THE UNIVERSITY OF WESTERN AUSTRALIA

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A SCENARIO ANALYSIS OF THE SOCIAL IMPACT OF THE WESTERN ROCK LOBSTER INDUSTRY MANAGEMENT OPTIONS ON FLEET HOSTING COMMUNITIES

(FRDC PROJECT NO. 2004/247)

FRDC FINAL REPORT
Part I – Main Report

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Veronica Huddleston
Matthew Tonts

Institute for Regional Development
The University of Western Australia
35 Stirling Highway, Crawley, WA 6009
http://www.ird.uwa.edu.au

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EXECUTIVE SUMMARY

The aim of this project was to consider the social impact of management change in the Western Rock Lobster Fishery and those communities hosting the fishing fleet. This is consistent with one of the core Fisheries Research and Development Corporation's priorities, namely that "it is important to understand social impacts of implementing fisheries management regimes", and that "ESD (ecologically sustainable development) will be pursued most effectively when the industry is economically strong and when social benefits are clear". The Western Rock Lobster Council, the Western Australian Department of Fisheries and a range of other stakeholders have also noted the importance of understanding the social dimensions of the fishery.

Using a social impact assessment methodology, this research project has examined the socio-cultural characteristics of rock lobster communities, focusing on the experiences of those directly involved in the industry, as well as other residents in the communities that host the rock lobster fleet. It also considers the impact of management changes on the social sustainability of the fishery, and the fleet hosting communities. The study involved a number of methods, including: i) the compilation and analysis of secondary statistical data and documentary evidence; ii) a postal survey of managed fishery license holders; iii) semi-structured interviews with 216 stakeholders; iv) a telephone survey of 1,033 residents of fleet hosting communities; and v) multi-stakeholder workshops in 12 communities. This represents one of the most comprehensive social assessments ever undertaken of a fishery, both in Australia and globally.

Most stakeholders within the Western Rock Lobster Fishery believe that the fishery remains carefully managed, in line with the principles of ecologically sustainable development. The Western Australian Department of Fisheries and other industry stakeholders including the Western Rock Lobster Council and the Rock Lobster Industry Advisory Council have sought not only to ensure the biological security of the resource, but also the economic and social sustainability of those engaged in the fishery. The industry remains an important component of the Western Australian economy. In terms of employment, around 1,400 people are engaged directly in the fishery. In addition, the industry contributes to employment in a range of ancillary activities, including processing, transport, boat building and repair, and through the provision of various public and private services.

Importantly, the report highlights that the Western Rock Lobster Fishery is more than simply an economic activity. In social terms, the fishery has long been an intrinsic part of the fabric of many coastal communities. Indeed, the origins of a large number of coastal localities can be traced to the activities of rock lobster fishers. This engagement in local social institutions and networks remains a key characteristic of the industry. For many fishers, their participation in the industry was linked as much to lifestyle choices as to economic objectives. The report found that there was a strong desire on the part of most fishers to remain in their communities if possible, and that the level of attachment to both the physical location and the social networks therein were very high. The levels of participation in sporting clubs, voluntary organisations and community events were also high, particularly in the communities north of Lancelin.

While the rock lobster industry is an important contributor to the economic and social makeup of coastal communities, it was also clear that it is an industry in a state of significant transition. Despite the industry, as a whole, being very profitable, individual operators have experienced an ongoing cost-price squeeze over the past decade. This has resulted in a steady decrease in the size of the rock lobster fleet, as smaller less efficient boats are replaced by larger, more efficient vessels. At the same time, the number of people directly engaged in the fishery has decreased over the past 15 years or so. Most of those involved in the industry do not draw income from other sources. In demographic terms, the age of the fishery was relatively young, particularly when compared with other primary industries, such as agriculture.

One of the processes associated with the economic (and technological) transformation of the industry is spatial reorganisation. Vessels, employment and ancillary industries are becoming increasingly concentrated in a smaller number of localities. The outcome is that both the economic base and the social base of the industry are shifting in geographical terms. In some communities, the industry is becoming less important; yet in other communities, it has remained stable or even increased.

The impact of these shifts is in part compensated for by the expansion of new industries in coastal areas. All of the communities that host the rock lobster fleet have experienced considerable population and economic growth over the past 15 years or so, largely as a result of increasing tourism activity and the in-migration of a more permanent population for a range of lifestyle reasons. As a consequence, there was a widespread recognition that, in relative terms, the rock lobster industry is less important today than it was in the past. This was not a view that the industry is unimportant, but simply a recognition that the economic and social base of most coastal communities had diversified.

In terms of management, the general consensus amongst both fishers and other community members was that the industry was well managed and in tune with the principles of ESD. Importantly, there was a recognition that the industry needed not simply to be biologically sustainable, but that economic and social dimensions were also important. Rock lobster fishers, particularly skippers with young families, indicated the need to have a good work-family balance as a feature of the fishery, in addition to efficiency and profitability. The preference for any management system will ultimately depend on individual fisher's personal preferences for lifestyle, community attachment and work-family balance, as well as personal circumstances in terms of level of indebtedness, age, and the type and scale of operations.

With regard to the specific regulatory regime, fishers generally supported maintaining the status quo, since it was familiar and seen as being effective in ensuring the sustainability of the fishery and industry more broadly. The input control system was also regarded as one that rewards hard work, knowledge and innovation with additional catch, and as one that helps those with investment loans and those who are leasing to pay off their debts and leasing obligations.

Quota systems were supported by less than a quarter of all fishers, largely on the grounds of uncertainty regarding its impact on the beach price, and increased compliance and enforcement costs that will ultimately be borne by the fishers. There was also a perception that the quota system will reward less efficient catchers and that it will put an end to family-based fishing operations in favour of a more investor-oriented type of operations.

The Western Rock Lobster Fishery is likely to continue to experience significant economic and social change into the future, regardless of management arrangements. Prior to this study, no baseline data existed on the social characteristics of the industry against which to assess the impact of change. The compilation of a detailed database of the social, cultural and economic attributes of rock lobster fishers and their communities offers an opportunity to monitor the nature and impact of changes over a longer timescale. On a global scale, there are only a few longitudinal studies or monitoring programs that exist with regard to the social and socio-economic characteristics of fishers and their communities. In line with the principles of ESD, this report sets the groundwork for a longer term monitoring program which has the potential to make a significant contribution to policy and management. In addition, the extensive nature of the consultation undertaken by the project was viewed by industry stakeholders as an extremely positive step towards a more open, holistic and transparent consultation process within the rock lobster industry.

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LIST OF ACRONYMS

ABS	Australian Bureau of Statistics
ADC	Aquaculture Development Council
ANZSIC	Australian and New Zealand Standard Industrial Classification
CCE	Centre for Community Excellence
ERA	Economic Research Associates Pty Ltd
ESD	Ecologically Sustainable Development
FGD	Focus Group Discussion
FRDC	Fisheries Research and Development Corporation
FRMA	Fish Resources Management Act
GFC	Geraldton Fishermen's Cooperative
GPS	Global Positioning System
IRD	Institute for Regional Development
ITE	Individual Transferable Effort
ITQ	Individual Transferable Quota
MFL	Managed Fishery License
MSC	Marine Stewardship Council
NCP	National Competition Policy
OECD	Organisation for Economic Cooperation and Development
PFA	Professional Fishermen's Association
RFAC	Recreational Fishing Advisory Committee
RLIAC	Rock Lobster Industry Advisory Committee
SARS	Severe Acute Respiratory Syndrome
SIA	Social Impact Assessment
SLED	Sea Lion Exclusion Device
SPSS	Statistical Package for the Social Sciences
SRG	Scientific Reference Group
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TRS	Total Resilience Score
WA	Western Australia
WACOSS	Western Australian Council of Social Service Inc.
WAFIC	Western Australian Fishing Industry Council
WRL	Western Rock Lobster
WRLC	Western Rock Lobster Council
WRLDA	Western Rock Lobster Development Association
WRLF	Western Rock Lobster Fishery

1.0 INTRODUCTION

1.1 BACKGROUND OF THE PROJECT

> *The Western Rock Lobster Fishery is currently ecologically sustainable and profitable, however, it is facing unprecedented economic challenges both in the short- and long-term due to rising costs (e.g. fuel, bait, labour) and reduced prices for the catch (a decline of about 20 percent in real terms over the last 10 years). The current economic conditions and the recent management process to decide on the fishing effort reduction package for 2005-06 has raised considerable interest among fishers with regard to how the current effort control management system would compare to other management systems, particularly individual transferable quotas* (Department of Fisheries Western Australia, 2006b:7).

In April 2002, the Western Australian Government committed to review the management arrangements that are in place for the West Coast Rock Lobster Managed Fishery in response to the Commonwealth Government's National Competition Policy (NCP).[1] The specific Government response as outlined in the Fish Resources Management Act 1994 Summary of Outcomes was:

> *The current input based management regime for the Western Rock Lobster Fishery remain in place until at least December 2006 with the Department of Fisheries and the Rock Lobster Industry Advisory Committee to review and quantify any further efficiency gains from additional changes to the current regulatory regime including the costs and risks of management failure, over the next 2-3 years* (<http://www.fish.wa.gov.au/docs/pub/ResponseNatCompPolicy/page 02.php?0305> cited 06 March 2007).

While the NCP provided the initial impetus for the review, there was also increasing recognition among fishery managers and industry stakeholders of the need to conduct the review within an Ecologically Sustainable Development (ESD) framework.[2] This would

[1] A major evaluation of future management options was undertaken in 1994 in view of continued concerns regarding over-fishing. The focus of the evaluation was on the desirability of continuing to use input controls (i.e. controls on pots, vessels, seasons, etc.), the potential for using output controls (quotas), and the optimum size fleet and its associated implications. At that time, it was realised that control through a total allowable catch (TAC) or individual transferable quota (ITQ) system would present many new issues, including the method of determining the TAC, allocation of the TAC between zones, the units of quota to be adopted, method of allocation of quota, monitoring of the total and individual catch in the zones, and effective enforcement (Gray, 1999:255).

[2] Australia's National Strategy for Ecologically Sustainable Development (1992) defined ESD as "using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased." It is a concept that requires the integrated consideration of economic, social and environmental implications in making decisions and a long-term perspective when taking actions (for details, please see http://www.environment.gov.au/esd).

ensure that the fishery that was awarded the Marine Stewardship Council (MSC) certification in 1999, remains well managed and committed to ESD principles.[3]

The industry commitment to ESD was manifested in the actions it took to ensure that it fully understands and takes into account not only the biological and environmental aspects of the fishery, but also the economic and social dimensions of management. The management review process also clearly specified that in the context of ESD, the decision on which system will be adopted will be based on the management arrangement that "provides the greatest incentives and opportunity for growth in economic return for all sectors of the rock lobster industry and the Western Australian economy in general; and in the context of providing the best socio-economic benefit to the Western Australian community, [one that] encourages the maintenance and development of regional communities" (Department of Fisheries, 2006:93).

In April 2004, the Department of Fisheries engaged the services of Economic Research Associates Pty Ltd (ERA) to produce a report that would provide detailed results of the analysis of the costs and benefits of alternative fisheries management approaches using an interactive and integrated cost-benefit model (Request for Tender No. 604, Department of Treasury and Finance WA, 2004:19).

As a parallel activity and with the support of both Western Australian fishers and industry representatives, the Institute for Regional Development (IRD) of The University of Western Australia prepared a project proposal to address the need for a comprehensive social impact analysis of WRLF management practices for submission to the Fisheries Research and Development Corporation (FRDC).[4] Such analysis would inform managers and industry on the likely social consequences of changes to the existing management rules and practices (particularly a change from input to output controls) on the communities hosting the Western Rock Lobster fleet. The proposal also took into consideration one of the key elements of FRDC research priorities, namely that "it is important to understand social impacts of implementing fisheries management regimes… [and] ESD will be pursued most effectively when the industry is economically strong and when social benefits are clear" (FRDC Research and Development Plan, 2000-2005). The IRD received an FRDC grant for a three-year research project in October 2004.

1.2 OBJECTIVES AND SCOPE OF THE PROJECT

The research project has three key objectives:

1. To assist in the formulation of policies and strategies concerning the management arrangements in the WRL fishery;

2. To establish a database of quantitative and qualitative social indicators that will enable an integrated socio-economic assessment of alternative management options; and

[3] The MSC certification is provided to well-managed and sustainable fisheries based on the assessment of an international group of experts using the MSC standard principles and criteria (for details, please see <http://eng.msc.org>).

[4] This follows on a report prepared by Veronica Huddleston and Neil Drew for the Western Rock Lobster Council (WRLC) in June 2003 that recommended a more intensive data gathering to capture key social and economic indicators across rock lobster hosting communities.

3. To contribute to the development of a framework and predictive sustainability model that integrates social, economic and environmental parameters, to be used in predicting wider effects of management changes on host communities.

Consultations with an extensive range of industry, government and community stakeholders during the course of this project has confirmed the need for the provision of social research for a more informed decision-making process on future management options for the Western Rock Lobster Fishery. Towards this end, the focus of the research was on the most likely social consequences of any management change in the fishery and the collection of data that enabled tracking these consequences.

The various data collection techniques adopted for the project reflected a strong commitment of the project team to community engagement, both within the community of rock lobster fishers ('community of interest') and the geographical communities along the Western Australian coast that host the fishing fleet ('communities of location').[5] While the focus of this project has been the catching sector of the rock lobster industry, the project team also interviewed the management and workers of processing companies, especially in those communities where the processing factory is still, or had once been, a major source of employment for the community, such as Geraldton, Fremantle, Jurien Bay and Cervantes. Rock lobster fishers supply their catch directly to processors, with some fishers supplying their catch to the same factory all of their working lives. Price is always a point of conflict between fishers and processors, with some fishers believing that the price is fixed and that they are forcibly manipulated into accepting low prices (Crombie, 2001:220-221). This sentiment of fishers is best summed up in a caricature that once appeared in the Geraldton Fishermen's Cooperative Newsletter (n.d.) (Figure 1).

Crombie (2001) notes that within the catching sector, fishers fall under the following categories:

1. *Owners:* These are fishers who own the vessel as well as the managed fishery license. In some cases, the licenses belong to a family company.

2. *Fisher Investors:* These are fishers who have leased out their pots, or who have not sold all of their pot entitlements when they left the industry.[6]

3. *Financial Investors:* These are individuals who are not traditionally fishers themselves, e.g. local business people who have bought out pots that they lease out to existing fishers.

[5] As noted by Black (2005:20-21), the term 'community' has been the subject of much debate, with the use of the term varying greatly from one context to another. 'Communities of location' refer to a collectivity of people engaged in social interaction within a geographic area and having goals or norms in common while 'communities of interest' apply to categories of people who engage in a particular purpose, task or function together, or who have some form of identity in common, though not necessarily associated with the same locality.

[6] Fishers who have sold their entire license retain a pot holding that is used as an investment. By retaining pots, the fisher is able to maintain contact within the industry and remain a part of it. If the fisher wishes to resume fishing, the remaining pot entitlement can be built upon through leasing, purchasing or creating a partnership (Crombie, 2001:221).

(Source: Geraldton Fishermen's Cooperative, n.d.; Reprinted with permission of GFC.)

Figure 1: The Chase for the Almighty Dollar

The actual fishing is done by:

1. *Owner-Operators:* As owners who skipper their vessels, they have total control over what occurs on board their vessels and are able to openly voice their opinion within the industry.

2. *Skippers:* Those who are hired to operate the boat and decide where the vessels will fish, the type of bait to use, and the style of pots and other fishing gear to use. Hired skippers operate a boat and pot license owned by somebody else, in return for a percentage of the catch. Hired skippers maintain their employment based on their ability to catch at a rate equal to or above the fleet average.

3. *Lessees or Lease Fishers:* These are skippers who already own their vessel or are paying them off, and who lease the pot licenses that are worked. The pots are leased from individual owners or through agents, including processing companies. Because the lease price is required to be paid up-front or by instalment throughout the season, the profit margins within which they operate is small. In view of this, they must catch above the fleet average to remain solvent.

4. *Deckhands:* Colloquially referred to as deckies, they make up the bulk of the fishing industry workforce. They perform the majority of the physical labour required in return for a percentage of the value of the catch. Deckies are hired to work usually upon the recommendation of a patron. Their work entails cutting up bait, running ropes, retrieving and resetting the pots, unloading the catch, washing the deck and fixing the gear.

Nineteen communities (communities of location) spread across the three fishing zones, were included in the project (Figure 2). The history of the fishery (see Gray, 1999) and recent developments in the mobility of the fleet led to the choice of these communities. In this regard, the following points are noteworthy:

- The development of the rock lobster industry underpinned strong economic and employment growth in established centres such as Fremantle and Geraldton and smaller villages such as Dongara;

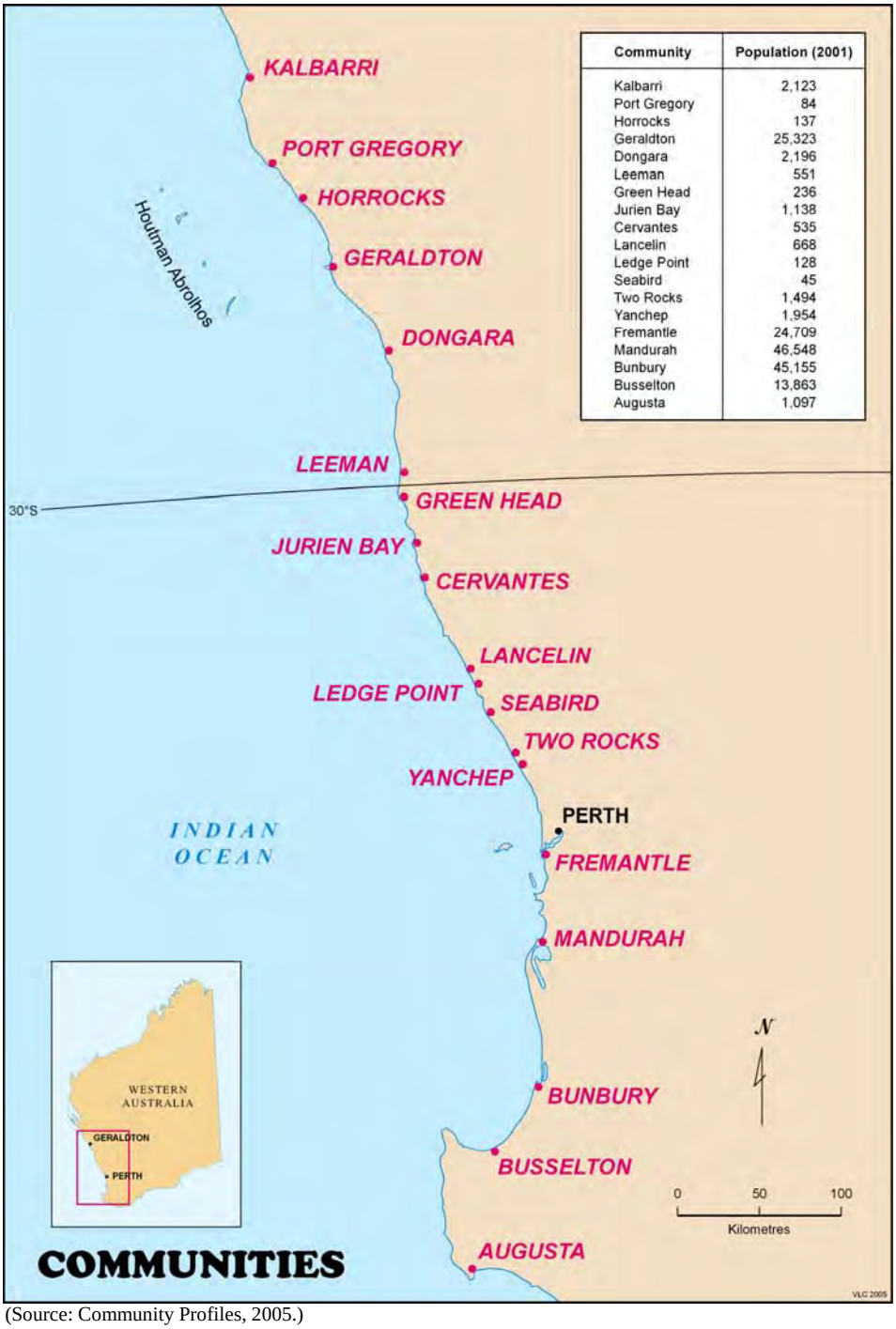
- The establishment of new settlements adjacent to suitable anchorages such as Two Rocks, Cervantes, Lancelin, Jurien Bay, Leeman and Kalbarri were the result of the development of the rock lobster industry. The construction of roads and service facilities for the rock lobster industry provided the basic infrastructure for the further development of both the fishery and the towns;

- The expansion of the fishery in the late 1940s resulted in the expansion of the Fremantle fleet northward to the small anchorages of Yanchep and Ledge Point, and the spread of the Geraldton fleet along the coast from African Reef in the south to Port Gregory in the north;

- In 1949, the Fisheries Department designated strategic areas as sanctuaries, especially where inaccessible reef areas and the climatic regime provided a natural sanctuary for rock lobsters. In 1950, the southern limit of this area was set at 33°S so that fishers could continue to explore the potential for rock lobsters in the waters between Mandurah and Bunbury; and

- Although the Capes Region has not been historically targeted by large numbers of rock lobster fishers, there was a relatively large number of commercial fishing vessels in the South West during the 2001/02 and 2003/04 fishing seasons. This was due to the fact that the life cycle and environmental variables result in rock lobster catches that occur on a boom and bust cycle.[7]

[7] The Capes Region refers to the area between Cape Naturaliste and Cape Leeuwin in the south, including Hamelin Bay and Cowaramup Bay. Due to variations in climate, weather patterns (such as predation and food availability), and external factors (such as fishing pressure), variability in the rock lobster population is high. Consequently, the number of puerulus returning to the coast each season is not stable. This variation has been accounted for by the managers and scientists of the Fisheries Department and is included in their prediction of the future catch. However, large scale patterns, such as changes in the Southern Oscillation Index which are linked to the El Nino phenomenon also affect the Western Rock Lobster fishery, by changing the strength of the Leeuwin current, and consequently affecting the recruitment of puerulus back into the coastal population. Events such as this occur on a cyclical basis, with El Nino events occurring roughly every 4-7 years. These events also alter the strength and duration of the Leeuwin Current (the predominant current running southwards down the WA coastline which is also responsible for bringing puerulus recruits back to WA's coastal areas), and researchers have developed a method for determining the strength of the Leeuwin current using sea levels. When the Leeuwin current is stronger, such as during La Nina years, more puerulus are recruited back into WA's populations along the coast (including towards the southern limits of their distribution) and this consequently increases the number of recruits into the Capes Region. Following a few years of growth in the colder, nutrient rich waters of WA's south western coast, these lobsters become a prime target for the highly mobile commercial fishing fleet, as occurred in the Capes Region in the 2002/03 season. This seasonality of the Leeuwin Current also explains why there is a sudden increase in commercial activity in the Capes Region in some years followed by reduced activity for a few seasons (*Western Rock Lobster Industry Code of Conduct for Fishers Operating between Cape Naturaliste and Cape Leeuwin*, WRLC, 2003).



(Source: Community Profiles, 2005.)

Figure 2: Communities Hosting the Western Rock Lobster Fleet

1.3 INDUSTRY AND COMMUNITY ENGAGEMENT AND CONSULTATIVE PROCESSES

A continual process of engagement with both industry and community stakeholders was undertaken by the members of the project team during the course of the project. These took the form of group meetings, one-on-one meetings, and formal presentations. These forums, listed in Appendix 1, were important means of data collection and validation as well as principal mechanisms for communicating the findings of the project to specific audiences.

As part of its commitment to engage in communication and extension with all stakeholders, the project team provided periodic status reports to key industry stakeholders, including the Department of Fisheries Western Australia, the Western Rock Lobster Council, the Rock Lobster Industry Advisory Council, and the Professional Fishermen's Associations (PFAs). Attending the meetings and special events of the various PFAs enabled the project team to maintain contact with, and get to know other, fishers and community members; schedule the semi-structured interviews; provide updates on the project; and keep abreast of issues that fishers saw as important and raised during these meetings (see Box 1). As part of networking and data collection, the project team attended the annual Rock Lobster Coastal Tours in 2004, 2005 and 2006. During the Annual Rock Lobster Coastal Tour in early 2006, the initial findings of the social assessment of coastal communities were presented by the co-investigator, Veronica Huddleston.

Box 1: Annual Fishermen's Good Luck Drink, Leeman, November 14, 2004

(Source: Veronica Huddleston, 2004.)

The rock lobster fishers of Leeman, their families and friends gather at the beginning of the rock lobster season for their annual Good Luck Drink at the Leeman Country Club. In their 2004 gathering, Harold Wass, then President of the Leeman PFA, made special mention of the IRD research project. After outlining the importance of having fishers' inputs into the study of alternative management arrangements in the fishery, he encouraged everyone to cooperate and participate in the interviews. After thanking the sponsors for the event, he wished every fisher in Leeman "safe sailing and a productive rock lobster season abiding by the rules and regulations of the industry."

The individual members of the project team attended various community events as observers. These included the Annual Blessings of the Fleet in Two Rocks (2004), Jurien Bay (2004 and 2006), and Mandurah (2005). In an observer capacity, the co-investigator attended community sports events such as the Corporate Bowls in Jurien Bay and special events such as the Lancelin Coastal Day and Crayfish and Wine Tasting Festival in 2006 and the Annual Crab Festivals in Mandurah in 2005 and 2006.

A Reference Group composed of individuals from the academe, industry and government was established to provide advice to the project. An associate of ERA is a member of the Reference Group, providing a link with the bio-economic model being developed by ERA. Appendix 2 sets out the terms of reference and the composition of the Reference Group.

In addition to the Reference Group, an Expert Forum was held in November 2006. The one-day reflection and validation workshop was undertaken to solicit comments on the documents produced by the project, draw out key conclusions based on the data gathered to date, and contribute to the development of a predictive model. The selection of the participants to the Expert Forum was based on the availability and willingness for involvement of those who have been initially approached by the project team during the project preparation and approval phase and the need for multi-representation of expertise from a range of social science, economic and ecological disciplines.[8] Appendix 3 provides the details of the composition and terms of reference for the Expert Forum.

1.4 STRUCTURE OF THE REPORT

In this report:

Chapter 1 presents the background of the project, highlighting the commitment of fishery managers and industry stakeholders towards an ecologically sustainable Western Rock Lobster Fishery. It then outlines the objectives and scope of the project. The chapter also identifies the composition of the fishing fleet and the coastal communities included in the study.

Chapter 2 describes the research design and methodology for primary and secondary data collection and analysis. It also outlines the processes involved in the social impact assessment framework adopted for the research project.

Chapter 3 provides the history and background of the rock lobster fishery and the management arrangements that govern it. The chapter also presents the characteristics of the fishing fleet and the hosting communities.

Chapter 4 considers the social impacts associated with changing management options in the rock lobster fishery. It considers factors such as economic, social and cultural drivers of change, and outlines a framework to help conceptualise fishers' decision-making processes in relation to industry and social change.

Chapter 5 discusses the nature of sustainability in the rock lobster fishery. It pays particular attention to social sustainability, and the broader community level impacts of change. It also emphasises the need to understand the likely spatial variations in social impact. The chapter concludes by outlining a framework for understanding and promoting social sustainability in the fishery.

Chapter 6 summarises the key conclusions of the study, and provides a series of recommendations.

Accompanying this main report is a companion report entitled *Profiles of Communities Hosting the WRL Fleet*. This Part II report sets out the selection process for the identification of the communities included in the study and provides the structure and content of the detailed community profiles prepared for the project.

[8] As outlined in the FRDC project document, experts from a range of social science and economic disciplines, such as community psychology, sociology, human geography, anthropology, resource economics and ecosystem health will be invited to participate in the Expert Forum. Experts will be selected from all three areas of the triple bottom line – environmental, economic and social.

2.0 RESEARCH DESIGN AND METHODOLOGY

2.1 SOCIAL IMPACT ASSESSMENT FRAMEWORK

> *Consideration of social impacts is an integral part of the NCP review process. Social impacts are anything that will change a community's cultural traditions or alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally cope as members of society. A social impact assessment will identify the nature and distribution of the human costs and benefits of the alternative* (Queensland Treasury, 1999:12).

The design and conduct of this research project is based on a Social Impact Assessment (SIA) framework. SIA is a process and an approach to understanding social and economic change, which has broad application in any setting where the intent is to understand the dynamics of change and its effect on both individuals and groups in society. Broadly speaking, SIA is a methodology for systematically assessing and predicting the social and economic consequences of projects, programs and policies on people and their communities.

SIA is an integrated and iterative methodology that involves a number of basic processes. Consultation with stakeholders is an important element in, and an integral part of, SIA. As outlined by the Queensland Treasury (1999), the basic SIA process involves:

1. *Scoping:* This is the stage of identifying potentially impacted groups and individuals as well as their issues of concern and the nature of the likely impact of what might happen to whom. Ideally, this process involves consultation with potentially impacted groups and individuals.

2. *Profiling:* This involves the identification of the nature of the groups and individuals likely to be impacted in terms of whether they have the capacity to cope with the potential social impacts.

3. *Prediction:* This is the determination of the magnitude and effect the potential impacts might have on the groups or individuals likely to be impacted, taking into account their capacity to cope and their issues of concern.

4. *Assessment:* This entails determining whether the impacts are significant given the priorities, policies and programs of Government.

5. *Evaluation:* This involves looking at alternative ways to meet the objectives of the policy without causing the identified potential impacts.

6. *Management, mitigation, monitoring and review:* This entails provision of answers to the question of how the potential impacts can best be managed, and should also identify means of ongoing assessment and mitigation.

7. *Recommendation:* This requires the provision of strategies and actions that will produce the best outcomes for the groups or individuals potentially impacted by the identified change(s).

2.2 DATA COLLECTION METHODS AND TECHNIQUES

> *Everyone uses information to make decisions about the future. If our information is accurate, we have a high probability of making a good decision. If our information is inaccurate, our ability to make a correct decision is diminished. Better information usually leads to better decisions* (Walonick, 2003:n.p.)

The first two stages of scoping (a preliminary investigation to identify key issues and stakeholders) and profiling (a form of baseline study describing the initial conditions) are crucial to a comprehensive SIA and require a solid foundation of data. In this regard, a range of standard social science data collection techniques were utilised during the project to ensure a systematic identification of issues and the analysis of data across geographical boundaries. Walonick (2003) identifies six common ways of getting information, namely: literature searches, talking with people, focus groups, personal interviews, telephone surveys, and mail surveys. In addition, the research also employed observational research throughout the project.

2.2.1 Literature Search and Secondary Sources

An extensive literature review of government, academic, institutional and internet sources was undertaken for this research project. Among the topics and areas included in the review were:

1. Relevant studies on the development of the contextual and methodological frameworks linking changes in fishery management arrangements with socio-economic adjustments at the community level;

2. Concerns and issues faced as well as changes experienced by other fisheries in Australia and overseas involving shifts in management arrangements; and

3. Community histories, issues and dynamics on the development of the Western Rock Lobster Fishery in the 19 communities included in the study.

Secondary sources of data were also identified and used in the research project. The data on demography, labour force, income and employment were derived from the 1991, 1996 and 2001 Census of Population and Housing gathered by the Australian Bureau of Statistics (ABS). While there were limitations on the use of the Census data given the rapid changes affecting most coastal communities in recent years, it nevertheless provided a basis of comparative analysis for the communities included in the study.

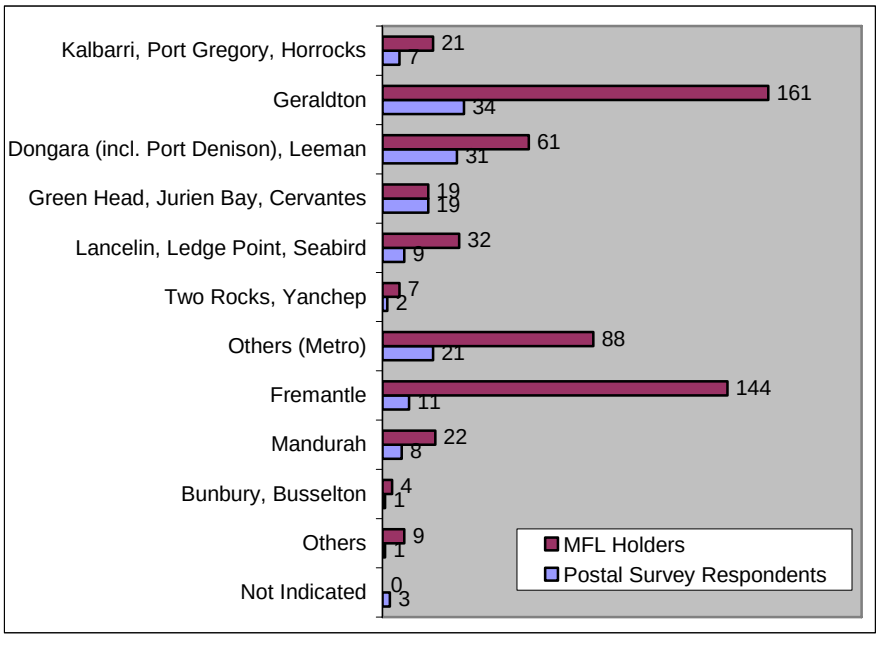
The monthly data compiled by the Department of Fisheries in Western Australia provided information on catch volume and catch effort (number of pot lifts), number of boats and number of persons directly engaged in the fishery from 1989/90 to 2005/06. Information on the marine facilities in the coastal communities included in the study utilised the data from the Department for Planning and Infrastructure.

2.2.2 Postal Survey of Managed Fishery License Holders

A postal survey of fishery license holders was conducted in 2004 using the list of WRLF managed fishery license (MFL) holders as of April 7, 2004, provided by the Department of Fisheries' Licensing Office. This list indicated the license number, the company or name of the license holder, and the postal address of the 601 license holders. Those with multiple licenses were identified and only one questionnaire was forwarded to these license holders.

The questionnaire that was used in the postal survey was pre-tested with eight rock lobster fishers in Jurien Bay and Cervantes in March 2004. It contained questions on the individual and family characteristics, their reasons for entry into the rock lobster fishery, their fishing operations and degree of mobility, and their level of involvement in community activities. There were also questions posed to determine their perceptions on the past and present management arrangements adopted in the fishery (including the most recent lifting of the 150 pot rule); and their thinking on the introduction of the quota system. The complete questionnaire mailed out to MFL holders is in Appendix 4.

Of the total 568 questionnaires mailed out to license holders, 93 completed questionnaires were received. An additional 54 responses were received after a follow-up letter, increasing the total response rate to the postal survey to 26%. Figure 3 shows the number of MFL holders and postal survey respondents grouped based on the postal address locations. The response rate of MFL holders whose postal address is in the communities of the northern zone of the fishery (from Leeman northward to Kalbarri) is 30%, which is higher than the 22% response rate of MFL holders with postal addresses in the southern zone (from Leeman southward to Augusta).[9] The high response rate of MFL holders in Green Head, Jurien Bay and Cervantes could be attributed to the close follow-up undertaken by the co-investigator during her fieldwork in the area.



(Source of Data: Postal Survey, 2005.)

Figure 3: Number of Respondents vis-à-vis Total MFL Holders, by Postal Address

[9] When a social survey is conducted whether by structured interviews or by self-completion questionnaire, it is invariably the case that some people who are in the sample refuse to participate. The response rate is, therefore, the percentage of a sample that does, in fact, agree to participate (Bryman, 2004:98).

The co-investigator received positive feedback during the postal survey that indicated overall fishers' support for the study investigating the effects of the rock lobster management arrangements on the fishery's family business tradition, on families and on the communities hosting the lobster fleets.

2.2.3 Personal Interviews

Two hundred and sixteen semi-structured interviews were undertaken as part of this project, the bulk of which were completed in late 2004 and early 2005. They formed an important part of the research and provided data and information on stakeholders' perceptions and thoughts on the issues facing the fishery and their communities, as well as the fishers' perceptions on management arrangements under consideration in the rock lobster fishery.[10]

Interviews were conducted with various stakeholders in the catching sector, including owner-operators, owners, skippers, lease fishers, deckhands, and investors in the fishery. Other stakeholders were also interviewed, including fishers' wives, local community residents, business groups, and local government officials. The interviewees were selected on the basis of the co-investigator's previous knowledge of people in the WRL fishery and the use of snowball sampling.[11] The interviews were conducted face-to-face, were tape-recorded when permission was granted, and ranged from thirty minutes to two hours.[12] Most of the interviews took place at the interviewees' residence or place of work. In all cases, the interviewees were provided a brief background on the research project and the type of questions to be covered during the interview. All the taped interviews were transcribed and content-analysed, to ascertain any emerging patterns and common themes on responses to specific questions.[13]

Efforts were directed at ensuring interviewees represented a good cross-section of stakeholders from all the communities. Table 1 provides a breakdown of the interviewees by community and stakeholder classification, while Figure 4 presents the breakdown of interviewees from the fishing community.

The guide questions used during the interviews for specific stakeholders can be found in Appendix 5. They include questions on the most valued aspects of the community and the contribution of the WRLF to community life from a social, cultural and economic perspective.

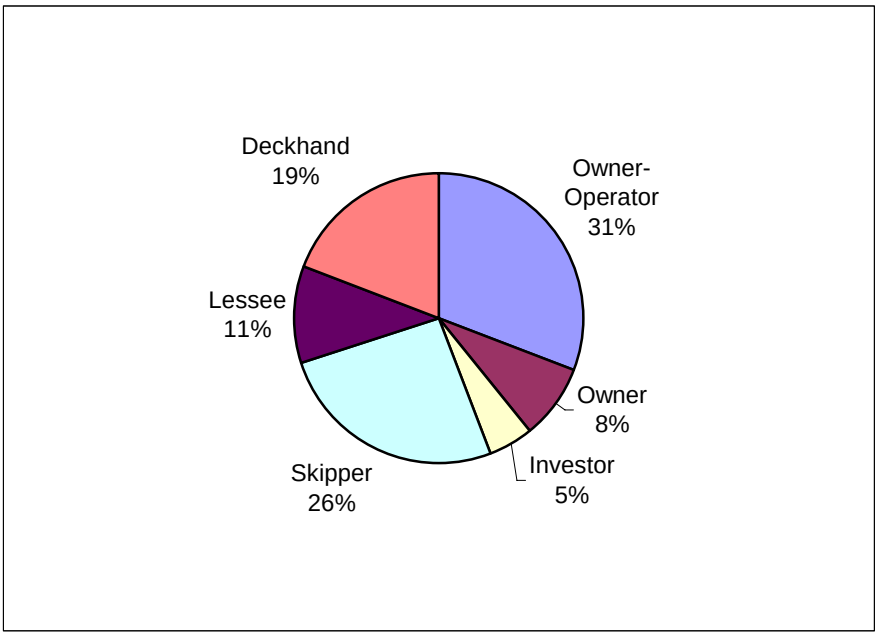
[10] At the time the project was approved, there were three management arrangements identified by the Rock Lobster Industry Advisory Council as outlined in the Western Rock Lobster Fishery newsletter dated September 2004. These were: (a) current management system or status quo (one where there are limits on the number of pots that can be fished in each zone and that provides a range of biological controls and a limited season); (b) an individually transferable effort management system (an input system of management that would not have an off season but rather unitise the fishery's capacity, both with respect to number of days and number of pots); and (c) an individually transferable quota system (a system whereby units have a value in kilograms of lobster that can be taken and the unit value equates to a Total Allowable Commercial Catch and biological controls remain to ensure the breeding stock is not selectively targeted). The interviews conducted with rock lobster fishers included questions relating to these three alternatives.

[11] With this approach to sampling, the researcher makes initial contact with a small group of people who are relevant to the research topic and then uses these to establish contacts with others (Bryman, 2004:100).

[12] Of the total interviews, five per cent or 11 interviews were conducted over the telephone in 2006.

[13] Detailed notes were prepared by the interviewers for those interviews that were not tape-recorded because the interviewee did not consent to having the conversation tape-recorded or the situation did not make it possible to record the interview.

Table 1: Interviewees by Community							
		Classification of Interviewees					
Place of Residence	***Number of Interviewees***	***Fishers***	***Fishers' Spouses***	***Processors and Depot Workers***	***Community Residents***	***Business/ Community Groups***	***Local Officials***
Kalbarri, Port Gregory, Horrocks	23	18	3	--	0	2	--
Geraldton	30	18	6	3	0	2	1
Dongara (incl. Port Denison), Leeman	37	26	5	--	1	2	3
Green Head, Jurien Bay, Cervantes	59	21	6	6	6	14	6
Lancelin, Ledge Point, Seabird	25	13	2	--	0	10	--
Two Rocks, Yanchep	12	6	1	--	3	2	--
Others (Metro)	8	6	1	1	0	--	--
Fremantle	7	4	--	3	--	--	--
Mandurah	9	6	1	--	0	--	2
Bunbury, Busselton, Augusta	6	2	--	--	--	2	2
Total Interviewees	216	120	25	13	10	34	14
(Source of Data: Personal Interviews, 2006.)							



(Source of Data: Personal Interviews, 2006.)

Figure 4: Interviewees from the Rock Lobster Fishing Community

2.2.4 Telephone Survey of Community Residents

A telephone survey was conducted between November 17 and December 19, 2005, targeting residents in all of the nineteen communities included in the research project. A target of 100 respondents for each community or group of communities was set. Smaller communities were grouped to provide a large enough sample in each area for valid statistical comparison and analysis. In grouping these smaller communities, the project team took into account the fishing zones in the fishery as well as local administrative boundaries. To determine the representative sample size of interviewees in each of the grouped communities, the proportion of the population size of the community in 2001 to the total population size of the grouped communities was used. Table 2 presents the number of interviews undertaken per community.

