

# Appendix A: Methods

## A.1 Introduction

This study drew on secondary data and primary data collected through interviews and community consultations. The following sections provide descriptions of the data collection and analysis techniques used for this study.

## A.2 Interviews and Community Consultations

Between October 2007 and November 2008 a series of interviews were conducted with stakeholders in the Ranglands region. For the purpose of this study stakeholders included:

- Resource managers and local government authorities
- Representatives from NGOs and community organisations involved in the management of coastal and marine resources
- Recreational fishers
- Recreational divers
- Recreational boaters and yachters
- Surfers, windsurfers and kiteboarders
- Recreational coastal campers
- Commercial fishers (including those involved in aquaculture)
- Commercial tour operators
- Mining companies
- Port authorities

Interview participants were identified by virtue of their position and/ or through the snowball technique.

Interviews were semi-structured, with participants asked a series of questions centred on the following themes.

- Type, location and nature of participation in activity
- Major changes in the nature and location of activity over the last three decades and key reasons for changes
- Perceived probable future use trends of the marine and coastal environment
- Concerns regarding current activities and implications for the natural environment
- Concerns regarding expected probable future development trends and implications for the uses of the marine and coastal environment
- Perceived limitations of existing management frameworks, regulations and supporting infrastructure

Informal consultations were conducted with members of the coastal townships reviewed as part of this study. These consultations focused on eliciting information related to residents' perceptions about probable development scenarios and perceptions about potential threats to the coastal and marine environment due to human activities. The information gained through these community consultations was used during the validation stage of the scenario development.

## A.2 Secondary Data

Statistical data used in this study was collected from the following:

- Australian Bureau of Statistics' Census of Population and Housing. Data were drawn from the Time Series Profiles for Statistical Local Areas
- Department of Employment and Workplace Relations Small Area Labour Market Data
- Australian Migration Database
- Department of Industry and Resources and various mining companies' publications
- Port authorities, various publications
- Tourism Western Australia, various publications
- Department of Fisheries 'State of Fisheries' report, various editions
- Management plans, research documents and other documents from various government agencies

## A.3 Statistical Calculations

The following statistical calculations were used during this study:

### A.3.1 Location Quotient Analysis

Location quotient was used in this study to assess local economic and employment structures against those of the wider reference area (in this case the averaged trends from Australia). The statistic provides a measure of how specific attributes within the study area compare to 'expected' trends (those of the reference area).

An example of a location quotient used in this study to determine industry concentration is as follows:

$$LQ_{ir} = (E_{ir} / E_r) / (E_n / E_n)$$

Where  $E_{ir}$  equals employment in sector  $i$  in region  $r$ ;  $E_r$  equals total employment in region  $r$ ;  $E_n$  equals employment in sector  $i$  in the national 'reference' economy and,  $E_n$  equals employment in the national 'reference' economy.

Scores more than 1.0 indicate that there is a concentration of a given industry in an area and scores of less than 1.0 indicate an under representation of a given industry.

### A.3.2 Shannon's H Statistic

To identify trends in employment diversity Shannon's H Statistic was used. This statistic provides a measure of the dispersal of employment across sectors. This enables research to identify if an economy is becoming increasingly or decreasingly diversified. Shannon's H Statistic is expressed as

$$H = P_i \ln P_i$$

So that a value of 1.0 equals maximum dispersion across employment sectors and a value of 0 represents maximum concentration, H is restated as

$$H = H / \ln k$$

Where  $P_i$  equals the proportion of employment in a sector,  $k$  refers to the number of employment sectors and  $\ln$  is the natural logarithmic value.