Development of methods and results for the pilot Report Card Social and Economics

Table of Contents

1. Introduction

1.1. Purpose of this Report

The primary purposes of this report are to document the process undertaken to develop the social and economic indicators and methods for the pilot Mackay-Whitsunday report card, and to document the results generated for the pilot report card through these assessments. This report provides further detail to that which is displayed within the pilot report card.

This document will complement similar documents reporting on the results of the other report card components:

- Stewardship;
- Freshwater environment;
- Estuarine environment; and
- Inshore and offshore marine environment.

For further information on the report card, and objectives and indicators, refer to the Program Design: Pilot Report Card document.

1.2. Mackay-Whitsunday Healthy Rivers to Reef Report Card Geographic Scope

The region assessed in the pilot report card extends from Home Hill in the north to Flaggy Rock Creek in the south (Figure 1), including the freshwater environment and the marine environment to the eastern boundary of the Great Barrier Reef (GBR) Marine Park. There are three local government areas (LGAs) covered within this geographic scope – Whitsunday Regional Council, Mackay Regional Council, and a small portion of Isaac Regional Council.
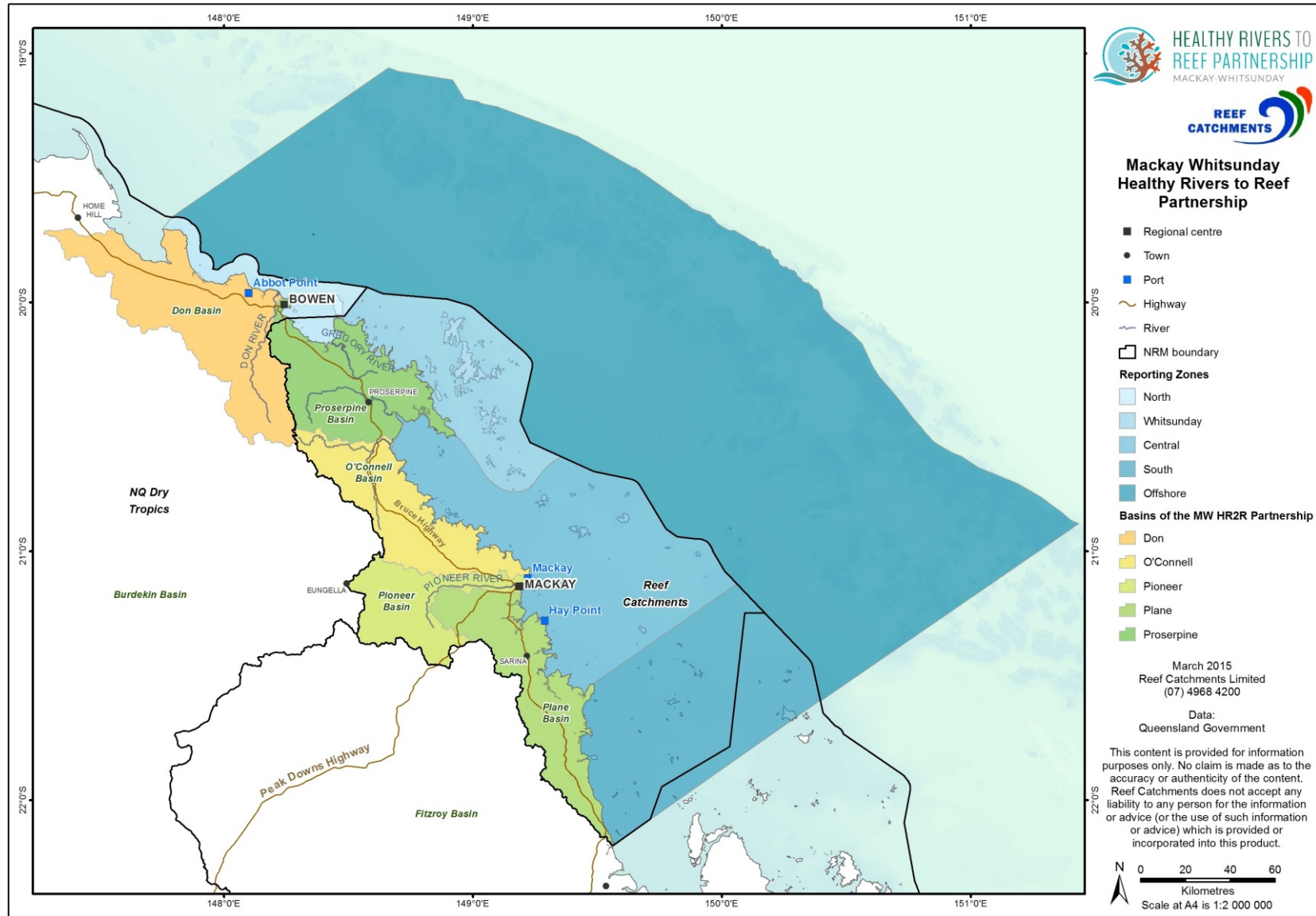
Figure 1. Geographic scope of the Mackay-Whitsunday report card.

2. Development of Social and Economic Indicators

2.1. Process Undertaken

The process undertaken to develop the social and economic indicators for the report card involved a team of social scientists and economists who had recently been involved in short and long term projects in the region and in the development of similar report cards.

An assessment of indicators used in similar projects and other report cards was conducted to determine which indicators may be important in the Mackay-Whitsunday region, relevant to the report card objectives, and appropriate for inclusion in a report card. Based on this assessment it was anticipated that the majority (approximately 70%) of indicators (core survey questions) would be drawn from the GBR Social and Economic Long Term Monitoring Program (SELTMP) including the National Environmental Research Program (NERP) 10.1 and 10.2 projects. These studies include a multitude of survey data which can be extracted for the relevant post codes in the Mackay-Whitsunday reporting region.

The remaining 30% of data would be developed specific to the Mackay-Whitsunday region and obtained through a new survey in the 2015-16 financial year with focus on the freshwater systems and filling any identified gaps. Data from the latest national census and from the Australian Bureau of Statistics (ABS) was also be drawn upon, as well as a range of other data sources for economic measures.

The data collated from existing studies and surveys can also be combined with any additional works to enable the provision of a report card score. The scores used a five-point system, ranging from "Very Good" through to "Good", "Moderate", "Poor", and "Very Poor".

Social and economic scores were not split based on the environmental reporting zones in the pilot report card (freshwater, estuarine and marine inshore and offshore). The reporting zones for social and economic scores aligned with the LGAs within the geographic scope of the report card – Mackay Regional Council (MRC), Whitsunday Regional Council (WRC), and the relevant proportion of the Isaac Regional Council (IRC). It was intended that there would be a social score and coaster, and an economic score and coaster presented for each of the three LGAs.