Table 2: Number of Telephone Interviews Collected by Community

	Area Grouping		***Town***	
1	Kalbarri, Port Gregory Horrocks	100	Kalbarri Port Gregory Horrocks	82 5 13
2	Geraldton	117	Geraldton	117
3	Dongara (incl. Port Denison) Leeman	106	Dongara Port Denison Leeman	61 26 19
4	Green Head, Jurien Bay Cervantes	126	Green Head Jurien Bay Cervantes	16 83 27
5	Lancelin, Ledge Point, Seabird	73	Lancelin Ledge Point Seabird	42 23 8
6	Two Rocks, Yanchep	84	Two Rocks Yanchep	41 43
7	Fremantle	113	Fremantle	113
8	Mandurah	110	Mandurah	110
9	Bunbury	103	Bunbury	103
10	Busselton, Augusta	101	Busselton Augusta	78 23
	Total	**1,033**	**Total**	**1,033**

(Source of Data: Telephone Survey, 2006.)

Only those aged 18 years and over were included in the community survey. The quota sample of community respondents was also divided into strata in terms of gender and age using Census data.

Up to three callbacks were made to secure a representative sample. In the smaller communities, more than three callbacks were made in order to maximise the number of interviews obtained. The number of males and females in each age group from each community was reviewed after each day of data collection. Subsequent data collection aimed to collect interviews in categories that were low and to maximise the response rate from smaller communities.

The questionnaire used in the telephone survey was developed by the Institute for Regional Development and approved by The University of Western Australia's Human Ethics Committee. In developing the questionnaire, the investigators incorporated questions on the population characteristics and community and social structures to generate information on individual wellbeing, community integration and participation, residents' attitudes toward the community and their perceptions on issues relating to the WRL industry.

Twenty-six interviews were conducted to pilot-test the questionnaire, resulting in some minor revisions to improve the clarity of some questions. The questionnaire was a fifteen minute interview and included forced choice and open-ended questions (see Appendix 6 for the detailed questionnaire used in the telephone interview).

Five per cent of the total questionnaires generated during the interview were audited as part of quality control procedures. This process involved re-interviewing a randomly selected number of respondents from the different communities and re-asking a small sub-set of questions to ensure that the data has been collected accurately.

2.2.5 Focus Group Discussions

Focus group discussions were used, "to explore people's beliefs, attitudes and opinions" (Dawson, Manderson and Tallo, 1993:n.p.). They are defined as a "carefully planned discussion designed to obtain perceptions in a defined area of interest in a permissive, non-threatening environment" (Kreuger, 1988, p.18, cited in Lewis, 2006:2).

In this study, focus groups were used to complement the other methods of data collection and to check the validity of the information and data gathered during the course of the study. The focus group discussions were specifically aimed at getting the views and perspectives of the business sector and civic groups on the importance of the rock lobster fishery to their communities, in general, and to local business, in particular.

Thirty-eight individuals (26 males and 12 females) participated in the six focus group discussions (FGDs) conducted under the project. The participants were selected randomly from business and civic group segments relevant to the WRL industry and the community. There was no effort directed to include rock lobster fishers in the FGDs; nevertheless, five participants were involved in various ways in commercial rock lobster fishing. Two participants were formally rock lobster fishers (one skipper and one deckhand), one participant is an investor in the fishery, one was married to a rock lobster fisher, and one has a family who remains active in the rock lobster fishery. A few participants identified themselves as recreational rock lobster fishers.

Three FGDs were held in Geraldton and one each was held in Dongara and Kalbarri in November 2005. One FGD was held in Fremantle in February 2006.[14] After a review of the number of participants and groups represented in the semi-structured interviews as well as the distribution of managed fishery license holders in the nineteen communities, the investigators decided on holding the FGDs in these communities.

The size of each focus group ranged from 4-8 individuals per session and each group discussion ran for about two hours. An independent facilitator ran all six focus groups, with the co-investigator attending as an observer. A note-taker, present during the discussions, enabled the proceedings to be tape-recorded and transcribed.

Almost half of those who participated were in the 45-54 age range and almost two-thirds have Bachelor or Honours Degrees, Trade Certificates and Diplomas or Advanced Diplomas. Of the 38 FGD participants, 22 have children. Business sector participants represented the following business types: 1) boat/engine builders; 2) boat repair/maintenance/lifters; 3) marine brokers; 4) cray pot manufacturers; 5) electrical and electronic providers; 6) tourist and charter operations; 7) commercial banks; 8) real estate and housing construction; 9) chartered accountants and insurance brokers; 10) cafes and restaurants; and 11) exporters, shipping, freight and refrigeration.

2.2.6 Community Workshops

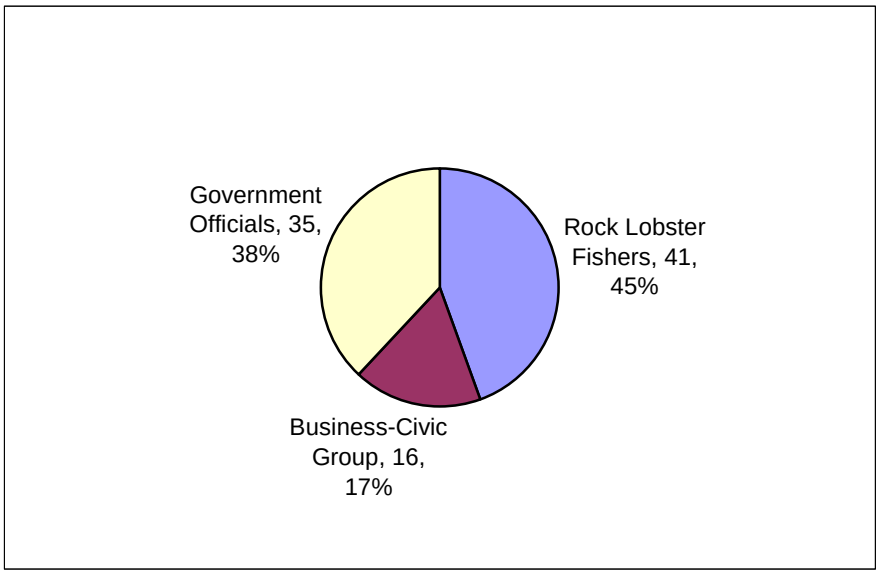
Twelve community workshops were conducted by the co-investigator from May to August 2006, attended by 92 participants (Figure 5).[15] The workshops were aimed at: (1) sharing the data/information analysed to date with key stakeholders in the community; (2) confirming the likelihood of the possible outcomes and the degree by which the community will be affected by the potential impacts; and (3) identifying strategies to minimise possible negative effects of the fishery management changes on the community.

Prior to conducting the workshops, consultations were undertaken with the relevant local government official in charge of town planning or community and economic development, in order to facilitate the identification of participants from the various community and business groups active in the communities as well as relevant local and State government officials. The representatives from the rock lobster fishery were chosen in coordination with the presidents of relevant PFAs and industry contacts from the WRLC Board and the RLIAC Advisory Board.

The letters of invitation sent out to the potential participants included a brief description of the research project, along with a set of documents that included the highlights of the community survey and a tabular matrix of the perceptions of the community and of the fishery from fishers, community residents, business owners and civic groups generated from the semi-structured interviews and focus groups. A sample set of documents sent out to the individuals invited to participate in the Jurien Bay Community Workshop is in Appendix 7.

[14] The potential FGD participants in Fremantle were originally contacted in December 2005 but their feedback was that in view of the busy Christmas period, scheduling the FGD in February was a better alternative.

[15] Community workshops were held in Northampton (for Port Gregory and Horrocks), Geraldton, Dongara, Leeman, Green Head, Jurien Bay, Cervantes, Lancelin, Ledge Point, Seabird, Two Rocks (including Yanchep), and Fremantle. The workshop in Kalbarri was cancelled in view of the end-of-season activities that inhibited rock lobster fishers from participating in the workshop.



(Source of Data: Community Workshops, 2006.)

Figure 5: Community Workshop Participants, by Groups

Using the information generated from the personal interviews with a range of fishers, the specialist reports prepared for the 2006 RLIAC Coastal Tour, and the discussion paper entitled "Review of the Management System of the Western Rock Lobster Fishery" compiled by the Western Rock Lobster Council in June 2006, two basic scenarios were developed for discussion at the community workshops.[16] These basic scenarios were not predictions or forecasts of what will happen; they presented a plausible outcome of how the future may develop if the fishery management arrangements remain the same; or if the fishery moves towards a catch quota system. While the social impacts were not precisely defined or quantitatively valued, an indication of who will be affected and what social changes may occur under each scenario were discussed. The full details of these scenarios are outlined in Section 4.3.

2.2.7 Observational Research

At the onset of this research project, the research team adopted a qualitative observational research approach to look into the nature and qualities of the fishing group as a community of interest and their interactions within their communities of location. As mentioned in Section 1.3, the attendance of the co-investigator at the RLIAC Annual Coastal Tours held in Geraldton, Jurien Bay and Fremantle and at various PFA meetings provided multiple opportunities to observe the group interactions and dynamics between the fishers, and the managers and scientists of the Department of Fisheries. Providing the various stakeholders in the fishing community with feedback on the developments of the research project and the initial research findings during these meetings enabled the research co-investigator to build

[16] Interviewee data included was that of owners, owner-operators, lease fishers, skippers, deckhands and investors in all the three zones of the Western Rock Lobster Fishery. As mentioned in Footnote #10, three options were originally considered. In June 2006, the decision to be made by industry stakeholders was limited to the two options of staying with the existing input controls or moving towards quotas based on setting a kilogram allocation for commercial fishers (WRLC, 2006:9).

trust among the members of the fishing community.[17] It also facilitated the full cooperation of rock lobster fishers in subsequent research activities, notably, the community workshops.

During the course of the three-year project, the fieldwork also allowed for the generation of personal observations on the general socio-economic and cultural facets of the nineteen communities included in the study. Staying in the communities for periods ranging from two days to four weeks during the conduct of the semi-structured interviews enabled access to research participants and allowed for a good understanding of the communities. Living in Jurien Bay for several weeks in late 2004 and again in early 2006 provided the co-investigator with a deeper appreciation and insights on the dynamics of life in Australia's rural fishing communities and the values and beliefs that influence the cultural behaviours of these communities. Being seen in the community and walking around the town enabled her to conduct various interviews in a more frank and open manner, usually within the confines of the interviewees' homes and at times that were more convenient to the interviewees. Combining the conduct of the interviews with observational research provided her with several opportunities to familiarise herself with the local socio-economic conditions and to interact with the residents of the nineteen communities in a random and informal basis. Participation in the community social events in six of the nineteen communities also allowed the co-investigator to observe the community residents in a more dynamic and in-depth fashion.

2.3 DATA ANALYSIS

> *Why link qualitative and quantitative data? Rossman and Wilson (1984, 1991) suggest three broad reasons: (a) to enable confirmation or corroboration of each other via triangulation; (b) to elaborate or develop analysis, providing richer detail; and (c) to initiate new lines of thinking through attention to surprises or paradoxes, "turning ideas around", providing fresh insight* (Miles and Huberman, 1994:41).

The primary and secondary data were collected during the course of this research project using both quantitative and qualitative methods. This mix provided a solid foundation of data and a systematic identification of issues that face the fishing community, in general, and specifically the communities that host the WRL fleet. The limitations of the secondary data were also addressed by triangulating it with the results of primary data gathered using other data collection techniques.[18]

[17] The co-investigator was fully aware of the possibility of bias arising from the close affinity and sympathy she developed for the rock lobster fishers, considerable efforts were exerted during the course of the research to comply with ethical principles or standards guiding the research project.

[18] Triangulation is a method used by qualitative researchers to check and establish validity in their studies (Guion, 2002:1). By combining research methods to get a range of perspectives, the use of triangulation can make the research findings more robust.

2.3.1 Analysis of Qualitative Data

In undertaking the qualitative analysis of the data collected, the research team adopted the framework developed by Miles and Huberman (1994:10-11), which involves the following major phases of qualitative analysis:

1. *Data reduction:* the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written up field notes or transcriptions;

2. *Data display:* an organised, compressed assembly of information that permits conclusion drawing and action; and

3. *Conclusion drawing and verification:* involving the testing of the meanings emerging from the data for their plausibility, their sturdiness and their validity.

During the course of this project, the first phase of the analysis essentially involved an iterative process of organising and reconfiguring the data in the various interview transcripts. Content analysing these transcripts in terms of subjects and themes allowed the researchers to compile a list of the fishers' views of the problems within the fishery and in their communities.[19] The problems and issues expressed by the fishers were broken down into economic, social, environmental, political and institutional types. The researcher then compiled and categorised a list of the potential positive and negative impacts of the alternative management arrangements under consideration that were raised during the interviews. These initial findings and preliminary conclusions were presented to the fishing community during the 2005 Annual Rock Lobster Coastal Tour. Community profiles using secondary data were also prepared for each of the communities included in the study.

The second phase involved the preparation of several matrices and diagrams or flowcharts that provide a conceptual framework for the textual data compiled from the interviews and focus groups during the first phase. These matrices and flowcharts allowed for the extrapolation of systematic patterns and interrelationships in the textual data. Using the information gathered from the interviews, focus group discussions, postal and telephone surveys and from the literature review, the likely factors that will affect an individual fisher's preference for the management arrangement that will govern the WRL fishery were identified.

Two basic scenarios were also developed for discussion during the community workshops, as well as a flowchart mapping out key decision points showed the possible outcomes of decisions on the management arrangement at the individual level (fisher) and community level.[20] In undertaking the analysis, the way the issues were expressed and raised during the interview process were noted, as these varied depending on the position of the interviewee in the fishery and their level of knowledge and information about the fishery management arrangements as well as their appreciation of the opinions and motives of other fishers.

In view of the multiple group perspectives and the different types of data collected, the third phase of conclusion drawing and verification involved a number of activities. These include data triangulation, and the conduct of community workshops involving multiple stakeholders within both the fisher community and the community of location.

[19] Content analysis is an approach to the analysis of documents and texts that seek to quantify content in terms of predetermined categories and in a systematic and replicable manner (Bryman, 2004:183).

[20] The scenarios recognise that any decision made by fishers will ultimately have a bearing on the communities to the extent that leaving the fishery may result in their own and their families' departure from the community.

In analysing qualitative data, the research team also ensured that the informed consent of participants was secured either in writing or verbally at the time of the data collection. When citing verbal data analysed in this research, codes were used to ensure the privacy, confidentiality and anonymity of the participants. In some cases, the co-investigator secured the written consent of individuals for the use of specific quotations and accompanying photographs.

2.3.2 Analysis of Quantitative Data

The data collected from the postal survey of managed fishery license holders and the telephone interview of community respondents were processed with the use of the Statistical Package for the Social Sciences (SPSS) Version 12.0.[21] The analyses conducted ranged from univariate analysis (one variable at a time) to bivariate analysis (two variables at a time) and multivariate analysis (three or more variables). Included in the analyses are the generation of frequency data and diagrams and the calculation of arithmetic means, where appropriate. Questions were tabulated by community so that individual differences could be considered.

Where attitude rating questions were asked, factor analysis was conducted to investigate underlying factors common to the items.[22] Where items reflected a common factor, a scale was then developed. The reliability of the scale was assessed using Cronbach's alpha.[23]

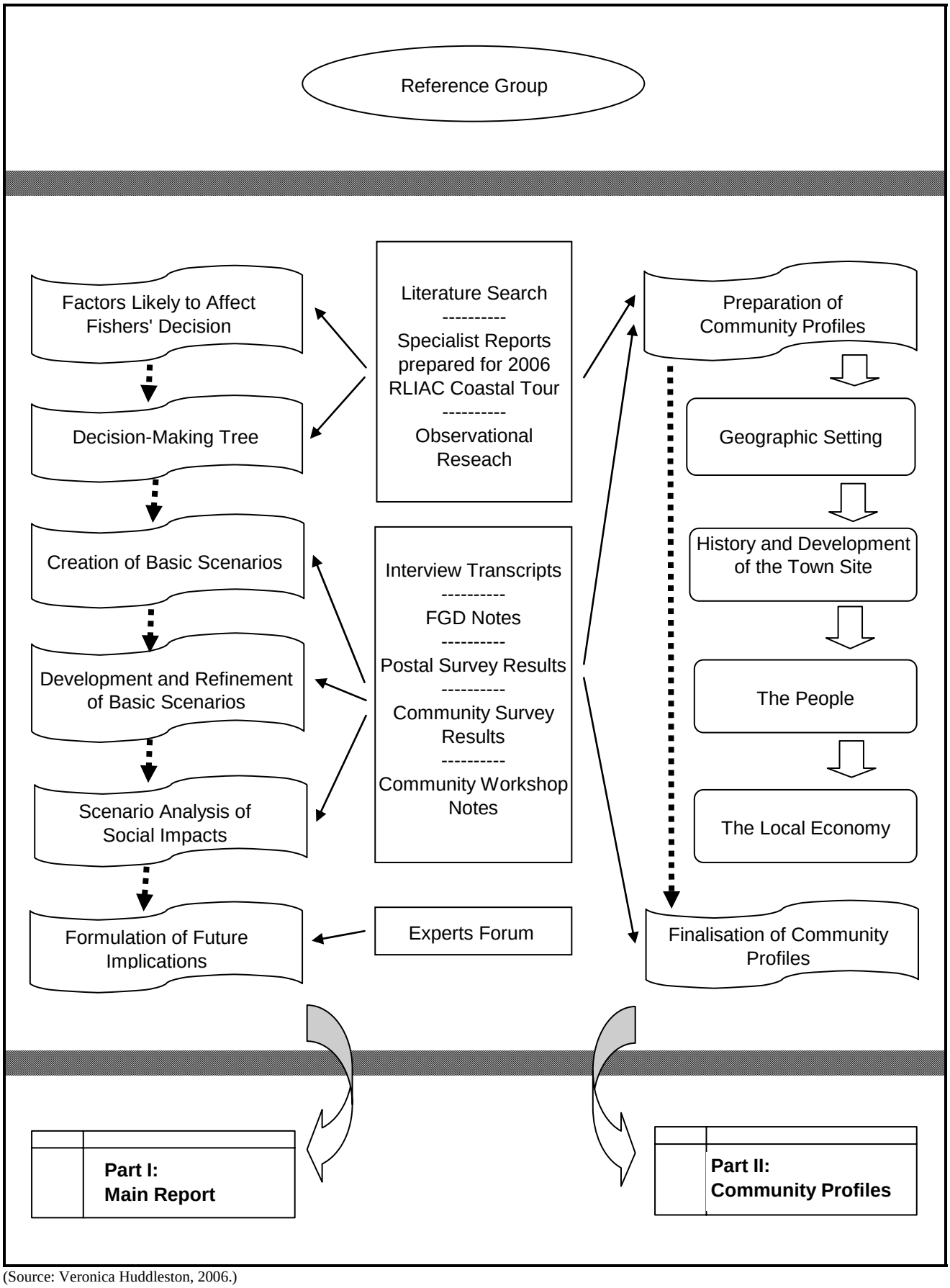
Secondary analysis of data from the Census and from government departments such as the Department of Fisheries in Western Australia and the Department for Planning and Infrastructure was undertaken by the research investigators during the duration of the project.

2.3.3 Integration of the Qualitative and Quantitative Data

Figure 6 presents the framework adopted by the investigators in collecting and analysing the primary and secondary data for this research. To synthesise both primary and secondary data collected for each of the hosting communities, detailed community profiles were developed by the project. Secondary data from existing sources (e.g. Australian Bureau of Statistics, Department of Fisheries, and Department of Planning and Infrastructure) were integrated and interwoven into the primary data on the key social indicators in each community. Comparisons between Census data at the community level and Census data for Western Australia and the whole of Australia were incorporated, whenever possible.

The community profiles form Part II of this Final Report and contain information on: (1) the geographic setting; (2) history and development of the town site; (3) the people, including population, dwelling and employment and income characteristics as well as community identity, integration and participation characteristics; (4) the local economy, with focus on the fishing industry, tourism, business and commerce; (5) the existing infrastructure support in the community; and (6) the institutional resources available in the community.

[21] First developed in the 1960s, SPSS is probably the most widely used suite of programs for statistical analysis in the social sciences (Bryman and Cramer, 1990:xiii).
[22] This is a statistical technique employed in relation to multiple-indicator measures to determine whether groups of indicators tend to bunch together to form distinct clusters, referred to as factors (Bryman, 2004:80).
[23] Cronbach's alpha is a commonly used test of internal reliability. It essentially calculates the average of all split-half reliability coefficients. A computed alpha coefficient will vary between 1 (denoting perfect internal reliability) and 0 (denoting no internal reliability). The figure 0.80 is typically employed as a rule of thumb to denote an acceptable level of internal reliability (*Ibid:*76).



(Source: Veronica Huddleston, 2006.)

Figure 6: Framework for Data Collection and Analysis

3.0 THE WESTERN ROCK LOBSTER FISHERY

3.1 HISTORY AND DEVELOPMENT OF THE FISHERY

> *The developments in all aspects of the fishery, gained through lifetimes of hard-working men and women, have been sparked and propelled by clever, inventive, innovative and entrepreneurial individuals. And there have undoubtedly been lucky breaks, the target species responding positively to selective harvesting, local and overseas economic policies and conditions working in the rock lobster industry's favour, and for individuals, being in the right place at the right time. It has been, and remains, an exciting industry in which to be involved, in any way* (Gray, 1999: 275).

While eight species of rock lobsters are caught off the Western Australian coast, the entire catch consists mainly of the western rock lobster (*Panulirus cygnus*). Rock lobster fishing makes up a significant component of commercial fishing activity in Western Australia, with estimated annual values of the landed catch ranging between $190 million to $392 million from 1990/91 to 2004/05.[24] It is also the most valuable single species fishery in Australia.

In the 2002/03 to 2004/05 fishing seasons, rock lobsters made up, on average, 31% of the total catch in tonnes and 67% of the total estimated value of the catch in Western Australia (Table 3). Rock lobsters caught by fishers from the coastal communities of the Mid West and Wheatbelt Regions accounted for approximately 70% of the total rock lobsters caught in Western Australia.[25] This may be attributed to the fact that "the area of distribution of the western rock lobster is the continental shelf on the west coast of Western Australia, with greater abundances off the mid west coast (Geraldton-Perth) than the northern and southern parts of the west coast" (Department of Fisheries: 2005:12).

In addition to those directly engaged in the fishery (e.g. skippers and deckhands), WRL processing establishments also employ people in their fish reception facilities (receival depots) and processing factories located along the Western Australian coast. For most of the communities along the western coast of Western Australia (south of Shark Bay), much of the infrastructure associated with their ports or jetties, as well as their general population growth, resulted from the development of this industry (Crombie, 2001; Fletcher, *et. al.*, 2005).

[24] The estimated value of the catch in 2002/03 of $280 million is lower than the overall value in 2001/02 of approximately $300 million in view of several factors, including the impacts of SARS and the Iraq war on overseas markets, and most notably the strengthening of the Australian dollar (from 55-56 US cents at the start of the season to 67 US cents by June 2003). The bulk of the product was exported to Japan, Taiwan, Hong Kong/China, and the United States and Europe (Department of Fisheries, 2005:17).

[25] The Mid West Region of Western Australia extends along the west coast from Green Head to Kalbarri and more than 800 kilometres inland to Wiluna in the Gibson Desert. Its area of 472,336 square kilometres covers nearly a fifth of the State, and comprises nineteen local government authorities. The City of Geraldton is the region's commercial, administrative and service centre (*Indicators of Regional Development in WA*, Department of Local Government and Regional Development, March 2003). The Wheatbelt Region covers an area of 154,000 square kilometres. It adjoins Perth and extends from the Indian Ocean in the northwest, to the western edge of the Goldfields and to the northern border of the Great Southern Region (Patterson Market Research, 1999).

Table 3: Catch and Value of Wild-Caught/a Species in Western Australia (2002-2005)						
	Catch (tonnes)			*Estimated Value ($ '000) /c*		
	2002/03	*2003/04*	*2004/05 /b*	*2002/03*	*2003/04*	*2004/05 /b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Mid-West Region	2,075	2,510	2,512	5,628	6,495	6,159
Wheatbelt Region	153	140	116	671	610	527
Perth	1,618	1,400	888	2,100	1,983	1,772
Peel Region	212	227	179	628	660	544
Southwest Region	1,772	1,795	1,916	3,478	3,627	3,790
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Mid-West Region	4,932	5,385	5,425	120,582	102,322	116,632
Wheatbelt Region	3,003	3,343	3,124	73,425	63,511	67,157
Perth	2,366	3,231	2,416	57,854	61,381	51,951
Peel Region	634	924	635	15,504	17,548	13,650
Southwest Region	474	817	642	11,607	15,537	13,826
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Mid-West Region	5,851	615	5,345	20,122	2,364	19,307
Wheatbelt Region	33	34	33	91	93	91
Perth	151	166	116	1,961	1,430	1,341
Peel Region	14	13	18	40	40	51
Southwest Region	67	94	94	3,036	3,792	3,749
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Mid-West Region	12,936	8,552	13,308	147,324	111,685	142,409
Wheatbelt Region	3,210	3,520	3,297	74,317	64,256	68,093
Perth	4,430	5,084	3,585	63,619	66,703	56,021
Peel Region	936	1,245	923	16,684	18,737	14,739
Southwest Region	2,341	2,732	2,676	18,307	23,066	21,512

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/05 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Commercial rock lobster fishing only expanded rapidly in the mid-1950s, even though the potential for an intensive rock lobster fishery had been recognised in the early days of the European settlement of Western Australia.[26] The 1890s saw individuals from Britain, Greece, Italy, among others, taking up fishing as an occupation. By the turn of the century and up to the end of the 1930s, a number of fishers derived a livelihood from the exploitation and marketing of rock lobsters to the local populace.

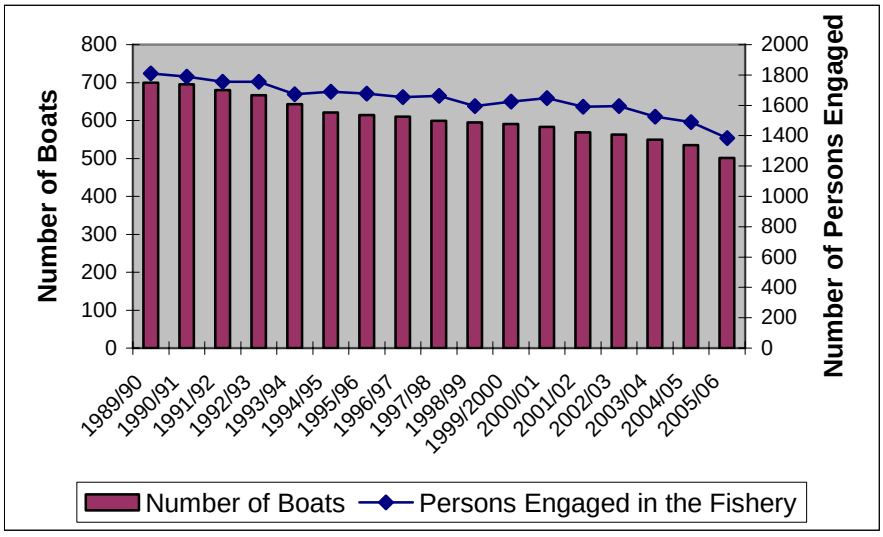
The outbreak of war in 1939 provided an impetus for dramatic change in the local fishing industry. The number of fishers was substantially reduced given the wartime restrictions on the mobility of fishers, even though the prospects of canning rock lobsters substantially improved. The demand for rock lobsters continued as the commodity was eagerly sought by

[26] This historical account of the fishery is based primarily on information from *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999.

the United States service personnel. In the post-war period, Western Australian producers and fishers pursued the opportunity for marketing rock lobsters to the United States and the management of the fishery was more actively undertaken.

By the 1950s, Western Australian rock lobster exports accounted for 75% of Australia's total rock lobster export value. This was brought about by more intensive fishing as the knowledge of the rock lobster distribution increased rapidly with the invention and adoption of the recording echo sounders. There was also a steady improvement in vessels and catching gear, as boat designers and builders established businesses to service the industry. With the growth of the fishery, rock lobster fishers ventured to remote waters and isolated coastal locations to fish for rock lobsters in addition to the traditional fishing grounds on the coastal reefs close to Geraldton, Dongara, Lancelin Island and Fremantle. Along the coast, adjacent to suitable anchorages such as Two Rocks, Cervantes, Lancelin, Jurien Bay, Leeman and Kalbarri, new settlements were established where formerly, only beach holiday camps existed. Fishers established a more settled lifestyle with the obligations of family life and schooling for their children.

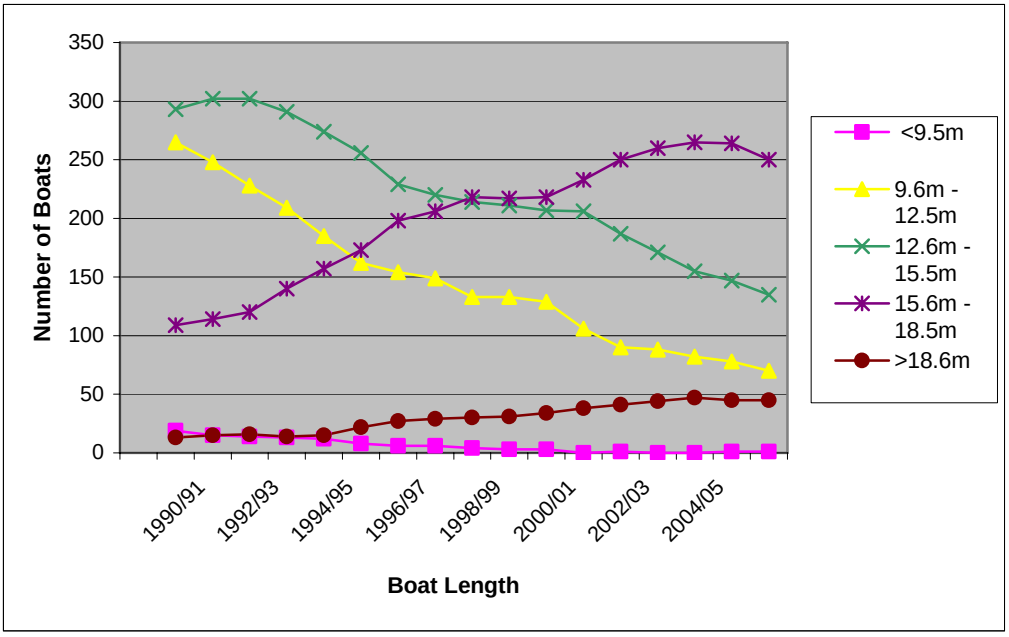
The intense exploitation of rock lobsters in the late 1950s resulted in more scientific research into the rock lobster resource. As Gray (1999:163) noted, the creation of the Western Fisheries Research Committee in 1961 provided an impetus to refocus the management of, and research on, the western rock lobster and other commercial species towards more optimal and sustainable yield of rock lobsters and other commercial species. The commercial rock lobster fishery was declared a limited-entry fishery in 1963 in order to restrict the number of boats (fishers) that could operate in the fishery to 836 boats, including 45 freezer boats licensed to process at sea. Subsequently, the fishery has experienced a decline in the number of boats, to 700 in 1989/90 and 501 in 2005/06 (Figure 7). The reduction in the fleet size can be accounted for by the sale of some pot entitlements to other licensees (Fletcher, *et. al.*, 2005:15). Consequently, the number of persons engaged in the rock lobster fishery (deckhands and skippers) has also declined over time, from 1,811 persons in the 1989/90 season to 1,385 persons in the 2005/06 season.



(Source of Data: Department of Fisheries, Western Australia.)

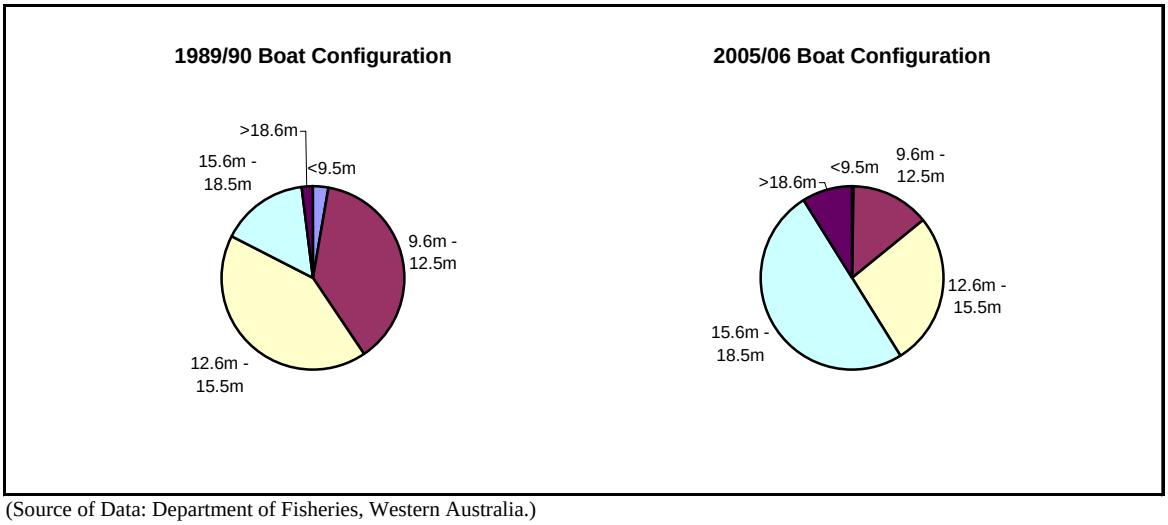
Figure 7: Number of Boats and Persons Engaged in WRLF, 1989/90 – 2005/06

Another contributory factor to the decline in boat numbers was the replacement of some of the older and/or smaller boats with bigger boats, as the restrictions on the length of replacement boats introduced in 1965 was lifted in 1979 (Figure 8A). As Figure 8B shows, the number of boats ranging in size from 12.6 metres to 15.5 metres declined substantially between the 1989/90 and 2005/06 fishing seasons (from 293 boats to 135 boats) while the number of boats ranging in size from 15.6 metres to 18.5 metres substantially increased (from 109 boats to 250 boats). Boats measuring between 9.6 metres and 12.5 metres also exhibited a sharp decline from 265 boats to 70 boats.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 8A: WRLF Boats Classified by Boat Size, 1989/90 – 2005/06



(Source of Data: Department of Fisheries, Western Australia.)

Figure 8B: WRLF Boat Configuration, 1989/90 and 2005/06

The increased number of boats with three crew members (normally a skipper and two deckhands) and the decline in two-crewed lobster boats is indicative of the shift towards larger boats in the rock lobster fleet.[27] At present, rock lobster fishing boats that are 15 metres and longer that operate in distant water are legally required to have a minimum of three crew members.

The effect of these declining boat numbers along with the consolidation and merger of some processing plants have resulted in a reduction in the number of people employed in the processing factories (located mostly in Perth, Fremantle and Geraldton) and the fish reception facilities located up and down the Western Australian coast.[28] While receival depots and trucks continued to service every location where fishing occurred, the number of processing establishments declined from 11 in 2000/01 to 7 in 2004/05 (Department of Fisheries, 2002 and 2005). People employed in related service industries such as bait suppliers, cray pot makers and marine metal fabricators have been affected by the decline in the number of commercial rock lobster boats. As noted by Huddleston (2006:17), fewer boats means reduced revenue for community infrastructure such as marinas, boat lifts, jetties and car parks or may result in reduced budgets for their maintenance resulting in a corresponding loss of local jobs.

3.2 FISHERY MANAGEMENT ARRANGEMENTS[29]

> *Government regulations are needed to curtail the overexploitation of open access fisheries. Typically, governments implement fishery policy instruments (including management measures) with the goal of meeting social, economic, and/or biological objectives with respect to the use of living marine resources. In accordance with its perception of the structure of the fishery system, fishery managers decide to impose regulations on a fishery to control the system in order to influence the outcome in a direction that is considered desirable, given its objectives* (Sutinen, 1999:1051).

Since the early 1960s, the Western Rock Lobster Fishery has been one of the most carefully managed fisheries in Western Australia.[30] The primary aims of the regulations introduced in the fishery were to ensure the sustainability of the fishery by conserving the rock lobster stocks, particularly the breeding stock and to protect fishers' economic interests by restricting the number of boats (fishers) that could operate in the fishery (Department of Fisheries, 2006:23). The fishery is under an Individual Transferable Effort (ITE) management arrangement whereby input controls affecting the way fishing may be undertaken is the primary management method used in the fishery to limit what can be caught during the fishing season. Only a specific number of licensees can operate in the fishery and each license has a number of pots associated with it.

[27] Whilst a reduction in the number of vessels may have reduced the demand for rock lobster boat skippers, the higher crewing level on larger vessels may have offered continued employment opportunities for deckhands in the commercial rock lobster fishing industry, although these opportunities may have been locationally different to those that existed in the past (ERA, 2006:13).

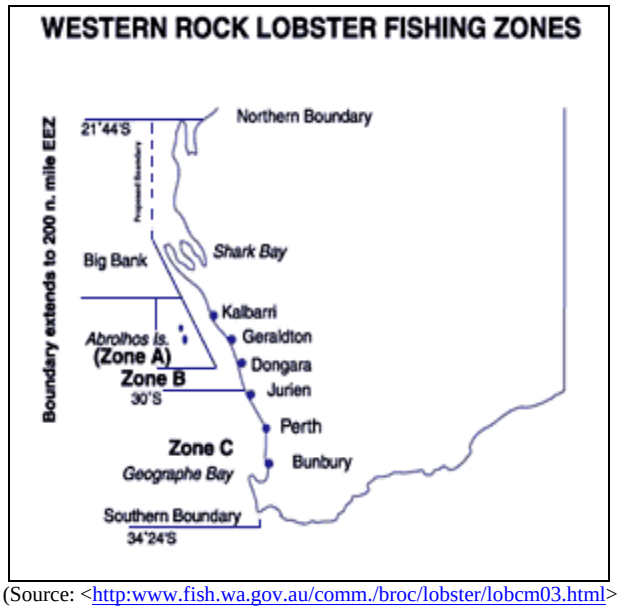
[28] Using an employment multiplier of 3.28 estimated for rock lobster fishing in a previous impact study (McLeod and Nicholls, 2003) done on commercial fishing, the total employment impact of this fishery in 2005/06 is approximately 4,500 people.

[29] This is based on information from Fletcher, et al, *ESD Report Series No. 4 – Western Rock Lobster Fishery*, 2005, pp. 12-17 and Department of Fisheries, *An Overview of Bio-Economic, Sociological and Comparative Analyses*, 2006.

[30] WRLF is a managed fishery under section 65 of the *Fish Resources Management Act 1994*.

3.2.1 Western Rock Lobster Fishing Zones and Catch Methods

The managed fishery licenses are specific to the three major zones in the fishery - south of latitude 30ºS or south of Green Head (C Zone), north of latitude 30ºS or north of Green Head (B Zone) and, within this northern area, a third offshore zone (A Zone) around the Abrolhos Islands (Figure 9). The season for the Abrolhos Islands area is from March 15 to June 30. There is also a restricted season for fishing the "whites run" out of the Abrolhos Islands area northward towards Big Bank in February.[31]



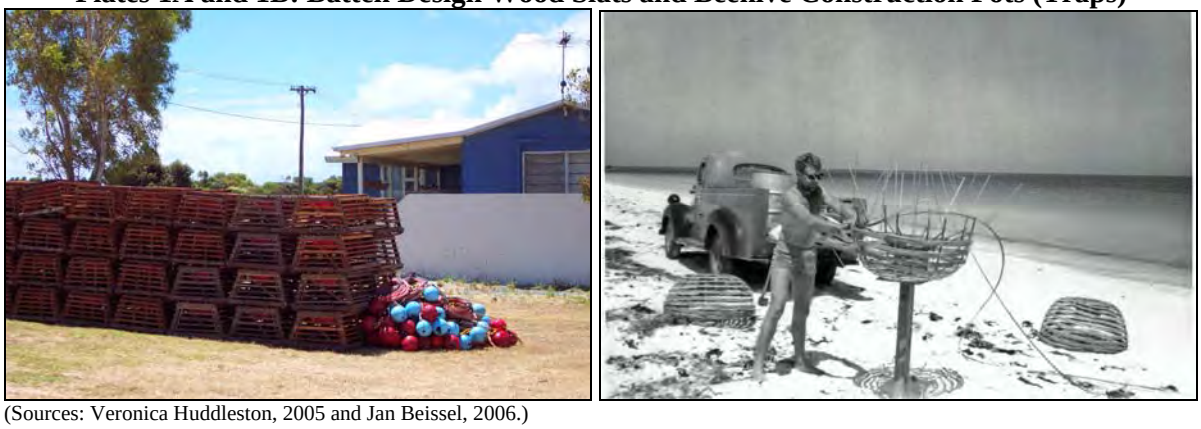
(Source: <http:www.fish.wa.gov.au/comm./broc/lobster/lobcm03.html> Cited June 2003.)

Figure 9: Western Rock Lobster Fishing Zones

During the open season between November 15 to June 30, lobsters are fished using pots or traps, of a batten design made of wood slats or a beehive construction using cane, the precise dimensions of which are regulated and specified (Plates 1A and 1B). Baited pots are released or set from boats near reefs where lobsters usually reside or in areas where the lobsters are thought to be migrating. Fishers set the pots using their previous knowledge of fishing grounds and using various technologies including depth sounders and GPS systems. The pots are generally pulled the following day. Captured lobsters of legal size, and not in breeding condition, are then placed into holding tanks for transport back to on-shore processing plants and/or receival depots.

