by the North-East Shipping Management Group, related working groups and key stakeholders.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: 351, E236

The Strategic Assessment does not adequately acknowledge the positive contributions of ports or the importance of maintenance dredging to keep ports safe and operational. Little attention is given to the economic and social benefits of ports, not only in relation to the mining industry. This is especially noted in comparisons to how this is presented for the fishing and tourism industry. Ports and shipping channels are as important as road and rail networks. The Strategic Assessment must emphasise that maintenance will always be required, as it is an essential part of port operations which can be conducted sustainably. Dredged sediments are part of natural coastal sedimentation processes deposited from river flows and littoral drift processes. Areas subject to maintenance dredging are routinely disturbed and are generally of much lesser environmental value than adjacent areas; this distinction should be emphasised more in the risk assessments. The difference in duration of maintenance dredging campaigns and volumes should be stated more clearly. The risk profiles of these two activities are different; however this is not consistently recognised nor considered within the Strategic Assessment. There is concern that the impacts of dredging and dredge disposal is driven by perception and emotion rather than scientific facts and that the impacts of this is extrapolated from a very localised effect to being region wide.

Response

The comprehensive strategic assessment of the Great Barrier Reef World Heritage Area looked at the cumulative impacts of activities on the Reef’s values, and the effectiveness of management arrangements to protect and manage those values. It was not intended to provide an economic appraisal of the importance of ports to Australia’s economy. The Authority is aware of Australia’s dependence on maritime trade and the significant economic and social importance of ports and their associated infrastructure. A number of Queensland’s ports, including those in the Great Barrier Reef Region, are considered nationally significant for cargo throughputs and contributions to the national economy – accounting for some 197 of the 942 mega tonnes of cargo which travel through Australian ports.

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The Authority acknowledges that there is considerable debate around the scientific evidence and interpretation about the biophysical effects of dredging and offshore spoil disposal and the cumulative effects of these activities on the Great Barrier Reef Region. To address this issue, the Authority and Australian Institute of Marine Science (AIMS) have jointly commissioned a dredge synthesis project. It will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef region. The Expert Panel will develop and publish a synthesis statement outlining what is known, what (if anything) is scientifically contentious, and what are the key gaps in our knowledge. A number of key experts have been invited to participate, with the aim of bringing together a broad range and diversity of skills, experience and perspectives. The project will provide greater clarity about the effects of dredging, the modelling of those effects, and the knowledge gaps, and will provide a stronger foundation for development of best practice guidelines and for the assessment of proposed developments that involve dredging. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194, E195, E215, E220, E228, E261, E173, E238</i></p>	
<p>Inconsistencies within the document about impact, management effectiveness and risk classifications from ports, shipping, dredging and dredge disposal.</p> <p><u>Response</u></p> <p>Please refer to amendments to chapters below and in Section 6.2, which contains amendments that are relevant for this comment. It needs to be noted that effects of impacts and projected risk are two different metrics and based on different methods, hence a grading of “high effect” in chapter 6 does not translate to a grading of “high risk” in chapter 10 and vice versa.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398, E126, E194, E200, E215, E228, E248, E211</i></p>	
<p>Improving certainty. Why is there no cap (nor limit or target) on the amount of dredge spoil that may be permitted by the Authority outside of port boundaries? Is there a fee for dumping dredge spoil in the Great Barrier Reef Marine Park?</p> <p><u>Response</u></p> <p>There is currently no cap (limit or target) to the amount of dredge spoil that is allowed to be disposed of in the Great Barrier Reef Marine Park. The Authority’s policy on Dredging and Spoil Disposal states that “annual maintenance dredge spoil volumes for each spoil ground in the Marine Park will be capped to a limit, which will be determined by the Great Barrier Reef Marine Park Authority in consultation with the relevant port authority”. This has not as yet been implemented.</p> <p>There is currently no Environmental Management Charge (EMC) payable for dredging or disposal in the Great Barrier Reef Marine Park. The Authority’s policy on Dredging and Spoil Disposal states that “an environmental levy based on environmental risk alternatives and cubic metre of spoil disposed to the Marine Park will be charged to facilitate GBRMPA’s general principles of user pays”. This has not as yet been implemented.</p> <p>The disposal of dredge material at sea is only allowed when this is the last and only available option for disposal. When undertaking an assessment under the <i>Environmental Protection (Sea Dumping) Act 1981</i> the Authority follows the <i>National Assessment Guidelines for Dredging (2009)</i> which states that minimising pollution caused by ocean disposal is a key consideration. As such evaluating the alternatives to ocean disposal and identifying and implementing measure to prevent pollution are important first steps in the assessment process.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E212, E211; E248</i></p>	
<p>As long as dumping of dredge spoil in the Great Barrier Reef Marine Park remains the cheapest disposal option for major port expansions, it will be the preferred choice for developers and port authorities. Actions must be taken to show the full cost of such a policy. There is little to no evidence to show past long-term impacts of dredging spoil dumping on outstanding universal values in the Great Barrier Reef Marine Park.</p> <p><u>Response</u></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>There is currently no Environmental Management Charge (EMC) payable for dredging or disposal in the Great Barrier Reef Marine Park. The Authority's policy on Dredging and Spoil Disposal states that "an environmental levy based on environmental risk alternatives and cubic metre of spoil disposed to the Marine Park will be charged to facilitate GBRMPA's general principles of user pays". This has not as yet been implemented.</p> <p>The Authority acknowledges that there is considerable debate around the scientific evidence and interpretation about the biophysical effects of dredging and offshore spoil disposal and the cumulative effects of these activities on the Great Barrier Reef Region. To address this issue, the Authority and Australian Institute of Marine Science (AIMS) have jointly commissioned a dredge synthesis project. It will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef region. The Expert Panel will develop and publish a synthesis statement outlining what is known, what (if anything) is scientifically contentious, and what are the key gaps in our knowledge. A number of key experts have been invited to participate, with the aim of bringing together a broad range and diversity of skills, experience and perspectives. The project will provide greater clarity about the effects of dredging, the modelling of those effects, and the knowledge gaps, and will provide a stronger foundation for development of best practice guidelines and for the assessment of proposed developments that involve dredging.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E212</i></p>	
<p>Figures in relation to port trade or shipping need to be corrected and updated according to the Braemar Seascope for AMSA, 2013. Tonnages appear to be combined Queensland and NSW figures. The underutilised capacity quoted for 2011-2012 needs to be considered in light of extreme weather and flooding of that year, which greatly impacted coal export volumes</p> <p><u>Response</u></p> <p>Figures in section 5.3.5 have been checked and the quote "In 2011–12, ports within the Great Barrier Reef Region accounted for 76 per cent of the total throughput for all Queensland ports combined. This amounted to 199.8 million tonnes of imports and exports through the Region" is correct.</p> <p>The text in section 5.3.5 has been given a qualifier in relation to the extreme weather of these years.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E220</i></p>	ADD-39
<p>Lack of consultation and engagement with Port industry during the preparation of this report is raised and it is pointed out.</p> <p><u>Response</u></p> <p>The report was released for public consultation from 1 November 2013 to 31 January 2014, a total of 13 weeks. Methods of consultation included a dedicated web page that had public surveys and all relevant documentation available to download; six community information sessions around the Queensland coast; Indigenous stakeholder and Marine Park Advisory Committee workshops; six directed presentations (including one to the resource industry stakeholders, organised by Rio Tinto on the 22nd of November, 2013; and a large number of publicity campaigns in newspapers and social media. The Authority disagrees with the perception that there was a lack of consultation.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E215</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Visual impacts of coal ports have been completely ignored in the reports.</p> <p><u>Response</u></p> <p>There are only two existing ports within the Great Barrier Reef Marine Park; being the Port of Quintell Beach and the Port of Cooktown. The other ten Great Barrier Reef ports (including the coal ports) are located in areas that were excluded from the Marine Park. The Authority acknowledges that these 'excluded' ports are still within the confines of the Great Barrier Reef World Heritage Area and as such the Authority works closely with the Federal Department of the Environment to address all possible impacts on matters of national environmental significance.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E248</i></p>	
<p>The process to develop and implement the findings of the draft Strategic Assessment must acknowledge and ensure that existing and approved port development and operational rights are respected, and that any consideration of changes to those rights does not occur without proper consultation.</p> <p><u>Response</u></p> <p>Any process to implement the findings of the Strategic Assessment will undergo rigorous and robust stakeholder engagement and consultation</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E228</i></p>	
<p>Impacts from the Gladstone Harbour dredging projects has occurred due to a systemic failing in monitoring, managing and reporting allowed the Gladstone port development to deliver massive negative impacts on the Great Barrier Reef World Heritage Area. It is unclear how much the Gladstone Healthy Harbour Partnership knew about impacts. Conditions and regulations may not always be effective at preventing environmental harm, particularly if the proponent is prepared to be negligent in their approach to the environment. The finding that there is a very high water quality risk at Gladstone is not consistent with the findings of PCIMP http://www.pcimp.com.au/ or the Gladstone Healthy Harbour Partnership http://www.ehp.qld.gov.au/gladstone/water-quality.html. An explanation for this discrepancy is required.</p> <p><u>Response</u></p> <p>The findings of the Australian Government's Independent Review of the Port of Gladstone do not support the comment that impacts from the Gladstone Harbour dredging projects has occurred due to a systemic failing in monitoring, managing and reporting, which allowed the Gladstone port development to deliver massive negative impacts on the Great Barrier Reef World Heritage Area.</p> <p>The panel determined that the environmental health of the Port of Gladstone has been variable over recent years. The fish health issues in 2011 were alarming to many stakeholders and drew substantial attention. There is no clear single cause for the conditions observed in 2011. They are likely to be the result of multiple pressures, in particular extreme weather events and associated overcrowding from fish that moved into the area after overspilling Awoonga Dam. These conditions have improved since 2011. Sampling and analysis of sediment and water demonstrates that the dredged sediments are not contaminated to levels that would lead to toxicological effects.</p> <p>Neither the Gladstone Healthy Harbours Initiative nor the Port Curtis Integrated Monitoring Program have made any comments on the potential causality of the fish health issues observed in 2011.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E252; E192</i></p>	
<p>There is a need for better understanding of dredge plume footprint dispersal and relevant impacts over time with the use of the most up-to-date scientific evidence and modelling, including modelling and monitoring from existing dredge campaigns (positive and negative). Refer SKM report. Any limitations with modelling used must be identified. The interpretative statement that is associated with this report states that. <i>"Due to the limitations associated with this study, modelling results should not be used to determine actual dredge material movement or be used to infer where sediment could be dispersed and deposited or its ecological significance"</i>.</p> <p><u>Response</u></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The Authority acknowledges that there is considerable debate around the scientific evidence and interpretation about the biophysical effects of dredging and offshore spoil disposal and the cumulative effects of these activities on the Great Barrier Reef Region. To address this issue, the Authority and Australian Institute of Marine Science (AIMS) have jointly commissioned a dredge synthesis project. It will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef region. The Expert Panel will develop and publish a synthesis statement outlining what is known, what (if anything) is scientifically contentious, and what are the key gaps in our knowledge. A number of key experts have been invited to participate, with the aim of bringing together a broad range and diversity of skills, experience and perspectives. The project will provide greater clarity about the effects of dredging, the modelling of those effects, and the knowledge gaps, and will provide a stronger foundation for development of best practice guidelines and for the assessment of proposed developments that involve dredging. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 329, 398, E123, E130, E169, E194, E215, E220, E228, E248, E248</i></p>	
<p>The basis for the Very High Effect classification of dredging impacts to Indigenous and cultural heritage values requires further verification. The level of risk ascribed in the Strategic Assessment have not been previously raised with ports by regulators or Traditional Owners.</p> <p><u>Response</u></p> <p>When asked by the Authority, Traditional Owner group's statements all agreed with the "very high effect" rating. As such, this rating will not be changed. Some background statements upon which this rating rests include:</p> <ul style="list-style-type: none"> • Traditional Owners often talk of the impact of dredging – Port Curtis Coral Coast and Juru Traditional Owners in particular see these impact in their sea country. • The Great Barrier Reef Lagoon has only been inundated in the last 8-12,000 years and there have been various rises and falls in sea level since then. As Indigenous history extends well beyond 40,000 years, all parts of the sea floor of the Great Barrier Reef Lagoon are considered to have been utilised by Traditional Owners when it was in fact dry land. • Traditional Owners talk of impacts to story lines, song lines, story places, marine totems, and other now submerged sites of significance such as burial sites, artefact sites, fish traps and so on. • Impacts on water quality due to dredging impact traditional marine resources which form one part of overall Indigenous cultural values for an area of sea country <p>Additional information in this matter can be obtained from the Indigenous Partnerships section within the Authority.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E220, E194, E215</i></p>	
<p>The difference in risk, scope and impact of different risk for capital and maintenance dredging and a distinction of this to riverine inputs needs to be clarified and made more explicit. "Annual maintenance dredging is based on long shoredrift natural coastal processes and is therefore the movement of uncontaminated material within the same system. Capital dredging is more intense, less frequent and required for the economic growth of Queensland and Australia. Both are highly regulated".</p> <p><u>Response</u></p> <p>Table 10.3 separates the projected risks of capital and maintenance dredging as well as dumping and resuspension of dredge material with a minor consequence for maintenance and a moderate consequence of capital dredging. This can easily be compared to the major and catastrophic projected risks that are associated with increased freshwater inflow, nutrients in relation to riverine input and sediments from catchment run-off in the same table.</p> <p>While maintenance dredge material may be affected by longshore drift natural coastal processes, putting it somewhere new may disrupt these natural movements and get sediment where in the past there was no impact.</p> <p>Please refer to response above on necessity of capital and maintenance dredging.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398, E126, E173, E194, E200, E215, E228, E248</i></p>	
<p>There is not enough emphasis placed on existing regulations which already mitigate impacts from dredging and dredge spoil disposal, including international conventions. The practices of dredging and disposal have been improved to minimise impacts.</p> <p><u>Response</u></p> <p>The section states that “Disposal sites may include ocean disposal sites, nearshore reclamation areas and land-based receiving facilities. The National Assessment Guidelines for Dredging¹⁸⁶ require an evaluation of alternatives to ocean disposal including the environmental, social and economic impacts of each disposal option.” The national Assessment guidelines for dredging include Australia’s obligation to international conventions such as the London Protocol. As this section does not elaborate on the details of the listed impacts, further elaboration on this subject is not deemed necessary at this point. It is acknowledged that dredging and disposal have been improved.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194, E215, E220</i></p>	
<p>Inconsistent/outdated data or reference material used to demonstrate impacts from dredge spoil disposal. Incomplete modelling used.</p> <p><u>Response</u></p> <p>The Authority recognises the debate and community concern surrounding dredge spoil disposal within the World Heritage Area as well as the lack of region specific data, and has therefore instigated a joint initiative between the Great Barrier Reef Marine Park Authority and the Australian Institute of Marine Science which will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef region.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E169, E215, E248; E220; E194</i></p>	
<p>The Strategic Assessment refers to 3Mm³ of silt contribution to the Great Barrier Reef Marine Park as a result [of] capital dredging proposed at Abbot Point and this is defined as being equivalent to the discharge of a year from the Burdekin River. This statement needs to be revised and put into context as whilst most of the material discharged from the Burdekin is fine silt, only 20% of the capital dredge material is silt (with the other 80% made up of gravels, sand and consolidated material).</p> <p><u>Response</u></p> <p>The particle size distribution of the material to be disposed at Abbot Point consists of 7.7% gravel, 54% sand, 19% silt and 20% clay. That is a total of 39% fine silts.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E220</i></p>	
<p>Develop and implement a joint Commonwealth and Queensland Government policy on dredging and spoil disposal and for it to apply to the Great Barrier Reef World Heritage Area. The development of a policy should not be deferred to the processes and outcomes of the Queensland Ports Strategy.</p> <p><u>Response</u></p> <p>The Authority is working closely with all levels of government and port corporations to reduce the amount of dredge material being placed within the Marine Park and we will continue to do this.</p> <p>The Authority supports the Minister’s view — and that of the wider community — that we should work towards reducing the quantity of dredge material being placed in the Marine Park.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>This is consistent with the Authority's position that we should limit port development to existing ports. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	
<p>Deal with the inconsistencies in risk of dredging: For example: The charts at these locations place the risks of dredging on biodiversity as: Chapter 6 p.91 very high Chapter 8 p.28 low effect Chapter 10 p.12 medium risk</p> <p><u>Response</u> These figures refer to three different gradings, each derived from a different method. However, it is noted that the 'Very high effect'- grading of Dumping and re-suspension of dredge material should be graded as 'High effect' in table 6.11. This has been amended. Please refer to section 9.2. A High effect in Table 6.11 chapter 6 means this was the highest impact grading given to this activity in tables 6.6 - 6.7. In this case to habitats such as seagrass, coral reefs and lagoon floors in the affected area. Chapter 8 relates to management effectiveness, hence that grading is 'mostly or partially effective' and relates to management, not risk or impact. Chapter 10 deals with projected risk, and is assessed according to the AS/NZS ISO 31000:2009) standard. Medium risk is given to anything of 'minor' consequence with 'likely' likelihood, as well as 'major' consequence but 'unlikely' likelihood. So can't be directly translated to a grading of the effect of the impact (that is, the consequence rating only).</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 329, 365, E248</i></p>	ADD-90
<p>As there is now an implicit assumption that port expansions are going ahead, and that expansion outside existing areas is only limited until 2022 (REC11), a need to ensure that the damage is minimised is urgently required. The Strategic Assessment and program report need to properly address the cumulative impacts of dredging and spoil disposal over time. Port, dredging and spoil disposal impacts need to be appropriately attributed to declines in coastal and marine environment. The impacts from dredging on inshore coral reefs have not been adequately addressed. The SA must identify the assessment and approval process required for any dredging and disposal.</p> <p><u>Response</u> The Authority acknowledges that there is considerable debate around the scientific evidence and interpretation about the biophysical effects of dredging and offshore spoil disposal and the cumulative effects of these activities on the Great Barrier Reef Region. To address this issue, the Authority and Australian Institute of Marine Science (AIMS) have jointly commissioned a dredge synthesis project. It will convene an expert panel to develop and publish a synthesis statement on the biophysical effects of dredging and offshore spoil disposal on the Great Barrier Reef region. The Expert Panel will develop and publish a synthesis statement outlining what is known, what (if anything) is scientifically contentious, and what are the key gaps in our knowledge. A number of key experts have been invited to participate, with the aim of bringing together a broad range and diversity of skills, experience and perspectives. The project will provide greater clarity about the effects of dredging, the modelling of those effects, and the knowledge gaps, and will provide a stronger foundation for development of best practice guidelines and for the assessment of proposed developments that involve dredging. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 120, 179, 274, 329, 351, E123, E169, E200, E215, E221, E252</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Consider an increase of penalties and fines for shipping infringements.</p> <p><u>Response</u></p> <p>The impacts and risks of shipping and predicted increases in shipping into the future are addressed in the North-East Shipping Management Plan. This plan is currently in draft and being finalised. The draft North-East Shipping Management Plan outlines measure currently in place to manage the safety of shipping in the sensitive marine environments of Australia's north-east region and proposes options to further minimise the environmental impacts of these activities and related risks to the Outstanding Universal Value of the Great Barrier Reef World Heritage Area in the years to come. The development of the North-East Shipping Management Plan is integral to the Reef 2050 Long-term Sustainability Plan for the Great Barrier Reef World Heritage Area due to be completed in June 2015. The North-East Shipping Management Plan has been developed by the North-East Shipping Management Group, taking into consideration a quantitative risk assessment by Det Norske Veritas (DNV) of current control measures and a range of possible future risk mitigation options. The North East Shipping Management Group comprises senior representatives from the following agencies: Australian Maritime Safety Authority (AMSA), Great Barrier Reef Marine Park Authority (GBRMPA), Maritime Safety Queensland (MSQ), Department of Infrastructure and Regional Development, Department of the Environment, Department of Innovation and the Department of Agriculture. The work program associated with the North-East Shipping Management Plan summarises the proposed actions to be taken over the coming years to improve the safety of shipping and protection of the marine environment in the north-east region. Implementation and monitoring will be guided by the North-East Shipping Management Group, related working groups and key stakeholders.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E007, E183</i></p>	
<p>Both the marine and coastal assessments would benefit from some analysis of external/offshore processes/influences. Influence such as the substantial LNG pipeline being constructed in the Gulf of Papua and the expansion of the Port of Port Moresby will lead to increased shipping traffic through northern areas should be mentioned. Catastrophic incidents associated with these activities could significantly affect the far northern section of the Great Barrier Reef World Heritage Area. .</p> <p><u>Response</u></p> <p>See response to above.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398</i></p>	
<p>The impact of algal blooms and invasive species which may be caused by dredge spoil disposal and use of dredge equipment in the Marine Park are not adequately considered.</p> <p><u>Response</u></p> <p>The Authority recognises the risks of invasive species being introduced into Australian waters by dredge equipment. It is a standard condition of approval that proponents develop and implement a marine pest monitoring program.</p> <p>Currently the National Assessment Guidelines for Dredging do not require extensive nutrient testing on material to be dredged. As for marine pests on dredge equipment, this is usually addressed in a condition of a sea dumping permit.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 378</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Tourism</p> <p>Introduce information briefings by commercial enterprises for tourists utilising the reef. Include information such as leave no trace message, history and challenges of the Great Barrier Reef.</p> <p><u>Response</u></p> <p>The Authority supports tourism operators to provide quality interpretation about the Great Barrier Reef World Heritage Area and its outstanding universal value. This includes interpretation on its biodiversity and heritage values, ways to conduct activities like snorkelling to best practice standards (responsible reef practices) and ways to encourage visitors to become stewards of the Reef both in the water and back at home. In addition, High Standard Tourism operators must meet ECO Certification standards relating to economic, environmental, and social sustainability. This includes standards for interpretation.</p> <p>The Program Report proposes supporting best practice and stewardship and specifically working with the tourism industry to strengthen training and the development of educational material to promote presentation of the Reef.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 265</i></p>	
<p>Introduce moorings for ships used for commercial tourist purposes in congested localities.</p> <p><u>Response</u></p> <p>This is already in place and forms part of the Authority's foundational management. To ensure anchoring by ships over 70 metres is sustainable, the Authority has provided 32 designated cruise ship anchorages throughout the Marine Park for use by cruise ships over 70 metres in length, with 15 being within the popular areas offshore Cairns and the Whitsundays. The anchorages are available for booking up to three years ahead and usually have a limit of one cruise ship/large vessel at any one time. The cruise ship industry has not indicated an interest in additional access through moorings. Like other tourism operators, cruise ship operations could apply for a mooring at a desirable location and the Great Barrier Reef Marine Park Authority would assess this application against the criteria in the Regulations. Any costs of public advertising, and if a permission is granted, costs for installation and maintenance of the mooring would be the responsibility of the cruise ship permittee.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 265</i></p>	
<p>The reports lack the required detail to deal with the pressures on existing infrastructure for recreational boats. Need more public moorings in the Cairns region to minimise anchor damage and promote reasonable use with a review of time limits set for the use of public moorings.</p> <p><u>Response</u></p> <p>Over 120 public moorings have been installed in the Marine Park by The Authority, catering for a range of vessel sizes and wind strengths. Thirty-six of these are located in the Cairns Planning Area. The maintenance of these moorings is funded and conducted through the Field Management Program. All public moorings are available for overnight use. All public moorings have a time access limit on day use to promote reasonable use. Most moorings have a limit of either 2 or 4 hours. This has been introduced to ensure fair and equitable use of the moorings. The Cairns Planning Area also uses other strategies to minimise anchor damage including 87 reefs which have at least one identified reef anchorage where vessels are encouraged to anchor and seven no-anchoring areas delineated by reef protection markers.</p> <p>The final Program Report highlight activities that enhance protection of the Great Barrier Reef ecosystem such as installation of public infrastructure to protect fringing reefs.</p> <p>No further action has been taken in relation this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E126</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Greater planning and scheduling of tour boats to areas subject to high attendance is required.</p> <p><u>Response</u></p> <p>The Authority manages use of popular areas such as Cairns and Whitsunday Planning Areas through a number of mechanisms. Firstly, caps on the number of tourism operations who anchor daily in these areas are in place. Generally, other tourism operations may only operate 50 days a year to these planning areas and the Great Barrier Reef Marine Park Authority has set a daily limit on the total number of bookings taken on any one day for each planning area to manage cumulative use. In addition, there are booking limits to sensitive locations such as Green Island and Low Isles. Where conflicts of use arise, the Authority can and has developed site plans separating those uses (for example, areas within the location may be set aside for anchoring or for mooring). There has been no request from the tourism industry for greater management of scheduling.</p> <p>The final Program Report proposes a management framework based on outcomes and targets. Not only will this framework help to identify the need for greater management action at sites receiving unsustainable cumulative use, it will also help to manage multiple uses.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 265</i></p>	
<p>Consider the introduction of permanent Park Rangers at congested points.</p> <p><u>Response</u></p> <p>This is a question of resources and funding. Compliance and enforcement of Marine Park rules is funded on a 50:50 basis by the Australian and Queensland governments as part of the joint field management program established under the Great Barrier Reef World Heritage Area Intergovernmental Agreement. The last review of base funding occurred in 2011 when it was noted that the current levels of activity will progressively decline under existing resource levels. Given the projected increasing levels of use, outcomes of the draft strategic assessment report, and independent review recommendations (particularly in relation to illegal activity) the Authority considers there is justification for seeking a further review of funding for the joint field management program.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 265</i></p>	
<p>Fishing (commercial and recreational)</p> <p>The Authority appears to be favouring recreational and Indigenous sectors. Commercial fishers would be horribly disadvantaged should the idea of recreational fishing for tilapia gain traction. Start showing support for commercial fishermen.</p> <p><u>Response</u></p> <p>The Authority does not understand this comment. There is no reference to 'tilapia' in either the Strategic Assessment or the Program Report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 219</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Reference is made to the estimated quantity of fish taken by the recreational sector. Here a reference needs to be made to the perceived ratio of take in the Great Barrier Reef Region as a proportion between recreational and commercial. For instance coral trout is 1 : 10 (80t : 780t) with similar ratios for many other species.</p> <p><u>Response</u></p> <p>Chapter 5 and Chapter 6 contain quantity of fish taken by both sectors. Furthermore it is clearly stated in chapter 5, under impacts, that commercial fishing is the largest extractive use of the Region and that the total estimated catch in 2011 was 8100 tonnes. The Authority sees no reason to be more specific in the comparison.</p> <p>No further action has been taken in response to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>Total recreational fishing expenditure needs clarification and comparison made to the relevant commercial sector. Note: The Queensland East Coast Inshore Finfish net fishery generates \$22.4 million dollars annually from the sale of 5517 tonnes of fish, however this fishery is exempt from the GST. By contrast, the 770,000 strong recreational sector in Queensland has been reported via Fisheries Queensland studies to generate \$562 million dollars annually and would therefore collect \$51.1 million dollars in GST for the Government. But, this expenditure figure may be grossly underestimated when compared to recent New South Wales (University of Wollongong) reports of their estimated 700,000 recreational fishers expending \$1.6b and when direct employment is taken into consideration, the benefit to their economy is \$3.5b. Note: the expenditure and GST that the recreational fishing industry in Queensland generates would increase substantially if the Government accepted calls for net free areas and/or recreational only fishing areas near population centres, revitalising the healthy pursuit.</p> <p><u>Response</u></p> <p>Under the 'Great Barrier Reef Intergovernmental Agreement' between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management". Expenditure and cost analysis of all fisheries will come under consideration.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>Bilateral or co-management approach to commercial fisheries should be considered including a re-introduction of the East Coast Inshore Fin Fish Review and Plan. If this is not workable, the management should be passed to a single authority with Great Barrier Reef Marine Park Authority permits for commercial fishing operations. Overharvesting needs proper assessment and to be specifically addressed in the Strategic Assessment.</p> <p><u>Response</u></p> <p>Under the 'Great Barrier Reef Intergovernmental Agreement' between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management".</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E126, E181, E183, E201</i></p>	
<p>Abundance for most target and bycatch species has declined and needs to be adequately addressed as Fisheries Queensland is not dealing with it. This may be through management by some trilateral agreement, that is Fisheries Queensland, Great Barrier Reef Marine Park Authority and stakeholders, or via a Great Barrier Reef Marine Park Authority permit system. This should be highlighted as a key reform agenda recommended by this Strategic Assessment and further expanded in the Reef 2050 Long-term</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Sustainability Plan.</p> <p><u>Response</u></p> <p>Under the 'Great Barrier Reef Intergovernmental Agreement' between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management".</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>The Strategic Assessment is missing an adequate discussion on abundance of various fish species. This is a quality directly relevant to vitality and therefore to the health of the Great Barrier Reef, and, a quality of national importance that ought to be a key driver of investigations.</p> <p><u>Response</u></p> <p>The Strategic Assessment uses available scientific information on the abundance of fish.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>I believe impacts to fish spawning aggregations has a higher previous/historical impact than shown in Chapter 6, and has a much higher potential for future impact than shown in Chapter 10. Impacts to fish spawning aggregations should be considered at least as high a risk as extraction - death of discarded species. Both present real and very high risks to fisheries and ecology of the Great Barrier Reef. Might fish spawns also be considered as "spectacular natural phenomena" as per Criterion xii of the World Heritage listing?</p> <p><u>Response</u></p> <p>This is noted, however the data shown is based on the best publicly available data as of June 30, 2013. The Queensland Government has committed to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management. The issue of latency and risk of fish spawning aggregations will be considered.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181, E192</i></p>	
<p>Latency in trawl (and other) fisheries is a threat which must be addressed.</p> <p><u>Response</u></p> <p>Under the 'Great Barrier Reef Intergovernmental Agreement' between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management".</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The issue of fisheries management has not been adequately addressed in either the coastal or marine Strategic Assessment documents. Various forms of extraction are rated as medium to high risk but these impacts are not comprehensively addressed in the proposed program. We support the recommendation to adopt regionally based cooperative approaches to protect biodiversity hotspots, and note there are no relevant recommendations in the coastal zone assessment.</p> <p><u>Response</u></p> <p>Under the 'Great Barrier Reef Intergovernmental Agreement' between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management".</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E130; E126</i></p>	
<p>Past activities. - The over allocation of commercial fishing permits/licenses and or endorsements resulting in overharvesting and overcapacity should be included in the section 'commercial harvest'. Consider these data: number of registered trawlers in the 1980's was more than 1000, now it is down to 150; net catch in 1998 was more than 1200t now it is 341t; crab: 1995 approximately 1000t now approximately 440t; trout 2001 more than 2100 tonnes, now 750 tonnes. There can be no question that these are legacy issues, and they should be identified as such, and adequate space provided in the explanations following to show the numbers. They are important.</p> <p><u>Response</u></p> <p>Past over allocation of commercial fishing licences is an important issue and one that is recognised by Fisheries Queensland. It should be addressed in their Strategic Assessment.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>Section 5.4.4 under "Impacts" notes that survival rates of fish captured and released during recreational fishing varies. This statement is speculative without providing data to support the statement. Are the data available and, if so, why has it not been presented?</p> <p>The figures relating to bycatch are misleading and the percentage of target catch caught should represent a percentage of the total catch. Stating that bycatch in the trawl fishery can comprise hundreds of species, many of which are caught very infrequently is very misleading when clearly the bulk of the bycatch species caught are extremely predictable, and that is what should be stated. The Halliday report is not an accurate representation.</p> <p><u>Response</u></p> <p>The text in section 5.4.3 has been amended to clarify the issue of bycatch species. Please refer to section 6.2. The Authority sees no reason to disregard the Halliday report, however it is not cited in relation to the by-catch paragraph in section 5.4.3.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	ADD-42