2.2. Background to Social and Economic Monitoring for the Great Barrier Reef

Two NERP funded projects (Projects 10.1 and 10.2) were designed to analyse and describe conditions and trends relative to the human aspects of the GBR to enable better decision-making, with a key objective being to act as a reference point or 'repository' for all regional social and economic datasets (Marshall et al. 2013; Stoeckl et al. 2014).

The design for NERP Project 10.1 included:

- Engagement with industry, government, and community to identify their monitoring needs;

- Development of a conceptual framework to guide the choice of data to be collected;
- Identification of the existing regional, state, and federal databases;
- Development of a survey addressing the gaps in knowledge;
- Administration of (five similar) surveys (over 8000 in total) to local and national residents, tourists, tourism operators and commercial fishers; and
- Presentation of preliminary results to working group members to identify key findings and better understand how the data will be used by different groups.

NERP Project 10.2 trialled a new method for assessing the total economic value of the Great Barrier Reef by determining how much the Reef contributes to a person's overall 'quality of life'. The study was conducted using the following steps:

- Identification of community benefits derived from the Reef and catchment;
- Administration of mailed surveys and face-to-face surveys of over 3000 catchment residents and Reef visitors;
- Asking survey respondents to rank the importance of nine groups of community benefits;
- Identification of the relative value of these nine benefits through the ranking process;
- Benchmarking known market values associated with Reef and catchment industries (e.g. economic value of jobs and income); and
- Calculation of the total value of all benefits relative to benchmark market values.

Further detail on the methodology used for the NERP funded projects (relevant to the Mackay-Whitsunday report card) can be found in Marshall et al. (2013), Bohensky et al. (2014), Pascoe et al. (2014) and Stoeckl et al. (2014).

The assessment of data available through these projects determined there was already an abundance of relevant information regarding the health of waterways in the Mackay-Whitsunday region. It was decided that this data should be incorporated and heavily relied upon for the Mackay-Whitsunday pilot report card. This approach aligns with the overall aim of the Partnership to build upon, complement, and enhance existing efforts of members. Additionally, it also supports the key objective of the NERP Projects to act as a reference point for regional social and economic datasets.

3. Social Objectives and Indicators

3.1. Social Objectives

In supporting the Partnership's vision of "Healthy rivers and Reef contributing to a prosperous region where people live, work, and play", the main purpose of the report card is to bring together the best available information for the evaluation of the condition of the region's waterways' in terms of their environmental, social, cultural, and economic values. An assessment of the region's ecosystem health, and how this is reflected in the region's prosperity, is achieved by assessing a range of key indicators representative of these values.

The social objectives for the pilot report card are:

- Provide local communities with the latest available information about the current condition of their waterways and ecosystem health and the link to on-ground management practices;
- Gauge the stewardship of key industries and communities in the region, as they relate to the waterways;
- Assess and monitor trends of the satisfaction of the community regarding the waterways in the region and their experiences associated with these waterways;
- Assess and monitor trends of the satisfaction of the community regarding the management and decision-making of waterways in the region; and
- Assess and monitor trends in the perception the local community hold on the health of the waterways in the region.

3.2. Social Indicators

The grade for social health was largely determined through existing data derived from two very large NERP funded projects; NERP Project 10.1 and NERP 10.2 (see Section 2.2). It is noted there are gaps in this data that will be required to be filled in order to present a complete picture of the social health of the Mackay-Whitsunday region.

The data used in the social assessment relates to community satisfaction across a number of aspects of the waterways and waterway health (where A = very good; E = very poor), including:

- Satisfaction with experiences (*experiences*);
- Satisfaction with waterway health (*waterway health*);
- Satisfaction with management of waterways (*management*);
- Satisfaction with access to waterways (*access*); and
- Satisfaction with decisions and opportunities to contribute to decision-making (*decision-making*).

See Figure 2 below for an example of the coaster included in the pilot report card. Survey questions that provided data for the assessment and results are shown in Table 1.
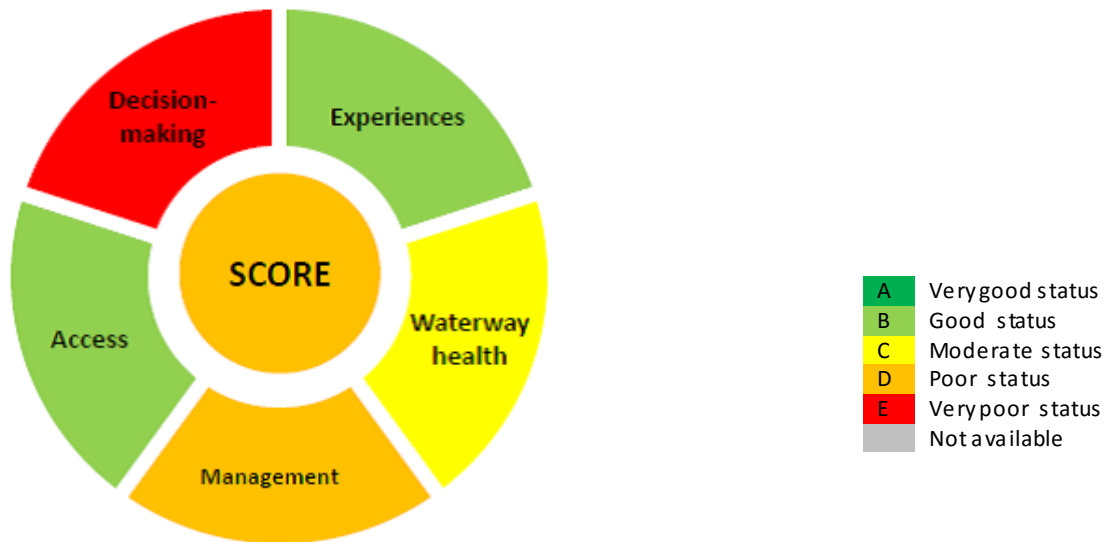
Figure 2. Coaster and indicators for the three social zones for the pilot report card (colours are arbitrarily assigned).

Table 1. Social survey questions drawn upon to provide data for the social indicators.

NB: Unless specifically stated, the term "waterways" will be used and refers to freshwater creeks and rivers, estuarine environments, and wetlands within the five nominated basins, and the inshore and offshore marine environment. "New Survey" indicates a question that was not included in NERP 10.1 or 10.2 surveys and thus not included in the pilot report card; these questions will be included in future surveys.