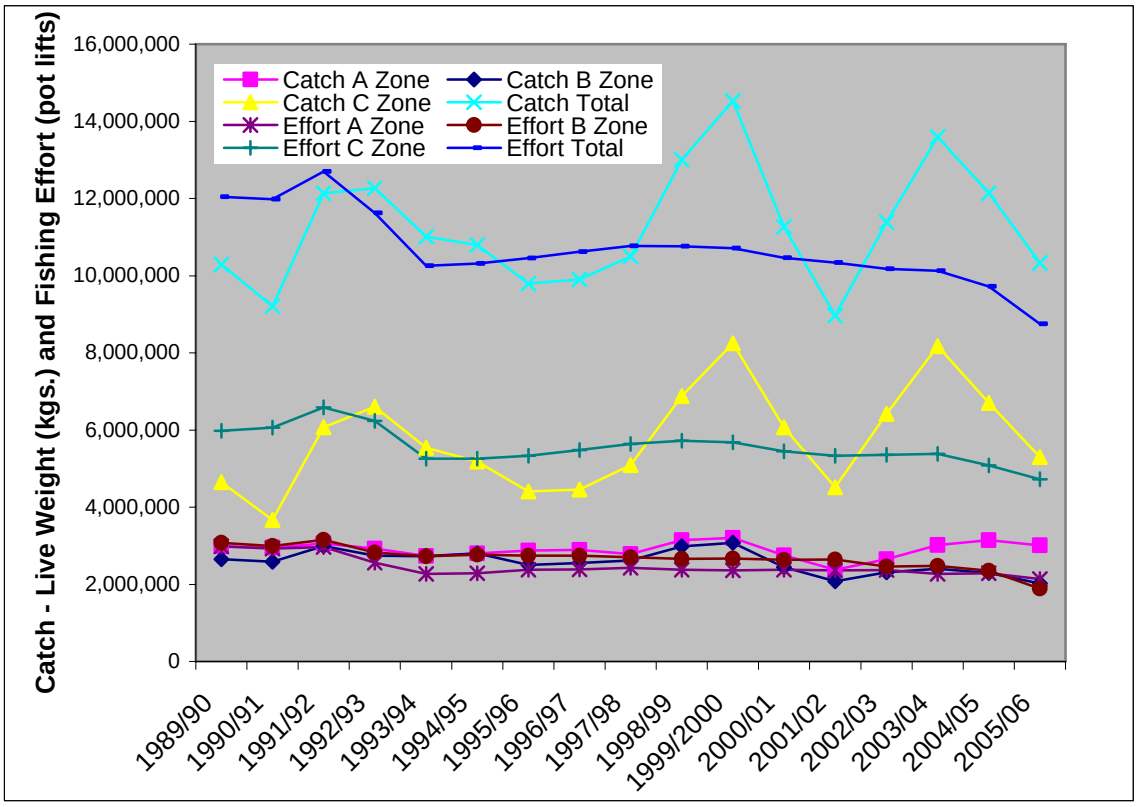
[31] 'Whites' refer to the adolescent phase of the western rock lobster, evidenced externally by a moult to a pale exoskeleton, lasting several weeks. They usually reach legal size with this moult, and are typically hungry, so they represent a significant part of the catch, this portion of the season being referred to as 'the whites' (Gray, 1999:277). At the beginning of the fishing season, B Zone fishers nominate doing the Big Bank whites run from February 10 to February 28.

Plates 1A and 1B: Batten Design Wood Slats and Beehive Construction Pots (Traps)



(Sources: Veronica Huddleston, 2005 and Jan Beissel, 2006.)

The level of puerulus settlement affected by changing environmental conditions determines the amount of rock lobsters caught three to four years later.[32] The fishery has always been characterised by fluctuations in the annual catch of rock lobsters caught by commercial fishers. Figure 10 shows that for the 1989/90 to 2005/06 fishing seasons, the total annual catch varied between 8,965 tonnes (2001/02) to 14,530 tonnes (1999/2000). On average, 51% of the total catch is accounted for by fishers in the C Zone of the fishery, 26% by the A Zone fishers and 23% by the B Zone fishers during the same period.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Annual Live Weight Catch and Fishing Effort, 1989/90 – 2005/06

[32] Puerulus refers to a smooth, transparent miniature (infant) lobster (Department of Fisheries, 2006, *A Bio-Economic Evaluation of Management Options for the West Coast Rock Lobster Fishery*, Volume 2, p. 99).

The level of fishing effort, measured in terms of the number of pot lifts, declined in the early 1990s and remained stable throughout the rest of the decade (Figure 10).[33] While this measure does not take into account increases in fishing efficiency (resulting from the use of better and faster boats, advances in technology and more accurate pot setting), it nonetheless provides a rough measure of the level of fishing activity in the fishery.

3.2.2 Management Instruments and Controls

The management of the Western Rock Lobster Fishery to date has mostly centred on regulating and reducing fishing effort in order to protect the breeding stock through changes or restrictions in the number of pots that fishers can use during the fishing season. These include, among others, the five per cent pot reduction for boats less than six years old when replaced (1986-1995), temporary 10% pot reduction for the 1986/87 fishing season, permanent 10% pot reduction at two per cent per year over five years (1987-1991), 10% pot reduction for B Zone fishers (November 15, 1992 – January 10, 1993), and the 18% pot reduction in 1993.

Changes in the duration and location of fishing have been applied from time-to-time, including closed seasons in 1962, shortening of the season by six weeks in 1978, and the summer closure for B Zone fishers in 1992. The sustainability management package for the 2005/06 fishing season incorporated both features, with a 26-day summer closure from January 15 to February 9 For Zones A and B, Sunday closures from March 15 to June 30 for Zone B, plus 10 per cent pot reductions in Zone B from November 15 to February and in Zone A from March 15 to April 15, and for Zone C, closure from November 15-24 and 3-day moon closure from February 1 to June 30.

A number of biologically based measures have also been employed to maintain a sustainable level of breeding stock such as changes to the minimum and maximum sizes and the protection of particular types of lobsters. For example, in the 1992/93 fishing season, fishers were mandated to only capture females with a maximum size of 115 mm and to return in the water setose and tar-spotted females.[34] The sustainability management package adopted in 1993 continued to include provisions for the maximum size for female lobsters (105 mm for the northern sector of the fishery and 115 mm for the southern sector) and provided for an increase in the minimum size from 76 mm to 77 mm from November 15 to January 31.

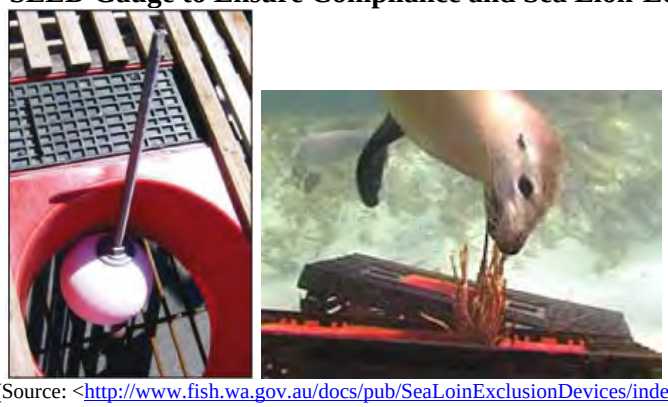
Other measures undertaken to regulate and reduce fishing effort include restrictions on pot designs and dimensions. These include: (a) the introduction of, and increase in, escape gaps (1 x 51 x 304 mm in 1966, 1 x 54 x 304 mm in 1971, ¾ x 54 x 304 mm in 1986); (b) the banning of multiple necks and parlour pots in 1973; and (c) the restrictions on the use of large wire traps, large batten and beehive pots in 1984.

Starting in the 2006/07 fishing season, sea lion exclusion devices (SLEDs) must be fitted in all rock lobster pots used in the identified SLED zone (Plates 2A and 2B and Figure 11).

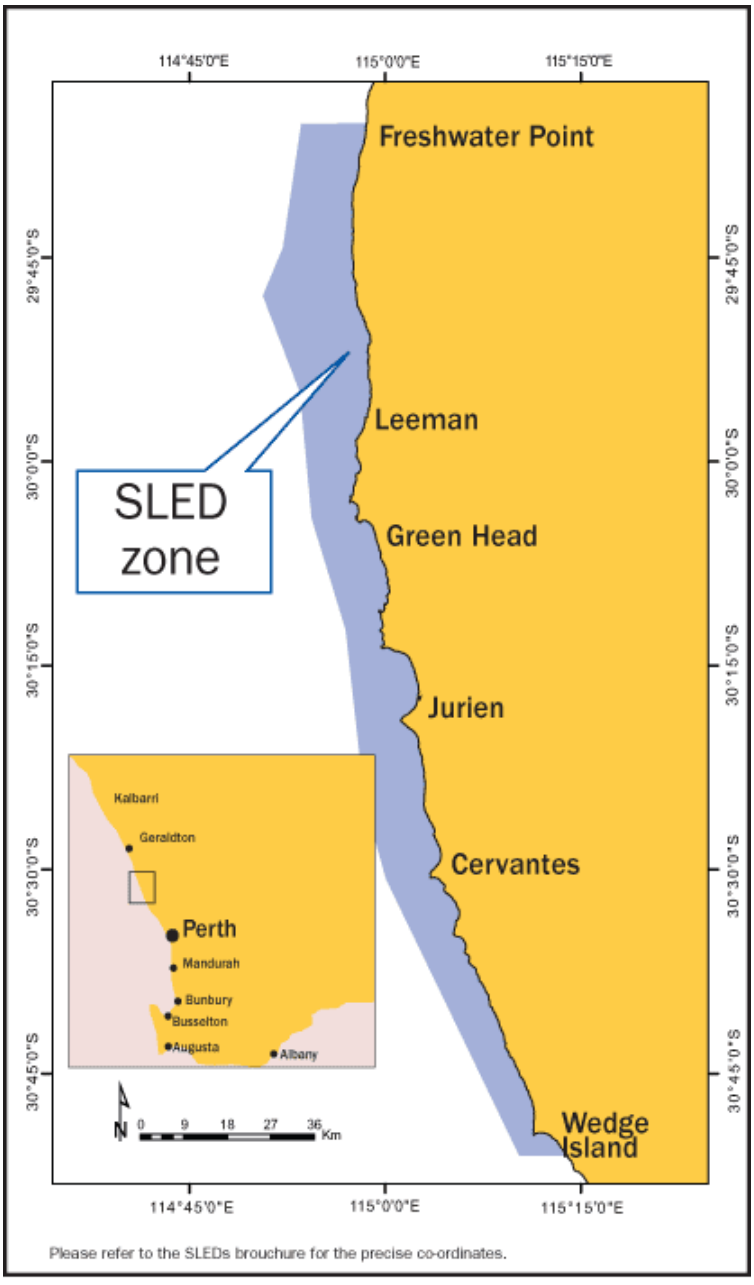
[33] Pot lifts or pot drops, as a measure of fishing effort, represent usually a day's fishing, with the baited pot dropped (set) one day, left overnight and pulled (lifted) the next day. Depending on the weather, catch rates and other factors, the pot may not be pulled everyday (Gray, 1999:277). More recently, a lot of fishers are already doing 2 or 3 day pulls to manage the increasing costs of fuel (Community Workshop Notes, 2006).

[34] Setose refers to a female rock lobster in breeding condition while tar-spotted females refer to those lobsters whose undersides have the black putty-like sperm deposited by the male lobsters (Gray, 1996:277).

Plates 2A and 2B: SLED Gauge to Ensure Compliance and Sea Lion-Lobster Interaction



(Source: <http://www.fish.wa.gov.au/docs/pub/SeaLoinExclusionDevices/index.php?0200> Cited 15 March 2007.)



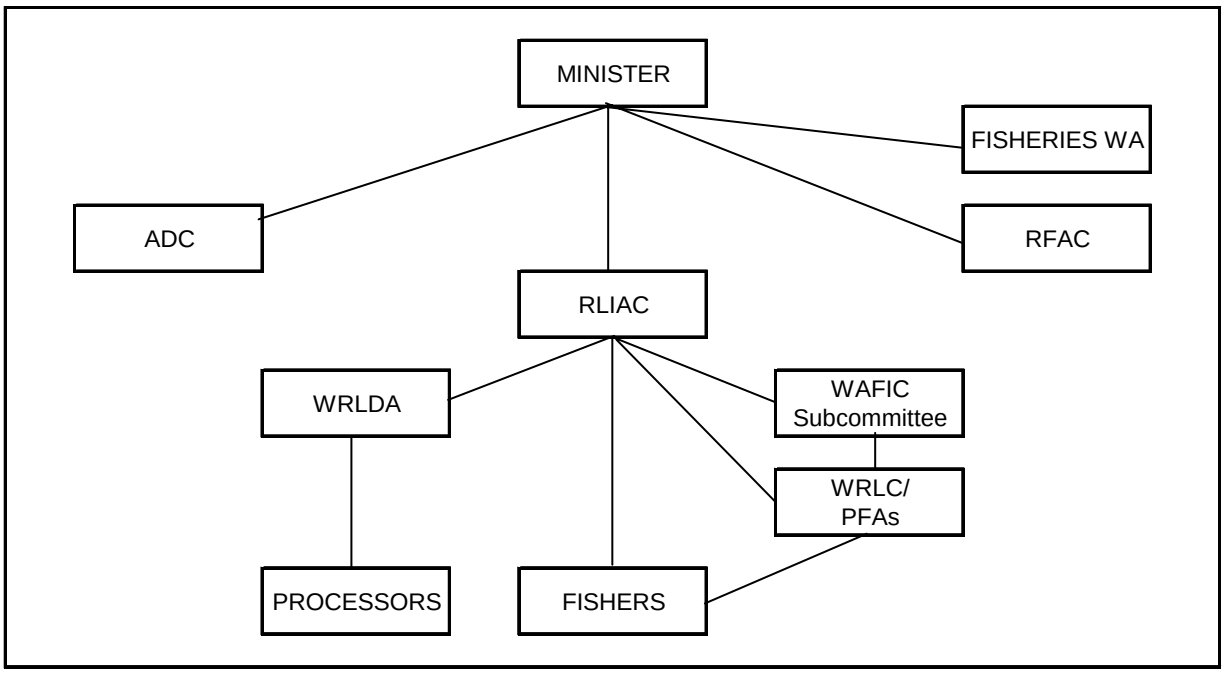
(Source: <http://www.fish.wa.gov.au/docs/pub/SeaLoinExclusionDevices/index.php?0200> Cited 15 March 2007.)

Figure 11: Identified SLED Zone

The introduction of SLED in the 2006/07 fishing season is in line with the conditions attached to the MSC certification provided to the Western Rock Lobster Fishery in 1999. The Ecological Risk Assessment undertaken as part of these conditions identified the accidental capture and subsequent mortality of seas lions as a moderate ecological risk. In addition to this MSC requirement, the fishery also has a legal obligation to address and mitigate against fishing-induced mortality of sea lions in view of its status as 'vulnerable" under the *Environmental Protection and Biodiversity Conservation Act 1999* and "specially protected" under the *Wildlife Conservation Act 1950* (RLIAC, 2006:3-4).

3.2.3 Management and Consultation Process[35]

The management of the Western Rock Lobster Fishery is based around a very extensive consultation and communication process (Figure 12). Under the Fish Resources Management Act 1994 (FRMA), three statutory advisory committees were established to assist the Minister for Fisheries in the task of managing the State's fish resources. The relevant advisory committee for the fishery is the Rock Lobster Industry Advisory Committee (RLIAC).



(Source: Department of Fisheries, Western Australia.)

Figure 12: The Consultative Process in the Western Rock Lobster Fishery

The RLIAC was established to: (i) identify issues that affect rock lobster fishing; (ii) advise the Minister on the management, protection and development of rock lobster fisheries; and (iii) respond to Ministerial requests for advice on rock lobster fisheries issues. As specified in

[35] This is based on information from Fletcher, *et al*, 2005, *ESD Report Series No. 4 – Western Rock Lobster Fishery*, pp. 82-83, RLIAC <http://www.fish.wa.gov.au/docs/macs/rliac/indec.php?001> (cited 20 February 2007), WRLC <http://www.rocklobsterwa.com/mainframe.html> (cited 20 February 2007), WAFIC http://www.wafic.org/au (cited 20 February 2007), WRLDA <http://www.fish.wa.gov.au/docs/macs/rliac/rliac06/RLIAC3YearManagement2006.pdf> (cited 20 February 2007), RFAC <http://www.fish.wa.gov.au/docs/macs/rfac/RFACPage01.php?0001> (cited 21 March 2007) and ADC <http://www.boards.dpc.wa.gov.au/index.cfm?fuseaction=bdetail&bno=806> (cited 21 March 2007).

the FRMA (Section 29), there are 14 membership positions on RLIAC, comprised of an independent chairperson, the Executive Director of the Department of Fisheries, commercial rock lobster fishers, a recreational rock lobster fisher and processing/marketers of rock lobster. In addition, RLIAC has a number of permanent observers who participate in the process at the discretion of the Chairperson. Representatives from the Conservation Council of Western Australia and the Western Rock Lobster Council are permanent observers. A senior member of the Minister's staff also attends RLIAC meetings. To assist it to complete its functions, RLIAC has established sub-committees that cover strategic management, cost recovery finance, stock sustainability research and development, and compliance and marketing issues. In addition to these long-standing sub-committees, RLIAC has recently established two Scientific Reference Groups (SRGs) who are responsible for ensuring that it is provided with advice on how to ensure that the management of the fishery is consistent with the principles of ecosystem-based management.

The stakeholders in the catching sector of the fishery (individual fishers) have their Professional Fishermen's Association (PFA) to represent their interests in matters concerning the management of the fishery.[36] The presidents of the various PFAs make up the Western Rock Lobster Council (WRLC), established in August 2001 as the peak body for the catching sector of the Western Rock Lobster Fishery. In 2005, MFL holders voted in support of changing the structure of the WRLC to an elected body for a more even representation of fishers in all three zones. Today, the WRLC is made up of three representatives from A Zone, 3 representatives from B Zone and 6 representatives from C Zone.

Processors, on the other hand, have the Western Rock Lobster Development Association (WRLDA). The WRLDA represents all the unrestricted processors (except the Geraldton Fishermen's Cooperative). It had recently received FRDC funding to expand its database on the export activities of countries competing with the western rock lobster in the international lobster market, to include the southern and tropical rock lobsters.

The Western Australian Fishing Industry Council (WAFIC) is the peak industry body representing the commercial fishing industry, pearling and aquaculture. Created by the industry more than 30 years ago, it represents the interests of seafood, pearling and aquaculture industries and works with government to set the directions of commercial fishers in Western Australia. The WAFIC also promotes training, occupational health and safety, and seafood quality initiatives to the industry.

The management of the WRLF and RLIAC processes have traditionally focused on the commercial rock lobster fisheries sector. It has recently evolved, however, to more explicitly recognise and include other stakeholders such as those in the recreational and conservation sectors. The RLIAC hosts annual coastal tours in October, a day-long forum with rock lobster stakeholders, held at three fishing ports between Fremantle and Geraldton. These coastal tours are open to the public and provide a mechanism for providing up-to-date scientific information on the status of the fishery and key management issues.

Two other bodies consulted periodically in the management of the Western Rock Lobster Fishery are the Recreational Fishing Advisory Committee (RFAC) and the Aquaculture Development Council (ADC). This enables the consideration of the sharing of fish resources

[36] PFAs are named after geographical locations where their support base is located. Membership is not compulsory and fishers are not criticised for their choice of association. The primary functions of each association are to promote local concerns and to protect its members from any changes to fishing regulations (Crombie, 2001:251).

among competing users within the broader context of ESD. At present, the total recreational catch is estimated to be between three per cent and six per cent of the commercial catch. There is no limit in terms of the number of recreational fishery licenses issued for lobsters, but there is a limit of two pots per fisher and a daily bag limit of eight lobsters. The RFAC's functions are to: (i) identify issues that affect recreational fishing; (ii) advise the Minister on issues relating to recreational fishing and the management of recreational fishing; (iii) advise the Minister on recreational fishing funding priorities; and (iv) advise the Minister on any matter related to recreational fishing on which the advice of the Advisory Committee is sought by the Minister.

The ADC, on the other hand, is an advisory committee created in 1996 whose function is to identify issues that relate to aquaculture, advise the Minister on issues relating to aquaculture and its management, and advise the Minister on matters related to aquaculture on which the advice of the Council is sought by the Minister.

The Department of Fisheries also provide independent advice to the Minister on the implications of any proposal from RLIAC, or other bodies, on the sustainable management of the Western Rock Lobster Fishery.

3.3 THE WESTERN ROCK LOBSTER FLEET

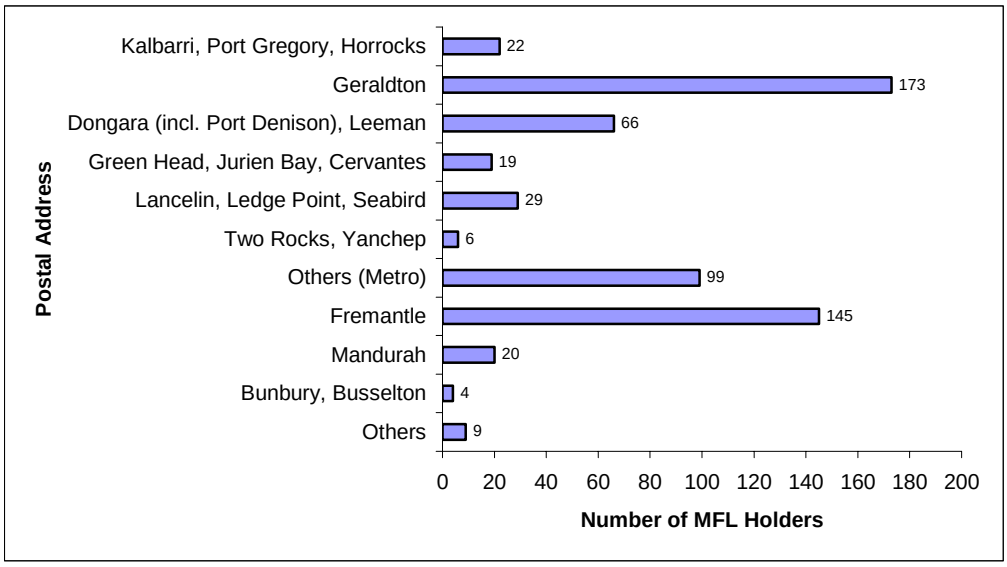
> *Inevitably the future is tied to the same factors that have operated to date: fishing intensity, recruitment levels in response to environmental conditions, changes in consumer preferences, local and global economic conditions, scientific insights and management decisions, and the destinies of competitive fishers. … Some of these require fishing communities to decide on their vision for the future, whether to promote directions that are lifestyle focussed, or to pursue narrow economic maximisation, with a few highly efficient fishers exploiting the resource for the benefit of external investors* (Gray, 1999:275).

The Western Rock Lobster Fishery is a managed fishery. To operate in the fishery prior to 2003, a license for between 63 units and 150 units of pot entitlement is required. The minimum unit holding of 63 pots, deemed to be an economically viable holding, was established in 1999 to address the declining boat numbers in the fishery. Today, there is no longer an upper limit of 150 pots, with the abolition of the 150-pot rule in 2003. Some license holders have only one pot entitlement and in so doing, are able to remain a part of the fishery. They may or may not own rock lobster boats.

3.3.1 The Managed Fishery License Holders

As of July 2005, there were 592 managed fishery license (MFL) holders in the Western Rock Lobster Fishery. Half of the licenses were in the C Zone while the other half was split evenly between the other two zones (A and B Zones) of the fishery. Forty-nine of these fishers licensed to operate in all three zones had one-pot entitlements, 16 of whom also owned rock lobster boats.

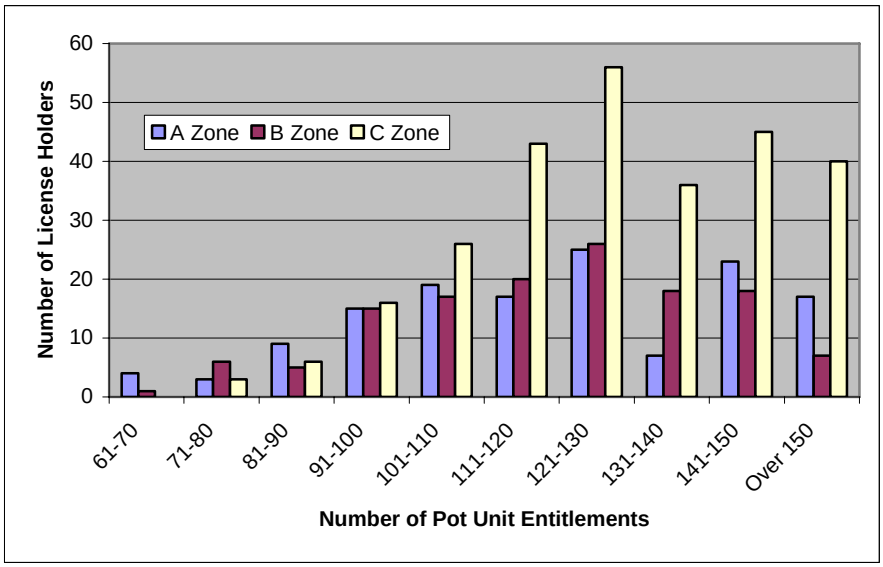
License holders based in Geraldton and Fremantle constituted the bulk of licensees in 2004/05 (Figure 13). Those based in Metropolitan Perth and Dongara/Port Denison/Leeman made up the third and fourth largest groups of license holders in the fishery.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 13: Managed Fishery License Holders, by Postal Address, 2004/05

The distribution of MFL license holders by the current pot entitlements for the 2004/05 season indicate that most of the C Zone licenses had higher pot unit entitlements, with 19% operating between 121 pots and 130 pots (Figure 14). During the same period, fishers in the A Zone demonstrated a higher number of licenses that had large pot unit entitlements (with 27% of MFL holders with over 141 pots and 21% licensed to operate between 121 pots and 140 pots). Conversely, a higher proportion of MFL holders with B Zone licenses operated between 121 pots and 140 pots than those licensed to operate more than 140 pots (30% and 17%, respectively).



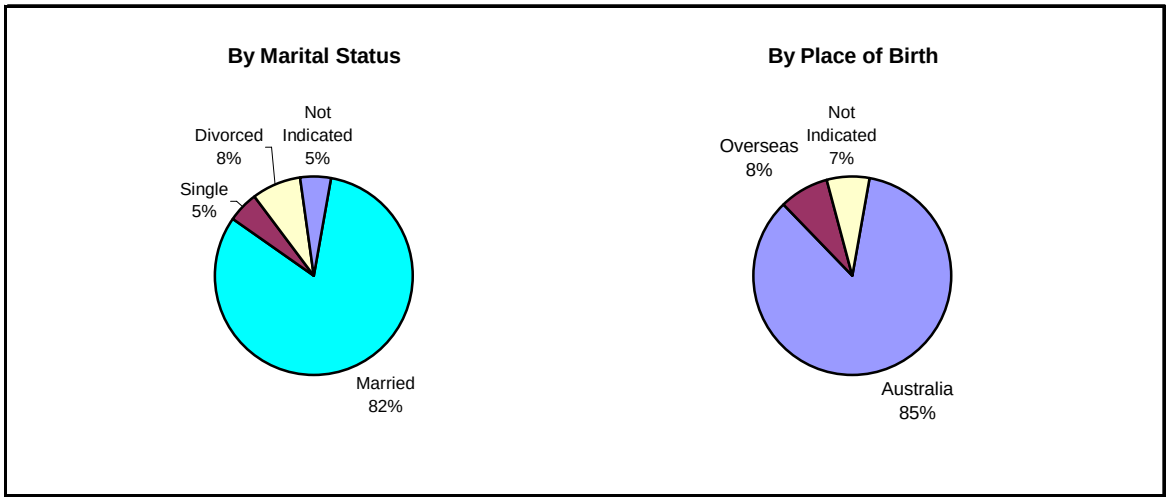
(Source of Data: Department of Fisheries, Western Australia.)

Figure 14: Managed Fishery License Holders, by Pot Unit Entitlements, 2004/05

3.3.1.1 Socio-Economic and Demographic Characteristics

Based on the responses to the postal survey, 82% of MFL holders were married, eight per cent were divorced or separated, and five per cent were single (Figure 15). Eighty-five per cent of license holders were born in Australia, with the majority (90%) born in Western Australia. Overseas-born license holders comprised eight per cent. They were born in countries including England, Indonesia, Ireland, Italy, New Zealand, Portugal, Scotland, South Africa and Wales.

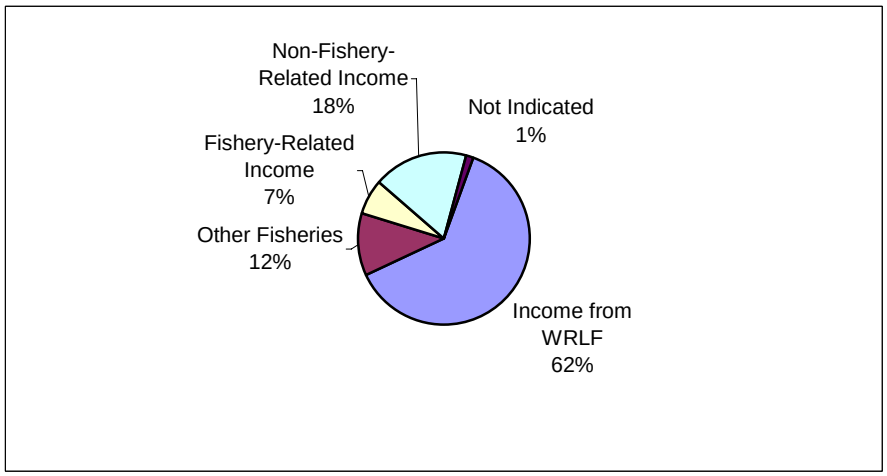
Forty-four per cent of the postal respondents had dependent children of school age attending classes in the local community schools or nearby towns. The majority of respondents (55%) indicated that their spouses were not employed. Fishers' spouses who were employed had jobs in the education, health and community services, retail trade, and the property and business services industry division.



(Source of Data: Postal Survey, 2006.)

Figure 15: Characteristics of MFL Holders, by Place of Birth and Marital Status

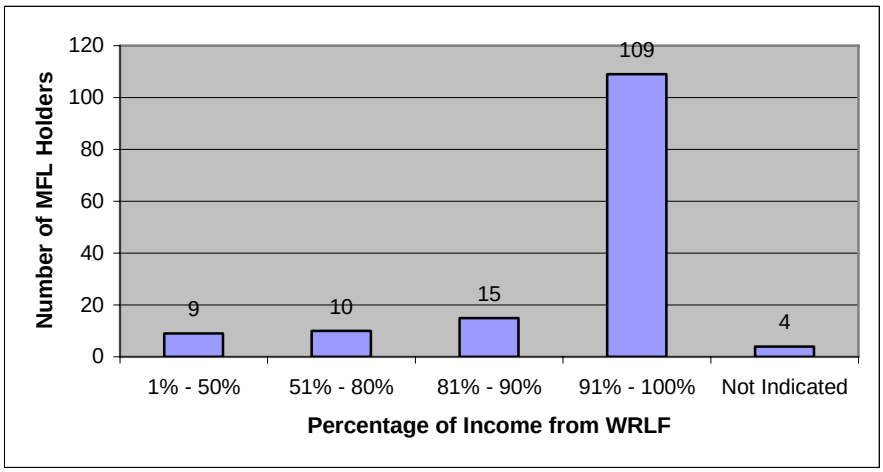
The primary source of income of the majority of MFL holders was rock lobster fishing, with 62% indicating that they get all their income from the Western Rock Lobster Fishery (Figure 16A). Of the 37% who indicated that they had other sources of income, 12% identified other fisheries (such as beach seine, blue swimmer crab, deep sea crab, prawn, and tuna) as their source of income. Seven per cent indicated that they have fishery-related sources of income from boat building and design, boat brokering, charter fishing and leasing of pots. Eighteen per cent of MFL holders had non-fishery related sources of income including, among others, truck services, property services, and farms.



(Source of Data: Postal Survey, 2006.)

Figure 16A: Income Sources of MFL Holders

In regard to the proportion of income derived from the WRL fishery, seventy-four per cent of postal survey respondents indicated that between 91% and 100% of their income came from rock lobster fishing (Figure 16B). Another ten per cent of MFL holders derived between 81% and 90% of their income from the fishery.

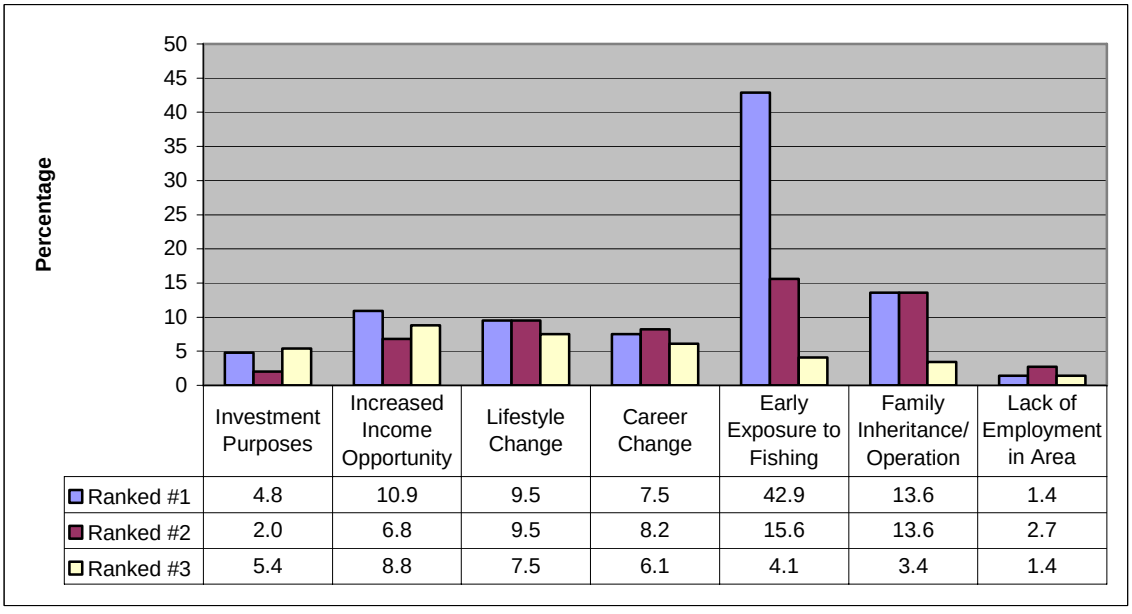


(Source of Data: Postal Survey, 2006.)

Figure 16B: Percentage of Income from Rock Lobster Fishing

Most license holders (40%) earned a gross weekly individual income of over $2,000, on average, during the rock lobster season. Another 18% reported earning $1,000 to $1,499 per week. A number of fishers also reported that their spouses worked in the fishing business, either doing the accounts or managing the family business. On whether they work during the rock lobster off-season (July to November), half of the postal survey respondents reported that they were self-employed and the other half reported they were unemployed.

Owner-operators comprised about 63% of postal survey respondents while investors comprised a further 20%. Lease fishers and skippers accounted for eight per cent and nine per cent of postal survey respondents, respectively. Asked to rank the primary reasons for their entry into the fishery, MFL holders identified early exposure to fishing activities during youth, family inheritance or operation, and increased income opportunities as the main reasons for entry into the fishery (Figure 17).



	Investment Purposes	Increased Income Opportunity	Lifestyle Change	Career Change	Early Exposure to Fishing	Family Inheritance/ Operation	Lack of Employment in Area
Ranked #1	4.8	10.9	9.5	7.5	42.9	13.6	1.4
Ranked #2	2.0	6.8	9.5	8.2	15.6	13.6	2.7
Ranked #3	5.4	8.8	7.5	6.1	4.1	3.4	1.4

(Source of Data: Postal Survey, 2006.)

Figure 17: Reasons for Entry into the WRL Fishery

A review of the responses received to questions on the National Competition Policy and the proposed move towards a quota system, highlighted concerns for effects on their level of job satisfaction and the communities where they live. The lifestyle and socio-economic concerns raised were: a) decline in family-owned fishing and small pot licenses towards bigger and more mobile operators; b) difficulties faced by young crew members and fledgling operators to enter into, and stay in, the fishery; c) less time spent with family in view of more competitive, more intensive and more mobile operations; and d) decreasing profit margins. MFL holders also raised concerns about the continual changes in the rules affecting the management of the fishery and their dissatisfaction with the removal of the 150-pot rule. The effects of these factors on coastal communities were identified as being: (1) fewer employment opportunities; and (2) less money spent in communities. The following were some of the sentiments expressed by fishers in this regard:

> *Our industry is touted as the best managed and [an] environmentally sustainable fishery. The lifestyle it provides is excellent. It is a family-based industry and provides the backbone to thriving coastal communities. Why change it? –* Respondent No. 0011

> *Lower price for the product, higher costs of catching, and a situation where more boats are forced to become more mobile have greatly affected the industry. Maintaining a family lifestyle for the skipper and the deckhands has become extremely hard. The industry seems very unstable and most skippers and deckhands are very disillusioned and unsure about what the future will bring. –* Respondent No. 0070

> *Operating a small pot license in competition with a highly mobile fleet of large pot license holders has had a huge effect on our day-to-day fishing. More pressure on fishing ground at any one particular time means [spending] more time at sea and [incurring] more expense in catching the available lobsters. –* Respondent No. 0467

> *A move to a quota system could all but spell the end of family-owned businesses, as we know it today. In particular, young skippers setting out to establish their own family business would be at a major disadvantage. The quota system puts a ceiling on hard work and initiative for the fledgling operator… If implemented, there would be a decline in morale and in industry standards since there is no incentive for improvement and growth.* – Respondent No. 0143

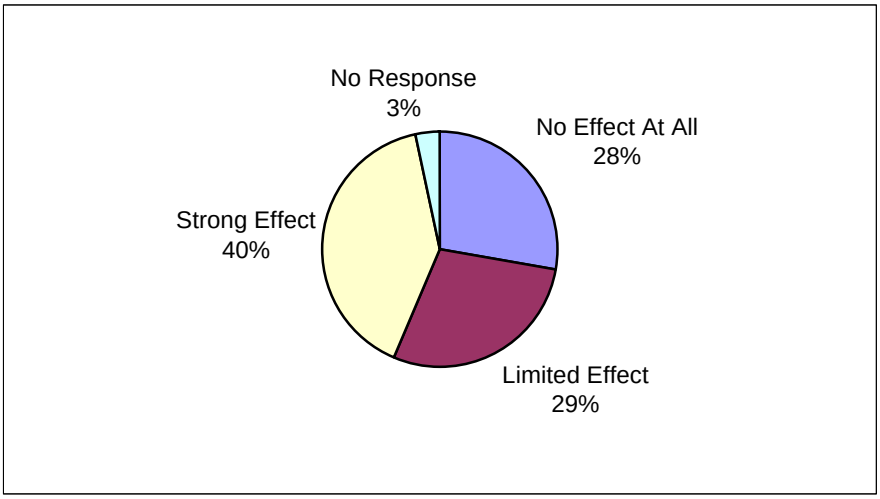
> *I can see the fleet getting smaller with smaller licenses selling out. There will be fewer licenses, fewer boats to be built, less services needed, less employment for local towns, less jobs for the future, and less voice [for the fishermen]… -* Respondent No. 0295

High costs, low returns, continual changes to the rules (especially in the Abrolhos), lifting the 150-pot rule, NCP… all [these] are putting more pressure on the fisherman. The industry is in a delicate balance at the moment and seems to be used as a political ping-pong ball. Unfortunately, it encourages the big operators to get bigger and the small family to move out of the industry. – Respondent No. 0980

The (NCP's) lack of ability to recognise the right of workers' lifestyle issues and the work done by an industry [that is] proven to be ecologically sustainable furthers the argument that the drive for the almighty dollar is not necessarily the only consideration when making a fair assessment of the health of a particular industry… The decreasing profit margins to fishers in the rock lobster industry over the past few years cannot be ignored. Current costs are pushing the father/son generation fishing business [out] in favour of large multi-purpose vessels, which can only, in the long-term, [put] pressure on the industry's sustainability as a whole. – Respondent No. 0492

... After so many years of being involved with the coastal fishing community and despite the changes and sanctions that have been implemented to protect the fish stocks, I've continued on despite the increased amount of paper work this has meant to me for one reason – I love the work that I do… I consider our fishing industry to be one of the best and it is currently working well… It is good for things to change and improve but [the change] should not just benefit a few of the larger conglomerates and investors [without] regard to the damage to family fishing businesses and their communities… I hope that the broader view will be taken and implemented for the good of all. – Respondent No. 0143

On whether the removal of the 150 maximum unit-holding ruling had any effect on their fishing operation, 40% of MFL license holders indicated that it had a strong negative effect on their operation (Figure 18).



(Source of Data: Postal Survey, 2006.)

