

## 1. INTRODUCTION

This report describes in economic terms all the major human activities which occur within the Great Barrier Reef Region. The activities are grouped into the following 'sectors'; commercial fishing, recreational fishing from private motor boats, charter boat tourism, island resort tourism, island camping, and research. These sectors are described for the four economic regions into which the Great Barrier Reef Region may be classified. Basic descriptions of the sectors in terms of investment, employment and value of production are presented in section 2 of this report.

It is emphasised that at the time the researchers undertook the studies on which this volume is based, little data were available on the economic characteristics of Great Barrier Reef-based activities. One of the major products of this research was the provision of basic descriptive data on the extent and location of human activities in the Great Barrier Reef Region and these data were used by the GBRMPA in the marine park planning process.

Further understanding of the economic aspects of human activities is aided by analysis to determine the 'economic impact' of sectors. The methodology adopted for analysis, termed 'input-output analysis', is discussed in section 3. The interpretation of analysis is presented in a stepwise fashion in section 4 so that the interested reader may interpret the extensive results, which are presented in detail as Appendices.

The information derived from the analysis is most useful if examined in a comparative sense, and this is undertaken in section 5. Both multipliers, and the economic impact data calculated using the multipliers, are presented and contrasted according to sector and region. The economic impacts are described for 1981/82, thus forming a basis for monitoring changes in economic activity since that time.

## 1.1 The sectors

The Great Barrier Reef-based activities included in analysis are those which lie within the outer boundaries of the Great Barrier Reef Region. The Great Barrier Reef Region, shown on Figure 2, is defined by the Great Barrier Reef Marine Park Act 1975 and is the area which is being progressively planned (zoned) as a multiple use Marine Park.

The adjacent mainland is not included in the Great Barrier Reef Region although the economic activities within the Great Barrier Reef Region are closely associated with the mainland. Most of the islands within the outer boundaries of the Great Barrier Reef Region are not included in the Marine Park, however resort activities on these islands are included in the economic analysis because of their close association with the Great Barrier Reef Region. Hereafter the area will be referred to simply as the 'Reef' to emphasise that the Great Barrier Reef Region, plus islands lying within its outer boundaries, are included.

The Reef-based activities with which this report is concerned cover all major uses of the Reef. The activities have been grouped into the following 'sectors':

- Island Resorts
- Charter Boats (including day-trips)
- Commercial Fishing
- Recreational Fishing (from private boats)
- Island Camping
- Research

A brief description of each sector is given in section 2 of this report, including the more important data on each sector. The data and economic analysis present a 'baseline' as they represent the first such data collected and analysis undertaken for the Great Barrier Reef Marine Park.

## 1.2 The regions

The geographic and functional unit for this economic analysis is the economic region. A region may be any size from a city to a nation and beyond. For the purposes of the economic analysis of the Reef-based sectors, analysis was undertaken for local regions and the State of Queensland.

The four local economic regions chosen for analysis are shown on Figure 2. These regions are based on the Australian Bureau of Statistics' Statistical Divisions and were chosen because input-output tables are available for those Statistical Divisions. For the purpose of this analysis the Wide Bay - Burnett and Fitzroy Statistical Divisions are combined into one region and re-named the Rockhampton Region. The Mackay Statistical Division is renamed the Mackay Region, the Northern Statistical Division is renamed the Townsville Region and the Far Northern Statistical Division is renamed the Cairns Region (renaming was basically for convenience and to reflect the major economic focus in each region). Reef-based activities are considered to be a part of the adjacent mainland economic region as indicated on Figure 2.