Indicator	Survey question	Data source
Waterway health	How satisfied are you with the status/health of the region's freshwater waterways - without visible rubbish (bottles, plastic)? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	New survey
Waterway health	How satisfied are you with the status/health of the region's freshwater waterways - undeveloped and uncrowded? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	New survey
Waterway health	How satisfied are you with the overall status/health of your local waterway? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	New survey
Waterway health	How satisfied are you with the status/health of the region's freshwater fish? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	New survey
Waterway health	How satisfied are you with the status/health of the region's freshwater waterways - clear water (with good underwater visibility)? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	New survey
Waterway health	How satisfied are you with the status/health of the region's mangroves and wetlands? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	NERP 10.2
Waterway health	How satisfied are you with the status/health of the region's beaches and islands - without visible rubbish (bottles, plastic)? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	NERP 10.2
Waterway health	How satisfied are you with the status/health of the region's beaches and islands - undeveloped and uncrowded? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	NERP 10.2
Waterway health	How satisfied are you with the status/health of the region's coral reefs? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	NERP 10.2
Waterway health	How satisfied are you with the status/health of the region's reef fish? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	NERP 10.2
Waterway health	How satisfied are you with the status/health of the region's iconic marine species (whales, dugongs, turtles)? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	NERP 10.2
Waterway health	How satisfied are you with the status/health of the region's oceans - clear water (with good underwater visibility)? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A*	NERP 10.2

Management	I feel confident that the GBR is well managed ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	NERP 10.1
Management	I feel confident that the region's freshwater waterways are well managed ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	New survey
Management	I support the current rules and regulations that affect access and use of the GBR *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
Management	I support the current rules and regulations that affect access and use of the region's freshwater waterways *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
Access	The amount of debris and litter in the GBR affects my access *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
Access	I do NOT have fair access to the GBR compared to other user groups *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
Access	The water quality in the waterways has not affected how often I use the area in the last 12 months	New survey
Decision-making	It is NOT my responsibility to protect the GBR ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	NERP 10.1
Decision-making	Coastal residents should take steps to reduce their impacts on the GBR *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
Decision-making	It is the responsibility of all Australians to protect the GBR ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	NERP 10.1
Decision-making	I have the necessary knowledge and skills to reduce any impact that I might have on the GBR ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	NERP 10.1
Decision-making	I do not have the time and opportunity required to reduce any impact that I might have on the GBR ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	NERP 10.1
Decision-making	It is too expensive for me to reduce any impact I might have on the GBR ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	NERP 10.1

Decision-making	It is NOT my responsibility to protect the freshwater waterways in the region ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	New survey
Decision-making	I have the necessary knowledge and skills to reduce any impact that I might have on the region's freshwater waterways ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	New survey
Decision-making	I do not have the time and opportunity required to reduce any impact that I might have on the region's freshwater waterways ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	New survey
Decision-making	It is too expensive for me to reduce any impact I might have on the region's freshwater waterways ❏ *V. strongly disagree* ❏ *Strongly disagree* ❏ *Disagree* ❏ *Slightly disagree* ❏ *V. slightly disagree* ❏ *V. slightly agree* ❏ *Slightly agree* ❏ *Agree* ❏ *Strongly agree* ❏ *V. strongly agree* ❏ *Don't know*	New survey
Experience	How satisfied have you been with your visit with friends/relatives or the success of your business trip? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	NERP 10.2 – tourists only
Experience	How satisfied have you been with your visit to the freshwater waterways in the region? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	New survey
Experience	How satisfied have you been with your experiences eating local seafood? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	NERP 10.2 – tourists only
Experience	How satisfied have you been with your experiences fishing, spear-fishing, or crabbing? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	NERP 10.2 – tourists only
Experience	How satisfied have you been with your experiences fishing, spear-fishing, or crabbing in the freshwater waterways? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	New survey
Experience	How satisfied have you been with your experiences on the beach, swimming, diving, etc? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	NERP 10.2 – tourists only
Experience	How satisfied have you been with your experiences swimming, biking and walking along the freshwater waterways? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	New survey
Experience	How satisfied have you been with your experiences boating, sailing, or jetskiiing? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	NERP 10.2 – tourists only
Experience	How satisfied have you been with your experiences boating, canoeing/kayaking, or jetskiiing in the freshwater waterways? ❏ *V. satisfied* ❏ *Satisfied* ❏ *Neutral* ❏ *Unsatisfied* ❏ *V. unsatisfied* ❏ *N/A* ❏ *I have not been here long enough to assess*	New survey
Experience	So far, how well has this trip met your expectations? ❏ *Well above expectations* ❏ *Above expectations* ❏ *Neutral* ❏ *Below expectations* ❏ *Well below expectations* ❏ *I do not know*	NERP 10.2 – tourists only

Experience	How likely is that you will return to visit the region in the future? ❑ *Will definitely return* ❑ *Will likely return* ❑ *Neutral* ❑ *Will likely not return* ❑ *Will definitely not return* ❑ *I do not know*	NERP 10.2 – tourists only
Experience	How satisfied were you overall with your experience? (For your most recent trip beyond the beach, if applicable) *1 (Extremely dissatisfied) to 10 (Extremely satisfied)*	NERP 10.1 – local residents

4. Scoring Methods for Social Status

The social, economic, and environmental condition of the Mackay-Whitsunday region is reported on using a five-point scale ranging from A (Very Good) to E (Very Poor). Grading is scaled appropriately for each indicator, and then standardised so all indicators present the same ranges. The overall ranges used for the pilot report card are the same as those for the Reef Plan report card, shown in Table 2.

Table 2. Overall range of scores (source: Reef Plan report card).

Range of index condition scores	Condition grade and colour code
81-100	Very Good
61-80	Good
41-60	Moderate
21-40	Poor
0-20	Very Poor

For the social and economic indicators, a C grade does not necessarily indicate passing or failing a guideline, rather it indicates a satisfactory state of social or economic health.

4.1.   Weightings for Social Indicators

The grade given to the social condition of the three LGAs was equally weighted across the five categories (Satisfaction with experiences; Satisfaction with waterway health; Satisfaction of management of waterways; Satisfaction with access to waterways; and Satisfaction in decision-making), therefore each provided one-fifth of the overall social score.

The number of survey questions addressing each indicator varied, so the weightings given to each survey response varied (see Table 3). In the future, if it appears that equal weighting is not the most appropriate way to score the social aspects, information within the NERP 10.2 project on establishing a process and methodology for weighting, based on the importance that the community placed on different aspects could be used to help guide weightings in subsequent Mackay-Whitsunday report cards.