Figure 18: MFL Holders Perceptions on the Effects of the Removal of the 150-Pot Rule

Some fishers, however, welcomed the move as it "provided them with the opportunity to have a gradual build-up of pots to more than 150 pots, which was very difficult to do previously" (Respondent No. 0146). Some of the comments received in this regard were as follows:

> *The removal of the 150-pot rule was a good thing as it was too restricting for large operators. No other industry (e.g. farming and mining) reduces the economic efficiency of one sector for socio-economic reasons.* – Respondent No. 0309

> *The 150-pot rule was an unfair restriction. The minimum rule should go too. If someone could make a living out of 20 pots, he should be allowed to do so.* – Respondent No. 0200

3.3.2 The Western Rock Lobster Fishing Crew

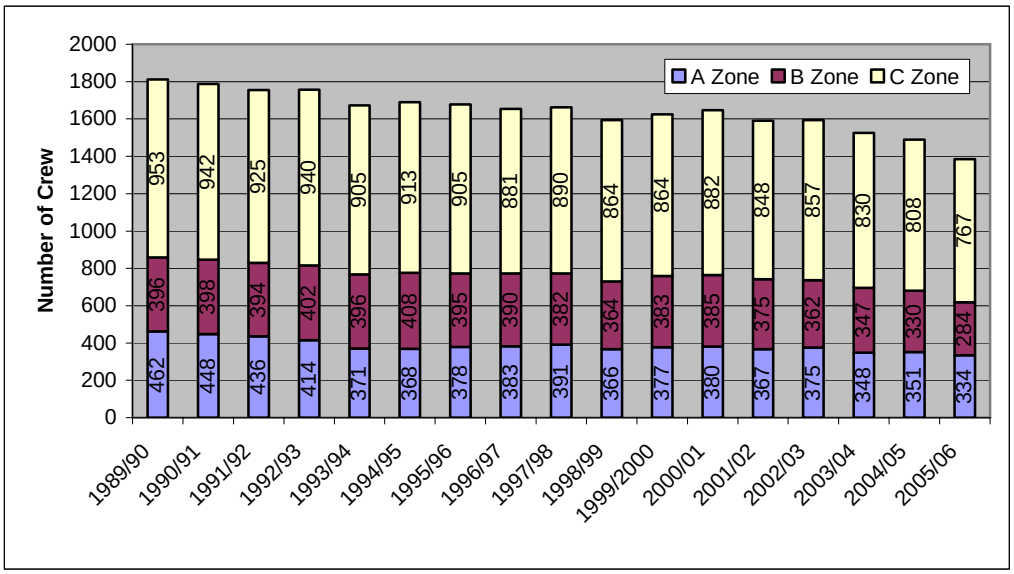
Employment in the Western Rock Lobster Fishery is seasonal, with the seven and a half months fishing season from November 15 to June 30. Skippers and deckhands are the persons directly employed or engaged in the fishery. Rock lobster vessels usually have a crew of two or three (a skipper and one or two deckhands).

The skipper of a commercial vessel is required to hold, at the very least, a Master Class 5 or Skipper Grade 3 Certificate of Competency issued by the Department for Planning and Infrastructure.[37] Thirty months sea time and satisfactory oral examination results are mandatory to get this certificate and individuals should be 19 years old at a minimum. The WA Maritime Training Centre in Fremantle offers a year-round training course of six weeks duration for interested individuals. The Centre also offers training for people who want to work as deckhands on board commercial vessels.[38]

Data from the Department of Fisheries in Western Australia showed a declining trend in the number of persons engaged in the industry, from 1,811 persons in the 1989/90 season to 1,385 persons in the 2005/06 season (Figure 19). The last three years had seen an average decline in the number of crew of five per cent per annum. Employment in the C Zone of the fishery accounted for a little more than half of the total direct employment in the fishery (54% during the period under review), while employment in the A and B Zones accounted for 23% each, on average, during the same period. While the decline in the number of crew was in direct correlation with the decline in the number of boats in the fishery, from 700 in 1989/90 to 501 in 2005/06, anecdotal evidence indicated the difficulty of hiring crew in the fishery amidst the competitive salaries offered by other sectors, such as mining and construction, was a factor.

[37] This is based on information from *Marine Operations (Masters/Skippers, Integrated Rating, Cadets)* <http://www.challengertafe.wa.edu.au/scripts/viewoverview_contact.asp?NID=4335> (cited 30 March 2007).

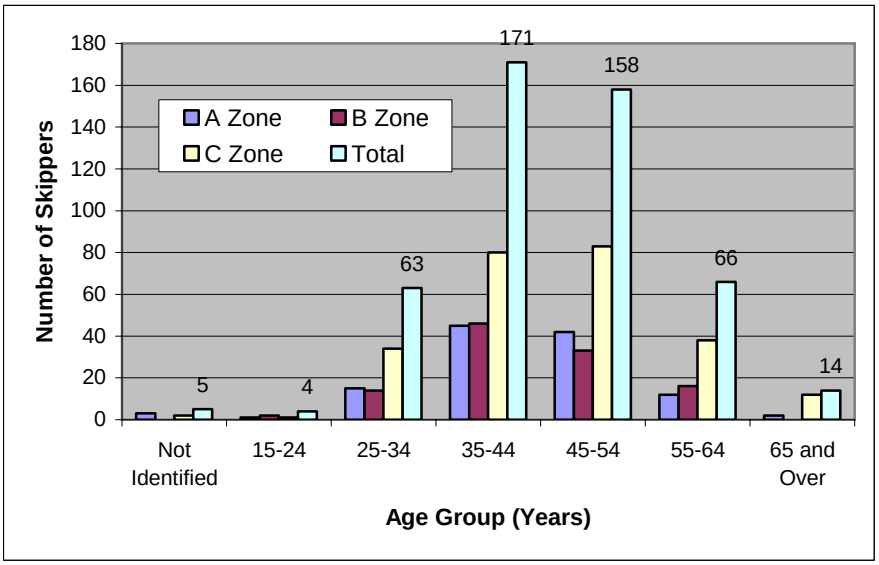
[38] The Certificate II in Seafood Industry (Fishing Operations) course is designed to provide the knowledge and skills required to gain employment as a deckhand in the fishing industry. Once sea time is logged in this industry, progression can lead to skipper's ticket qualifications.



(Source of Data: Department of Fisheries, Western Australia.)

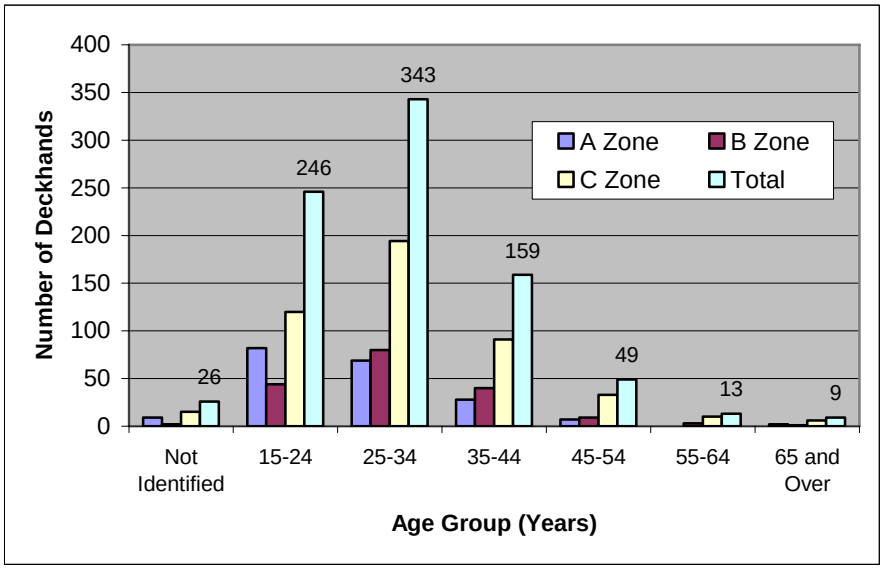
Figure 19: Number of Crew by Fishing Zones, 1989/90 – 2005/06

On the age structure of the crew in the fishery, Figure 20A shows that a majority of the skippers in the fishery were in the 35-44 age group (36%), followed by those aged 45-54 years (33%). Deckhands, by contrast, were primarily in the 25-34 age group (41%) and 15-24 age group (29%) (Figure 20B). As noted in the community workshop in Geraldton, given the physical exertion of the job, "a deckhand's job has always been a young man's job. When they get to a certain age, then they start skippering" (Community Workshop Notes, 2006).



(Source of Data: Department of Fisheries, Western Australia.)

Figure 20A: Age of Skippers in the WRLF, 2004/05



(Source of Data: Department of Fisheries, Western Australia.)

Figure 20B: Age of Deckhands in the WRLF, 2004/05

Using the ABS Census data for 2001, Table 4 shows the number of persons employed in rock lobster fishing and seafood processing, as well as the proportion of employment in rock lobster fishing and seafood processing to the total employment in the agriculture, forestry and fishing industry. Rock lobster fishing was an important contributor to employment in the communities of Cervantes, Ledge Point and Green Head in the C Zone of the fishery and in Dongara and Leeman in the A and B Zones of the fishery.

Table 4: Employment in Rock Lobster Fishing and Seafood Processing *[a]*, 2001

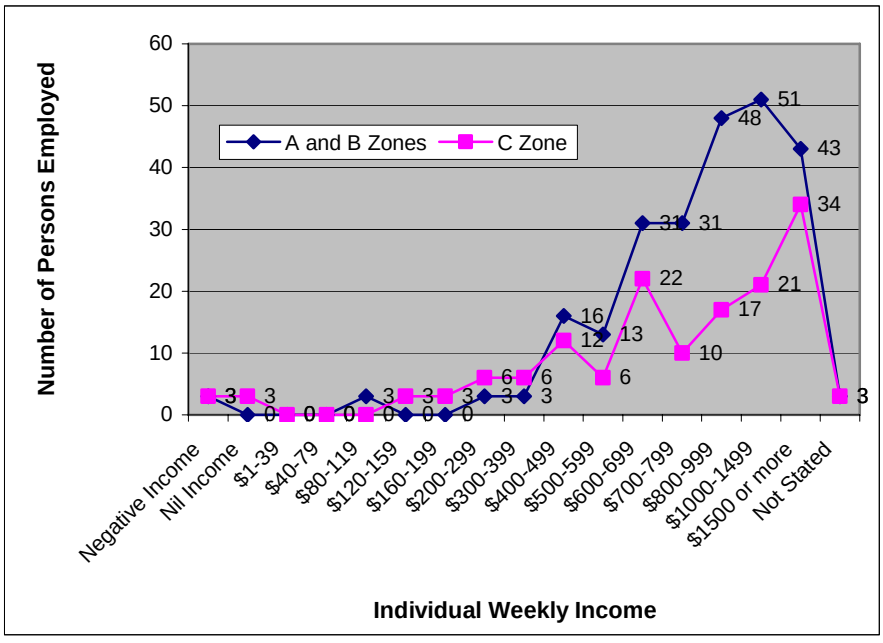
Community	*Persons Employed in Rock Lobster Fishing (1)*	*Persons Employed in Seafood Processing (2)*	*Proportion of (1) and (2) to Employment in Agriculture, Forestry and Fishing*	*Proportion of (1) and (2) to Total Employment*
Australia	1,462	2,217	1.1	0.0
Western Australia	723	242	2.6	0.1
A and B Zones				
Kalbarri	10	3	21.0	1.7
Port Gregory	0	0	0.0	0.0
Horrocks	3	0	14.3	4.2
Geraldton	160	26	37.2	1.9
Dongara	55	9	47.8	8.6
Leeman	20	0	60.6	8.2
C Zone				
Green Head	9	0	42.9	12.0
Jurien Bay	17	6	56.1	6.5
Cervantes	21	9	96.8	18.0
Lancelin	16	0	37.2	6.2
Ledge Point	9	0	60.0	18.0
Seabird	0	0	0.0	0.0

Table 4: Employment in Rock Lobster Fishing and Seafood Processing /a, 2001 (cont.)				
Community	***Persons Employed in Rock Lobster Fishing (1)***	***Persons Employed in Seafood Processing (2)***	***Proportion of (1) and (2) to Employment in Agriculture, Forestry and Fishing***	***Proportion of (1) and (2) to Total Employment***
Two Rocks	3	0	16.7	0.7
Yanchep	6	0	14.6	0.9
Fremantle	33	6	27.9	0.4
Mandurah	29	0	10.9	0.2
Bunbury	6	0	1.4	0.0
Busselton	0	0	0.0	0.0
Augusta	0	0	0.0	0.0

/a Based on the Australian and New Zealand Standard Industry Classification (ANZSIC), Class 0411 Rock Lobster Fishing consists of units mainly engaged in catching rock lobsters from ocean or coastal waters and Class 2173 Seafood Processing consists of units mainly engaged in processing fish or other seafoods as well as units mainly engaged in operating vessels which process but do not catch fish or other seafoods.

(Source: ABS 2001 Census of Population and Housing.)

As reported by the ABS, the majority of individuals involved in rock lobster fishing in the A and B Zones earned, on average, $1,000-$1,499, $800-$899 and $1,500 or more per week in 2001 (Figure 21). In the C Zone of the fishery, the majority reported average individual weekly earnings of $1,500 or more, $600-$699 and $1,000-$1,499. This is generally consistent with the responses of postal survey respondents to the question of 'what represents your average gross weekly individual income during the 32 week lobster season', wherein 40% of rock lobster fishers indicated that they earned $2,000 or more weekly during the season.



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 21: Individual Weekly Income of Persons Employed in Rock Lobster Fishing, 2001

3.4 COMMUNITIES HOSTING THE ROCK LOBSTER FLEET

> *Rock lobster fishing has been responsible for the establishment of, and is a critical element in the economic survival of, many towns along Western Australia's west coast from Mandurah to Kalbarri* (Department of Fisheries, 2005:17).

3.4.1 Demographic and Economic Characteristics

The population of most of the nineteen communities included in this research project expanded along with the development of the rock lobster industry in the late 1950s and early 1960s. As with many coastal areas, these communities experienced substantial population growth between 1996 and 2001 (Table 5). Of the communities in the A and B Zones of the fishery, Kalbarri and Dongara registered the highest population growth rates while Busselton and Mandurah registered the highest growth rates in the communities in the C Zone of the fishery. Ledge Point and Green Head were the exception, with these communities registering population decreases during the period.

Table 5: Population Levels, Median Years and Dependency Ratios, 1996 and 2001

	Total Resident Population		*Population Growth*	*Median Years*		*Dependency Ratios* /a	
Community	***1996***	***2001***	***1996-2001***	***1996***	***2001***	***1996***	***2001***
Australia	17,752,829	18,769,249	5.7	34	35	50.9	50.3
Western Australia	1,713,023	1,832,008	6.9	33	34	49.2	48.4
A and B Zones							
Kalbarri	1,720	2,123	23.4	43	48	55.5	60.1
Port Gregory	--	84	--	--	58	--	42.9
Horrocks	118	137	16.1	41	54	48.3	43.8
Geraldton	25,148	25,323	0.7	30	32	55.6	58.9
Dongara	1,868	2,196	17.6	37	38	63.0	64.5
Leeman	506	551	8.9	27	32	59.1	59.7
C Zone							
Green Head	257	236	-8.2	41	46	60.6	71.0
Jurien Bay */b*	631	1,138	80.3	36	40	58.5	65.6
Cervantes	486	535	10.1	41	45	46.8	55.5
Lancelin	604	668	10.6	37	36	61.9	66.2
Ledge Point	180	128	-28.9	34	49	44.0	68.4
Seabird	--	45	--	--	48	--	50.0
Two Rocks	1,367	1,494	9.3	42	42	62.2	61.9
Yanchep	1,785	1,954	9.5	35	38	61.8	63.0
Fremantle	24,029	24,709	2.8	38	40	45.3	44.2
Mandurah	35,839	46,548	29.9	36	39	68.1	65.2
Bunbury	24,885	45,155	81.4	33	33	53.8	50.9
Busselton */c*	10,601	13,863	30.8	36	36	69.0	65.7
Augusta	1,075	1,097	2.0	45	51	73.4	84.7

/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

/a The sharp increase in population growth between 1996 and 2001 is due to two factors – the significant population growth in one of the collection districts comprising Jurien Bay and the inclusion of a third collection district in the redefined boundari

/b This sharp increase in population growth is due to the change in the size of the geographical region that made up the Bunbury Urban Centre/Locality.

(Source: ABS 2001 Census of Population and Housing.)

Between 1996 and 2001, the median age of the population in most of the communities registered a generally ageing trend as retirees continue to be attracted to these communities. Most communities exhibited high dependency ratios compared with Australian and Western Australian ratios. This required investments in social infrastructure such as schools for the young population and health care for the aged population. In almost all the personal interviews, it was noted that the movement of people away from the smaller communities was motivated either by the need for more advanced schooling beyond Year 8 or 10, and for more comprehensive health facilities (Personal Interviews, 2006).

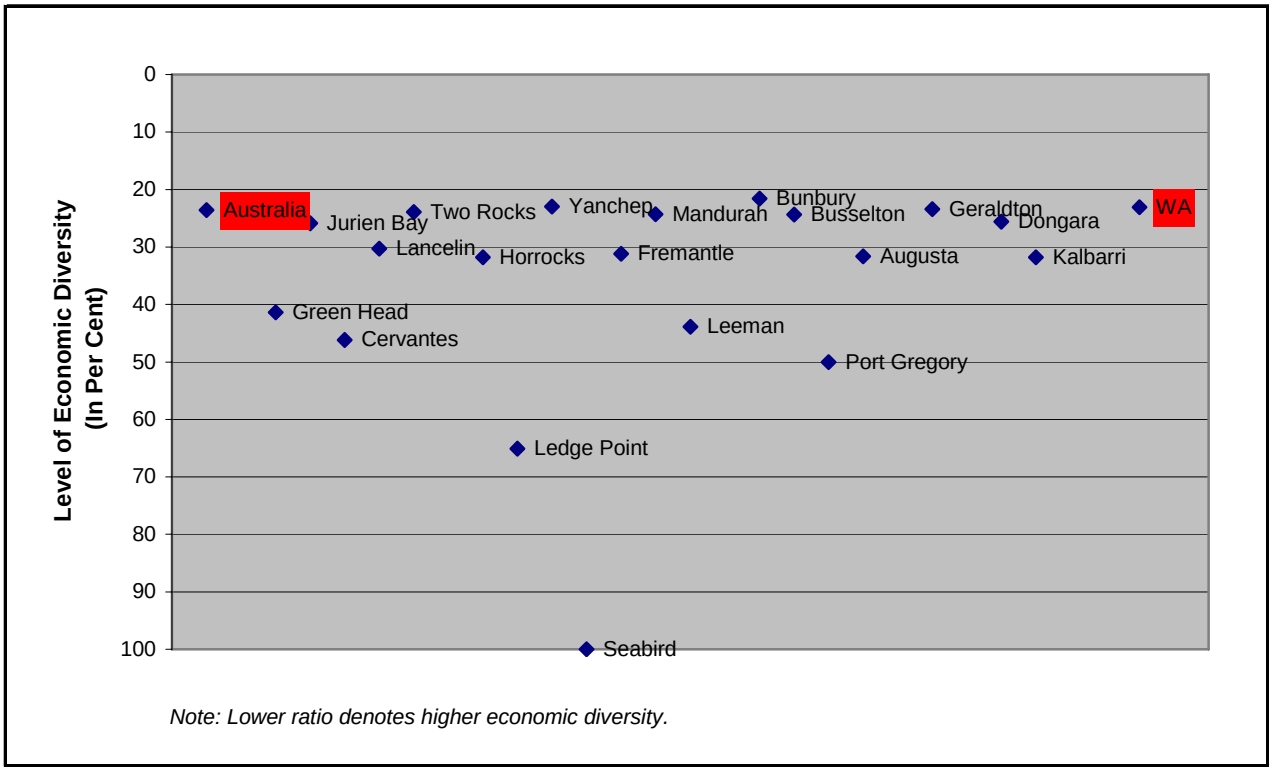
Some communities exhibited large seasonal population changes that affected business activities. In 2001, the percentage of dwellings not permanently occupied ranged between 15% (for Dongara, Kalbarri, Mandurah, Two Rocks, Busselton and Yanchep) to 70% (for Ledge Point and Seabird).

Smaller fishing communities also registered unemployment rates that were almost double the national average. In most of the larger centres, part-time employment rates were comparable to the Western Australian average of 34%, partly because of the seasonal fluctuations in the number of people in these communities. There was anecdotal evidence that during school holidays, the population of some centres more than doubled as tourists were drawn to the coastal environment. Some fishers were also only seasonal residents, living with their families in the city or regional centres such as Geraldton and Perth, and moving back to the coastal communities during the fishing season.

Employment data based on the Australian and New Zealand Standard Industry Classification (ANZSIC) was used to compare the economic diversity of the 19 communities. As research evidence suggests, localities or regions with diverse economies are generally more able to withstand downturns in a particular sector or industry. The measure of economic diversity used was the proportion of persons employed in the top three industry subdivisions to the total number of persons employed per community.[39] A higher ratio would indicate that the community is highly dependent on the top three sectors of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across industries.

Figure 22 shows that there was less diversity in communities like Seabird, Ledge Point, Port Gregory, Leeman, Cervantes and Green Head as compared to the Australian national and Western Australian ratios. Employment in these communities was largely provided by the top three subdivisions of employment. The remainder of the communities exhibited moderately diversified economies.

[39] Each of the 53 subdivisions in the ANZSIC is represented by a two-digit code, with commercial fishing represented by code 04. Under this industry subdivision are two groups – Marine Fishing (041) and Aquaculture (042). Rock lobster fishing is one of the six industry classes comprising the Marine Fishing group.



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 22: Economic Diversity, 2001

3.4.2 Fishers' and Residents' Perceptions of their Communities

3.4.2.1 Interview and Focus Group Findings

The most frequently identified reasons given by those interviewed on what they think about their communities and what they like best in these communities, was the lifestyle – 'idyllic', 'peaceful and quiet', 'a place where everybody knew everybody', and 'where the fishing grounds are good'. Family life was also rated highly in terms of 'the community being small and safe to raise young children', 'where the schools are close by' and 'where one knows their neighbours and can easily ring up friends and have a barbecue in half an hour'.

A number of interviewees pointed out that their communities were becoming more populated and becoming busier with more traffic. While some interviewees noted the limitations of their communities (e.g., lack of doctors, limited recreation facilities, high business turnover, lack of employment opportunities for spouses, etc.), they nonetheless indicated that it is nice to live in these communities. For older interviewees, city life was too fast for them and the coastal communities provide them with the opportunity to slow down. While some interviewees noted that the communities were hard to break into socially, residents were believed to 'stick together in times of crisis.'

The majority of interviewees identified the following as factors that result in the movement of some residents into the city or into bigger regional centres:

1. Schooling for older children;
2. More intensive and specialised medical needs for children and the aging population; and
3. More varied lifestyle and circle of friends for the whole family.

Except for the South West communities, the interviewees acknowledged that fishing was the main economic activity of all the communities in the earlier periods of its development. As Crombie (2001:135) pointed out:

> *With the exception of a community of mining employees at Leeman, all of the centres along the coast are totally dependent upon fishing. Over the years, the attraction of recreational fishing has provided additional income in the form of tourism and retirement settlement. Overall, however, the economy is still very much at the mercy of the crayfishing community.*

While fishing may remain as an integral part of the community, rock lobster fishing is not necessarily however, still the major industry. The movement of retirees and investors to these communities has resulted in their becoming 'retirement' towns. In some communities, tourism is on the rise, resulting in the creation of alternative job opportunities for the residents. Developments in the mining and oil and gas sectors also provide alternative employment to residents in some of the northern communities. In Geraldton, which is the key port and administrative centre for the Mid West Region, commercial rock lobster fishing is still considered a major industry although the need for economic diversification is increasingly appreciated. As Huddleston (2006:21) pointed out:

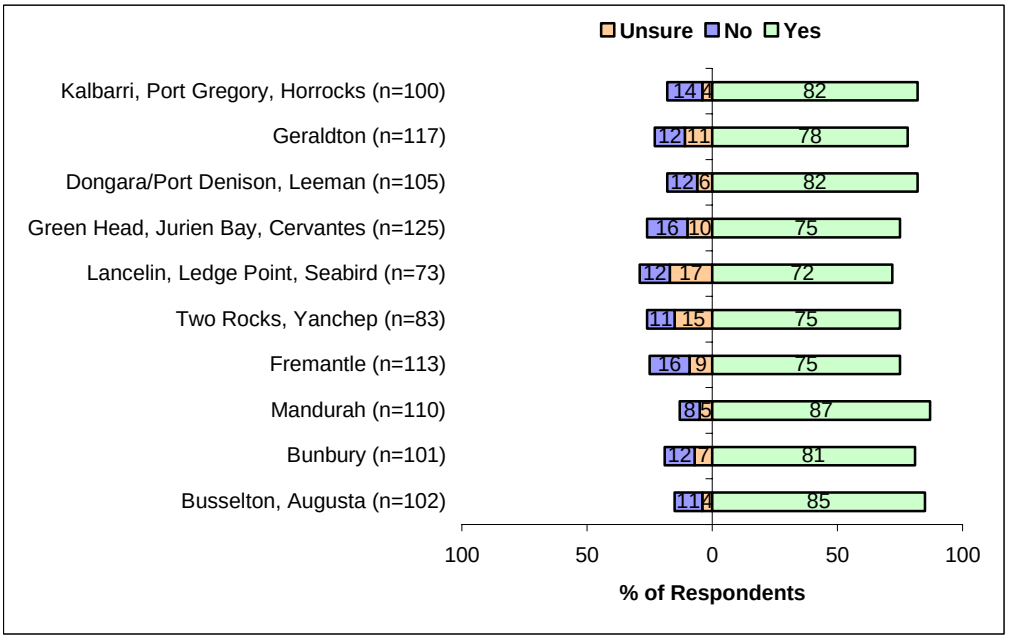
> *From the business community's point of view, there is general recognition that "crayfishing has given Geraldton an identity, a history and a lifestyle that had resulted in a lot of investments. It had given Geraldton prominence and reputation, both at the national and international levels. The money stays in the town, with the fishers' supporting local businesses and spending locally" (FGD Participant No. 20, 2005). There was however, an appreciation of the need for economic diversification inasmuch as, "Geraldton relies a lot on primary industry and as such, its economy goes up and down a lot. This is a concern as far as jobs for [my] children are concerned…" (Interviewee No. 063, 2005).*

When asked about their contribution to the community, some interviewees noted that rock lobster fishers were involved in their communities in the past (e.g. voluntary associations, building of infrastructure such as town oval) but many have retired and are not as involved any longer. WRL fishers were more actively involved in the past in voluntary activities such as the Bushfire Brigade, Ambulance, First Aid and Sea Search and Rescue. Interviewees mentioned the financial contribution of fishers in terms of donating money or lobsters for charitable activities such as local school, local gun club, Silver Chain, Rotary Clubs and community events. The employment of local residents as fishing crew and processing plant workers plus their direct economic support for local businesses and tradesmen (e.g. lobster pot makers, boat lifters and repair facilities, boilermakers, diesel fitters, electricians, etc.) was observed as being an important contribution of fishers to their local economies. Some fishers and their families have started up businesses in their communities. However, it was noted that major shopping and specialised boat repair and maintenance are done in bigger regional centres and in Perth.

3.4.2.2 Telephone Survey Findings

Based on the responses of 1,033 community residents who participated in the telephone survey in November 2005, more than seven out of 10 respondents in every community surveyed expected to be living in the same community in five years time (Figure 23).[40] Expectations ranged from 72% in Lancelin, Ledge Point and Seabird, to 87% in Mandurah. Among the communities surveyed, Cervantes had the largest percentage of people who feel they are unlikely to be living there in five years time. In the report on the outcome of the community workshops, Huddleston (2006:23-24) noted that:

> *The home fleet size has decreased considerably in recent years, as more boats are now based in other communities… The negative effects of a further reduction in boat numbers on the town will be felt in terms of the loss of communal employment opportunities and income. Some interviewees noted that, "Crayfishing is still the major employer of the male population since most boats would have at least 2 or 3 crew" (Interviewee No. 160, 2004) and "crayfishing bring the workers that spend their money in the town" (Interviewee No. 112, 2004).*

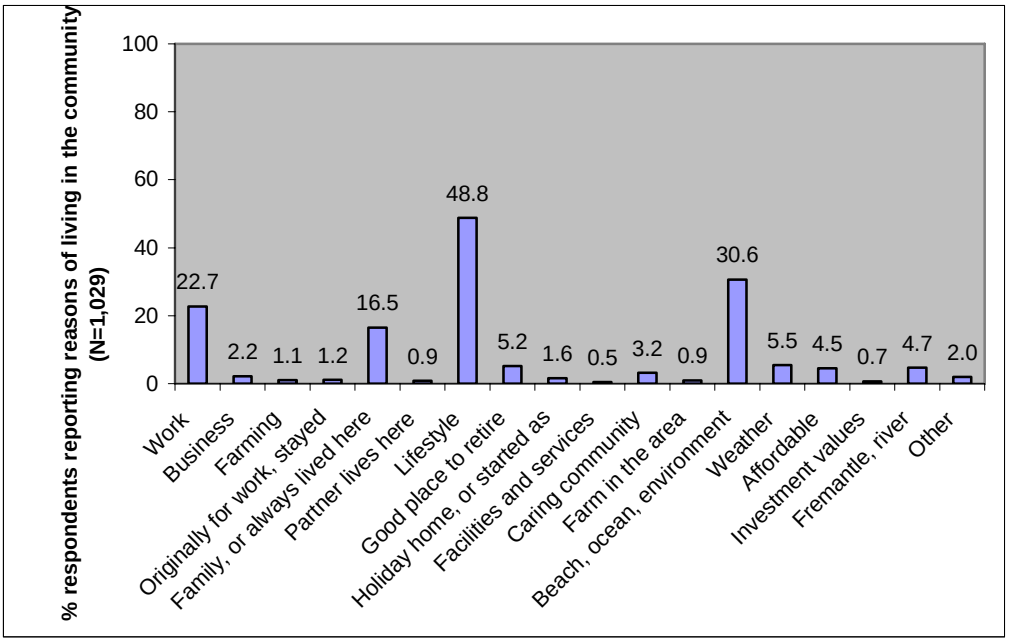


(Source of Data: Telephone Survey, 2006.)

Figure 23: Expectation of Living in Present Location in Five Years Time

[40] Respondents to the community survey were mostly born in Australia and New Zealand (80%), lived in separate houses (90%), and fully owned their houses (49%). This sample is representative of the Western Australian population who in 2001, had 71% Australian-born persons and where 85% of the population lived in separate houses and where 36% fully owned their houses. In terms of household structure, 26% of respondents constitute older couples with no children at home, 25% were young families with children less than 14 years, and 20% were mature singles. Twenty-one per cent finished Year 10 schooling while another 18% and 14% finished Year 12 and Trade Certificate and Apprenticeship, respectively.

The main reasons cited for choosing to live in the communities were lifestyle, the beach, ocean and environment, work, and family (Figure 24). The mix and balance of these factors varied considerably between communities. Large numbers in all of the areas apart from Fremantle cited lifestyle and related issues (such as the coastal location and weather). These were particularly important factors for people who choose to live in coastal towns such as Dongara/Port Denison, Leeman, Green Head, Jurien Bay, Cervantes, Busselton, Augusta, and Bunbury.

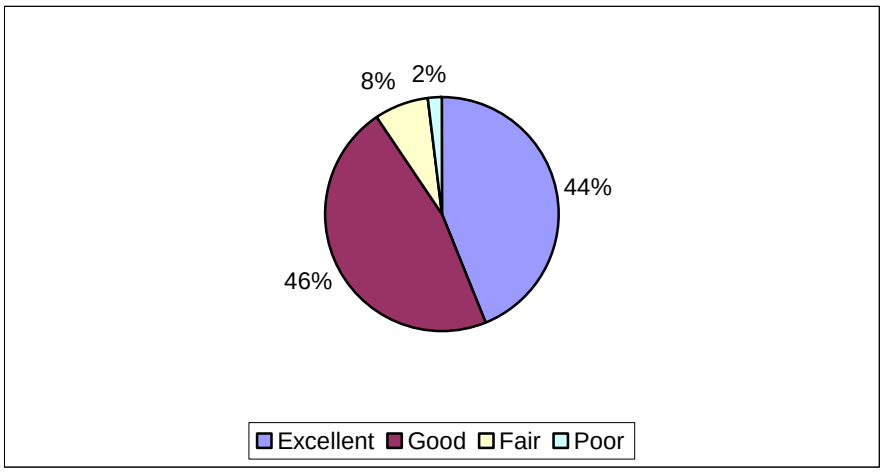


(Source of Data: Telephone Survey, 2006.)

Figure 24: Reasons for Living in Present Location

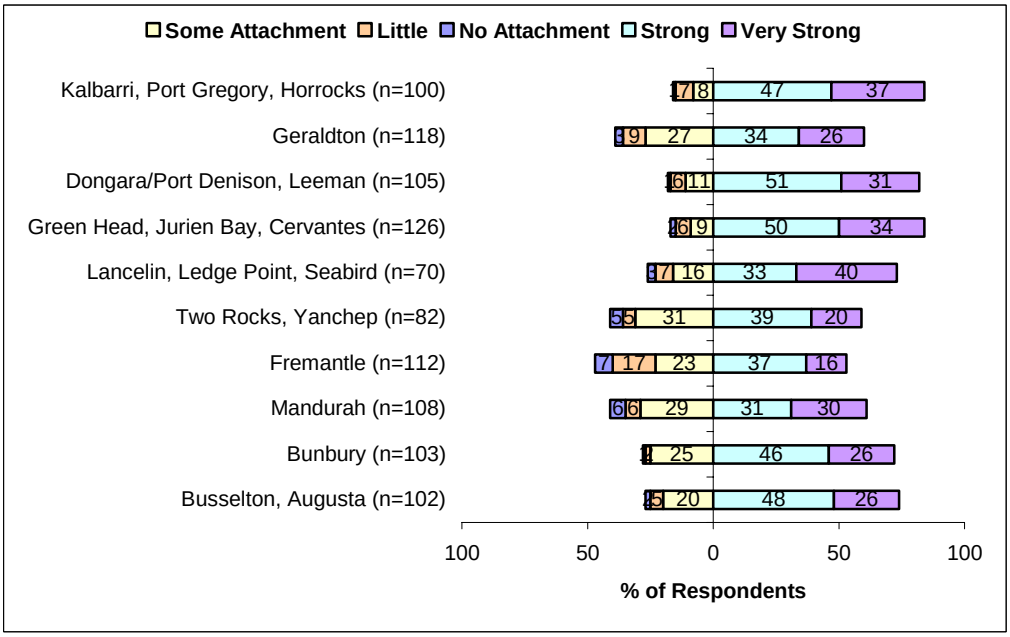
Respondents from Geraldton cited a range of issues, in addition to lifestyle, including family background, the ocean and the weather, and work. The communities where people cited work as an important reason for choosing to live there (or "plenty of work" being an advantage in living there) were Lancelin, Ledge Point and Seabird (39%); Bunbury (35%); Dongara/Port Denison and Leeman (31%); Geraldton (30%); and Green Head, Jurien Bay and Cervantes (24%). Those in Two Rocks and Yanchep cited the ocean location and affordability as important factors for choosing to live in these communities.

In all the areas surveyed, more than eight out of 10 respondents described their community as either a 'good' or 'excellent' as place to live (Figure 25). Geraldton received the lowest ratings, followed by Fremantle and Mandurah. In terms of their feelings of attachment to the community, there were significant differences between the communities (Figure 26). The residents in Mandurah, Two Rocks, Yanchep and Geraldton reported lower levels of attachment while the residents of all of the coastal towns north of Yanchep (apart from Geraldton) reported the highest levels of attachment. The residents in these coastal towns also reported that they 'knew most of the people in their neighbourhood' and that they 'nearly always meet people they know when shopping'.



(Source of Data: Telephone Survey, 2006.)

Figure 25: Respondents' Perception of the Community as a Place to Live



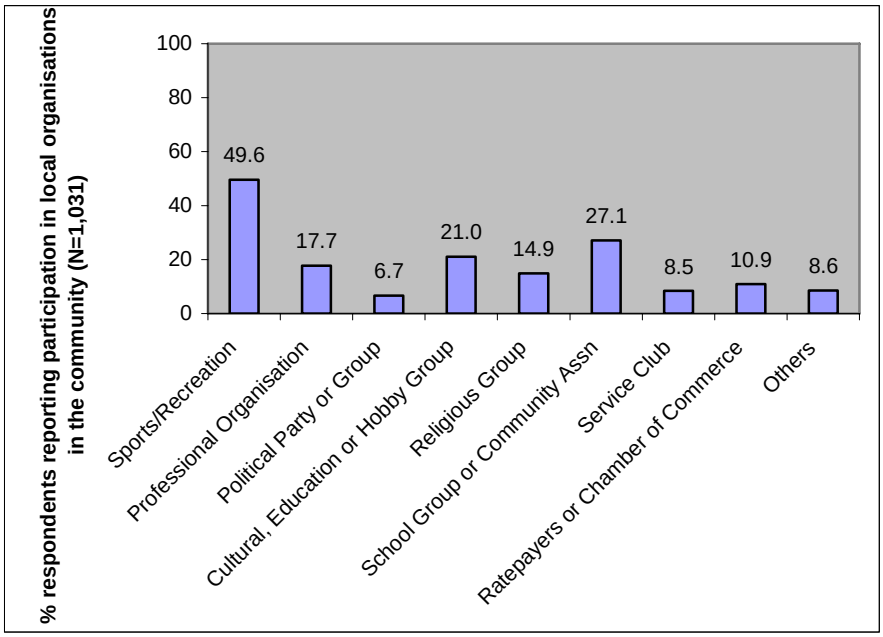
(Source of Data: Telephone Survey, 2006.)

Figure 26: Ratings of Attachment to the Community

Communities where the residents reported a relatively high level of participation in projects to develop new services, activities, or facilities in their community included Lancelin, Ledge Point, Seabird, Kalbarri, Port Gregory, Horrocks, Green Head, Jurien Bay and Cervantes. Residents in Two Rocks, Yanchep, Fremantle and Bunbury had low levels of participation in such projects. The residents of the northern coastal towns (including Geraldton) reported a higher level of attendance at community events compared with those from other areas. Busselton and Augusta residents also had a relatively high level of participation.

Participation of community residents in local groups and associations produced a highly variable pattern of results (Figure 27). Fifty per cent of surveyed respondents reported that they participated in local sports and recreation organisations and 27% participated in school groups and community associations. There was also participation in cultural, education or

hobby groups (21%), professional organisations (18%) and religious groups (15%). In the smaller northern coastal towns (north of Yanchep), participation in local sports or recreation organisations tended to be high. Participation in religious groups is higher in larger centres such as Geraldton, Fremantle, and the South West communities. Participation in local ratepayers associations or chambers of commerce is higher in Geraldton, Green Head, Jurien Bay, Cervantes, Lancelin, Ledge Point and Seabird. Participation across a range of activities also tended to be higher in these latter communities.

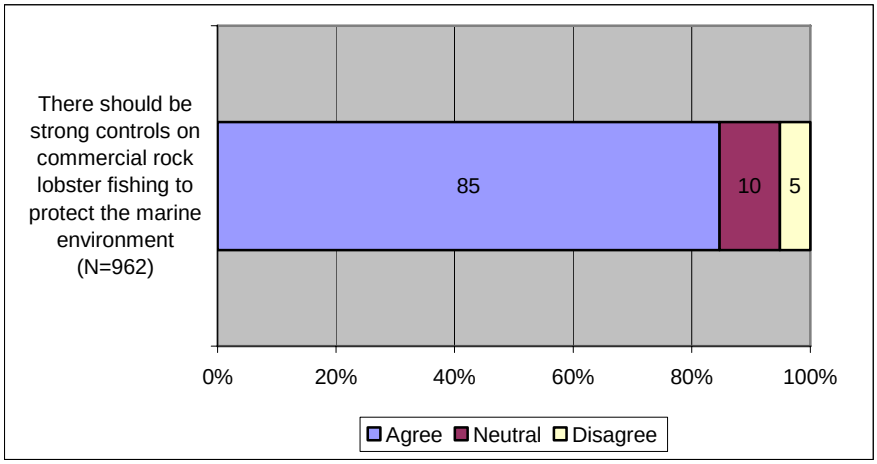


(Source of Data: Telephone Survey, 2006.)

Figure 27: Participation in Local Groups and Organisations

Surveyed respondents were asked questions to determine their attitudes to, and perceptions of, the rock lobster industry. Eighty-five per cent of surveyed respondents indicated agreement to the statement that 'there should be strong controls on commercial rock lobster fishing to protect the marine environment' (Figure 28). The average ratings of agreement that there should be strong controls on commercial rock lobster fishing to protect the marine environment were high across all the communities (ranging from 7.9 to 8.7 on a Likert scale ranging between 1 – strongly disagree to 10 – strongly agree).[41] Approximately half of the respondents in each of the communities rated their agreement with this as either 9 or 10 out of 10. Agreement was lowest in Dongara/Port Denison and Leeman where the average rating is 7.9 out of 10 and where 21% of the respondents gave a rating of 1 to 6 out of 10.

[41] The investigation of attitudes is a prominent area in much survey research. One of the most common techniques for conducting such an investigation is the *Likert scale*, named after Rensis Likert who developed the method. The Likert scale is essentially a multiple-indicator or –item measure of a set of attitudes relating to a particular area. The goal of the Likert scale is to measure intensity of feelings about the area in question. In its most common format, it comprises a series of statements (known as 'items') which focus on a certain issue or theme. Each respondent is then asked to indicate his or her level of agreement with the statement. Normally, since the scale measures intensity, the scoring is carried out so that a high level of intensity of feelings in connection with each indicator receives a high score (Bryman, 2006:68).

