



# **GREAT BARRIER REEF COASTAL ZONE STRATEGIC ASSESSMENT**

**INDEPENDENT REVIEW REPORT**

25 October 2013





An underwater photograph of a coral reef. The foreground is dominated by a large, branching piece of red coral. Several small, dark fish are swimming in the clear blue water above the coral. The background shows more coral and a slightly hazy blue sky at the surface.

**MILES YEATES**  
**SINCLAIR KNIGHT MERZ**  
T +61 7 3026 7100  
E: MYeates@globalskm.com

ABN 37 001 024 095  
32 Cordelia Street, (PO Box 3848)  
South Brisbane QLD 4101 Australia

[www.globalskm.com](http://www.globalskm.com)

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# LIMITATION STATEMENT

The sole purpose of this report and the associated services performed by Sinclair Knight Merz ("SKM") is to complete an independent review of the Great Barrier Reef Coastal Zone Strategic Assessment in accordance with the scope of services set out in the contract between SKM and the Department of the Environment ("Client"). That scope of services, as described in this independent review report, was developed with the Client.

SKM prepared this report from information sourced from the Client and additional material available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. SKM reviewed a 'draft in progress' version of the Strategic Assessment reports, dated 13 September 2013. This version may differ significantly from subsequent reports published for public comment.

SKM has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by SKM for use of any part of this report in any other context. This report has been prepared on behalf of, and for the use of, SKM's Client, and is subject to, and issued in accordance with, the provisions of the contract between SKM and the Client. SKM accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.



# EXECUTIVE SUMMARY

## BACKGROUND

The Great Barrier Reef is recognised globally as an iconic natural asset, comprising almost 3,000 reefs, which form one of the largest, most complex and diverse ecosystems on the planet. Management of the reef ecosystem as a multiple-use marine park and world heritage area is being increasingly challenged by a range of complex factors, many of which have their origin outside of the marine park's boundaries.

The Australian and Queensland governments are undertaking a Strategic Assessment of the Great Barrier Reef World Heritage Area and adjacent coastal zone, with the Queensland Government leading the relevant coastal zone components and the Great Barrier Reef Marine Park Authority leading the marine components. The Strategic Assessment will help identify, plan for and manage the unique values of the Great Barrier Reef, and is being carried out under Part 10 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Sinclair Knight Merz (SKM) was engaged by the Commonwealth Department of Sustainability, Environment, Water, Populations and Communities (SEWPaC, now Department of the Environment) to complete an independent review of the draft Great Barrier Reef Coastal Zone Strategic Assessment (version dated 13/09/13). This report outlines the findings of the independent review.

## METHODS

SKM established a review team to assess the draft Strategic Assessment, which was comprised of a Program Report, Assessment Report and

Appendices. SKM utilised experienced staff in the areas of marine park management, coastal planning, marine science, impact assessment, strategic program management and environmental assessments under the EPBC Act. The SKM review team worked independently of the Queensland Government when conducting the review.

SKM made an assessment of the Strategic Assessment's consistency with its Terms of Reference, structure and cohesiveness of presentation, breadth and depth, technical accuracy and the validity of conclusions drawn. Comments have been presented in this report on the adequacy of the Strategic Assessment in addition to recommendations for improvement of the documents in subsequent versions. It is anticipated that the independent review, or part thereof, will form an appendix to the final assessment report, once completed.

## RESULTS

Overall, the draft Strategic Assessment was found to be a good presentation of a large body of information. The reports are generally well written and will be consistent with the Terms of Reference if key gaps identified in this review are addressed in subsequent revisions. Strengths of the Strategic Assessment are its relatively concise format suitable for a wide audience, use of spatial mapping tools, analysis of terrestrial ecological values and detailed consideration of the linkages between land-based activities and the environmental health of the reef ecosystems.

Suggestions for improvement of the documents have been identified which may further assist



in enhancing the presentation and to increase the depth and coverage of the assessment. These include placing greater emphasis on the assessment of outcomes rather than processes when considering the adequacy of the existing Program and Forward Commitments, conducting a more detailed assessment of ecological processes, focussing on managing for resilience and expanding some aspects of the Program description to include the regulation of activities such as fisheries, agriculture and aquaculture.

#### Structure and Cohesiveness of the Reports

The reports were found to be cohesive in their presentation and structure, particularly in light of the large amount of material and the magnitude of the Strategic Assessment task. The complexities associated with the intergovernmental management arrangements for the Great Barrier Reef were well described, and articulated an improving alignment in the future management of Matters of National Environmental Significance (MNES), through converging approaches to mapping environmental values and considering environmental offsets. SKM considers that the objectives of the Strategic Assessment were not clearly defined, and constrained the synthesis of key findings into a collection of strong conclusions. Some recommendations to improve the readability of the Assessment results through minor changes to the structure and layout have been made. The frequent use of tables, figures and cross references to aid interpretation of the reports was highly regarded.

#### Breadth and Depth of Assessment

The large geographic scale of the assessment required a synthesis of the most important issues for detailed analysis and the development of a method of simplification in the assessment approach. The majority of issues were described and assessed in a balanced and rigorous fashion, with a particular focus on development assessment and the protection of terrestrial ecology values. Further analysis of land uses and their regulation in moderately disturbed areas would have added value, particularly due to the significance of water quality issues for the future of the Great Barrier Reef. Further description and assessment was expected in relation to port development and dredging, aquaculture and fisheries management, which are all given limited attention in the reports. It is recommended that the assessment of cumulative impacts is expanded, with a particular focus on port and coastal development and the influence of severe weather events. A more detailed description of the magnitude and adequacy of protected area management activities would also add value to the analysis. The application of methods to select key listed species on the basis of regularly triggering development assessments does not appear to have produced a geographic representation of species across the Great Barrier Reef Coastal Zone.



### Technical Accuracy

In general, the results derived from the application of the assessment methods were evidence-based and justified by the information presented in the reports. The Assessment communicates that the condition of the Great Barrier Reef is in decline, and that existing management measures have generally been only partially effective at reversing this trend. Discussion of the effectiveness of management measures appears to be more favourable than the assessment results appear to warrant. In this context, further justification of the likely effectiveness of future management commitments in protecting MNES and reversing the ongoing decline in condition is recommended. The documents identify that the existing Program has some weaknesses in the management of cumulative impacts and environmental offsets. Further text is required to strengthen the description of these aspects of management and how they will be improved in the future. Amendments to the Program description are also recommended as some relevant legislative functions and planning reforms have not been mentioned or are incorrectly described.

### Validity of Conclusions

There is strong focus on the management of water quality issues arising from runoff within the catchment as a means of protecting MNES of the Great Barrier Reef and mitigating the impacts of sediment, nutrient and pesticide discharges. This is appropriate and consistent with management of the environment at a landscape scale.

Issues relevant to the 25 year time frame of the Program receive less attention, such as

managing for resilience in response to ocean acidification and climate change. Collectively, the future management commitments do not appear sufficient to halt the declining condition of MNES and to maintain all of the natural heritage values described in the world heritage listing criteria for the Great Barrier Reef. In this context, further justification of the objectives, perceived benefits and resources to be allocated to Forward Commitments would provide more information to make an informed judgement on the appropriateness of these measures.

### CONCLUSIONS AND RECOMMENDATIONS

The draft documents reviewed by SKM address the majority of the requirements of the Terms of Reference, and with further improvement, will provide complete consistency with the Terms of Reference. The documents therefore represent significant progress in the preparation of a comprehensive and detailed Strategic Assessment of the Great Barrier Reef Coastal Zone. They focus on the strengths of the existing Queensland Program, which was not designed explicitly for the purpose of protecting MNES. In this context, proposed actions to further align the State and Commonwealth management frameworks and to focus on water quality issues are appropriate and will be critical to the success of the Program's implementation. Further work is required to fill information gaps, focussing on Program outcomes rather than inputs and processes, and to define future management actions on the basis of an assessment of what will be required to halt the declining values of the Great Barrier Reef World Heritage Area.



# 1. INTRODUCTION

## 1.1 BACKGROUND

The Great Barrier Reef is recognised globally as an iconic natural asset, comprising almost 3,000 reefs, which form one of the largest, most complex and diverse ecosystems on the planet. More than 900 islands are located throughout the Great Barrier Reef, covering a distance of 2,300 kilometres across shallow estuarine areas to deep oceanic waters.

Management of the reef ecosystem as a multiple-use marine park and world heritage area is being increasingly challenged by several threats, many of which have their origin outside of the marine park's boundaries. These include climate change, ocean acidification, catchment runoff comprising sediment, nutrients and pesticides, disease and pest outbreaks, ports and shipping, recreation and tourism, fishing and coastal development. While the Great Barrier Reef remains one of the healthiest coral reef ecosystems on the planet, its condition and resilience have declined in recent decades as a result of such pressures (GBRMPA 2009).

The Australian and Queensland governments are undertaking a Strategic Assessment of the Great Barrier Reef World Heritage Area and adjacent coastal zone, with the Queensland Government leading the relevant coastal zone components and the Great Barrier Reef Marine Park Authority (GBRMPA) leading the marine components. The Strategic Assessment will help identify, plan for and manage the unique values of the Great Barrier Reef, and is being carried out under Part 10 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Queensland Government and the GBRMPA will

together produce reports covering the terrestrial and marine areas of the Great Barrier Reef.

There is a high degree of public interest in the management of the Great Barrier Reef, both within Australia and internationally. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Committee, in its final reactive monitoring mission report in June 2012, called for a halt to new port developments outside of the existing major port areas on the Great Barrier Reef until the completion of the Strategic Assessment (UNESCO 2012). The mission report also made several references to the Strategic Assessment as making an important contribution to the long term conservation of the Great Barrier Reef.

The Queensland Government has recently developed the coastal zone Strategic Assessment to an initial draft stage. This includes a Program Report (Queensland Government 2013a), which describes the Queensland Government's coastal management, planning and development assessment framework, and a Strategic Assessment Report (Queensland Government 2013b), which contains an assessment of the Program's effectiveness in managing and protecting the Matters of National Environmental Significance (MNES) of the Great Barrier Reef Coastal Zone. Several appendices to the Assessment Report have also been prepared.

The purpose of the coastal zone Strategic Assessment is described in Sub-Chapter 1.3 of the Assessment Report. The Strategic Assessment is a broad systems and landscape scale assessment of Queensland's policies, plans



or programs that relate to the management and protection of Matters of National Environmental Significance (MNES), including Outstanding Universal Value (OUV). The Strategic Assessment will help identify, plan for and manage existing and emerging risks to ensure ongoing protection and management of the unique environmental values of the Great Barrier Reef World Heritage Area and adjacent coastal zone. This will be achieved by ensuring that:

- the existing management arrangements for MNES in and adjacent to the Great Barrier Reef World Heritage Area are adequate.
- planning, development and land management in the Great Barrier Reef Coastal Zone avoids, mitigates or offsets significant direct, indirect and cumulative impacts on MNES.

The Strategic Assessment forms part of Australia's response to the World Heritage Committee's concerns regarding the impact of development on the Great Barrier Reef World Heritage Area.

## 1.2 SCOPE OF WORK

Sinclair Knight Merz (SKM) was engaged by the Commonwealth Department of Sustainability, Environment, Water, Populations and Communities (SEWPaC, now Department of the Environment), to complete an independent review of the draft Great Barrier Reef Coastal Zone Strategic Assessment. This report outlines the findings of the independent review.

Terms of Reference (Queensland Government 2012) for the Strategic Assessment were finalised in 2012, following a public consultation process. Among the 377 public submissions received, the carrying out of an independent review of the Strategic Assessment was the most commonly raised issue. Accordingly, SEWPaC engaged SKM to complete an independent review of the draft Strategic Assessment, prior to release for public comment in late 2013.

The independent review is an important step in determining whether the Strategic Assessment has satisfied its Terms of Reference and assessed and described the existing and future risks to the Great Barrier Reef and how they will be managed.

The review considered electronic versions of the Draft Program Report, Draft Strategic Assessment Report and Draft Appendices. These were provided to SKM by SEWPaC on 13 September 2013.

The documents were marked "Draft in Progress – version current as at 13/09/2013". Although largely complete, the documents included a small number of incomplete sections, primarily 'Gaps and Improvements' sections of the Assessment Report (Sub-Chapters 7.6.4.5, 7.10.2.1, 7.10.3.1). Some sections of the Appendices were missing or were difficult to locate in the absence of a Table of Contents for the Appendices. SKM understands that the documents are being refined by the Queensland Government while the independent review is being conducted.

## 1.3 METHODS

SKM established a review team to assess the draft Strategic Assessment, utilising staff experienced in the areas of protected area management, coastal planning, marine science, impact assessment, strategic program management and assessments under the EPBC Act. The method adopted for the review was agreed with SEWPaC prior to the project commencing, and is summarised as follows:

- A project inception meeting was held to confirm project objectives, methods, communication channels and timeframes.
- A briefing was given by the Queensland Government approximately one week prior to receipt of the draft documents. It provided SKM with background on the approach to the Strategic Assessment and on the approach that had been taken to developing the documents.

- The Program Report, Assessment Report and Appendices were reviewed, with an assessment made of their:
  1. consistency with the Terms of Reference.
  2. structure and cohesiveness of presentation
    - SKM considered whether the information was appropriately structured, presented in a clear, concise and well-written manner, and whether the goals and objectives of the assessment were feasible, well-defined and targeted towards the material issues.
  3. breadth and depth - SKM considered whether the coverage of the assessment was adequate, and whether issues had been addressed in sufficient depth, or been overlooked.
  4. technical accuracy - SKM also considered whether uncertainty had been adequately characterised and whether any conflict in the available information had been recorded and assessed.
  5. conclusions - to determine whether they were evidence-based, valid and comprehensive. The change process assumed in the Strategic Assessment was tested for feasibility, and the presentation of the implications of the Strategic Assessment was reviewed.
- Conclusions from the review were drawn, and areas requiring further work were identified. Recommendations on improving the Strategic Assessment have been made and are presented in this report.