Additionally, the information for the pilot report card is solely derived from the NERP 10.1 and 10.2 studies, and only presents information relevant to the GBR and the World Heritage Area (WHA). A new survey is proposed to be carried out in the 2015-16 financial year and will include survey questions specifically relating to the freshwater waterways, their use, and the community's satisfaction on the same issues (in a similar style to the GBR-related surveys). See Tables 1 and 3 for a breakdown of existing survey questions and proposed survey questions.

Table 3. Availability of social survey information.

Indicator	Number of existing survey questions (NERP 10.1 and 10.2)	Number of proposed new survey questions
Satisfaction with experiences	8	4
Satisfaction with waterway health	7	5
Satisfaction of management of waterways	2	2
Satisfaction with access to waterways	1	2
Satisfaction in decision-making and level of input	6	4

Survey responses from the NERP Projects were attributed a score from 1 (low) to 5 or 10 (high), depending on the point-scale used in the original survey, to assess satisfaction levels across the surveyed aspects. An answer of "Not Applicable" / "Don't Know" / "Have not Been Here Long Enough" etc. was given a zero.

The responses from within the MRC, WRC, and IRC areas were extracted from the entire dataset and analysed. The responses to each survey question were averaged for the relevant LGA and also for all LGAs combined. Average responses to survey questions were then grouped into indicators and an average score was generated.

The averaged scores were then converted to the five-point Mackay-Whitsunday scoring scale (Table 4) for NERP 10.2 (five-point scale), and the NERP 10.1 scores were divided by two to transform the ten-point scale into a five-point scale.

Table 4. Mackay-Whitsunday report card social scoring ranges.

Mackay-Whitsunday score	Mackay-Whitsunday grade
0 - 1	Very Poor
1 - 2	Poor
2 - 3	Moderate
3 - 4	Good
4 - 5	Very Good

4.2. Decision Rules

The primary decision rule applied during the social assessment was that results for a minimum of 50% of the survey questions (equivalent to indices in the environmental assessments) were required to generate the indicator score.

4.3. Data Analysed

A summary of the data used to assess social status within the region in the pilot report card is shown in Table 5. The "Access" indicator was not included in the analysis as only one NERP 10.1 survey

question on access was available, and this question was deemed not relevant in the Mackay-Whitsunday region, therefore not providing an accurate representation of perspective of access within the region. Additionally, the six survey questions from the NERP 10.1 resident survey relevant to satisfaction with waterway experiences were included, but the two from the 10.2 survey were not included in the assessment for the pilot report card.

The NERP surveys resulted in data from approximately 650 respondents for the Mackay-Whitsunday region.

Table 5. Summary of social data analysed.

Indicator	No. of survey questions used	Comment
Experiences	6	6/8 survey questions used, therefore satisfied the decision rule that ≥ 50% required
Waterway health	7	All available NERP 10.2 survey responses used
Management	2	All available NERP 10.1 survey responses used
Access	0	NERP 10.1 survey question would not provide accurate results
Decision-making	6	All available NERP 10.1 survey responses used

5. Social Assessment Results

The results from the assessment of the social status within the report card region generated an overall grade of "**B**", indicating a "**good**" status (Figure 3). This grade was the same for all LGAs combined, as well as for the MRC and WRC LGAs individually. There was not enough data to analyse the IRC individually.

Note: the survey information presented in the pilot report card is solely derived from results of the NERP Projects, and therefore only presents information relevant to the GBR and World Heritage Area, not the freshwater environments.

Figure 3. Combined social results for Mackay Regional Council and Whitsunday Regional Council zones.

Each of the four assessed indicators were graded the same when all LGAs were combined, or when MRC and WRC were analysed separately, as shown in Figure 3. The satisfaction with management and waterway health indicators were graded as **Good**, satisfaction with experiences graded as **Very Good**, and decision-making graded as **Moderate**. Table 6 below shows the scores awarded to each indicator, for each LGA, as well as the combined LGA results.

The limited IRC data available through the surveys did not allow an overall score to be given for the IRC region.

Table 6. Results of the social assessment for the three LGAs, and the combined results. The colours have been attributed as per Table 4.

LGA	Indicators and Scores					
	Decision-making	Management	Waterway Health*	Experiences	Access	OVERALL SCORE
MRC	2.8	3.3	4	4.4	N/A	3.6
WRC	2.8	3.4	4	4.4	N/A	3.5
IRC	N/A	N/A	4	N/A	N/A	N/A
Combined	**2.8**	**3.3**	**4**	**4.4**	**N/A**	**3.6**

*Broken to whole numbers, rather than in ranges due to data collection method in the NERP 10.2 Project.

6. Economic Objectives and Indicators

6.1. Economic Objectives

In supporting the Partnership's vision of "Healthy rivers and Reef contributing to a prosperous region where people live, work, and play", the main purpose of the report card is to bring together the best available information for the evaluation of the condition of the region's waterways' in terms of their environmental, social, cultural, and economic values. An assessment of the region's ecosystem health, and how this is reflected in the region's prosperity, is achieved by assessing a range of key indicators representative of these values.

The proposed economic objectives for the report card are:

- Calculate and monitor the direct economic benefits of industries which depend upon the presence of healthy waterways in the region;
- Assess the values and importance the local community place upon the waterways in the region and the relation to their quality of life; and
- Calculate and monitor the local economy associated with healthy waterways in the region and ecologically sustainable development.

6.2. Economic Indicators

The economic indicators were split into two categories, based on services provided to the community by the waterways. The first category used was *Direct market contributions* (based on the waterways), and the second category was *Value of the waterways* to people. Refer to Figure 4 and Table 7. The Value of the waterways category is included under economic section (rather than social) as it allows one to assess a broader range of contributions which the ecosystems make in supporting human well-being. The first category (*Direct market contributions*) presents information about the contribution of the major industries to the wellbeing of people in the local community. The second category (*Value of the waterways*) presents information about the indirect and/or non-financial (non-market) contribution of waterways to the well-being of people in the region.

The score for the *Direct market contributions of the major industries* category will be generated using information on:

- Agriculture;
- Shipping;
- Commercial fishing;
- Tourism (marine-based and overall); and
- Recreation.

The majority of the data to address these indicators will be obtained through existing datasets such as the Australian Bureau of Statistics (ABS) and industry-specific datasets. The industry indicators will also take into account employment rates within industries, compared to unemployment statistics for the region, and in turn for all Queensland LGAs.

Note – this category was not included in the pilot report card but will be included in the next report card.

The score for the *Value of the waterways* values category was generated using information on how local communities see the waterway providing:

- Biodiversity (defined as supporting a variety of life such as fish, corals);
- Lifestyle opportunities;
- Opportunities for scientific discoveries;
- Opportunities to attract international visitors;
- Economic opportunities;
- Fresh local seafood;
- Contributions to quality of life and well-being; and
- Aesthetic beauty.