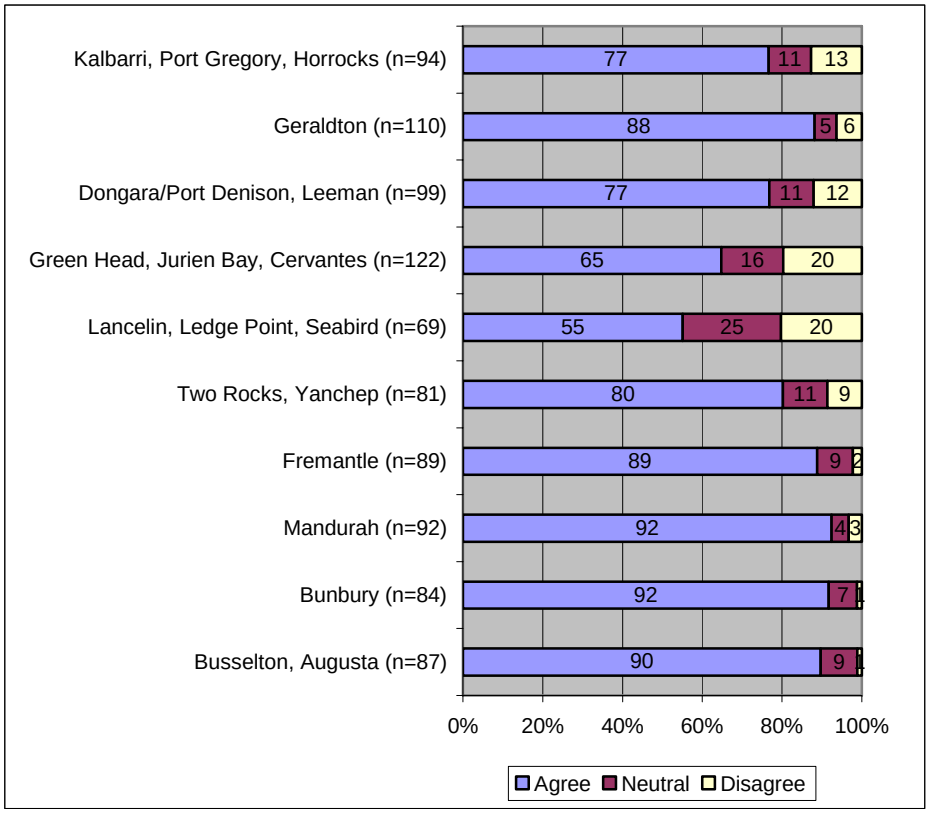


(Source of Data: Telephone Survey, 2006.)

Figure 28: Ratings of Agreement for Strong Controls on Commercial Rock Lobster Fishing to Protect the Marine Environment

The average ratings of agreement that limiting the number of rock lobsters caught each season is important for the long-term management of the fishery were also high, particularly in Geraldton, Fremantle, Mandurah and the South West communities (Figure 29). The average ratings of agreement ranged from 6.8 to 8.4 out of 10. Eighty-one per cent of surveyed respondents indicated their agreement to this statement while the remaining 19% either disagreed or were unsure about their response.

Overall, the statements that 'less people are employed in the rock lobster industry compared with 10 years ago', and 'the decline in the number of crayfish boats has had a negative impact on local business', received high ratings of agreement in Geraldton and the more northern coastal towns (with the exception of Kalbarri, Port Gregory and Horrocks). The ratings for agreement that there had been a negative impact on local business were low in Fremantle and the South West communities.



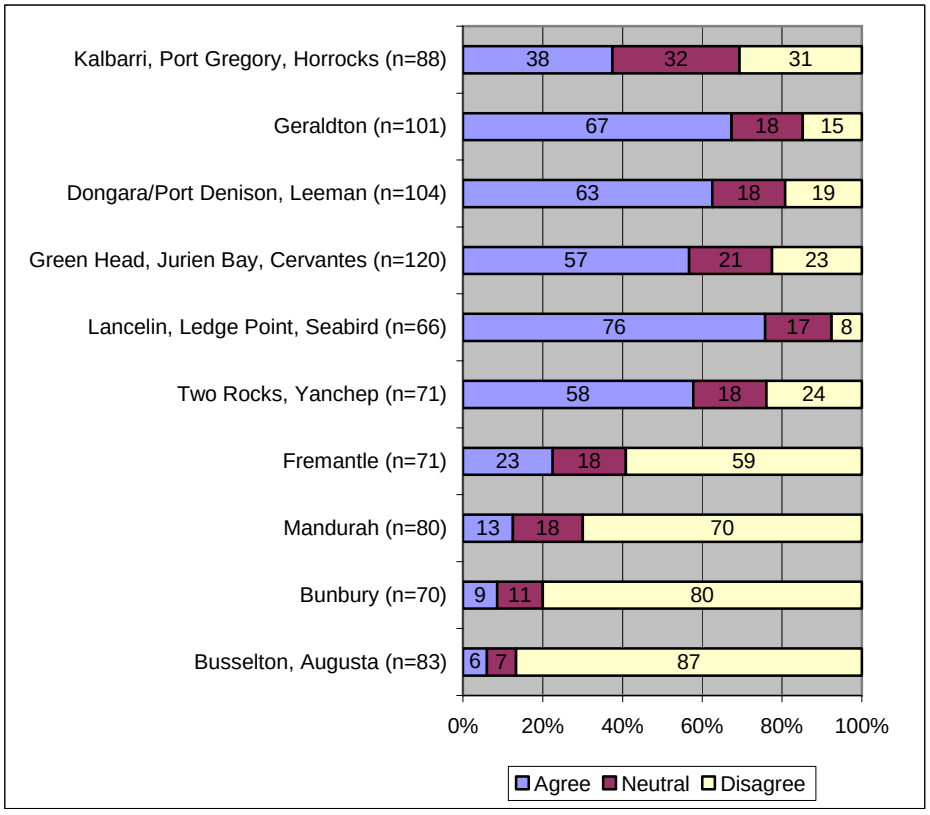
Rating of Agreement on a scale from 1-10 with:
Limiting the number of rock lobsters caught each season is important for long-term management.

Note that this scale was collapsed into three categories - 'Disagree' (1-4), 'Neutral' (5-6) and 'Agree' (7-10) for ease of interpretation.

(Source of Data: Telephone Survey, 2006.)

Figure 29: Ratings of Agreement that Limiting the Number of Rock Lobsters Caught Is Important for Long-Term Management

As Figure 30 shows, the communities where respondents gave relatively high ratings to the statement that 'the economic viability of our community is closely linked to the viability of the rock lobster industry' were: Lancelin, Ledge Point and Seabird (7.7); Geraldton (7.3); Dongara/Port Denison and Leeman (6.8), and Green Head, Jurien Bay and Cervantes (6.7). The statement that 'the decrease in the number of rock lobster skippers and deckhands is a significant problem' received higher ratings in the same four areas (6.6 to 6.9).



Rating of Agreement on a scale from 1-10 with:

The economic viability of our community is closely linked to the viability of the rock lobster industry.

Note that this scale was collapsed into three categories - 'Disagree' (1-4), 'Neutral' (5-6) and 'Agree' (7-10) for ease of interpretation.

(Source of Data: Telephone Survey, 2006.)

Figure 30: Ratings of Agreement on the Close Linkage between the Viability of the Local Economy and the Rock Lobster Industry

Communities where respondents rated rock lobster fishing and processing as a good source of employment for their community were: Geraldton (8.1); Lancelin, Ledge Point and Seabird (7.1); Dongara/Port Denison and Leeman (6.8); and Two Rocks and Yanchep (6.3).

Survey respondents gave mixed views on the statement that 'those employed in the rock lobster fishery earn good incomes'. Those in Kalbarri, Port Gregory, Horrocks, Dongara/Port Denison, Leeman, Green Head, Jurien Bay and Cervantes gave lower average ratings (ranging from 6.5 to 6.9) than respondents from other communities. Respondents in Mandurah and the South West communities, on the other hand, gave higher average ratings ranging from 7.6 to 8.1.

Surveyed respondents also indicated other concerns for the fishery in addition to the issues covered in the statements above. These included:

- Commercial boats come too close to recreational fishers (particularly in Busselton, Augusta, Bunbury, Two Rocks and Yanchep);

- Surfers in Bunbury are not safe since the [lobster] boats attract sharks;

- More regulation is required, with some respondents advocating the introduction of quotas;

- Respondents in Green Head, Jurien Bay and Cervantes (8.4%) and Dongara/Port Denison and Leeman (6.7%) expressed concerns that big business (larger boats that don't need to come ashore) are taking over the industry, and are pushing small operators out to the detriment of local communities;

- Respondents in Lancelin, Ledge Point and Seabird (11.4%), and Two Rocks and Yanchep (5.2%) cited their opposition to having different start dates for the season for recreational fishers and commercial fishers;

- Some respondents in Kalbarri, Port Gregory and Horrocks (4.5%) and Lancelin, Ledge Point and Seabird (3.6%) feel that recreational fishers need more regulation;

- Some respondents in Lancelin, Ledge Point and Seabird (6.1%) feel that controls on commercial fishing should be reduced, or done differently (3.3%). Wanting controls done differently was also voiced in Geraldton (4.8%) and Dongara/Port Denison and Leeman (4%), with respondents citing the need for more consultation, taking into account local knowledge, and adopting controls that are less complicated and better geared to small enterprises; and

- Some respondents in Green Head, Jurien Bay and Cervantes (4.4%) feel that rock lobster fishers should not be allowed to operate wet line licenses.

In summary, respondents from the smaller towns to the north of Yanchep reported higher levels of:

- Attachment to their communities;
- Social connectedness;
- Participation in community activities;
- Personal participation in voluntary emergency services;
- Personal attendance at local community events; and
- Participation in local sports or recreation organisations.

Rock lobster fishing continued to be seen as an important industry in these northern communities. The emphasis on these issues was lower in Kalbarri where there appeared to be a greater emphasis on elements such as tourism, holiday making, and retirement. People in Fremantle, Mandurah, and the South West communities were less aware of the industry and did not see the economic viability of their communities as linked to the viability of rock lobster fishing.

4.0 SCENARIO ANALYSIS OF THE SOCIAL IMPACTS OF ALTERNATIVE MANAGEMENT ARRANGEMENTS

> *Social Impact Assessment (SIA) is a method of gauging the social consequences of alternative fishery management actions or policies. In general, SIA is the estimation of how actions or policies, and all reasonable alternatives to them, will affect the quality of people's lives. In the context of marine fisheries conservation and management, SIAs focus on the human environment of the fisheries. That is, SIAs consider the effects of changes in resource availability or fishing practices on fishermen, communities, fishing-related businesses and employment, families and other social institution, regulations and social norms of behaviour and cultural values. Although a quantification of the impacts is preferable, it is not always possible. In these cases, it is essential, at a minimum, to convey conclusions and their basis qualitatively rather than ignore them because they are not easily enumerated or understood* (<http://www.nmfs.noaa/sfa/reg-svcs/social_impact_assess.htm> cited 01 August 2005).

The research team used scenarios, or 'stories of what might be', as a tool in undertaking the SIA tasks of predicting and assessing the potential social impacts of changes in the fishery management arrangement for the Western Rock Lobster Fishery (see Section 4.3 for the details of these management arrangements). Research into the experience of other countries and other fisheries on alternative fishery arrangements was undertaken, which focused on the effects of fishery management arrangements on people's way of life, their culture and their community. The research team also identified the driving forces or factors that may affect fishers' decisions to stay in or leave the fishery based on the perceptions and views of fishers of the current and alternative management arrangements under consideration. Together with the community views on the fishery in general and the rock lobster fishers in particular, two scenarios of how the future may unfold were developed and discussed during the community workshops.

4.1 INTERNATIONAL EXPERIENCE ON FISHERIES MANAGEMENT

> *…Scrutiny of the record of fisheries management reveals no alternative scheme that is free of significant problems* (Copes, 1986: 288).

In 1997, the Organisation for Economic Cooperation and Development (OECD) undertook a review of more than 100 fisheries in 24 member countries to determine which fishery management measures are effective in conserving marine fisheries and producing significant economic and social benefits (OECD, 1997). The management measures examined were: Output controls (total allowable catch, individual quotas, and vessel catch limits); Input Controls (limited licenses, individual effort quotas, and other gear and vessel restrictions); and Technical measures (size and sex selectivity and time and area closures). The social consequences looked into, included changes in ownership patterns such as family or

corporation, lifestyles, class divisions and perceived inequities. The study also looked into the conditions where such specific management measures are effective.

A summary of the findings reported that the total allowable catch management results in a race-to-fish, with all its attendant effects (Sutinen, 1999). It also reported that individual quotas are an effective means of controlling exploitation, of mitigating the race to fish and most of its negative impacts, of generating resource rent and increased profits, and reducing the number of participants in a fishery. Limited licenses and, to some degree, individual effort quotas, lead to over-capitalisation and increased harvesting costs. Time and area closures have not been effective in assuring resource conservation, although conservation of the fish stocks might well have been poorer without them.

While some studies have noted the economic benefits of the individual quota as a device in fisheries management (e.g. Symes and Crean, 1995; Criddle and Macinko, 2000), some have advocated the use of individual quota with caution.[42] Copes (1986) noted that ITQ is not a suitable management device under many common conditions. Others pointed out that ITQ is simply another fisheries management option and that it is not the panacea to address problems in fishery management (Boyd and Dewees, 1992). The literature points to the economic benefits of ITQ including increased economic efficiency resulting from reduced over-capitalisation, restructuring of inputs, and a closer alignment of harvesting activity to market needs and demands. (Symes and Crean, 1995),

A number of studies also expressed concern for social equity and balanced regional development in the shift towards ITQs. In New Zealand, ITQ in fisheries management is viewed in some quarters as 'part of a particular political and social agenda' that has led to the exclusion of small-scale and independent fishermen from fisheries that have fallen increasingly under the control of large, profit-seeking corporations' (Duncan, 1995, n.p., cited in Phillips, *et. al.*, 2002:467). The distributional effects of ITQs, in terms of income distribution between owner and crew, and the vulnerability of fishing communities short of quota, has also been central to the debate in Icelandic fisheries that have been managed by ITQs for a decade (Eythorsson, 2000). The history of ITQs also shows the effects of trial-and-error learning and adaptation. McCay (1995:7) pointed out that: "among the social implications of ITQs in fisheries are job losses, changing social relationships of production, changing social structures within communities, and increased concentration of rights, power and wealth within an industry".

Several countries, including Australia, have experimented and implemented ITQs in their fisheries and their experiences had been widely documented (see Appendices 5A and 5B for the details). A report prepared in 2001 on the social outcomes of applying ITQs to manage Australia's South East Fishery noted that the introduction of ITQs has had mixed results in social, economic and biological terms. Aslin, *et. al.* (2001:6) observed that:

[42] The individual quota may be thought of as a fixed share of the catch allocated in advance to individual operators (i.e., recognised fishermen, fishing units or fishing enterprises). Allocations may be made for a single season (e.g., year), for a longer period, or in perpetuity. While an individual quota may be set as a stated percentage of the total catch, administrative practicality dictates that it will usually involve setting a specific quantity that a fishing operator may take in a particular season. Advocates of the individual quota also emphasise a need to make it an individual transferable quota (ITQ). Transferability means that fishing operators may sell either their entire quota, or parts of their quota, to other operators. The sale could involve the quota for a given season only, or for a number of seasons, or it could be in perpetuity (Copes, 1986:279-280).

> *An increased understanding of the complexities of individual fisheries and care in designing participation or consultation strategies can help to produce more acceptable and effective regimes. Both system design and implementation processes are key factors in determining overall responses to changes in management regimes, including introduction of ITQs.*

In the case of the South Australian and Tasmanian rock lobster fisheries, the introduction of the ITQ resulted in large declines in the number of vessels accompanied by increased efficiency among the remaining vessels with improved catches, lower costs of fishing and enhanced market prices for the catch. It is worth noting, however, that on the socio-economic side, the picture was less positive. As Bradshaw, *et. al.* (2000:39) pointed out:

> *Early signs are that with a decrease in the number of commercial vessel fishing, employment in the Tasmanian rock lobster fishery has declined as predominantly lessees have been compelled to exit the fishery due to multiple license holders concentrating licenses on a single vessel to catch closer to what they did prior to the introduction of the ITQs. In addition, cost minimisation practices appear to be having an impact on the employment of deckhands as their number is reduced and their conditions of payment are changed, with more deckhands being paid wages than a percentage of the catch. In short, what is bio-economically efficient may not be socially effective in terms of the level of employment in the Tasmanian rock lobster fishery.*

4.2 DRIVING FORCES LIKELY TO INFLUENCE FISHERS' DECISIONS

Figure 31 presents the driving forces or factors that will likely have an effect to an individual fisher's preference for the management arrangement that will govern the WRL fishery. These were identified from the personal interview notes and detailed notes taken by the co-investigator during her attendance at various Coastal Tour meetings. These factors include:

4.2.1 Biological Factors

The need to protect the breeding stock for the long-term sustainability of the fishery is a primary ecological or biological imperative. Regardless of the management system chosen and adopted for the fishery, the Department of Fisheries remains committed to maintaining the breeding stock at levels above those of the late 1970s. In the current effort controlled management system, a combination of measures such as pot reductions or closures of the fishery would slow down the continual growth in fishing effort.[43] If the system is to move towards a catch quota, the allocation of the quota (with separate quotas set for each Zone) would be based on catch predictions and as such, if the catch is predicted to be lower, then the quota will be set at a lower level accordingly.

[43] The 2005-2006 resource sustainability management package for the commercial fishery included measures to reduce effective fishing effort by 15% in the northern coastal region and five per cent in the southern region. The package for the northern region comprised a 10% pot reduction from November 15 to March 14; Zone A 10% pot reduction (March 15 to April 15); closure from January 15 to February 9; no fishing on Sundays in Zone B from March 15 to June 30; and closure on Christmas Day and New Year's Day. For the southern region, measures included a 10-day November closure, three-day moon closures from February 1 to June 30, and closure on Christmas Day and New Year's Day.

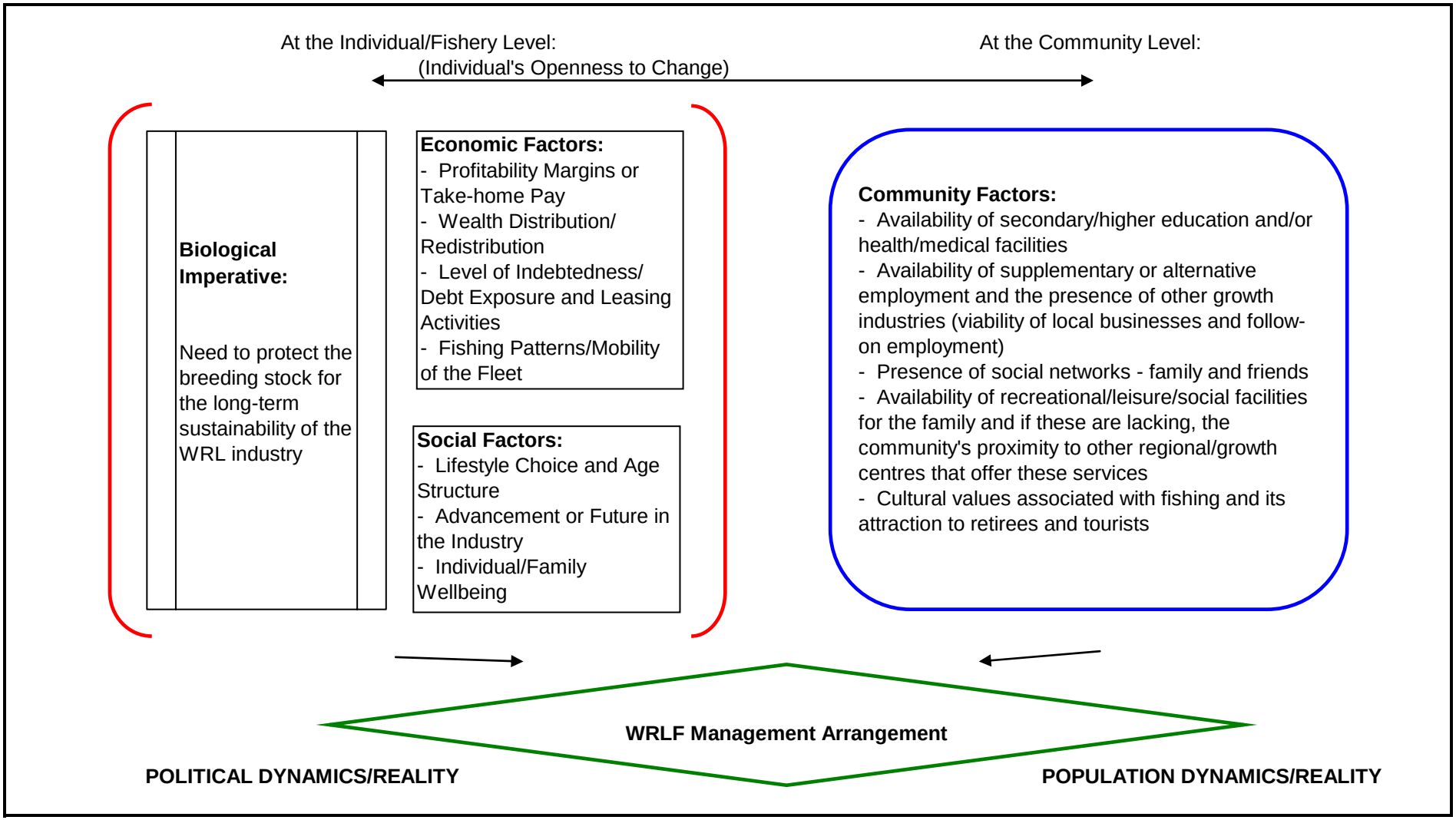


Figure 31: Factors Likely to Affect Individual Fishers' Decision on WRLF Management Arrangement

4.2.2 Economic Factors

In economic terms, the costs associated with fishing are rising (e.g. fuel, labour and bait) while the prices for rock lobsters have been declining in real terms by about 20 per cent over the last ten years. These two factors have resulted in lower profitability in the fishery, necessitating a change in fishing patterns and behaviours to minimise costs and maximise profits. As some interviewees noted: "People just work harder and harder to make the same money" (Interviewee No. 062, 2004) and "You have to work extremely hard and catch a little bit more than the average" (Interviewee No. 094, 2004). Fishers also acknowledged that the price paid to crew is critical to their profit margins. However, they have had to contend with the challenges posed by increased competition from the mining and construction sectors that offer attractive compensation packages for both skilled and semi-skilled employees. One rock lobster fisher (Interviewee No. 163, 2004) pointed out that:

> *Our profit margin in fishing now is getting less and less. Five or six years ago, my fuel and bait bill combined was about $56,000. This last year, my bait bill was $64,000 and my fuel bill was just over $86,000 for the season. The costs have trebled and that is profit gone. Then, you still have to pay your crew a decent wage to keep them.*

The current trend away from family fishing businesses to a corporate, investor-oriented type of operations is expected to continue in the current management system and to accelerate if the fishery moves towards a quota system. One rock lobster fisher (No. 042, 2004) pointed out that, "The reality is that you might be much better off selling your licence and investing or just leasing the pots and not working. I would have made more money in the last two years leasing the pots than I had made by going to work."

An individual fisher's level of indebtedness and debt exposure is also a major economic factor in the preference for the current system or the alternative quota system. The status quo rewards those who work hard and catch well, helping those who have investment loans to pay off their debts and for those who are leasing to meet their leasing obligations.

4.2.3 Social and Cultural Factors

The social and cultural factors that fishers take into consideration are those that affect their level of job satisfaction. These include the attraction of fishing as a profession based on lifestyle preferences, including the value and importance placed by fishers for individual and/or family well-being.

4.2.3.1 *Lifestyle Choice*

The majority of fishers who participated in the personal interviews indicated that the lifestyle of a fisher was the rock lobster fishery's major attraction as a profession. The following quotes expressed this carefree and independent lifestyle:

I love being a fisher and being out there on the ocean. It is a good job and I would not trade it for anything. – Interviewee No. 178, 2005

There are plenty of days when I think I've got to quit fishing – the body's stuffed, the knees and shoulders stuffed, the elbows buggered – but then I say to myself, "What else could I do that offers me the lifestyle I've got?" I am my own boss and it is only up to me to work as hard as I want. – Interviewee No. 024, 2004

Fishing is a good lifestyle. You work 12-13 hours a day, longer some days, but then you can relax during the off-season. - Interviewee No. 104, 2004
Fishing is a great way of life, a lifestyle of working during the day, having the option to have a day off if it's too rough to go to work or if there are not enough crays, calling the shots on when it's time to go home or have a day off or whether to work everyday. – Interviewee No. 120, 2004

If you have a trade, there are just multitudes of things you can do and you are not just stuck in one job. You can go crayfishing and in the off-season, you can lay bricks, or spray paint a car. – Interviewee No. 107, 2004

In my first two years, working on deck was the biggest buzz of my life. Everyday, you are seeing new and exciting things. – Interviewee No. 111, 2004

There was a general recognition, however, that "…fishing these days has become amazingly competitive; the industry is a more cut-throat industry these days..." (Interviewee No. 048, 2004). This excessive competition has led to "…owners getting out and leasing their licenses. This way, they have no headaches and they make money without getting dirty…" (Interviewee No. 136, 2004). There were also some fishers who lament that: "Courtesy and respect is a dying art in this fishery" (Interviewee No. 122, 2004).

The increased competition in the industry resulted in the decline in the socialising undertaken by fishers with other fishers and community residents. One rock lobster (No. 118, 2004) noted that "… up to a decade ago, the fishers got along very well together. Fishers play sports like tennis and football. However, we have lost all that. It's all gone." In some of the communities, it was observed that: "… the town's just got people who flitter in and out of the place and who has no real contact with the rest of the community." (Interviewee No. 132, 2004).

4.2.3.2 *Age Structure and Future in Fishing as a Profession*

In 2004/05, about 70% of the fishing fleet were in the 35-54 age range and another 17% were of an age where retirement is an option. As one fisher noted, "most of the fishers (in town) are getting older and it's been a hard slog. [The fishery] is so [much more] competitive now" (Interviewee No. 089, 2004).

Young skippers made up 14% of the total number of skippers in the 2004/05 fishing fleet. There was recognition among fishers that, "… the industry will survive as long as there are crew who really enjoy doing the work. However, it is getting to the point where the amount of hard work you are doing and the amount of money you put into it may outweigh the enjoyment you get out of it. You want to be able to get good returns especially if you have families" (Interviewee No. 097, 2004). This was a sentiment shared by the community residents surveyed in Port Gregory, Leeman, Jurien, Cervantes and Yanchep, where only a small percentage (ranging from zero to 36%) indicated that they would recommend rock lobster fishing to young people.

In addition to the challenges imposed by increasing competition for labour, particularly from the mining sector, there were mixed views among the fishers who participated in the interview with respect to the future of young people in the industry given the high cost of entry into the fishery. Some fishers who believe that there is no future for the fishery for young people expressed the following views:

> *Some move out of the fishery (in a depressed state) because there is no future in it for them [if you are] just working as a crew. They could not see any advancement in it, as they get older.* – Interviewee No. 004, 2004

> *Deckhands these days will not have a chance at all, unless someone has lots of money or wins in the lotto, because the [cost of] license and the pots are just too much.* – Interviewee No. 099, 2004

> *I had always worked as a skipper or as a lease fisher and so, there is nothing to hand down to my sons. I didn't want to see them going into what I could see was not a particularly good profession...* – Interviewee No. 069, 2005

> *(Advancement) is very hard for [today's fishers]. Some try very hard. They buy a boat and they lease licenses to try to make money so that they can one day be able to buy their own license. However, because the licenses are worth so much money, it makes it very hard to do it nowadays.* – Interviewee No. 163, 2004

Those who opined that there was still a good future for young people in the industry noted that:

> *Each stepping-stone is a different stepping-stone. While probably a lot harder, the opportunities are there in the industry to advance for deckhands who work hard and have the drive and the goal to succeed. Deckhands can still earn good money. If they can hold on to that good money and be prepared to work in the off-season, get the experience and be ready when they're lucky enough to get a break driving a boat for somebody, they can advance in this fishery.* – Interviewee No. 137, 2004

> *As long as they put their mind to it and as long as they are dedicated, young fishers can still make it in the fishery and make good income. There are investors out there who are doing 50-50 profit sharing and some fishing companies who still help young skippers with potential. Owning their own boats would be a hard issue, but they can certainly make a good income.* – Interviewee No. 179, 2005

4.2.3.3 *Individual Wellbeing and Family Relationships*

The long hours of work coupled with only a few short breaks during the season were cited as factors that contribute to the problem of maintaining family relationships among those engaged in the rock lobster fishery. One fisher noted that, "… working 7 days a week 7 months of the year and getting up at 4:00 AM every day does not bode well when you are into a young relationship. By the time you get home, you are pretty buggered and you do not feel like doing anything. Arguments can arise from these situations and put a bit of strain on relationships" (Interviewee No. 070, 2005).

The preference that fishers would give to any management arrangement will be affected by the importance placed on individual wellbeing as well as that of family. The long hours of work and the increasing mobility of the fleet may conflict with the need to spend more time with family, particularly for those with younger children. Among the considerations that fishers noted were:

> *We work up and down the coast a lot but while my family is at a stage where I need to be home more, I need to be fishing in order to earn money for my investment.* – Interviewee No. 082, 2005

> *I was so devoted to fishing that I did not realise there was a world outside. Having time off made me appreciate my family.* – Interviewee No. 129, 2004

> *Fishers are different individuals. Some do not value family as much and are just interested in fishing. However, there are some who are the roughest looking fishers whom you see quite happily pushing the baby prams. [They are quite happy] to talk about their babies' weights and first tooth.* – Interviewee No. 138, 2004

An additional concern was the uncertain monetary returns of rock lobster fishing that result in financial and family stress. One fisher noted that "…just wondering if at the end of the season, you're going to make enough money to pay off all your loans, pay your licence and your insurance, and your fuel bill, can contribute to the stress you face with fishing" (Interviewee No. 085, 2005). Most wives noted that, "… you have to learn to manage the seasonality of the income or take-home pay. Financial problems cause more stress and one has to learn to adjust to about 5-6 months of minimal or no income" (Interviewee No. 110, 2004).

4.2.4 Community Factors

Community factors that play a role in the preference for the fishery management arrangement include the availability of social infrastructure such as schools for those with children of school age and medical facilities, the presence of family and social networks, and availability of employment opportunities in the community. For some fishers, the isolation and smallness of the community were points of attraction, even as they recognised the importance of attracting a bigger population base to support local businesses and encourage the development of better social infrastructure.

There were a number of fishers whose families were split. The wife and the children resided in Perth because the children were studying there or because there were more social activities for the family to undertake. The husband (fisher) stayed in the coastal community and/or commuted back and forth between Perth and their fishing grounds. In other instances, older fishers with grown up children found themselves moving back to more established centres. As noted during the community workshop in Geraldton:

> *The smaller communities are no longer thriving because the experienced and older fishers are moving their operations back to the bigger towns like Geraldton or Dongara. There is nothing anymore in the smaller communities that fishers can relate to. Our kids have grown up, they're not babies anymore to play on their beach, they now have their own lives, and we are the ones who are not having a social life down in these fishing communities* (Community Workshop Notes, July 2006).

4.3 THE BASIC SCENARIOS

> *Scenarios are an important tool for learning and informing decision-making in situations of high uncertainty. Used properly, they can help people think more systematically about the different circumstances they may encounter in the future and the implications of those future possibilities for decision-making in the present* (Scenario Development, p. 29, <http://www.altfutures.com/sust_energy/scen_develop.pdf>, cited June 2006).

Based on the interviews with fishers, specific issues important to the fishery were identified. What the fishers are likely to do and what the results could be for staying with the current system of an effort quota or moving towards a catch quota system were outlined as possible outcomes and potential impacts. The way the issues were expressed and raised during the interview process varied depending on the position of the interviewee in the fishery and their level of knowledge and information about the fishery management arrangements as well as their appreciation of the opinions and motives of other fishers. There were, nonetheless, common themes expressed regarding the management of the fishery under each scenario. The two basic scenarios that were discussed during the community workshops focused on maintaining the current input control system and moving towards a catch quota. The features of these two basic scenarios are presented in Table 6.

Table 6: Features of the WRLF Management Scenarios		
Management Controls	***Status Quo***	***Catch Quota***
General	Continuation of input controls of reducing effort through pot numbers and/or days fished and/or adjustment to gauges). Review of the management system will be based on the decision rules framework.	Based on setting a kilogram allocation for the commercial fishery, with operators having flexibility to choose how and when they catch their allocation. A shift to a quota system will be implemented over serveral years and is expected to occur in phases.
Spatial - Boundaries	Cape Leeuwin to NW Cape	No Change
	Four fishing zones - A Zone, B Zone, C Zone and Big Bank	Three fishing zones - A Zone, B Zone and C Zone
Temporal - Opening and Closing Times	Seasonal Controls with B and C Zones operating from 15 November to 30 June and A Zone operating from 15 March to 30 June; Big Bank operates from 10 Feb to last day of February	Extended Season with B and C Zones operating from 15 November to 31 August and A Zone operating from 15 March to 31 August
Access	Minimum unit entitlement of 63 is required to operate	Minimum catch quota entitlement equivalent to a 45-pot entitlement to fish
Effort	Individual maximum gear usage	No maximum pot usage. Fishers can use as many pots as they like
Biological	Minimum size limits	No Change
Annual Catch	Not Applicable	Catch quotas based on conservatively set TACC for each Zone
Transferability	Individual pot entitlements are transferable between A and B Zones and not transferable between B and C Zones	Individual catch quota to be fully transferable within zones and within seasons
Cost Recovery	Department of Fisheries cost of management, research, compliance and enforcement recovered in accordance with agreed cost attribution and recovery rules	No Change
Processing	Licensing of lobster processing for expert is restricted to the existing number of issued licenses	No restrictions on export processing license numbers
(Source: Fisheries Management Paper No. 209, 2006 and Discussion Paper on the Review of the Management System of the WRLF, 2006.)		

It must be noted that the scenarios that were developed and presented in Figures 32A and 32B are not predictions or forecasts of what will happen, but a plausible description of how the future may develop if the fishery management arrangement stays the way it is, or moves towards a quota system. These scenarios also took into consideration the positive and negative impacts raised by the interviewees on the status quo and the output controlled management arrangement (see Appendices 6A and 6B for details). No single conclusion can be made on these scenarios because of the different circumstances faced by individual fishers and since the background circumstances of individual fishers might change over time. Nevertheless, a series of possible future outcomes can be identified from the basic scenarios.

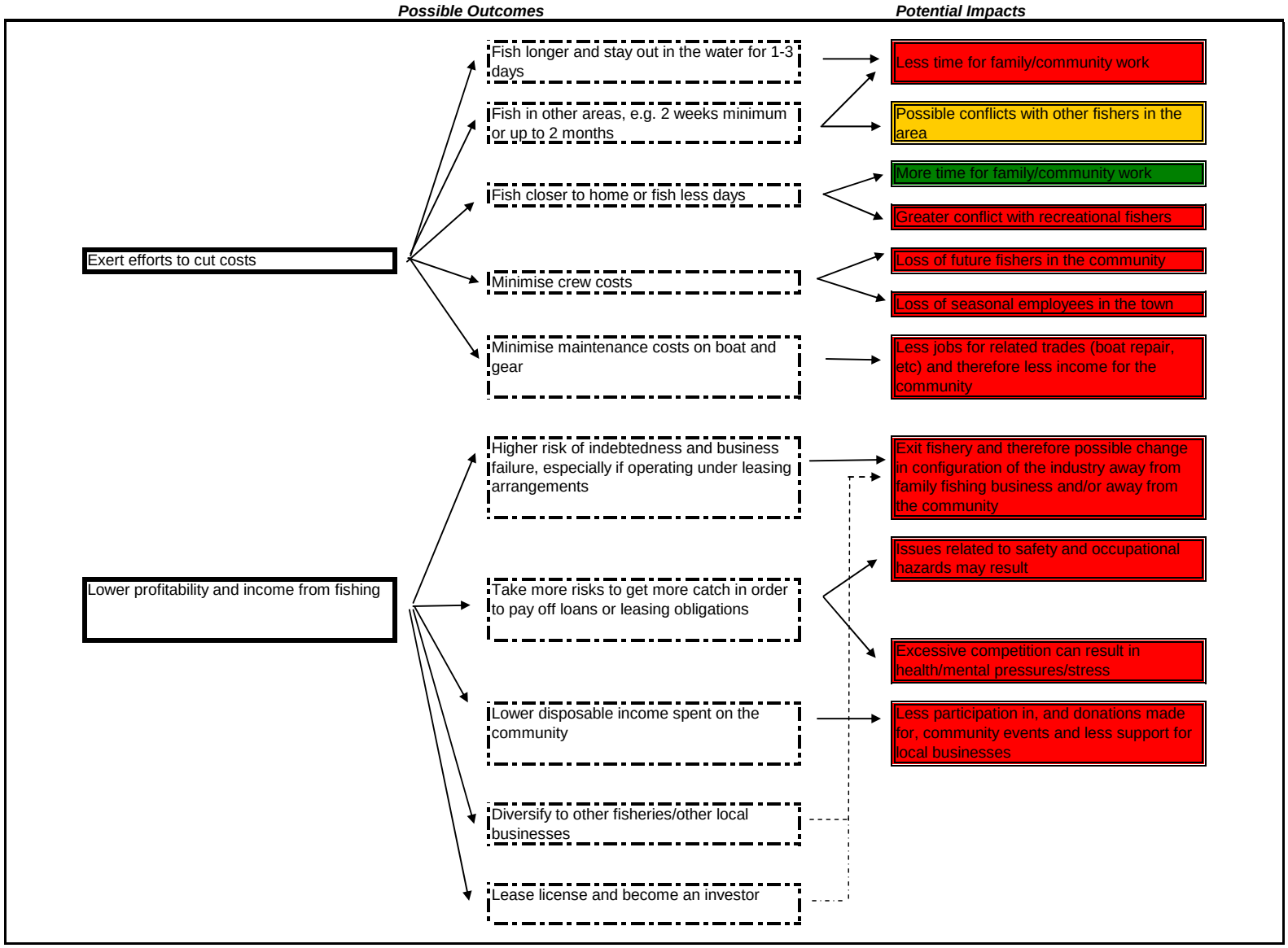


Figure 32A: Possible Outcomes and Potential Impacts of Maintaining the Current Input Control System

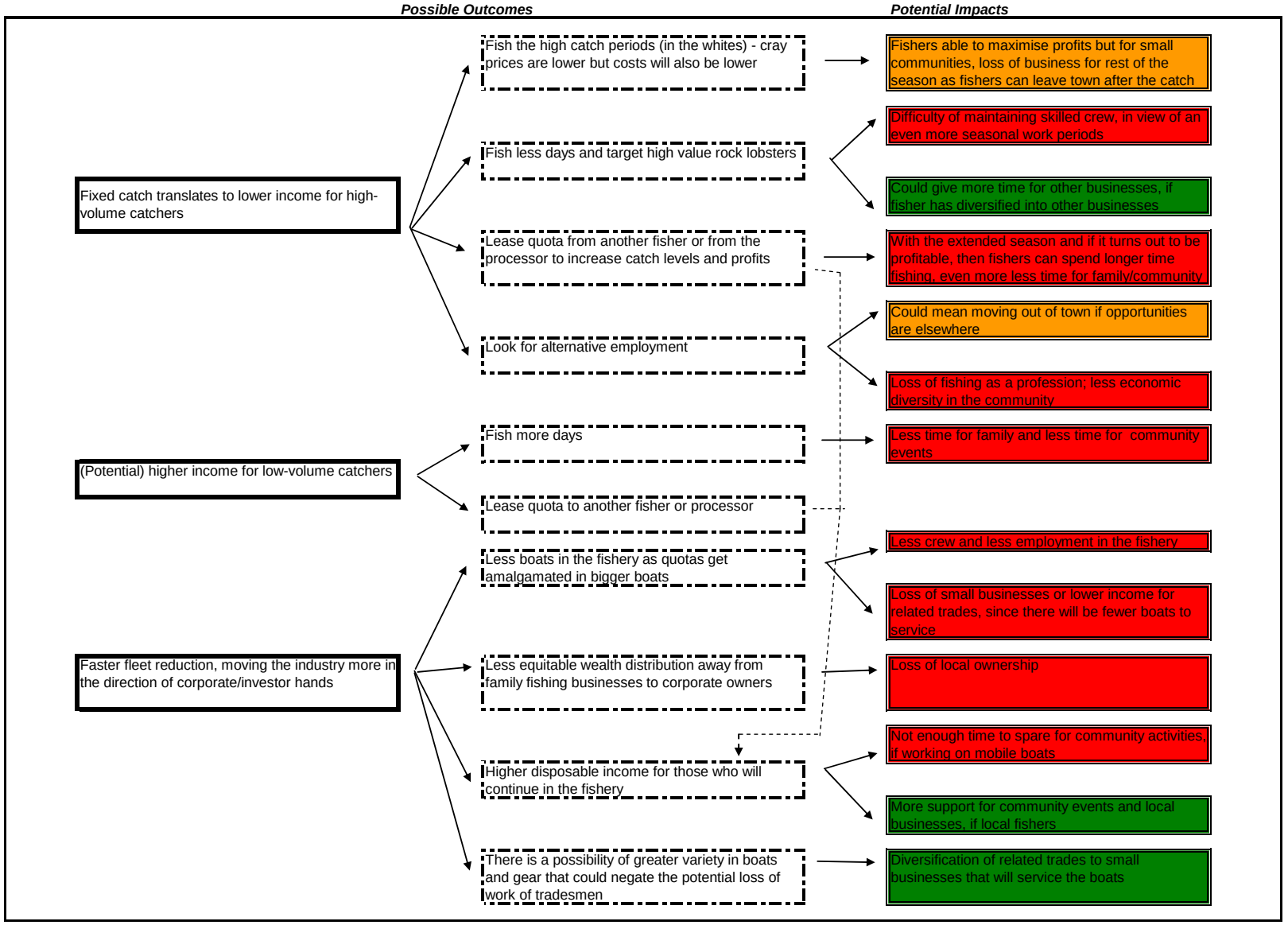
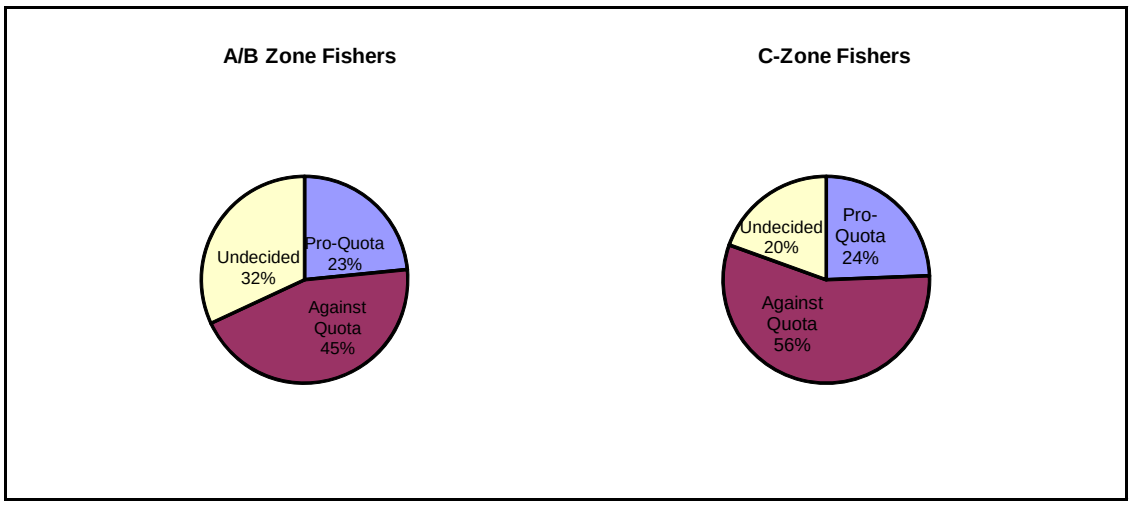


Figure 32B: Possible Outcomes and Potential Impacts for Moving towards a Catch Quota

The issues and problems viewed by fishers interviewed during the course of the project take on a zone or regional perspective and a local or community perspective. Most fishers preferred the status quo since this option was familiar to all of them, and generally, they knew how changes in the current system affect them.[44] The current system was also attractive because this system rewarded hard work, knowledge and innovation with additional catch. As such, it allowed young fishers to pay off their debts and remain in the fishery. Nevertheless, fishers also recognised the need to curtail their fishing effort since as one fisher noted (Interviewee No. 014, 2004), "[Fishers] are getting that good, we could probably cut down the season significantly and fish for less time and probably catch the same amount of crays." A number of C Zone fishers also cited the need for more intensive and aggressive marketing of lobsters both domestically and internationally so that fishers can be assured of a good price for their product.