The SKM review team worked independently of the Queensland Government and did not directly interact with it during the review process. In addition to reviewing the Strategic Assessment documents, SKM referred to other relevant reports and literature available in the public domain.

Weekly progress reports were provided to the Department of the Environment during the review process. Given that the documents were in a draft stage and still under revision at the time of the review, SKM did not provide feedback on editorial or formatting issues in the documents provided.

#### 1.4 STRUCTURE OF THIS REPORT

This report has been structured to meet two objectives of the review process:

- Conduct an independent, critical review of the Strategic Assessment documents, and describe their adequacy in meeting the objectives of the Strategic Assessment.
- Provide recommendations on how the draft documents can be improved.

The findings of the independent review are presented in two parts, consistent with these objectives. The main body of the report presents the findings of the independent review, by evaluating:

- the consistency of the Strategic Assessment with the terms of reference (Section 2),
- its structure and cohesiveness (Section 3),
- its breadth and depth (Section 4),
- the accuracy of technical aspects (Section 5), and
- the validity of conclusions (Section 6).

SKM's conclusions and recommendations are described in Section 7. A detailed list of comments and recommended actions to improve the Strategic Assessment documents is provided in Appendix A. These recommendations will assist the Queensland Government and Commonwealth Department of the Environment in finalising the for-public-comment and final versions of the Strategic Assessment.







## 2. CONSISTENCY WITH THE TERMS OF REFERENCE

### 2.1 OVERVIEW OF THE TERMS OF REFERENCE

The Terms of Reference for the Strategic Assessment (Queensland Government 2012) provide a description of the geographic extent of the Great Barrier Reef Coastal Zone, provide background information and context for the Strategic Assessment and prescribe the matters to be addressed in the Program description and assessment. A description of the scope of the Strategic Assessment is provided in Sub-Chapter 1.4 of the Program Report, with a summary of

The Strategic Assessment has a close alignment with the requirements outlined in the Terms of Reference. Tables and figures within the documents refer directly to relevant sections of the Terms of Reference to provide clarification of where key requirements have been addressed. The reports are focussed on the strengths of the Queensland Program, with detailed assessments of terrestrial ecological matters and development assessment controls. Gaps exist in the description of some Outstanding Universal Values, including natural beauty and aesthetics, which are not identified by the Protected Matters Search Tools applied in the assessment.

A greater focus on adaptive management for resilience in response to climate change, ocean acidification and declining water quality would enhance consistency with the Terms of Reference.

how the Terms of Reference have been addressed provided in Figure 3.3-1 of the Assessment Report and in Appendix D.

Some components of the Terms of Reference

have been addressed in more detail than others, which is to be expected given the scale of the assessment and the variety of issues requiring consideration. In general, the Queensland Government has provided adequate coverage of the issues stated in the Terms of Reference, with several exceptions, where further detail would strengthen the assessment and coverage of issues.

### 2.2 PURPOSE AND DESCRIPTION OF THE PROGRAM

The Program Report describes the purpose of the Queensland management framework for the coastal zone of the Great Barrier Reef, and defines the geographic area to which the Strategic Assessment applies. Legislation, plans, policies and other material that comprise the Program are described, including commitments to strengthen the Program or implement new management actions in the future. Some sections of the Program Report have gaps or inaccuracies in the description of the legislative framework and the jurisdiction of some Departments in implementation. The Program description was also focussed towards the assessment of development, and further expansion to include more detail on the management of other activities is recommended.

### 2.3 MNES AFFECTED BY THE PROGRAM

The Strategic Assessment comprehensively describes the spatial distribution and condition of the vast majority of MNES through the application of mapping tools. This provides a foundation for the assessment of impacts on MNES of activities within the Great Barrier Reef Coastal Zone and

adjacent catchment. The condition and trend in MNES are also explained, and referenced to the data sources. The identification of priority areas for conservation has only been given a brief and general consideration in the reports, and further detail would improve consistency with the Terms of Reference.

The Terms of Reference state that the Strategic Assessment must “describe the current condition of OUV against the retrospective statement of OUV which describes the state of the Great Barrier Reef World Heritage Area (GBRWHA) at the time of listing”. The condition of some aspects of OUV is not considered in any detail by the Strategic Assessment. Examples include the Great Barrier Reef’s superlative natural beauty, including above the water (listing criterion vii), and representation of the processes of geological and geomorphological evolution (criterion viii), coastal processes and the role of birds in processes such as seed dispersal (criterion ix). This appears to be because these aspects of OUV, though implicitly MNES, are not explicitly identified as MNES using tools such as the Protected Matters Search Tool, and have not been considered in the Strategic Assessment. For example, the Pied Imperial Pigeon (*Ducula bicolor*) is a listed marine species

role of birds in seed dispersal. Considering only aspects of OUV that are explicitly identified as MNES prevents the Strategic Assessment from fully meeting the Terms of Reference requirement to “provide sufficient information to allow an understanding of the connectivity between MNES including OUV”.

The description of the distribution, significance and management of indigenous cultural values of the Great Barrier Reef could be further expanded to provide greater recognition of the role played by indigenous people in the management of their traditional lands and sea-country. While it is recognised that the four world heritage listing criteria for the Great Barrier Reef relate to natural heritage, some further description of the cultural landscapes and heritage values of the Great Barrier Reef and their management by traditional owners would seem warranted given the depth and breadth of the Strategic Assessment and the limited description provided in the draft documents. The statement of OUV for the Great Barrier Reef acknowledges the “strong ongoing links between Aboriginal and Torres Strait Islanders and their sea-country”, and this could be more prominently reflected in some sections of the Strategic Assessment documents.



but is not a listed threatened or migratory species identified by the Protected Matters Search Tool. As a result, it is not addressed in the Strategic Assessment despite it being specifically referred to in the statement of OUV in relation to the

Existing and emerging risks to the Great Barrier Reef associated with climate change are not discussed to the level of detail expected to be consistent with the Terms of Reference (Section 2.2-g). Although it is recognised that actions to mitigate or reduce climate change are outside the scope of the report, increasing the resilience of the Great Barrier Reef is a common theme in many chapters, and adapting to climate change is a key challenge for future management. Further discussion of such matters would be appropriate, particularly in light of the 25 year timeframe of the Program. The absence of detailed discussion suggests that the Program does not currently address the issue of managing for increased resilience in response to climate change.





## 2.4 PROMOTING ECOLOGICALLY SUSTAINABLE DEVELOPMENT

It is not clear how the principles of ecologically sustainable development (ESD) are applied in the Program. The discussion of ESD is insufficient. One of the principles ‘improved valuation, pricing and incentive measures’ has been misinterpreted. The principle includes the following key aspects: polluter-pays, environmental factors should be included in the valuing of assets and services, costs should reflect the full life cycle of goods and structures, and financial or market incentives for developing effective solutions with a positive impact are available. It is not clear how the examples mentioned in the text (page 323) reflect or apply this principle.

The two other ESD principles (decision-making processes integrate both long and short term considerations, and the precautionary principle) are not addressed in detail. The precautionary

principle is noted as being enshrined in the *Sustainable Planning Act 2009*, but further explanation would be helpful on how it is applied. Greater focus on long-term or forward looking measures, which are encapsulated in the first ESD principle (see page 321 of the Assessment Report) is recommended. Much of the coastal development and infrastructure within the Great Barrier Reef Coastal Zone (especially ports) will have a design life spanning decades.

## 2.5 ADAPTIVE MANAGEMENT: ADDRESSING UNCERTAINTY AND MANAGING RISK

The adaptive management section of the Terms of Reference appears to have only been partially addressed. While there are broad descriptions in the Strategic Assessment of plans to adapt management to address risk and uncertainty, this section is lacking in detail and should be strengthened. The description of uncertainties in



scientific understanding could be further explained for key management issues such as crown-of-thorns starfish (COTS) outbreaks, the tolerance of coral reefs to sediment, nutrient and pesticide discharges and adaptation of the reef ecosystem to climate change.

2.6 AUDITING, REPORTING, REVIEW,  
MODIFICATION OR ABANDONMENT

Descriptions of how the Program will be administered in the future are relatively brief and described primarily within Sub-Chapter 9.8 of the Assessment Report. A statutory review process applied to all regulatory mechanisms in Queensland is referenced. The commitment to continue working with the Commonwealth Government on joint management arrangements is also reaffirmed.

2.7 FURTHER WORK

The draft reports reviewed by SKM meet the majority of the requirements of the Terms of Reference. In order to be completely consistent with the Terms of Reference, a broader coverage of the following issues is required:

- Description of OUV not identified by the Protected Matters Search Tool.
- Better recognition of the strong ongoing links between Aboriginal and Torres Strait Islanders and the management of their traditional lands and sea-country within the Great Barrier Reef Coastal Zone.
- Further explanation on how the principles of ESD are applied under the Program.
- More detailed description of adaptive management actions and of scientific uncertainty in our understanding of the Great Barrier Reef.
- Further details on the proposed administrative arrangements for the Program, including a description of the likely circumstances that may result in modification or abandonment of the Program, and the parties responsible for reviewing and/or auditing the Program.



# 3. STRUCTURE OF REPORTS AND COHESIVENESS OF PRESENTATION

## 3.1 INTRODUCTION

The Strategic Assessment is the result of work by a variety of Queensland and Commonwealth government agencies. This section examines whether the content of the reports is appropriately structured, and whether information is presented in a clear, concise and well written manner. The cohesiveness, or degree to which sections of the Strategic Assessment fit together logically is also described, particularly in relation to the objectives

The Strategic Assessment presents a large body of information. The reports are generally well written, concise and effective in articulating key messages. SKM found the reports to be cohesive in their presentation and structure, particularly in light of the large volume of information presented. The frequent use of tables, figures and cross references has assisted in the explanation of complex concepts for a broad audience.

Clear and measurable objectives for the Strategic Assessment should be outlined, and used as a basis for assessing the effectiveness of the existing Program. Further explanation is recommended on how the Program components comprising Foundational Management, Strengthened Management and Forward Commitments will be of a sufficient scale and magnitude to provide for the long term protection of the Great Barrier Reef.

being feasible, well-defined and targeted towards the material issues affecting the Great Barrier Reef. Some recommendations for improvement of the documents have been identified which will further assist in enhancing the presentation for a wide audience and to build technical rigour.

## 3.2 INTERGOVERNMENTAL MANAGEMENT ARRANGEMENTS

One of the first challenges faced in the Strategic Assessment is to describe the intergovernmental management arrangements in place for the Great Barrier Reef. These arrangements are relatively complex, as illustrated in Figure 6 (page 20) of the Program Report, but are described in a relatively simple and concise manner that is well suited to a general audience. The selection of demonstration cases across a broad range of management activities provides significant benefit in describing how the Program is applied in practice and how interaction between State, Commonwealth and Local government agencies is achieved.

The implications of the Strategic Assessment for the management of future development within the Great Barrier Reef Coastal Zone by the Queensland and Commonwealth governments could be more clearly defined. In accordance with Part 10 of the EPBC Act, Sub-Chapter 2.8 of the Program Report indicates that under an endorsed Strategic Assessment, “the Commonwealth Environment Minister can approve certain classes of actions, avoiding the need for proponents to submit individual proposals for further environmental assessment under national law”. The Program Report does not clearly specify activities that could be considered by the Minister to be actions or classes of action to which this exemption would apply should the Strategic Assessment be endorsed. If any such actions are to be proposed, details should be clearly specified in the Program Report, as should details of how the Program will manage potential impacts on MNES. The term ‘accreditation’ appears to have been incorrectly applied to the endorsement





term Sustainability Plan is outcome-focussed and follows through on the commitments in the Strategic Assessment. Further clarification of the purpose, objectives and likely content of the Long-term Sustainability Plan would provide important context for the reader on future actions that will be guided by the findings of the Strategic Assessment.

The Program and Assessment reports describe a Great Barrier Reef that is under significant threat from a diverse range of activities. The focus on water quality, and in particular links between land management and environmental health of the adjacent marine environment, are appropriate and backed by science. Most environmental values of the Great Barrier Reef Coastal Zone are described to be in either 'good' or 'poor' condition, with values that underpin MNES including OUV having deteriorated over the past 5 years. Such trends have occurred despite the existence of dedicated management programs, which have been assessed to be relatively successful ('partially effective' or 'effective'). This apparent conflict between the assessment of effectiveness and declining trends warrants further discussion and explanation. The results are a sign that the existing management actions and/or resources allocated for management are not sufficient to achieve the management objectives, even if they have been implemented successfully. Further discussion of the adequacy of existing management actions including resourcing, is warranted. Links to discussions of the adequacy of future management commitments would also be helpful in this context.

The current condition and declining trends of the Great Barrier Reef also raise concerns about the time scales over which a sustained improvement could be expected. Many of the key challenges

for future management of the Great Barrier Reef reflect historical legacies rather than current activities. Declines in the condition of the Great Barrier Reef in recent decades have been driven by historical clearing across vast areas of the catchment and activities operating at a broad spatial scale. This is perhaps one of the strongest messages from the Strategic Assessment, and is important in setting directions and priorities for future management. The scale and diversity of threats to the Great Barrier Reef will require a sustained management response to halt the declining condition of the Great Barrier Reef.

Summary tables used in the assessment of condition, trend and effectiveness are useful, especially the colour coding which is an effective visual cue. An additional table presenting a summary of all assessment ratings would be useful to provide a visual overview of the Strategic Assessment's findings. Summary assessment tables are currently spread across three separate chapters, and within different sections of each chapter, making it difficult for the reader to gain a complete picture of condition and trend across all of the MNES and OUV.

Recommendations to improve the readability and interpretation of concepts in the reports are provided in Appendix A. These relate to the purpose and layout of some figures, increasing the number of cross references between the Program and Assessment reports (which are helpful where they are present), and providing more information about matters such as the "accreditation process" described for the Program under the EPBC Act. The reports will provide a structured and cohesive presentation with further amendment to improve confidence that management actions will be sufficient to address the declining condition of the Great Barrier Reef.