The NERP Project 10.1 survey results were used to provide data for the indicators within the *Value of the waterways* category. These surveys used a ten-point scale.
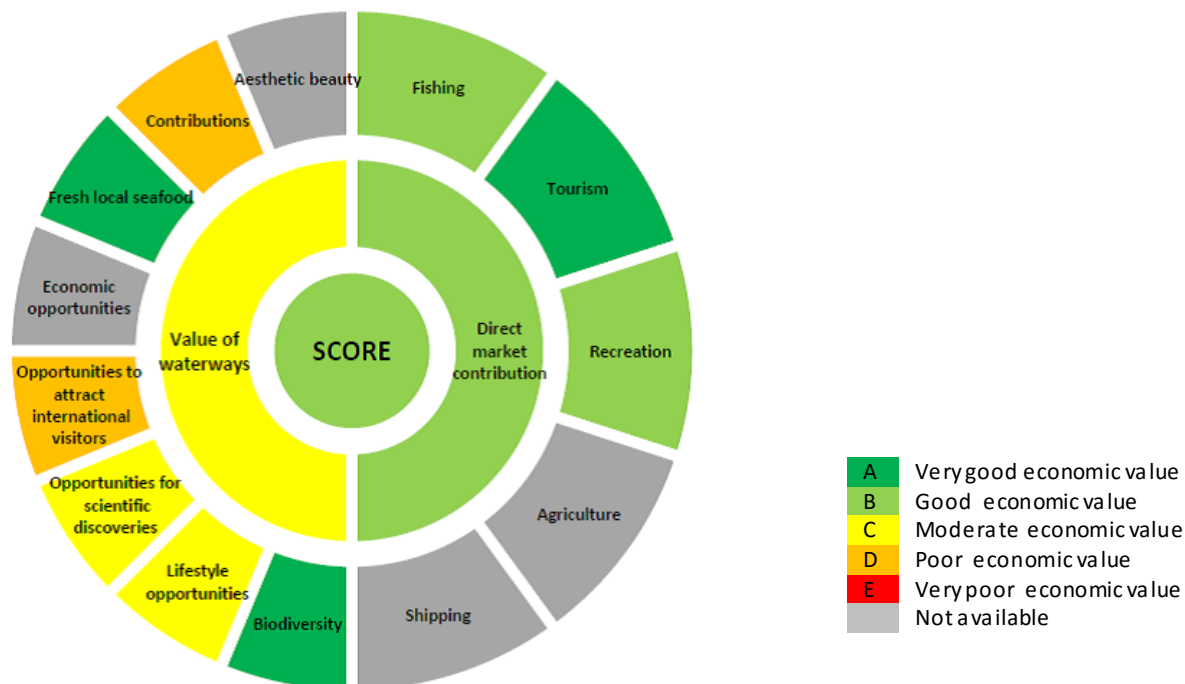
Figure 4. Coaster and indicators for the three economic zones (colours are arbitrarily assigned).

By presenting scores for each indicator, as well as the overall indicator category score, indicators that scored higher or lower than others are apparent, as well as highlight any indicators that seem to cancel each other out. While there is the chance antagonistic indicators may exist within the economic coaster, as the community values and perception varies, it is inherently difficult to

determine which will be antagonistic. For example, some people may think fishing and tourism are antagonistic while other people may think shipping and aesthetic beauty are. By capturing all indicators and presenting the results there is more transparency in what each indicator contributes to the overall score.

Table 7. Proposed economic information sources and survey questions to be drawn upon to provide data for the economic indicators.

NB: Unless specifically stated, the term "waterways" will be used and refers to freshwater creeks and rivers, estuarine environments, and wetlands within the five nominated basins, and the inshore and offshore marine environment. "New Survey" indicates a question that was not included in NERP 10.1 or 10.2 surveys and thus not included in the pilot report card; these questions will be included in future surveys.

Indicator	Data or Survey question	Data source
Indicator Category: *Economic contributions of the major industries*		
Commercial fishing	GVP data	ABS / Fisheries Queensland
	Tonnage data	Fisheries Queensland
	Employment data	ABS / Fisheries Queensland
Tourism	GVP data	ABS / Tourism Qld
	Visitation number data	GBRMPA for WHA area
	Accommodation occupancy data	Accommodation providers
	Employment data	ABS / Tourism Qld
Recreation	Recreational visit data	GBRMPA and Deloitte Access Economics for GBRWHA area; Qld Outdoor Recreation Federation
	Employment data	ABS
Agriculture	GVP data	ABS
	Mill throughput data	Mill data
	Employment data	ABS
Shipping	Ship numbers data	AMSQ / MSQ
	Port throughput data	NQBP / MSQ
	Employment data	ABS
Indicator Category: *Value of the waterways*		
Biodiversity	I value the GBR because it supports a variety of life such as fish, corals *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
	I value the freshwater waterways in the MW region because they support a variety of aquatic life *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
	I value the my local freshwater waterway because it supports a variety of aquatic life *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey

Lifestyle opportunities	I value the GBR because it supports a desirable and active way of life *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
	I value the freshwater waterways in the MW region because they support a desirable and active way of life *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
	I value the my local freshwater waterway because it supports a desirable and active way of life *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
Opportunities for scientific discoveries	I value the GBR because we can learn about the environment through scientific discoveries *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
	I value the freshwater waterways in the MW region because we can learn about the environment through scientific discoveries *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
Opportunities to attract international visitors	I value the GBR because it attracts people from all over the world *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
	I value the freshwater waterways because they attract people from all over the world *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
Economic opportunities	The GBR is a great asset for the economy of this region *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
	The freshwater waterways are a great asset for the economy of this region *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
Fresh local seafood	I value the GBR for the fresh seafood it provides *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
Contributions to quality of life and well-being	The GBR contributes to my quality of life and well-being *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
	The freshwater waterways in the region contribute to my quality of life and well-being *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey
Aesthetic beauty	The aesthetic beauty of the GBR is outstanding *1 (Very strongly disagree) to 10 (Very strongly agree)*	NERP 10.1
	The aesthetic beauty of the waterways in the region is outstanding *1 (Very strongly disagree) to 10 (Very strongly agree)*	New survey

*Economics data can be adjusted based on household size, unemployment rate, house prices, income distribution, rental costs etc. which are all annually publically available.

7. Scoring Methods for Economic Status

Similar to the scoring methods used for the social assessment, the economic condition of the Mackay-Whitsunday region was reported on using a five-point scale ranging from A (Very Good) to E (Very Poor); Table 2 (refer to Section 4). A "C" grade does not necessarily indicate passing or failing a guideline. Rather it indicates a satisfactory state of economic health related to the relevant benchmark or baseline.