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The Strategic Assessment has rated fishing spawning aggregations as a “high” risk, yet the program report does not directly address the impact.</p> <p><u>Response</u></p> <p>Under the ‘Great Barrier Reef Intergovernmental Agreement’ between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a “wide-ranging review of fisheries management”.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>There are many more species that should be under ‘uncertain status’ such as fingermark, barramundi, triple tail, other mackerel species, queenfish, coastal trevally species and perhaps gar.</p> <p><u>Response</u></p> <p>While the Authority recognises the limitation of this approach, all bony fish are considered together under the Strategic Assessment. There is a suggestion to divide them into harvested and non-harvested bony fish for future assessments.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>Program should commit to researching a way for commercial fisherman to stop the bycatch, not just reduce it.</p> <p><u>Response</u></p> <p>Significant progress has already been made in reducing bycatch, but it is not realistic to expect that it can be eliminated across all forms of fishing. The Authority focuses its bycatch reduction efforts on species of conservation interest as they are at greatest risk from unsustainable take. We continue to work with fisheries managers and fishers to reduce bycatch.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 89</i></p>	
<p>Complimentary closures and zoning have negatively impacted commercial fisheries without providing compensation or options to minimise impacts to business. Review the complimentary zones.</p> <p><u>Response</u></p> <p>The complimentary zones are part of the Queensland Government’s ‘Great Barrier Reef Coast Marine Park’ and are not under the jurisdiction of the Authority.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 219, 340</i></p>	
<p>Equal rules and compliance for everyone particularly traditional hunting. Indigenous fishing can take place with commercial apparatus (nets) during spawning closures and in green zones. Traditional hunting needs stronger regulation and compliance monitoring in general and the Great Barrier Reef Marine Park Authority needs to ensure it is done in a traditional way, not using modern technologies. New technologies mean that it is easier to hunt than it used to be, so the impact of traditional hunting is no longer the same. Traditional hunting hides substantial illegal gill netting and a commercial trade in butchered protected species. This reflects once again on management ineffectiveness</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>and needs to be addressed. Legislative framework accompanied with suitable penalties and monitoring should form part of the recommendations of this Strategic Assessment to stamp out the illegal harvesting and trade of dugong and turtle.</p> <p><u>Response</u></p> <p>The <i>Native Title Act 1993</i>, s211 acknowledges Traditional Owners' inalienable rights to access marine resources for personal, domestic and non-commercial communal use. Traditional hunting is considered to be traditional no matter what method is used as it is the "purpose" of the hunt that is considered rather than the method. Australian Law Reform Commission Report 31 refers.</p> <p>Traditional Owners can be prosecuted as with any other person if they break any of the Laws of General Application and penalties have been tripled. They cannot be penalised for practicing their traditional or customary rights which are legal under the <i>Native Title Act 1993</i>.</p> <p>Great Barrier Reef Marine Park Authority's Compliance Officers work very closely with Traditional Owners and Communities along the length of the Great Barrier Reef and are achieving excellent results. Compliance is more than just a big stick approach, it entails, education, soft compliance and enforcement.</p> <p>Traditional Use of Marine Resources Agreements (TUMRAs) are formal agreements between Traditional Owners which outline how marine resources are to be used taking into account traditional lore and custom. The agreements can then be jointly accredited under the Great Barrier Reef Marine Park Regulations 1983 and the Great Barrier Reef Coast Marine Park Zoning Plan 2004 (Queensland legislation).</p> <p>Once accredited, the TUMRA allows activities to be conducted 'as of right' under the Great Barrier Reef Marine Park Zoning Plan. Amongst other things, a TUMRA must describe the activities to be undertaken; the animal species to be harvested and the number of any protected species; and the management arrangements to achieve implementation including the role of the Traditional Owner group in ensuring compliance.</p> <p>There are currently six accredited TUMRAs. The Great Barrier Reef Marine Park Authority is also a party to one Marine Indigenous Land Use Agreement. Ten other Traditional Owner groups are expressing interest in developing TUMRAs. Funding for TUMRA development and support is provided by the Reef Rescue Land and Sea Country Indigenous Partnerships Program under Reef 2050.</p> <p>TUMRAs are an effective mechanism for managing the take of dugong and turtle. A TUMRA will identify the maximum level of hunting for a Traditional Owner group, who the hunters are and the cultural rules by which they can hunt. This then allows illegal hunting to be identified and dealt with.</p> <p>The agreed level of take is often not reached each year. In fact, many of the TUMRA groups fall well below their maximum numbers of take, and in several cases Traditional Owners have self-imposed a moratorium on hunting under their TUMRA while pressures on marine turtles and dugong remain high.</p> <p>While Traditional Owners can take dugong and marine turtles (regardless of any other agreement) if they choose to exercise their rights under S211 of the <i>Native Title Act 1993</i>, in practice, a TUMRA limits take.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 219, 396, E181, E183</i></p>	
<p>Management of recreational and spearfishing could be improved with a permit system, education, research and compliance commitments. There are currently too few limits on recreational fishers. Yellow zones need to be reviewed to ensure management of commercial and recreational fishing must be proportionate to the risk and backed by statistically robust, onsite studies. Yellow zones could be made 'no commercial harvest, recreational use only'. There needs to be a clear distinction in the documentation between the sectors.</p> <p><u>Response</u></p> <p>Under the 'Great Barrier Reef Intergovernmental Agreement' between the Commonwealth and the State of Queensland, the Queensland Government is responsible for the management of fisheries in and adjacent to the Great Barrier Reef World Heritage Area. The Queensland Government has undertaken to develop further its consideration of fisheries management in its Strategic Assessment and Program Report. On 6 March 2014, the Queensland Fisheries Minister announced a "wide-ranging review of fisheries management". The purpose of 'conservation park zones' ("yellow zones") is to provide an intermediate level of biodiversity protection between 'national park zones' and</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>'habitat protection zones', based on restrictions to gear, not to separate commercial from recreational use. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 125, E181, E200, E201</i></p>	
<p>Recreational and commercial fishing have small economic value within the Great Barrier Reef, when compared with tourism, that has the highest economic value, and tourism is increasing. Tourism is non extractive and aids the protection of the reef through education, whereas fishing is extractive and removes animals, which adds to the destruction of the reef. In terms of the economy, we need to be reducing fishing, and increasing tourism.</p> <p><u>Response</u> The relative economic values of different industries are identified in the Strategic Assessment. It is the role of the Authority to ensure use is sustainable and to resolve conflicts of use, but it is not the agency's role to promote one form of economic activity over another. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 396</i></p>	
<p>Recreational and commercial fishing are not adequately covered in the Strategic Assessment and program report. Need to include consideration of the sustainability of gill netting practices and impacts on dugong and turtle.</p> <p><u>Response</u> The impacts of netting on dugong and turtle are adequately considered in section 6.4.4 (Extraction-death of discarded catch). No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E007, E227, E200</i></p>	
<p>If fish extraction is an important driver for abundance, Great Barrier Reef health, as well as socioeconomics, then it has to be vigorously investigated and where problems are found, they need to be addressed.</p> <p><u>Response</u> Fish extraction, and its effects on fish abundance, is managed through Marine Park and fisheries management arrangements. Both are managed in accordance with the principles of ecologically sustainable use. While great progress has been made in improving the ecological sustainability of fish extraction over the last 20 years, some concerns remain. The Great Barrier Reef Marine Park Authority remains committed to addressing those concerns in partnership with the Queensland Government. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>Implement dugong tracking program around Abbot Point to determine the impacts of commercial fishers on dugong distribution.</p> <p><u>Response</u> Dugongs are found at low density only in the vicinity of Abbot Point and the Great Barrier Reef Marine Park Authority does not consider that information of value to Marine Park management would be provided by such a study. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E201</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The suggestion of the Vessel Monitoring System should not just be applied to the commercial sector, it could also be considered unnecessary for the commercial sector as it is an invasion of privacy.</p> <p><u>Response</u></p> <p>The Authority is proposing the implementation of vessel tracking for commercial fishing vessels because illegal commercial fishing is considered to have a higher ecological risk than illegal recreational fishing and 'repeat offenders' are more common in the commercial sector. Vessel tracking is a key deterrent that aims to allow most commercial fishermen to remain voluntarily compliant without concern that a significant portion of the industry is repeatedly offending and gaining commercial advantage. This approach has worked well in the Queensland trawl industry and Commonwealth fisheries. Fishing occurs in public waters and exploits a public resource; monitoring of such activity is not an invasion of privacy.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 219, 247, 353, E201</i></p>	
<p>We wish to refute the statement "that traditional use of marine resources being undertaken according to customs and traditions are considered only to be minor." The increase of traditional netting, particularly in waters closed to commercial netting in the upper reaches of the Burdekin River and its tributaries is a major concern. These areas are considered as fish habitats and buffer zones for barramundi breeding stock where the fresh water meets the salt. There is a strong belief by commercial fishers that allowing traditional netting in these areas is impacting on sustainability and the local commercial catch. It is of deep concern to licenced fishers that the marine resource is under threat from the issuing of General Fisheries Permits to traditional fishers with special conditions. In particular, allowing the use of large gill nets without due consideration to the risk associated to interactions with dugong and turtles by allowing use of these nets by "untrained – unlicensed net fishers" off beaches and headlands along the North Queensland coast line where these protected species frequent.</p> <p><u>Response</u></p> <p>This issue is outside the area under consideration and falls under the jurisdiction of Fisheries Queensland. However, the Authority's Compliance Officers work very closely with Traditional Owners and Communities along the length of the Great Barrier Reef and are achieving excellent results. Compliance is not just about penalties, it entails education, soft compliance and enforcement. Traditional or customary fishing is only a minor impact. Illegal fishing or using illegal apparatus is another matter entirely.</p> <p>No further action has been taken in regards to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E201</i></p>	
<p>The Federal Minister for the environment must pay close heed to Wildlife Trade Operation permits and use legislation to intervene in some of the most obvious species depletions.</p> <p><u>Response</u></p> <p>The issue of Wildlife Trade Operation (WTO) permits fall outside the jurisdiction of the Authority. However, it frequently works with fishers and commercial and recreational fisheries science and management peers in the Queensland and Australian Governments on fishery Environment Protection and Biodiversity Conservation Act WTO accreditations.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Recreation

The issue of the impacts of boat strikes on turtles and dugong has been raised during environmental impact statement processes for coastal developments in and adjacent to the Great Barrier Reef World Heritage Area/Great Barrier Reef Marine Park as a potentially significant issue. However, there is little definitive information on the potential significance of this issue in relation to the outstanding universal value of the World Heritage Area. Therefore, it would be appropriate to explore this issue in more detail. Recently approved projects involving boating activity (for example LNG plants on Curtis Island, the Great Keppel Island revitalisation project) have been given conditions restricting boat speed to 6 knots in areas where dugong and turtle might be present. Is there any information on the effectiveness of this mitigation measure?

Response

Documented evidence regarding boat strike impacts on marine wildlife is available in stranding records collected by the Queensland Marine Wildlife Stranding Program. The Great Barrier Reef Marine Park Authority Position Statement on conservation of dugongs in the Great Barrier Reef Marine Park (2007) identified reducing the number of dugongs killed or injured by boat strike as a priority action. The Authority recommends that boaters should keep a good lookout on the water, avoid shallow seagrass meadows and if shallow seagrass meadows cannot be avoided, speed should be reduced to below 10 knots. Voluntary vessel transit lanes and suggested speed restrictions have been established in the Hinchinbrook Plan of Management. In addition, legislative go slow areas have been established in Moreton Bay and Hervey Bay to aid in the protection of dugong and turtle in areas identified as their prime habitat. However, it has been documented that go slow areas often have high rates of non-compliance.

Hodgson (2004) observed that only boats that were travelling above planing speed were observed running over dugongs, while dugongs were always observed moving away from the path of boats travelling at below planing speed. The distance of the flight threshold for dugongs remains constant regardless of boat speed and the speed of an approaching boat determines the time dugongs have to evade the boat. It was identified that speed is the main factor affecting the risk of boat strikes. Once struck by a boat, the probability of an animal being seriously injured increases as boat speed increases. The author concluded that the most obvious management action is to implement speed restrictions.

Hazel and Gyuris (2006) identified through stranding data that the majority of vessel-related records came from the greater Moreton Bay area, followed by Hervey Bay and Cleveland Bay. Hazel et al. (2007) identified that the proportion of turtles that fled to avoid the vessel decreased significantly as vessel speed increased, and turtles that fled from moderate and fast approaches did so at significantly shorter distances from the vessel than turtles that fled from slow approaches. The results implied that vessel operators cannot rely on turtles to actively avoid being struck by the vessel if it exceeds 4 km h⁻¹. As most vessels travel much faster than 4 km h⁻¹ in open waters, the authors inferred that mandatory speed restrictions will be necessary to reduce the cumulative risk of vessel strike to green turtles in key habitats subject to frequent vessel traffic.

No further action has been taken in response to this comment.

Public submissions that referred to this issue: E192

The impact of disturbance to avifauna roosting, foraging and nesting behaviours from recreational activities requires more discussion.

Response

Various peer reviewed publications document that human disturbance can be detrimental to roosting and nesting coastal birds. The Vulnerability Assessments in the Great Barrier Reef for Offshore and Foraging Pelagic Seabirds and Inshore and Coastal Foraging Seabirds indicate there could be high degree of exposure to impacts from tourism and recreational use in relation to disturbing coastal birds. To address impacts at coastal bird roosting and nesting islands, there are currently statutory measures in place under Commonwealth and State legislation. Measures include statutory seasonal closures during critical nesting periods and speed restrictions in waters adjacent to some sites. There are also conditions placed on Marine Parks Permits and Commercial Activity Permits to manage potential impacts on roosting and nesting coastal birds. Programs are also in place to manage introduced flora and fauna at coastal bird roosting and nesting islands to maintain suitable roosting and nesting habitat for coastal birds.

Foraging areas for coastal birds range over large distances from coastal, inshore habitat to offshore, pelagic areas. There are currently no specific sites set aside to protect foraging grounds for coastal birds apart from the benefits that would be available through Marine National Park (Green) Zones. Mainland roosting and nesting sites for coastal birds are afforded some protection through various Council and State provisions. The seabird vulnerability assessments identify that actions should be taken. An action recommended to address vulnerabilities includes exploring spatial and temporal management options that enable the protection of known important seabird forage-fish resources and trophic interplays (such as large predator fish driving prey species to the surface of the water), especially where they overlap with commercial or recreational

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>fishing use. The Field Management Program currently supports a project that aims to assist in the management of seabird populations of the Great Barrier Reef (GBR) and greater Coral Sea areas by providing information about the foraging locations, behaviour, and success of different species.</p> <p>No further action has been taken in response to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Defence</p> <p>Section 5.4.7 oversimplifies the current lack of guidance in relation to seismic activities and overlooks detailed mitigation measures already employed by Defence such as undertaking any activities that require extensive use of sonar (such as anti-submarine warfare) in the Coral Sea rather than the Great Barrier Reef Marine Park.</p> <p><u>Response</u></p> <p>As the use of sonar is not an activity that currently occurs in the Marine Park, it is not taken into consideration in under “Activities in the region”. Section 5.4.7 states ongoing operational activities in the Region, the additional support given by the Defence Force and the limited area which the activity occurs in. As the impacts of defence activities are only minor, the Authority does not see any benefit of further elaborating this section.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E132</i></p>	
<p>The potential impacts from marine pests, discharge of sewage, and other waste from defence vessels is adequately managed through quarantine procedures and adherence to The Authority’s protocols. This should be noted.</p> <p><u>Response</u></p> <p>The list of risks is reprinted from the Department of Defence Strategic Environment Assessment report and represents their own assessment of the greatest risks. The section starts with a sentence detailing the adequacy of their management, including a specific mention of the stringent quarantine measures. An amendment to this sentence has been made to further note this commitment. Please refer to section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E132</i></p>	ADD-46
<p>The paragraph relating to Talisman Sabre should quantify potential impacts from the exercises by noting that no such significant environmental impacts have occurred since the commencement of the exercises in 2004.</p> <p><u>Response</u></p> <p>A sentence confirming the lack of significant impact relating to Talisman Sabre has been added. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E132</i></p>	ADD-45

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Management

General comments on management

The effectiveness of the Strategic Assessment is limited by failure to focus on the details of why the plethora of existing legislation, ecological information, asset mapping and works programs has not been as effective as should have been in overcoming the decline in catchment condition and addressing outstanding management issues in the marine park. It was expected that in particular, a detailed review of existing legislation (Foundational management), its associated regulations and compliance with them at all scales, would have been a major investigation. For example in Chapter 8, it is noted that the Authority has the lead role for management within the Great Barrier Reef Marine Park and an advisory or partnership role outside. This fails to say that under the Marine Parks Act, the Authority also has power to regulate or prohibit actions outside the Marine Park that pollute water within the Marine Park. It would have been good to discuss the experience with invoking this power. For what kind of issues has it been invoked? Could it be invoked for others? Has it been invoked sufficiently often and have regulations/powers been sufficiently appropriate from a protection point of view?

It is suggested that the Strategic Assessment be more explicit in how the Authority aims to achieve the management arrangement stated in section 12.3.1 'improving governance arrangements for key development activities' and includes a concrete proposal to review the governance arrangements of the Great Barrier Reef World Heritage Area with a view to developing and implementing world's best practice. There appears to be disconnection between the management of the Marine Park, which is managed largely for its ecological values, and the management of the full range of features and components, both within and outside the Marine Park that contribute to the outstanding universal value of the World Heritage Area. It remains of significant concern that there is no Australian or Queensland government agencies charged with management of the outstanding universal value of the World Heritage Area. Note the Department of the Environment is charged with protection of the World Heritage Area from impacts of development proposals, but not with ongoing management.

Response

Under the Terms of reference for the development of the Great Barrier Reef Strategic Assessment, the Authority was required to assess the effectiveness of its management arrangements to protect the values that underpin matters of national environmental significance within the Region. The effectiveness of Great Barrier Reef Marine Park management was reviewed and assessed by an independent panel including Professor Marc Hockings, Dr Andrea Leverington and Mr Brian Gilligan (Hockings, M., Leverington, A., and Gilligan, B. 2013. Assessment of Management Effectiveness for the Strategic Assessment of the Great Barrier Reef Region. Uniquist Pty Limited, Brisbane). The management effectiveness ratings in the Great Barrier Reef strategic assessment reflect this review.

The Authority recognises the declining condition and trend of many of the values in the Great Barrier Reef World Heritage Area, particularly in the southern section and inshore areas of the Great Barrier Reef. The recommended improvements to the Authority's program and the future commitments identified in the Great Barrier Reef Region Strategic Assessment Program Report aimed at improving management arrangements and improving condition and halting declining value trends in the Great Barrier Reef Region.

The Hockings et al. review and assessment has also considered the powers to regulate outside the Great Barrier Reef Region, noting (page 44) "The Authority has its greatest direct influence on water quality through the Great Barrier Reef Marine Park Act and Regulations (Section 66(2)e of the Act), under which it is illegal to discharge waste into the Marine Park except for some permissible actions. Permitting the discharge of wastewater into the Reef is assessed on a case by case basis, against guideline trigger levels." Section 66(2e) of the Great Barrier Reef Marine Park Act states that regulations may be made "regulating or prohibiting acts (whether in the Marine Park or elsewhere) that may pollute water in a manner harmful to animals and plants in the Marine Park."

Regulation 66(2e) has been used in the regulation of aquaculture discharge to waterways leading to the Marine Park. To implement 66(2e), the Authority developed performance standards to guide the development of a single Australian and Queensland Government accredited environmental assessment process and performance standards for land-based aquaculture developments adjacent to the Great Barrier Reef. The accreditation process only applies to land-based aquaculture facilities that discharge aquaculture waste to waterways leading to the Marine Park (i.e. those not discharging aquaculture wastes. The Australian and Queensland Governments established a single environmental assessment process and performance standards for land-based aquaculture developments adjacent to the Great Barrier Reef designed to meet all Queensland and Commonwealth regulatory requirements while maintaining protection for the Great Barrier Reef. The elements of the accreditation included:

The accreditation of Queensland environmental assessment law under the Great Barrier Reef Marine Park (Aquaculture) Regulations 2000 which removes the need for the additional permits from the Great Barrier Reef Marine Park Authority for land-based aquaculture developments affecting the Marine Park.