# 4. BREADTH AND DEPTH OF ASSESSMENT

## 4.1 INTRODUCTION

This section evaluates the breadth and depth of the Strategic Assessment, focussing on the coverage of key issues affecting the Great Barrier Reef Coastal Zone and the level of detail applied to the assessment. The comprehensiveness of the assessment is discussed and any areas that have been overlooked or require more detailed assessment have been identified.

There are many potential methods that could have been chosen to complete a Strategic Assessment at the scale of the Great Barrier Reef. Utilising the process specified under the EPBC Act has

focussed the assessment on MNES. However, the Queensland Program was not established with MNES in mind, and thus the assessment method has faced a significant challenge in evaluating the protection afforded to a range of environmental values that are not specifically defined or targeted by the Program legislation. This has made the assessment task complex, in the context that any protection afforded to MNES has been largely coincidental, rather than specifically targeted by Queensland's legislative framework.

A Queensland planning framework that is more compatible with Commonwealth legislation is proposed in the Program Report. This will involve explicit consideration of MNES and is indicative of improved collaboration between the Queensland and Commonwealth governments. MNES would appear to be mutually accepted by the State and Commonwealth governments as a key feature of the future management considerations for the Great Barrier Reef, which is a significant step forward in the process of aligning joint management responsibilities. This is illustrated in several sections of the report, such as in Figure 12 of the Program Report where an extract of the draft State Planning Policy released for consultation in April 2013 is shown, with specific reference to MNES.

Differing Queensland and Commonwealth government approaches to management of the Great Barrier Reef are highlighted in the reports. Examples include the techniques used to map environmental values, approaches to the listing of threatened species and the application of environmental offset policies to major projects. The reports identify these inconsistencies and

The Strategic Assessment has addressed significant challenges associated with evaluating the effectiveness of the Queensland Program, which was not designed to specifically consider MNES. There is a detailed focus on the links between land-based activities and the environmental health of the adjacent marine environment, which is a strength of the assessment. The rigorous analysis of water quality issues and the spatial distribution of terrestrial ecological values are of a high quality and targeted towards the material issues.

The description of port development and related activities such as dredging and shipping would benefit from further detail. Additional information on land use in disturbed areas and the management of national parks is also recommended, to justify the assumptions of ecological integrity and effectiveness of management across the protected area estate. There is limited evidence that the Program, including its Forward Commitments, will be sufficient to reverse the decline in the condition of the Great Barrier Reef and provide for its long-term protection. Further evidence and discussion is therefore recommended to provide a stronger evidence base to support the conclusions of the Strategic Assessment.

many of the Forward Commitments are associated with further aligning management between the Queensland and Commonwealth governments.

#### 4.2 ASSUMPTIONS AND GAPS

The Strategic Assessment has a strong focus on urban and infrastructure development, which is reflected in the planning and legislative instruments discussed. Coastal planning mechanisms which are not focussed on infrastructure projects are given limited discussion and recognition in the documents. The regulation of fisheries, aquaculture operations and agriculture, for example, are given limited consideration. The reports would benefit from an expansion in the discussion of ecological processes, as this is generally limited to a small number of issues such as the linkages between nitrogen discharges and outbreaks of the COTS.

More detail on port development was expected, particularly in light of the World Heritage Committee's concerns about port expansions throughout the Great Barrier Reef Coastal Zone. Port development and associated activities such as shipping and dredging are given limited description and assessment within the documents. The potential impacts of port development are correctly described as being local in geographic scale, although such descriptions do not acknowledge the broader spatial scale of shipping activities and the cumulative impacts of multiple ports along the coast. While port development activities are subject to detailed management processes under the approval framework described in the Program, there is little justification provided for the assessment of risks relating to these activities in the documents. Discussion on port developments is also disjointed, in some areas referring to the recently released draft Queensland Ports Strategy without summarising and analysing the material issues for the Strategic Assessment. The description of the management of dredging and the disposal

of dredged material at sea is overly simplified and does not refer to the National Assessment Guidelines for Dredging, which is the basis upon which applications for dredging and material placement are generally assessed (see page 168 of Assessment Report). Given the degree to which expanded port proposals have shaped the public's interest in the Strategic Assessment, and the nature of the Terms of Reference, a more detailed description and assessment of these activities is recommended.

The description of the Queensland Government's commitment to limit future port developments to the existing port limits until 2022 should be explained in more detail, as readers may incorrectly interpret this as meaning that no new port expansion projects will occur during this period. Significant expansion of port capacity to accommodate new shipping berths could occur within the existing port limits at many port locations. The majority of concerns raised regarding port expansions on the Great Barrier Reef have occurred in response to proposals to increase capacity within existing port limits. Also, the Program life is stated to be 25 years, which is longer than the currency of the 2022 port commitment.

The Assessment Report makes an assumption that Queensland regional ecosystems are a surrogate for Commonwealth Threatened Ecological Communities (TECs). While TECs are often based on regional ecosystems, the Strategic Assessment does not recognise that condition thresholds such as patch size, canopy species and the level of weed infestation must be met for a regional ecosystem to form the TEC, for the two TECs which have the majority of their distribution within the Great Barrier Reef Coastal Zone. Such matters should be clarified in the method description and addressed where possible in the interpretation of results.



The Strategic Assessment would benefit from a discussion regarding the process to select the key species to be assessed in the report. In Sub-Chapter 3.5 of the Strategic Assessment report, it is stated that those EPBC Act listed species



that are not regularly triggered for development assessments under the EPBC Act were removed from the list of species to be assessed. This reduced the number of species to be considered from 162 to 50 species. No rationale for this approach was provided, and the method appears to invalidly assume that key risks for listed species are only associated with development. However, development is only one of the many sources of pressure on listed species and further justification of the approach would aid the reader in understanding its validity. The description of the process to identify threatened species could be strengthened with a definition of what is meant by the phrase “not regularly triggered” in relation to development assessments used to identify species.

The application of methods to select key listed species on the basis of regularly triggering development assessments does not appear to

have produced a geographic representation of species that would be logically expected. The key species considered in the assessment are largely concentrated in the northern parts of the Great Barrier Reef Coastal Zone. The southern parts of the Great Barrier Reef Coastal Zone, where significant development occurs, are poorly represented in the distributions of these 11 species (e.g. only two of the species listed in Table 3.5-1 – ‘Key threatened species and ecological communities in the Great Barrier Reef Coastal Zone’ are found in the two southern natural resource management (NRM) regions, Fitzroy and Burnett Mary). This apparent discrepancy between the assessment method and its application in practice warrants further clarification and discussion. The selection of listed species could be more representative of the entire Great Barrier Reef Coastal Zone if NRM regions were used to provide a framework to check that the species chosen for assessment are distributed relatively evenly.

Sub-Chapter 5.2.2.3 of the Program Report describes that proposed guideline for MNES in the Queensland Planning System. This is a good initiative and has potential to clarify expectations about MNES in a Queensland context. Consideration could be given to expanding the coverage of the guideline from State Development Areas and regional planning, to include mining, agriculture, development and other activities that generate non-point source impacts to the Great Barrier Reef.

#### 4.3 COMPREHENSIVENESS

The detailed examination and assessment of the influence of land-based activities on the marine environment is a feature of the Strategic Assessment. Management of marine protected areas is often constrained by legislation and

jurisdictional powers that primarily consider activities within the marine environment only. The strong links between land management activities in the Great Barrier Reef catchment and the environmental condition of the Great Barrier Reef Coastal Zone are well communicated, backed by science and provide insights into the condition of the reef ecosystem. Such whole of landscape discussion helps frame the assessment towards water quality, which is one of the key issues for the future of the Great Barrier Reef.

The geographic coverage of the assessment is considered appropriate for the objectives of the assessment. Where overlap occurs with the Commonwealth's Strategic Assessment of marine areas, this has been identified and the key results of the marine assessment are presented in the Great Barrier Reef Coastal Zone Strategic Assessment for completeness. Some uncertainty remains in aspects of marine management for which responsibilities are shared between multiple State and Commonwealth agencies (e.g. dugong management). A more detailed description of whether duplication of effort is avoided would assist in clarifying how multiple State and Commonwealth government agencies work together on issues of joint interest and operations.

The Strategic Assessment is mostly focussed on the issues that are likely to have a negative impact on the Great Barrier Reef and in particular MNES. Water quality and the protection of listed habitats and species are given significant attention within the reports. Mapping inputs to the Strategic Assessment are particularly strong and provide a rigorous data set to support the ecosystem-scale assessment. The mapping tools are in widespread use across Queensland and applied in legislation, local government planning and project impact assessment processes. Data

underpinning the methods are based on field surveys and interpretation of aerial photography, and are the accepted standard for Queensland ecological assessments. Use of this approach has resulted in a robust assessment and analysis of key ecological values, including regional ecosystems and threatened species (pending further clarification of the validity of methods for the selection of listed species). It is recognised that there are differences in the approaches of the Commonwealth and Queensland governments to the mapping of environmental values. A potential weakness of the mapping method applied to the Strategic Assessment is that it may not be as comprehensive in its application to MNES-related purposes as it is for other purposes for which it is commonly applied under the Queensland assessment framework.

The impact of severe weather events on the Great Barrier Reef could be better explained to provide the reader with more information on the interaction of anthropogenic activities with severe weather events. Severe weather events are identified as posing one of the highest future risks to the Great Barrier Reef, and are expected to become more severe in the future, due to the influences of climate change. However the Great Barrier Reef has been exposed to severe weather events for thousands of years, and these events alone do not explain the declining condition and trend of the reef.

An important component of the description of severe weather events is the cumulative impact of human-related activities which may be manifested during such events. For example, floods carry more sediment, nutrients and pesticides onto the reef than would have been the case prior to European settlement, due to land uses in the catchment. The reports could do more to

acknowledge that pressures from human activity are capable of exacerbating impacts from severe weather events.

The increasing risks associated with ocean acidification through increases in atmospheric carbon dioxide concentrations are mentioned



briefly in the reports (e.g. page 155 of the Assessment Report). However their coverage within the assessment, particularly from the context of managing the Great Barrier Reef for increased resilience, warrants further detail. Ocean acidification can be expected to become increasingly important to the Great Barrier Reef over the 25 year life of the Program (e.g. De'ath et al. 2009).

The assessment of resilience and cumulative impacts lacks detail and is not forward-looking. The Strategic Assessment is focussed on approvals and conditions, with less emphasis on the management of day to day activities which may affect the reef, such as fishing, tourism, and agriculture. The assessment process leading to the presentation of the relative significance of pressures and impacts on MNES in Table 5.4-1 and Table 5.4-2 on pages 193 and 194 of the

Assessment Report has not been well explained and does not differentiate between spatial scales. Page 194 of the Assessment Report indicates that tourism has a high impact by facilitating pests, weeds and disturbance, which reinforces the need to assess the ongoing management of tourism activities.

Given the existing pressures on the Great Barrier Reef, projects and activities of the future are likely to contribute more to the exceedance of resilience thresholds than they would have in the past. Such circumstances warrant the implementation of cumulative impact assessment processes which are suitable for implementation to the Great Barrier Reef and the range of pressures it is facing. Although the need for improvement in the management of cumulative impacts is recognised, the current lack of a robust process to assess this should temper some of the assessment of effectiveness, which relates to the requirement to report on cumulative impacts in Environmental Impact Statements. The cumulative assessment for Abbot Point port is an example of leading practice, but was completed voluntarily by port proponents in the absence of specific Commonwealth or State guidelines.

The assessments of effectiveness would benefit from providing evidence of outcomes, not just information on inputs to and outputs of activities, or the resources allocated and administered. Assessments of the effectiveness of various Acts and other planning or support measures provide little evidence for describing or demonstrating the outcome that is achieved. Effectiveness criteria frequently contain statements such as 'systems are in place' 'impacts are understood', 'resources are applied to manage the key threats' which reflect an intention and activity, but not outcomes. Environmental outcomes in natural systems are often only evident across a long time frame, and do not always give measureable or visible results



in the short-term. Some interim measures or indicators may therefore be appropriate, with supporting evidence that the outputs do lead to the intended outcomes.

#### 4.4 PROTECTED AREAS

There is a large amount of information about protected areas in the Strategic Assessment, and protected areas are generally assumed to be indicative of high levels of habitat protection and consistent with good environmental outcomes for the Great Barrier Reef. The protected area estate is described as being the 'cornerstone of protection for MNES' (page 229 of the Assessment Report). However, the environmental benefits of protected areas are partly dependent upon the scale and effectiveness of management activities, including fire management, pest management, patrols to achieve compliance with legislation and adapting management to the results of natural resource monitoring. There is little context provided on the magnitude of management activities within protected areas, and no assessment of the adequacy of existing management activities in achieving the benefits or outcomes assumed by the establishment of protected areas.

A demonstration case on island management provides significant detail on the programs in place to conserve and manage the fragile island ecosystems in the Great Barrier Reef. Examples of important conservation programs are provided for a small number of islands. However, there is no definitive indication of the magnitude and scale of the operational program, other than the \$8 million budget allocated by the State and Commonwealth governments for implementation. Sub-Chapter 9.4 (Compliance) of the Assessment Report provides no detail of the risk-based compliance program implemented by the Queensland Parks and Wildlife Service (QPWS) under the *Marine Parks Act 2004*, and therefore provides little insight into

the degree to which current zoning arrangements are complied with.

The reports would benefit from a quantified description of the existing management program for protected areas (e.g. quantity and type of management activities completed per island per year, per cent of estate subject to active pest management practices) and an evaluation of its adequacy in managing the Great Barrier Reef for resilience. Information contained within the Strategic Assessment suggests that many of the island protected areas on the Great Barrier Reef are rarely visited by rangers due to limited resources for management, large geographic distances and number of islands involved. In this context, the existing Program is possibly a fraction of what may be required to manage the islands and marine protected areas of the Great Barrier Reef to achieve improved resilience and to provide long-term conservation of MNES. The description of existing natural resource monitoring programs lacks detail in a similar way, and focusses on describing what is done under the existing Program, rather than evaluating the outcomes currently achieved and what may be required in the future.