7.1. Weightings for Economic Indicators

The data for the two indicator categories were collected in slightly different ways, as described below. The process for scoring the results into a grade will also vary but as far as practical will reflect how the environmental scores and grades were generated.

The initial approach for scoring in the pilot report card used an equal weighting scoring method. As with the social indicators, if it appears that equal weighting is not the most appropriate way to score the economic aspects, information within the NERP 10.2 project on establishing a process and methodology for weighting, based on the importance that the community placed on different aspects could be used to help guide weightings in the Mackay-Whitsunday report card, as well as expert opinion.

7.1.1. Direct Market Contributions

As shown in Table 7, it is proposed that the majority of data for the indicator category *Direct market contributions* will be obtained from ABS, and directly from industry bodies. Grading for each indicator needs to be scaled appropriately, and then standardised so all indicators present the same ranges (shown in Table 2).

To obtain a score for each of the five indicators within this indicator category (Fishing; Tourism; Recreation; Agriculture; and Shipping), the individual indicators will be scored and averaged (i.e. the three indicators within Fishing will each be scored, then averaged to provide the Fishing score). Each of the five indicators will then be averaged (therefore each providing one-fifth) into the overall indicator category score for *Direct market contributions*. This indicator category will provide half of the total economic score for each LGA.

This data and an appropriate scoring method will not be available for the pilot report card, but will be presented in the subsequent report card, published in 2016 (for the 2014-15 year).

7.1.2. Value of the Waterways

Survey data from NERP Project 10.1 will be used to provide the score for the *Value of Waterways* indicator category. There are eight indicators within this category – Biodiversity (defined as supporting a variety of life, such as corals and fish); Lifestyle opportunities; Opportunities for scientific discoveries; Opportunities to attract international visitors; Economic opportunities; Fresh local seafood; Contributions to quality of life and well-being; and Aesthetic beauty. Each indicator

will be weighted equally, therefore each contributed one-eighth to the overall indicator category score.

A new survey is proposed to be carried out in the 2015-16 financial year and will include survey questions about the value provided to communities from freshwater waterways (see Table 8 for a breakdown of existing survey questions and proposed survey questions). These survey questions will reflect those used in the NERP Project 10.1 survey, but focus on freshwater environments only and a few other gaps required further information.

Including the new survey data, the majority of indicators will have two relevant survey questions, therefore, each survey question will provide half of the indicator score (see Table 8). However, for the pilot report card, the survey information will be solely derived from results of the NERP Project 10.1, and only present information relevant to the GBR and WHA.

Table 8. Availability of economic survey information.

Indicator	Number of existing survey questions (NERP 10.1)	Number of proposed new survey questions
Biodiversity	1	2
Lifestyle opportunities	1	2
Opportunities for scientific discoveries	1	1
Opportunities to attract international visitors	1	1
Economic opportunities	1	1
Fresh local seafood	1	0
Contributions to quality of life and well-being	1	1
Aesthetic beauty	1	1

Survey responses from the NERP Project 10.1 were attributed a score from 1 (low) to 10 (high). An answer of "Not Applicable" / "Don't Know" / "Have not Been Here Long Enough" etc. was given a zero.

The responses from within the MRC and WRC LGAs were extracted from the entire dataset and analysed. The responses to each survey question were averaged for the relevant LGA and also for all LGAs combined. Average responses to survey questions were then grouped into indicators and an average score generated. This score was then simply translated to the Mackay-Whitsunday scoring scale (Table 9) by dividing the average result by two to transform the ten-point scale into a five-point scale (where A = 9-10, B = 7-8, C = 5-6, D = 3-4, E = 1-2). Each averaged indicator score provided one-eighth of the overall *Value of the waterways* score.

Table 9. Mackay-Whitsunday report card social scoring ranges

Mackay-Whitsunday score	Mackay-Whitsunday grade
0 - 1	Very Poor
1 -2	Poor
2 - 3	Moderate
3 - 4	Good
4 - 5	Very Good

Refer to report on the Program Design: Pilot Report Card document for further detail.

7.2. Decision rules

The primary decision rule applied during the economic assessment was that results for a minimum of 50% of the survey questions or economic indices were required to generate the indicator score.

7.3. Data Analysed

A summary of the data used to assess economic status within the region in the pilot report card is shown in Table 10. All available results from the NERP 10.1 Project were used and analysed to generate the score for the "*Value of waterways*" category (approximately 650 respondents for the Mackay-Whitsunday region). The "*Direct market contributions*" indicator category was not included in the analysis as further work needs to be conducted on the indicators and indices, including assessing data sources, methods, and scoring methods. This data will be included in the next Mackay-Whitsunday report card. As a result, the economic score and coaster in the pilot Mackay-Whitsunday report card only relates to the "*Value of waterways*" category.

The NERP surveys resulted in data from approximately 650 respondents for the Mackay-Whitsunday region.

Table 10. Summary economic data analysed.

Indicator	No. of survey questions / data used	Comment
Indicator Category: Value of waterways		
Biodiversity	1	All available NERP 10.1 survey responses used
Lifestyle opportunities	1	
Opportunities for scientific discoveries	1	
Opportunities to attract international visitors	1	
Economic opportunities	1	
Fresh local seafood	1	
Contributions to quality of life and well-being	1	
Aesthetic beauty	1	
Indicator Category: Direct Market Contribution		
Agriculture	0	Not included in pilot report card. The direct market contributions category needs to be further developed in terms of data sources, methods, and scoring.
Shipping	0	
Commercial fishing	0	
Tourism (marine-based and overall)	0	
Recreation	0	

8. Economic Assessment Results

The results from the assessment of the "*Value of waterways*" within the Mackay-Whitsunday report card region generated an overall grade of "**A**" indicating a "**Very good**" status (Figure 5 and Table 11). This overall grade was the same for the MRC and WRC LGAs separately, and also when both LGAs were combined. There was no data to inform results for the IRC LGA.

Seven out of eight indicator scores were the same for both LGAs. The only indicator that varied between the MRC and WRC LGAs was the indicator assessing the value of waterways contributing to the quality of life and well-being, where it was awarded a "**B**" or **Good** in MRC region (Figure 5) and a "**A**" or **Very good** in the WRC LGA (Figure 6). For both LGAs the value attributed to fresh local seafood was given a "**B**" **Good**, while all other indicators were attributed an "**A**" or **Very good** (Figure 5, Figure 6, and Table 11).

Note: the survey information presented in the pilot report card is solely derived from results of the NERP Projects, and therefore only presents information relevant to the GBR and World Heritage Area, not the freshwater environments.