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Accreditation of Queensland environmental assessment processes in a bilateral agreement under the EPBC Act.</p> <p>Consideration of case-by-case accreditation where necessary.</p> <p>These elements are underpinned by modifications to the Queensland development assessment systems, technical standards and operational standards.</p> <p>Permits are still required for the operation of aquaculture facilities within the Great Barrier Reef Marine Park under the Great Barrier Reef Marine Park Regulations 1983 (i.e. for cage culture, sea ranching, seawater intake and discharge structures from land-based aquaculture facilities). The assessment of actions under the single accredited process is conducted to the same standards; however, aquaculture proposals affecting the Marine Park may still trigger the EPBC Act.</p> <p>As noted in the Great Barrier Reef Strategic Assessment Program Report recommendation 20, the Authority intends to work with the Queensland Government in developing critical ecosystem thresholds, with a focus on inshore biodiversity and associated ecosystems, to inform management actions on ecosystem condition and halting the trend in declining condition in the Great Barrier Reef World Heritage Area.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 353, E242, E243, E235, E251, E227, E192</i></p>	
<p>The discrepancy between the apparent good management effectiveness and deteriorating state of habitats and species needs to be clarified. For example: The Great Barrier Reef Region Strategic Assessment shows that the management for water quality protection (catchment run-off) is rated as effective or mostly effective, but the outcomes (overall and for biodiversity) were ranked only as partially effective. Given that the Authority has no capacity to take direct action with respect to water quality decline, as this responsibility lies with the Queensland Government and other agencies, how can the Great Barrier Reef Management Authority's management effectiveness be rated as effective? The Strategic Assessment further states that "<i>the Authority's capacity to influence the drivers and activities causing most impacts on the Region relies on its capacity to engage and work collaboratively with its partners and stakeholders.</i>" Both these examples encapsulates a major problem for the Great Barrier Reef Marine Park Authority — it is seen as a regulatory authority, but does not have the regulatory power it needs to shape policy and stop inappropriate development. Especially given the current focus of state government on development, the Authority must be given the power to address issues like catchment run-off and degradation of coastal ecosystems, or the Strategic Assessment process will not be able to meet its goals and the Reef will continue to decline.</p> <p><u>Response</u></p> <p>The Great Barrier Reef Outlook Report 2009 assessed the overall management of activities and issues that occur within the Great Barrier Reef, rather than assessing each individual Authority's management of any particular issue or activity and considers management activities across the Australian and Queensland governments. The Great Barrier Reef Region Strategic Assessment management effectiveness analysis follows that used in the Outlook Report but focuses solely upon the aspects of management undertaken by the Authority as distinct from other agencies. It comprises a qualitative assessment of performance against all six elements of the IUCN Management Effectiveness Framework (context, planning, inputs, processes, outputs and outcomes). As per sections 4 and 8 of the Strategic Assessment terms of reference, the direct, indirect, consequential and cumulative impacts, as well as condition and trend of the values underpinning matters of national environmental significance, are considered. In addition, the assessment considered whether the Authority's Program provides certainty regarding where uses may occur, the type of activities allowed, conditions under which activities may proceed and circumstances where impacts are likely to be unacceptable. Evaluation focuses on the management activities within the Authority's jurisdiction and any joint management arrangements with the Queensland Government (for example, joint permitting arrangements and the Field Management Program). The ratings reflect jurisdictional application on issues that cover integrated ecosystem functions across the terrestrial and marine landscape, lag periods in implementing management actions and ecosystem response, and the effects on ecosystem health from large natural events such as cyclones and flooding.</p> <p>The Authority's primary role in relation to Matters of National Environmental Significance is to advise the Queensland and Australian governments on the measures required to manage and protect the ecosystem health for the Great Barrier Reef Marine Park and World Heritage Area as matters of national environmental significance. To improve the effectiveness of this role, the Great Barrier Reef Marine Park Authority will need include the following in the Long-term Sustainability Plan/Reef Recovery Plan:</p> <p>Information for catchment stakeholders that describes the value of catchment ecosystems in maintaining and restoring the health of the Great Barrier Reef, the current condition of catchment ecosystems and the catchment ecosystem thresholds for planners to apply to planning.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Information to describe the expected biodiversity and desired ecosystem states of the inshore environment.</p> <p>The establishment of indicators and targets to monitor achievement of desired ecosystem states.</p> <p>Support of on-ground actions that prioritise the maintenance, restoration and repair of catchment ecosystems and marine ecosystems to achieve ecosystem health thresholds and desired ecosystem states.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E252, E221, E170, E130</i></p>	
<p>There remains considerable confusion as to the exact geographic boundary between the Coastal and Marine Strategic Assessments as well as considerable inconsistencies between the two Strategic Assessments, ranging from methods and coverage of issues to conclusions drawn. One example of this is the inclusion of beaches in the Marine Strategic Assessment: Section 4.3.1 – technically, the beaches are not in the Great Barrier Reef Marine Park as the Marine Park boundary is to the low water mark.</p> <p>In the discussion on the inscription of the Great Barrier Reef World Heritage Area, it may be worth noting that, at the time of inscription, there was no consideration of existing uses such as existing port development when setting the declared boundaries. Lucas, et al (1997) raised the issue of the arbitrary nature of the boundary (see Section 3 of the reference in particular) and recommended that consideration be given to aligning the boundaries of the World Heritage Area and Marine Park to simplify management arrangements. We suggest that this option be considered to streamline the management of the Great Barrier Reef World Heritage Area.</p> <p><u>Response</u></p> <p>Page 3-5 of the Great Barrier Reef Region Strategic Assessment states: “In the Authority’s agreement with the then Minister for Sustainability, Environment, Water, Population and Communities . . . , the strategic assessment areas is defined as: The Great Barrier Reef Region and areas outside the Great Barrier Reef Region, to the extent that actions in those areas may affect the Great Barrier Reef Region.” As per sections 4 and 8 of the Strategic Assessment terms of reference, the direct, indirect, consequential and cumulative impacts, as well as condition and trend of the values underpinning matters of national environmental significance, are considered.</p> <p>Through the supporting information under the Regional Sustainability Planning C project, the relationships of coastal ecosystems (such as beaches and other coastal habitats) to the Great Barrier Reef Region were considered, and ecosystem functions and processes important to the long term health of Great Barrier Reef ecosystems identified. The Great Barrier Reef Region Strategic Assessment also focuses on the management activities within any joint management arrangements with the Queensland Government, for example, through complimentary planning in the Great Barrier Reef Coastal Marine Park, Field Management Program and joint permitting systems, which apply to the management of beaches and islands in the Great Barrier Reef World Heritage Area.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192, 396</i></p>	
<p>Despite claims [by the State government] that there is a strong and effective partnership between it and the Federal government in terms of the Great Barrier Reef World Heritage Area, recommendations relating to climate change (RECs 35-38) are conspicuous in that they are unmatched by any State commitment. This calls into question the ability of the Great Barrier Reef Marine Park Authority to develop targets in relation to climate change on a ‘collaborative’ basis with the Queensland government</p> <p><u>Response</u></p> <p>In December 2007, Australia ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change, agreeing to limit annual carbon pollution to an average of 108 per cent of 1990 levels during the Kyoto period (2008 to 2012).</p> <p>Australia has also committed to reducing its emissions by between 5 and 15 or 25 per cent below 2000 levels by 2020. The five per cent target is unconditional. The up to 15 per cent and 25 per cent targets are conditional on the extent of international action. On 27 January 2010, Australia formally submitted its full target range to the Copenhagen Accord. The decision to maintain the full range is consistent with the approach taken by other countries.</p> <p>The Australian Government has also committed to a long-term target to cut pollution by 80 per cent below 2000 levels by 2050.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The Great Barrier Reef Marine Park Authority operates through the <i>Great Barrier Reef Marine Park Act 1975</i> which provide for the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region through, among other tools, the establishment of the Marine Park. Other objects of the Act, relate to allowing ecologically sustainable use, encouraging engagement in the protection and management of the Great Barrier Reef Region, and assisting in meeting Australia's international responsibilities in relation to the environment and protection of world heritage. Recommendations 36 to 39 support the Australian Government's carbon emissions target through the <i>Great Barrier Reef Marine Park Act 1975</i> by working with industry, the community and management agencies to highlight the impacts of climate change on the Great Barrier Reef and the industries and community it supports, and support initiatives for adaptation and mitigation in the Great Barrier Reef Region</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E252</i></p>	
<p>The strategic assessment does not adequately address UNESCO concerns regarding the industrialisation, specifically the ports, along the Great Barrier Reef coast. If UNESCO decides to list the Reef as "endangered" the cost to tourism in jobs, economics, and impacts to townships reliant on tourism could be enormous.</p> <p><u>Response</u></p> <p>The Reactive Monitoring Mission to the Great Barrier Reef requested that (in relation to port activities and coastal development):</p> <p>Not permit any new port development or associated infrastructure outside of the existing and long-established major port areas within and adjoining the property.</p> <p>Ensure that any development, as well as all associated infrastructure and supporting activities, are carried out consistent with the highest international standards of best practice.</p> <p>Develop a fully integrated approach to the planning, regulation and management of ports and shipping activity, including via a Shipping Policy for the property, the proposed Ports Strategy for Queensland, and individual Port Plans.</p> <p>The independent assessors of management effectiveness conducted as part of the Great Barrier Reef Region Strategic Assessment considered that the Authority's management of activities for which it has jurisdiction within the Region is effective. However, there are management effectiveness challenges for those issues which are broad scale – often extending well beyond the Region – or are complex socially, biophysically and across jurisdictions. These include (among others) issues highlighted by the world heritage missions in relation to ports, shipping, coastal development and catchment runoff.</p> <p>In recognition of the findings of the independent assessment and the Reactive Monitoring Mission to the Great Barrier Reef, recommended improvements to the Authority's management arrangements for coastal development have been developed. Some of these recommendations include:</p> <p>Recommendation 11: Support development of a Queensland port strategy that concentrates port development around long-established major ports in Queensland and encourage port master planning.</p> <p>Recommendation 12: Promote a strategic approach to the development and operation of marinas and other access infrastructure along the Great Barrier Reef coast.</p> <p>Recommendation 34: Contribute to the development of improved governance arrangements for the management and coordination of development activities that affect the Great Barrier Reef.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E248, E177</i></p>	
<p>Proponents should provide funds to the Great Barrier Reef Marine Park Authority for Authority staff to manage the environmental impact process and monitoring/compliance activities to minimise potential conflicts of interest.</p> <p><u>Response</u></p> <p>Refer to the Great Barrier Reef Marine Park Authority's Environmental Impact Management Policy and the <i>Great Barrier Reef Marine Park Act 1975</i> which outlines the permit</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>assessment fees, Environmental Site Supervisor fees and the capacity for the Authority to require monitoring programs. The Authority will review current policies and guidelines to be more explicit in the implementation of the permit assessment fee for large projects.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E124</i></p>	
<p>All environmental impact assessments should include the latest in 3D modelling of spoil disposal run for a minimum of 3 years and include a number of event scenarios (floods, cyclones and prolonged periods of strong winds and spring tides). There should also be a suggested penalty for getting it wrong.</p> <p><u>Response</u> While the Authority recognises the benefits of such detailed and progressive environmental impact assessments, there is not enough foundational data to develop such models to the level of accuracy that would be required, especially if it was to include a penalty for getting it wrong. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E248</i></p>	
<p>Compile survey or monitoring information from individual project environmental impact statements (EISs) into a central database that is made publicly accessible.</p> <p><u>Response</u> This is a good suggestion. The coordination of data and information collection under environmental impact statements will be considered further under the Great Barrier Reef Strategic Assessment Program Report recommendation 31 (integrated monitoring, reporting and adaptive management program).</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Neither the Strategic Assessment Report nor the Program Report elaborates on what is intended by 'removing the need for project by project assessment and approval by the Australian Government' and this needs to be rectified.</p> <p><u>Response</u> Unlike project-by-project assessments, Strategic Assessments are landscape scale assessments that consider a broad set of actions. The purpose of the Strategic Assessment for the Great Barrier Reef Region is to develop such a landscape scale assessment, which will pre-define thresholds for the cumulative impacts of all activities that have an impact on the outstanding universal value of the Great Barrier Reef World Heritage Area. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E213</i></p>	
<p>The environmental and Matters of National Environmental Significance (matters of national environmental significance) assessments should have legislated standards and processes, further to the proposed non-statutory guidelines, to better uphold principles of the Environment Protection and Biodiversity Conservation Act and Great Barrier Reef Marine Park Act and provide greater transparency in decision-making.</p> <p><u>Response</u> Recommendations 18 to 22 of the Great Barrier Reef Strategic Assessment Program Report are targeted to providing better information for decision makers in mitigating impacts on Matters of National Environmental Significance. The Authority is already working with the Queensland Government to legislate ecosystem health standards in the Great Barrier Reef Water Quality Guidelines under Queensland law through Healthy Waters Management Plans. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E221</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The draft report does not mention that the Convention on Biological Diversity applies to protection of all biological resources in Australia including the Great Barrier Reef.</p> <p><u>Response</u></p> <p>The convention on Biological Diversity is listed as being applicable to the Region in section 3.5.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E212</i></p>	
<p>The Comprehensive Strategic Assessment must establish a common vision and goals that satisfy the main objective of the Great Barrier Reef Marine Park Act as the primary Act relating to the Great Barrier Reef, further to the objective of the EPBC Act, ensuring the long term protection and conservation of the Reef.</p> <p><u>Response</u></p> <p>Refer to recommendations 7, 18 and 25 in the Great Barrier Reef Region Strategic Assessment Program Report. In particular, recommendation 25 proposes to establish a management framework with clear outcomes and targets for the protection of values and management of impacts, including cumulative impacts, to enhance matters of national environmental significance. This includes the Marine Park as a Matter of National Environmental Significance under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>, as described and managed under the <i>Great Barrier Reef Marine Park Act 1975</i>.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E221</i></p>	
<p>There is no management measure to improve governance and clarifying regulatory responsibility (should fall with the Great Barrier Reef Marine Park Authority) to address development activities that may impact the Great Barrier Reef. The Authority should have more decision making powers.</p> <p><u>Response</u></p> <p>Refer to recommendations 7, 18 and 25 in the Great Barrier Reef Region Strategic Assessment Program Report. In particular, recommendation 25 proposes to establish a management framework with clear outcomes and targets for the protection of values and management of impacts, including cumulative impacts, to enhance Matters of National Environmental Significance. This includes the Marine Park as a matter of national environmental significance under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>, as described and managed under the <i>Great Barrier Reef Marine Park Act 1975</i>.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E124, E183</i></p>	
<p>There is no clear link between the recommendations of the Strategic Assessment and where they are addressed as an action in the draft Program Report. Greater clarity is needed of actions to achieve outcomes, especially in relation to priorities, timeframes, cost and responsibilities.</p> <p><u>Response</u></p> <p>Further information will be provided in the implementation of the Program Report recommendations, specifically how actions are seeking to maintain or halt the decline and improve the condition of values in the Great Barrier Reef Region.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 353, E171, E075</i></p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Addressing Outstanding Universal Values. It is not clear whether matters of national environmental significance (matters of national environmental significance) are an effective 'substitute' for outstanding universal value, but throughout both program reports matters of national environmental significance are being used as such. The Wet Tropics Management Authority (WTMA) is developing guidelines for assessing impact on outstanding universal value and a related reporting framework. This work could be useful for the Implementation Plan.

Response

Matters of National Environmental Significance (matters of national environmental significance) and Outstanding Universal Value (outstanding universal value) are two different concepts applied at different jurisdictional levels and should not be confused.

Matters of national environmental significance is a collective term used in Australia's EPBC Act that recognises that certain matters have been determined as being 'environmentally significant' for Australia as a nation. Matters of national environmental significance are mainly used as 'triggers' to help determine whether an assessment and approval are required under the EPBC Act; if an impact is deemed to have, or likely to have, a 'significant' impact on a matters of national environmental significance, that action must be referred to the Minister for a decision.

There are seven matters of national environmental significance relevant to the Great Barrier Reef Region; one matters of national environmental significance is triggered if an action has a significant impact on a world heritage property; another occurs if an action has a significant impact on the Great Barrier Reef Marine Park.

OUV is defined in the 'Operational Guidelines for the Implementation of the World Heritage Convention' as "*cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity.*" The word '*universal*' is important in the term OUV, recognising the World Heritage Convention is global and hence something must be so exceptional to be significant for all people of the world to be considered to be of outstanding universal value. By definition, properties cannot be considered for outstanding universal value if the values they contain are significant only from a national or regional perspective. Similarly it is the World Heritage Committee, comprising 21 nations, that determine whether the outstanding universal value of a property is 'In-danger', or if the values for which it was listed has been lost, that property may be delisted.

Matters of national environmental significance are therefore a national benchmark in Australia determined by an assessment under EPBC whereas OUV is a global benchmark. The fact that a world heritage property may be a trigger as a matter of national environmental significance exemplifies a link between the two concepts but it should also be recognised they are assessed and applied differently, so one should not be substituted for the other.

It is also important to note the term OUV is singular, so it is not appropriate to refer to 'Outstanding Universal Values'. It is, however, quite appropriate to refer to the 'heritage values' or the 'natural values' for which a world heritage property has been inscribed.

A number of Australian world heritage properties, including the Wet Tropics Management Authority, are developing ways of benchmarking and reporting on OUV; there remains scope for a more comprehensive reporting framework with the aim to achieve national consistency in OUV assessment, monitoring and reporting.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E222

The GBRMPA Strategic Assessment should provide details of how the precautionary principle will be used in making decisions in data-poor areas. The question of uncertainty needs to be fully addressed. Define the steps in the Risk Based approach and define the principles of ecological sustainable use.

Response

The Authority is committed to the precautionary principle. Lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. Details on how the precautionary principle will be used in making decisions in data poor areas is made explicit also in the final Program Report.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: 348, E169

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The Curtis Island industrial development triggered a UNESCO mission, which reviewed the status and management of the Great Barrier Reef World Heritage Area, and subsequent Strategic Assessments and Program Reports (UNESCO 2012). UNESCO identified many concerns regarding the protection and management of Port Curtis and its surrounding environment, including inadequate independent scientific oversight in monitoring water quality. The Strategic Assessments does not adequately address these concerns.</p> <p><u>Response</u></p> <p>In response to UNESCO's concerns, the Australian Government conducted an Independent Review of the Port of Gladstone. The review produced two separate reports that provided both findings of material fact and recommendations of future actions that could be taken by the Australian Government to improve the management of this area. The Australian Government will be responding publically shortly with details of how the recommendations will be actioned to ensure that the issues are addressed.</p> <p>The Australian and Queensland governments are also working together to develop a Long-Term Sustainability Plan for the Great Barrier Reef World Heritage Area to guide the protection and management of this iconic World Heritage Area to 2050. The Reef 2050 Long-term Sustainability Plan will target the identified areas of action from the strategic assessments and seek to address gaps important for future management of the Area. The Plan will build on a strong foundation by incorporating the following four elements:</p> <p>A Vision for the Great Barrier Reef World Heritage Area that reflects the diversity of use and interest in the property, protects the outstanding universal value, sustains its integrity and integrates the three pillars of sustainability (environmental, social and economic).</p> <p>An Outcomes framework that includes desired outcomes and targets for protection of the property's outstanding universal value.</p> <p>Adaptive management actions to deliver outcomes and targets (primarily drawn from the two strategic assessments and with a focus on critical areas of new work).</p> <p>Integrated monitoring and reporting programs to measure the success of the Plan.</p> <p>Development and implementation of the Reef 2050 Long-term Sustainability Plan directly addresses the range of matters raised by the UNESCO mission in 2012.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E208</i></p>	
<p>As is noted on page 19, the objectives of the Environmental Protection and Biodiversity Conservation Act and the Great Barrier Reef Marine Park Authority are to protect the environment, especially Matters of National Environmental Significance, but not limited to matters of national environmental significance. These reports only consider matters of national environmental significance which clearly is not consistent with the objective of the Act, which recognises all environmental matters are important to maintain World Heritage values. Hence, considering only wetlands declared under RAMSAR has resulted in non-inclusion of areas of high significance to reef health. If as stated "These obligations can be summarised as a responsibility to 'maintain and enhance' the condition of the Region's values and to 'transmit' those values in good or very good condition to future generations", then limitation of interest to only matters of national environmental significance will not fulfil this obligation.</p> <p><u>Response</u></p> <p>Strategic assessment is conducted under Part 10 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i>, where a program or plan may be endorsed for assessment of impacts on matter protected by a provision of Part 3. Matters protected by the provision in Part 3 are the Matters of National Environmental Significance: the Great Barrier Reef World Heritage Area, National Heritage, wetlands of international importance, listed threatened species and communities, listed migratory species, protection of the environment from nuclear actions, marine environment, the Great Barrier Reef Marine Park and protection of water resources from coal seam gas development and large coal mining development.</p> <p>The Great Barrier Reef Marine Park is described and managed through the <i>Great Barrier Reef Marine Park Act 1975</i>, which includes all aspects of the environment. The object of the <i>Great Barrier Reef Marine Park Act 1975</i> is to provide for the long-term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. This object has been reflected in the development of the Great Barrier Reef Region Strategic Assessment.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E200</i></p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Measures to strengthen current management

Beyond the specific suggestions in the draft program report, resilience-based management should be an integral part of continuing marine park planning. For example, the spatial configuration of no-take zones has consequences for source-sink relationships of corals, fish and crown-of-thorns (COTS) populations. Population replenishment is a cornerstone of reef resilience. Strategic water-quality management can also support resilience because several resilience drivers are linked to water quality. These include the likely positive relationship between nutrient run-off to reefs in the Wet Tropics and the risk of COTS outbreaks, the negative relationship between turbidity and herbivores and reduced coral recruitment under high turbidity, sedimentation and algal abundance. Recent and ongoing work at Australian Institute of Marine Science (AIMS), some of which is in collaboration with the Great Barrier Reef Marine Park Authority and Department of the Environment, are building operational products to assist resilience-based management of Great Barrier Reef ecosystems.

Response

The Authority agrees with much of the above statement. Resilience-based management is one of the corner stones of the proposed Cumulative impact assessment guidelines.

Public submissions that referred to this issue: 398

A “Key Hole Surgery” approach in marine parks would enable slight adjustment to be made to zoning plans in between reviews, so as to adjust to the ever changing marine environment due to impacts such as coastal development, port expansions, extreme natural weather events and climate change. It would provide for temporary legislated changes to protect where the environmental changes have impacted negatively on fishers ability to maintain profitability in the short term. This approach has been demonstrated by Queensland Department of Agriculture, Fisheries and Forestry following the flood devastation at Bundaberg (2013) and on the land for cattle agistment in State National Parks.

Yellow zones need to be reviewed as the value of them since being introduced has been purely a reallocation of the resource from a shared resource to a “recreational only” resource. This is most evident in inshore waters and a region by region approach allowing some restricted commercial netting efforts back into these areas would help offset the loss of productive fishing grounds that are associated with port developments.

Response

The Authority has noted the suggestion. Examples of temporary adjustments to the zoning plans include current voluntary moratoriums on coral harvesting and no-anchorage areas in response to the decline of coral cover in the Keppel Bay and the implementation of site specific management plans. There are currently no plans to change or review current zoning plans.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E201

Social issues have been identified as a subject of concern in the Strategic Assessment. If the acid test of ‘Community Benefit’ were applied, it would be clear that there ought to be a better solution in the Representative Areas Program (RAP) zoning than keeping ‘no take’ (green both commercial and recreational) and ‘take’ (almost everywhere else again – both commercial and recreational). At RAP we called for a distinction between the sectors and did not receive it. Yellow zones were instead negotiated which did nothing to distinguish between the differing impacts of each sector. Yellow zones were nominated as areas requiring ‘higher conservation’ or getting a ‘higher conservation value’, with a one hook regulation and one dory rule for commercial fishermen. The ‘one dory rule’ however does nothing to reduce commercial effort or separate the competing users and ‘working the yellows’ gets the same hard commercial harvest treatment as multi use zones.

Yellow zones should be made ‘no commercial harvest, recreational use only’.

Green zones on the other hand, play a key role in keeping biodiversity functioning particularly when it comes to important species such as coral trout. This species predictably congregates in certain areas and is not nomadic which makes them a fairly easy target. Heavy harvesting depletes them from habitat quickly and leaves the area depleted for some years until recruitment recolonises and fish grow through to mature sizes. No take zones must provide a safe haven to facilitate recruitment.

Response

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The Authority has noted the suggestion. There are no plans to change or review current zoning plans at this point. No further action has been taken in response to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>More detail on how the condition and trend values were derived, as well as impact ratings is sought, to provide certainty in how reliable they are, and to what extent they are based on scientific facts.</p> <p><u>Response</u></p> <p>The assessment of condition and trends for the Outlook 2014 report was based on a consensus workshop, implemented to secure expert judgement on a set of components that adequately represent the biodiversity and ecosystem health of the region. The components were hierarchically arranged within the assets/values of biodiversity and ecosystem health. The assessment required scores/grades (where possible) to be assigned to indicators of both condition and trend for each component, followed by an estimate of confidence in assigning those scores/grades. The condition and trend values presented in the Strategic Assessment Report follows the outcomes of this workshop. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398, E126, E212</i></p>	
<p>Need to better contextualise risks of local, regional and reef wide activities and apply appropriate scales to the levels of risk. There is a concern that findings are consistently pitched at a high level producing a better overall prognosis than the likely results if the focus had drilled down into regional or problem areas. The Strategic Assessment provides no real indication of scale of individual issues and therefore the resources required to address them. Cutting the Reef up into only four zones for condition and trend analysis lacks the required definition for a true regionalised picture of species and ecosystem health. Where confidence in conditions and trends is limited, it is misleading to identify the conditions and trends as good.</p> <p><u>Response</u></p> <p>Tables 6.7-6.11 have been amended to add a category of “Data deficient (DD)”, to clearly separate “no impact” from “no data”. Tables 7.1 – 7.3 have confidence ratings, which clearly shows that the confidence in the stipulated condition and trend is either Adequate, Limited or Very limited. In cases where the latter two categories are given, the rank is “to the best of our knowledge” and should be considered with caution. The impact rating in the risk assessment in Chapter 10 is divided into a broad and local scale, and each impact has an accompanied text which states the relevant geographic levels and how that has been considered for the overall rating.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 255, 353, E220, E171; E130; E124;</i></p>	ADD-73;ADD-74; ADD-75
<p>Improve the cross referencing between the program report and the Strategic Assessment report.</p> <p><u>Response</u></p> <p>The cross referencing between the reports has been highlighted in the final version of the Program Report. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E251</i></p>	
<p>Many sections, including sections 5.2 and 5.3 highlights the difficulty of submitting separate assessments for the Marine and Coastal areas. Separate and long documents may hamper the wider impact of the assessment. The many recommendations should be summarised into a succinct single table, indicating the jurisdiction responsible and perhaps aligned with the forward commitments of both jurisdictions (e.g. Table 10.7.1 on p 10.341 in the Queensland Strategic Assessment). Better cross-referencing between the two jurisdictional reports would improve the usefulness; perhaps it may be considered even producing a single “Program Report” for future management of the Great Barrier Reef World Heritage Area.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u></p> <p>The Reef 2050 Long-term Sustainability Plan is the combined outcome of the two reports, where jurisdictional boundaries are defined and future commitments of each area are made explicit.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398, E192</i></p>	
<p>Not enough consideration is placed on north-south and east-west connectivity from land base ecosystems to deep oceans within the Great Barrier Reef World Heritage Area. Actions and reporting must be managed and addressed at a meaningful 'regional' or local scale if they are to engage communities in the future sustainability of the Great Barrier Reef.</p> <p><u>Response</u></p> <p>In the development of the Great Barrier Reef Strategic Assessment, the Great Barrier Reef Marine Park Authority has considered the connectivity of terrestrial ecosystems and marine systems through the Coastal Ecosystem Assessment Framework. Further work on the ecosystem function and processes in defining thresholds is proposed through the Long-term Sustainability Plan, which will provide guidance to the community and decision makers in maintaining marine environment ecosystem health. The program report recognises the inherent variability in the values and uses across the Region and the Authority will work with its partners to establish desired outcomes for individual regions".</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E180</i></p>	
<p>Key initiatives _ Great Barrier Reef Net Benefit Policy</p> <p>There is a lack of evidence to support the effectiveness and applicability of offsets that deliver net-benefits rather than them being used as a tool to approve projects that have unacceptable impacts. Baselines need to be clearly identified, including potential 'no go areas' for the purpose of determining net benefit as well as criteria to evaluate these (statistical power, monitoring, etc.) and timely performance feedback to allow adaptive management. A precautionary approach is needed in the face of uncertainty, with additional margins to exceed calculated net impacts</p> <p><u>Response</u></p> <p>The Authority does not currently consider offsets when making decisions under the <i>Great Barrier Reef Marine Park Act 1975</i>, rather impacts must be avoided or mitigated. The Authority recognises that offsets alone will not deliver net benefits to the World Heritage Area, and where they exist under other Commonwealth and State legislation, they must be combined with additional activities and management actions to deliver an overall positive effect.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E170, 348, E071. E096, E167, E177, E193, E251, E262, E130, E167</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Key priority tasks should be fast tracked so they can be implemented as soon as Reef Trust becomes available.</p> <p><u>Response</u></p> <p>The Authority is continuing to work with the Department of the Environment and the Queensland Government to ensure funding available within Reef Trust delivers net benefits to the values of the World Heritage Area. A number of responses below also relate to this issue.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E171, E262</i></p>	
<p>Return the focus to action and restoration rather than research and monitoring for offset funds.</p> <p><u>Response</u></p> <p>The <i>Environment Protection and Biodiversity Conservation Act 1999</i> Environmental Offsets Policy allows for 10 per cent of the offset to provide for 'other compensatory measures', (i.e. those actions that do not directly offset the impacts on the protected matter but are anticipated to benefits for the protected matter). These actions may include funding for research or educational programs. Whilst this option exists for offsets within the Marine Park, it is the Authority's preference that 100 per cent of the offset provides for direct offsets. There is no capacity for monitoring to be funded through offsets under the national policy. It is important to note that the Authority does not currently consider the application of offsets when making decisions under the <i>Great Barrier Reef Marine Park Act 1975</i>, rather impacts must be avoided or mitigated.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E183</i></p>	
<p>Elaborate on how offsets and the net benefit policy can be considered "best practice". Alternatively, how best practice will be developed and implemented in regards to environmental impact statements, compliance monitoring, permit conditions and offsets in the Great Barrier Reef World Heritage Area.</p> <p><u>Response</u></p> <p>The Strategic Assessment identified that, combined with natural events, the cumulative effects of past and present activities in the catchment and Region have significantly affected the Great Barrier Reef's values and the health of the ecosystem, particularly in the southern two-thirds of the Region. There is also increasing evidence that the ecosystem's resilience is being lost. While avoiding and mitigating impacts remains the primary focus of management efforts, these are not sufficient on their own. When combined, economic mechanisms, behavioural changes and community activities can deliver an overall positive effect or 'net benefit'. The Authority considers this is what is required if we are to halt and reverse the decline in the Reef's health and ensure the long-term protection and restoration of the Region's values.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E212, E235</i></p>	
<p>There is a need to be more explicit in stating that the current state is deteriorated and that the targets of net benefits should make a clear improvement/return to previous condition of values.</p> <p><u>Response</u></p> <p>The Authority has amended the Program Report to include more information on the proposed policy, including a set of guiding principles for its development. "Net Benefits" has been defined as the restoration and enhancement of all 62 values within the World Heritage Area, which will halt the ongoing decline of the property and result in a net improvement to its values towards a state consistent with that at the time of the property's inscription on the World Heritage List in 1981.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 120</i></p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

There should be an explicit condition that offsets are delivered within the relevant (same) bioregion.

Response

It is important to note that the Authority does not currently consider offsets when making decisions under the *Great Barrier Reef Marine Park Act 1975*, rather impacts must be avoided or mitigated. The Authority recognises that some values are irreplaceable and cannot be offset. Where offsets are appropriate under other Commonwealth or State legislation, the Authority recommends they be linked to the impact and the management area in which the impact is occurring. For migratory species and where values are overlapping, offsets may also be applied across the Great Barrier Reef Region.

The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.

Public submissions that referred to this issue: E222, E212

Of interest to local government is the understanding and management of consequential and cumulative impacts on community benefits from, for example, port and coastal development. As noted in the independent assessment of the marine component of the report, these have not been well documented or assessed thoroughly. As increasing conflict between economic benefits of the Reef and the personal, recreational and value-based benefits is likely to increase, so it is pertinent to consider actions to close the gap through the development of guidelines and benchmarks for social and economic impact assessments for development that may impact the World Heritage Area. Involve the community (for example, through the development of regional stakeholder groups) when establishing investment priorities for offset funds. Consider funding opportunities to enhance and maintain community benefits and heritage values.