It is difficult to evaluate the effectiveness of the existing Program in the absence of descriptive or quantitative targets for protected area management activities. Management of protected areas is given a 'very effective' rating on page 256 of the Assessment Report. Yet there is insufficient information presented to allow an assessment of the validity of this conclusion and further justification is recommended, particularly as the overall condition of the Great Barrier Reef is assessed to be declining. While existing management activities may be effective at the places they are implemented, the scale of management appears to be insufficient, as a whole, to reverse the declining condition of

the Great Barrier Reef and to manage for future resilience.

#### 4.5 FORWARD COMMITMENTS

The estimation and assessment of future



sustainable limits to activities within the Great Barrier Reef Coastal Zone and its catchment has not been addressed in significant detail in the reports, with the exception of water quality. This may be the role of the Long-term Sustainability Plan, and if so, further explanation of such plans is required.

The reports provide little explanation or evidence that the management improvements needed to halt the declining condition of the Great Barrier Reef can be met through the proposed Strengthened Management and Forward Commitments sections of the Program. Page 352 of the Assessment Report states that without appropriate intervention, MNES values of the Great Barrier Reef are likely to deteriorate further. For the key issue of water quality, management objectives and targets exist, but are described as ‘ambitious’ (Queensland Government 2013c), and for other features of the environment there is little detail of the management actions necessary to

maintain or improve the condition of MNES.

Page 177 of the Assessment Report states that there is scientific consensus that greater effort will be needed to achieve goals for water quality and that lags between the implementation of management actions and improvement in water quality impact on assessment of effectiveness. The presentation of further detail, based on the best available science is recommended, to provide context for the reader to assess the adequacy of Forward Commitments aimed at addressing the gaps in the existing management framework.

When considered collectively, the Forward Commitments do not appear to be the appropriate actions or to be supported with sufficient resources to halt the declining condition of MNES and achieve their long term conservation. Forward Commitments 3 (development of a joint outcomes-based framework) and 10 (a Great Barrier Reef-focussed offsets strategy) are considered to be necessary to enhance and tailor future management activities to the material issues affecting the Great Barrier Reef. The planned use of offsets funds derived from the Great Barrier Reef to tackle the most significant issues facing the reef is a significant step forward.

Many of the other Forward Commitments refer to continuing existing activities, and do not represent major new initiatives. Examples include Forward Commitment 14 “Queensland will continue to support ongoing joint field management activities”. However, there is no description of the scale, magnitude or adequacy of the existing activities. Joint management field management activities have already been in place for several years. While the Forward Commitments are aimed at improving existing management approaches, it is unclear from the information contained within the Strategic Assessment how much improvement is required to reverse the declining condition of the Great Barrier Reef and how far the Forward Commitments go

towards achieving this. The reports would be significantly improved if more detailed information was provided on the anticipated outcomes of Strengthened Management and Forward Commitment programs.

#### 4.6 GAPS

Agriculture is a key issue given limited treatment in the reports. There is no breakdown of agricultural land use in the Great Barrier Reef Coastal Zone, although sugar cane and grazing are recognised as significant activities. Numerous references in the Strategic Assessment suggest agriculture is the activity with the greatest impact on the health and long term resilience of the Great Barrier Reef. Yet compared with urban development and infrastructure, agriculture is given little attention and analysis in the assessment. Legislative and regulatory controls for agricultural activities, such as 'Agricultural Environmentally Relevant Activities' under the *Environmental Protection Act 1994*, are not discussed, with the exception of clearing restrictions under the *Vegetation Management Act 1999*. The *Vegetation Management Act 1999* is described as the prime means of preserving MNES in the Great Barrier Reef Coastal Zone, but recent amendments to the Act, which reduce the protection afforded to vegetation, are not discussed.

Tables in the Assessment Report indicate that conservation areas comprise 31.9% of terrestrial land in the Great Barrier Reef Coastal Zone and areas likely to be subject to future development comprise only 3.0%. This forms the basis for a 'very effective' assessment on avoiding impacts on MNES through conservation areas (page 256 of Assessment Report). There is no discussion of the remaining 65% of land area, its land uses, and the degree of threat it poses to the Great Barrier Reef.

There are currently 253 aquaculture sites within the Great Barrier Reef Coastal Zone. Given

the current scale and anticipated expansion in aquaculture, further discussion of how its potential impacts on MNES are managed is required. The Strategic Assessment report notes that aquaculture activities are 'strongly regulated relative to other agriculture activities' (page 161). However, given that agricultural activities are generally not strongly regulated, further information on the regulatory framework for aquaculture (particularly the approval systems in place under legislation such as the *Fisheries Act 1994*, *Marine Parks Act 2004* and *Environmental Protection Act 1994*) is required. There is also limited discussion of fisheries management which is a state government responsibility, and a significant management activity occurring under the Program in the Great Barrier Reef Coastal Zone.

Regional plans are presented as a statutory measure for managing activities in the Great Barrier Reef catchment. The Mackay, Isaac, Whitsunday Regional Plan demonstration case describes how regional plans fit into the Queensland planning framework. However, given the Queensland Government is preparing a "new generation" of regional plans that differ dramatically from the structure and approach adopted by current regional plans, the relevance of this demonstration case without reference to the anticipated changes is limited.

SKM reviewed the draft Central Queensland Regional Plan, which is an example of a "new generation" regional plan. The Central Queensland Regional Plan states that its primary purpose is to manage competition between the agriculture and resources sectors and to enable economic growth. The four regional policies in this plan are focused on resource and agricultural land use protection, growth and co-existence, and the growth of regional towns and living areas. The Great Barrier Reef and coastal values are recognised within



A close-up photograph of a clownfish, characterized by its bright orange body and two prominent white vertical stripes, nestled within the thick, yellowish-green tentacles of a sea anemone. The fish is positioned slightly to the left of the center, facing towards the left. The anemone's tentacles are numerous and have a bulbous, rounded appearance, creating a complex, textured environment around the fish. The lighting is soft, highlighting the vibrant colors of both the fish and the anemone.

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assessments. The terms 'protected areas' and 'conservation areas' are both used frequently, but have quite different meanings and geographic coverage. Inclusion of these terms in the definition table is recommended and use of the terms interchangeably should be avoided.

It is recommended that the Assessment Report include data on:

- the number, total area (ha) and % total area of the Great Barrier Reef Coastal Zone gazetted as National Parks, Nature Refuges, State Forests and other land use tenures in conservation areas.
- area (ha) and % total area of land currently developed.
- area (ha) and % total area of land identified for future development.
- area (ha) and % total area of land in the conservation area minimal use, moderate use and intensive use areas.
- agricultural land uses: area (ha) and total % of Great Barrier Reef Coastal Zone under each agricultural land use (especially sugarcane and grazing).

This would provide greater confidence in the report's assessments, underpin a more informed view of the adequacy of the various land use tenures, and better inform the assessment of future condition and trend. Tables that indicate land within conservation areas and developable areas (e.g. page 237, 238) are interesting, but amount to a relatively small percentage of the Great Barrier Reef Coastal Zone (35%).

The application of offsets warrants greater scrutiny and analysis in the Strategic Assessment. It is generally acknowledged that offsets to

date have been reactive, ad hoc and sited in areas of convenience, rather than for good ecological outcomes. As this is the pillar of the offsets component in the 'avoid-mitigate-offset' framework, some data on the number of offsets under the existing Program, their average size and condition is recommended. Information on ongoing management arrangements would also assist the reader in understanding how the current policy is applied. The assessment of 'partially effective' for offsets is not substantiated by hard evidence in the Assessment Report. The 'limited' confidence rating for this assessment is appropriate. It is noted that a new Queensland offsets policy is currently under development.

The description of the investment and effectiveness of support programs aimed at agricultural activities could be enhanced with further detail and rigour. The nine initiatives identified have been developed for a range of purposes, at different times and are aimed at different agricultural stakeholders and activities. It is not a co-ordinated and integrated program with a prime focus on the health of the Great Barrier Reef. These programs are also largely voluntary, not well resourced historically, and lack long term security of funding. Such challenges are not explained in much detail within the Strategic Assessment.

The recently developed program of Best Management Practice (BMP) modules by Canegrowers warrants mention, especially as this type of industry-led initiative is likely to get greater adoption by farmers than are government-developed programs. Achieving long term change in agricultural practice is about attitude and behaviour change, and the BMP program reflects this.





# 5. TECHNICAL ACCURACY

## 5.1 INTRODUCTION

This section examines whether technical aspects of the Strategic Assessment are accurate, as determined by a critical analysis of the information and evidence presented in the reports. Consideration has been given to whether uncertainty in the evidence, where present, has been adequately characterised and whether conflict in the evidence has been recorded and discussed. Recommendations for strengthening the accuracy of information provided in the Program and Assessment Reports are described.

A high degree of technical rigour has been applied to the majority of issues in the Strategic Assessment. Management of the Great Barrier Reef is influenced by the outcomes of scientific investigation. Most of the areas identified for improvement are associated with better explaining the context or clarifying the use of terms in the reports. SKM concurs with the majority of condition, trend and effectiveness ratings in the Assessment Report.

The rating of management effectiveness as 'effective' requires further justification for some key areas, given the declining condition of key MNES. Discussion in the text accompanying assessment ratings is at times more optimistic than would appear to be justified by the information presented in the assessment tables. Conclusions about the predicted effectiveness of future management commitments are not well justified and would be strengthened by providing more evidence and discussion.

## 5.2 STRENGTHS

Where the results of science have been referenced in the documents, they are generally presented on the basis a scientific consensus, informed by a panel of experts. This is a helpful approach to move forward from scientific debate and uncertainty relating to some aspects of coral reef ecology and make informed decisions for future management. Technical referencing within the document is considered to be adequate and could be expanded significantly in scope if further discussion of ecological processes is included. Application of the assessment methods as described in Chapter 3 of the Assessment Report has generally been applied consistently and accurately.

## 5.3 AREAS FOR IMPROVEMENT

The Program description does not demonstrate an appreciation of the legislative framework and of the jurisdiction of some State government departments in implementation. Some relevant legislative functions have not been mentioned or are incorrectly described. Further details are provided in Appendix A. Some key examples include the following:

- There is no explanation of the role of declaring coastal management districts and erosion prone areas under the *Coastal Protection and Management Act 1995*, nor in the assessment of tidal works applications and works within coastal management districts.
- *Vegetation Management Act 1999*: this Act is described as prohibiting broad scale clearing, but such measures apply specifically to agriculture, and exemptions for mining and

coordinated projects apply. Amendments to the Act, once in effect will also allow some broad-scale clearing for high value agriculture.



- *Nature Conservation Act 1992*: this Act is described as including a dugong conservation plan, but this plan and a separate conservation plan for dolphins and whales have been replaced by new provisions in the *Nature Conservation (Wildlife Management) Regulation 2006*.
- The description of the functions of the *Torres Strait Islander Cultural Heritage Act 2003* could be greatly expanded to include a similar description to that for the *Aboriginal Cultural Heritage Act 2003*.
- *Water Act 2000*: this Act has a role in the assessment of development involving taking or interfering with water and in regulating the filling and excavation of watercourses. These functions are not described.
- *Land Protection (Pest and Stock Route) Management Act 2002*: the description does not outline the role in declaring pest animals

and plants, management of pest plants, management of pest plants and animals on private land and on state land.

- *The Wild Rivers Act 2005* and *Queensland Heritage Act 1992* are not discussed.
- *Environmental Protection Act 1994*: there is no description of the function of Agricultural Environmentally Relevant Activities, which are prescribed for the purpose of managing water quality impacts of cane growing and cattle grazing activities in the Wet Tropics, Mackay-Whitsunday and Burdekin Dry Tropics catchments.
- *The Nature Conservation Act 1992* and *Marine Parks Act 2004* are stated to be integrated with the *Sustainable Planning Act 2009*, but this is incorrect.

A number of references are made throughout the documents to the effectiveness of Matters of State Environmental Significance (MSES) mapping being prepared to support the new single State Planning Policy (SPP). As indicated in the Program Report, neither the MSES mapping nor the single SPP have yet been finalised and the mapping is not currently publicly available and so its effectiveness can neither be assessed nor established. Reference to MSES mapping in the present tense (although footnoted) in Chapter 4 of the Program Report - Foundational Management is misleading and may be more appropriate for discussion in Chapter 5 of the Program Report – Strengthened Management.

Criterion (x) of the listing statement outlines the importance of the conservation of biological diversity (see page 74 of the Assessment Report). Most discussion about the condition and trend of coral reefs is focussed on coral per cent cover, which has been in gradual decline as a result

of frequent outbreaks of the COTS and impacts from sedimentation within inshore areas. Coral reefs and tropical rainforests are among the most species rich and diverse habitats on earth, and this diversity is pivotal to the MNES including OUV which underpin the significance of the Great Barrier Reef. Coral cover on its own is not a good indicator of biological diversity or ecological processes, which underpin diversity. Sections of the Great Barrier Reef under pressure from impacts from water quality and COTS are most likely to be less diverse than they were 20 years ago, even if coral cover has remained relatively stable. This additional dimension to the decline of coral reefs on the Great Barrier Reef would warrant discussion, particularly with reference evaluating priorities for future management.

High protection areas are described on page 48 of the Assessment Report as protected areas on land and in the marine park are presumably Marine National Park zones and Conservation Park zones (although this is not defined). While on land it is generally true that national parks can be expected to remain intact with minimal impacts from human activities, the same cannot be inferred for marine protected areas (see page 48 of the Assessment Report). For example many inshore Marine National Park zones have experienced a decline in water quality and associated reduction in the diversity and abundance of corals.

What is important is that Marine National Park zones provide the best chance for habitats to have maximum resilience in the face of pressures from water quality and climate change. For example, it has been reported that coral communities in Marine National Park zones experience fewer and less severe outbreaks of COTS than other areas (Sweatman 2008). Such studies highlight the importance of species diversity (in this case

presumably the presence of predators of COTS or coral symbionts that protect corals from COTS) in maximising resilience and resisting further decline in condition. Additional discussion and assessment of resilience of the Great Barrier Reef on page 141 of the Assessment Report would strengthen its technical standing.