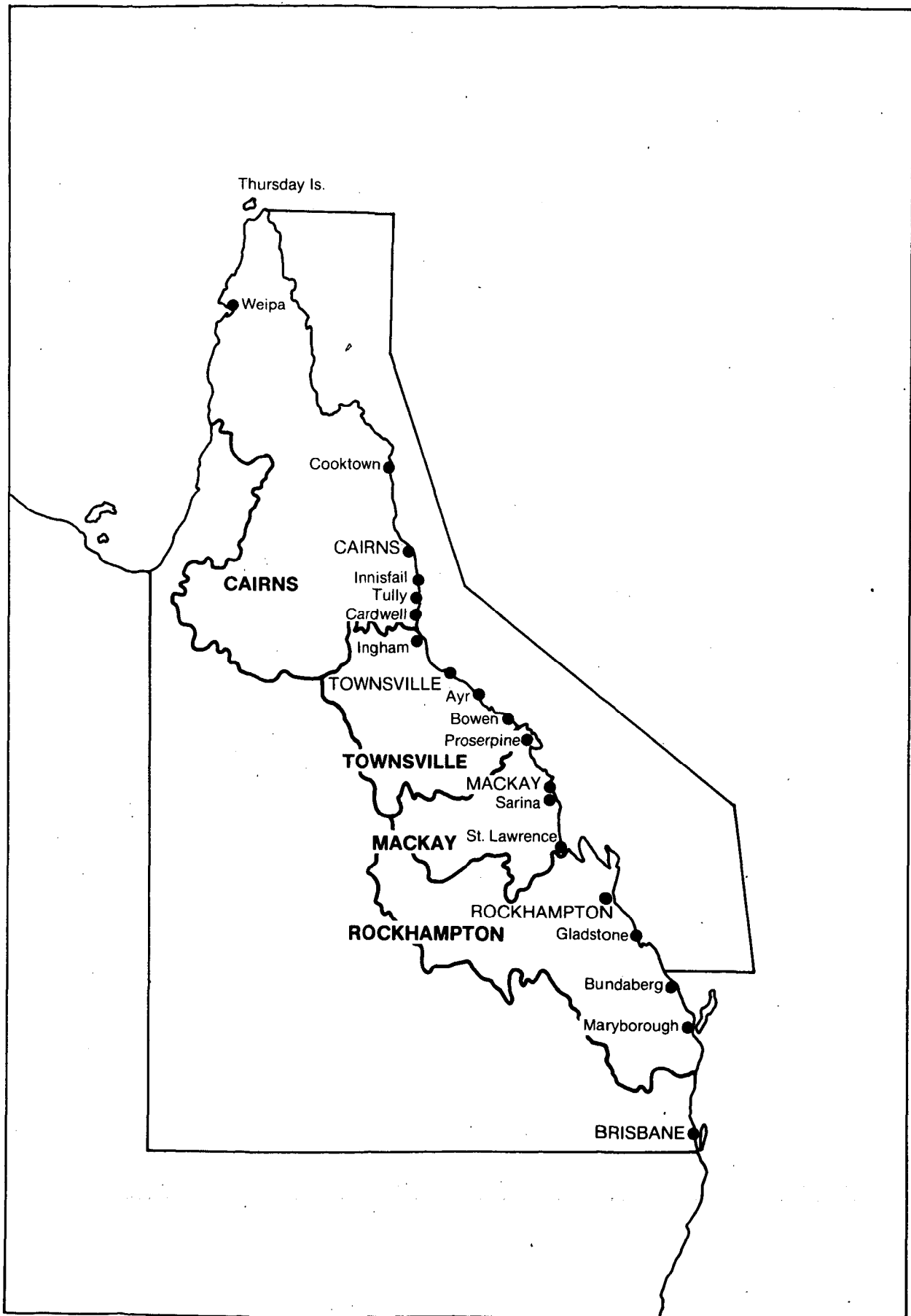
The Reef-based sectors for which economic analysis was undertaken are shown in the following figure (Figure 1).

Figure 1. Reef-based sectors by region.

| Sector               | Cairns<br>Region | Townsville<br>Region | Mackay<br>Region | Rockhampton<br>Region |
|----------------------|------------------|----------------------|------------------|-----------------------|
| Island Resorts       | X                | -                    | X                | X                     |
| Charter Boats        | X                | X                    | X                | X                     |
| Commercial Fishing   | X                | X                    | X                | X                     |
| Recreational Fishing | X                | X                    | X                | X                     |
| Island Camping       | -                | -                    | X                | X                     |
| Research             | -                | X                    | -                | -                     |

X = Sectors for which input-output analysis was undertaken.

Figure 2. Map of the Great Barrier Reef Region locating economic regions and Marine Park Sections.



### 1.3 The analysis

The particular economic analysis undertaken was 'input-output analysis'. This is one means of looking at the economic characteristics of the Reef-based sectors and provides information on the flow-on effects of an increase or decrease in output from a sector in terms of output, income and employment. This type of information can be of use in planning the Marine Park. Input-output analysis is considered a useful approach in monitoring the impact on economic activity which may be due to the Marine Park, over time. This approach to economic analysis is only one of several which produce different types of information that may be of use in decision making.

It needs to be stressed that this type of economic impact analysis is limited to consideration of the distribution of gross impacts and not the economic efficient allocation of resources. In other words, input-output analysis does not show whether a particular activity is generating net economic benefits or if a change in the activity will alter net economic benefits.

Input-output analysis provides information on the association of one sector with all other sectors in the economy and on impacts of economic growth or decline in one sector on the rest of the economy. For instance, in the case of commercial fishing, through input-output analysis, multipliers can be produced which estimate the effect of an increase or decrease of output from the sector (sales of fish products) on sector output, income and employment, not only for the commercial fishing sector but throughout the regional and state economies. Thus not only the 'direct effects' on a sector are measured but also 'flow-on' effects to the rest of the economy.

This type of information provided by input-output analysis is relevant to planning where economic impact is an element to be considered in decision making.

Where a planning decision restricts certain activities and a decrease in the value of production is predicted, the distribution of impacts throughout the region and the state can be quantified. On the other hand a planning decision may promote the growth of some activities. The likely increase in economic activity may be quantified using multipliers.

Reef-based sectors may be compared with each other in terms of distributional economic impact and this information is an important element of the economic information useful to decision-makers if competition between uses occurs and trade-offs are required. One particular advantage of the input-output technique as developed for these studies of the Reef Sectors is that 'non-commercial' activities such as recreational fishing and camping are able to be included and the economic impact of expenditure on those activities calculated.

Monitoring of the impact of a Marine Park plan on the regional and state economy over time may be undertaken using input-output analysis every five years or so. Such an exercise requires the collection of up to date figures on the value of production of a sector. This data may be analysed using input-output multipliers to calculate impact effects. Comparisons over time and between sectors may tell much about any economic effects of a zoning plan.