On moving towards a catch quota, Figure 33 shows that 45% of A/B Zone fishers and 56% of C Zone fishers were not in favour of such a shift in management arrangement of the fishery.



(Source of Data: Personal Interviews, 2006.)

Figure 33: Number of Fishers For and Against the Quota System

Less than a fourth of fishers in both zones indicated that they were amenable to the shift towards a quota system or were at least willing to try a new system. The main issues raised by fishers on the move towards a quota system were the uncertainty regarding the beach price and the increased compliance and enforcement costs that would ultimately be borne by fishers. There was also the perception that it rewards the inefficient and less than average catchers since the allocation of the catch is based on the number of units (pots) held on the license and not the fisher's catch history. There was, nonetheless, an overall appreciation of the difficulties of allocating the quota based on the fisher's catch history. The other main issues with the catch quota system were the effect it will have on crew availability and the possibilities of fishers leaving the communities they currently reside in should their fishing pattern change to a more mobile type of operation. Some anti-quota fishers pointed out that:

[44] For more than 40 years, the WRL fishery is under an individual transferable effort management system (ITE is a unit of fishing effort – e.g. rock lobster pot – that can be transferred between fishers in the same zone). Pot numbers are largely limited by the carrying capacity of the vessel and how many can be efficiently operated each day.

> *The quota system is fraught with danger because they always promise you better prices. The other thing with quota is that it removes the good fishermen; it's just not worth for good fishermen to fish because they are just brought back to mediocrity… The thing is, if they bring in quota, it won't be worthwhile fishing for us because the amount of money you will make will be just ordinary [compared to your] outlay.* – Interviewee No. 046, 2004

> *I can see the industry being owned by a small percentage of investors. Big operators put all the pressure in the industry because of technology - in the old days no one fished the deep waters so less breeding stock was targeted but now, the big guys can put more pots in the water and go out on ground that small guys can't go to. All the guys that get bad backs are guys on big boats and the mobile fleet can move from one end of fishery to the other. Compliance costs are scary because we will have to pay for it under cost recovery.* – Interviewee No. 079, 2005

Those who favoured the shift to a quota system cited the benefits of being able to fish in a more flexible way as to get the best value out of the product and the benefits of having more time with family. Others mentioned the benefit of having more concrete profit figures in dealing with banks to secure loans and for good financial planning. One fisher (Interviewee No. 183, 2005) summed it up as follows:

> *The quota system will stop the mentality of catching as many as you can and will turn fishermen back into good fishermen. We're going to start fishing for price, not lobsters, and be able to control the market. Quotas will make processors be good marketing people. The quota system would recreate the lifestyle that originally made it a good industry to begin with. You don't have daily pressure and you don't have to go out in that bad weather. The costs will be down and profitability will go up and you also have a better relationship with your family and with your deckhands.* – Interviewee No. 183, 2005

Those who were undecided or unconvinced that quotas would be of more benefit than the current system, cited the need for more information on how much quota is to be allocated. Some fishers pointed out that:

> *If it is a 12-month season, [fishers] will be picking their time when to catch the lobster at high price. But who knows whether it would set that high price 12 months of the year? If the overseas market finds out that we can catch it 12 months of the year, the price might [drop] and this could be bad. If it is allocated the correct way, it would be good; if it is allocated the wrong way, well I can't see any advantage in it at all.* – Interviewee No. 182, 2005

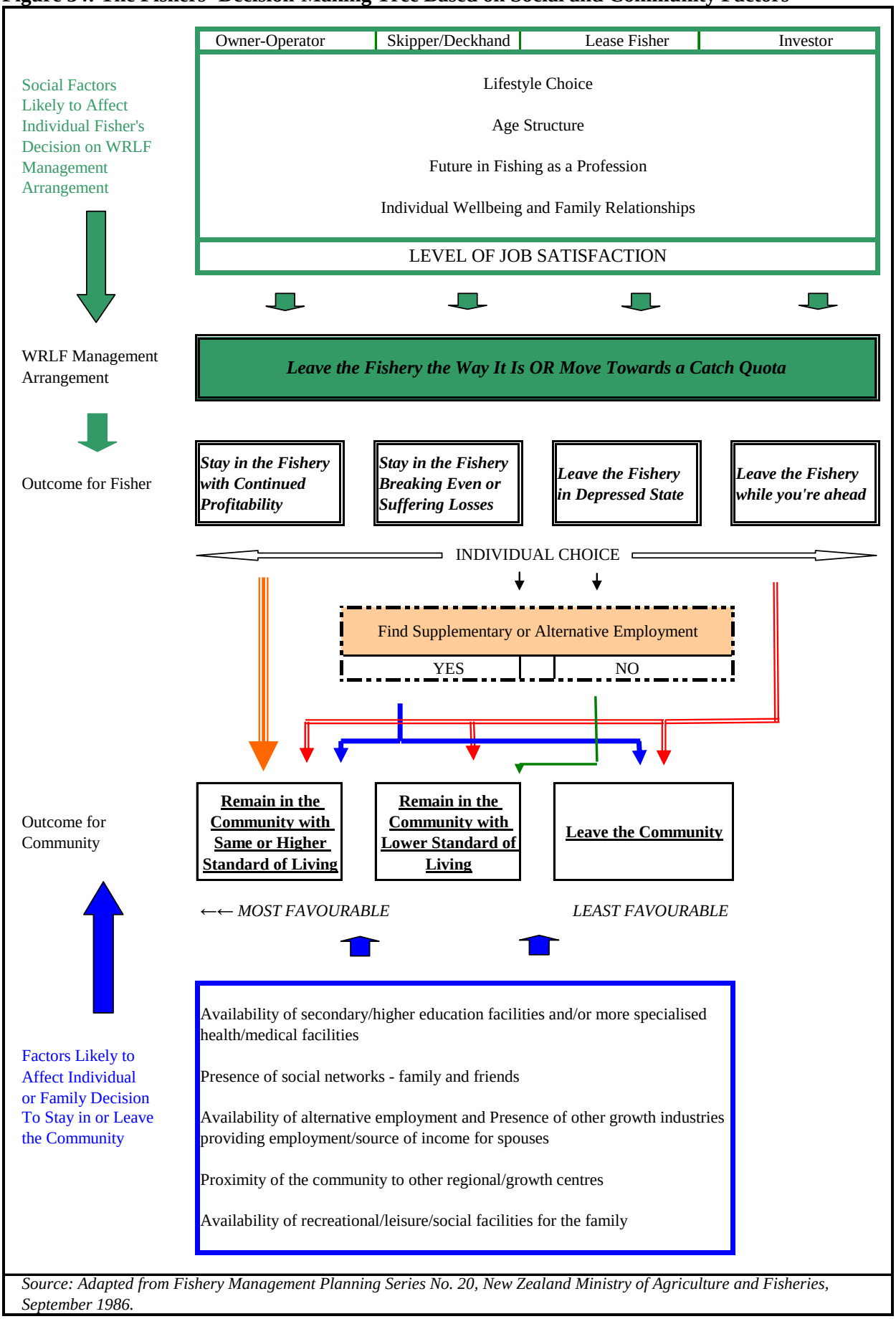
> *I have no idea how it would affect me. I catch over and above average but what hurts me is that I actually pay 18 per cent more because I have to lease pots I cannot use. I would have to calculate how much it will cost me to lease pots and then how much I am going to catch. Then I would have do a fair and equitable calculation for a split between me and the investor and my costs to catch them and figure out if I would come out in front.* – Interviewee No. 056, 2005

4.4 The Fishers' Decision-Making Paradigm

An analysis of the qualitative data collected primarily from interviews with fishers and their spouses highlighted a number of social factors that were likely to influence the fishers' level of job satisfaction (Figure 34). The results for individual fishers, once a decision on the management arrangement is taken, will depend on their personal preferences and circumstances. One fisher (Interviewee No. 083, 2005) commented that: "One of the great things about the industry is the competitiveness of it, competition against yourself as you set your goals. I think that under a quota system, people like that would probably lose interest in the industry really quick." However, another fisher also noted that: "Even without management changes, there could likely be more leased licenses because of the aging of the fleet. What we will see increasingly is people our age no longer wanting to go fishing, only wanting to be involved in owning boats, and it is most likely they will go and live somewhere else" (Interviewee No. 012, 2004).

At the community level, several factors will affect the fishers' choice of whether to remain in the same community or to move elsewhere. It is recognised that any decision made by fishers will ultimately have a bearing on the communities to the extent that leaving the fishery may result in leaving the community as well. A change in the fishing pattern for those who are staying in the fishery may have an effect on the choice of the community to reside in. One fisher noted that, "If I kept working, I would probably not live [in this smaller town]. I would fish out of [places close to Perth] since it would not be that hard to catch what they would give us to catch" (Interviewee No. 048, 2004). The choice will also depend on whether there are supplementary or alternative employment opportunities that exist in the community. In addition, the value placed by individual fishers on social and community factors will affect their decisions to remain or leave the community. Community effects in terms of changed financial inputs or community participation, as a result of changed circumstances for the fishers if they stay in the communities, could be positive or negative.

Figure 34: The Fishers' Decision-Making Tree Based on Social and Community Factors



Source: Adapted from Fishery Management Planning Series No. 20, New Zealand Ministry of Agriculture and Fisheries, September 1986.

5.0 SUSTAINABILITY AND THE WESTERN ROCK LOBSTER FISHERY

5.1 THE CONCEPT OF INTEGRATED SUSTAINABILITY

The core process in sustainability consists of:

- *Finding a strategic vision of the future which is the desired outcome for a majority of the community based on common good principles;*
- *Setting out practical steps that integrate economic, social and environmental outcomes relevant to that vision and which can be taken through every element of development; and*
- *Incorporating these in statutory processes and procedures where appropriate to make a significant contribution to the implementation of the desired strategy* (State Government of Western Australia, 2003:60).

With the majority of the State's population located within 20 kilometres of the coast, the Western Australian State Sustainability Strategy highlights the importance of the sustainable use and management of the coast and marine waters. The coastal waters feature a diversity of fish and support well-developed commercial and recreational fisheries. Western Australia is a major exporter of commercial fisheries, including aquaculture, with annual exports representing about 25 per cent of the national total. The sustainability of fish stocks and conservation of fish habitats are desired outcomes reflected in the *Fish Resources Management Act 1994*.

The Department of Fisheries remains committed to ensuring sustainable fisheries management, characterised by strong cooperation and partnerships with industry and the community. Significant changes in the management of the rock lobster fishery will have a bearing on coastal communities inasmuch as the expansion of the industry in the late 1940s onward provided the impetus for the establishment of services and the bulk of employment in these coastal communities (Crombie, 2001).

In promoting the ecologically sustainable development of the rock lobster fishery, industry leaders and stakeholders recognise the holistic and integrated concept of sustainability embedded in the WA Sustainability Strategy. The Strategy defines sustainability as "meeting the needs of current and future generations through the integration of environmental protection, social advancement and economic prosperity" (Ibid, 2003: 24). The findings of a recent Tasmanian research (Frusher, *et. al.*, 2003) lends support to the fact that growing and changing communities are an important part of the marine resource management equation and that communal social and economic sustainability is as important as the biological sustainability of the resource.

The Department of Fisheries is currently compiling ecologically sustainable development assessment reports for commercial fisheries and plans to expand the scope of the assessment to include social and economic components. It is with this holistic view that the management review process for the Western Rock Lobster Fishery was undertaken.

5.2 ANALYSIS OF SOCIAL IMPACTS

> *Social impacts cannot be precisely defined, and they can not be quantitatively valued. They are not consistent across the community. They impact on individuals differentially. All social impact assessment can do is to indicate that some sections of the population will likely experience certain impacts, while other sections will likely experience certain other impacts* (Vanclay, 2004:280).

5.2.1 Impacts on Fishers

Section 3.1 outlined the history and development of the Western Rock Lobster Fishery and the growth and expansion of the coastal towns along the Western Australian coast from Kalbarri to Mandurah. Along with population growth, infrastructure was developed and businesses were established to service both the industry and the overall population. Technological advancements in fishing and boat design, as well as export market advantages, brought about prosperity for fishers and attracted investors into the industry. As fishing vessels and fishing gear were updated and improved, the fleet's mobility increased and fishers were able to fish more efficiently over a wider area. The advent of modern and fast vessels also enabled fishers to be more mobile, travelling daily to fishing grounds while basing themselves in more established coastal towns.

As most interviewees acknowledged, rock lobster fishing today is still an integral part of the local economies of communities along the coast of Western Australia, but in some communities, it is no longer the main economic activity (see Section 3.4.2). With the decline in the number of boats in the fishery over time, the benefits derived from fishing have also declined. These benefits include employment and consequently, income and financial returns to those engaged in the fishery as well as social and cultural benefits such as lifestyle and fishing as a profession which contributes to cultural diversity (Figure 35).

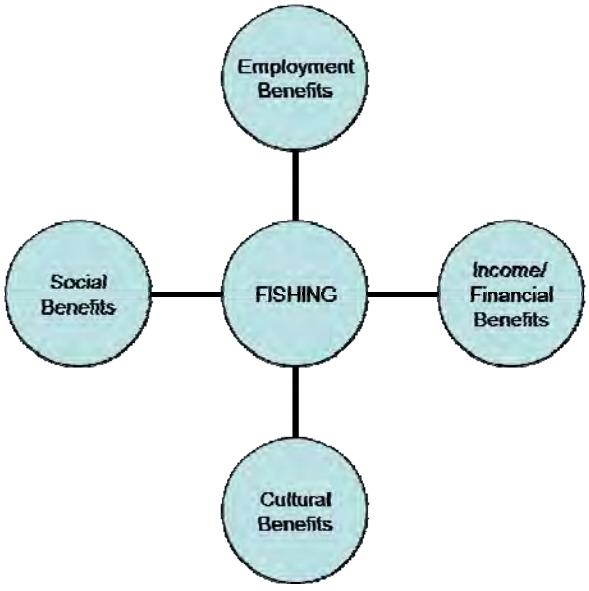


Figure 35: Benefits Derived from Fishing

In terms of employment, the number of persons engaged in the fishery declined from 1,811 in 1989/90 to 1,385 in 2005/06. This decline can be attributed to the movement of workers to other sectors that offer more lucrative salaries (e.g. mining and oil and gas sectors). In addition to the lower salary levels, there were also fewer jobs available for deckhands in some communities. Some fishers observed that:

> *With the low beach prices in the past two seasons, a big problem is getting crew. (Unfortunately), we lose the good ones to the mines.* – Interviewee No. 157, 2004

> *Employment opportunities within the fishing industry are decreasing quickly because boats are not putting on twice as many deckies [even though] they have twice as many pots. The number of people making an income out of the industry is decreasing and it is going to keep on decreasing.* – Interviewee No. 019, 2004

Anecdotal evidence from the interviews pointed to the decline in the income and financial benefits from rock lobster fishing. Owner-operators and skippers give their deckhands a reasonable percentage of the catch to retain their crew members. Gray (1999:263) noted that: "with increasing involvement of investors in the industry, many skippers earned far less than the general public imagined, and if they were trying to build up a pot entitlement of their own there was little left for luxuries." Some fishers lamented the shift of the fishing industry from family-based businesses to a more corporate type of operation. One fisher noted that: "Increasing costs and decreasing profit margins over the past few years are pushing the father/son generation fishing business in favour of large multi-purpose vessels" (Postal Survey Respondent No. 0492). Another fisher commented that: "Some of fishers in this town had been in it for generations, some in their third, and I think they would love to see it continue as a viable family tradition" (Interviewee No. 089, 2004).

In terms of social and cultural benefits (also see Section 4.2.3), most fishers acknowledged the great lifestyle provided by the fishing profession but noted that the industry had become 'too cut-throat'. Some fishers remained optimistic that with hard work and perseverance, deckhands can still aspire to rise up to become skippers and owner-operators in the future. The majority of those interviewed, however, expressed the sentiment that this progression is 'impossible'. Some fishers acknowledged that with the increasing tendency for mobility of the fleet, they were unable to spend time with their family and continue their involvement in voluntary activities in their community. The following were the sentiments expressed by fishers in this regard:

> *We have some very bright young talent in our industry but the bureaucracy has made it impossible for them to be fishermen. The price is ridiculous. An 18/19 year old who is a good fisher has to face this big hurdle. He cannot go to the bank and borrow 2-3 million dollars so he has to work for a private enterprise.* - Interviewee No. 116, 2004

> *The increased pressure to catch more crays, competing with boats with much larger licenses, and the pressure to travel more allow for very little family time, let alone time for voluntary activities or the pursuit of leisure activities.* - Postal Survey Respondent No. 0467

The extent to which the fishery management arrangement would affect individual fishers depends to a large degree on fishers' individual preferences and situations. Fishers who have low or no debts to pay can opt for a less competitive fishing pattern and favour a quota system. Those who have high debt burdens would on the other hand, opt to maximise their catch and favour the current system.

Fishers who operate on leasing arrangements have mixed views on the benefits of changing the current management system. Some fishers noted that there are likely benefits of a shift towards a quota system, e.g. less competition and more time off. Others, however, foresee a reduction in their income with the shift towards a quota system. These mixed views were expressed by lease fishers as follows:

> *With a quota system, you'll know how much you're going to catch and you know roughly how much money you're going to make, so in that respect you can probably budget a little bit better for it. It would take a lot of the competition out of it, [and because] it wouldn't be so competitive, you could go to work when you know you can catch your crays. I guess you'd work the markets rather than work the crays. The pressure would be off there too, you know you don't have to go out in rough weather you could have that time off as well.* - Interviewee No. 126, 2004

> *I think [the shift to quotas] will be harder for me because I lease. The way I can make a living now is to do well, to catch a lot and try to make it work in my favour, but it can also go the other way. I currently average 200 kg per pot. [Assuming the quotas] will be somewhat less than that, my income band will probably get brought down and I will have to work out what my gross is and what is viable for me to go to work. It would [also] be harder to round up crew and get them to hang around with no income for a month until fishing [starts again].* – Interviewee No. 023, 2004

Some of the older fishers, regardless of the management arrangement, may opt to lease their license or their quota instead of actively pursuing fishing as a profession. There had also been a number of concerns expressed by fishers on leasing arrangements, in particular, with respect to lease prices and risk taking between the lessees and the lessors (see Box 2).

Should the fishery move towards a quota system, some fishers indicated that they would shift their fishing pattern to one that maximises the value of their catch and minimises their costs. These would involve fishing during the winter months or fishing in nearby areas instead of their traditional fishing grounds. It may also be likely that smaller communities who benefit from the presence of rock lobster fishers during the seven months of the fishing season would be affected as fishers reduce the months they would stay in these areas once they had fished their quotas.

Box 2: Perspectives of a Lease Fisher
(Postal Respondent No. 588, 2004)

I had been fishing for 18 years and for the past 8 years, I had been leasing a whole license. Every year, it has become increasingly difficult to procure a fair lease deal with the license holders. Before leasing became popular, the license holder provided a boat and gear and the skipper provided the crew and paid running expenses, the catch proceeds were split 60/40. With the 60 per cent proceeds, the skipper paid all the expenses except boat refits and maintenance. These deals are now rare, most skippers receive 15-17 per cent wage only. Those entering the crayfishing industry without a family license have to lease a license. From our experience, the lessee takes all the risk, by having to own the boat and gear and pay all the expenses including the crew and the lease. The lease price is set by the lessor who demands either a set price per pot or a factor of the average price per pot, usually on a take it or leave it basis. Both of these are usually very high, approximately 50-60 per cent of the catch (based on industry average catch per pot). A system like this does not allow for bad years, which occur in all primary industries. For instance, in this town alone, three lessees are not leasing next year or being forced out due to the lease price being too high and the low average price per kilo. Those that remain will not make a profit for the year. [One way of addressing this problem is for] the lessor and the lessee to take equal risks and allow a sharing of the catch that allows the lessee to cover the cost of leasing and still make a profit.

5.2.2 Community Perceptions of Management Change Impact

Primary data collected from the nineteen communities through the telephone survey indicated that some communities identified strongly with the rock lobster fishery and were concerned about the industry. This was mainly due to the importance of the fishery to the community as a source of employment and income.

A factor analysis was conducted on 11 items included in the community telephone survey that asked about residents' attitudes and perceptions toward the rock lobster industry.[45] Two main factors emerged that together explain 48% of the variance – (i) Importance of the rock lobster industry to this community and concern about it, and (ii) Concern about the environment and support for strong controls.[46] The items that made up the first factor included:

- Decline in the number of crayfish boats has a negative impact on local businesses;
- Economic viability of our community is closely linked to viability of the rock lobster industry;

[45] Factor analysis is a mathematical tool that can be used to examine a wide range of data sets. It is a data reduction technique in that it takes a large set of variables and looks for a way that the data may be 'reduced' or summarised using a smaller set of factors or components. It does this by looking for 'clumps' or groups among the inter-correlations of a set of variables (Pallant (2005), SPSS Survival Manual, 2nd Edition, Allen and Unwin, New South Wales, Australia, p.172)

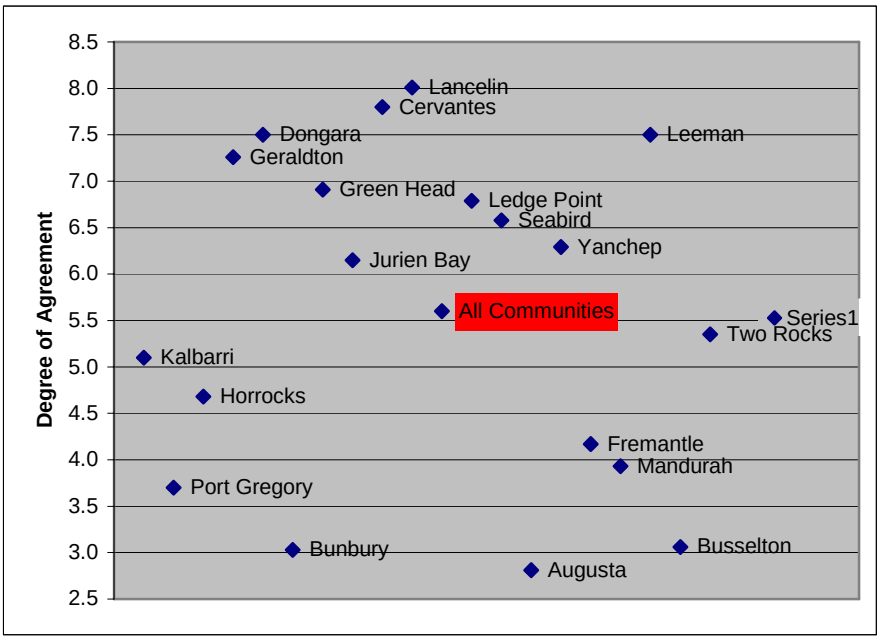
[46] Five items made up this factor (Cronbach alpha coefficient = 0.748). These are: (1) There should be strong controls on commercial rock lobster fishing to protect the marine environment; (2) There should be more marine protected areas in our community; (3) Limiting the number of rock lobsters caught each season is important to long-term management; (4) Marine parks and government environmental regulations have a significant impact on the viability of the industry; and (5) Management of commercial rock lobster fishing should include greater consultation.

- Decrease in the number of rock lobster skippers and deckhands is a significant problem; and
- Rock lobster fishery and processing sector is a good source of employment in this community.

Combining these four items into a scale resulted in good internal consistency.[47] The scores on this factor combined both a perception of the importance of the industry and concern about reductions in the number of skippers and deckhands. Figure 36 shows the average scores on this scale for each community. Communities north of Yanchep, with the exception of Kalbarri, Port Gregory and Horrocks, registered higher scores, an indication of the continuing importance of the fishery to these communities.

It was likely that Kalbarri residents did not give high ratings to these statements because of the importance placed on tourism activities. For Port Gregory and Horrocks, the low scores on this factor could indicate that the community respondents did not feel that there have been reductions in the number of boats and/or skippers in the area.[48] One rock lobster fisher in Port Gregory (No. 007, 2004) noted that, "Normally we have 7 boats working out of Port Gregory. However, this year, we have had nine permanent boats. We've picked up a couple of boats but the skippers don't live in town."

It is worth noting that in most of the communities that provided high scores to the importance of the industry, commercial fishing (mainly rock lobster fishing) was one of the top three industry subdivisions providing employment to community residents. This was true for Lancelin, Cervantes, Leeman, Ledge Point and Seabird, as well as for Dongara.



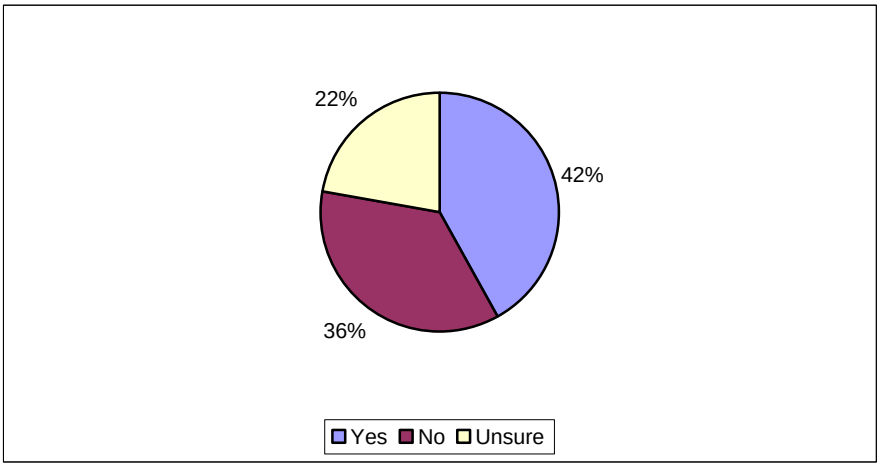
(Source of Data: Telephone Survey, 2006.)

Figure 36: Importance of the Rock Lobster Industry to the Community

[47] These items, when combined as a scale, resulted in a Cronbach alpha coefficient of 0.837, a value that is above 0.7 so the scale can be considered reliable with the sample. The item "less people in this community are employed in the rock lobster industry than 10 years ago" does not perform well with the other items. This could be because people don't know enough about the situation in rock lobster industry employment '10 years ago'.

[48] There are also smaller numbers of respondents from these small communities so some caution is needed in interpreting these figures.

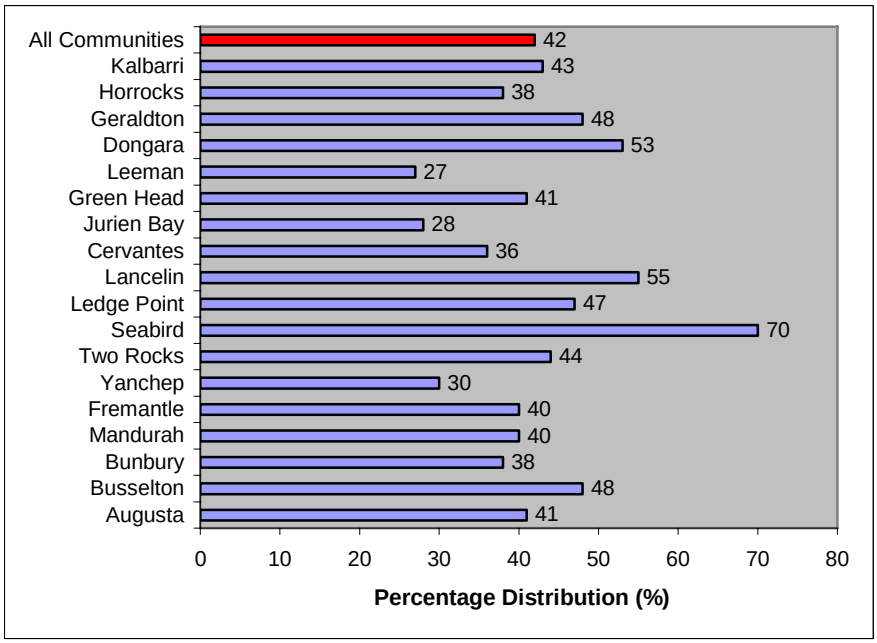
On the question of whether respondents would encourage young people in their communities to become involved in the commercial rock lobster fishery, 42% of surveyed respondents indicated a positive response (Figure 37A). Almost a fourth of the respondents (22%) said that they were unsure if they would encourage entry into the fishery, while 36% said that they would not.



(Source of Data: Telephone Survey, 2006.)

Figure 37A: Respondents' Views on the Entry of Young People into Commercial Rock Lobster Fishing

The exceptions to this were Green Head, Jurien Bay and Cervantes, where a majority indicated that they would not do so (Figure 37B). The proportion of those who would recommend commercial rock lobster fishing to young people was higher in Seabird, Lancelin, Dongara (including Port Denison), Geraldton, Busselton, and Ledge Point.



(Source of Data: Telephone Survey, 2006.)

Figure 37B: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, by Community

5.3 DIFFERENTIAL EFFECTS ON COMMUNITIES

> *Community development extends beyond the formal economy to consider the needs of the population at large, and that in setting about its task it aims to balance economic, social and environmental concerns, rather than prioritising the economic approach above all else* (Haughton, 1999: 8).

A number of indicators were used in determining the potential impact of the fishery management arrangements on the communities hosting the rock lobster fleet. Some of these indicators relate to the socio-economic conditions (based on secondary data) while some relate to measures of community cohesiveness and resilience (based on primary data).

5.3.1 Socio-Economic Conditions

> *Historically, rural Australia was a place whose role was seen as the exploitation and transformation of natural resources – whether they were farming or grazing lands, forests, fisheries or mineral deposits. The economic and social role of rural towns reflected that purpose, in that they were essentially service centres for these primary industries. Today, however, the relationship between the economic condition of primary industries and the economic and social condition of rural communities is often much less strong and direct, and factors originating elsewhere in the economy are relatively more important in determining the circumstances of rural communities* (Stayner, 2005:122).

The population and demographics data selected to understand the social environment of the nineteen communities, include the total population size, the age distribution and the corresponding dependency ratio. Since the young and the elderly members of the community are the non-wage producing or dependent segments of the population, the dependency ratio is often used as an indicator of the economic burden that the productive segment of the population has to carry. Higher dependency ratios indicate a greater need to invest in social infrastructure such as education and health facilities for the dependent segment of the population.

In considering the extent to which the local population depends on a primary industry such as rock lobster fishing, three indicators were selected. The first is economic diversity, defined as the proportion of persons employed in the top three industry subdivisions to the total number of persons employed. There have been a number of research projects that support the argument that localities or regions with diverse economies are generally better able to withstand downturns in a particular sector or industry. A higher ratio would indicate less diversity in economic terms. The unemployment rate and the proportion of persons employed in rock lobster fishing to total employed persons provide an indication of the importance of the industry as a source of employment in the community.

In most of the interviews conducted with residents and business owners, the limited population base and the seasonal fluctuations in the population were cited as major constraints to business growth, in addition to the low occupancy levels of most dwellings in the community. The proportion of unoccupied dwellings to total dwellings is thus an additional indicator used in the analysis.

Table 7 shows details of the selected indicators based on the 2001 Census data. High dependency ratios characterised most communities, necessitating investments by the local governments in social infrastructure. In most of the interviews, the lack of school facilities for older children and more comprehensive health facilities for the aged population were among the reasons cited for the movement of residents away from the smaller communities to bigger communities and regional centres.

Table 7: Selected Socio-Economic Indicators, 2001

Community	*Dependency Ratio*	*Economic Diversity*	*Unemployment Rate*	*Proportion of RLF to Total Employed*	*Proportion of Unoccupied to Total Dwellings*
Australia	50.3	23.6	7.5	0.02	9.2
Western Australia	48.4	23.1	7.4	0.09	10.0
Communities with Population Levels between 10,000-47,000					
Geraldton	58.9	23.4	12.2	1.62	10.6
Fremantle	44.2	31.2	10.1	0.30	9.9
Mandurah	65.2	24.2	12.6	0.18	20.7
Bunbury	50.9	21.6	8.4	0.03	8.9
Busselton	65.7	24.3	7.9	0.00	15.1
Communities with Population Levels between 1,000-2,200					
Kalbarri	60.1	31.8	7.7	1.32	16.5
Dongara	64.5	25.6	14.9	7.42	20.4
Jurien Bay	65.6	25.9	10.4	4.78	37.8
Two Rocks	61.9	23.9	17.0	0.68	20.6
Yanchep	63.0	23.0	12.5	0.86	20.3
Augusta	84.7	31.6	5.5	0.00	38.4
Communities with Population Levels less than 1,000					
Port Gregory	42.9	50.0	0.0	0.00	48.7
Horrocks	43.8	31.8	8.5	4.17	58.6
Leeman	59.7	43.9	7.6	8.23	28.9
Green Head	71.0	41.4	17.2	12.00	62.6
Cervantes	55.5	46.2	12.5	12.57	50.1
Lancelin	66.2	30.3	11.6	6.20	63.3
Ledge Point	68.4	65.1	11.3	18.00	78.4
Seabird	50.0	100.0	0.0	0.00	70.2

(Source of Data: ABS 2001 Census of Population and Housing.)

Smaller communities such as Seabird, Ledge Point, Port Gregory, Cervantes, Leeman and Green Head exhibited lower economic diversity. The bigger communities exhibited moderately diversified economies.

The proportion of persons employed in rock lobster fishing to the total number of persons employed was high in the smaller communities of Ledge Point, Cervantes, Green Head, and Leeman. With unemployment rates already at levels higher than the Australian and Western Australian rates, any loss of opportunity to work in the fishery would have a negative effect in

these communities. Other communities that would be negatively affected by any future decrease in the number of employment opportunities in the Western Rock Lobster Fishery include Dongara, Lancelin and Jurien Bay.

The smaller communities have a high proportion of unoccupied dwellings which affect the viability of local businesses. In the larger population centres of Geraldton, Fremantle and Bunbury, the proportion of dwellings normally unoccupied was about the same as the national and Western Australian ratios.

In the community workshops conducted under the project, it was apparent that community stakeholders have a strong commitment to the preservation of the fishing cultural traditions. For example, at the community workshop held in Cervantes in May 2006, participants emphasised that, "the social and cultural fabric of the town is tied to rock lobster fishing; we want to diversify our economic base but not lose the rock lobster industry altogether" (Community Workshop Results, May 2006).

5.3.2 Community Resilience and Cohesiveness

> *A resilient community is one that takes intentional action to enhance the personal and collective capacity of its citizens and institutions to respond to, and influence the course of social and economic change* (The Centre for Community Enterprise, 2000:1 -5).

> *A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed* (Local Government Association, Community Cohesion – An Action Guide, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006).

In earlier social assessments of the communities included in this research project, the measure of resilience adopted was based on time-series indicators from Census data and from the catch and effort data of the Department of Fisheries (see Huddleston, 2006:19-22 and Appendix 7 for the description of the variables and methodology used in measuring community resilience). The total resilience scores generated using this earlier methodology indicated that the communities that would be less resilient and more sensitive to change are Geraldton, Cervantes, Bunbury, Augusta, Green Head and Jurien Bay. Meanwhile, communities that would be more robust and better able to handle change were Two Rocks, Yanchep and Busselton, together with Ledge Point, Mandurah, Lancelin and Fremantle.

As emphasised by the research team, the overall resilience scores generated earlier may change with the inclusion and/or refinement of other indicators and as data becomes available during the course of the project. During the Expert Forum, it was noted that the indicators used related mostly to local structural change and sensitivity to change rather than to resilience and that it would be useful to use a different set of indicators in measuring the

resilience of communities. It was also pointed out that "resilience is a very value-laden and slippery concept" (Argent, Neil, Personal Communication "Comments on Documents for the Expert Forum". Personal e-mail, 22 November 2007).

In further reviewing available literature on resource-dependent communities, community satisfaction and attachment, stability and social resilience (see, for example, Stedman, *et. al.*, 2004, Theodori, 2001, Machlis, et. al., 1990 and Adger, 2000), it was noted that "major concerns have been the unit of analysis and the coherent definition and measure of critical variables" (Machlis, *et. al.*, 1990:412). In aiming to utilise the primary data collected from the telephone survey, the research team took note of the indicators developed and designed by Canada's Centre for Community Enterprise to assist rural communities dependent on primary industries cope with the stress and pressures of volatile commodity markets, technological change and environmental concerns. Using the manual developed for the purpose and correlating this to the data collected from the telephone survey, the research team looked at a different way of measuring and characterising resilience in the communities included in the study. The research team also took note of the measure of social resilience espoused by Beratan, *et. al.*, (2004:182), that is, the degree to which individual citizens feel connected to their neighbours and their community and that there are adaptive characteristics in a community with multiple local businesses. The research team also took into consideration the qualities and indicators of community cohesiveness used by the Local Government Association in the United Kingdom.

The following description of resilient communities was then adopted:

1. In resilient communities, people feel a sense of attachment to their community and perceive that they are there for the long-term. In this regard, people invest their time, energy and money in improving the community;

2. In resilient communities, people feel a sense of pride which is demonstrated in the care in which they maintain their community and the energy and commitment they give to events such as community festivals and celebrations;

3. In resilient communities, people feel connected to their neighbours and their community;

4. Employment in resilient communities is diversified beyond a single, large employer;

5. In resilient communities, there is a strong belief in, and support for, education at all levels. People value and support education and there is a curiosity or "thirst for knowledge" within the community;

6. In resilient communities, there is a spirit of mutual assistance and cooperation in the community. People make an effort to work together and help each other in times of difficulty;

7. Community members in resilient communities are involved in community decisions. Community leaders work to encourage participation from all segments of the community and use this input as a guide for their decisions.

Using these characteristics as a guide and based on the data collected from the telephone survey, 12 indicators were chosen to measure community resilience (Table 8).