Further explanation and analysis of the links between land use and marine ecosystem function are warranted on page 180 of the Assessment Report. The risk assessment shows that risks for water quality are highest along the Great Barrier Reef in the Wet tropics region. Yet the Wet Tropics region is described as having largely intact flora and fauna (page 84 of the Assessment Report), with a large proportion of terrestrial habitat protected in national park and is subject to highly effective management systems, administered by the Wet Tropics Management Authority. Without further analysis and explanation, the assessment confuses the reader about the links between intact vegetation, protected areas and water quality, as the Wet Tropics has a large percentage of intact vegetation compared with other regions, yet risks for water quality are higher than other regions. Discussion on this issue is particularly relevant due to the location of the Wet Tropics region immediately adjacent to the COTS initiation zone.

Conclusions about the predicted effectiveness of future management activities are not well justified. Referring to evidence from the monitoring of management effectiveness from the Great Barrier Reef or from other management programs internationally would provide additional confidence that conclusions are evidence-based and achievable.





#### 5.4 ASSESSMENT RESULTS

SKM concurs with the majority of environmental assessment ratings presented in the Assessment Report. A summary of assessments where the rating appears inaccurate or requires further justification is provided in Table 5-1. Discussion of the results of the assessment ratings is not always tied to the evidence presented in the reports and is optimistic when drawing conclusions about the adequacy of existing and future management actions. Further discussion on these matters is provided in Section 6 of this report 'Validity of Conclusions'.

The assessment of the trend and condition of listed species has been based on the proportion of habitat that is located in national parks and minimal use areas, on the assumption that these areas provide a level of protection that is higher than non-protected or higher use areas. While at a landscape scale this approach is a sound assumption, the assessment of condition and trend does not recognise localised threats to listed species. The assessment appears to accept a much higher loss of environmental values outside

of the protected area estate, but does not describe how such an approach remains consistent with the EPBC Act or the protection of world heritage values.

To illustrate this point, the cassowary condition is rated in Table 4.7-2 as being 'very good' and the trend of the species is rated as 'improving'. The cassowary case study in Sub-Chapter 7.6.3.1 of the Strategic Assessment Report describes the factors that affect survival of the cassowary. These are "the loss, fragmentation and modification of habitat, vehicle strikes, dog attacks, human interactions, pigs, disease and natural catastrophic events". The ratings for condition and trend shown in Table 4.7-2 should be reviewed to capture an assessment of the status of the species in areas that are outside national parks and minimal use areas, which are also targeted by the Program. As the Report is currently presented, the condition and trend of listed species and TECs located outside national parks and minimal use areas does not appear to be specifically considered and assessed in the discussion and rating tables.

Table 5-1

Environmental assessments where the rating appears incorrect or requires further justification.

Assessment Report reference	MNES/Activity	Assessment Report Rating	Comment
Table 4.8-2	<b>Migratory species habitat</b>	Poor	A rating of 'good' is more appropriate. Text in the paragraph preceding the table refers to a 'good' rating. The rating in the table may be a typographical error.
Table 5.4-1	<b>Bowling Green Bay Ramsar Site</b>	High Effect (Loss of Habitat and Connectivity; Pest and Weed Species)	This rating does not align with the Condition and Trend assessment in Sub-Chapter 4.4.1, which describes the condition to be 'very good' and 'stable'. It is unclear what the pressures related to habitat loss and pest and weed species operate at Bowling Green Bay.
Table 5.4-2	<b>Port development and dredging</b>	Very high effect on water quality	Discussion in the text indicates that impacts of port development on water quality (suspended sediment) are 'localised'. The 'very high' rating (the same as agriculture) appears to be too high, given dredging projects are highly regulated by approval conditions and their impact is localised compared with diffuse sources. If the rating is based upon the cumulative impacts of multiple ports across the Great Barrier Reef, then it is recommended that this be clarified.
Table 5.4-2	<b>Land and resource management</b>	Very high effect on pest and weed species and modified fire management regimes	The 'very high' rating appears to be inappropriate. Land and resource management activities can be expected to have a positive effect on pest and weed species and modified fire regimes (as is the case for the rating of loss of habitat and decline in water quality).
Dugong Demonstration Case Snapshot, page 294	<b>Dugong management</b>	Effective	The 'effective' rating is not consistent with the very poor condition of dugong and their key habitat (seagrass) across the Great Barrier Reef (page 294 of Assessment Report). The detailed dugong demonstration case rates the overall effectiveness of dugong management as 'partially effective', which would be more appropriate. While there are several detailed initiatives to manage dugong in the Great Barrier Reef, an 'effective' rating does not appear to be justified on the information presented.
Table 8.7-1	<b>Projected condition</b>	Variable	The colours and ratings in the projected condition column do not correspond, and it is unclear what rating is meant to be applied for 'GBR WHA, beaches and coastlines, inshore coral reefs, seagrass meadows and shorebirds'.







# 6. VALIDITY OF CONCLUSIONS

## 6.1 OVERVIEW

The majority of conclusions in the Strategic Assessment are sound and based upon a detailed assessment of the evidence. The combined Program and Assessment reports present a strong commitment from the Queensland and Commonwealth governments to work together closely on the future management of the Great Barrier Reef, adding confidence that commitments can be achieved through joint management.

Conclusions of the Strategic Assessment are generally consistent with the assessment methods applied and are focussed on the strengths of the Queensland Program. The conclusions would be significantly strengthened if there were a greater emphasis on outcomes and looking forward to the 25 years of the Program.

There is insufficient evidence presented that the Forward Commitments and Strengthened Management actions will be sufficient to reverse the declining condition and trend of the Great Barrier Reef. A more detailed description of how the Strategic Assessment will be implemented, providing further information on support programs for industry and the level of resources to be committed for improved management and implementation would also add value. Linking the conclusions with future tasks such as development of the Long-term Sustainability Plan is also recommended.

There are several areas where the validity of the conclusions reached in the Strategic Assessment would be enhanced by providing further information or rationale to justify the position described in the reports.

There appears to be a lack of evidence that current management actions are able to halt the decline in biodiversity on the Great Barrier Reef and building resilience to threats. Future recommendations do not seem to be backed by compelling evidence that they are the types of actions with sufficient resources to halt the decline of MNES within the world heritage area and to maintain all of the natural heritage values described in the world heritage listing criteria for the Great Barrier Reef. Some of the foundational management measures have been in effect for only short periods of time and consequently their long-term effectiveness in conservation and management of the reef cannot be validated.

The Strategic Assessment is largely focussed on the present situation, despite the 25 year life of the Program. There is limited discussion of future trends in threats to the reef and how management of the reef, through the Program, will need to adapt. Outbreaks of the COTS are a good example of a threat that was recognised in the 1980s and has since accounted for significant loss of coral cover since this time, estimated to be 1.4% per year over the past 25 years (page 179 of Strategic Assessment). The report indicates that further implementation of Reef Plan to reduce nitrogen discharges in the Wet Tropics region will assist in reducing risks associated with COTS outbreaks. Reef Plan is one of the strongest aspects of the current Program, due to its science-based targets and ability to monitor progress through validated modelling approaches (Queensland Government 2013d). The 25 year life of the Program is a period in which significant further declines in



the condition of the reef may be manifested (as demonstrated in the previous 25 years) in the absence of effective management.



The existing Queensland Program has no current mechanism for specifically requiring both the consideration of MNES and that active measures are taken to protect them. Given the acknowledged weaknesses in offsets, no process for assessing cumulative impacts and no mechanism for explicit consideration of MNES, elements of the Program appear to have been discussed in a positive context which does not reflect their effectiveness. For example the summary table of projected condition and trends of values and MNES suggests a more cautious assessment may be warranted. Of the 27 elements listed in the table (page 302-3), only five are good or very good, with condition of stable or improving. The remainder are poor to very poor, or have a deteriorating condition. Similarly, the threatened and migratory species summary (page 149-50) shows that out of a total of 26 species, most (18) are deteriorating and only 1 is improving. These data do not support the optimistic summary presented in some sections of the associated discussion.

The projected risk summary (page 301) shows that of the six risks assessed, five are rated high to very high, with only one rated as medium (loss of habitat and connectivity). The risk assessment includes consideration of all aspects of the Program, including Forward Commitments to avoid future impacts and enhance MNES. This does not give an optimistic assessment of the future of the Great Barrier Reef Coastal Zone, and suggests that continuing with the Program will not be sufficient to avoid or reverse these negative trends. The intactness of intertidal habitats, including mangroves, is evidence that the Queensland Program has been effective in managing direct impacts in the coastal zone, such as clearing. The Program has been less effective in managing indirect impacts such as the decline in water quality.

A range of demonstration cases has been selected across a variety of relevant disciplines, and these provide insight into how the Program is applied. It is unclear whether the demonstration cases are representative of the Program's implementation across the Great Barrier Reef Coastal Zone, or are examples of best practice measures that are rarely implemented. If the approaches in the demonstration case studies are more broadly representative, then this is worth noting as this provides additional evidence of the robustness and rigour of the Program. If they are a singular example, then opportunities to apply the approach that resulted in positive outcomes more widely should be described, and would strengthen the report's recommendations.

6.2 IMPLEMENTATION

The administration of Strengthened Management measures proposed to more explicitly incorporate MNES into the planning framework will generally fall to local governments and port authorities, through their local planning schemes and land use plans. There are a number of potential

implications associated with this approach that warrant further description in the Program Report. For example, the capacity and capability of local governments and port authorities within the Great Barrier Reef Coastal Zone to effectively implement this responsibility has not been explained. Administration of the revised measures is likely to require a higher level of funding and ecological, water quality and marine science expertise within local governments and port authorities than previously required.

The assessment of cumulative impacts on MNES within the Great Barrier Reef Coastal Zone will need to be managed across multiple local government jurisdictions. The inclusion of MNES as a matter of state interest under the draft single State Planning Policy (SPP) will require local governments to address MNES in developing their local planning schemes. At this stage, the draft single SPP does not contain any development assessment provisions for MNES. The Program Report indicates that guidelines will be developed to outline how MNES are to be considered in the preparation of various planning instruments and in development assessment. It is important that these guidelines include measures to manage cumulative impacts on MNES across multiple local government jurisdictions.

The timeframe for achieving integration into local planning schemes may also be lengthy given that many local governments have only recently completed or are near completion of new local planning schemes. Until local planning schemes are updated, development will be regulated by the SPP. The draft single SPP does not provide any detail in relation to how MNES are to be protected through development assessment other than to identify, consider, avoid, mitigate or offsets potential impacts. Further details are required in

order to determine the effectiveness of the draft single SPP as a measure to protect MNES.

Support programs are a critical element for the agricultural land uses in the Great Barrier Reef catchment. It is stated they have stopped and reversed the decline in water quality, particularly for dissolved inorganic nitrogen. However, continued reductions may be more difficult to achieve, and these programs typically attract the 'early adopters' and those farmers pre-disposed to better management practices. A recent assessment by the independent scientific panel of the Canegrowers BMP modules found that if they were adopted by 100% of growers, a 15-30% of dissolved inorganic nitrogen would result (M. Petrie, pers. comm.). This indicates that the current initiatives of the support program are unlikely to achieve the aspirational water quality targets, and that additional programs with industry involvement are likely to be required.

The 'avoid' and 'mitigate' aspects of the Program are key elements of the management framework. The legislation and policies outlined in the report have a strong locational or site-specific basis for avoiding impacts, by locating development in sites that avoid significant habitat or species. This is a valid approach and would be strengthened by expansion to include the maintenance of ecological processes and connectivity across a system or landscape. It is not clear how the Program legislation is applied to maintain and enhance these ecological connections.







# 7. CONCLUSIONS AND RECOMMENDATIONS

## 7.1 SUMMARY OF CONCLUSIONS

The conclusions of the independent review have been summarised by applying the descriptions outlined in Table 7-1. A summary of SKM's assessment of the adequacy of the Strategic Assessment across the key sections of the Queensland Program is provided in Table 7-2.

The draft documents reviewed by SKM address the majority of the requirements of the Terms of Reference, and with further improvement, will be consistent with the Terms of Reference. The documents therefore represent significant progress towards establishing a robust and comprehensive Strategic Assessment for the

Great Barrier Reef Coastal Zone. In general, the reports are cohesive, relatively concise given the magnitude of the task and linked to scientific evidence where it is available. The rigorous application of spatial mapping tools to the assessment and whole of landscape approach are strengths of the documents. Further work is recommended to fill key gaps in the assessment and to provide stronger evidence to underpin the conclusions. The reports would also benefit from further explanation of how the Strengthened Management and Forward Commitments of the Program are sufficient to reverse the declining condition of MNES.

Table 7-1  
Description of assessment method for summary table.

Assessment	Description
	A rigorous and detailed assessment has been completed. If gaps exist, they are relatively minor and can be addressed with minimal rework.
	The assessment has been partially effective, with some gaps present. Further work is recommended to improve the rigour of the assessment.
	Major gaps are present and conclusions are not based on the available evidence or sufficiently supported by information. A more detailed description, assessment and/or justification for the outcomes of the assessment are required.
	Not applicable



Table 7-2

Summary table of SKM's assessment of the adequacy of the Strategic Assessment.