A	Very good economic value
B	Good economic value
C	Moderate economic value
D	Poor economic value
E	Very poor economic value
	Not available
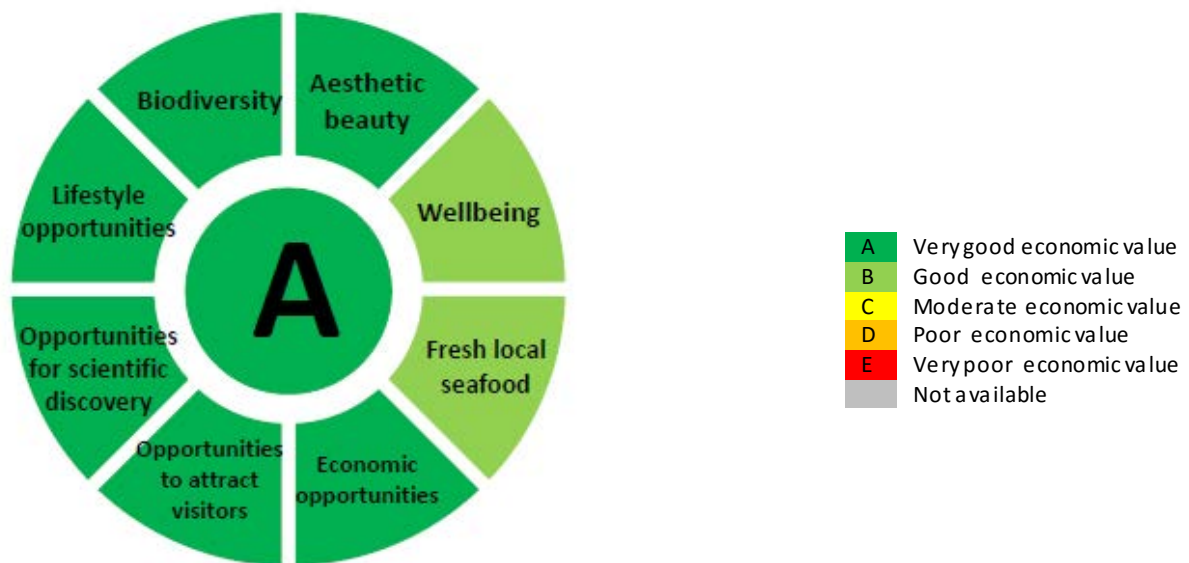
Figure 5. Economic results for Mackay Regional Council and Whitsunday Regional Council zones when combined; this reflects the results for MRC only.
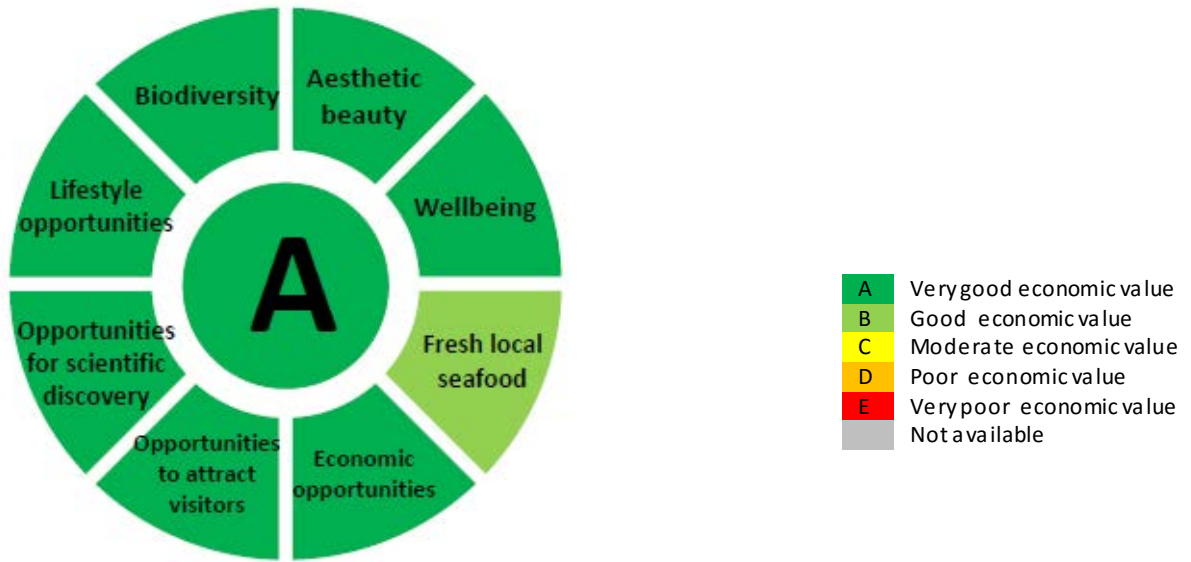
Figure 6. Economic results for Whitsunday Regional Council zone.

A	Very good economic value
B	Good economic value
C	Moderate economic value
D	Poor economic value
E	Very poor economic value
	Not available

Table 11. Results of the social assessment for the three LGAs, and the combined results. The colours have been attributed as per Table 4.

LGA	Indicators and Scores								
	Biodiversity	Lifestyle opportunities	Opportunities for scientific discoveries	Opportunities to attract international visitors	Economic opportunities	Fresh local seafood	Contributions to quality of life and well-being	Aesthetic beauty	**OVERALL SCORE**
MRC	4.5	4.2	4.2	4.1	4.4	3.8	3.5	4.6	**4.1**
WRC	4.7	4.4	4.2	4.2	4.6	3.7	4.3	4.6	**4.3**
Combined	**4.6**	**4.3**	**4.2**	**4.1**	**4.5**	**3.8**	**3.8**	**4.6**	**4.2**

8.1. Contextual Economic Data

In the absence of the *Direct market contribution* data and results for the pilot report card, during the process of the development of the pilot report card the following regionally relevant economic data was obtained. This information is relevant for the 2013-14 financial year for the Mackay-Whitsunday region:

- **Commercial fish catch** data[1] shows that approximately 1,300 tonne (t) of commercial fish were caught within grids in the Mackay-Whitsunday region. The three species groups with the highest catch were redthroat emperor (123 t), coral trout (284 t), and prawn (304 t);

- **Tourism** data[2] from the Mackay region (i.e. within the boundaries of the MRC and IRC) from the 2013-14 financial year had the following results:
  - Tourism industry worth $342.8 million in direct overnight visitor expenditure
  - 6% of employees in the region were involved in the tourism industry
  - 6,000 people were employed directly and indirectly in the tourism industry
  - Overall economic impact of the industry was $600 million
  - 3.5% of the regional economy is related to the tourism industry