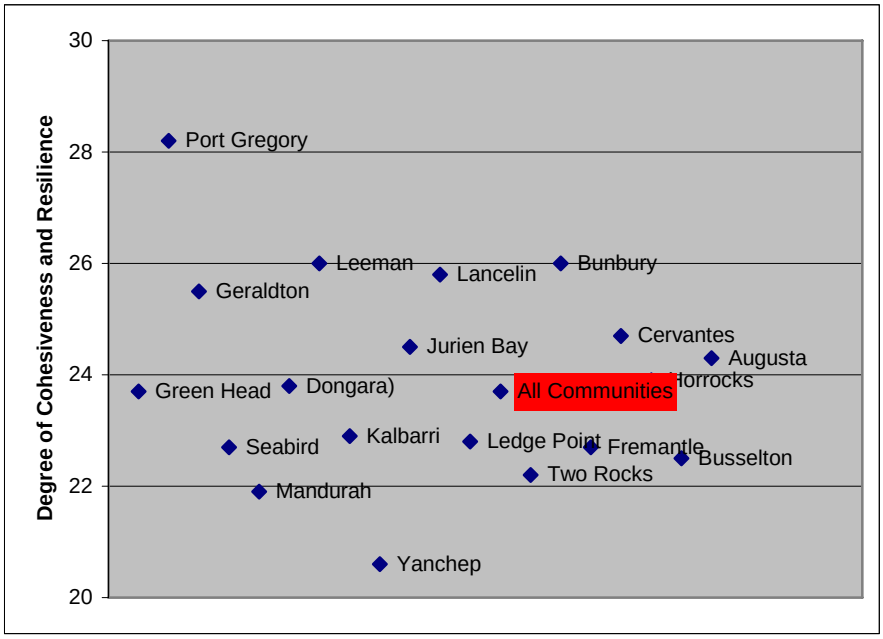
Table 8: Indicators Used in Measuring Community Resilience			
	Indicators	**Indicator Type**	**Ranking System**
1	Degree to which people rate their feelings of attachment to the local community	Opinion or Perception	1 Very Strong 2 Strong 3 Some 4 Little 5 No 6 Unsure
2	Degree to which people rate their local community as a place to live	Opinion or Perception	1 Excellent 2 Good 3 Fair 4 Poor 5 Unsure
3	Number of people who indicated that they expect to be living in the same town or area 5 years from now	Proportion of people who responded yes to the question "Do you expect to be living in the same town or area 5 years from now?"	
4	Number of people who will contribute time to community projects	Proportion of people who responded yes to the question "Are there many people in your local community willing to contribute time to projects from which they would not receive any personal benefit?"	
5	Number of people who will contribute money to community projects	Proportion of people who responded yes to the question "Are there many people in your local community willing to contribute money to projects from which they would not receive any personal benefit?"	
6	Frequency of people's attendance at local community events	Proportion of people who attended community events twice in past year	
7	Level of participation in projects to develop new services, activities and facilities	Proportion of people who participated once in past year	
8	Level of neighbourhood connections	Proportion of people who know most of the people in the neighbourhood	
9	Frequency of running into known people while shopping	Proportion of people who responded that they meet people nearly always while shopping	
10	Degree to which people agree that 'there are easily accessible training facilities that people can use to improve their skills and qualifications'	Proportion of people who agreed to the statement (or those gave a rating of 7-10, where the rating scale range between 1-strongly disagree to 10-strongly agree)	
11	Degree to which people agree that 'there are enough employment opportunities in the community for suitably qualified people'	Proportion of people who agreed to the statement (or those gave a rating of 7-10, where the rating scale range between 1-strongly disagree to 10-strongly agree)	
12	Degree to which people agree that 'the coast around this community is suitable for more tourism activities than we have'	Proportion of people who agreed to the statement (or those gave a rating of 7-10, where the rating scale range between 1-strongly disagree to 10-strongly agree)	
(Source of Data: Telephone Survey, 2006.)			

In addition to the indicators of resilience, five items from the telephone survey were combined to come up with a measure of community cohesiveness. These related to the rating of agreement (on a scale from 1-10 with 1-strong disagree and 10-strongly agree) to the following statements:

- This is an active community where people get involved in local issues and activities;
- There is strong local support for community events;
- If there was a serious problem, people would get together and solve it;
- This local community is friendly towards newcomers; and
- People here have opportunities to participate in decisions made by local government.

When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the nineteen communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

The scores for each of the 12 indicators listed in Table 7 and the community cohesiveness scale were then combined to develop resilience scores that were based solely on primary data (Figure 38).



(Source of Data: Telephone Survey, 2006.)

Figure 38: Community Resilience and Cohesiveness

As Figure 38 shows, smaller communities such as Ledge Point, Seabird and Green Head were less resilient to change and less cohesive. Bigger centres including Fremantle, Mandurah and Busselton also exhibited less resilience to change and less cohesiveness. Given that rock lobster fishing provided a major source of employment in these smaller communities, it is likely that any shifts in management arrangement in the Western Rock Lobster Fishery would have more considerable impacts in these smaller communities than in bigger communities.

5.4 SUSTAINABILITY FRAMEWORK FOR THE WESTERN ROCK LOBSTER FISHERY

> *There is more to the occupation of fishing than simply making money. Management schemes must take these other, non-monetary factors into account if they want to develop effective and humane management programs* (Cited in Bavinck, M and Monnereau, I., 2007:145).

Research on the holistic approach to sustainability recognises that all three dimensions – environmental, economic and social – are interconnected and impact upon each other (e.g. WACOSS, 2002). The interlocking circles model of sustainability presents sustainability as three interlocking circles or systems (see Figure 40). The model argues for an understanding of the connections and dynamics between the three spheres and the benefits of achieving a balance between them.

In outlining a sustainability framework for the Western Rock Lobster Fishery, it is important to note the industry's commitment to understand the social dimensions of sustainability. As enunciated in the management review process of the fishery, while the biological and environmental imperatives are primary, the decision on the management arrangement to be adopted will take into account both economic and social objectives. The goal, therefore, is to adopt a fishery management arrangement that not only protects the level of breeding stock but also increases the profitability of the industry and promotes the efficiency of the fishing fleet, as well as improving the well-being of individual fishers and maintaining the growth and development of the communities that host the fleet.

During the Expert Forum conducted as part of the project in November 2006, it was argued that the project would benefit from greater contextualising within the current state of the West Coast, highlighting issues such as the buoyant state of the real estate market and the particularly strong economic conditions that prevailed during the data collection period. It was noted that the broader economic-demographic situation in many of the communities hosting the fleet may overwhelm any impact from changes in the management of the fishery. As Figure 39 shows, communities along the Western Australian coast experienced significant population increases between 1996 and 2001 while most of the inland communities had experienced population declines. This surge in population brought about increases in real estate prices along side the expansion of residential areas in many of the coastal communities. It also brought about a change in the demographics of coastal communities towards more retirees and "baby-boomers" who favour a coastal lifestyle.

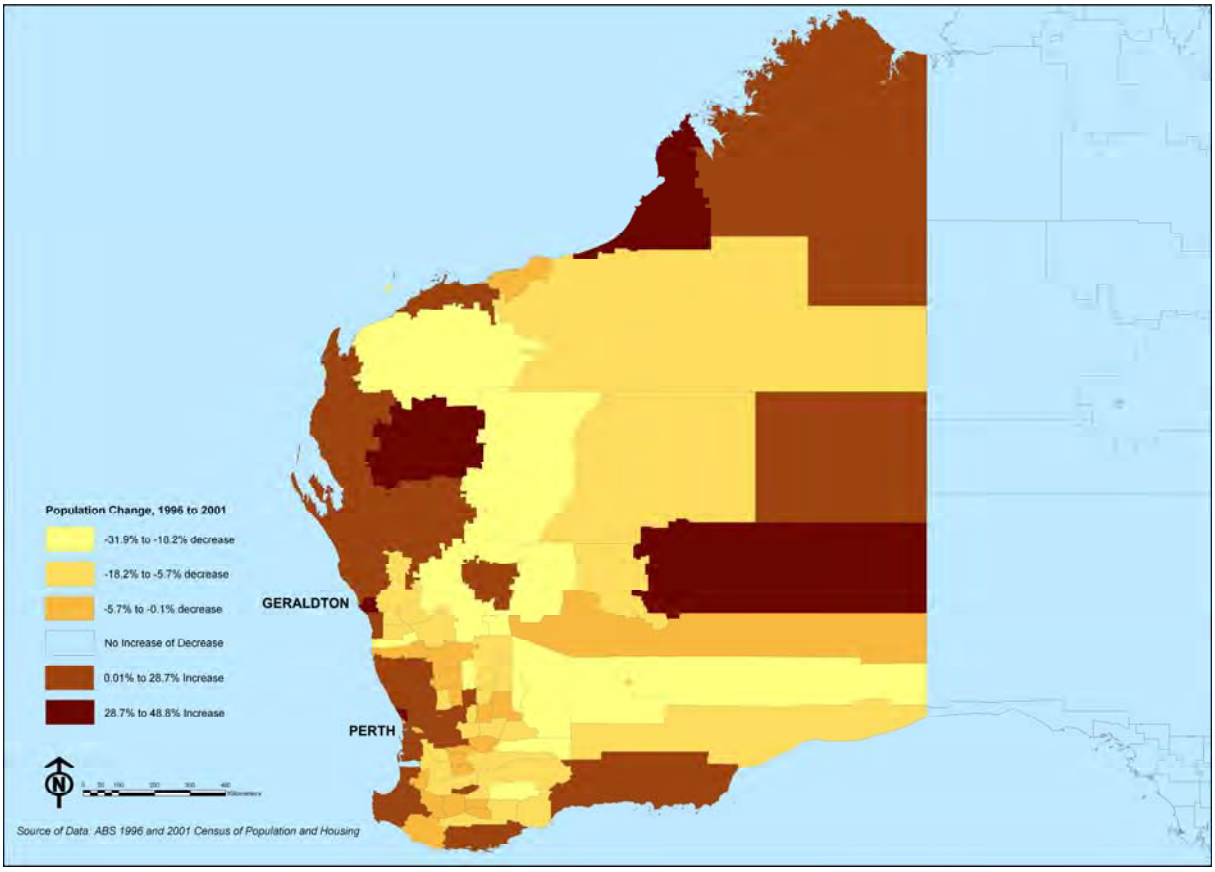


Figure 39: Population Changes in Western Australia, 1996 - 2001

Lifestyle and related issues such as the coastal location and the weather) were cited by large group of respondents to the telephone survey as the primary reasons for living in these communities (Telephone Survey, 2006). The extent to which these demographic factors would affect rock lobster fishers under any management scenarios would depend on how fishers (individually and collectively) change their fishing patterns and behaviours as well as their personal preferences and circumstances of living in their communities. In some communities that had experienced increasing real estate prices, the difficulties faced by fishers, particularly deckhands, in finding a place to buy or rent had been observed. Participants in the Community Workshop in Leeman (2006) noted that:

> *While it is good to note that some of the former deckhands are coming back to town, it is also a reality that even when they want to live in Leeman and buy a house, real estate is no longer as affordable as it used to be. Two-three years ago, deckhands earned $50,000 and can buy a house; now they can still earn $50,000 but can no longer afford to buy one. The last lot that was sold was just under $350,000. All the houses being sold had been bought by retirees and farmers and other people from other places (e.g. Perth). This had resulted in a lot of houses that remain unoccupied for the most part. So we have a case where people who want to live in the town cannot stay here because there's no place for them to rent or buy at affordable prices* (Community Workshop Notes, June 2006).

Noting the difficulty of being able to isolate the impacts of changes in fishery management arrangement given the complex economic-demographic changes in coastal communities, one of the suggestions given during the Expert Forum was for the research team to look at how best the data and information collected by the project could be best used as inputs in the management and decision-making process. In this regard, a conceptual framework for decision-making outlined in Figure 40 includes the external and internal factors that would likely affect the decisions made at each level of the management process. Factors that would affect the decisions made by the processors, rock lobster fishers and the communities are also presented.

The fishing bodies involved in the management process for the Western Rock Lobster Fishery do not have direct control on the participation of individual fishers as individual preferences and circumstances dictate the entry and exit of people in the fishery. Nevertheless, the data gathering process adopted throughout this project has already fostered a change in culture and an increasing appreciation by industry stakeholders for the social dimension of shifts in management arrangements. It is thus important for the fishing bodies, particularly the Department of Fisheries, RLIAC and WRLC, to uphold the participatory and consultative process in coming up with decisions on how best to manage and control the fishing effort within the fishery. There is already an increasing recognition by rock lobster fishers that with technological improvements in fishing boats and gear, fishers have become better at catching lobsters and as a result, there is too much pressure on the resource in some of the fishing grounds.

Any decision on the management arrangement for the fishery would, however, need to take into consideration the following concerns expressed by fishers and community residents:

- Having a reasonable work-family balance needs to be a feature of the fishery. Mandatory closures and time off work are good for the crew. They can spend more time with their family and have a much-needed enforced rest.

- Having regulations is fair but a lot of uncertainty is created with over-regulation in the industry. The rules get changed too soon without giving more time for things to settle to see how it works. In the past, the management package is given five years before it gets changed. Now, changes appear to be on a yearly basis.

- It is important to foster a positive impression of the fishing industry in the broader community. The fishery has an image problem that doesn't help attract people and retain people in the industry. Putting up good role model stories in the local and regional media would be a good starting point. Fishers can advertise what they have done for the conservation of the environment, e.g. environmentally-friendly gear. Capitalising on promotional and educational campaigns will help educate the young people about the importance of the fishery and help build up future support for the industry.

- There is a need for better marketing, advertising and promotional plan in order to market rock lobsters more efficiently and receive higher prices.

- There is a need to address the perception that when decisions are made, only the interests of a few are taken into consideration, rather than the actual people who are working on the fishery.

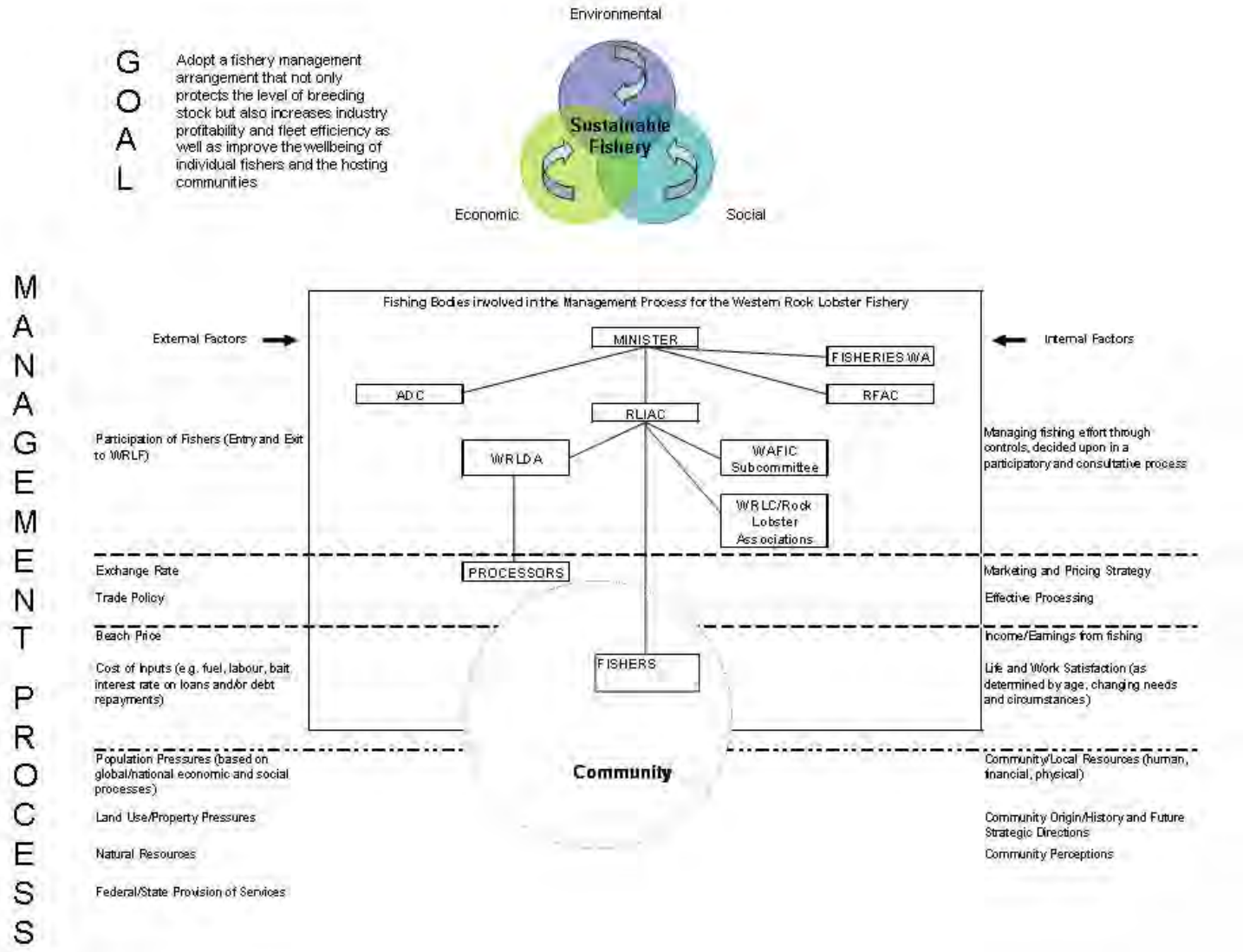


Figure 40: Conceptual Framework for Decision-Making in the Western Rock Lobster Fishery

Over the years, there has been rationalisation and consolidation among the processors in the rock lobster industry. Each processor has its own marketing and pricing strategy and each is committed towards the efficient processing of rock lobsters. While processors have no control over the exchange rate between the Australian and the U.S. dollars and over Australia's trade policy, they can control their production levels in accordance with the product range they are marketing (e.g. "live" or frozen, whole or tails). Optimising their product configuration and ensuring their processing costs are competitive allow processors to provide high beach prices to rock lobster fishers.[49] On numerous occasions, fishers have pointed to the need for processors to aggressively market rock lobsters in a unified fashion to get maximum prices for Western Australian rock lobsters.

From an individual fisher's perspective, the beach price and the cost of inputs determine his profitability and/or income from fishing. While fishers do not have direct controls on the cost of fuel, labour, and bait, he can minimise his cost structure to a certain extent. For example, fishers can fish closer to home or fish less days to reduce fuel consumption. Entry into or exit from the fishery is also determined by the income or earnings from fishing compared to other industries and the level of satisfaction one gets from fishing. During the community workshops, some fishers have noted the variations in pay for the crew (ranging from three to five per cent to eight to ten per cent) which make it difficult to attract and maintain crew in certain areas. There was general agreement to the following sentiments expressed by fishers during the personal interviews:

- With experienced crew, you won't have safety problems but you have to pay more.

- You have to give a fair wage to retain crew. The wages offered have to be competitive with other industries. When boats have crew problems, it is usually because the crew can't see a reasonable income at the end of the year compared to what they can earn in the mining or building trade.

- In addition to fair wages, there are other ways to keep crew. There should be respect and courtesy for each other. Some skippers also make fishing more comfortable for the crew, e.g. feeding them and cooking lunch on the boat or doing the gear themselves.

- Not everyone is a miner or a farmer, and there will always be younger ones coming through. Fishers just have to be prepared to take on a young kid and train him on how you like him to work.

- Each operator faces a different set of circumstances. Some of the people who own their licenses outright can afford to pay a lot higher wages and there's a bit of competition for good crew amongst fishers.

At the community level, local leaders have resources – physical, human and financial - at their disposal for the continued development of the community. The size of the fishing fleet and the available fishery-related industries and infrastructure also determines the potential impact of management changes to the community. Some communities that are moving towards a more tourism-based growth capitalise and build on their community origin and history and the inherent natural resources in the community. Some communities also benefit from services provided by the State or by the Federal Government, e.g. road network.

[49] 'Beach' price refers to the average price paid to fishermen selling their catch directly to licensed rock lobster processors (Department of Fisheries, 2002:13).

On the basis of this conceptual framework for decision-making, a sustainability framework for the fishery is outlined in Figure 41. The current emphasis of the governance context of a sustainable Western Rock Lobster Fishery is on the biological/environmental imperatives. There is an increasing recognition and change in culture by fisheries managers and industry stakeholders, however, of getting the balance right so that social and economic perspectives are also incorporated into decisions on fishery management arrangements.

In addition to economic indicators that affect individual fishers, a number of indicators at the community level determine the sensitivity of local communities to any change in fishing patterns or behaviours that result from management arrangements. These include:

- Rate of employment and unemployment
- Distribution of employment by industry division/subdivisions
- Proportion of those employed in commercial fishing over total employment
- Household income
- Number of persons engaged in rock lobster fishing
- Presence of processing depots and processing companies and related businesses (ship building, craypot making, etc.)
- Presence of fishing-related infrastructure

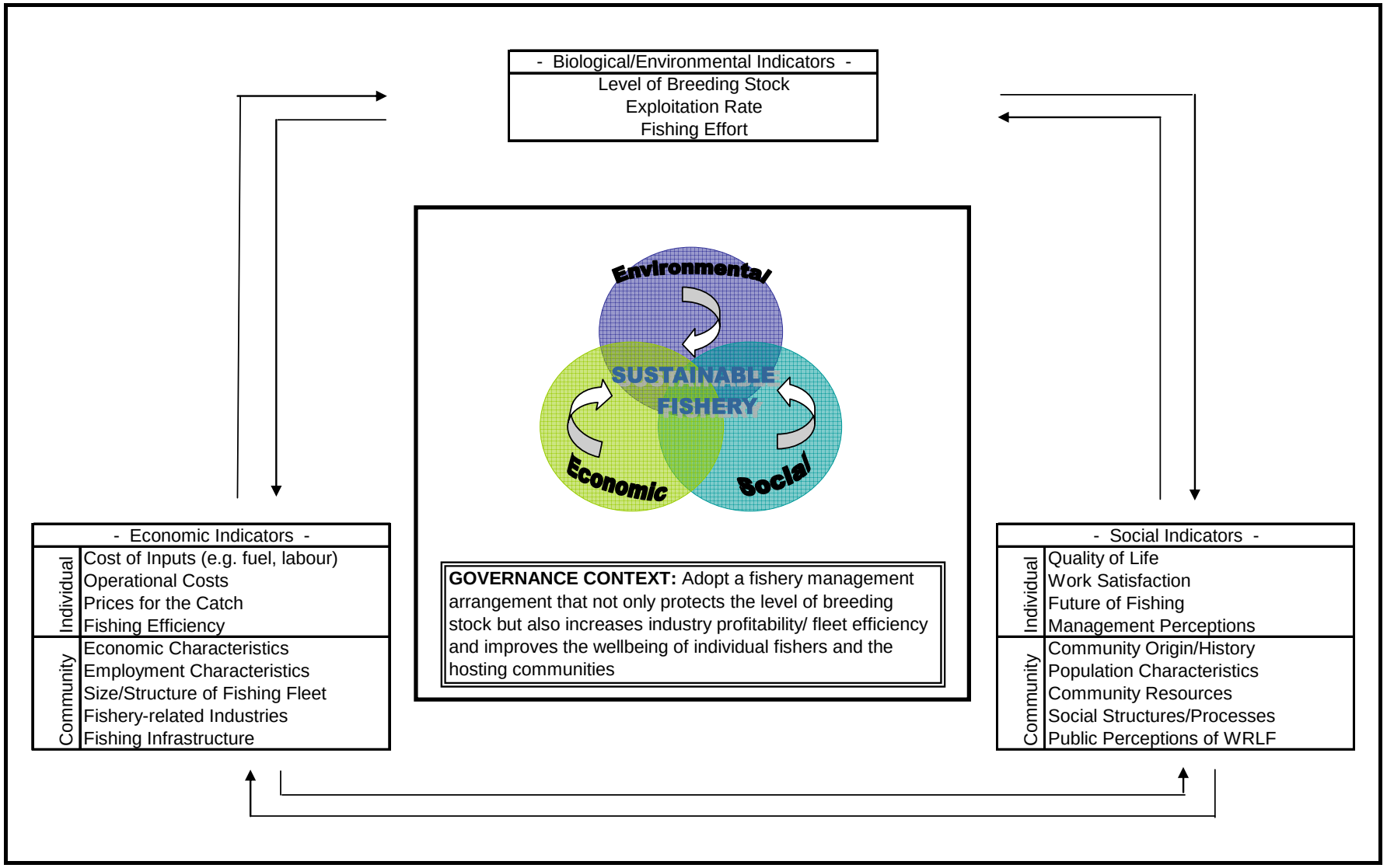


Figure 41: Sustainability Framework for the Western Rock Lobster Fishery

The loss of employment in rock lobster fishing that may arise from any shifts in management arrangement would be of particular significance in some communities where there are few alternative employment options available. As pointed out in Section 5.3.2, smaller communities such as Ledge Point, Seabird and Green Head which are less resilient and less cohesive, the consequences of a shift in the management arrangement for the fishery would be more significant. In areas where there processing is involved, there may be wider effects and gender implications particularly if those normally employed in the processing plants involve the female section of the population.

From an individual fisher's perspective, the quality of life offered by fishing depends not only on the income derived from fishing but on their preference for a good work-life balance. The latter is dependent on their age structure and of their perceptions of their future in fishing. At the community level, the indicators include public perceptions of the rock lobster as a good source of income and employment for young people in the community as well as fishers' attitudes towards the community (in terms of deciding to continue residing in the community in five years time. The telephone survey conducted by the project in 2005 is a useful baseline data in this regard since it provides information on:

- Reasons for living in the community
- Ratings of the community as a place to live
- Feelings of attachment to the community
- Participation in community events
- Access to specific services
- Attitudes towards the community
- Perceptions on rock lobster fishing

6.0 CONCLUSIONS AND RECOMMENDATIONS

> *For most managed commercial fisheries where access entitlements are transferable, the key focus has been resource sustainability. Economic and social considerations have only been sought to influence management direction where there is wide industry support or some political imperative at the time. [But] Economic and social objectives – and their primacy in fisheries management – are difficult to achieve, let alone measure or reach easy community agreement on. Maximising economic wealth in a fishery – and the concentration of wealth – as opposed to a social objective for regional development and employment, do not easily sit side-by-side* (Department of Fisheries, 2000:37).

The key conclusions of the project are as follows:

1. Under an Ecologically Sustainable Development framework, incorporating an appreciation of the social dimensions of the rock lobster fishery into management and policy decisions should remain a priority. During the duration of the project, the research investigators were able to provide social research to industry managers and stakeholders, resulting in a better appreciation of the importance of considering social dimension in future decision-making within the fishery.

2. The Western Rock Lobster Fishery is a significant contributor to the economies of many coastal communities through both direct employment and indirect employment in a range of ancillary industries and services, including fish reception and processing facilities, boat building, metal fabrication and other related trades.

3. The fishery underpins the social fabric of many coastal communities, with fishers and their families making important contributions to the social fabric of the communities and to sustaining social networks and institutions.

4. Despite the economic and social importance of the industry, it is in a state of transition as a result of growing economic pressures. A key outcome of this has been the significant decline in boat numbers and in the number of persons engaged in the fishery. Still, there is considerable support from community residents to encourage young people to become involved in the fishery.

5. The geographical structure of the industry is changing, with vessels, employees and ancillary activities becoming concentrated in a smaller number of coastal locations. This is not only affecting the economic base of some communities, but also the social structure.

6. The changes in the rock lobster industry are often masked by the broader economic, demographic and social changes being experienced by communities along the Western Australian coast. The rising prominence of tourism, recreation and lifestyle migration has, in relative terms, reduced the importance of, and dependence on, the rock lobster industry in most communities. Communities that exhibit less resilience to change and

less cohesiveness and that rely on rock lobster fishing as a major employer would be more significantly affected by changes in the management structure of the fishery.

7. Within the industry and rock lobster fleet hosting communities, there was a general consensus that the industry was well managed and in tune with the principles of ESD.

8. In terms of management, rock lobster fishers supported maintaining the status quo (input controls) on the basis that it was familiar, and rewarded hard work, knowledge and innovation. Moreover, it was widely argued that input controls were an adequate means of ensuring the sustainability of the industry.

9. Catch quota systems were generally not seen as being in the interest of the industry, on the basis that they would reward less efficient fishers and increase compliance and enforcement costs that will ultimately be borne by the fishers.

10. There is a need for longer term monitoring of social characteristics, changes and impacts in the Western Rock Lobster Fishery to ensure that management and policy remain in tune with the principles of ESD. Moreover, this will help to ensure the ongoing socio-economic wellbeing of fishers, their families and communities.

Based on the above conclusions and key findings, the following recommendations are provided:

1. In line with the principles of ESD, fishery managers and stakeholders can continue to engage in an intensive and open consultation process and ongoing information flow in future discussions of fishery management arrangements. The baseline data collected under this project should continue to be compiled in order to monitor the nature and impact of changes in management arrangements on both the fishery and the communities over the longer term.

2. The important contribution and legacy of the Western Rock Lobster Fishery to the development of communities along the Western Australian coast can continue to be enhanced by the collaboration of industry stakeholders with community leaders and business groups. In some communities, the Blessing of the Fleet had taken on a more comprehensive nature and is highlighted as a community activity targeting residents and local tourists. These events can be used by the fishing community (through local PFAs in coordination with the Western Rock Lobster Council and the Department of Fisheries) to foster a positive perception of the fishing industry. Educational and promotional posters can highlight the fishery's contribution to the development of both the town and the State and featuring local stories of prominent fishers from the area. Providing support for local tourism initiatives (e.g. photo galleries or interpretative centres) capitalising on the rock lobster industry and fostering multi-stakeholder partnerships should also be investigated.

3. Fishery stakeholders should engage a more proactive media and communications campaign and continue to capitalise on local and regional media to foster a positive impression of, and build up future support for, the fishery.

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APPENDICES

Appendix 1: List of Meetings and Consultation Forums

Date	Industry and Community Stakeholder Group	Purpose
December 6, 2004	Central West Coast PFA Annual General Meeting	Verbal presentation on interviews being conducted and its usefulness in the research being conducted and Networking with fishers
May 25, 2005	Department of Fisheries Western Australia	Briefing on the status of the project and PowerPoint presentation outlining milestone accomplishments and planned activities
June 9, 2005	Economic Research Associates (ERA) Pty Ltd	Exchange of information on the bio-economic optimization model, alternative management options under consideration and variables being looked into to come up with community measures of resilience
June 15, 2005	WRLC Board	Provision of updates on the progress of the project
July 13, 2005	RLIAC, WRLC and Department of Fisheries WA	Discussion on how to organise the rock lobster industry consultations regarding the management strategic review
July 28, 2005	Department of Fisheries WA	Exchange of information on project status and Fisheries database on the WRLF compliance protocol and country experiences of the quota system
August 2, 2005	WRLDA	Exchange of information on rock lobster processors, the location of processing plants and depots, and the type of information collected by the processors, e.g. number of employees and amount of catch processed and exported
August 12, 2005	WRLC	Provision of updates on the status of the Expert Group and Reference Group as well as the collaboration with ERA on the measures of resilience
October 11, 2005	United Mid-West PFA Annual General Meeting	Verbal presentation of project status and interviews conducted and circulation of document on the summary of project findings

Date	Industry and Community Stakeholder Group	Purpose
November 3, 2005	Dongara PFA Annual General Meeting	PowerPoint presentation of fishers' views of the fishery management arrangements and exchange of information on the status of the project
November 4, 2005	Fremantle PFA and WA Rock Lobster Fishers Federation Annual General Meeting	Verbal presentation on the project findings and the status of the interviews with fishers and circulation of summary document on the social assessment study
November 8, 2005	Shire of Dandaragan	Courtesy call on new CEO and verbal presentation of the project objectives and initial findings on Jurien Bay and Cervantes
December 6, 2005	Seabird and Ledge Point PFA Annual General Meeting	PowerPoint presentation of project findings to date on fishers' perceptions of their communities and WRL fishery management arrangements
December 23, 2005	Central West Coast PFA Annual General Meeting	PowerPoint presentation on the social assessment of coastal communities and measures of resilience and circulation of handouts on initial project findings
January 13, 2006	RLIAC Meeting	PowerPoint presentation of social assessment study and discussion of Strategic Management Review papers for Rock Lobster Coastal Tour
January 30, 2006	Department of Fisheries WA, WRLC, ERA	Discussion of Coastal Tour presentations and the mechanics for wider consultation among rock lobster fishers on the management arrangements
March 5, 2006	Lancelin Coastal Day (sponsored by Conservation Council)	Information sharing on the project objectives and status and opportunity to meet key individuals in the community
March 7, 2006	Recfishwest	PowerPoint presentation of project findings to date and exchange of information, particularly in view of IT's spatial dimensions that could lead to more conflicts between commercial and recreational lobster fishers

Date	Industry and Community Stakeholder Group	Purpose
May 11, 2006	Department of Fisheries WA	Discussion of community level impacts of alternative management scenarios and initial findings from community survey
May 15, 2006	Shire of Dandaragan	Information sharing on project status and findings and discussion of Jurien Bay and Cervantes workshops
May 16, 2006	Department of Fisheries	Information sharing on project status and findings, with particular focus on community workshops
June 1, 2006	Shire of Coorow	Information sharing on project status and findings and discussion of Leeman and Green Head community workshops
June 1, 2006	Shire of Gingin	Information sharing on project status and findings
June 7, 2006	Mid-West Development Commission	PowerPoint presentation on the project status and findings, focused on community survey results for Mid-West communities
June 12, 2006	Shire of Northampton	PowerPoint presentation on the project status and findings and discussion of community workshops for Kalbarri, Port Gregory and Horrocks
July 5, 2006	Department for Planning and Infrastructure, Geraldton	Information sharing on project status and data gathering on marine facilities in the Mid-West communities
July 14, 2006	Department of Fisheries WA	Information sharing on project status and exchange of views on consultative process undertaken to date to gather fishers' views on the management arrangements
August 7, 2006	South West Development Commission	Information sharing on project status and data gathering on South West communities
August 17, 2006	RLIAC, WRLC, WRLDA and Department of Fisheries WA	PowerPoint presentation on the outcomes of the community workshops and other social research findings
November 20, 2006	ERA	Exchange of views on measures of resilience and community survey findings

Appendix 2: Terms of Reference and Composition of the Reference Group

Terms of Reference:

The primary objective of the proposed Reference Group is to provide ongoing advice to the social assessment study. Specifically, it will provide feedback on:

a) the socio-economic indicators that will assist in the estimation of the effects of the management scenarios under consideration;
b) the estimation of the impacts of the various scenarios on the communities hosting the WRL fleet; and
c) identification of additional groups/stakeholders that should be consulted as part of the determination of any regional impacts of the proposed scenarios

Composition:

Alan Black was Foundation Professor of Sociology/Anthropology at Edith Cowan University, Perth, before his retirement at the end of 2003. As an Emeritus Professor, he retains a link with the Edith Cowan University Centre for Social Research, a unit that he established in 1997. Many of his research projects relate to aspects of community capacity, sustainability and wellbeing, especially in rural and regional Australia. He and his colleagues have recently completed a large national survey on Wellbeing and Security in Australia. He is also the representative for Australia on the International Advisory Council for the World Values Survey.

Rhys Brown had been with the Department of Fisheries Western Australia for most of his career, involved in policy matters relating to the Western Rock Lobster Fishery.

John Duff teaches sociology in the School of International, Cultural and Community Studies at Edith Cowan University. He is interested in cross-national comparisons of social policy, having published on topics as diverse as health insurance policy in Australia, Singapore and Europe, and regional development policies in Australia and Ireland as a member of the EU. He has participated in a number of rural social development projects in the Centre for Social Research at Edith Cowan University.

Steven Gill is the Executive Director of the Western Rock Lobster Council, the peak body for the catching sector of the Western Rock Lobster Fishery.

Roy Jones is currently Professor of Geography in the Department of Social Sciences, Faculty of Media, Society and Culture at Curtin University of Technology, Perth, Western Australia. He is also currently the Co-Director of the Curtin Sustainable Tourism Centre and Editor (Human Geography) of Geographical Research: Journal of the Institute of Australian Geographers. With a BA (Econ) (Hons) (Sheffield), DipEd (Wales), Dip Economic Development (North Western Polytechnic, London) MA (Newcastle upon Tyne), PhD (Manchester) FRGS, he worked as a Research Assistant at North Western Polytechnic and taught Geography and Economic History at South East Northumberland Technical College, Wallsend before joining the Western Australian Institute of Technology (Curtin's predecessor institution) in 1970.

Paul McLeod is currently the Dean of the Faculty of Economics and Commerce of the University of Western Australia that operates as the UWA Business School. He is also with Economic Research Associates Pty Ltd, commissioned by the Department of Fisheries to evaluate the relative "socio-economic" benefits of alternative management scenarios for the Western Rock Lobster Fishery.

Jeremy Northcote is a Research Fellow at the National Drug Research Institute (Curtin University of Technology), a Research Officer in the Sustainable Tourism Cooperative Research Centre (STCC) at Murdoch University, and a Lecturer in the School of Marketing, Tourism and Leisure at Edith Cowan University. His recent work has involved developing conceptual frameworks for sustainable tourism management and the social impacts of tourism. Dr Northcote has also been involved in several evaluation projects, including evaluations of the human service industry in Carnarvon and CSIRO's 'tourism futures simulator' for sustainable tourism development in the South West Tapestry Region. Currently he is part of a STCRC project examining the socio-economic impacts from sanctuary zone changes for recreational fishing and tourism in the Ningaloo Marine Park.

Appendix 3: Terms of Reference and Composition of the Expert Forum

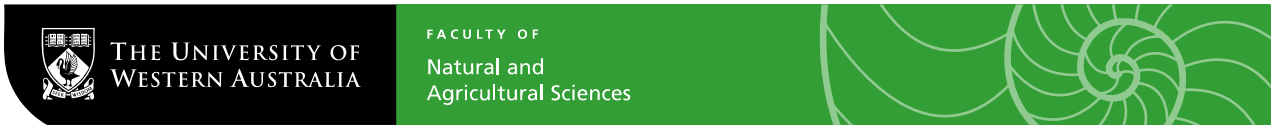
The Expert Forum will be a one-day reflection/validation workshop wherein the participants are expected to:

1. Review and provide comments on documents provided (written comments to be submitted at least one week before the workshop);
2. Draw out key conclusions based on the data gathered by the project to date;
3. Formulate a case for, and identify, interventions to assist affected stakeholders in managing potential changes to the fishery and the community; and
4. Contribute to the development of a predictive sustainability model for the Western Rock Lobster Fishery.

Composition:

Name	Position/Affiliation	Email Address
Neil Argent	Senior Lecturer in Human Geography, University of New England, Armidale NSW –	nargent@une.edu.au
Alan Black	Emeritus Professor, Edith Cowan University Centre for Social Research	a.black@ecu.edu.au
Rick Fletcher	Director of Research, Fisheries Department and Leader of FRDC ESD Assessment Subprogram	rfletcher@fish.wa.gov.au
Pierre Horwitz	Associate Professor, School of Natural Sciences and Director Consortium for Health and Ecology, Edith Cowan University	p.horwitz@ecu.edu.au
Colin Macgregor	Principal Social Scientist – Sustainability URS Asia Pacific	ca.macgregor@bigpond.com colin_macregor@urscorp.com
Jacki Schirmer	Research Fellow, The Australian National University, School of Resources, Environment and Society	jacki.schirmer@anu.edu.au
Geoff Syme	Theme Leader of Society , Policy and Economy Theme, CSIRO; Research psychologist in water resources management	Geoff.Syme@csiro.au
Frank Vanclay	Professorial Research Fellow in Rural Sociology, University of Tasmania	Frank.Vanclay@utas.edu.au

Appendix 4: Postal Survey Questionnaire



School of Earth and Geographical Sciences

The University of Western Australia
35 Stirling Highway, Crawley WA 6009

Phone +61 8 9380 2776
Fax +61 8 9380 1037
Email jking@geol.uwa.edu.au

CRICOS Provider Number 00126G

Dr. Matthew Tonts
Ph D. Supervisor

Veronica Huddleston
Ph.D. Candidate

"The Effects of National Competition Policy on Coastal Fishing Communities: The Western Rock Lobster Fishery"

SURVEY OF COMMERCIAL ROCK LOBSTER FISHERMEN

This survey is part of a Ph.D. dissertation that builds upon an earlier study by UWA's Institute for Regional Development (IRD) that investigated the potential social impacts of proposed changes to industry management arrangements in the commercial rock lobster fishery, specifically the 150-pot rule (Huddleston and Drew, 2003).

The present research will address the question of whether the National Competition Policy framework and the changes to the fishery management arrangements will affect the coastal communities that were developed following the expansion of the rock lobster fishery in the late 1940s. The research will be conducted in parallel with a forthcoming project to be undertaken by IRD and funded by the Department of Fisheries that will look into the social sustainability dimension of a possible move towards an output quota system in 2006.

	CONFIDENTIALITY		**ONCE COMPLETED**
🗀	Responses to the survey will be kept strictly confidential. Any information obtained from the survey will only be presented in summary form. Please sign the consent form in the second page of this questionnaire.	✉	Mail it in the postage-paid envelope provided. Thank you for your help in the conduct of this research.

CONSENT FORM

The participant is free at any time to withdraw consent to further participation without prejudice in any way. The participant need give neither reason nor justification for such a decision. In such cases, the record of that participant is to be destroyed, unless otherwise agreed by the participant.

I, _____ (the participant), have read the information provided and any questions I have asked have been answered to my satisfaction. I agree to participate in this activity, realizing that I may withdraw at any time without reason and without prejudice.

I understand that all information provided is treated as confidential and will not be released by the investigator unless required to by law. I have been advised as to what data is being collected, what the purposes are, and what will be done with the data upon completion of the research.

I agree that research data gathered for the study may be published provided my name or other identifying information is not used.

_____ _____

Participant *Date*

HOW to Complete this Questionnaire

The questions can be answered by simply marking the appropriate answer (☒ or ☑) or writing a few words. If you have any questions about the survey, please feel free to contact the researcher by phone (08-93802695) or by email (veronica@pvhuddleston.com).