Summary of Adequacy of Strategic Assessment						
Program Component	Coverage of topics within the Terms of Reference	Structure and Cohesiveness	Breadth and Depth	Technical Accuracy	Validity of Conclusions	Key comments, focussing on gaps
<b>Introduction and objectives</b>						There are no specific, measureable objectives defined for the Strategic Assessment.
<b>Identification of MNES</b>						There are gaps in relation to some OUVs, such as outstanding beauty and aesthetic values and in the description of adaptive management. Mapping approaches are generally robust and based upon the accepted standard of ecological assessments applied in Queensland. Their lack of comprehensiveness in relation to the assessment of MNES-related values is a potential weakness.
<b>Description of Program legislation and policies</b>						There is a focus on infrastructure and urban development, with limited information on the regulation of agriculture, aquaculture, fisheries and port development. The Program description is difficult to follow. Gaps exist in the description of legislative tools applied across the catchment and Great Barrier Reef Coastal Zone.
<b>Avoid impacts</b>						There is a strong site-specific basis for avoiding impacts, which is appropriate to development proposals. Further detail is recommended on management actions that avoid impacts through the maintenance of ecological processes.
<b>Mitigating impacts</b>						There is a strong site-specific basis for mitigating impacts, which is appropriate to development proposals. Mitigating impacts on activities across the landscape is more challenging for the Program.
<b>Offsetting residual impacts</b>						The limited effectiveness of the current Program's offsets policies is acknowledged and accurately described. There is a commitment to develop new improved offset guidelines and apply these specifically to the Great Barrier Reef, with greater alignment between the approaches of the State and Commonwealth governments. A review of offsets would assist to inform the new Queensland offsets policy, which is currently in development.
<b>Support programs</b>						There are opportunities to focus on tighter coordination of support programs, long-term behaviour change and industry-led initiatives. More explanation is recommended on how the ambitious targets for Reef Plan will be met.
<b>Strengthened Management</b>						It is difficult to distinguish the Strengthened Management initiatives from Foundational Management and Forward Commitments. It is unclear whether the Strengthened Management initiatives will be enough to halt the decline in MNES.
<b>Forward Commitments</b>						Collectively, the Forward Commitments do not appear to be strong enough to halt the declining condition of the Great Barrier Reef. There is limited discussion about their adequacy in protecting MNES. Some Forward Commitments are a continuation of long standing existing practice.
<b>Implementation and Governance</b>						More detail would be helpful on how the Program will be implemented in practice, and what changes will be necessary for this to be successful. Aspects of the 'accreditation' or endorsement process for the Program under the EPBC Act require further description.
<b>Demonstration Cases</b>						Well-chosen examples are provided across a diversity of management issues. It is unclear if they are representative of the broader Program's application, or a selection of the best possible examples.

## 7.2 RECOMMENDATIONS

Detailed recommendations to improve the adequacy, readability, technical standing and comprehensiveness of the Strategic Assessment are provided in Appendix A. These recommendations are summarised into the following key issues:

- Broaden the focus of the Strategic Assessment to include more detailed consideration of aspects of the Queensland Program unrelated to development assessment. This will achieve a broader coverage of threats to the Great Barrier Reef and assist in identifying weaknesses in the current Program which may be addressed through Forward Commitments.
- Focus the assessment more on outcomes and less on processes under the Queensland Program. Consider the effectiveness of existing management actions in more detail and describe what will be required to achieve management objectives from an outcomes perspective.
- Expand the assessment of port development and associated activities such as shipping and dredging to provide further justification for the assessment of risks. Consider the cumulative impacts of multiple port projects across the Great Barrier Reef and describe the application of relevant policies and guidelines, such as the National Assessment Guidelines for Dredging and the recently released draft Queensland Ports Strategy.
- Include better recognition of the strong ongoing links between Aboriginal and Torres Strait Islanders and their traditional lands and sea-country of the Great Barrier Reef Coastal Zone. This may include a description of the level of engagement with the Queensland Government when implementing various components of the Program.
- Expand the focus of the assessment from the past and present to include future risks in the context of climate change. Describe how the impacts of climate change and ocean acidification are likely to be manifested on the Great Barrier Reef and how managing for resilience can play an important role in addressing these challenges.
- Broaden the assessment to better explain how the Program protects ecological processes and OUV which are not identified by protected matters search tools, such as beauty and aesthetic values. Provide a qualitative description of the aesthetic OUV and highlight any regional differences or transitions that occur from north to south and across the continental shelf. Describe the ecological processes that are most important to the functioning and resilience of the Great Barrier Reef and contribute to the maintenance of biological diversity.
- Evaluate the effectiveness of the Program in managing protected areas and provide a more detailed assessment of its adequacy in achieving the benefits assumed by the establishment of protected areas. Discuss whether current and future management activities for marine, island and terrestrial protected areas are targeted at the material issues for protection of the Great Barrier Reef and sufficiently resourced to achieve improved resilience.
- Expand the consideration of managing for resilience and assessment of cumulative impacts. Consider how the impacts of development activities may be amplified by broader ecosystem trends across the Great Barrier Reef such as declining water quality and increasing ocean acidification. Discuss how management actions can adapt to addressing these emerging threats.
- Broaden the focus on land use descriptions to include disturbed areas outside of protected areas and urban areas. Provide a more detailed analysis and assessment of the contribution of activities occurring in minimal and moderate use areas to the condition and trend of the Great Barrier Reef Coastal Zone.
- Review the effectiveness of environmental offsets to inform the new policy to be applied to the Great Barrier Reef. Describe how the best offsets will be identified and prioritised to address the most significant issues facing the Great Barrier Reef.

## 8. REFERENCES

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- UNESCO (2012). Mission Report – Reactive Monitoring Mission to the Great Barrier Reef (Australia), 6th to 14th March 2012. United Nations Educational, Scientific and Cultural Organisation, 99 pp.

# **APPENDIX A: RECOMMENDATIONS**





Recommendations for improvement of the Program Report and Assessment Report are outlined in the following table.

#	Reference	Comment	Action
<b>DRAFT Program Report - version as at 13/09/13</b>			
1	General comments	The Program Report is generally well structured, particularly Chapters 1 to 3. Where cross references are provided in the existing documents between the Program Report and Assessment Report, they greatly assist the reader with interpretation of the intended message.	To improve readability and useability for a wider audience, consideration should be given to opportunities to include more specific references to key sections in the Strategic Assessment Report. For example, Sub-Chapter 4.4 of the Program Report has strong linkages with Sub-Chapters 7.6.4 and 7.6.5 of the Strategic Assessment Report.
2	General comments	The Program Report refers to the World Heritage Committee's recommendations in several sections, without providing a description or background (indicating a level of assumed knowledge).	The inclusion of a brief description of the background of the World Heritage Committee's consideration of the Great Barrier Reef and the Strategic Assessment would enhance understanding for a broad audience.
3	General comments	There is some confusion and overlap in describing Foundational Management, Strengthened Management and Forward Commitments. Some of the Forward Commitments relate to ongoing programs that have been in place for many years, and don't appear to be committing to anything new (e.g. FC14 – continuation of support for joint field management activities). Use of the term 'proposed program' (e.g. on page 15) in the future tense adds to the confusion about what is actually in place. Further information on the legal or policy status of Forward Commitments would be helpful.	For clarity, it is recommended that: <ul style="list-style-type: none"> <li>• Chapter 4 – Foundational Management focus on describing legislation, policies and programs that are currently in effect. Ideally a commencement date should be provided, particularly when referring to new or amended measures introduced recently (i.e. within the last 12 months) so that a more accurate baseline can be determined.</li> <li>• Chapter 5 – Strengthened Management should focus on describing proposed new or amended legislation, policies and programs currently in draft or scheduled to be developed within the life of the Program.</li> <li>• Chapter 6 – Forward Commitments should focus on new or ongoing monitoring, reporting, review and continual improvement strategies, including timing and resourcing commitments where possible. It is understandable that some Forward Commitments may lack detail at this stage of the Program, but key objectives should be clear.</li> </ul>
4	General comments	Reference to Matters of State Environmental Significance (MSES) mapping in the present tense causes confusion about the currency of this tool, which is not yet available.	Give consideration to referencing MSES mapping in Strengthened Management.

#	Reference	Comment	Action
<b>DRAFT Program Report - version as at 13/09/13</b>			
5	General comments	The Program Report makes good use of tables and figures to assist in illustrating key messages. The majority of tables and figures are well presented and useful. However, a small number of tables and figures do not seem to have a clear purpose or are not easily understood. For example, Chapter 2 of the Program Report, Figure 1 includes the boundaries of NRM regions, making it difficult to identify the boundary of the Great Barrier Reef Coastal Zone and catchment (the primary purpose of the figure). This is prior to any NRM regions being introduced in the text.	It would be beneficial to show the NRM boundaries on a later figure to avoid confusion, and simplify Figure 1 to include the Great Barrier Reef Coastal Zone and Great Barrier Reef catchment only.
6	General comments	Additional referencing of certain information presented in the Program Report would contribute to improving the validity of the Report. For example, on page 22 "Protected areas also provide a stronghold for threatened species."	A reference for this statement and /or more specific detail (e.g. percentage of threatened species currently represented in the conservation estate) would be beneficial.
7	General comments	There are some aspects of the Program where a duplication of effort between the State and Commonwealth seems to exist (e.g. dugong management).	Explain how this is managed and whether there is duplication of effort in areas of overlapping responsibility.
8	General comments	The description of support programs would benefit from expansion to include further detail and strengthen the Program description.	Expand the description of support programs and clarify that the programs are not coordinated and integrated with the prime focus on the health of the Great Barrier Reef.
9	Executive Summary	The statement about restricting significant port development to within existing port limits to 2022 may mislead some readers. Port limits are generally extensive and substantial expansion could occur within existing port limits. The magnitude of "significant development" is also unclear.	It is recommended that further text be added to clarify that considerable expansion is possible within existing port limits, but that new ports won't be established under the policy. Where possible, explain what is meant by "significant port development".
10	Page vi Program Report	States that the Australian Government has direct responsibility for dredge spoil disposal.	It should be noted that the State also has responsibility. Examples include through the issue of marine park permits (which are jointly assessed) and the issue of licences and approvals for ERAs.



#	Reference	Comment	Action
DRAFT Program Report - version as at 13/09/13			
11	Chapter 2 Introduction	The timeframe for the Program is clearly specified. Sub-Chapter - 2.4 states that the specified timeframe for implementation of the Program is 25 years.	It is recommended that discussion of Strengthened Management measures and Forward Commitments should refer to this timeframe and the likely timing of changed management arrangements for each commitment, if this is known.
12	Chapter 4 Foundational management	Discussions in Sub-Chapter 4.3 could more clearly differentiate between measures to “avoid, mitigate and offset” impacts on MNES and measures to “avoid, mitigate and offset” impacts on environmental values that may be aligned with MNES. As correctly mentioned elsewhere in Chapter 4, the current planning framework in Queensland is not designed to explicitly “identify, avoid, mitigate and offset” impacts on MNES.	Provide further clarification in the text that until measures proposed to strengthen management of MNES are incorporated more broadly into Queensland’s planning framework, any benefits to MNES afforded by the current framework are largely coincidental. The exception to this would be in the case of current EIS processes under the <i>State Development and Public Works Organisation Act 1971</i> (SDPWO Act), <i>Environmental Protection Act 1994</i> (EP Act) and <i>Sustainable Planning Act 2009</i> (SP Act) which are accredited under the EPBC Act and therefore provide more explicit consideration of MNES.
13	Chapter 4 Foundational management	Sub-Chapter 4.4.2 states that “Queensland’s planning system provides for consideration of MNES and environmentally sensitive areas.....”. However, the current planning framework, which should be described as part of the foundational management arrangements, does not explicitly provide for consideration of MNES, therefore this statement could be misleading.	Text should be amended to clarify any confusion.
14	Chapter 4 Foundational management	It is unclear how many trading ports are in the Great Barrier Reef Coastal Zone. Page 25 of the Program Report says 10, but page I-4 of the Abbot Point demonstration case says there are 11.	Clarify the number of trading ports in the Great Barrier Reef Coastal Zone for consistency.



#	Reference	Comment	Action
DRAFT Program Report - version as at 13/09/13			
15	Chapter 4 Foundational management	The explanations provided for key legislation governing coastal development in the Program Report are confusing and do not clearly define the differences and interrelationships between these Acts. There is also a general lack of detail in relation to key assessment processes and requirements. In Chapter 4 of the Program Report, the Table 4 caption refers to five core pieces of development legislation but only three pieces of legislation are illustrated (the SP Act and EP Act are not shown). The "Assessment" and "Approval and conditions" lines refer to the responsible entity, but it may be more relevant to nominate assessment and decision criteria so that the reader can determine the level of consideration of MNES.	For Sub-Chapter 4.5 a summary table could be useful to provide a comparison of the five core pieces of development legislation and could replace much of this section and potentially Table 4 or Sub-Chapter 4.5.2. The table could summarise each Act: the purpose of the Act, the responsible authority, typical assessment triggers (including statutory and voluntary EIS triggers), common types of development, assessment process (e.g. EIS or IDAS, whether it considers MNES or is accredited under EPBC Act), assessment criteria (e.g. local planning scheme, SPPs, project specific ToR and whether these consider MNES), other functions (e.g. plan making / development scheme making process) and relationship with other Acts (e.g. post-EIS approvals, subsequent exemptions).
16	Chapter 4 Foundational management	Sub-Chapter 4.5.1.6: Table 3 - Other legislation that minimises impacts on MNES requires amendment or further clarification in relation to some key functions. There are some gaps and errors in the description of legislation. Also this Chapter is generally focussed on development approvals rather than other legislative tools used to manage the Great Barrier Reef Coastal Zone.	<ul style="list-style-type: none"> <li>• <i>Coastal Protection and Management Act 1995</i>: There is no mention of the role in declaring coastal management districts (CMDs) and erosion prone areas, nor in assessment of tidal works and works in CMDs.</li> <li>• <i>Vegetation Management Act 1999</i>: The statement "prohibits broad-scale clearing" requires clarification throughout the report to confirm that this specifically refers to broad-scale clearing for agriculture as the VM Act does not prohibit broad-scale clearing for all purposes (e.g. exempt development such as mining activities, coordinated projects). It is noted that amendments resulting from the <i>Vegetation Management Framework Amendment Act 2013</i> once in effect later this year, will also allow some broad-scale clearing for high value agriculture. The term 'Protects remnant vegetation' could be more accurately described as regulating the clearing of vegetation to conserve remnant vegetation.</li> </ul>