Response

The strategic assessment identified that, combined with natural events, the cumulative effects of past and present activities in the catchment and Region have significantly affected the Great Barrier Reef's values and the health of the ecosystem, particularly in the southern two-thirds of the Region. There is also increasing evidence that the ecosystem's resilience is being lost. While avoiding and mitigating impacts remains the primary focus of management efforts, these are not sufficient on their own. When combined, economic mechanisms, behavioural changes and community activities can deliver an overall positive effect or 'net benefit'. The Authority will continue to work collaboratively with Government, non-government stakeholders and the community to enable the restoration and enhancement of whole of ecosystem functions and services within the World Heritage Area. The Authority is a key player in the Social and Economic Long Term Monitoring Programme being coordinated by the CSIRO. This programme aims to develop a long-term social and economic monitoring program that will be used to assist the Authority and industry bodies to understand changes that are occurring within the region and to make plans for the future.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E262, E227, E209, E227, E222; E209

There should be a clearly stated consideration of alternatives before offsets are considered, including funding research into alternatives to move beyond present paradigms.

Response

The Authority does not currently consider offsets when making decisions under the *Great Barrier Reef Marine Park Act 1975*, rather impacts must be avoided or mitigated and potential alternatives are always considered during the scoping phase of a permit application (please refer to permission system case studies and section B of the final Program Report for details). Additionally the Authority recognises that some values are irreplaceable and cannot be offset. In some cases, impacts upon unique cultural and historic heritage sites, and critically limited ecosystems and populations of threatened species cannot be compensated for with a sufficient equivalent and should be avoided. Avoiding impacts on these values means the principle of no net loss is retained and, in some instances, Net Benefit Actions can be designed to enhance these values.

The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.

Public submissions that referred to this issue: E075, E130

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The concept of “offsets” in relation to impacts on outstanding universal value is problematic, and is not something which to date the World Heritage Committee has considered as appropriate. In principle, the decisions that were taken to proceed with approvals based on offsetting therefore appear to not correspond to an agreed approach within the World Heritage Convention. (p.99, Mission Report). In developing and applying the net benefit policy, it will be extremely important that the concerns raised by the mission (that reflect discussions of the World Heritage Committee) are heeded.</p> <p><u>Response</u></p> <p>Where there is a residual impact to a value within the World Heritage Area, actions must be taken to restore and enhance the value towards a state consistent with that at the time of the property’s inscription on the World Heritage List in 1981. Avoidance, mitigation and offsetting of impacts are still required but are not sufficient alone in ensuring the long-term protection of the World Heritage Area. To achieve a Net Benefit for the World Heritage Area, all residual impacts on the values must be addressed through activities designed to enhance and restore the impacted value(s) to a state prior to impact. While avoiding and mitigating impacts remains the primary focus of management efforts, these are not sufficient on their own. When combined, economic mechanisms, behavioural changes and community activities can deliver an overall positive effect or ‘net benefit’. The Authority considers this is what is required if we are to halt and reverse the decline in the Reef’s health and ensure the long-term protection and restoration of the Region’s values. It is important to note that the Authority does not currently consider offsets when making decisions under the <i>Great Barrier Reef Marine Park Act 1975</i>, rather impacts must be avoided or mitigated.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E251</i></p>	
<p>A focus on offsets and “net benefit” may be misused. To a large extent this could be viewed as the ability to raise funds outside the Federal budget to protect the Reef. This is of concern because it provides a perverse incentive to permit actions that have a negative impact on the Reef in order to raise funds. As an example, dumping in the Marine Park at Abbott Point, where the required offset is that the water quality will be 150% better after the dumping of spoil. There is little science behind this. This incentive is increased by the notorious difficulty of delivering other than financial offsets when it comes to the marine environment</p> <p><u>Response</u></p> <p>It is important to note that the Authority does not currently consider offsets when making decisions under the <i>Great Barrier Reef Marine Park Act 1975</i>, rather impacts must be avoided or mitigated. The Authority considers financial offsets as one of many mechanisms to achieve a Net Benefit for the World Heritage Area. These financial offsets have been determined under other Commonwealth and State legislation, and may be implemented by organisations other than the Australian and Queensland governments. The permission system and the implementation of a net benefit policy are detailed in section A of the final Program report and its implementation under the permission system is exemplified by the Permission system case studies.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E252</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Social facts such as importance of an environment to different cultures, for traditional livelihoods, for aesthetic values or as tourism assets should be fully considered under the net-benefits policy.</p> <p><u>Response</u></p> <p>“Net Benefits” refers to the restoration and enhancement of all 62 values within the World Heritage Area which will halt the ongoing decline of the property and result in a net improvement to its values.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E177</i></p>	
<p>Commonwealth and State approaches need to be fully aligned and complementary. Clarify the linkage between the Queensland offset policy and the Direct benefits management plan, as well as the apparent broader scope of the net benefits policy to that of offsets. Also clarify the legislative jurisdiction to achieve this policy.</p> <p><u>Response</u></p> <p>All Net Benefit Actions must be additional to existing management arrangements and programs in place to protect and ensure ecological sustainable use of the World Heritage Area. As a means to assist in delivering the restoration and enhancement of the 62 values of the World Heritage Area a register of Net Benefit Actions will be kept and referred to in order to avoid duplication and encourage the development of new initiatives that will leverage off existing activities. The Authority will continue to work with the Queensland Government and other stakeholders, including Natural Resource Management bodies, to ensure activities designed to provide Net Benefits in the World Heritage Area leverage off pre-existing activities. The Authority will continue to engage with the Queensland Government, relevant experts, stakeholders and the community to ensure the coordinated and transparent delivery of Net Benefits within the World Heritage Area.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E177, E222, E251, E194, E220</i></p>	
<p>Both program reports advocate the “avoid, mitigate, offset” policy. We suggest an assessment of risk in a structured decision-making context. Managers need to be able to analyse (1) how critical it is that impacts are avoided in the first place, relative to (2) the efficacy and return of investments in mitigation, and (3) to what extent meaningful offsets are indeed possible. This comes down to a formal quantification of risk to values (matters of national environmental significance) across the Great Barrier Reef World Heritage Area ecosystems. The Australian Institute of Marine Science is developing such a framework in collaboration with the Great Barrier Reef Marine Park Authority and Department of the Environment and would be interested in the Queensland Government joining this partnership.</p> <p><u>Response</u></p> <p>The Authority will continue to engage with the Queensland Government, relevant experts, stakeholders and the community to ensure the coordinated and transparent delivery of Net Benefits within the World Heritage Area. Through the policy, priority will be given to actions to restore ecosystem health and resilience, as this is fundamental to protecting all matters of national environmental significance and the community benefits they support. The policy will set the basis for pre-identification of priority areas or management actions that will best tackle the most serious issues facing the Great Barrier Reef. It will provide greater certainty and deliver improved environmental outcomes, complementing the proposed arrangements of the Queensland Government. The achievement of Net Benefit outcomes and targets within the World Heritage Area will be determined by the agency’s Integrated Monitoring Program.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398 E183</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>There is a risk that [Port developers] are asked to offset impacts from other contributing sources that are not subject to the same level of environmental regulation or reduce impacts beyond what is caused by the actual development (such as a 150% reduction in sediment requirement). It is requested that more information on how the net environmental benefit approach is planned to be implemented as there is considerable uncertainty [in the port industry].</p> <p><u>Response</u></p> <p>This policy will guide actions required to support ecosystem health and deliver net benefits to the Region's 62 values. It will facilitate a strategic and coordinated approach to delivering improvements to ecosystem health and complement and support existing Australian and Queensland government management arrangements and restoration programs. The policy will be informed by the outcomes of the strategic assessment. It will also be informed by more focused assessments such as those undertaken for coastal ecosystems which have systematically assessed and identified priority areas for restoration in the coastal-marine interface.</p> <p>Through the policy, priority will be given to actions to restore ecosystem health and resilience, as this is fundamental to protecting all matters of national environmental significance and the community benefits they support. All actions will be consistent with, but additional to, the Authority's foundational management activities.</p> <p>The policy will link to the delivery of the Authority's outcomes for the condition of values and its Reef Recovery Program to address high risk threats to biodiversity, and the achievement of Net Benefit outcomes and targets will be determined by the agency's Integrated Monitoring Program.</p> <p>The final program report contains more details on the intent of a comprehensive, outcome based management framework, which sets the intent of these proposed policies and guidelines.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E215, E173, E261</i></p>	
<p>Key initiatives _ Cumulative impact assessment guidelines</p> <p>There is an urgent need to implement the cumulative impact assessment guidelines and to provide clearly defined outcomes and targets. Methods need to be more clearly stated, as does the recognition and identification of key knowledge gaps in relation on how to assess cumulative impacts. This includes understanding factors such as assimilative capacity and defined thresholds for each value (especially those ranked very poor, poor or good but declining). The guidelines should be made into a regulatory instrument with proper legislative impact. It is also important to ensure the guidelines minimise the cumulative impacts on multiple co-located matters to enable the overall risk to the outstanding biodiversity value of the World Heritage Area to be minimised.</p> <p><u>Response</u></p> <p>Desired outcomes for the values and processes will guide the Authority's planning and assessment decision-making processes. For example, if a value or process is likely to be affected by a planning decision or development process, the effect of such a decision should be consistent with achieving the identified outcome for the affected value or process. Refer to tables 3 and 4 of the Great Barrier Reef Strategic Assessment Program Report which describe the desired outcomes for the condition and trend of the Region's values and processes. Condition and trend management will be guided by thresholds for ecosystem health - recommendation 20 is focused on supporting research on critical ecosystem thresholds, with a focus on inshore biodiversity and associated ecosystems, and the Authority already has in place ecosystem health guidelines for water quality. Recommendation 18 is proposing to update and strengthen the Great Barrier Reef Marine Park water quality guidelines to address a broader range of habitats and species, account for cumulative impacts and inform critical ecosystem thresholds.</p> <p>The Authority is already working with the Queensland Government to legislate ecosystem health standards in the Great Barrier Reef Water Quality Guidelines under Queensland law through Healthy Waters Management Plans.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E124, 398, E170, E215, E241, E252, E130, E177, E235, 348, E173, E251, E096, E220, E183, 348, 205</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Fund an independent cumulative impact assessment of all proposed work and services associated with the mining boom of the Great Barrier Reef.</p> <p><u>Response</u></p> <p>The Strategic Assessment process is ‘an independent cumulative impact assessment of all developments and activities that have an impact on the Great Barrier Reef Region’.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E178, E227</i></p>	
<p>The proposed principles for managing environmental impacts should be expanded to include “halt and reverse the decline” to address legacy issues as part of cumulative impact assessment.</p> <p><u>Response</u></p> <p>The principles for managing environmental impacts consider ecosystem thresholds, which will be fundamental in managing for the desired outcomes for values and processes. Desired outcomes for values include halt and reverse of trends in decline. Thresholds and desired outcomes will guide the Authority’s planning and assessment decision-making processes. For example, if a value or process is likely to be affected by a planning decision or development process, the effect of such a decision should be consistent with achieving the identified outcome for the affected value or process. Refer to the Great Barrier Reef Strategic Assessment Program Report which describes the desired outcomes for the condition and trend of the Region’s values and processes.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E167</i></p>	
<p>Include impacts at a wider scale, including mining and the potential of uranium being shipped out through the port of Townsville.</p> <p><u>Response</u></p> <p>The Authority’s capacity to manage the impacts of uranium does not differ from those of other shipping or port related activities.</p> <p>No further action has been taken in relation to this comment</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E212</i></p>	
<p>Ensure the cumulative impact assessment guidelines are developed with the participation across all relevant stakeholder groups.</p> <p><u>Response</u></p> <p>The Authority will continue to engage relevant stakeholders in the development of guidelines.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E222</i></p>	
<p>Clarify where the cumulative impact assessment guidelines sit in relation to the current Australian–Queensland governments Environmental Protection and Biodiversity Conservation (EPBC) assessment and bilateral agreement.</p> <p><u>Response</u></p> <p>The cumulative impact assessment guidelines focuses on how the specific challenges associated with managing cumulative impacts in the Great Barrier Reef Region are addressed. The guidelines will incorporate thresholds and desired outcomes that will guide the Authority’s planning and assessment decision-making processes, and provide an approach in:</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>identifying values and ecosystem processes that are important to matters of national significance, such as the Marine Park</p> <p>identifying impacts affecting the Region</p> <p>spatial and temporal scale of direct and indirect impacts</p> <p>determining the tools for analysis, data collection, standards and review processes to be applied.</p> <p>The development and implementation of the guidelines forms part of the commitment to improve alignment between by the Great Barrier Reef Marine Park Authority's permission system and the EBPC Act., Australian and Queensland Governments will provide direction on the development assessment processes that have the potential to significantly the signifies the Marine Park as a matter of national environmental significance under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E248, E192, E222</i></p>	
<p>Clarify how this sits in relation to current environmental impact statements, which lack in transparency, are paid for by proponents and are not independently reviewed. Clarify who will implement environmental impact assessments.</p> <p><u>Response</u></p> <p>The policy will guide how the specific challenges associated with managing cumulative impacts in the Great Barrier Reef Region are addressed. The policy will incorporate thresholds and desired outcomes that will guide the Authority's planning and assessment decision-making processes, and provide an approach in:</p> <p>identifying values and ecosystem processes that are important to matters of national significance, such as the Marine Park</p> <p>identifying impacts in the affecting the Region</p> <p>spatial and temporal scale of direct and indirect impacts</p> <p>determining the tools for analysis, data collection, standards and review processes to be applied.</p> <p>The development and implementation of the guidelines by the Great Barrier Reef Marine Park Authority, Australian and Queensland Governments will provide direction on the development assessment processes that have the potential to significantly the Marine Park as a matter of national environmental significance under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E248, E192</i></p>	
<p>Proper consideration is needed of impacts to seagrass beds, including the flow-on impacts to key species. There needs to be clear consideration of the seagrass beds in existing port areas, including results from monitoring of seagrass distribution in these areas.</p> <p><u>Response</u></p> <p>This is noted, and through new initiatives such as the Cumulative impact assessment guidelines and the Reef 2050 Long-term Sustainability Plan, key ecosystems such as seagrass beds will continue to be considered, monitored and managed.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E220</i></p>	
<p>Key initiatives _ Integrated research, monitoring and reporting program</p> <p>There are large numbers of gaps in our knowledge about important aspects of the Reef, the impacts of the threats to it and potential solutions underscore the interface between coast and marine. There needs to be increased capacity to detect population changes and assess management initiatives in response to such changes. These gaps need to be identified and clearly connected to management initiatives.</p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

Response

The Integrated Research, Monitoring and Reporting Program (IRMRP) will be built around a Driver, Pressure, State, Impact and Response framework. Understanding the cause and effect links in this framework is critical to understanding where management actions affect change and where and how future management may be improved. Monitoring each node in the framework from drivers through to response will allow us to understand how the entire system works and how changes in any part of the system affect the rest. Drivers such as population and economic growth will be monitored, including future predictions, at regional and smaller scales. How this translates into changes in activities and pressures and ultimately changes in state of social, economic and ecological values will be understood to guide management response. There will always be gaps in our knowledge, but through the IRMRP we will strive to ensure that the key gaps are identified and addressed.

No further action has been taken in response to this comment.

Public submissions that referred to this issue: 327, 346, E183

Responding to deterioration identified through the integrated monitoring framework will involve extensive collaboration and liaison between the various levels of government and research institutions involved. Focus on greater integration of monitoring and research activities across the Great Barrier Reef, including the range of institutions involved (including the minerals industry and defence).

Response

The Integrated Research, Monitoring and Reporting Program (IRMRP) will be designed and developed during an establishment phase that will bring together all of the relevant institutions, levels of government, industry and other stakeholders. The program will be guided by a steering committee with representation across stakeholders to whom working groups responsible for scientific design, synthesis, data management, reporting and communications will report. Full integration of research and monitoring with each other, and with management, is the aim, with alignment of currently disparate research monitoring programs into a broader landscape where individual programs inform, are compatible and in effect become nodes of the overall integrated program.

Public submissions that referred to this issue: 327, E211, E169

Is there a forward research program addressing toxicity for coral, fish, epifauna or plants?

Response

The Integrated Research, Monitoring and Reporting Program (IRMRP) will be built around a Driver, Pressure, State, Impact and Response framework, rather than pre-defined research projects. Understanding the cause and effect links in this framework is critical to understanding where management actions affect change and where and how future management may be improved. Monitoring each node in the framework from drivers through to response will allow us to understand how the entire system works and how changes in any part of the system affect the rest. Drivers such as population and economic growth will be monitored, including future predictions, at regional and smaller scales. How this translates into changes in activities and pressures and ultimately changes in state of social, economic and ecological values will be understood to guide management response. There will always be gaps in our knowledge but through the IRMRP we will strive to ensure that the key gaps are identified and addressed.

No further action has been taken in response to this comment.

Public submissions that referred to this issue: E192

The Program Report should provide further details on the establishment of an integrated and funded research, development and monitoring program to guide future management activities and evaluate their effectiveness. Current scientific knowledge gaps are limiting the effectiveness of existing management approaches, and a more detailed understanding of the World Heritage Area's function is required. A national research strategy model for the Great Barrier Reef, similar to those in place for water research, climate research and Antarctic research might be an appropriate approach. Such a program needs to be: (1) developed as quickly as possible through partnership between Great Barrier Reef Marine Park Authority staff and a small group of senior scientists chosen for their expertise and capacity to work beyond self-interest, and (2) implemented with high priority.