- **Resources industry** data[3] from the Mackay Regional Council and Whitsunday Regional Council LGAs shows:
  - Direct contributions (wages paid to direct employees, community contributions and the purchases of goods and services from local businesses):
    - Employment wages = $689 million (paid to full time employees (excluding contractors) directly employed by the sector)
    - 5,287 full time employees in the region
    - $2.6 billion in goods and services purchased locally
    - Purchases made from at least 1324 local businesses
  - Flow-on contributions (spending by the resources sector supports additional employment and Gross Regional Product, GRP):
    - Total GRP = $2.2 billion
    - 26,904 full time employees
  - TOTAL industry economic contribution to the region = $5.4 billion
    - 32,191 full time employees
    - $95 million out of $2.5 billion in royalties (spent on schools, roads, and hospitals to the benefit of all Queenslanders)

- **Sugarcane industry**[4] from the region shows that:
  - Economic contribution of the industry to the region was approximately $488M in sugar sales alone

---

[1] Data source: QFish database, query included: Logbook type: Commercial; Fishing Methods: Beam Trawl, Danish Seine, Line, Net, Otter Trawl, Pot; Grids M21, M22, M23, N21, N22, N23, N24, O21, O22, O23, O24, O25, O26, P22, P23, P24, P25, P26, Q22, Q23, Q24, Q25, R24, R25.

[2] Data source: Mackay Tourism

[3] Data source: Queensland Resources Council

[4] Data source: Canegrowers Mackay, and Queensland Sugar Limited 2013/14 Annual Report

- Regional employment includes that generated through 900 cane farming entities, cane harvesting and haul-out units, ancillary facilities and industries, and approximately 1140 mill employees (including seasonal employees)
        - 3.765 M tonnes of raw sugar handled through the bulk sugar terminals
- **Ports**[5] in the region show:
        - 315.1 M tonnes of throughout through Queensland Ports
        - 43% of all Qld throughput for the three ports in the MW Region

---

[5] Data source: North Queensland Bulk Ports

9. Additional Information

Information on the diversity of waterway users was collected through the NERP Projects and will be collected through subsequent surveys for the report card on the following demographic attributes:

- Home town;
- Language spoken at home;
- Identify as Aboriginal, Torres Strait Islander;
- Traditional Owner;
- Occupation;
- Income;
- Gender;
- Age;
- Family structure; and
- Socio-economic status.

This demographic information may be presented in subsequent report cards as contextual information.

Other sets of useful contextual information that will be collected and may be presented in the report card include:

- Information on frequency and type of use of the waterways. This information may also be included in the report card for context; and
- Information on community stewardship (in terms of the number of active community groups (e.g. Landcare, etc.) in the region; and the number of total volunteer hours total per year).

Data relating to the first point is collected as part of the surveys currently. Data to inform the second point would be easily collected from regional bodies and conservation groups. This data would also provide further linkage to the stewardship reporting in the report card, and the following social objectives:

- Provide local communities with the latest available information about the current condition of their waterways and ecosystem health and the link to on-ground management practices; and
- Gauge the stewardship of key industries and communities in the region, as they relate to the waterways.

10. Limitations and Recommendations

Following the release of the pilot report card, the program design, indicators, and scoring methods will be reviewed to determine any aspects that require improvement.

Particular focus will be given to:

- Developing a survey which aligns with NERP Project 10.1 and 10.2 and provides information relevant to the freshwater environment in the region, as well as infilling any identified gaps relevant to the region (i.e. access questions) and gaining more response from the IRC LGA. As part of this process, the survey length will be reviewed, as well as all questions and any redundancies or less critical questions;
- Revising the scoring methods and weightings to determine they are relevant (review NERP Project 10.2 for guidance on perceptions and importance placed on different aspects);
- Reviewing data within the NERP Project 10.2 and include community's perception of contribution by different industries to their quality of life – could add an extra dimension to the *Value of waterways* and *Direct market contribution* assessments;
- Working through the *Direct market contribution* assessment data sources, indicators, and scoring/weighting system (including adding in resources industry, and refining the industries currently proposed; and
- Reviewing the confidence around the survey questions and results relevant to the Mackay-Whitsunday region.

11. Cultural Objectives and Indicators

Cultural objectives and indicators will be developed and included in the next report card. The development will be documented in a separate report, but the objectives will likely include:

- Report on trends in Indigenous cultural heritage sites and values;
- Report on trends in non-Indigenous cultural heritage sites and values;
- Report on trends in Indigenous and non-Indigenous connection to the region's coastal lands and waterways; and
- Ensure Indigenous and non-Indigenous heritage including natural, aesthetic, historic, scientific, and social values are identified, conserved and managed in partnership with the community.

The cultural objectives and indicators will be progressed with local Indigenous representatives and reference groups.

12. Acknowledgments

The Technical Working Group would like to acknowledge the input of the Social and Economic subgroup into developing this body of work, in particular Renae Tobin, Margaret Gooch, John Rolfe, Natalie Stoeckl, and Nadine Marshall.

Additionally, this work would not be possible without the previously collected data from the NERP 10.1 and 10.2 projects.

References and Supporting Documentation

Bohensky, E., Currnock, M., Gillet, S., Goldberg, J., Gooch, M., Marshall, N., Pert, P., Scherl, L., Stone-Jovicich, S., Tobin, R. (2014) The Social and Economic Long Term Monitoring Program (SELTMP) 2013, Drivers of Change in the Great Barrier Reef. Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited, Cairns (51pp.).

Marshall, N., Bohensky, E., Curnock, M., Goldberg, J., Gooch, M., Pert, P.L., Scherl, L., Stone-Jovich, S., Tobin, R.C. (2013) A Social and Economic Long Term Monitoring Program for the Great Barrier Reef. Key Findings 2013. Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited, Cairns (52pp.).

Pascoe, S., Tobin, R., Windle, J., Cannard, T., Marshall, N., Kabir, Z., and Flint, N. (2014). Piloting of social, cultural and economic indicators for the Gladstone Healthy Harbour Partnership Report Card. CSIRO Final report for the Gladstone Healthy Harbours Partnership. (182 pp).

Stoeckl, N., Farr, M., Jarvis, D., Larson, S., Esparon, M., Sakata, H., Chaiechi, T., Lui, H., Brodie, J., Lewis, S., Mustika, P., Adams, V., Chacon, A., Bos, M., Pressey, B., Kubiszewski, I., Costanza, B. (2014). The Great Barrier Reef World Heritage Area: its 'value' to residents and tourists Project 10-2 Socioeconomic systems and reef resilience. Final Report to the National Environmental Research Program. Reef and Rainforest Research Centre Limited, Cairns (68pp.).