#	Reference	Comment	Action
DRAFT Program Report - version as at 13/09/13			
			<ul style="list-style-type: none"> <li>• <i>Nature Conservation Act 1992</i>: The statement that the Act includes a Dugong Conservation Plan is not correct. The previous dugong conservation plan and a separate conservation plan for dolphins and whales have been replaced by new provisions in the <i>Nature Conservation (Wildlife Management) Regulation 2006</i>.</li> <li>• <i>Torres Strait Islander Cultural Heritage Act 2003</i> has similar functions as the <i>Aboriginal Cultural Heritage Act 2003</i> and this should be reflected in the table. Key functions that could be outlined include: the recognition, protection and conservation of Torres Strait Islander cultural heritage, recognition of Torres Strait Islander ownership of Torres Strait Islander human remains and cultural heritage, establishing a duty of care for activities that may harm Torres Strait Islander cultural heritage, and establishing a database and a register for recording Torres Strait Islander cultural heritage.</li> <li>• <i>Water Act 2000</i>: does not outline the role in assessment of development involving taking or interfering with water, or the role in regulating the filling and excavation in watercourses.</li> <li>• <i>Land Protection (Pest and Stock Route) Management Act 2002</i>: does not outline the role in declaring pest animals and plants, management of pest plants, management of pest plants and animals on private land as well as state land.</li> <li>• <i>Recreation Areas Management Act 1995</i> should reference the updated <i>Recreation Areas Management Act 2006</i>.</li> <li>• There is no mention of the <i>Wild Rivers Act 2005</i> or the <i>Queensland Heritage Act 1992</i>.</li> <li>• <i>Environmental Protection Act 1994</i>: Agricultural Environmentally Relevant Activities (ERAs) are not discussed.</li> </ul>

#	Reference	Comment	Action
DRAFT Program Report - version as at 13/09/13			
17	Sub-Chapter 4.5.3.1	The Queensland jurisdiction for fisheries management, including in Commonwealth waters could be explained. There is also no mention of recreational fishing, which is a major activity in the Great Barrier Reef Coastal Zone.	Include further detail on the jurisdiction of Queensland in fisheries management and in the management of recreational fishing.
18	Sub-Chapter 4.5.3.2	The shipping management Sub-Chapter addresses only traffic management.	Include discussion of other issues such as the discharge of waste from vessels.
19	General comments	In-stream waterway barriers and diversions impacting on natural flow regimes receive only passing mention regarding the legislation, policies and guidelines that relate to these issues.	Include more details, with reference to the <i>Fisheries Act 1994</i> and <i>Water Act 2000</i> .
20	Chapter 4 Foundational management	In relation to Chapter 4 the following amendments are recommended.	<ul style="list-style-type: none"> <li>• Sub-Chapter 4.5.1.1 incorrectly identifies the Single Assessment and Referral Agency rather than the State Assessment and Referral Agency as responsible for assessment of development applications involving State triggers.</li> <li>• Sub-Chapter 4.5.1.1: The description of the SP Act does not describe the community infrastructure designation.</li> <li>• Sub-Chapter 4.5.1.1: The <i>Nature Conservation Act 1992</i> and <i>Marine Parks Act 2004</i> are stated to have been integrated with the SP Act. This is not currently correct as these Acts are not yet integrated with the SP Act.</li> <li>• Sub-Chapter 4.5.1.3: The description of the EP Act suggests that ERAs are assessed under the Act's EIS process whereas most ERAs won't involve an EIS but rather assessment of an Environmental Authority application under the EP Act and possible development permit under the SP Act. This could potentially be misleading as to the level of assessment and consideration of MNES afforded to ERAs.</li> </ul>



#	Reference	Comment	Action
DRAFT Program Report - version as at 13/09/13			
			<ul style="list-style-type: none"> <li>• Sub-Chapter 4.5.1.3: Reference to the EP Act does not mention some key functions of this Act, including the role of prescribing ERAs (including Agricultural ERAs), establishing general environmental duties, environmental protection policies and dealing with contaminated land matters all of which have some relevance to mitigating impacts in the coastal zone.</li> <li>• Sub-Chapter 4.5.1.6: Although integrated to some extent into the SP Act, the <i>Coastal Protection and Management Act 1995</i> and <i>Fisheries Act 1994</i> have a more prominent role in managing development in the coastal zone than is suggested by the discussion in Chapter 4 and may warrant a more detailed description.</li> <li>• Sub-Chapter 4.8 refers to several ERAs which are no longer defined as ERAs (e.g. concrete batching, motor vehicle works) following amendments to the EP Act through the <i>Environmental Protection (Greentape Reduction) and Other Legislation Amendment Act 2012</i>.</li> </ul>
21	Chapter 4 Foundational management	Sub-Chapter 4.8 – The difference between responsive and reactive compliance activities is not well described and hard to understand. There is also little information about compliance activities within marine parks, which would seem highly relevant to this section.	Provide further details on the number of patrol days and the risk based compliance planning process used by GBRMPA and QPWS. Is the existing investment in compliance enough to maintain resilience of the Great Barrier Reef, by reducing illegal activities?
22	Chapter 5 Strengthened Management	Chapter 5 of the Program Report does not specifically mention the Queensland Government's plans to introduce new planning legislation as part of its overall reform of the planning and development system to facilitate "more streamlined assessment and approval processes, and remove unnecessary red tape." This adds to the confusion about what constitutes Foundational Management, Strengthened Management and Forward Commitments.	Describe the Queensland Government's plans in more detail.

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23	Chapter 5 Strengthened Management	Sub-Chapter 5.2.2.2 suggests that the Queensland Ports Strategy will “establish a master planning framework for Queensland ports, with consistent principles for environmental, social and economic planning” but does not specify what these principles might be and what they will be consistent with (will it be the principles of ESD?). Similarly, this section refers to “strengthening the effectiveness of environmental management at ports” but does not provide any detail on how this will be achieved.	Provide further detail on specific principles under the master planning framework. Provide further detail on how the key actions identified will be achieved.
24	Chapter 5 Strengthened Management	Sub-Chapter 5.2.2.3 indicates that the proposed Guideline for MNES will “identify circumstances in which planned development would be considered to have an unacceptable or unsustainable impacts on MNES” but does not specify what these circumstances might be.	Provide further detail.
25	Chapter 5 Strengthened Management	Sub-Chapter 5.2.3 states that “the approach to assessing projects through the development assessment process ..... has been previously accredited by the Australian Government”. This statement is not entirely correct in that not all development assessment processes in Queensland are accredited under the bilateral agreement. Only EIS processes under the SDPWO Act, EP Act and SP Act are accredited.	Amend text to clarify.
26	Chapter 7	In relation to Chapter 7 - Table 12, the following amendments are recommended.	<ul style="list-style-type: none"> <li>• The Department of State Development, Infrastructure and Planning (DSDIP) Supporting Policies and Plans should include the State Development Assessment Provisions.</li> <li>• The Department of Agriculture, Fisheries and Forestry (DAFF) responsibilities should include assessment and approval for works involving disturbance of marine plants, development in declared fish habitat areas and waterway barrier works under the <i>Fisheries Act 1994</i> as well as assessment and approval of certain ERAs. It is noted that DSDIP through the State Assessment and Referral Agency (SARA) is now primarily responsible for these tasks, however similar responsibilities are still identified with the Department of Environment and Heritage Protection (DEHP) and the Department of Natural Resources and Mines (DNRM) even though these also have been transferred to DSDIP. There should be consistency and it may be more accurate to identify that DSDIP has primary</li> </ul>

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			<p>responsibility for these assessment roles with support from the other agencies.</p> <ul style="list-style-type: none"> <li>Other Legislation should include the <i>Land Protection (Pest and Stock Route) Management Act 2002</i>.</li> </ul>

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27	General comments	The glossary definition of cumulative impacts refers to foreseeable pressures. On page 4 it says that the assessment targets emerging risks. However, the assessment generally only looks at past and present pressures, trends and condition.	The report would benefit from consideration of future trends, or scenarios, and evaluation of the likely future effectiveness of the Program in those scenarios.
28	General comments	The description of existing and emerging risks to the Great Barrier Reef associated with climate change would be improved with further expansion.	Some further discussion is recommended on increasing the resilience of the Great Barrier Reef in response to climate change, particularly in light of the 25 year life of the Program.
29	General comments	Ocean acidification is only briefly mentioned in the reports, and warrants further discussion in the context of managing for resilience.	Expand the discussion and assessment of ocean acidification. The statement on page 78 of the Assessment Report that ocean acidification “dissolves the calcium carbonate on reefs” should be revised. Ocean acidification (which is the water becoming less alkaline rather than more acidic) reduces the availability of calcium ions, thereby reducing calcification, rather than dissolving reefs.
30	General comments	The Terms of Reference refers to “matters of MNES including OUV”, but the methods are fundamentally based on protected matters search tool results, which do not incorporate a number of aspects of the Great Barrier Reef World Heritage Area OUV, such as natural beauty and aesthetics (criterion vii) and island morphologies (criterion ix).	Expand consideration of MNES to consider OUV not picked up by the protected matters search tool. Discuss any limitations of the application of these values to the analysis.
31	General comments	There is limited assessment of the effectiveness of fisheries management in the Great Barrier Reef Coastal Zone, which is a State Government responsibility.	Include information on fisheries management.
32	General comments	When referring to severe weather events like floods, reference should be made the anthropogenic factors in such impacts, to avoid misinterpretation that such impacts are solely natural.	Revise and clarify where appropriate.

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33	General comments	The assessment lacks a clear and robust conceptual framework. It purports to use a driver-activity-impact/pressure - effect framework (see page 29) but this is not applied consistently or with any depth of analysis. There is also a critical part missing: how the management responses embodied in the Program address adverse effects. Logically this would include interventions at the driver-activity levels but the approach to avoid-mitigate-offset appears to focus very much on the end stages of the process. The lack of a clearly thought out conceptual framework is especially apparent in Fig. 5.4-1, which shows a number of activities and a limited number of pressures/impacts (nutrient & sediment flows, freshwater flows, algal blooms). Despite the title of Sub-Chapter 5.4, there are no clear links in the figure (or accompanying text) to which activities are most important to which pressures. Some activities (e.g. shipping) appear unrelated to the pressures/impacts shown in the figure, and a wide range of pressures/impacts are not included. The absence of fisheries in the figure reflects the general lack of attention to fisheries throughout the assessment. Chapter 6 does not have clear links with Chapter 5.	Explain the causal relationships between activities and pressures/impacts, including their relative importance, more clearly. Leading on from Sub-Chapter 5.4 and Figure 5.4-1, outline some sort of conceptual framework that relates the Program – i.e., specific management measures to the driver-activity-pressure/impact hierarchy to show the interventions target the environmental impact process. A robust overall conceptual framework that relates the Program interventions to the driver-activity-impact/pressure sequence would also provide an improved tool to analyse how robust the Program might be with respect to foreseeable future changes, since future scenarios for drivers and activities can be developed.
34	General comments	The assessment report describes a Great Barrier Reef that is in significant decline, despite the existence of successful management programs for many years, such as Reef Plan. Many MNES are in poor condition or have a declining trend, despite the efforts of existing management actions.	Further discussion on the adequacy of existing management measures is recommended. Links to the adequacy of forward management commitments in addressing the declining condition and trend are recommended to strengthen the conclusions of the assessment.
35	General comments	There are only limited pieces of information presented on the cultural heritage values of indigenous people in the Great Barrier Reef Coastal Zone. While MNES do not appear to strongly reference cultural heritage values, some further recognition of the cultural values of the Great Barrier Reef Coastal Zone and of the involvement of traditional owners in their management would be appropriate. Cultural heritage values are only given approximately 2 pages of description.	Expand the consideration of cultural heritage values, and include a description of how traditional owners interact with the Queensland Government when implementing the Program.



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36	General comments	Further analysis of existing offsets arrangements is warranted to provide evidence for the conclusions in the assessment.	Provide data on the number of offsets under the existing Program, their average size and condition.
37	Chapters 4-7	The assessment results are spread across several chapters and a summary would be helpful. There is a large gap between the description of assessment methods in Chapter 3 and the presentation of results in subsequent chapters. It is difficult to recall the methods described in Chapter 3 when reviewing Chapters 7, 8 and 9.	A summary table providing a complete representation of all assessment ratings would also be helpful in visualising the overall picture. It is also recommended that consideration be given to presenting only brief generic methods in Chapter 3, and describing the methods applying specifically to each chapter in that particular chapter. This might result in some repetition so would need to be evaluated further prior to adoption. The purpose of such restructuring would be to have the methods readily available within the same chapter as the assessment results, removing the need to constantly refer back to Chapter 3.
38	General comments	Figure 4.2-1 and 1.4-1 seem to be identical and repeated.	Evaluate need for both figures.
39	General comments	The Strategic Assessment has a strong focus on urban and infrastructure development. Aspects of the Program not related to development are given less emphasis, such as fisheries, aquaculture, agriculture and tourism. Assessment of ecological processes is also limited, except in the case of nitrogen and COTS outbreaks.	Broaden the focus of the Program and assessment to consider these activities. Expand the assessment of ecological processes.
40	General comments	Analysis of land use is focussed on protected areas and urban areas, which collectively comprise approximately 35% of the Great Barrier Reef Coastal Zone. There is little description provided on land use within the remaining 65%. Agricultural land use is not broken down or subject to detailed analysis in the way that other land uses are.	Provide further information on land uses within the Great Barrier Reef Coastal Zone, with a particular focus on agriculture.
41	Chapter 1 Background	Sub-Chapter 1.4 - page 5, the text causes confusion as to whether the Commonwealth marine area (Great Barrier Reef Marine Park) is in or out of the Coastal Zone. It is mentioned in the bullet list of areas to be included then mentioned again in a different context in the following sentence.	Clarify the extent to which the Commonwealth Marine Area is included.