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u></p> <p>Further details of the proposed structure of the Integrated Research, Monitoring and Reporting Program (IRMRP) will be provided in the revised Program report and will be a key component of tracking progress with the Reef 2050 Long-term Sustainability Plan. The program will be guided by a steering committee with representation across stakeholders to whom working groups responsible for scientific design, synthesis, data management, reporting and communications will report. The IRMRP will be developed as soon as possible and be built around a Driver, Pressure, State, Impact and Response framework. Understanding the cause and effect links in this framework is critical to understanding where management actions affect change and where and how future management may be improved. Monitoring each node in the framework from drivers through to response will allow us to understand how the entire system works and how changes in any part of the system affect the rest. Drivers such as population and economic growth will be monitored, including future predictions, at regional and smaller scales. How this translates into changes in activities and pressures and ultimately changes in state of social, economic and ecological values will be understood to guide a dynamically adaptive management response. There continue to be key gaps in our knowledge particularly around ecosystem processes and social dimensions. These have been identified through the Strategic Assessment and Outlook Reporting processes and will be reflected in the next version of scientific information needs for management of the Great Barrier Reef provisionally titled 'Science Information Needs for an Integrated Research, Monitoring and Reporting Program for the Great Barrier Reef World Heritage Area 2014-2019'. This document will be different to previous versions in that it will be far more than an identification of gaps but also a strategy for how scientific information needs are identified, how scientific information is generated and how management will use the information into the future.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 327, E235, E124, 346, 389, E170, E096</i></p>	
<p>Key initiatives _ Reef recovery</p> <p>Provide details about key aspects such as regulatory and non-regulatory approaches and the rationale behind the choice of priority areas for the focus of the demonstration case studies</p> <p><u>Response</u></p> <p>The Program Report states that the Reef Recovery program will be rolled out on a regional basis, with priority given to Keppel Bay, Mackay, Townsville, Princess Charlotte Bay and Bathurst Bay.</p> <p>The aim of the Reef Recovery program is to restore sites of high environmental value through regionally-based cooperative management approaches.</p> <p>Strategic assessment demonstration cases were chosen based on matters consistently raised by stakeholders, key issues identified in the Great Barrier Reef Outlook report 2009, spatial and information availability, and meeting the following criteria:</p> <ul style="list-style-type: none"> A location where multiple impacts are acting or predicted to act upon a region, locality or value. Allows the examination of a specific management approach or method to identify a set of values/attributes or to assess a range of impacts/pressures. Can demonstrate connectivity across coastal and marine systems. Can demonstrate the integration of environmental, social, cultural and economic benefits in decision making. Improves understanding of factors affecting Great Barrier Reef ecosystem resilience. Can provide lessons or outcomes that could transfer to other areas. Can provide opportunities to build capacity for future management. Can be used to consider the effectiveness of management across local, Queensland and Australian government jurisdictions. <p>Key aspects of regulatory and non-regulatory approaches will be considered further in the development and implementation of the Reef Recovery Program</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<i>Public submissions that referred to this issue: E251, 348</i>	
<p>Future actions need to consider threats on individual parts of the system from cumulative impacts, and the impact on interconnected system that maintain reef resilience (particularly how they affect the interaction between ecological processes).</p> <p><u>Response</u></p> <p>These actions will be dealt with through the development and implementation of the Reef Recovery Program.</p> <p>The aim of the Reef Recovery Program is to restore sites of high environmental value through regionally-based cooperative management approaches.</p> <p>To do this effectively, the Great Barrier Reef Marine Park Authority will need:</p> <p>Information that describes the value of catchment ecosystems in maintaining and restoring the health of the Great Barrier Reef, the current condition of catchment ecosystems and the catchment ecosystem thresholds to apply to planning.</p> <p>Information to describe the expected biodiversity and desired ecosystem states of the inshore environment, its current condition and vulnerability to threats.</p> <p>The establishment of indicators and targets to monitor achievement of desired ecosystem states.</p> <p>Support of on-ground actions that prioritise the maintenance, restoration and repair of catchment ecosystems and marine ecosystems to achieve ecosystem health thresholds and desired ecosystem states.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E130</i></p>	
<p>Reef 2050 Long-term Sustainability Plan</p> <p>The lack of consensus between the World Heritage Committee, Great Barrier Reef Marine Park Authority and the Queensland Government in recognising that the Great Barrier Reef's health is declining suggests that the findings of the two strategic assessment reports either contradict each other, or that the evaluation and analysis of the findings reflect opposing views from each governing body. The importance of these three bodies sharing a mutual understanding of how and why the Reef's health is declining and what the actual risk ratings are (they are currently inconsistent) is the first, vital step in effectively managing the impacts.</p> <p>The Great Barrier Reef Marine Park Authority recognises that "the health of the Great Barrier Reef is declining, particularly inshore areas in the southern two-thirds of the Great Barrier Reef Region". However, the Queensland Government avoids explicitly declaring the health and state of the Great Barrier Reef, instead stating that "the Queensland Government has a history of strong, adaptive management of the Great Barrier Reef World Heritage Area and its adjacent catchments. The Queensland Government environmental management of the Reef has evolved over time to respond to emerging threats and issues". This difference of opinion affects the principles of joint management, and as a result actions taken by the two governments are less likely to produce the best possible outcomes or worse, undermine the efforts taken by the other government. As one example, the continued efforts by the Australian Government through their Reef Rescue Program to improve water quality is potentially being overridden by the new Queensland draft Ports Strategy that may allow for dredging and dredge spoil dumping within the waters of the Reef.</p> <p>The Marine component of the strategic assessment process has identified forward commitments to strengthen the management of the Reef, including pointing out the need to align Queensland and the Authority better and to ensure the future of the Reef is not put in danger by political priorities. Base the Long-term Sustainability Plan largely on the Authority's final program report and ensure it contains clear priorities (for example up dated water quality guidelines, hydrodynamic modelling, restore healthy habitats by 2025, monitoring plans), targets, milestones and outcomes. Vague or broad recommendations do not have the rigour to address the findings of the Great Barrier Reef Region Strategic Assessment. The clearly explained findings in the Authority's Strategic Assessment must have direct correlation with the recommendations, in a manner that ensures that any further action being taken is driven by a clear directive on specific matters. All current and proposed developments and threats need to be properly assessed with the aim to mitigate any direct and cumulative impacts.</p> <p><u>Response</u></p> <p>The overview assessment of condition and trend of the Great Barrier Reef agree across the Strategic Assessments - refer to chapter seven of the Great Barrier Reef Region</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Strategic Assessment and chapter four of the Great Barrier Reef Coastal Zone Strategic Assessment. Note also that the assessments consider the Matters of National Environment Significance that apply to each of the regions.</p> <p>The Australian and Queensland governments have been working together since 2003 to deliver the Reef Water Quality Protection Plan. Both the Australian and Queensland governments agree that “The quality of water entering the reef has deteriorated over the past 100 years and continues to have a detrimental effect on the marine ecosystem.” The Australian and Queensland governments have committed to the long term goal that, by 2020, “the quality of water entering the reef from broad scale land use has no detrimental impact on the health and resilience of the Great Barrier Reef.” The new inputs of sediment from the catchment and relocation of sediment by dredging are not directly comparable in the context of loads. Dredging and the resuspension of sediment is recognised as a significant issue that is assessed on a case by case basis to ascertain if it is appropriate in the location it is proposed, especially if it can be undertaken without having a significant impact on values in the marine environment.</p> <p>The Authority and the Queensland Government also have a joint field management and compliance program for the Great Barrier Reef World Heritage Area, and joint permit and planning process across the Great Barrier Reef Marine Park and the Great Barrier Reef Coastal Marine Park.</p> <p>With respect to the Reef 2050 Long-term Sustainability Plan, the Authority agrees. The Reef 2050 Long-term Sustainability Plan will target the identified areas of action from the strategic assessments and seek to address gaps important for future management of the Area. The Plan will build on a strong foundation by incorporating the following four elements:</p> <p>A Vision for the Great Barrier Reef World Heritage Area that reflects the diversity of use and interest in the property, protects the outstanding universal value, sustains its integrity and integrates the three pillars of sustainability (environmental, social and economic).</p> <p>An Outcomes framework that includes desired outcomes and targets for protection of the property’s outstanding universal value.</p> <p>Adaptive management actions to deliver outcomes and targets (primarily drawn from the two strategic assessments and with a focus on critical areas of new work, such as water quality guidelines, hydrodynamic modelling and the cumulative impact assessment).</p> <p>Integrated monitoring and reporting programmes to measure the success of the Plan.</p> <p><i>Public submissions that referred to this issue: 351, 353, E213, E235, E193, E170, E218, 348, E183, E251, E252, 348, E178, E192, E208, E236, E262, E221, E212, E096</i></p>	
<p>We urge both governments to reaffirm their commitment to protect and restore the outstanding universal value of the Great Barrier Reef World Heritage Area through clear decisions and actions and urge a more immediate approach than the Long-Term Sustainability Plan. We need actions and not plans. Recommended priority outcomes include:</p> <p>By 2020, water quality no longer contributes to the decline of the Reef.</p> <p>There is no loss of ecosystem function.</p> <p>The environmental, social and economic values of the Reef are well protected and enhanced.</p> <p>Recommended Recovery Actions should be prioritised and include:</p> <p>Dredge spoil disposal in the World Heritage Area is halted.</p> <p>An accelerated program of catchment management is commenced to restore ecosystem function.</p> <p>Catchment runoff is capped and monitored.</p> <p>Port development and transhipping proposals are refused outside of current major port areas, and immediate protection is provided to Cape York and Port Alma.</p> <p>We recommend that all Recovery Actions should commence in the next twelve months, be funded accordingly, and urge that the responsibility for delivery of the Recovery Actions be assigned. Considering the future of the Great Barrier Reef is at stake, we also recommend that the Federal and State Ministers annually and publicly report on what has been achieved in the previous 12 months.</p> <p><u>Response</u></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Over the next five years the Authority will focus its management efforts on the implementation of proposed new initiatives and measures to strengthen foundational management. It is expected that the Reef 2050 Long-term Sustainability will be developed and implemented within 12 months (refer to table 2 of the Great Barrier Reef Region Strategic Assessment Program Report). Priority outcomes identified are incorporated into the delivery of the long-term sustainability plan, or are identified in recommended improvements in the Authority's management that are to be implemented over the next five years.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E262 and campaign submission</i></p>	
<p>The primary goal and outcomes of the Strategic Assessment should be to ensure that environmental protection objectives are met while also continuing the streamlining of regulation and planning schemes. Streamlined and effective regulation will help support industry operations and improve the productivity and environmental performance of ports that support export and domestic industry. The most effective approach to managing the multiple impacts affecting the Reef is one of risk management, (i.e. that management should focus on the activities that actually adversely affect the Reef, rather than populist or emotive reactions to interest groups and/or media commentary).</p> <p><u>Response</u></p> <p>The Authority agrees that management should target impacts that adversely affect the Marine Park values and that risk and resilience assessments should be based on best available science and understanding rather than emotions.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E228</i></p>	
<p>Keep a focus on the Far Northern and Cape York sections of the Great Barrier Reef. The new Queensland Cape York Regional Plan, along with other actions by the Queensland Government, will enable considerable transformation of Cape York Peninsula and that will significantly increase the risks to the Reef's northern section. In a document of this kind, such risks need to be identified and the proposed risk management strategies spelled out.</p> <p><u>Response</u></p> <p>There are two significant issues raised here. The first being a focus on the major threats to the overall health of the Great Barrier Reef World Heritage Area (for example climate change, water quality and crown-of-thorns) and the second relating to potentially significant impacts at a local or regional scale (ports, point source discharges [wastewater treatment facilities, aquaculture, mineral processing, stormwater inputs]).</p> <p>Whilst there must be a focus on those major threats we cannot lose sight of the potentially significant loss of ecological function in a local or regional area associated with any activity. Management of the Great Barrier Reef World Heritage Area requires that a balance be struck between management of potential impacts cumulatively and not continue to assess these in isolation.</p> <p>Recommendation 7, 18 and 25 of the Program Report address these issues at all spatial and temporal scales. Based on this approach, an estimate of the ability of Great Barrier Reef World Heritage Area ecosystems to assimilate and tolerate potential impacts will be determined. Once determined the acceptable level of development can be defined.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E222, E169</i></p>	
<p>The actions within both Program Reports do not provide certainty in terms of cost and the responsible agency for funding and implementation. Any action plan should hold either the federal or state minister responsible for the implementation and achievement of those actions. Given that the Comprehensive Strategic Assessment shows that there are parts of the Great Barrier Reef that are in a poor state, declining or predicted to decline, having no indication of recovery actions to be undertaken immediately suggests a lack of concern and poor management. This lack of commitment will essentially stall the recovery process of parts of the Reef that are identified as being in danger. Some immediate recovery actions to be prioritised should include:</p> <p>Dredge spoil disposal in the World Heritage Area does not occur (although land-based dumping of spoil brings a whole other set of issues which will need to be managed accordingly).</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>An accelerated program of catchment management is commenced to restore ecosystem function.</p> <p>Catchment runoff is capped and monitored.</p> <p>Port development and trans-shipping proposals are refused outside of current major port areas, and immediate protection is provided to Cape York and Port Alma.</p> <p>Key priority tasks are fast tracked and funding for those actions commence straight away.</p> <p><u>Response</u></p> <p>Over the next five years the Authority will focus its management efforts on the implementation of proposed new initiatives and measures to strengthen foundational management. It is expected that the Reef 2050 Long-term Sustainability Plan will be developed and implemented within 12 months (refer to table 27 of the Great Barrier Reef Region Strategic Assessment Program Report), and includes improved management and monitoring of the catchment. Recommended improvements to the authority's management arrangements for port activities to be implemented over the next five years include:</p> <p>Recommendation 11: Support development of a Queensland ports strategy that concentrates port development around long-established major ports in Queensland and encourage port master planning.</p> <p>Recommendation 12: Promote a strategic approach to the development and operation of marinas and other access infrastructure along the Great Barrier Reef coast.</p> <p>Recommendation 34: Contribute to the development of improved governance arrangements for the management and coordination of development activities that affect the Great Barrier Reef.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 353, E252, E221</i></p>	
<p>We need to ensure a strong focus on user pays, include the full life cycle of activities in environmental impact statements. There needs to be a greater focus on the source of impact. For example the focus on water quality needs to look at both point source and diffuse sources. This is happening sporadically, for example the Fitzroy Partnership for River Health, but needs to happen much more rigorously to better understand the influences on water quality, the often incremental changes to habitats, ecosystem services (e.g. much neglected and threatened salt marshes) and fish populations. Without this, the prospects for investment effectively in research and better management practices are poor.</p> <p><u>Response</u></p> <p>To protect the plants and animals of the Great Barrier Reef World Heritage Area a holistic approach to potential impacts associated with water quality has already been undertaken through development and implementation of the Reef Water Quality Protection Plan 2003 and 2013.</p> <p>The Water Quality Guidelines for the Great Barrier Reef Marine Park 2010 define the water quality that is required to support healthy reef ecosystem functions. These water quality guidelines have been incorporated into Regional Water Quality Improvement Plans and Queensland's Healthy Waterways Management Plans under the Environment Protection (Water) Policy 2009.</p> <p>Recommendation 18 proposes to review and further enhance these current documents to include the assessment and determination of cumulative impacts. The desired state for critical coastal ecosystems adjacent to the Great Barrier Reef World Heritage Area that provide critical ecosystem services will be a key contributor to this assessment (Recommendation 20).</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E183</i></p>	
<p>Consider and discuss the implications of Queensland Government's broad legislative reform agenda on the design and delivery of the Reef 2050 Long-term Sustainability Plan</p> <p><u>Response</u></p> <p>Development of critical thresholds for the desired ecological function of Great Barrier Reef World Heritage ecosystems will provide the benchmark that must be achieved to</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>ensure the ongoing health of the world heritage property. A wide range of programs, policies and procedures will be required to meet these requirements including land use planning, improvements in best practice management and protection (or restoration) of coastal ecosystems that provide connectivity and ecosystems services to this property. In developing and implementing the Reef 2050 Long-term Sustainability Plan all programs, policies and procedures must be able to clearly demonstrate how they contribute to meeting these critical ecosystem thresholds and therefore protect the plants and animals of the Great Barrier Reef World Heritage Area.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E222</i></p>	
<p>All the policies and strategies in the world will be ineffective if there is no real commitment to: Providing sufficient funds both to protect the reef and implement a rigorous compliance policy. Implementing tough political decisions that might not be seen favourably by a powerful industrial sector. Taking the advice of independent scientists.</p> <p><u>Response</u></p> <p>The Authority would like to draw attention to the forward commitments outlined in Chapter 12 of the Strategic Assessment report and the Program Report. Specifically sections relating to the Reef 2050 Long-term Sustainability Plan, the Integrated Research, Monitoring and Reporting Program, and the section relating to how the permitting program considers Environmental Protection and Biodiversity Conservation Act Part 3 Requirements. These forward commitments, together with the current foundational management of the Marine Park have been developed specifically to improve the outcomes.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 321</i></p>	
<p>Measures to strengthen forward management _ Outcomes and targets</p> <p>It is important that the targets are made qualitative and are achievable, with necessary levels of funding, rather than merely aspirational. Hence, the Great Barrier Reef Marine Park Authority's Strategic Assessment needs to provide more details in the Program around statistical power to detect trends, baselines, specific and time bound targets and defined benchmarks (and scales) (what is 'good'?). The Authority should also identify priority areas, a series of indicators for each Matter of National Environmental Significance value and consider a revised assessment of how to set targets. The document lacks clarity about what might happen when monitoring shows continuing decline (no triggers are identified that will ensure action in response to monitoring outcomes).</p> <p><u>Response</u></p> <p>Development of critical thresholds for the desired ecological function of Great Barrier Reef ecosystems will provide the benchmark that must be achieved to ensure the ongoing health of the World Heritage property. A wide range of programs, policies and procedures will be required to meet these requirements including land use planning, improvements in best practice management and protection (or restoration) of coastal ecosystems that provide connectivity and ecosystems services to this property.</p> <p>In developing and implementing the Reef 2050 Long-term Sustainability Plan all programs, policies and procedures must be able to clearly demonstrate how they contribute to meeting these critical ecosystem thresholds and therefore protect the plants and animals of the Great Barrier Reef World Heritage Area.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 348,353, 398, E124, E169, E235, E173, E252, E170, E167, E126, E096, E075</i></p>	
<p>Noting that there is no apparent input from scientists into the targets as they are not listed among those to have input. Yet on page 19 the targets are required to be 'scientifically justified' – how is this going to work? What I envisage is a process like the setting of the reef Plan 2013 load targets which did not involve expert scientific input and left us with a set of uninterpretable targets, less clear than the 2009 targets which were already obscure. 'Scientifically justified' surely also means ecologically relevant which is not the case with Reef Plan targets.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u></p> <p>Targets will be set according to the best available scientific information and continually be up-dated and reviewed in light of new knowledge and improved understanding.</p> <p>The Authority conducted a number of workshops with catchment stakeholders and experts to form a consensus on the status, trends and protected future of values of the Great Barrier Reef World Heritage Area. Experts involved included in species management, ecosystem health, cumulative impact assessment, water quality, geology, oceanography and spatial mapping. Stakeholder engagement was conducted through:</p> <p>Four expertise-based Reef Advisory Committees that provided advice on catchment and coastal, ecosystem, Indigenous, and tourism and recreation issues.</p> <p>Twelve community-based Local Marine Advisory Committees provided advice on management issues across the Region (Cape York, Douglas, Cairns, Cassowary Coast, Hinchinbrook, Townsville, Bowen–Burdekin, the Whitsundays, Mackay, Capricorn Coast, Gladstone and Burnett).</p> <p>Targeted engagement of Traditional Owner and stakeholder input were provided through a series of purpose-designed workshops and follow-up surveys. This targeted consultation achieved representation from a diverse range of interests including Traditional Owners; local government; ports, shipping and related development sectors; mining and resource sectors; research organisations; tourism operators; commercial fishers; recreational users including fishers; natural resource managers; farmers; conservation groups and the broader community.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	
<p>Make the recommendations from the Strategic Assessment report purpose and outcome driven, including timeframes (short, medium and long term), costing and level of prioritisation and feasibility.</p> <p><u>Response</u></p> <p>The Reef 2050 Long term sustainability plan will dictate the way ahead for many of these recommendations and future management initiatives that are related to outcomes based management. Table 2 of the final Program report outlines current timeframes and activities.</p> <p>The Authority conducted a number of workshops with catchment stakeholders and experts to form a consensus on the status, trends and protected future of values of the Great Barrier Reef World Heritage Area. Experts involved included in species management, ecosystem health, cumulative impact assessment, water quality, geology, oceanography and spatial mapping. Stakeholder engagement was conducted through:</p> <p>Four expertise-based Reef Advisory Committees that provided advice on catchment and coastal, ecosystem, Indigenous, and tourism and recreation issues.</p> <p>Twelve community-based Local Marine Advisory Committees provided advice on management issues across the Region (Cape York, Douglas, Cairns, Cassowary Coast, Hinchinbrook, Townsville, Bowen–Burdekin, the Whitsundays, Mackay, Capricorn Coast, Gladstone and Burnett).</p> <p>Targeted engagement of Traditional Owner and stakeholder input were provided through a series of purpose-designed workshops and follow-up surveys. This targeted consultation achieved representation from a diverse range of interests including Traditional Owners; local government; ports, shipping and related development sectors; mining and resource sectors; research organisations; tourism operators; commercial fishers; recreational users including fishers; natural resource managers; farmers; conservation groups and the broader community.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 348, 353, E235, E192, E124</i></p>	
<p>Measures to strengthen forward management _ Heritage</p> <p>In drafting the Strategic Assessment the Great Barrier Reef Marine Park Authority does not specifically discuss National Heritage as a separate matter of national environmental significance but rather concludes that assessment of the World Heritage Area will suffice or cover all areas of the Great Barrier Reef National Heritage place. This does raise the question about whether there are significant attributes of the Great Barrier Reef that might be overlooked because its National Heritage qualities have not been formally assessed. Strengthen the intent of REC1 to ensure both heritage values and community benefits are elevated in all aspects of reef management, including</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>enhancing these values and reducing impacts on them.</p> <p><u>Response</u></p> <p>The Authority is unsure where this misconception arose; the draft Strategic Assessment clearly addressed 'National Heritage in a number of parts; as indicated below: Part 4.4 introduces National Heritage as one of the seven matters of national environmental significance addressed in the document; Part 4.10 shows the connections between the various matters of matters of national environmental significance including National Heritage Tables 4.8 and 4.9 show the values, attributes and processes than are addressed by each matters of national environmental significance including National Heritage Part 7.6.3 shows the current condition and trend of the Great Barrier Reef against the listing criteria for National Heritage.</p> <p>However, the program report did suggest there is value in contemplating an investigation of the National Heritage listing to further consider values (Indigenous and historic) that are not currently part of the listing.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E169, E227</i></p>	
<p>The Australian Heritage Council would welcome an opportunity to make an assessment of the Great Barrier Reef against all relevant National Heritage criteria and this could assist meet the Program Report targets.</p> <p><u>Response</u></p> <p>The Authority appreciates the offer and will follow up on this request.</p> <p>No further action has been taken in relation to this comment at this point.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E169</i></p>	
<p>Both Great Barrier Reef and Wet Tropics World Heritage Areas are matters of national environmental significance. Both of these World Heritage Areas are listed for their cultural values so any impact assessment on matters of national environmental significance needs to include the impact upon the cultural values more fully.</p> <p><u>Response</u></p> <p>This comment is not entirely correct; the Great Barrier Reef World Heritage Area was not listed as a world heritage property for its cultural values. However one of the natural world heritage criteria applicable to the Great Barrier Reef when listed as a world heritage property in 1981 did refer to "man's interaction with his natural environment". On this basis, part of the Statement of Outstanding Universal Value for the Great Barrier Reef World Heritage Area does mention some cultural attributes but only those that were mentioned in the nomination. The wording in the Statement includes "Man's interaction with the natural environment is illustrated by strong ongoing links between Aboriginal and Torres Strait Islanders and their sea country, and includes numerous shell deposits (middens) and fish traps, plus the application of story places and marine totem".</p> <p>In recognising the Great Barrier Reef for the four natural criteria in 1981, the World Heritage Committee acknowledged not only the Great Barrier Reef's natural values, but also the strong ongoing links between Aboriginal and Torres Strait Islanders and their sea country as part of the criteria at the time, so the above aspects do need to be part of any assessment today. However, while other cultural, Indigenous and historic values (including shipwrecks and lighthouses) cannot be viewed as being world heritage values; these values ARE protected under both Queensland and Commonwealth legislation and elements of the environment of the Marine Park which is a matter of national environmental significance protected under national environmental law are also considered to be matters of national environmental significance by the 'Great Barrier Reef Marine Park' trigger.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E242</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Encourage closer engagement on identification of sites and activities of Indigenous significance and the potential for traditional custodian ranger programs and input into decision making.</p> <p><u>Response</u></p> <p>In response to encouraging closer engagement on identification of sites and activities of Indigenous significance, the Authority would like to draw attention to a recommended improvement (REC4), which states: ‘<i>Collaborate with Traditional Owners to undertake an assessment of the Indigenous heritage values of the Region.</i>’</p> <p>The Traditional Use of Marine Resources Agreements (TUMRAs) are formal agreements between Traditional Owners which outline how marine resources are to be used taking into account traditional lore and custom. The agreements can then be jointly accredited under the <i>Great Barrier Reef Marine Park Regulations 1983</i> and the <i>Great Barrier Reef Coast Marine Park Zoning Plan 2004</i> (Queensland legislation). Once accredited, the TUMRA allows activities to be conducted ‘as of right’ under the Great Barrier Reef Marine Park Zoning Plan. Amongst other things, a TUMRA must describe the activities to be undertaken; the animal species to be harvested and the number of any protected species; and the management arrangements to achieve implementation including the role of the Traditional Owner group in ensuring compliance. There are currently six accredited TUMRAs. The Great Barrier Reef Marine Park Authority is also a party to one Marine Indigenous Land Use Agreement. Ten other Traditional Owner groups are expressing interest in developing TUMRAs. Funding for TUMRA development and support is provided by the Reef Rescue Land and Sea Country Indigenous Partnerships Program under Reef 2050.</p> <p>No further action has been taken in relation to this comment</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E183, E156, E222, 205</i></p>	
<p>The Strategic Assessment undervalues initiatives undertaken by Traditional Owners in the management of the Great Barrier Reef. For example, there is no mention of Indigenous Protected Areas, which are Traditional Owner led, country-based protected areas that integrate management of land and sea including parts of the Reef and which the Great Barrier Reef Marine Park Authority has committed to support.</p> <p><u>Response</u></p> <p>While Indigenous Protected Areas (IPAs) are not specifically mentioned in the Strategic Assessment, they are still in their infancy in the Marine Environment and don’t necessarily confer any benefits to Traditional Owners unless they are coupled with Funding, Management Plans, Implementation Plans, TUMRAs or some other mechanism for management and environmental outcomes. At this time there is only one IPA within the Great Barrier Reef Marine Park being the Giringun IPA which uses the TUMRA boundary for its marine component so it is effectively still being managed as a TUMRA.</p> <p>The Authority disagrees with the comment that initiatives by Traditional Owners are undervalued and wish to refer to items on Lama Lama, Gudjuda, Giringun, and Woppaburra to mention a few examples.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E156</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Measures to strengthen forward management _ Engagement</p> <p>The Program report needs to provide scope to support community driven initiatives. The management of the Reef can't just be the responsibility of the Queensland Government and the Great Barrier Reef Marine Park Authority. There needs to be support at a political level to make things happen and there needs to be an explicit statement on how this will be achieved. Biodiversity protection needs to have enforcement and general knowledge of regulations such as the Zoning Plan and other 'Reef rules'. Information such as local government community surveys could be used to better strengthen both program reports in relation to social impacts to changes of the Great Barrier Reef over time. Involve local governments in relation to recommendations such as 3, 6, 7, 23, 26, 31 and 34.</p> <p><u>Response</u></p> <p>The Authority recognises that success in protecting the Great Barrier Reef World Heritage Area in the long term will only be brought about through the collaborative efforts of all tiers of government, Traditional Owners, land managers, users of the Reef and the community, particularly where the risks are outside the jurisdiction of the Great Barrier Reef Marine Park Authority. Opportunities exist under the Reef Water Quality Protection Plan to collaboratively address land management issues that impact on the health of the Reef and the Authority has actively been working through its partnership and stewardship programs, for example, Reef Guardians, to educate, promote adoption of best practice and to bring together sectors of the community to protect the World Heritage Area. This work alongside other programs will continue in the future.</p> <p>The Authority will continue to refine and improve its communication tools particularly in the area of improving community and users' knowledge in management arrangement that protect the World Heritage Area. The Authority is actively engaged with the CSIRO's Social and Long Term Monitoring Program (SELTMP) to improve understanding of people and communities in the ongoing management of the World Heritage Area.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E251, E156, E122, E18, E209, E127</i></p>	
<p>Highlight the Great Barrier Reef Marine Park Authority's intent to work with experts in social change to rethink the way in which the agency works to change the behaviour of the major groups of reef users, particularly extractive users.</p> <p><u>Response</u></p> <p>The Great Barrier Reef Marine Park Authority has and will continue to support and partner the CSIRO's Social and Long Term Monitoring Program (SELTMP) which is providing valuable information about use of the Reef, behaviours and drivers of users and the aspirations of the community and industry for the Reef into the future. This information can and will in turn be used to inform ways to bring about changes in behaviour. Working in partnership with these social science and economic experts that work in this program and other collaborators will continue to be a focus for the Authority into the future.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E235</i></p>	
<p>Measures to strengthen forward management _ Compliance</p> <p>Prioritise management actions around compliance and enforcement, especially in relation to water quality guidelines.</p> <p><u>Response</u></p> <p>The Authority has a strategic compliance risk assessment that is updated annually and against which performance is evaluated quarterly. This allows for adjustment of treatments to emerging problems, within the constraints of available resources and within legislative parameters. Some water quality related offences in the Great Barrier Reef Marine Park are included in this strategic risk assessment, including discharges from ships (oil – high risk, sewage – medium risk) and discharges from land (medium risk). While there have been a small number of high consequence offences reported in the past years, relatively few incidents are currently detected or reported relating to water quality compliance in the Marine Park.</p> <p>No further action has been taken in regards to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E124</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>There is no mention of an increase in compliance activities, which will make it difficult to make a difference to compliance. At present there is too large a gap between compliance requirements and enforcement and ongoing confusion about jurisdictional responsibility of enforcement. Community engagement and education is sought on this matter.</p> <p><u>Response</u></p> <p>The Authority works cooperatively with other State and Commonwealth agencies to achieve a coordinated compliance program for the Great Barrier Reef World Heritage Area. The use of enforcement actions will always be balanced with other compliance tools, including community education. The resources of the field management compliance program are static. Advances in compliance will focus on better use of technology, improved tasking of surveillance patrols to target high risk and repeat offences and improved legislative frameworks for continuing or emerging compliance risks. This approach is outlined by recommendation 16.</p> <p>No further action has been taken in regards to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E170, E183</i></p>	
<p>Support recommendation to increase compliance but the program report needs to identify new ways to deal with longstanding problems such as illegal turtle hunting.</p> <p><u>Response</u></p> <p>Traditional Owners can be prosecuted as with any other person if they break any of the Laws of General Application and penalties have been tripled. They cannot be penalised for practicing their traditional or customary rights that are legal under the <i>Native Title Act 1993</i>. The Great Barrier Reef Marine Park Authority's Compliance Officers work very closely with Traditional Owners and Communities along the length of the Great Barrier Reef and are achieving excellent results. Compliance is more than just a big stick approach, it entails, education, soft compliance and enforcement.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E126</i></p>	
Editorial comments per chapter	
<p>Overall comments</p> <p>A summary of the significance and implications of the findings at the end of each section would be helpful.</p> <p><u>Response</u></p> <p>The significance and implications of the findings of the Strategic Assessment Report are summarised in the final version of the Program report, which dictates the way ahead, identifies key initiatives and identifies changes to future management policy.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Scientific literature specific to the Great Barrier Reef is generally well referenced; however the international science related to our understanding of general drivers and impacts in tropical systems is not as comprehensively reviewed.</p> <p><u>Response</u></p> <p>The focus on Great Barrier Reef specific literature was deliberate, especially for areas where the subject is well studied on the Reef. Where there is a lack of understanding of processes specifically from the Reef, relevant international literature was included. One such example is the literature on cyclones and climate change in Chapter 10, which is not Reef specific.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398</i></p>	
<p>The Giringun Aboriginal people will not endorse the Strategic Assessment due to the inadequate consideration of Traditional Owner interests and overall lack of consultation.</p> <p><u>Response</u></p> <p>Traditional Owners were allocated two Indigenous workshops specifically devoted to indigenous matters (North and South Great Barrier Reef), with the expressed intent to gather the views of Traditional Owners. A follow-up Workshop for both North and South combined was conducted. Traditional Owners at the workshops expressed dissatisfaction with the time frames, as did most non-Traditional Owners. All views expressed were provided and considered in the Workshop reports.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E149</i></p>	
<p>Chapter 1</p> <p>Section 1.1.2, last paragraph – Traditional Owners may not be the only people for which the criterion of “interaction between man [sic] and his [sic] natural environment” is relevant.</p> <p><u>Response</u></p> <p>At the time of listing, the part of criterion (ii) that referred to “man’s interaction with his natural environment” was specifically recognised by the strong connection between Traditional Owners and their land and sea country. Since then criterion (ii) has been changed. Please refer to Chapter 4, section 4.2.1 for further clarification.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 1.1.5 – although it is explained later, it would be more useful at this point in the document to point out that the boundaries of the Great Barrier Reef Marine Park and the Great Barrier Reef World Heritage Area are not identical and that there are areas within the World Heritage Area that are outside the Marine Park.</p> <p><u>Response</u></p> <p>This issue is adequately addressed in the current format of the Strategic Assessment Report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 1.2 is misleading. The purpose of the Strategic Assessment according to the Terms of Reference was to identify impacts and assess the Great Barrier Reef Marine Park Authority’s management arrangements to deal with this only. The implied relationship/equivalence with environmental impact assessments (S 1.2.1) is tenuous. The Strategic Assessment does not provide solutions/mitigation as such, except through good intentions to improve management arrangements.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u></p> <p>The Terms of Reference states that the purpose of the Strategic Assessment was to “asses the likely impacts of actions on relevant matters of national environmental significance as defined in the Environment Protection and Biodiversity Conservation Act, including the outstanding universal value of the Great Barrier Reef World Heritage Area and the Authority’s management arrangements to deal with such impacts”. Many impact assessments (determining likely impacts of actions) are currently dealt with through the environmental impact assessment process; hence the relationship is highly relevant.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 1.2.3 – the fourth paragraph identifies that Australia was requested to identify “planned and potential developments that could impact on the outstanding universal value of the World Heritage Area”. This was not achieved for the Marine Strategic Assessment.</p> <p>The section also lists the expectations of UNESCO against Recommendation R5. It would be appropriate to provide an assessment of the extent to which the Coastal and Marine Strategic Assessments have met this expectation.</p> <p><u>Response</u></p> <p>The Authority disagrees that the Strategic Assessment failed to identify “planned and potential developments that could impact on the outstanding universal value of the World Heritage Area”. Especially Chapters 10 and 11, (Resilience and risk and Projected condition) both discuss the potential impacts of future developments and their impacts on the outstanding universal value of the World Heritage Area.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192, E181</i></p>	
<p>Chapter 2</p> <p>Section 2.7.1 - the diagram does not seem to match the Driving Forces-Pressures-State of Environment-Impacts-Responses (DPSIR) approach to assessing and managing environmental issues.</p> <p><u>Response</u></p> <p>The figure text clearly states that it is “<i>Based on the widely recognised...</i>”, rather than it being an exact match.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 2.7.3 – there is a limited basis for the decision to model (Bayesian) only coral and seagrass habitats and dugong populations. The Environment Institute of Australia and New Zealand (EIANZ) seeks clarification of why these attributes were selected over the many other candidates, and how the list of chosen attributes might influence the conclusions reached in the Strategic Assessments.</p> <p><u>Response</u></p> <p>Coral and Seagrass were habitats for which there was sufficient data and information to produce meaningful models; hence they were chosen to illustrate the utility of the approach. As stated in chapter 6, the models are preliminary and the outcomes were not intended to influence the conclusions reached in the assessment report. Please refer to response of recommendation IPR-92 from the Independent peer review and the associated amendment in section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-116

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The document does not contain any information on the study team, authors and specialists who prepared the Strategic Assessment. This is important in establishing the credibility of the assessment. Note that environmental impact statements under the Environment Protection and Biodiversity Conservation Act are required to list the study team's names, qualifications and years of experience.</p> <p>Section 2.11.1 – it would be useful to list the membership of the advisory committees, either here or in an appendix.</p> <p>Section 2.11.2 – a list of all of the stakeholders/stakeholder groups consulted should be included.</p> <p><u>Response</u></p> <p>The members of our advisory committees are listed on our external web page and complete lists of all stakeholder groups can be provided upon request. The list of people who contributed to the preparation of the Strategic Assessment is substantial and varies greatly between each chapter and section. The reason they are not named is due to the Australian Government Intellectual Property Manual, which states that “<i>Under common law, where the creator has performed the relevant work under a contract of service, ownership is vested in the employer rather than the employee, unless there is agreement to the contrary</i>”. Hence all authorship is attributed to the Authority unless written agreement has been obtained from the Chairman, Great Barrier Reef Marine Park Authority.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192, REP001</i></p>	
<p>Chapter 3</p> <p>Section 3.3, last paragraph - has the Great Barrier Reef Marine Park Authority recommended, drafted or implemented any regulations in relation to activities outside the Great Barrier Reef Marine Park that might impact on water quality? Is this planned as part of the forward program? It would be useful to describe a few examples.</p> <p><u>Response</u></p> <p>The following text has been added to section 3.3.”In regard to actions that may pollute water in a manner harmful to animals and plants in the Marine Park, Section 66(2)(e) of the Act provides the capacity to make a regulation to regulate or prohibit these actions, whether they are within the Marine Park or elsewhere. This provision was used in 2000 to develop the Great Barrier Reef Marine Park (Aquaculture) Regulations 2000. This occurred because of concerns that coastal aquaculture expansion under the Queensland legislation and policy of the day was likely to have such an impact. These regulations were later ‘turned off’ by the Commonwealth Minister using provisions of the regulations to accredit improved Queensland legislation and policy.”</p> <p>Future management initiatives, such as the Reef 2050 Long-term Sustainability Plan, are presented in detailed in the final version of the Program Report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-1
<p>Section 3.4.1 notes that the Great Barrier Reef Marine Park Authority can delegate authority to the Queensland Government. Are any such delegations in place? It would be useful to provide a few examples.</p> <p><u>Response</u></p> <p>This power under the GBRMP Act is not currently applied. Any decision to apply this power in the future would be made by the Authority Board. One such example has been added to section 3.3 of the Strategic Assessment Report in relation to the Authority's means of addressing activities that occur in the Marine Park. Please refer to Section 6.2</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-1