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42	Chapter 1 Background	Sub-Chapter 1.6 - More information on the accreditation process for actions as part of the Strategic Assessment would be useful. The information provided does not appear to be correct (in relation to the use of the term 'accredit' rather than 'endorse').	Provide further information about the proposed accreditation or endorsement process and/or explain how the Program Report, once approved might be implemented.
43	Sub-Chapter 1.3	The section titled 'Objectives and Purpose of the Strategic Assessment' only provides a high level description of the purpose and benefits of the Strategic Assessment. No objectives are provided.	A series of specific and measureable objectives in this section would improve understanding of the aims of the assessment. These could also be referenced in the conclusions chapter, to demonstrate that the objectives have been achieved.
44	Page 18 of Assessment Report	Improved presentation of historic and projected population trends in each of the LGAs would improve the reader's context for pressures that may relate to population changes. This section would also be enhanced by a summary of economic contribution by each industry sector (tourism, agriculture, resources). The data presented are inconsistent with respect to the spatial scale covered, direct vs total contribution.	Revise where possible to improve the information provided.
45	Page 94 of Assessment Report	The map on page 94 is very difficult to interpret.	Better clarity of boundaries and shading is recommended.
46	Chapter 3 Assessment and approach	Sub-Chapter 3.5.1 - It would be worth noting that much shorebird habitat (feeding and roost sites) is devoid of vegetation (naturally or cleared). Has this been considered in the assessment of environmental values?	Investigate whether this has been considered and clarify in text.
47	Chapter 3 Assessment and approach	The definition of the 'partially effective' rating of management effectiveness is very broad which has led to a large number of management programs being rated as 'partially effective'. This makes it difficult to assess the true effectiveness of the Program.	Consider revising the definition, including another category or providing a qualitative description of where within the spectrum of this rating each assessment lies.

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48	Chapter 3 Assessment and approach	The selection of threatened species to be assessed in the Strategic Assessment Report could be improved with a reordering of the steps listed in Sub-Chapter 3.5.	Swapping step 3 with step 4 would focus the refinement of the potential species to be assessed on the basis of location before applying other non-ecological or location parameters.
49	Chapter 4, Table 4.8-2	Migratory species habitat rated as 'poor'.	Re-evaluate rating. The information presented would support a 'good' rating.
50	Chapter 4, Values of the Great Barrier Reef Coastal Zone and their extent, condition and trend	The assessment of the trend and condition of listed species has been based on the proportion of habitat that is located in national parks and minimal use areas, on the assumption that these areas provide a level of protection that is higher than non-protected or higher use areas. While at a landscape scale this approach is a sound assumption, the assessment of condition and trend does not recognise localised threats to listed species.	<p>The ratings for condition and trend shown in Table 4.7-2 should be reviewed to capture an assessment of the status of the species in areas that are outside national parks and minimal use areas, which are also targeted by Program. As the Report is currently presented, the condition and trend of listed species and TECs located outside national parks and minimal use areas does not appear to be specifically considered and assessed in the discussion and rating tables.</p> <p>For example, the cassowary condition is shown in Table 4.7-2 as being 'very good' and the trend of the species is rated as 'improving'. The cassowary case study in Sub-Chapter 7.6.3.1 of the Strategic Assessment Report describes the factors that affect the cassowary survival. These are "the loss, fragmentation and modification of habitat, vehicle strikes, dog attacks, human interactions, pigs, disease and natural catastrophic events".</p>
51	Chapter 5 Pressures and impacts on MNES	Sub-Chapter 5.3.2.3 - Photosystem II inhibiting herbicides would benefit from an initial definition or description. Scientists will understand this term but the general public may need more of an explanation.	Better define the meaning of photosystem II herbicides.
52	Chapter 5 Pressures and impacts on MNES	Sub-Chapter 5.3.5 - Boat strikes are discussed mainly for dugong, but are generally more common for marine turtles, which are also listed species and MNES. Also artificial light can disorient or repel nesting adult turtles, as well as hatchlings.	Include turtles in discussion of risks from boat strikes as well as dugong. Include nesting turtles in discussion of risks of lighting on turtle nesting beaches.

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53	Chapter 5, Table 5.4-1	Bowling Green Bay Ramsar Site is assessed as High Effect when considering Loss of Habitat and Connectivity; Pest and Weed Species. This rating does not align with the condition and trend assessment in Sub-Chapter 4.4.1.	Check information used to determine rating and revise as necessary.
54	Chapter 5, Table 5.4-2	Port development and dredging rated as having a very high effect on water quality, the same as agriculture. Dredging and port development are highly regulated and their impact is local when considered project by project, as noted in the Assessment Report on page 168 when referring to the 2013 Scientific Consensus Statement. This rating requires further justification or explanation. If it is based on the cumulative impacts of ports spread throughout the Great Barrier Reef, then this should be highlighted in the accompanying text.	Review rating for consistency with other activities and assessments relating to port development and dredging.
55	Chapter 5, Table 5.4-2	Land and resource management is rated as having a very high effect on pests, weed species and modified fire regimes. This does not reflect the positive influence of land resource management on these issues.	Review rating and revise.
56	Page 294, Dugong Demonstration Case Snapshot	The 'effective' rating is not consistent with the very poor condition of dugong and their habitat.	A rating of 'partially effective' overall would be more appropriate, as described in the detailed Dugong Demonstration Case.
57	Chapter 5 Pressures and impacts on MNES	Pie charts in Figure 5.3-3 need further explanation and don't match the accompanying text. For example, the text says that Wet Tropics is higher risk for seagrass than the Fitzroy, but the pie charts suggest the opposite.	Check accuracy of information in pie charts and relate to text.
58	Chapter 7 Program effectiveness	Sub-Chapter 7.6.2 - To what extent has protection of the Great Barrier Reef guided the national park acquisition process for the past 20 years?	Provide information on the past or proposed plans for national park acquisitions to be guided by outcomes for the Great Barrier Reef.



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59	Chapter 7 Program effectiveness	Sub-Chapter 7.6.3.1 - protected areas are a real strength of the program, as explained on page 245 of the Assessment Report. To achieve their purpose, protected areas require management, as noted on page 247 of the Assessment Report. Sub-Chapter 7.6.4.6 - Table on page 256 gives "management" a high grading, yet there is very little information about how protected areas are managed in the documents, and in particular, about the scale or quantum of the investment in management.	<p>Provide further information on the effectiveness of protected area management activities. How actively are protected areas in the Great Barrier Reef Coastal Zoned managed? Provide information to justify the high grading for management. For example, what proportion of the estate is subject to active fire and pest management activities? What is the scale of such management?</p> <p>Evaluate the effectiveness of the Program in managing protected areas and provide a more detailed assessment of its adequacy in achieving the benefits assumed by the establishment of protected areas. Discuss whether current and future management activities for marine, island and terrestrial protected areas are targeted at the material issues for protection of the Great Barrier Reef and sufficiently resourced to achieve improved resilience.</p>
60	Chapter 7 Program effectiveness	It is difficult to evaluate the effectiveness of the Program without specific environmental targets, which are only described for water quality.	Provide further information to justify the management effectiveness ratings and focus the descriptions on the outcomes that are necessary to protect MNES.
61	Chapter 7 Program effectiveness	The commitment to the development of Matters of State Significance (MSES) is a promising suggestion and a step toward integration of Queensland and Commonwealth description and assessment of matters of state and national environmental significance (Sub-Chapter 7.5.1).	The Report would benefit from a detailed description of how the development of MSES would be undertaken and how MSES and MNES would operate to avoid, minimise impacts and offset unavoidable impacts.
62	Chapter 8, Table 8.7-1	The projected condition ratings do not correspond to the appropriate colours, making it unclear what the assessments are.	Revisit rating for 'GBRWHA, beaches and coastlines, inshore coral reefs, seagrass meadows and shorebirds'.
63	Chapter 9 Adaptive management	Sub-Chapter 9.3 refers to a long term strategic plan for the Great Barrier Reef World Heritage Area to guide joint management in the future. It is unclear what the purpose or objectives of this plan will be.	Is the long-term strategic plan the same as the long term sustainability plan mentioned in other sections of the Program Report? Further clarification in the text is recommended. Further clarification of the purpose, objectives and likely content of the Long-term Sustainability Plan would provide important context for the reader.

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64	Chapter 9 Adaptive management	The discussion of ESD is very brief and it is not clear how the principles of ESD are applied in the Program.	More detailed analysis is recommended of the principles of ESD and how they are addressed by the Program. How are the principles applied in the SP Act?
65	Chapter 9 Adaptive management	There is limited detail in the descriptions of plans to adapt management to address risk and uncertainty. Further information on the priority areas for conservation would assist in achieving consistency with the Terms of Reference.	Provide further detail on adaptive management and priority areas for conservation.
66	Page 27 of Assessment Report	The purpose of the diagram showing boundaries of MNES is not clear. It is repeated throughout the document. There are no natural heritage places shown, yet these are mentioned in text. Some of the boundaries depicted in the figure are incorrect.	Review purpose and need for diagram and check the location of boundaries.
67	Page 135 of Assessment Report	Refers to only 1800 ha of habitat for migratory species. This sounds too low.	Check accuracy of figure and revise if necessary.
68	Page 21 Assessment Report	What is the dugong research and monitoring program?	Include details of this program.
69	Page 62 of Assessment Report	It is notable that the ports sector was not included in the Queensland Stakeholder Reference Group, considering the issues discussed regarding the impacts and management of ports.	Include a description of engagement activities with the ports sector.
70	Page 138 of Assessment Report	The text box on nutrients and blooms appears out of context, without background on the extent, severity and frequency of such blooms (which are not particularly common on the Great Barrier Reef). Also the summary description in the assessment box refers to volumes of flow (which are natural). It is the quality of the discharge that is of concern.	Revise to provide further clarity.

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71	General comments	<p>There is not much detail provided for some key topics of public interest within the report. Port development and the management of dredging and spoil disposal are given only a brief mention in the assessment report, despite being an activity upon which key concerns of the public and UNESCO have been raised.</p> <p>There is also little information upon which to base an assessment of how effective national and marine park management is in enhancing resilience in the Great Barrier Reef Coastal Zone. While the management activities are described, more detail would be useful to indicate to the reader the extent or magnitude of the management activities implemented.</p>	<p>More information could be provided on:</p> <ul style="list-style-type: none"> <li>• Port development and shipping activities. This could include reference to the National Assessment Guidelines for Dredging (NAGD).</li> <li>• Management activities within National Parks and the Great Barrier Reef Marine Park</li> </ul>
72	Page 140 of Assessment Report	Sub-Chapter 4.9.4 does not present evidence that demonstrates an impact on MNES that would support the conclusion on condition and trend. See also summary on page 151.	Provide further details of the process of impact on MNES.
73	167 of Assessment Report	Sub-Chapter 5.2.4.3 would benefit from the addition of further detail. While it is agreed that impacts of dredging and disposal are localised, at least on a project by project basis, this is a key area of public interest and a more detailed description is warranted.	More detailed information is recommended.
74	Page 168 of Assessment Report	Sub-Chapter 5.2.4.4 would benefit from the addition of further detail. For example oil spills and groundings are not specifically mentioned in terms of shipping risks.	More detailed information is recommended about the risks of shipping, including oil spills and groundings.
75	Page 180 of Assessment Report	Further explanation of the links between land use and ecosystem function is warranted, in the context of the Wet Tropics region being mostly intact and subject to effective management, yet water quality risks are the highest of the regions.	Provide further explanation of apparent inconsistency.

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76	Pages 193 and 194	The assessment process leading to the tables presented on pages 193 and 194 of the Assessment Report has not been well explained and doesn't differentiate between spatial scales.	Clarify assessment process and consider spatial scale.
77	Pages 48, 237 and 253 of Assessment Report	It is unclear what is meant by high protection marine park zones. Are these Marine National Park and Conservation Park Zones? Page 237 of the Assessment Report also refers to marine conservation areas in Table 7.6-1. Are these the same as high protection marine park zones? See also page 253 of the Assessment Report where it is stated that 38.7% of the Great Barrier Reef Coast Marine Park is considered protected?	Clarify what is meant by these terms in regard to zoning.
78	Page 224 of Assessment Report	First paragraph of Sub-Chapter 7.3.1 states that the avoid, mitigate, offset approach is the basis of the endorsement criteria for the Program. However, this is only part of the endorsement criteria. The remaining endorsement criteria are not systematically covered in the Strategic Assessment.	Provide further detail to address the other endorsement criteria.
79	Page 265 of Assessment Report	In Sub-Chapter 7.6.7.2, the description mostly corresponds to grading statement for 'Effective' on page 56 (except that it refers to impacts being 'identified and considered' rather than 'avoided') but the grade is 'Partially effective'	Review the assessment and/or associated description.
80	Page 281 of Assessment Report	There is no grading system for cumulative impacts defined in the methodology (Sub-Chapter 3.8, including Table 3.8-1, pages 52-57). Instead cumulative impacts are considered in the grading statements for 'very effective' and 'partially effective' in avoiding impacts. With regard to cumulative impacts, the description on page 281 (Cumulative impacts are considered upfront) corresponds to the grading statement for 'very effective' with regard to avoiding impacts.	Reassess the grading and description in Sub-Chapter 7.9.2.



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81	Page 57 of Assessment Report	Although the methodology in Table 3.8-1 provides grading statements for 'resourcing, monitoring, and compliance', these components of effectiveness are not addressed in the assessment.	Consider assessment of these program effectiveness measures.
82	Page 230 of Assessment Report	More summary text is necessary to provide evidence for the 'very effective' rating of Enhance MNES.	Provide further justification for the rating.
83	Page 316 of Assessment Report	The colour coding of ratings in Table 8.7-1 are inconsistent. It is unclear what the projected condition is meant to be for some values. The projected condition of Great Barrier Reef World Heritage Area is rated as 'very poor', yet some improvement on the current condition is predicted in Sub-Chapter 8.2.4.	Check ratings and colours.
84	Appendices	Individual appendices are difficult to locate and the Appendices would benefit from a Table of Contents.	Include a Table of Contents for the Appendices.