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 3.5 should probably include the following Queensland legislation:</p> <p><i>Aboriginal Cultural Heritage Act 2003</i></p> <p><i>Torres Strait Islander Cultural Heritage Act 2003</i></p> <p><i>Queensland Heritage Act 1992</i></p> <p><i>Land Act 1994</i></p> <p><i>Mineral Resources Act 1989</i></p> <p><u>Response</u></p> <p>Additional Queensland legislation has been added to section 3.5 as per recommendation. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-3
<p>Sections 3.6, 3.7 and 3.8 – although mentioned later in Section 3.11, it would be appropriate in these sections to discuss the Great Barrier Reef Marine Park Authority's role in assessment and approval of development projects inside and outside of the Reef/World Heritage Area, including projects undergoing assessment under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act), <i>State Development and Public Works Organisation Act 1971</i> (SDPWO Act), and <i>Sustainable Planning Act 2009</i> (SP Act). This section should also clarify the Authority's role and the role of the Commonwealth Department of the Environment (DoE) in management of the outstanding universal value (OUV) of the World Heritage Area, particularly for those aspects of the OUV that are not clearly captured in the Marine Park.</p> <p><u>Response</u></p> <p>The Authority's role in relation to the EPBC Act is under review and will be more explicitly addressed in the final version of the Program Report. Ongoing bilateral negotiations are taking place between the Australian Government and Queensland Government to clarify their respective roles in environmental impact assessment and approval processes.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 3.8 should note the following:</p> <p>Queensland Department of National Parks, Recreation, Sport and Racing (DNPRSR) also undertake scientific research.</p> <p>Queensland Department of Environment and Heritage Protection (DEHP) are also responsible for cultural heritage protection and management.</p> <p>DEHP is responsible for authorising certain activities (environmentally relevant activities) that may cause harmful discharges to air, water and land, and noise emissions.</p> <p>DEHP also has responsibility for waste management.</p> <p>Queensland Department of State Development, Infrastructure and Planning (DSDIP) are also responsible for coordination of the environmental impact statement process for certain major projects, and coordination of development approval process under the <i>Sustainable Planning Act 2009</i>.</p> <p><u>Response</u></p> <p>The comment is noted. The responsibilities outlined in section 3.8 are not exhaustive.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 3.11.5 discusses the financial resources available for management of the Great Barrier Reef Marine Park and associated values. It would be useful to provide an analysis of how this compares to other international benchmarks for expenditure on management of highly significant environmental values. It would also be beneficial to examine the proportion of this expenditure that contributes specifically to protection of the outstanding universal value of the Great Barrier Reef World Heritage Area.</p> <p>The discussion on management in this section appears to be focussed on management of biodiversity generally, habitat protection and management of individual species of conservation significance. Further information should be provided on management arrangements for protecting the outstanding universal value in relation to criterion vii, viii and ix.</p> <p><u>Response</u></p> <p>Noted, and we agree that such analyses would have been useful to implement. However, due to time and resource constraints, this will not be undertaken at this point. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 3.13 – should the Bowling Green Bay Ramsar Wetland also be mentioned?</p> <p><u>Response</u></p> <p>Bowling Green Bay has been added. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-10
<p>Chapter 4</p> <p>Section 4.2: The box in Section 4.2 identifies the aesthetic values. However, in the management recommendations, there is no focus on aesthetics or natural beauty, although these are core values of the Great Barrier Reef World Heritage Area.</p> <p><u>Response</u></p> <p>Section 4.2.1 has been amended to add "superlative natural phenomena". Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-11
<p>Section 4.3.1 – technically, the beaches are not in the Great Barrier Reef Marine Park as the Marine Park boundary is to the low water mark.</p> <p><u>Response</u></p> <p>Beaches and coastlines are however part of the Great Barrier Reef World Heritage Area, and as such are considered in both the Marine and Coastal Strategic Assessments in the same manner as other matters of national environmental significance.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 4.8.2. Points out the current importance of Bowling Green Bay but its geomorphological history is also of great importance to the Great Barrier Reef evolution.</p> <p><u>Response</u></p> <p>This has been amended in accordance with the suggestions by Hopley. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	ADD-14

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Tectonic processes are missing from Table 4.9.</p> <p><u>Response</u></p> <p>Tectonic forces have been added to Table 4.9. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	ADD-23
<p>Section 4.9. One statement on p4-43 is misleading. Sea Level has not been fairly constant over the last 6500yrs but has varied across the shelf determined by glacio-hydro-isostasy. As a result inshore reefs are older, sometimes raised, whilst reefs of the outer shelf are younger with more prolific coral cover.</p> <p><u>Response</u></p> <p>This has been corrected. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	ADD-15 ADD-99
<p>Section 4.9: Environmental processes relevant to ameliorating the impacts of dredging and dredge material placement are not described, such as the importance of the reworking of sediments by animals and plants (bioturbation) and consolidation of sediments, which have major influences on the fate of dispersed dredge material. There is sufficient published literature to indicate these processes have a significant influence on potential impacts.</p> <p><u>Response</u></p> <p>The role of bioturbation in the movement of sediment profiles, consolidation of fines, binding of particles etc. is acknowledged and amendment has been made to section 4.9 to add this process. Relevant amendments to the Strategic Assessment Report on this matter are summarised in Section 6.2.</p> <p>At present, the rate of sediment movement is generally unknown at the scale of the Great Barrier Reef Region. However, the Authority, in partnership with the Australian Institute of Marine Science, is convening an Expert Panel to develop and publish a synthesis statement outlining what is known, what is scientifically contentious, and what are the key gaps in our knowledge, focusing on the biophysical effects on the environment by dredging and the dispersal of dredge material. The synthesis statement should enhance the foundation for the ongoing development of policy and guidelines for best practice management and assessment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E220; E194</i></p>	ADD-18, ADD-66, ADD-67
<p>Chapter 5</p> <p>Section 5.2.3: The potential impacts of growth in the mining and resource sector in and adjacent to the Region's catchment are insufficiently covered.</p> <p><u>Response</u></p> <p>The section starts with a statement "Queensland's economy is currently worth \$260 billion per annum and is principally based on mining, construction, tourism and agriculture." It goes on to discuss predicted growth of coal seam gas-to-liquefied natural gas as well as coal exports under the future trends section. The impacts of this are addressed in detail elsewhere in the document, including increased shipping, increased port activity and expansions, the impacts of capital and maintenance dredging, light pollution and visual impacts. Given this, we feel the potential impacts of growth in the mining and resource sector is sufficiently covered.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E243</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 5.2.3: Figure 5.18 contains a typo - 1900 should be 1990.</p> <p><u>Response</u> This has been amended. Refer to Section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	ADD-32
<p>Section 5.2.4: The final, point should read: ‘<i>Development of antifouling alternatives that do not contain or are lower in tributyltin (TBT) and have lower concentrations of copper, reduce shipping impacts.</i>’ This will bring the report in line with the International Convention on the Control of Harmful Anti-fouling Systems on Ships and the Australian <i>Antifouling and in-water cleaning guidelines.</i></p> <p><u>Response</u> This has been amended. Refer to Section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E107</i></p>	ADD-32
<p>Section 5.2.5: Linkage with local government agencies responsible for enforcing the use of improved wastewater and stormwater treatment technology should be further drawn out.</p> <p><u>Response</u> An amendment has been made under the section 5.3.3, which deals with advancement in sewage treatment as well as the addition of a dot point under section 5.2.5. Please refer to Section 6.2.</p> <p>Proposed new, on-ground actions in the Great Barrier Reef catchment include the Reef 2050 Long-term Sustainability Plan/Reef Recovery Plan to include support for stormwater management that improves water quality and maintains ecosystem functions for Great Barrier Reef ecosystems.</p> <p>Net benefit policies and development assessment should mandate the use of stormwater management that improves water quality and maintains ecosystem functions as mitigation prior to approval of offsets and implementation of net benefit projects.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-31, ADD-37
<p>Section 5.3.1: Immediately after the discussion about Agriculture and how the <i>Vegetation Management Act 1993</i> (the VMA) has reduced land clearing, the statement is made that “Recently, the Queensland Government proposed a suite of changes to the VMA which includes repealing regulations that apply to clearing high value regrowth on freehold land and Indigenous lands, and promoting self-assessment of areas that contain remnant or high value regrowth”. The Environment Institute of Australia and New Zealand (EIANZ) suggests that Great Barrier Reef Marine Park Authority explain what this comment means for water quality in the Reef region.</p> <p><u>Response</u> This issue was raised by the independent peer review and has been actioned by an addition to the current text under section 5.3.1. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-34
<p>Section 5.3.1: Figure 5.9. The land uses in this map are unacceptable. As far as I can tell sugarcane cultivation (one of the most important land uses in the Catchment) is listed as red – horticulture irrigated, or yellow – horticulture non-irrigated. In Great Barrier Reef Catchment analysis sugarcane is never listed as horticulture!</p> <p><u>Response</u> <i>Amendments have been made to the key in Figure 5.9. Please refer to Section 6.2.</i></p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	ADD-35

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 5.3.3 – it is not clear what is meant by visual disturbance.</p> <p><u>Response</u></p> <p>Impacts that reduce the aesthetic value are considered visual disturbances. No amendments have been made with regards to this as the meaning of the term is not deemed to be confusing.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 5.3.4 – industrial development also increases the demand for shipping. Clarify whether mining and petroleum extraction is included in industrial development. A heading “Industrial Development and Resource Extraction” might be more appropriate. The section gives the impression that only minor mining activities occur in the catchment, when in fact there are a number of significant mining areas.</p> <p><u>Response</u></p> <p>The section has been reworded for clarification. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-33, ADD-38
<p>Section 5.3.5: Figure 5.11, It would be useful to delineate the three potential ports on the map (i.e. Wongai in Cape York, Fitzroy terminal project and Balaclava Island).</p> <p><u>Response</u></p> <p>As these are not yet approved, or have been withdrawn (Balaclava Island), they will not be considered for inclusion in a figure depicting Queensland trading ports.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E243</i></p>	
<p>Section 5.4: Note that commercial fishing is not only an impact but also an economic contribution to the Region. Explicitly stated in relation to the tourism marketing of "local seafood".</p> <p>5.4.4-Total revenue collected by the state via private boat registration is \$17.75 x 230,000 (approximate 2009 figure) = over \$4m pa.</p> <p><u>Response</u></p> <p>Like all other impacts under section 5.4, Commercial fishing is addressed under the headings of; Trends, <u>Benefits</u> and Impacts. The \$4m per annum of revenue from private boat registrations forms part of the estimated \$330m per annum economic contribution.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	
<p>Table 5.2 does not seem to correlate with the regions defined in Table 1.2.</p> <p><u>Response</u></p> <p>Only ten of the 12 exclusion zones are ports and not all ports are in exclusion zones.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 5.4.5 – prefer use of non-gender specific language – boaters or yachters rather than yachtsmen.</p> <p><u>Response</u> Boaters and yachters have replaced gender specific terms.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-43
<p>Section 5.4.6: The Coastal Strategic Assessment reports a downward trend in shipping incidents while the Marine Strategic Assessment states that there is no trend. This discrepancy requires further investigation.</p> <p><u>Response</u> This has been corrected in the Marine Strategic Assessment Report. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-44
<p>Section 5.4.7: The benefits of Defence activities are primarily focused on, and aligned with, the conservation and management of the Great Barrier Reef Marine Park. Additional activities that should be listed in that section include charting, ocean surveillance, maritime search and rescue, and Defence Aid to the Civil Community tasks. This section should also identify Defence's contribution to research efforts in the Marine Park including population surveys of key species in Shoalwater Bay and Coral Sea, research into the impacts of Defence activities on marine fauna as well as soil and water quality runoff as a normal part of Defence operations.</p> <p><u>Response</u> This has been added to the benefits under section 5.4.7. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E132</i></p>	ADD-47
<p>Chapter 6</p> <p>Whilst mining of the Great Barrier Reef was halted 50 years ago and subsequent coral growth has obliterated most impacts, mining on high and low islands for guano based phosphate rock has had a continuing impact. In addition many of the significantly important beach ridge sequences have been seen (and still are) as a source of building materials by developers. Daly and Griggs (2006) is a most important and informative reference and should be included in the Report. It discusses implications for contemporary management and contains information on current use.</p> <p><u>Response</u> Impacts of ongoing mining activities have been included and Daly and Griggs (2006) has been added as a reference.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	ADD-70, ADD-50
<p>Throughout this section, cross references should be provided to the Coastal Strategic Assessment as there is considerable overlap.</p> <p>A number of sections describe impacts very generically. There is emerging concern about a number of impacts, particularly impacts relating to port activities and development, and a great deal of conjecture about the potential significance of these impacts. It would, therefore, be beneficial to provide more detailed reviews of recent studies and monitoring programs so that public and professional debate could become more focussed and accurate. The Environment Institute of Australia and New Zealand (EIANZ) is concerned that many of the assigned grades might be under-represented.</p> <p><u>Response</u> The overlap is acknowledged and is considered within a range of new initiatives to improve future management, such as the Reef 2050 Long-term Sustainability Plan. Grades that are based on what can be considered "Data deficient" information, have now been clearly labelled as such, hence avoiding the possibility of under-representing</p>	ADD-73, ADD-74

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>the risk of the impact due to lack of sufficient information. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.4: We support the criticism of the flawed modelling approach adopted within the “Improved Dredge Material Management for the GBR Region” study undertaken by Sinclair Knights Merz (SKM) and Asia-Pacific Applies Science Associates (APASA). The findings in this study are not aligned with previous monitoring outcomes and indeed the Great Barrier Reef Marine Park Authority has issued an Interpretive Statement clarifying the SKM APASA study. The inclusion of the SKM APASA study results in the draft Assessment without reference to the Interpretive Statement is therefore misleading and vexatious. Ports Australia and the Queensland Ports Association view the SKM APASA study as lacking in credibility.</p> <p>There has been considerable stakeholder concern in recent times regarding the effects of dredging on the Great Barrier Reef. It is possible that some of this concern has been overstated. It would be useful if this section drew on monitoring data and related information from recent dredging projects, such as at Hay Point and in the Port of Gladstone, to provide a more thorough assessment of the geographic extent of dredging related impacts, and also the severity and duration of these impacts on coral, seagrass and other marine ecosystems.</p> <p>Re <i>dumping and re-suspension of dredge material</i> – it would be appropriate to also mention that some dredge material may be potential acid sulphate soils (although this is only an issue where the dredge material is exposed to oxygen) and may also contain contaminants from land runoff. In addition, further care is required when interpreting the results in Figure 6.19, particularly, as the scales of the modelled versus actual pictures are not provided, nor are geographic reference points that would allow easier comparison of the pictures. As the “actual” pictures are at a smaller scale, the plume appears much larger. Also, the modelled output represents the cumulative modelled concentration of suspended sediment over a 31 day period, whereas the “actual” images are snapshots and may not represent the same time frame, dredging rates or dredge method as was used in the model.</p> <p>Although modelling has shortcomings, it is still a useful predictive tool, and should not be disregarded. However, as noted in the text, significant opportunities exist to improve the quality of predictive modelling. It may be possible to “recalibrate” the models used for the Western Basin dredging project using actual monitoring data to improve accuracy of the models for this area. This in turn may lead to improved modelling accuracy at other locations.</p> <p>The potential impacts of dredging and spoil disposal are well summarised in the Great Barrier Reef Marine Park Authority’s Strategic Assessment (with limited references). However an overall statement on page 6-35 is made: “The effects of dredging activities are well documented and include (...)”. While there is a good understanding of the theoretical effects and impacts and case studies from overseas, we would argue that there is a widely acknowledged dearth of knowledge about dredging and spoil disposal impacts in the tropical marine environment and certainly about long-term and far field impacts on matters of national environmental significance.</p> <p>The final Assessment needs to provide balanced information to enable a more mature discussion on dredging related impacts.</p> <p>Section 6.11: This point contains the statement that “recent research indicates that resuspended dredge material may move over much greater distances from disposal sites than previously assumed”. It is assumed that the “recent research” quoted is the SKM-APASA. Any reference to this report needs to include reference to the significant limitations of the report as stated in the Interpretative statement that is attached to this report. For example:</p> <p>“Due to budget and timeframe constraints, and the technical challenges posed by the large spatial coverage and the extended period for simulation, it was necessary to make a number of simplifying assumptions. Some of these assumptions (for example, no consolidation of material, all placed material is resuspended, and no resuspension of sediments in shallow water) do not reflect real conditions, leading to a lack of alignment with existing field measurements. These assumptions resulted in the model overestimation and the dispersion of dredged material from placement sites in both the amount and distances travelled. Consequently, the sediment plume and transport maps provided in this report do not represent actual sedimentation rates or the specific extent of dredge material dispersion and migration. In some cases, the amount of sediment deposition mapped is so small that it could not be measured. The approach adopted in the modelling study was purely to emphasise the comparison between sites and does not provide guidance on the actual impacts likely in the regions shown on the maps. As such, the maps cannot be used to determine the ecological relevance of impacts.</p> <p>Section 6.8.1: Figure 6.27. Dredging is shown in red on the diagram along with agricultural runoff and urban runoff as releasing toxins which have widespread negative effects. Elsewhere in the Strategic Assessment dredging is given a ‘low effect’ rating and is recognised as being tightly controlled by National Assessment Guidelines for Dredging (NAGD) to prevent dumping of contaminants. Additionally it needs to be clarified that the NAGD regulate the quality of dredge material placed at sea preventing the disposal of</p>	<p>ADD-62; ADD-63; ADD-64; ADD-65; ADD-66; ADD-67; ADD-68</p>

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>toxic material.</p> <p>Table 6.11: Dumping and resuspension of dredge material is listed as a “very high” impact on biodiversity. This ranking is not justified in the document nor is it supported in available literature. There appears to be an assumption that, if material disposed at existing dredge disposal grounds does not remain within the defined disposal area (page 6-39), this will result in adverse impacts. Many Dredge Material Placement Areas (DMPAs) in Australia are at least partially dispersive and their use does not cause demonstrably unacceptable environmental effects. Reference also needs to be made to previous port monitoring of DMPAs, and the nature of influence over ecosystem components.</p> <p>Consistency issue of impact and risk ratings carries throughout the Strategic Assessment report.</p> <p><u>Response</u></p> <p>There have been several amendments to the Strategic Assessment report in response to these concerns, most relevant to Figure 6.19 (amendment number ADD-39 and ADD-40) and the interpretation of the dredge spoil plume modelling outcomes. Please refer to amendments in Section 6.2.</p> <p>We acknowledge that the best available information at the time of writing the Strategic Assessment report was scarce, and in response to this discrepancy, the Authority is currently implementing an in-depth synthesis of the impacts of dredging, dredge spoil disposal, dispersal and resuspension. This process includes substantive expert input through consultation and workshops. This synthesis is due for release during 2014.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194, E261, E192, E220, 398; E221; 365; E171; E126</i></p>	
<p>Section 6.1.3: The division of impacts into direct and indirect can be problematic due to the complex cause and effect relationships between some types of impacts. This is particularly the case with water quality impacts.</p> <p><u>Response</u></p> <p>This complexity is not limited to direct and indirect impacts and water quality, but spans a range of impacts, activities and pressures. Hence there are areas that overlap or have unclear divisions, which is inevitable when tackling impacts and activities at the scale of something as large and complex as the Great Barrier Reef World Heritage Area. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.2: There are no data or assessments provided with respect to the scale of the impact. For example, loss of wetland habitats (seagrass or mangroves) has an immediate direct impact, but also a broader indirect impact given that fish migrate among a range of habitats for breeding, shelter and feeding.</p> <p><u>Response</u></p> <p>Please refer to response above. The Authority acknowledges that there are unavoidable gaps and omissions in the Strategic Assessment report. It would have been impossible to provide an exhaustive synthesis at all relevant scales and across every impact and activity. One of many benefits of this process has been to highlight scientific information needs and areas where the Authority needs further information, such as the current synthesis of an in-depth analysis of the impacts of dredging and dredge spoil disposal.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.2.1: The receptor categories for the impact assessment (biodiversity, geomorphological features, heritage and community benefits (including aesthetics) do not necessarily represent the full range of values that make up the outstanding universal value of the Great Barrier Reef Marine Park Authority. In particular, the categories do not represent Criterion ix (outstanding example representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, freshwater, coastal and marine ecosystems and communities of plants and animals). The superlative natural phenomena of Criterion vii also seem to have been overlooked.</p>	ADD-11

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u> Criterion (ix) is considered in detail in Chapter 7. An amendment has been made to Chapter 4 to include superlative natural phenomena. Please refer to Section 6.2. <i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.2.1: Table 6.1: the use of the term “Regional” to describe scale of impact is confusing given that the assessment focuses on the Great Barrier Reef Region. Presumably regional in the context of scale of impact does not refer to impacts across the entire Great Barrier Reef Region. <u>Response</u> The term “Great Barrier Reef wide” has been used throughout the report to imply “across entire Great Barrier Reef Region”. It is acknowledged that this may cause some confusion. No further action has been taken in relation to this comment. <i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.2.1: Table 6.1: Cyclone activity – the impact may be better described as “damage to benthic and coastal habitats from wind and waves”. <u>Response</u> Cyclones and cyclone activity has been referenced to throughout the reports. Hence to introduce a new terminology for that at this point does not seem necessary. No further action has been taken in relation to this comment. <i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.2.1: Table 6.1: Dumping and resuspension of dredge material is listed as a 'regional scale' problem. We query this classification. If urban and industrial discharge is classified as a 'local' scale issue then so should dredging and resuspension. <u>Response</u> Agreed. This has been amended in Table 6.1. Please refer to section 6.2 <i>Public submissions that referred to this issue: E194; E220</i></p>	ADD-48
<p>Section 6.2.1: Table 6.1: In relation to acid sulphate soils, the impact should be stated as “Exposure and subsequent oxidation of potential acid sulphate soils”. <u>Response</u> This has been amended. Please refer to Section 6.2 <i>Public submissions that referred to this issue: E192</i></p>	ADD-49
<p>Section 6.2.1: Table 6.1: Dredging – the impact may be better described as “destruction of benthic habitats and suspension of sediments in a dredge plume”. <u>Response</u> Suspension of sediments in a dredge plume is not an impact. The impacts listed under dumping and resuspension of dredge material are the impacts – “<i>smothering, loss and modification of seabed habitats and resuspension</i>”. <i>No further action has been taken in relation to this comment.</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<i>Public submissions that referred to this issue: E192</i>	
<p>Section 6.4.1: Are other non-coral reef ecosystems also vulnerable to the various climate change effects? There is a sense throughout this assessment that the focus is on coral reef ecosystems.</p> <p><u>Response</u></p> <p>Unlike many other Great Barrier Reef habitats, coral reefs have been extensively studied in regards to the potential climate change effects; hence there is a strong focus on this ecosystem. However, climate change impacts are also discussed for seagrass beds, beaches and islands. Data on impacts of climate change on deep reefs, shoals, <i>Halimeda</i> banks, open waters and continental slope are lacking.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.2: Page 6–19. Para 2. Please remove the word ‘inshore’. Land based pollution also has significant effects on mid shelf ecosystems, for example through crown-of-thorns starfish and coral bleaching susceptibility. It is NOT just an inshore issue.</p> <p><u>Response</u></p> <p>This has been amended in the text. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	ADD-54
<p>Section 6.4.2: The claim that freshwater input to the Great Barrier Reef is generally higher in the southern half of the Region (assuming this really does mean the southern HALF, i.e. south of Townsville) as the catchments are larger is incorrect. Largest inputs of freshwater come from the Wet Tropics, Cape York and the Burdekin. Lower amounts come from Mackay Whitsunday, Fitzroy and Burnett Mary rivers.</p> <p><u>Response</u></p> <p>In the Strategic Assessment report, south is south of Cooktown. The word “half” has been replaced with “south of Cooktown”. Please refer to Section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	ADD-55
<p>Section 6.4.2: Urban and industrial discharge – replace “impurities” with “contaminants”.</p> <p><u>Response</u></p> <p>This has been amended in the Assessment report. Rationale: “Contaminants” is consistent with terminology used by the Queensland Department of Environment Heritage. “Impure” suggests that the original water was of “pure” status. “Contaminants” refer to the properties that make the thing impure. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-57
<p>Section 6.4.2: Figure 6.9. Colour scheme is not well chosen and it is hard to distinguish the gradients of green. Perhaps it looks clearer on screen but it certainly doesn’t in the official printed version?</p> <p><u>Response</u></p> <p>This is noted, however at this point figures are not being amended unless there is an actual fault in them.</p> <p>No further action has been taken in relation to this comment.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<i>Public submissions that referred to this issue: E199</i>	
<p>Section 6.4.2: Figure 6.10. This figure is incorrect in a number of ways. Needs to be edited by a scientist who knows about crown-of-thorns starfish.</p> <p><u>Response</u></p> <p>This figure has been amended to give a more accurate reflection of the hypothesised connection between nutrients and crown-of-thorns starfish outbreaks. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	ADD-56
<p>Section 6.4.2: Figure 6.8. This is a very confusing figure and needs lots of work. What is the difference between the light blue (no freshwater) and the darker blue (0 freshwater exposure)? I can only assume the legend is incorrect and the darker blue actually means 0 – 1 exposure events?</p> <p><u>Response</u></p> <p>There is a difference between “beyond freshwater extent” and “0” exposures in the period from 2001-2011. Zero events during a ten year period does not mean it never has nor ever will happen to the extent of the darker blue area. The lighter blue area, however, will likely never be exposed. The figure has not been amended.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	
<p>Section 6.4.2: Sediments from catchment run off: Please remove the word ‘mostly’. When are they delivered at other times?</p> <p><u>Response</u></p> <p>They are also transported across floodplains during the wet season.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E220</i></p>	
<p>Section 6.4.3: The mechanism by which potential acid sulphate soil related impacts arise could be better expressed. When potential acid sulphate soils are exposed to oxidising conditions, sulphuric acid can be produced. As pH drops, this can increase the solubility of metal contaminants resulting in release of metals to the environment as well as acidic water. Note that potential acid sulphate soils have to be exposed to air for oxidation to occur. It should also be noted that the Queensland Acid Sulphate Soils Investigation Team (QASSIT) produced a comprehensive soil technical manual setting out methods for testing and managing acid sulphate soils (http://www.nrm.qld.gov.au/land/ass/products.html). Where developments have followed these guidelines, there has been little, if any, impact from oxidation of acid sulphate soils.</p> <p><u>Response</u></p> <p>The current explanation does not differ significantly from the above statement. The first sentence has had a minor amendment. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-58
<p>Section 6.4.3: Release from dams occurs under the requirements of a statutory Water Resource Plan. This usually specifies the quality and quantity of water that must be released to maintain environmental flows. Individual dams and weirs are operated under licences that also specify environmental flow requirements. Many dams and weirs in Queensland have release structures to ensure that poorer quality water is not released. If this is an important impact, more factual information should be provided on how releases are made and managed. In addition, where releases are made in the dry season, these are usually extracted further downstream for water supply purposes rather</p>	

Public submission / comment and GBRMPA response

**Addendum table
reference #
(if applicable)**

than flowing out of the mouth of the river.

Artificial barriers to riverine and estuarine flow – are there examples of where water extraction and barriers to flow have changed salinity of seawater in bays along the Great Barrier Reef coast, or altered ocean currents? What are the consequences and mechanism in place/necessary to mitigate these effects?

Artificial barriers to riverine and estuarine flow – a number of dams and weirs in Queensland are fitted with fish passage devices. An analysis of the number of dams with such devices in place, and the effectiveness of these devices, would be useful to support the statement that marine and estuarine fish can be affected by artificial barriers.

Response

This has been discussed under the Regional Sustainability Plan C project (in review with the Department of the Environment) that supports the Strategic Assessment. The issues identified in the Regional Sustainability Plan C will be used to inform the development of the Reef 2050 Long-term Sustainability Plan and assessment of cumulative impacts on the Great Barrier Reef Region.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E192

Section 6.4.3: Coastal reclamation – it is useful that the total area that has been reclaimed is quantified. It would also be useful to know whether this was within the Great Barrier Reef World Heritage Area. As with a number of other sections, it would be appropriate to provide more specific details on the actual effects of coastal reclamation projects. For example, did the coastal reclamation at Gladstone or Townsville result in reduced biodiversity? Coastal reclamation may also be a tool to modify habitats to suit certain biodiversity groups, for example, by creating wetland habitat for wading and migratory bird species. Queensland Fisheries undertook a study of the impact of a marina development, including land reclamation on fisheries resources at Airlie Beach (Gribble, 2010, Port of Airlie Marina Development Project : fisheries resources monitoring in Boathaven Bay, Department of Employment, Economic Development and Innovation, Brisbane, Qld).

Note that coastal reclamation may also be used as a means of dredge spoil disposal. This approach was endorsed by the Federal Minister for the Environment <http://www.environment.gov.au/minister/hunt/2013/pubs/mr20131210.pdf>.

Response

Refer to page 6-33 of the Great Barrier Reef Region Strategic Assessment - “The total area reclaimed within the Region is approximately eight square kilometres, the majority of which is in the Gladstone area (approximately 5.5 square kilometres)” and most of which is within the Great Barrier Reef World Heritage Area. Refer to the Great Barrier Reef Outlook Report 2009 for potential impacts from reclamation in the marine environment.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E192

Section 6.4.3: Atmospheric pollution can be a significant issue for the region’s environment as it can affect human populations. It would be more appropriate to say that atmospheric pollution is not presently a major issue for biodiversity or other attributes that contribute to the outstanding universal value of the Great Barrier Reef World Heritage Area.

Response

The current text reads “*Atmospheric pollution has the potential to affect the health of species living in the Region on a local scale, including birds and island plants*”, which reflects the statement that it is not presently a major issue, but that it can become one.

No further action has been taken in relation to this comment.

Public submissions that referred to this issue: E192

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 6.4.3: It would be useful to know how many beaches (or kilometres of beach) are accessible for four-wheel-driving.</p> <p><u>Response</u></p> <p>Accessibility to drive on beaches does not fall within the jurisdiction of the Authority, and is therefore not raised in the Marine component of the Strategic Assessment. It may be worth noting for the Coastal component.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.3: The Great Barrier Reef Strategic Assessment notes some of the impacting processes associated with coal dust but does not place them into perspective or note the range of other sources of dust. The potential for coal dust to reduce the amount of sunlight reaching seagrasses and corals or potentially smothering benthic habitats is extremely low and this needs to be clarified rather than just describing an impact process.</p> <p><u>Response</u></p> <p>An amendment to the text to better clarify the low potential of this has been made. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E220</i></p>	ADD-60
<p>Section 6.4.4: Figure 6.18 of the Great Barrier Reef Region Strategic Assessment report shows that there are projects under assessment with approximately 45 million cubic metres of potential dredge material to be disposed. A further 13 million cubic metres of dredge material is approved for disposal, while approximately 25 million cubic metres has been disposed to date. Despite this, page 7-35 shows that the trends are 'stable' (which contradicts the notion that the condition and trend is not deteriorating) and that the confidence in condition and trend is "adequate high-quality evidence and high level of consensus". This is a surprising conclusion given that the following observation was also made: "Dumping of dredge material also affects sedimentation processes with resuspension plumes likely to travel considerably further than previously thought".</p> <p><u>Response</u></p> <p>The comment is correct in as much that sedimentation from dredging is on an upward trend. However, Table 7.10 is 'Current condition and trend' and considers the change since 2009 to present. In relation to the amount of already present sediment in the Region and the re-suspension of that during recent cyclones, the (to date) addition from dredge spoil has not significantly changed the overall impact on the condition of matters of national environmental significance in the Region.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E221</i></p>	
<p>Section 6.4.4: Extraction, herbivores— a statement could be made here as to whether there was an overall decline or increase in seagrass beds. Also, removal of herbivorous fish is known to increase algal growth. What is the likely trophic cascade effect for the Reef and its ecosystems?</p> <p><u>Response</u></p> <p>The removal of herbivorous fish and the potential trophic effect for the Reef and its ecosystem is dealt with in some detail in the Coral reef demonstration case study in Chapter 9. Likewise, the decline in seagrass beds is extensively considered in other sections of the Assessment report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 6.4.4: Figure 6.22 – the column ‘net’ is incorrect and the figures are dubious. The Halliday report is inaccurate.</p> <p><u>Response</u></p> <p>As part of the Outlook 2014 data request, the Authority enquired for updated estimates from the Department of Agriculture, Fisheries and Forestry. As no better estimates of non-retained catch are available, the 2009 data were used for the Strategic Assessment report. It is noted that this leaves a serious gap in understanding fishing related impacts of direct use of the Region.</p> <p>A caveat has been added to the figure text for Figure 6.22. Please refer to Section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	ADD-71
<p>Section 6.4.4: <i>Noise pollution</i> should be divided into above and below water, since the mechanisms for impacts are quite different. As this is another emerging issue of concern, about which there is considerable conjecture, it would be useful to expand on the statement “effects to marine life range from detection with no adverse impacts to significant behavioural changes, to hearing loss, physical injury and mortality”. Underwater noise measurements have been undertaken for the Western Basin Dredging and Disposal project and a review of this issue was also presented in the Abbot Point Cumulative Impact Assessment.</p> <p><u>Response</u></p> <p>The Authority is aware of the emerging issue of noise pollution. However, at this point it has been decided that further expansion of this section is not necessary. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.4: <i>Marine debris</i>. Prefer non-gender specific language (anthropogenic rather than man-made). For this to be effective, regular maintenance and cleaning is necessary. This needs to be highlighted in this section. To what extent are litter traps effective in removing litter from stormwater runoff?</p> <p><u>Response</u></p> <p>An amendment has been made to change man-made to anthropogenic. This section focuses on identifying the impacts, not on mitigation and solutions. Hence no further amendments have been made.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.4: <i>Large chemical spills</i>. It should be possible to identify most of the bulk chemicals transported through the Great Barrier Reef World Heritage Area from an understanding of chemical production facilities and large industrial facilities that require chemical inputs. It would also be useful in this section to provide some context in terms of global risk of chemical spills. For example, the International Maritime Organisation publishes data on incidents involving “hazardous and noxious substances” http://www.imo.org/KnowledgeCentre/ShipsAndShippingFactsAndFigures/Statisticalresources/MarinePollution/HazardousandNoxiousSubstancesHNS/Pages/default.aspx</p> <p><i>Large oil spills</i>. Further information on the long-term effects of areas affected by reported large oil spills would be useful. Information on effectiveness of spill response and measures in place to respond to oil spills would also be useful.</p> <p><i>Small spills</i>. Are there issues associated with discharges from outboard motors? Has water quality monitoring indicated increased levels of total petroleum hydrocarbon (TPH) in areas used by recreational boats and/or areas such as marinas where boats refuel?</p> <p><u>Response</u></p> <p>As stated above, this section focuses on impacts on the values that underpin the outstanding universal value of the Great Barrier Reef World Heritage Area. Issues such as effectiveness of spill responses are dealt with in other chapters, for example Chapter 8, Management effectiveness. Regarding discharge from outboard motors, that is</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>included in “small spills”. Water quality is not measured in marinas as the variability would be too great to generate any statistically relevant data. An increase in TPH has not been reported as an issue from regular water monitoring data reports.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.5: Table 6.6. Are there trends that show acid sulphate soils and urban/industrial discharge are increasing given the effectiveness of current good practice management approaches?</p> <p><u>Response</u></p> <p>There is no specific monitoring for acid sulphate soils. Urban and industrial discharges are managed and monitored through Queensland and Australian Government permit processes.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.4.5: Are management approaches and mitigation measures for various impacts taken into consideration when the significance of the effect is assessed?</p> <p>In Tables 6.6 and 6.7, the white no effect category is defined as “no interaction; the interaction is insignificant or unknown”. Many of the activities listed have a white grading allocation. However, it is not clear which part of the definition applies – “insignificant” or “unknown”. Both these terms are polar opposites – insignificant relates to a low grading or minimal risk, while unknown relates to insufficient data or information available to allocate a grading. How can a no effect grading be allocated when the effect is unknown? This category needs to be separated as “insignificant” and “unknown”.</p> <p><u>Response</u></p> <p>The development assessment processes undertaken by the Australian and Queensland governments include the requirement for proponents proposing to develop in and adjacent to the Great Barrier Reef World Heritage Area provide information on management approaches and mitigation measures they intend to employ to reduce impacts on the World Heritage Area. The Australian and Queensland governments conduct a rigorous development assessment process to ensure that any residual impact on the World Heritage Area is minimised.”</p> <p>Tables 6.6 and 6.7 have been revised in regards to highlighting differences between no effect versus data deficient assessments. Please refer to Section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-73; ADD-74
<p>Section 6.4.5: The claim within the Assessment (tables 6.6 and 6.7) that the placement and resuspension of dredge material has a “high effect” is not backed up within the Assessment nor is it supported by previous dredging monitoring projects undertaken in the Great Barrier Reef. The draft Assessment must also state unequivocally that dredged material is never placed on the Reef.</p> <p><u>Response</u></p> <p>The definition of “High effect” is: <i>The effects of the impact are obvious in many locations or for many species to the extent that significant additional intervention would be required to maintain the values.</i> The next level down, “Low effect” states that: <i>The effects of the impact are observable in some locations or to some species, but only to the extent that limited additional intervention would be required to maintain the values.</i> To consider that the placement and resuspension of dredge material is “observable” rather than “obvious” or “only to the extent that limited intervention would be required to maintain the values” rather than “significant additional intervention” is not correct. The grading remains as “High effect”.</p> <p>The Assessment report never states that dredge material is placed on the Reef.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E261</i></p>	
<p>Section 6.4.5: Table 6.7. Separate bony fish into two categories; 'harvested' and 'non-harvested' and move 'harvested' into 'deteriorating'. Address these as separate throughout the report.</p> <p><u>Response</u></p> <p>The Authority recognises the benefit to such an approach, and will consider it for future management assessments. Time and resource constraints make this amendment unfeasible at this point, as it would equally apply to the division of sharks and rays and a range of other groups of species which are now considered as a single unit. However, it needs to be noted that management responses are sought to be put in place in relation to the most vulnerable species within a unit that is managed as one.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E261</i></p>	
<p>Section 6.5 – increased intensity of cyclones may be a threat to geomorphological values. However, cyclones are also a driving force in formation of coastal geomorphology.</p> <p><u>Response</u></p> <p>A thorough review of the geology and geomorphology information in the Strategic Assessment Report has been provided by Professor David Hopley, where the impact of severe weather on geomorphology is raised. Aspects of this review will be incorporated into the revised Strategic Assessment Report. Please refer to section 6.2.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-97
<p>Section 6.5: Paleochannels are at risk from dredging and other port activities.</p> <p><u>Response</u></p> <p>This has been added to the bullet list under section 6.5. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-76
<p>Section 6.8: Cumulative impact assessment modelling is valuable. However, insufficient time was available to review the supporting report. It would be appreciated if it were possible to submit comments at a later date.</p> <p><u>Response</u></p> <p>The Authority welcomes comments and feedback at all times. However, there will be no further opportunity to comment on, or suggest amendments to the Strategic Assessment report per se.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.8.1: The report by Anthony et. al. on the qualitative networks has not been released. The wording in this section appears to be over justification for a draft report that has not been released for public scrutiny. It is listed in the references as a draft report with no date suggesting it has been used in the Strategic Assessment but not yet finalised or reviewed.</p> <p><u>Response</u></p> <p>The work by Anthony et al. on the qualitative networks formed part of the Regional Sustainability Programs, which were undertaken to inform the Strategic Assessment. Hence</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>the inclusion is well justified. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194</i></p>	
<p>Section 6.8.2. Figure 6.29d. Something wrong with the ‘freshwater’ panel which seems to miss the colours in the inshore area? <u>Response</u> Figure 6.29 shows exposures of coral reefs, hence only reefs are coloured. There are no missing colours in panel c. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	
<p>Section 6.8.2: Figures 6.31- 6.33 These pages present results from a recent water quality risk assessment (Waterhouse et al. 2013). It is important to note that the risk assessment does not present impacts, and certainly not cumulative impacts. The figure captions and the associated text should be reworded accordingly to reflect the carefully phrased risk assessment that was included in the Reef Plan Scientific Consensus Statement (Chapter 3 of the SCSU, Brodie et al. 2013) and also as a separate, more detailed report (Waterhouse et al. 2013). <u>Response</u> The figure texts have been amended to be “exposure” rather than impacts. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 351, 398</i></p>	ADD-80, ADD-81, ADD-82
<p>Section 6.8.2 – Heavy reliance on unpublished data (Waterhouse et al.). Significant reproduction of figures of "key water quality impacts" that have not been published. A report from Waterhouse et al. (2013) is cited in the text. The report does not appear to have been published. The reference list for this report does not have a date. <u>Response</u> The report and peer reviewed scientific papers have been published during 2013. Relevant references have been up-dated.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194</i></p>	
<p>Section 6.9.1 – it would have been expected that there would be a significantly larger emphasis on evaluating impacts on the outstanding universal value (OUV) of the Great Barrier Reef World Heritage Area, particularly given that it was concern about impacts on OUV that led UNESCO to request a Strategic Assessment. A much more detailed analysis of impacts on integrity would be appropriate here, as this is a difficult concept to convey, and requires authorities responsible for managing the World Heritage Area to be more definitive in terms of acceptable and unacceptable impacts on integrity. Ecological and biological processes – a key aspect of this criterion is the demonstration of evidence of ongoing evolutionary processes. <u>Response</u> Adverse impacts to the Great Barrier Reef Region impact the outstanding universal value of the World Heritage Area by default, as it is underpinned by the status of all assets that support its intrinsic value and thus its integrity. The Authority acknowledges that the concept of impact on integrity is complex. Criteria (ix) ‘Ecological and biological processes’: ‘<i>be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, freshwater, coastal and marine ecosystems and communities of plants and animals.</i>’ The statement in Table 6.10, under section 6.9.1. considers the most severe impacts on this criterion, which is the modification of supporting terrestrial habitats. It does not seek to demonstrate ongoing processes.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.9.2 – the reference to support the statement that impacts are greatest in the southern Great Barrier Reef Marine Park is in relation to coral reef ecosystems only. It is important that the Marine Strategic Assessment considers all of the important habitats, and the connectivity within the Marine Park.</p> <p><u>Response</u></p> <p>The reference to De'ath et al. has been removed from this sentence. The section builds on findings within the Report itself, and relates to effects on numerous habitats and processes, a majority of which are in poor or declining state in the southern two thirds of the Region.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-86
<p>Section 6.9.5 – is this section consistent with Table 6.7? It appears to present a different message.</p> <p><u>Response</u></p> <p>The sentence has been corrected to be consistent with Table 6.7. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-87
<p>Section 6.10.4 – a better discussion of how the community values the Great Barrier Reef World Heritage Area and the environment in general, is necessary.</p> <p><u>Response</u></p> <p>The Authority acknowledges that this would be a good contribution, however at this point it will not be incorporated into the Assessment Report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.10.5: In relation to cumulative impacts, a framework for assessment of cumulative impacts of development projects and activities would be an important output from the Strategic Assessment as this would assist proponents in preparing more meaningful cumulative impact assessments.</p> <p><u>Response</u></p> <p>One of the seven key initiatives that stem from this Assessment report is the development of Cumulative impact assessment guidelines. This is clearly stated in Chapter 13 and the Program Report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 6.11 – this section needs to link to the findings of the Coastal Strategic Assessment.</p> <p>– the statement that the effects of dredge disposal can be widespread is inconsistent with earlier findings that this is a local issue.</p> <p><u>Response</u></p> <p>An amendment to the text under section 6.11 has been made. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-89

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Chapter 7</p> <p>Section 7.2: Table 7.5. “There has been no significant change to the geomorphology since the end of the last sea level rise 6500 yrs ago”. This is certainly not true as sea level across the Reef has varied by several metres over the last 6500 yrs resulting from glacio-hydro-isostatic processes, with important landform changes. All reef islands including complex low wooded islands have formed on reef tops during the last 6500 yrs. Similarly on the mainland coast landforms such as beach ridge sequences have prograded several kilometres and as an example Cape Bowling Green (Plate 2) has formed entirely in this period. A complete understanding of the coast would not have resulted in this statement.</p> <p><u>Response</u></p> <p>The overview text has been amended to reflect this information. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	ADD-99
<p>“The effects of climate change impacts on geomorphological features are unknown but are likely to be negative” (p7.48). The authors are obviously unaware of the Great Barrier Reef Marine Park Authority’s own publication edited by Johnson and Marshall in 2007. The chapter “Vulnerability of geomorphological features on the GBR to climate change” is written by four of the top Australian coastal geomorphologists and has been widely quoted and used overseas as well as in Australia. Internationally it has been recognised as a critical climate change reference.</p> <p><u>Response</u></p> <p>The section has been corrected to be a more accurate reflection of Chapter 21 in “Climate Change and the Great Barrier Reef – A vulnerability assessment”. Please refer to Section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	
<p>Section 7.8 Summary. The quite extraordinary opening statement that ‘Most habitats and species are in good to very good condition overall.’ is totally unsupported by the assessment in the previous 52 pages of Chapter 7. A similar statement made in the opening sentence of 7.1.1 “At the scale of the Great Barrier Reef Region, most of its habitats and species are assessed to be in good to very good condition’ is equally unsupported by the facts.</p> <p>Of the species and habitats for which we have reasonably good monitoring data (i.e. coral, seagrass, dugongs, turtles, commercial fish, sharks, inshore dolphins) – none are in good condition ACROSS the Great Barrier Reef. Interestingly this is quite well analysed in the sections on these species and habitats in the individual sections within Chapter 7. Thus the assessment gives a very schizophrenic message – a well written assessment of the species and habitats for which we have data (a very sobering assessment!), obviously written by knowledgeable Great Barrier Reef Marine Park Authority staff and a ‘public relations’ gloss in the final summary written by someone who does not know the Reef. Of the species and habitats we have little data on, nothing can be said but certainly we CANNOT assume they are in good condition. While things might be better in the northern 25 – 30 per cent of the area of the Great Barrier Reef World Heritage Area, this cannot lead to a conclusion of good to very good overall.</p> <p><u>Response</u></p> <p>This has been amended by changes to the relevant sections. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	ADD-91, ADD-103
<p>The division of the Great Barrier Reef adopted here into latitudinal ‘halves’ such that we end up with four assessment areas – Northern inshore, Northern offshore, Southern inshore and Southern offshore based on Figure 2.3 is highly misleading. By putting this division at Port Douglas, in reality we divide the Reef into a northern one third and a southern two thirds, not halves. Since the area north of Port Douglas is in fair to good condition (certainly not very good though) this assessment method gives the impression half of the Reef is in good condition. The reality, as quite well shown in the rest of the assessment, is that only one third of the Reef is in good condition while two thirds is in poor condition.</p> <p>Generally in the past we have noted three sections of the Reef – north, central and south. The assessment must be done on this basis here as well. This would provide six</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>assessment areas of which four would be poor and two good. This is a much more honest assessment of the reality. This should be an essential change to the report.</p> <p><u>Response</u></p> <p>Whilst this is a valid suggestion, the Authority will not change the division of the regions at this point. The decision to divide the Region into a North and South of Port Douglas was based on degree of development rather than geographic distance. It reflects two areas of the coast line with clearly different scales of anthropogenic impacts. The area south of Cooktown is consistently referred to as the southern two thirds, or simply as the area South of Cooktown.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	
<p>There are a large number of indicators where the confidence is very limited to adequately support rankings. Given the clear guidance within the Environment Protection and Biodiversity Conservation Act on use of the Precautionary Principle when evaluating condition, it is puzzling that the Authority decided to give all indicators a rank regardless of the confidence/level of knowledge. We recommend that a more appropriate treatment would be to identify these categories/system components as DATA DEFICIENT – as per the approach used by IUCN. This would help to highlight genuine data gaps that should be filled through additional research and monitoring.</p> <p><u>Response</u></p> <p>Tables 7.1 – 7.3 have confidence ratings, which clearly shows that the confidence in the stipulated condition and trend is either Adequate, Limited or Very limited. In cases where the latter two categories are given, the rank is “to the best of our knowledge” and should be considered with caution. Amendments under section 7.8 have added a clear caveat to this end.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398</i></p>	ADD-103
<p>The summaries tend to either downplay or leave the bad news until the end of the sections, for example, “at the scale of the Great Barrier Reef Region, most of its habitats and species are assessed to be in good to very good condition”. This may be technically correct, but if most of its KEY habitats and vulnerable species (corals, seagrasses, seabirds, dolphins, dugong, turtles) are in very poor to poor condition and declining in the southern Reef, it would seem appropriate to lead with this point.</p> <p><u>Response</u></p> <p>Amendments have been made in chapter 7 to address this issue.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 398</i></p>	ADD-91, ADD-103
<p>Chapter 7 seems to repeat much of what has been previously stated. Suggest that this section could be revised to focus on trends and forward trends under various hypothetical scenarios.</p> <p><u>Response</u></p> <p>The chapter will not be significantly revised at this point.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section: 7.1.3: The paragraph states that "examples of declines include substantial reductions in the meadows adjacent to Cairns, Townsville and Gladstone." More recent monitoring than the reference cited for Townsville (Taylor and Rasheed, 2011) shows substantial recovery of Cleveland Bay seagrasses. Further the interpretative statement on the Great Barrier Reef Marine Park Authority's website states "One of the key causes for the recent decline in seagrass may be related to a prolonged period of intense wet seasons with associated major cyclones (for example, cyclone Yasi). Long-term monitoring of seagrass near ports by researchers from the Queensland Government (now James Cook University) has not implicated dredging or other anthropogenic influences as causes for the marked decline. However, McKenna and Rasheed (2013)</p>	ADD-95

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>acknowledge the "cumulative impacts of natural stressors combined with future developments associated with port expansions have the potential to impact seagrasses" and reduce their resilience to further impacts and stressors". This is not a true representation and would benefit from use of the most recent data as you have for other issues.</p> <p><u>Response</u></p> <p>Unclear if the true representation is referring to the Authority website or the Strategic Assessment report, however an inclusion of 2012 data from Seagrass-Watch has been added to the section. Please refer to Section 6.2</p> <p><u>Public submissions that referred to this issue: E194</u></p>	
<p>Section 7.1.5: It is misleading to say that of gillnets 'Although there is very limited mortality of inshore dolphins in gillnets.' A more accurate statement would be 'Although there is very limited reporting of mortality of inshore dolphins in gillnets '.</p> <p><u>Response</u></p> <p>An amendment to reflect this, without assumption of negligence to report has been added. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E181</i></p>	ADD-96
<p>Chapter 8</p> <p>Section 8.2 just above Table 8.1: assessment of management effectiveness was intended to consider whether the Authority's management arrangements provide certainty regarding where uses may occur, type of activities allowed, and circumstances where impacts are likely to be unacceptable. This is reiterated in the Terms of Reference under the heading Context: "Once complete, the comprehensive strategic assessment will strengthen the protection of the Great Barrier Reef and guide its management by providing greater certainty on where sustainable uses can occur, the type of activities that will be allowed and the conditions under which activities may proceed". This has not been achieved by the Marine Strategic Assessment.</p> <p><u>Response</u></p> <p>Outcomes of the Strategic Assessment include several new initiatives such as a management framework based on outcomes and targets, the development of cumulative impact assessment and net benefit policies, the Reef Recovery program and the Integrated research, monitoring and reporting program. In addition, the outcomes of the Assessment will underpin the Reef 2050 Long-term Sustainability Plan, which is instrumental in how the Great Barrier Reef World Heritage Area is managed over the coming decades. As such, the Authority strongly disagrees that the Marine Strategic Assessment has not achieved the target of "<i>strengthen the protection of the Great Barrier Reef and guide its management by providing greater certainty on where sustainable uses can occur, the type of activities that will be allowed and the conditions under which activities may proceed</i>".</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.2 - the assessment of management effectiveness was intended to "take more explicit account of matters of national environmental significance including the outstanding universal value of the Great Barrier Reef World Heritage Area". However, the values that were assessed only included biodiversity, Indigenous and non-Indigenous heritage, and community benefits. The World Heritage Area was listed for four natural environmental criteria, of which "habitats for biodiversity conservation" is only one. The other three criteria (ecological and biological processes, natural beauty and phenomena, and major stages in evolution) are not assessed at all for management effectiveness, and the justification for including "community benefits" is not provided.</p> <p><u>Response</u></p> <p>The values that are assessed in Chapter 8 follow the definitions in Chapter 4 (please refer to Table 4.8 for details). As outlined in Chapter 4, Biodiversity encompasses habitats and species, aesthetics (natural beauty) falls under community benefits of the environment. The Authority acknowledges that geomorphological features were not adequately</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>covered in the assessment report. An in-depth review of this subject area across all chapters has been provided by Professor Hopley.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.2 notes that the assessment framework (Hockings, et al. 2006) has been used widely around the world. Therefore, it would be good to provide examples. The problem here is that the assessment framework has been bolted on to a Terms of Reference, which has asked for different things than what the framework was designed to accomplish. Chapter 8 appears to follow a pre-ordained course of discussion with the Terms of Reference required discussion trailing as an after-thought. The chapter is very process oriented, repetitive, and difficult to follow in terms of the overall Marine Strategic Assessment context. For example, why is outstanding universal value (World Heritage) not a value under the list of values in S 8.2.1? Surely, it is a key value for this Strategic Assessment (as requested in the Terms of Reference)?</p> <p><u>Response</u></p> <p>The values identified are those that underpin the outstanding universal value (OUV) of the Great Barrier Reef World Heritage Area. Hence, the property is said to have OUV based on the condition and state of its attributes. The Management Effectiveness assessment focuses on these attributes (values). The sum of these equals the management effectiveness of the OUV.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.2.1: Table 8.2. Comparison of scale and complexity of management topics – what do minor, major, and moderate mean and how are they determined? How does this table fit into the overall discussion provided in the chapter?</p> <p><u>Response</u></p> <p>The performance assessments in Chapter 8 need to be interpreted in the context of the differences in scale and complexity outlined in table 8.2 (as per section 8.2.1).</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.2.2 calculation of grades - “individual grades were added and then scaled”. How was this done? Why were two grades assigned, one for outcomes related to biodiversity, the other for all outcomes (biological, social, economic, and management objectives)?</p> <p><u>Response</u></p> <p>The separation of biodiversity from the overall grading was done to highlight that activities outside the jurisdiction of the Authority will, at times, have an adverse effect on biodiversity values despite the fact that the management of the value by the Authority was deemed to be effective.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.3.1 to Section 8.5.8: Why is management effectiveness for Biodiversity Protection mostly effective for “Overall” outcome, but not for “Biodiversity” outcome? It is hard to understand to what the difference relates. While the discussion provided is quite clear, it is not clear how it relates to the table and vice versa. The tables suggest a level of rigour that is not realised by the reader without showing the actual workings/calculations. It would have been better to provide text without the tables, and refer to the calculations and tables in a separate specialist report, if at all. Do the tables and calculations really need to be included to arrive at the conclusions? Couldn’t the conclusions have been more simply argued in words? Use of subheadings (context, planning, inputs, etc.) as was used in Chapter 9, could have helped present the information.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u></p> <p>This chapter is entirely based on the external review of Management effectiveness (Hockings et al 2013), and as such is presented the way it was in the review rather than along the lines of the other 12 chapters. Please see above for response to the division of ‘overall effectiveness’ and ‘biodiversity effectiveness’.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.4.2 notes financial spending amounts by Australian and Queensland governments. How does that relate to effectiveness?</p> <p><u>Response</u></p> <p>Commitment of funds to manage an impact will likely have an impact on effectiveness as it translates directly to resources towards management.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.4.3 sixth paragraph - notes that Queensland Government has replaced the Coastal Protection State Planning Policy with a draft Regulatory Provision, potentially changing the level of protection afforded. How does this bode for future cooperation with Queensland Government to protect the reef in partnership?</p> <p><u>Response</u></p> <p>The Queensland Government has jurisdiction over most development and management in the coastal zone (above the mean low water mark). Changes in coastal planning and management have significant implications for the Great Barrier Reef Region. The Great Barrier Reef Region Strategic Assessment Program Report includes a number of recommendations to improve outcomes for the Great Barrier Reef through a more coordinated governance and outcome focused structure. Some of these include:</p> <p>REC7 Work closely with Australian and Queensland government agencies to improve understanding and management of cumulative impacts from activities within and adjacent to the Region and provide clearer guidance on how proponents and decision makers should address cumulative impacts in assessment.</p> <p>REC25 Establish a management framework with clear outcomes and targets for the protection of values and management of impacts, including cumulative impacts.</p> <p>REC26 Develop and implement a long-term sustainability plan for the Great Barrier Reef in cooperation with Australian and Queensland government agencies to better coordinate programs designed to manage and improve the condition of the Reef.</p> <p>REC34 Contribute to the development of improved governance arrangements for the management and coordination of development activities that affect the Great Barrier Reef.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.5.6 reports that the need for improved pilotage, bilge and ballast water management, marine debris and other impacts from “parked” ships, exclusion of other users in high shipping areas and management response to groundings are outside the jurisdiction of the Great Barrier Reef Marine Park Authority, but does not explain why, or state under whose jurisdiction these activities lie.</p> <p><u>Response</u></p> <p>As this is an exact extract from the consultancy report, the text in this section will not be amended. In response to the above question, the management of shipping and shipping related impacts in the Great Barrier Reef World Heritage Area lies under the combined jurisdiction of Australian Maritime Safety Authority, Great Barrier Reef Marine Park Authority, Queensland and Australian governments.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.6 - This section actually addresses the Terms of Reference directly, but because the Hockings et al. (2006) framework was evaluated first, much of the text in Section 8.6 is repeat text, adding bulk to the Marine Strategic Assessment without providing new information.</p> <p><u>Response</u></p> <p>Please refer to responses above with regards to amending the text or changing the layout or general contents of Chapter 8.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.6.3: Table 8.22 lists as an indicator “There is a planning system in place that effectively addresses (uncertainty and risk) and gives a grade of mostly effective”. Insufficient evidence is provided to back up this grade. Regarding indicator 4.1.1(f), it lists strengths as zoning plan and plans of management, thereby giving an overall grade of “partially effective”. Given that zoning does not cover all activities, and plans of management only exist for a small proportion (approximately eight per cent of the Marine Park) of the World Heritage Area, and are out of date, an “ineffective” grade may be more appropriate.</p> <p><u>Response</u></p> <p>Please refer to responses above with regards to amending the text or changing the layout or general contents of Chapter 8.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.6.3: Figure 8-10 illustrates dredge spoil disposal grounds but doesn’t indicate whether these are just within the Great Barrier Reef Marine Park or not. If it is meant to include all spoil grounds with the Great Barrier Reef Region, then at least one is noted to be missing.</p> <p><u>Response</u></p> <p>The Authority does not agree that any spoil grounds are missing. In a few cases (Hay Point and now Abbot Point), there are multiple spoil grounds associated with the one port, but given the scale of the map, the one brown box symbol effectively captures both spoil grounds. There are sometimes spoil grounds that are not associated with a commercial port, such as Rosslyn Bay Marina. The figure legend has been amended to refer to commercial ports. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-104
<p>Section 8.6.5: Table 8.26 - partnerships are listed as both strengths and weakness, with insufficient explanation.</p> <p><u>Response</u></p> <p>Section 8.6.6 provides the explanation for this.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.6.6 - In relation to integrating with government programs, this section notes that “the impacts of changes to Queensland’s Coastal Plan on downstream effects from land-based water quality is not known at this stage”. Is it not possible for inferences to be made, as was done in Section 8.4.3 in relation to the changes to the Queensland Coastal Protection State Planning Policy?</p>	ADD-105

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u></p> <p>Section 8.4.3 notes that, with changes to Queensland coastal policy “this has significant implications for the Great Barrier Reef Region because it removes many of the specific requirements placed on local government and potential developers to undertake best practice and to minimise environmental harm.” Section 8.4.3 does not go onto discuss the potential environmental effects from this policy change, although it does discuss the potential effects on decision making processes.</p> <p>Section 8.6.6 has been amended to reflect the suggestion above. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.7 - There appears to be little if any difference in the material covered here compared to that covered in earlier sections. Indeed, this section opens with “This section contains an assessment of the effectiveness of the Authority’s current management arrangements to protect the Region’s values”. This is a slight reordering of the words used in the opening sentence for Section 8.3: “This section provides a summary of the effectiveness of the Authority’s current management arrangements to protect the values of the Region”.</p> <p>This section assesses whether the relevant matters of national environmental significance have been identified, including outstanding universal value, and whether their current condition and trends are understood. However, once again, only the Great Barrier Reef Marine Park area is assessed so the areas of the World Heritage Area that are not within the Marine Park are ignored. This may seem a minor issue as it relates only to a small proportion of the property, but these areas are the ones that are under the most pressure from coastal development. So, if it is not known how they are managed (let alone how well), how will it be known whether alarm bells should be ringing?</p> <p><u>Response</u></p> <p>Chapter 8 is based on an independent review by Hockings et al., which had a scope to concentrate primarily on management activities within the Authority’s jurisdiction with the Great Barrier Reef Marine Park, joint management arrangements with Queensland where they exist and any activities that occur outside the Region that are affecting or may affect the Marine Park.</p> <p>This report is available at http://www.gbrmpa.gov.au/__data/assets/pdf_file/0014/103514/Assessment-of-GBRMPA-Management-Effectiveness.pdf</p> <p>A similar assessment has been made for the Coastal Strategic Assessment, with a focus on demonstration cases that included areas outside the Marine Park region. Please refer to chapter 7 of the Coastal Strategic Assessment report.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 8.7.1: It is acknowledged in this section that the Agency’s knowledge regarding aesthetic value, geological and geomorphological features of outstanding universal value is poor. However, a grade of “mostly effective” is then provided in Table 8.29. The Environment Institute of Australia and New Zealand (EIANZ) questions how this rating could be made.</p> <p>In a number of tables (e.g. 8.27, 8.28, 8.30) there is a criterion “relevant standards are identified and being met” which is consistently graded “mostly effective” but there is nothing to substantiate this grade and little explanation as to what it is actually referring.</p> <p><u>Response</u></p> <p>Chapter 8 is based on an independent review by Hockings et al., which contains additional details regarding methods and the justifications for gradings. This report is available at http://www.gbrmpa.gov.au/__data/assets/pdf_file/0014/103514/Assessment-of-GBRMPA-Management-Effectiveness.pdf</p> <p>In response to the Agency’s lack of detailed knowledge of geological and geomorphological features, Professor Hopley provided an exhaustive review on this subject in his submission response, and his comments are incorporated into the addendum table. Please refer to section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 8.8: Table 8.31. Effectiveness of the Authority’s management arrangements to protect each matters of national environmental significance – Great Barrier Reef World Heritage Area, Great Barrier Reef Marine Park, and Commonwealth Marine Area (CMA) are all graded together. However, it appears that this assessment has only considered the Marine Park, since parts of the World Heritage Area and Commonwealth Marine Area are outside the Agency’s jurisdiction.</p> <p>There are repeated references throughout Section 8 (including the conclusion in Section 8.9) that “the Authority’s ability to address consequential and cumulative impacts, apply socio-economic and Indigenous knowledge, and set targets to benchmark performance was assessed as problematic for most management topics”. If the lack of understanding (and hence effective management) of consequential and cumulative impacts is an acknowledged weakness, please explain the rationale behind the decision in Section 9.1.1 to omit a case study on ports as port activity was considered in the UNESCO Mission Statement to be contributing to cumulative impacts on the property.</p> <p><u>Response</u></p> <p>The rationale for omitting a separate case studies on ports is clearly outlined in section 9.1.1 “<i>Recognising the extensive separate investigations on ports and their management being undertaken in parallel to the strategic assessment, a demonstration case study on ports was not carried out. As they have become available, the preliminary outcomes of these investigations have been taken into account in the strategic assessment.</i>”</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Chapter 9</p> <p>This chapter appears to function as an illustration, without adding significant new information.</p> <p>Opening paragraph to Section 9 states “The purpose of the case studies is to assess in finer detail the effectiveness of current management arrangements to protect and manage the relevant matters of national environmental significance, including outstanding universal value, and to guide improvements to management arrangements”. The case study on Keppel Bay could have been used to assess management effectiveness in relation to some of the outstanding universal value, other than biodiversity values. For example, for geomorphological processes, the Fitzroy Estuary with its multiple intertidal islands and braided waterways, is an excellent example of these processes in action, in an area not currently well managed (being part of the Great Barrier Reef World Heritage Area but not the Great Barrier Reef Marine Park, and hence outside the jurisdiction of the Great Barrier Reef Marine Park Authority).</p> <p>Section 9.1.1 refers to a report “Environmental best practice port development: an analysis of international approaches”, without providing a reference.</p> <p><u>Response</u></p> <p>In response to the geomorphological processes in the Fitzroy Estuary, this is amended through the inclusion of amendments recommended by Professor Hopley. The missing reference has been inserted. Please refer to Section 6.2</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	ADD-106
<p>Whilst the Report is obviously aimed at the Great Barrier Reef Marine Park the physical entity of the Great Barrier Reef does not end there and it may have been useful to look at the Reef holistically – after all ocean currents, fish, birds etc. are unaware of administrative boundaries. To include Torres Strait would add a further 37,000 km² and 750 reefs (Hopley et al 2007).</p> <p><u>Response</u></p> <p>The Authority acknowledges the rationale behind this comment. However, the scope of the Strategic Assessment is the Great Barrier Reef World Heritage Area. As stated by the above comment, there are no natural boundaries, hence a jurisdictional boundary has to be made and then adhered to or exercises such as this assessment would become too vast.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>9.4 Corals: Has a large literature on corals but consideration of <i>coral reefs</i> would seem appropriate.</p> <p><u>Response</u> The demonstration case is on corals, as an element of biodiversity. In the full length demonstration case, there is some additional focus on the ecosystems and structures that are coral reefs. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	
<p>Section 9.4.3: Again we have the strange statement that Biodiversity outcomes for corals are partially effective because it seems only inshore coral reefs have declined! In fact the De'ath et al 2013 paper focusses mostly on mid-shelf reefs and their severe decline south of Cooktown. I'm not sure if the independent assessment team were misled or just ill-informed but this is clearly misconstrued. Both inshore reefs south of Cooktown (Thompson et al MMP report) and mid-shelfs reefs south of Cooktown (De'ath et al. 2013) are in decline.</p> <p><u>Response</u> The term 'inshore' has been removed from the outcomes paragraph in section 9.4.3. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	ADD-112
<p>9.5 Island demonstration case: This should be checked as being relevant to Defence activities.</p> <p><u>Response</u> The Authority agrees that this needs to be checked and will considered for the future publication of the comprehensive version of the demonstration case studies. This Island demonstration case was written in collaboration with the Queensland Government. No further action has been taken in response to this comment at present.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E132</i></p>	
<p>9.5 Island demonstration case: Whilst problems of feral rats and pigs are noted there appears to be no mention of goats which for example have been a major problem on Orpheus Island.</p> <p><u>Response</u> This will be considered for the future publication of the comprehensive version of the demonstration case studies. No further action has been taken in response to this comment at present.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	
<p>9.6 Princess Charlotte Bay: A major focus of the 1973 Royal Society Expedition recorded in the <i>Philosophical Transactions of the Royal Society</i>, B, 260, 1978. This is the source of a wide range of information including archaeology, geology, geomorphology, intertidal macro fauna, island dynamics etc. and appears to have been overlooked as it is still very relevant 40 years on.</p> <p><u>Response</u> This will be considered for the future publication of the comprehensive version of the demonstration case studies. No further action has been taken in response to this comment at present.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>9.7 The Cairns planning area: This is one of the most highlighted areas of the Great Barrier Reef from an earth science viewpoint which seems to have been missed in this section. It contains 13 low wooded islands, has been the focus of a shallow drilling program and site of the Bureau of Mineralogy's deep drilling program (through the full extent of the Reef in the 1980s (on Boulder and Ribbon 5 Reefs) from which has come much of the present knowledge of the evolution of the Reef. This was also the site of a manned submersible (Platypus) expedition to the <i>Halimeda</i> banks and outer ribbon reefs to depths >220m.</p> <p><u>Response</u> This will be considered for the future publication of the comprehensive version of the demonstration case studies. No further action has been taken in response to this comment at present.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	
<p>9.9 Keppel Bay: Further comment relates to the need to clearly value the white silica sands of Whitehaven Bay, Whitsunday Island in the Mackay section, appreciate the very high tidal range of the Mackay and Keppel Island sections, and list the "significant geomorphic features" of the Keppel Bay areas, which, unlike the Cairns area, is as far as I am aware, one of the lesser areas of earth science study on the Great Barrier Reef.</p> <p><u>Response</u> This will be considered for the future publication of the comprehensive version of the demonstration case studies. No further action has been taken in response to this comment at present.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: REP001</i></p>	
<p>Further detail is required to allow the reader to understand the selection of certain case study and demonstration case 'sites' over other potential locations, particularly those areas shown in the Great Barrier Reef Marine Zone component to be heavily impacting the Reef through terrestrial and estuarine activities such as Townsville and Gladstone. These areas are currently underrepresented in the case studies. Clarification is also sought on the absence of a case study or demonstrations case that considered the effectiveness of the Vegetation Management and Soil Conservation Acts.</p> <p><u>Response</u> Section 9.1.1. states the justification for choosing these eight demonstration cases presented in Chapter 9. Many others, including Townsville/Bowling Green Bay and Gladstone were considered but due to constraints of time and resources, it was not possible to address all relevant areas, habitats or species that were considered relevant. A demonstration case that considers the effectiveness of the Vegetation Management and Soil Conservation Acts would fall under the Coastal assessment component. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E209</i></p>	
<p>Chapter 10 This chapter does a good job of highlighting risks but is almost silent on resilience. It should either include explicit recovery trajectories for key Reef habitats or drop "resilience" from the title.</p> <p><u>Response</u> The term 'resilience' occurs 83 times in this chapter (excluding Table of contents, References and Chapter heading). Although this is not a qualitative indication of the coverage of the subject, the Authority feels there is justification in keeping the term 'resilience' in the title of the chapter, especially when considering the tight correlation between 'risk' and 'resilience' for ecosystems and species. No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E167</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Section 10.1:– Understanding synergistic impacts will also be important.</p> <p>It was hoped that this Strategic Assessment would have advanced understanding of the resilience of the Great Barrier Reef Region. How will the Strategic Assessment specifically address/achieve resilience? What is the framework, and what contingency plans are available, to modify and adapt to change?</p> <p><u>Response</u></p> <p>The final program report will focus on the framework and future management plans and how these address concepts such as improving resilience.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E191</i></p>	
<p>We disagree with the omission of seabirds from the ‘Key Values of Biodiversity’ in Chapter 10. Seabirds have a major influence on island ecosystems, including the transfer of nutrients from pelagic and offshore areas to islands and reefs. Seabirds are also key upper trophic level predators in the marine ecosystem and their demographics and reproduction are strongly influenced by changing marine conditions (Congdon et al. 2007). Furthermore, seabirds are expected to be directly or indirectly impacted by most of the impacts listed in Table 10.3 ‘Projected risks to biodiversity over the next 25 years’ (Chambers et al. 2009, 2012).</p> <p><u>Response</u></p> <p>The Authority agrees with this comment and has added seabirds under section 10.2. Please refer to Section 6.2.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E243</i></p>	ADD-114
<p>Section 10.6 – note that the AS/NZS ISO 31000 standard was developed to examine risk associated with hazard events, that is, events such as explosions and spills. While it is commonly used for examining the impacts of a hazard event on the environment, it is not ideal for impact assessment.</p> <ul style="list-style-type: none"> – given that the risk assessment is intended to evaluate the outlook for the various values over a 25 year period, it does not make sense for the likelihood descriptors to be defined in terms of annual recurrence intervals. – in evaluating the threats, was the effectiveness of existing management approaches and mitigation measures taken into account? For example, well established and demonstrably effective management approaches exist for acid sulphate soils. <p><u>Response</u></p> <p>AS/NZS ISO 31000 was designed to assist organisations of all types to manage their risks effectively, irrespective of risk type or how they arise (that is, any risk arising from any hazard). As such, the generic guidance provided by the standard is intended to enable its flexible application to the varying characteristics of individual organisations.</p> <p>In accordance to AS/NZS ISO 31000 risk is defined as the “<i>effect of uncertainty on objectives</i>”, and is expressed in terms of consequence (or impact) and likelihood. Some hazards are tangible (such as a chemical spill), and some are less tangible (such as the relationship between humans and the environment, and its perceived value).</p> <p>The Authority is guided by a suite of standards used to inform its current and evolving risk management strategies. Of particular note is the use of HB 203:2012, ‘Managing environment-related risk’.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Section 10.7: Both reports suggest that values are important and need to be maintained. However, in Table 10.3 dredging is likely to happen but only has minor consequence. How can this be possible when the report clearly states the effect on biodiversity within the dredging sites would be ‘very serious and possibly irreversible’? It also states that the dumping and resuspension of this material could ‘add further pressure to already declining inshore ecosystems’. Using biodiversity as one example, other values such as geomorphological features, Indigenous heritage values and historic heritage values would also be negatively impacted.</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p><u>Response</u></p> <p>The definition of “minor” is “<i>Impact is, or would be, not discernible at a wider level. Impact would not impair the overall condition of the value, including sensitive populations or communities, over a wider level.</i>” Dredging will not happen in an area where the overall condition of a value would be impaired, nor does it have an impact at a wider level. Hence, it is a minor impact by these standards. That does not mean it is of minor consequence where it occurs or to the habitat or species that are affected at the site of dredging.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 365</i></p>	
<p>Table 10.7 – the implications for the Great Barrier Reef World Heritage Area are different to those for the Great Barrier Reef Marine Park as the World Heritage Area encompasses a broader area and much broader range of values than the Marine Park. For example, the World Heritage Area includes islands and is declared in relation to a range of values, not just coral reef ecosystems and other biodiversity values.</p> <p><u>Response</u></p> <p>The implications in this table are divided into five categories, where the Marine Park is one, and world heritage properties are another. The sentence that states that the implications are the same under world heritage properties is followed by one that adds the islands, internal waters and ports.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 365</i></p>	
<p>Chapter 11</p> <p>This chapter is the poorest of all chapters. The scenarios considered take no note of the real possibilities for future developments within the Great Barrier Reef and its catchment. A lot of good work has gone into describing some of these likely future economic development trends in Chapter 5, but none of them are used in the scenarios of Chapter 11. Important future trends identified in Chapter 5 include:</p> <ol style="list-style-type: none"> a. Coal export expansion on a large scale and consequent large scale port development and shipping numbers increase. b. The Queensland policy to double the value of agricultural production by 2040. c. Population increase along the Great Barrier Reef coast and subsequent increasing urban development. d. Growth in tourism. e. Changes in fishing activity and possibly pressures on the Great Barrier Reef. f. Changes to the Vegetation Management Act to make permits for clearing easier to get. g. Possible increase in aquaculture development. <p>The implications for the Great Barrier Reef from these trends are profound.</p> <ul style="list-style-type: none"> • Doubling agricultural production in the Great Barrier Reef catchment would be highly likely to lead to greatly increased discharges of sediment, nutrients and pesticides to the Reef above any gains achieved through Reef Plan. • Major port expansion will likely lead to more dredging and spoil dumping in the Great Barrier Reef World Heritage Area and/or Great Barrier Reef Marine Park and increasing levels of turbidity in the inshore Reef in large areas around the ports. In addition there will be increased release of fine coal into the marine environment. • Increased shipping will lead to increased release of anti-fouling compounds, increased risk of shipping accidents and oils spills, anti-foulant pollution from ships striking reefs and increased prop wash turbidity. 	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>• Increased coastal urban populations, for example, in Townsville, or coastal tourism developments, for example, Aquis in Cairns, will likely lead to increased sediment run-off and potentially increased discharges of micro-pollutants such as pharmaceuticals.</p> <p>• The current changes to the Vegetation Management Act will likely lead to more clearing in the Great Barrier Reef catchment and potentially increased sediment delivery to the Reef.</p> <p>None of the scenarios in Chapter 11 take any of this into account. The Bayesian analysis presented in Chapter 11 is also deeply flawed. This can be readily assessed from the fact that the Anthony et al. report on which this is based is unpublished and undated. I had some involvement in this work and I am prepared to say that the model in its current state is entirely unreliable and definitely should not be used in such an important assessment as the Strategic Assessment. Perhaps further development to a stage where a peer reviewed report or paper is available to substantiate the model will make the model usable. Overall Chapter 11 is completely unacceptable in a work of the importance of the Strategic Assessment and it should be deleted. A properly done scenario modelling exercise using the trends from Chapter 5 as well as climate change scenarios would be very valuable and is badly needed.</p> <p><u>Response</u></p> <p>Section 11.6.1 addresses all the concerns listed above (a-g), with the exception of tourism and aquaculture, neither of which have been identified as serious long term risks by the Assessment. Hence the Authority feels that the chapter is justified and should remain part of the overall Assessment.</p> <p>The work by Anthony et al. on the qualitative networks formed part of the Regional Sustainability Projects which were undertaken to inform the Strategic Assessment. Hence the inclusion is well justified.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194</i></p>	
<p>Why was the forecast of future dredging, illustrated in Figure 6.18, not used in the scenarios in Chapter 11?</p> <p><u>Response</u></p> <p>The projected increase in port related activities is stated in section 11.6.1 and is considered for the projected conditions of impacted values in tables 11.1-11.4.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E199</i></p>	
<p>This chapter appears to have been written to satisfy a process/method driven imperative, rather than to add significant new substance.</p> <p>It is unclear upon what numbers in Figure 11.1 and 11.2 are based.</p> <p><u>Response</u></p> <p>It is not clear what numbers are referred to in this comment. Table 11.1 and 11.2 are; “a grade of best fit across all elements of the value. If a number of the elements are likely to have a ‘poor’ projected condition then the group is assigned this grade, even if some are likely to have a better projected condition.”</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Chapter 12</p> <p>This chapter focuses on the improvements of the Great Barrier Reef Marine Park Authority’s management arrangements only. It should also, and primarily, focus on the management arrangements for the Great Barrier Reef World Heritage Area. It seems unusual that although assessment of consequential and cumulative impacts is acknowledged as a weakness, there is no reference in this Section to the recently released “A framework for understanding cumulative impacts, supporting environmental</p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>decisions and informing resilience-based management of the GBRWHA”, of which the Authority was a contributing author. This section will likely require significant review once comments on earlier sections have been processed. Comments on the Program Report are also relevant here.</p> <p><u>Response</u></p> <p>The final chapters of the Strategic Assessment Report have been revised to provide a clear line of sight from the Assessment report to the recommendations in the final version of the Program Report. Both will focus more on the management arrangements for the Great Barrier Reef World Heritage Area from the perspective of the Authority. Combined with the outcomes of the Reef 2050 Long-term Sustainability Plan and ongoing bilateral negotiations between Queensland and Australian governments, it is envisaged that a comprehensive improvement of the management of the world heritage property will be achieved.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>We suggest that REC10 in relation to plans of management is broadened to include areas within the World Heritage Area that are not within the Marine Park where these are potentially high-growth areas.</p> <p><u>Response</u></p> <p>These recommendations relate to “Authority recommended improvements” hence only apply to areas within the Marine Park.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Table 12.1: what are the relative priorities of these recommendations? In relation to REC35, to whom would implications of climate change need to be communicated?</p> <p><u>Response</u></p> <p>At present there are no explicit priorities for the recommendations. The process of prioritisation will happen through future programs such as the Reef 2050 Long-term Sustainability Plan and the Integrated research, monitoring and reporting program.</p> <p>The implications of climate change are to be communicated to all levels of stakeholders, from Reef Guardian schools to international forums.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E192</i></p>	
<p>Chapter 13</p> <p>A stronger precautionary approach should be stated in (b), Table 13.1. Applying the Principles of ecologically sustainable development.</p> <p><u>Response</u></p> <p>The Authority considers the statement is consistent with the precautionary approach.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E251</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>Program Report</p> <p>Table 5 in the Program Report needs to include specific reference to some other key ecosystems and species in respect to targets, especially mangroves, saltmarshes and fish stocks.</p> <p><u>Response</u></p> <p>The final version of the Program Report will contain explicit targets for the condition of values for which there is sufficient data available to define such targets. It should be noted, however, that targets will be adjusted with increasing knowledge and will not be final at the time of publication, but subject to adaptive management responses.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E075</i></p>	
<p>Table 3 seems oddly structured with the inclusion of environmental processes. It gives the impression that the Great Barrier Reef Marine Park Authority intends to manage or control these things. How would the Authority maintain and enhance the performance of cyclones, sea level, wind, tides etc.? Perhaps these processes should be removed or referred to in another way.</p> <p><u>Response</u></p> <p>The final version of the Program report has amended this table to reflect only those processes which can be managed. These include sedimentation, light, nutrient cycling, primary production, herbivory, predation, connectivity and recruitment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 353</i></p>	
<p>Table 5 – unclear how the Great Barrier Reef Marine Park Authority would implement vessel monitoring systems in Queensland fisheries without extensive consultation which is not outlined.</p> <p><u>Response</u></p> <p>Extensive consultation is, and will continue to take place with all our stakeholders.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 353</i></p>	
<p>Table 5 – no comments in relation to recreational fishing pressure. Perhaps comments here would be best limited to fisher compliance with Marine Park zoning regulation?</p> <p><u>Response</u></p> <p>The maintenance of an effective field compliance presence in the region would refer to recreational fishing as much as any other type of activity, which is translated to compliance with Marine Park zoning regulation.</p> <p>No further action has been taken in relation to this comment.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 353</i></p>	

Public submission / comment and GBRMPA response	Addendum table reference # (if applicable)
<p>The list of desired outcomes in Table 3 and 4 is far greater than the list of preliminary targets in table 5. Is this because of prioritisation? It is unclear whether the targets in table 5 are absolute or relative (i.e. coral decline) - is the target to reduce the rate of decline (still declining but less quickly) or see actual improvement? Water quality should be included in Table 5 along with its outcomes and targets as water quality effects all other components listed in the table.</p> <p><u>Response</u></p> <p>The final Program report is more explicit in how and for what outcome based targets and thresholds will be developed. Please refer to the final Program report.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: 353, E124</i></p>	
<p>Table 6 Key indicators of the Region's values, processes and impacts p.44 - How will these indicators be linked to show the impacts, for example, climate change on values of biodiversity such as shorebirds?</p> <p><u>Response</u></p> <p>The final Program report is laid out to show a clear pathway between the vision, the desired state (outcome), thresholds, risks/impacts, targets and management actions. Please refer to the final Program report.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194</i></p>	
<p>Difficult to cross-reference recommendations from the Strategic Assessment with those in the Program report particularly recommendations 10, 12, 18, 19, 20 and 34, as they don't appear to have been addressed in the Program report.</p> <p><u>Response</u></p> <p>All recommendations are addressed and linked to specific Program commitments in the final version of the Program report.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194</i></p>	
<p>Principles for managing environmental impacts within the Great Barrier Reef Region: "in assessing impacts, uncertainty must be recognised but not delay protective actions". In this vein we suggest the inclusion of "in assessing permits, uncertainty must be recognised, but not delay the timely assessment of permits".</p> <p><u>Response</u></p> <p>Permits will be assessed in accordance with the principles of ecologically sustainable development and the cumulative impact assessment guidelines. The permitting process is outlined in great detail under section C of the final program report.</p> <p style="text-align: right;"><i>Public submissions that referred to this issue: E194; E220</i></p>	



Australian Government

**Great Barrier Reef
Marine Park Authority**

www.gbrmpa.gov.au