Part I:

1. Personal Details

<table>
<tr><td>Name of Respondent (Family, Given Names):</td><td>Gender:
☐ Male
☐ Female</td><td colspan="2">Marital Status:
☐ Single
☐ Married
☐ Divorced/Separated</td></tr>
<tr><td colspan="2">Date of Birth:</td><td colspan="2">Place of Birth:</td></tr>
<tr><td colspan="4">Residential Address:</td></tr>
<tr><td colspan="4">Mailing Address (if different from the residential address):</td></tr>
<tr><td colspan="4">Contact Coordinates:</td></tr>
<tr><td>Telephone:</td><td>Fax:</td><td>Mobile:</td><td>Email:</td></tr>
</table>

2. Please tick the box that best describes yourself.
   - ☐ Owner-operator fisherman
   - ☐ Investor (Owner but not working the boat)
   - ☐ Lease fisherman
   - ☐ Skipper
   - ☐ Deckhand

3. How many children do you have?
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ More than 3, please specify _____
   - ☐ Not applicable

4. For your children of school age, where do they go to school?
   - ☐ In the local school
   - ☐ In nearby towns, please specify _____
   - ☐ In Perth
   - ☐ In other areas, please specify _____
   - ☐ Not applicable

5. Does your wife or partner work? ☐ Yes ☐ No

   If yes, please indicate job position _____

   And the location/town where working _____

6. Please indicate your source (s) of weekly income.

   6A. Please tick the appropriate box that represents your **average gross weekly individual** income during the 32 week lobster season *(please do not include the income of other members of your family in answering this question)*

   ☐ $1 - $199
   ☐ $200 - $399
   ☐ $400 - $599
   ☐ $600 - $799
   ☐ $800 - 999
   ☐ $1,000 - $1,499
   ☐ $1,500 - $1,999
   ☐ More than $2,000 per week

   6B. Do you get all your income from rock lobster fishery?

   ☐ Yes ☞ Please go to 6F.
   ☐ No ☞ Please answer 6C and 6D.

   6C. What percent of your total income comes from the rock lobster fishery?
   /_____%_/

   6D. If your other sources of income are fishery-related, please indicate what type?

   ☐ Charter fishing
   ☐ Prawn fishing
   ☐ Tuna fishing
   ☐ Others, please specify_____

   6E. If not fishery-related, please indicate your other occupation or sources of income.

   _____

   6F. During the rock lobster off-season (20 weeks between July – November), are you:

   ☐ Employed
   ☐ Unemployed
   ☐ Self-employed, *please specify*_____

6G. If employed or self-employed, please indicate your job position

_____

And the location (town) _____

6H. During the 20 week off-season, please tick the appropriate box that represents your **average gross weekly individual** income *(please do not include the income of other members of your family in answering this question)*

- ☐ $1 - $199
- ☐ $200 - $399
- ☐ $400 - $599
- ☐ $600 - $799
- ☐ $800 - 999
- ☐ $1,000 - $1,499
- ☐ $1,500 - $1,999
- ☐ More than $2,000 per week

6I. It has been noted in some studies that some farmers have in the past, entered the rock lobster fishery. Have you or your family ever been engaged in farming? ☐ Yes ☐ No

If yes, please indicate in what year (s) _____

And the location of your farm: _____

Does your family still farm? ☐ Yes ☐ No

6J. Please tick the appropriate box that best represents your reason (s) for entering the rock lobster fishery *(you may tick as many reasons as you can but please rank them in order of importance starting from 1).*

Reasons for entering the rock lobster fishery	Ranking
☐ Investment purposes	/_____/
☐ Increased income opportunities	/_____/
☐ Lifestyle change	/_____/
☐ Career change	/_____/
☐ Early exposure to fishing activities during youth	/_____/
☐ Family inheritance/operation	/_____/
☐ Lack of work or employment opportunities in the area	/_____/
☐ Others, please specify _____	/_____/

If your family had been in the rock lobster fishery for generations, please indicate the year your family started in the fishery? /_____/

Part II:

7. In which zone (s) do you fish or where you are licensed to catch lobsters?

   ☐ Zone A
   ☐ Zone B
   ☐ Zone C

8. Please indicate the number of pots that you are licensed to own:

☐ Below 50 pots	☐ 51 – 60 pots	☐ 61 – 70 pots
☐ 71 - 80 pots	☐ 81 – 90 pots	☐ 91 – 100 pots
☐ 101 - 110 pots	☐ 111 – 120 pots	☐ 121 – 130 pots
☐ 131 - 140 pots	☐ 141 – 150 pots	☐ 151 – 160 pots
☐ 161 – 170 pots	☐ 171 - 200 pots	☐ Over 200 pots

9. Do you lease out any of your pots? ☐ Yes ☐ No

   If yes, please indicate the number of pots that you lease to other fisherman. /_____/

   If yes, please indicate if
   ☐ You negotiate the lease yourself, OR
   ☐ You use a third party dealer

   ☐ You lease the pots to a processor

   If you are leasing out your pots, what pressing problems do you face?

   _____

   _____

   _____

   _____

10. TO BE ANSWERED ONLY BY LEASE FISHERMEN: As a fisherman who leases pots from other parties, what is the most pressing problem that you have when it comes to, for example, leasing arrangements and lease prices?

    _____

    _____

    _____

    _____

11. Please indicate the number of boats that you own and that you use in your rock lobster fishery operation and the number of men that you employ by activity.

NOTE: For non-boat owners, please skip questions 11 and 12 and go to question 13 .

	Boat 1	Boat 2	Boat 3
Name of Boat			
Length of the Boat			
Number of persons engaged:			
- Skipper			
- Deckhands			

NOTE: If you own more than 3 boats, please indicate the details at the back page of this questionnaire.

12. In which town or community is (are) your boat (s) principally based?

Boat 1 - _____

Boat 2 - _____

Boat 3 - _____

13. The rock lobster fleet is getting increasingly mobile, with rock lobster fishermen travelling to other towns/areas to fish. Does this apply to you?

☐ Yes ☞ Please answer questions 13A, 13B and 13C
☐ No ☞ Please go to 13D

13A. Please indicate the names of the towns where you fish from.

_____

13B. Please indicate how many weeks you are out of the area where your boat is principally based.

☐ 1 – 4
☐ 5 – 8
☐ 9 – 12
☐ 13 – 16
☐ 17 – 20
☐ 21 – 24
☐ 25 – 28
☐ 29 – 32

13C. If you travel to other towns to fish, please indicate how much money you spend on average in a week in the town where your boat is principally based and the towns that you go to:

Supplies and Services	Principal Base Town	Other Towns you go to fish
Food		
Lodging or accommodation		
Bait		
Fuel		
Fishing Gear		
Other inputs *(please specify):* - -		
Boat Maintenance		
Boat Repair		
Equipment Repair (e.g. pots)		

13D. If you are not a highly mobile fisherman, please indicate how much you spend on average in a week on the following supplies and services in the town where you are based.

Supplies and Services	Principal Base Town
Food	
Lodging or accommodation	
Bait	
Fuel	
Fishing Gear	
Other inputs *(please specify):* - -	
Boat Maintenance	
Boat Repair	
Equipment Repair (e.g. pots)	

14. In the town where your boat is based, please identify the voluntary activities that you regularly engage in.

Voluntary Activities	Hours Per Week Spent
☐ Sports activities, please specify _____	/_____/
☐ Fire brigade	
☐ Ambulance services	/_____/
☐ Others, please specify	/_____/
_____	/_____/

15. When was the last time you were involved in any of the above activities?

    Please indicate the month and the year. /_____/

16. With the increasing tendency in the industry for fleet mobility, has your involvement in these voluntary activities changed?

    ☐ Yes ☐ No

    If yes, please elaborate on how your involvement has changed.

    _____
    _____
    _____

_

17. Do any members of your family (spouse and children) participate in any community voluntary activities?

    ☐ Yes ☐ No

    If yes, please indicate the activities they engage in.

    _____
    _____
    _____

Part III:

18. Using a scale of 1-10, where 1 means "low impact" and 10 means "high impact" on your fishing operations, please indicate how you perceive the influence of the following management arrangements that have been adopted (or are planned to be adopted) to ensure the biological sustainability of the rock lobster fishery.

Management Arrangement	Rating (1-10)
Temporary 10 percent reduction in the number of pots allowed to be used (1986)	
18 percent reduction in the number of pots allowed to be used (1993)	
Providing for temporary transfers of units of entitlement (2000)	
Removal of the 150 maximum unit holding rule (2003)	
Continuation of the current 2003-2004 management package	
Adoption of an individually transferable effort system (Under consideration)	
Adoption of an individually transferable quota system (Under consideration)	

19. In the past five years, the rock lobster fishery has been affected by global/external variables and factors. Using a scale of 1-10, where 1 means "low impact" and 10 means "high impact", please indicate the effect these variables have had on your fishing operations.

Variable/Factor	Rating (1-10)
War in Iraq	
SARS virus in Asia	
Higher probability of terrorist attacks	
Changes in the Japanese social structure	
Avian or Bird Flu in Asia	
Relatively stronger Australian dollar vis-à-vis the US dollar and the Japanese yen	
Increasing foreign competition	
Free Trade Agreement with the United States	
Possible rock lobster price increase in Europe	
Other environmental factors: - Global warming/Weather changes - Coastal erosion	
Other factors, *please specify*	

20. On a scale of 1-10, where 1 means "none or limited knowledge" and 10 means "extremely knowledgeable", please indicate your level of knowledge on National Competition Policy and its implications on the rock lobster fishery.

    /____/

    If you have any views or comments on the NCP, please elaborate.

    _____

    _____

    _____

    _____

21. In July 2003, the Government announced the removal of the 150 maximum unit-holding rule and maintained the minimum pot holding restriction of 63 pots. Did this change have any effect on your operations?

    ☐ No effect at all
    ☐ Limited effect
    ☐ Strong effect

    Please elaborate on the effect this change had on your operations.

    _____

    _____

    _____

    _____

ADDITIONAL COMMENTS:

22. If you feel there is something that have been overlooked, or something that you would like to add to the above, please use this space.

    _____

    _____

    _____

    _____

THANK YOU FOR YOUR PARTICIPATION IN THE SURVEY.

PLEASE RETURN THE COMPLETED QUESTIONNAIRE BY MAIL IN THE ENCLOSED REPLY PAID ENVELOPE.

Appendix 5: Semi-Structured Interview Guide Questions

FOR FISHERS:

1. Personal Characteristics
- *Age/Year of Birth*
- *Gender*
- *Place of Birth*
- *Marital Status*
- *Number/Age of Children*
2. History in the Industry
- *Classification in the industry*
- *Number of pots owned*
- *Reasons for entry to the rock lobster fishery*
- *Average gross weekly individual income during rock lobster season*
- *Are you leasing any pots? If yes, what problems do you face?*
- *Boat characteristics*
- *Number of people engaged*
- *In what major town do you fish?*
- *Do you fish in other towns?*
3. Community Aspects
- *How long have you lived or worked in this community?*
- *Why did you move to this community?*
- *What do you like about community?*
- *What changes have you noticed in the community since you moved here?*
- *Are there aspects in the community you don't like or wishes to change?*
- *What voluntary activities are you engaged in?*
- *What voluntary activities do your family engage in?*
- *What do fishermen contribute to the community? Please cite concrete examples.*
4. On changes to the management arrangement
- *Fisherman's thinking on the alternatives*
- *Status Quo of Input Controls*
- *Individual Transferable Effort*
- *Output Controls/ Individual Transferable Quota*
- *Perceived problems/issues in the industry*
5. Other Comments

FOR COMMUNITY RESIDENTS:

1. Personal Characteristics
- *Age/Year of Birth*
- *Gender*
- *Place of Birth*
- *Marital Status*
- *Number/Age of Children*
2. Community Aspects
- *How long have you lived or worked in this community?*
- *Why did you move to this community?*
- *What do you like about community?*

- *What positive or negative changes have you noticed in the community?*
- *Are there aspects in the community you do not like or wishes to change?*
3. Perceptions of Rock Lobster Fishing and Rock Lobster Fishers
- *This town was known as a rock lobster or 'crayfishing' town. Do you think it is still a rock lobster fishing town?*
- *To what extent was rock lobster fishing or 'crayfishing' important to the development of the community? Examples?*
- *What do you think are the contributions of rock lobster fishers in this town?*
- *What is the participation of rock lobster fishers in community events? In volunteer activities?*
- *Do you think that the rock lobster fishing industry is important to the continued growth and development of this town? If yes, to what extent is it important?*
4. Other Comments

FOR SMALL BUSINESS OWNERS/OPERATORS:

1. Personal Characteristics
- *Age/Year of Birth*
- *Gender*
- *Place of Birth*
- *Marital Status*
- *Number/Age of Children*
2. Business Aspects
- *What is the type of business you operate? How many staff? What is the staff turnover in the past 5 years?*
- *How long have you owned/operated the business?*
- *What made you decide to own/operate this business?*
- *What are the main challenges facing business in the town?*
- *Do you do any business with rock lobster fishers in this town? If yes, elaborate.*
- *How is your business affected with fewer boats and fewer crew in the rock lobster fishing industry?*
- *What is the extent to which your business depends on the rock lobster fishing industry?*
3. Community Aspects
- *How long have you lived or worked in this community?*
- *Why did you move to this community?*
- *What do you like about community?*
- *What positive or negative changes have you noticed in the community since you moved here?*
- *Are there aspects in the community you do not like or wishes to change?*
4. Perceptions of Rock Lobster Fishing and Rock Lobster Fishers
- *This town was known as a rock lobster or 'crayfishing' town. Do you think it is still a rock lobster fishing town?*
- *To what extent is rock lobster fishing important to the continued development of the town? Provide specific examples.*
- *What do you think are the contributions of rock lobster fishers in this town?*
4. Other Comments

FOR PROCESSORS:

1. Personal Background
2. Business Operations
- *How many kgs./tons of lobsters do you process in a season?*
- *What percentage of your business is rock lobster processing?*
- *Where are your processing plants located?*
- *How many people do you employ? Permanent or regular workers? Casual or temporary staff?*
- *Does the company own and lease boats? Pots?*
- *How many rock lobster fishers supply to your company – regularly? Not on permanent basis?*
- *What has been the effect of better infrastructure such as the road network along the coast (e.g. Indian Ocean Drive) to your operations? From the receival depots, are the lobsters transported immediately to the nearby processing plants by your mobile truck freezers?*
- *What are the major challenges facing the processing industry today?*
2. Community Links
- *To what extent was rock lobster or 'crayfishing' important to the development of the community? Examples?*
- *Is it still important today?*
- *What activities does your company support that benefits the community? Examples?*
- *What is the participation of fishermen in these activities?*
3. Community Development
- *What positive or negative changes have you noticed in the community over time?*
- *What do you consider as the major challenges facing the communities that host the rock lobster fleet today?*
4. Other Comments

Appendix 6: Telephone Survey Questionnaire

QNUM F1

Hello, my name is (first name and surname). We are conducting a survey about community issues for the Institute for Regional Development, University of Western Australia, and I'm calling from Australian Community Research. Would you mind answering a few questions?

YES	**CONTINUE**
NO - NOT AVAILABLE	**ARRANGE CALL BACK (NB: IMPORTANT TO ARRANGE CALL BACK FOR THIS STUDY)**
NO	**DISCONTINUE**

Federal Privacy laws protect the confidentiality of any comments you make in relation to this survey. We prefer that you answer all questions in the survey, but you don't have to…

Q2 Could I ask the postcode you live in please? __ __ __ __ ***F2***

Q3 How many years have you lived in this community? __ __Years ***F3***

Q4 How many generations of your family have lived in the area where you now live? __ __ Generations ***F4***

Q5. Do you expect to be living in the same town or area 5 years from now?

YES…..…… 1
NO…… ***2***
UNSURE…… ***3***
REFUSED…… ***4***

F5

Q6 What were the main things that made you choose to live in this community?

FULL PROBE: (CODE UP TO THREE)

(FOLLOWUP PROMPTS)
Could you explain that further?
Why else did you choose to live here?
What do you like most about this community?
What are the main advantages of living here?

_____
_____ ***F6***

Q7. How would you rate your local community as a place to live? Is it … (READ LIST)

Excellent…… 1
Good…… ***2***
Fair…… ***3***
Poor…… ***4***
UNSURE/REF….. ***5*** F7

Q8. How strong are your feelings of attachment to the local community in which you live? Is it … (READ LIST)

Very strong attachment …... 1
Strong attachment…… ***2***
Some attachment…….. ***3***
Little attachment…… ***4***

			No attachment…….. ***5***	
			UNSURE/REF….. ***6***	F8
Q9.	Would you say that you know … (READ LIST)	Most of the people in your neighbourhood……..	1	
		Many of the people in your neighbourhood……..	***2***	
		A few of the people in your neighbourhood…….	***3***	
		Or that you do not know any of the people in you neighbourhood……	***4***	
		UNSURE/REF…….....	***5***	F9

Q10.	When you go shopping in your local area, how often are you likely to run into friends and acquaintances? (READ LIST)	Nearly always…….	1	
		Most of the time….	***2***	
		Some of the time…	***3***	
		Rarely or never …	***4***	
		UNSURE/REF	***5***	F10

Q 11 On a scale of 1 to 10 where 1 means “strongly disagree” and 10 means “strongly agree”, how much do you agree or disagree that …

	STATEMENT	AGREEMENT RATING	DON’T KNOW/ CAN’T ANSWER	
11	This is an active community where people get involved in local issues and activities.		99	F11
12	People here have opportunities to participate in the decisions made by their local government.		99	F12
13	There is strong local support for community events, such as show days and festivals.		99	F13
14	If there was a serious problem in this community, people would get together and solve it.		99	F14
15	This local community is friendly towards newcomers.		99	F15
16	There are enough employment opportunities in the community for people like me.		99	F16
17	There are easily accessible training facilities in the community that people here can use to improve their qualifications/skills.		99	F17
18	The coast around this community is suitable for more tourism activities than we have at present.		99	F18

Q19.	Are there many people in your local community willing to contribute money and/or time to projects from which they would not receive any personal benefit? (READ LIST)	Many people will not contribute time……	1	
		Many people will contribute time……	***2***	
		UNSURE/REF……..	***3***	F19
Q20		Many people will not contribute money…….	***1***	

Many people will contribute money……. ***2***
UNSURE/REF…….. ***3*** F20

Do you use the following services locally, that is, where you live or do you go to another town?

RECORD NAME OF THE TOWN IF ANSWER IS NOT LOCALLY)
(MARK AS 'NA' IF THEY DON"T USE THE SERVICE)

(READ LIST)	LOCALLY	***OTHER (SPECIFY)***	
Q21. General Practitioner/ Doctor...	1	**Other**_____	***F21***
Q22. Hospital/ Clinic…….	1	Other_____	***F22***
Q23. Specialist Medical Services…	1	Other_____	***F23***
Q24. Dentist……	1	Other_____	***F24***
Q25. Primary School……	1	Other_____	***F25***
Q26. High School……	1	Other_____	***F26***
Q27. Higher Education & Training	1	Other_____	***F27***
Q28. Police……	1	Other_____	***F28***
Q29. Bank……	1	Other_____	***F29***
Q30.Mechanical services for cars/boats	1	Other_____	***F30***
Q31. Fisheries Officer……	1	Other_____	***F31***

Q32. Are you involved in voluntary state emergency services, rescue or fire services?

NO……. 1
YES ***2***
(SPECIFY).....
UNSURE/REF……. ***3*** F32

Q33 _____ ***F33***

Q34. Have you been part of a project to develop new services, activities or facilities in your area, for example, a new jetty/jetty re-construction, disabled facilities, medical facilities, child care or youth club in the past year?

NOT AT ALL……. 1
YES, ONCE……. ***2***
YES, TWICE……. ***3***
YES, THREE OR MORE TIMES ***4***
UNSURE/REF…….. ***5*** F34

Q35. Have you attended a local community event such as a fete, school concert, or craft exhibition in the past year?

NOT AT ALL……. 1
YES, ONCE……. ***2***
YES, TWICE……. ***3***
YES, THREE OR MORE TIMES ***4***
UNSURE/REF…….. ***5*** F35

	In the past 12 months, were you a member or a participant in? (READ LIST)	YES	*NO*	*UNS / REF*	
Q36	-A local sports or recreation organisation such as golf club, health club or netball club……..	***1***	***2***	3	***F36***
Q37	-A local professional organisation……..	***1***	***2***	3	***F37***
Q38	-A local political party or group……..	***1***	***2***	3	***F38***
Q39	-A local cultural, education or hobby organisation such as theatre group, book club or bridge club……...	***1***	***2***	3	***F39***
Q40	-A local religious affiliated group such as church youth group or choir…….	***1***	***2***	3	***F40***
Q41	-A school group, neighbourhood, civic or community association such as P & C or Neighbourhood Watch……..	***1***	***2***	3	***F41***
Q42	-A local service club……	***1***	***2***	3	***F42***
Q43	-Ratepayers association or local chamber of commerce….	***1***	***2***	3	***F43***
Q44	-Any other locally-based type of organisation (SPECIFY)....	***1***	***2***	3	***F44***

Q45 _____

F45

I am going to read some statements about the crayfishing industry and your community, on a scale of 1 to 10 where 1 means “strongly disagree” and 10 means “strongly agree”, to what extent do you agree that …

		AGREEMENT RATING	DON’T KNOW/ CAN’T ANSWER	
Q46	There should be strong controls on commercial rock lobster fishing to protect the marine environment.		99	***F46***
Q47	Management of commercial rock lobster fishing should include greater consultation with the community about what we want.		99	***F47***
Q48	There should be more marine protected areas in our community.		99	***F48***
Q49	Limiting the number of rock lobsters caught each season by commercial and recreational fishers is important to the long-term management of the W.A. marine ecology.		99	***F49***
Q50	Marine parks and Government environmental regulations have a significant impact on the viability of commercial rock lobster fishing.		99	***F50***
Q51	The decline in the number of commercial rock lobster or crayfish boats has a negative impact on local businesses in the community.		99	***F51***
Q52	Less people in this community are employed in the Rock Lobster industry than 10 years ago.		99	***F52***

		AGREEMENT RATING	DON'T KNOW/ CAN'T ANSWER	
Q53	The economic viability of our community is closely linked to the viability of the rock lobster industry.		99	***F53***
Q54	The decrease in the number of rock lobster skippers and deckhands is a significant problem in this community.		99	***F54***
Q55	The rock lobster fishery and processing sector is a good source of employment for people in this community.		99	***F55***
Q56	Those employed in the Rock Lobster fishery make a good income.		99	***F56***

Q57 Do you have any other concerns or issues about commercial rock lobster fishing?

(PROBE)

Q58. Would you encourage young people to become involved in the commercial rock lobster fishery?

YES…..…… 1
NO……. ***2***
UNSURE…… ***3***
REFUSED…… ***4***

F58

We are nearly finished. The last few questions are just to make sure we have a good sample…

Q59 Which of the following best describes your household?

(READ LIST)

Young singles…….. ***1***
Young couple – no children……..... ***2***
Young family – children mainly under 14. ***3***
Older family – children mainly 15 plus….. ***4***
Older couple – no children at home…….. ***5***
Mature singles…….. ***6***
Q60 _____ Other (SPECIFY)..... ***7*** ***F59***
UNSURE/REF……. ***8***

F60

Q61 What is your place of birth? (RECORD COUNTRY IN F60)

_____ ***F61***

Q62 (IF BORN IN AUSTRALIA ASK FOR TOWN OF BIRTH) (RECORD TOWN IN F61)

_____ ***F62***

Q63 Thinking about the last 3 years, do you regularly spend periods of at least a month in another town?

IF YES: Please name the town and the month that you usually live there?
(DON'T INCLUDE ONE OFF HOLIDAYS, LOOKING FOR REGULAR PERIODS IN ANOTHER TOWN)

TOWN NAME	MONTH	
	FROM	TO
_____ ***F63***	_____ ***F64***	_____ ***F65***
_____ ***F66***	_____ ***F67***	_____ ***F68***
_____ ***F69***	_____ ***F70***	_____ ***F71***
		(IF MORE INFORMATION WRITE INTO THIS FIELD)

Q72 Are you currently living in a…

(READ LIST)

Separate house……	***1***	
a semi-detached house……	***2***	
a flat, unit or apartment ……	***3***	
Other (PLEASE SPECIFY)……	***4***	***F72***
UNSURE/REF……	***5***	

Q73 _____ ***F73***

Q74 And do you…

(READ LIST)

Fully own it ……	***1***	
Paying off the mortgage ……	***2***	
Renting it ……	***3***	
Other (PLEASE SPECIFY)……	***4***	***F74***
UNSURE/REF……	***5***	

Q75 _____ ***F75***

Q76. Is the highest level of education or qualification you have completed

(READ LIST)

Year 9 or below……	1	
Year 10 or equivalent……	***2***	
Year 11 or equivalent……	***3***	
Year 12 or equivalent……	***4***	
Trade Certificate or Apprenticeship	***5***	
Diploma or Advanced Diploma	***6***	
Bachelor or Honours Degree…	***7***	
Postgraduate Degree (eg Masters, PhD)……	***8***	
UNSURE/REF……..	***9***	F76

Q77. Are you currently…

(READ LIST)

Full time employed……	1	
Part time employed……	***2***	
Unemployed……	***3***	
Employed seasonal worker ……	***4***	

Temporary unemployed seasonal worker……	***5***	
Retired/Semi-Retired……	***6***	
Not currently working……	***7***	
Currently looking for work……	***8***	
UNSURE/REF……..	***9***	F77

Q78. What is your current industry of employment (IF UNEMPLOYED ASK…) Which industry are seeking employment)?

(PLEASE MARK THE CATEGORY THAT BEST REPRESENTS THE RESPONDENT'S SITUATION. IF TWO OR MORE CATEGORIES WERE IDENTIFIED, PLEASE FOLLOW-UP FOR EXPLANATIONS AS INDICATED BELOW)

ACCOMMODATION, CAFES AND RESTAURANTS	GOVERNMENT ADMINISTRATION AND DEFENCE
AGRICULTURE	HEALTH AND COMMUNITY SERVICES
COMMUNICATION SERVICES	**MANUFACTURING -> Q79 ->Q80**
CONSTRUCTION	MINING
CULTURAL AND RECREATIONAL SERVICES	PERSONAL AND OTHER SERVICES
EDUCATION	PROPERTY AND BUSINESS SERVICES
ELECTRICITY, GAS AND WATER SUPPLY	RETAIL TRADE
FINANCE AND INSURANCE	TRANSPORT AND STORAGE
FISHING -> Q79 -> Q80	WHOLESALE TRADE
FORESTRY	

(IF UNSURE OF CATEGORY TO USE TYPE THE RESPONDENT RESPONSE ON THE LINE)

_____ ***F78***

Q79 (IF TWO OR MORE CATEGORIES IN Q77 ASK…) (PROBE FOR EXPLANATION OF THE NATURE OF EMPLOYMENT))

I see you are employed in different industries, could I ask you why is that?

_____ ***F79***

ASK THESE IF PERSON IS EMPLOYED IN **FISHING OR MANUFACTURING** INDUSTRY

Q80. Are you employed in commercial rock lobster fishing?
Q81 ←

YES…….…….	1	
NO…….....	***2***	
UNSURE/REF…….....	***3***	
		F80

Q81. Is that as a …

Owner-operator……....	1	
Skipper……..	***2***	
Deckhand……..	***3***	
Lease fisherman……..	***4***	
Investor……..	***5***	
Other (SPECIFY).....	***6***	

Q82 UNSURE/REF…… ***7***

F82

F81

ASK IF PERSON IS EMPLOYED IN **FISHING OR MANUFACTURING** INDUSTRY

Q83. Are you employed in commercial rock lobster processing?

YES…….…… 1
NO……..... ***2***
UNSURE/REF……..... ***3***

F83

Q84. Which of the following age groups do you belong to?

(READ LIST)

18-24…….…… 1
25-34…….. 2
35-44……. 3
45-54…….. 4
55-65……. 5
65 plus…….. **6**
UNSURE/REF…….. ***7*** F84

Q85. What is the gross annual income (including pensions and allowances) that your household usually receives from all sources? Gross income is your household's income from all sources before tax. Was it …

(READ LIST)

Less than $21,000 per annum…… 1
Between $21,000 and $42,000…… 2
Between $42,000 and $78,000…… 3
More than $78,000…….. 4
UNSURE/REF…….. ***5*** F85

Q86. Record gender of respondent

MALE…….. 1
FEMALE…….. 2

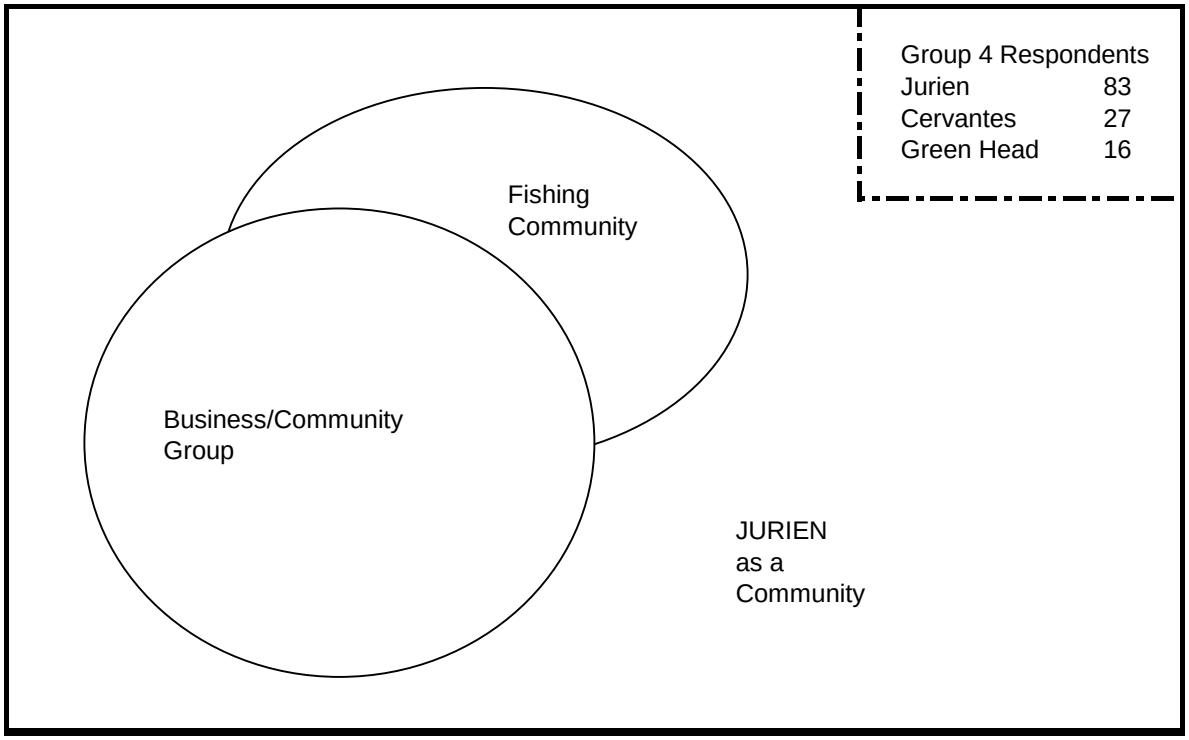
F86

87. And finally, **call-backs** are sometimes made to check that we have completed our interviews. Could I have your first name only please?
……. ***F87***

88. And I just need to confirm that your phone number is… (READ OUT FROM SAMPLE SHEET AND TYPE ONTO SCREEN) ***F88***

That is the end of the interview, thank you for your time. Just to remind you my name is (FIRST NAME AND SURNAME) from Australian Community Research. If you have any questions about this research you can phone our office on 9246 5300.
☺

Appendix 7: Documents for Jurien Bay Community Workshop



Based on the telephone survey conducted in November 2005 of community residents from Kalbarri to Augusta, the following are the highlights of responses among Jurien residents:

About 8 out of 10 respondents indicated that they expect to be living in Jurien in 5 years time.

The main reasons cited for choosing to live in Jurien are: 1) lifestyle; 2) beach, ocean and the environment; and 3) work.

About 9 out of 10 respondents rated Jurien as either an "excellent" or "good" place to live. Half of the respondents reported strong levels of attachment to the community. People in Jurien also reported high levels of knowing most of the people in the neighbourhood and nearly always running into people they know when shopping.

Almost half of those surveyed reported attending local community events three or more time in a year but 60 per cent reported that they do not participate at all in projects to develop new services or facilities.

The perception of those surveyed was that people are more willing to contribute money than time to community projects.

On the response to the question of whether they would encourage young people to be involved in rock lobster fishing, one of the areas where majority of the respondents say they would not is Jurien.

Respondents in Jurien expressed concerns that big business are taking over the industry and pushing small operators out of the industry.

Ratings of employment opportunities and training opportunities were lower than those given for community participation.

Fishing Community	Jurien as a Community	Business/Community Group
Fishers in Jurien are not big ones and not after big money. We're in it for the lifestyle.	With the growth of the town, there is more diversity. Workers come in and bring their families (e.g. Western Power, Water Corporation, other tradesmen, etc.). There is a more diversified workforce, diversified businesses and in terms of fishing personnel, they would certainly now be a minority.	Doing business with crayfishers is no longer a major part of the business because they only make up a small number of the community now. With fewer boats in the fishery, our sales to related trades (e.g., marine fabricators) have also gone down.
Most fishers have trades to fall back on (e.g. welder, fabricator, electrician, etc.). Some work in the mines during the off-season.	Jurien was a crayfishing town with 2 processing companies that employed a lot of workers. Now it's a crayfishing town with 14-15 boats. It's not what it used to be.	A number of small shops (i.e. take-away foods) make a living out of the rock lobster crew.
Fishing is a great way of life, a lifestyle of working during the day, having the option to have a day off if it's too rough to go to work or if there are not enough crays, calling the shots - when it's time to go home or have a day off or when to work everyday. But when an investor (especially not from town or without fishing background) owns the boat, you go where he's telling you to go. You'll only be a skipper (or crew) and you don't have a voice anymore.	We've got fishing, farming, mining and tourism is going to be a big thing.	The loss of people working at the processing plant have mostly affected local shops and businesses. Deckys don't spend a lot these days because the catch has not been good.
The rock lobster industry has really, really been good for Jurien. The fishers helped make everything happen, they built things, they initiated bowling clubs, golf clubs, P&C, footy clubs, etc.	Jurien is a nice little quiet town and great for young families with kids.	The major contributors to the town nowadays are those who come here for holidays. But we need to also have top quality tourist amenities to bring tourists who will spend money in the town.

Fishing Community	Jurien as a Community	Business/Community Group
The Annual Blessing of the fleet is a big affair supported by the community. Fishers help out and small businesses provide plenty of support.	Jurien is a good little fishing town and we mainly fish just around here.	It's hard to get good stable employees. Decky's girlfriends/partners work during the season and then, they're gone. People only want to work when it suits them to work.
Fishers belong to two groups. The first won't move to other places, they are quite happy to take what they get, call this home and fish out of here. The second group has pressures from de facto owners who want the maximum out of their boats.	You know a lot of people in the town and you know mostly what goes on in the town.	Most of businesses sold are existing businesses; not many new ones have been established. It's harder for a business to get established here because it doesn't have the population size to ensure its survival. There is also the challenge of getting people to shop local and keep the money in town.
The fishing industry has always been predominantly young people but now you see more family men employed. Once you have a family, you become more settled. As you get older, you think about saving a little bit and investing in things like real estate.	When you have kids, you become motivated a bit more on community activities. It doesn't matter if you are a skipper or deckhand, you still share the same interests when you have children.	The demographics of the real estate market has changed fairly markedly from the traditional buyers (Wheatbelt farmers and local people centred around rock lobster fishing) to self-funded retirees in town and baby-boomer investors from Perth and the metro area.
A lot of boats are sold out due to health reasons, divorce and financial problems.	Jurien's a close-knit community where everyone knows and supports everyone.	Young investors/couples from Perth and other areas, not only retirees, are buying real estate in Jurien, more for investment purposes.
The seasonality of the income/take-home pay is more difficult to adjust to than the seasonality of the work. Financial problems cause more stress and one has to learn to adjust to about 5-6 months of minimal or no income.	Jurien has most of the amenities that make living here good, e.g. school, hospital, marina, Shire office, fire station, grocery, etc.	Jurien has a lot to offer such as recreational fishing and the lifestyle. The marina is a good attraction for real estate and we wouldn't have had the marina if we didn't have the crayfishers.

Fishing Community	Jurien as a Community	Business/Community Group
Big investors with all the money are not really supportive of community events.	Over the years, no one's really gone broke in Jurien if you worked hard.	
The older ones still do volunteer work but the younger ones don't seem to join in to volunteer and help out. A lot of the young blokes now don't seem to have the time, they just go out and pull pots.	Among the plus factors of living in Jurien are that not many people live in the town and the people are still friendly these days.	
To start in the fishery now is too expensive and too hard. Some try very hard, they buy a boat and lease licenses to try to make money and be able to buy their own license. But the licenses are worth so much money.	Schooling past Year 10 could be a major factor in the decision to stay or not in Jurien. Medical reasons also play a role. A few have left because there's no social activities here (e.g. go out for dinner or go to the movies).	
The industry is getting more unskilled labour now because there is less money for deckhands. [But with huge amount of bills that have to be paid (e.g. cost of inputs, interest payments, etc), we can't afford to pay crew any higher. The profit margin in fishing is getting less and less.	There seems to have a lot going for the senior citizens but those in the 13-18 age range find Jurien boring. It's like living in a fish bowl. It is a caring town but it can be too much since everyone knows what each is doing.	
Experience counts a lot with deckhands. There are still a lot of young ones coming in to learn and some of them make it, some don't.	There's a bit of problem with the town being "cliquey". It's pretty accepting of newcomers but it's hard to sell new ideas.	
While a lot of the crew probably hasn't got high education, they want to improve themselves and make some money.	Like most other coastal towns, law and order incidences predominantly relate to anti-social behaviour related to drug and alcohol use.	

Appendix 8A: Country Experiences on ITQs – Australia and New Zealand

	General	South Australia	Tasmania	New Zealand
Fishery		Rock lobster fishery; Southern bluefin tuna fishery	Tasmanian Rock Lobster Fishery	30 Species or species groups as of Oct 1994 (179 fish stocks), with the rock lobster introduced into the QMS in 1990
Current Management Arrangement	ITQs are fisheries management tools designed to complement other more traditional measures such as restrictions on the total catch, size limits and closed seasons.	Management of the Southern Zone RL fishery is primarily based on a quota system that places a direct control on the annual commercial catch, but is complemented by a mix of input controls including limited entry, seasonal closures and gear restrictions.	Adopted ITQs in March 1998 at a time when the unit price for the rock lobster was generally high and increasing. With the introduction of quota management, the fishing season was changed from one that ran from November until September each year to one that runs from March until February.	Introduced QMS with ITQs as fundamental element in October 1986. The TAC available for commercial fishing for each fish species in catch area is predetermined; rights (ITQs) are issued authorising holders to annually take specified quantities of each species in each quota area. ITQs operate in tandem with other administrative and management controls.
	Communication and education are critical to the success of ITQ programs. How ITQ systems of fisheries management are designed, is important to how they work and their consequences.	Resource sustainability has been ensured by the implementation of a strategic research program, ongoing effort reductions to the commercial fishing fleet over time and the introduction of an ITQ.	The output control QMS adopted in March 1998 was on top of "traditional" technical conservation measures and input restrictions such as a shortened fishing season, gear stipulation, size limits and a cap on the number of licenses.	ITQs were changed from a fixed to a proportional basis in Oct 1990. An "adaptive management" scheme was adopted from the 1991-1992 fishing year where increases had been granted for 39 fish stocks.
		The TAC is set each year and is divided evenly between license holders as ITQs. The daily catch of individual boats is monitored via catch and disposal records.		The ITQs were allocated in perpetuity and are fully transferable, including rights to lease. Maximum/ minimum quota holdings have been set as well as restrictions on quota ownership (ITQs may not be held by persons not ordinarily resident in NZ or by companies with overseas control).

	General	South Australia	Tasmania	New Zealand
Current Management Arrangement		Current management of southern bluefin tuna stocks is under a trilateral arrangement between Australia, Japan and New Zealand.		A new Fisheries Bill was introduced in Dec 1994 providing a complete rewrite of the Fisheries Act, building on the strengths of the QMS, refining some aspects of the QMS and adding other fisheries management features.
Rationale for New Arrangement	The principal aims are usually to achieve tighter control over fishing effort, reduce levels of overcapitalisation and thereby improve the efficiency of the fishing fleet.	ITCQs were introduced to the Australian southern bluefin tuna fishery as a conservation measure. Quota units were initially apportioned among operators using a formula based on boat value and boat history of catch.	Fishers are expected to maximise the value as opposed to the quantity of fish caught. It is also expected to result in the quality of fishing effort and in the dynamics of the fleet.	Conservation – to limit catches to levels that will result in maximum production from the stock and Allocation – to maximise the net economic return to the nation
Issues Faced by the Fishery	Alternative policies that promote social equity and achieve conservation by mechanisms other than property rights may ultimately be more successful in making progress towards sustainability.			Prior to the introduction of ITQs, domestic inshore fishery had reached a crisis point – overfishing, overcapitalisation, potential biological damage to some fish species, and a declining economic performance in the inshore fishery.
Economic Aspects	ITQs result in the end of a costly and often dangerous "derby" or race to catch as much as possible before the quota is reached and the fishery is closed.	ITQ resulted in a rapid downward adjustment of the fleet with the number of vessels reduced by more than 70% (1984-1988); increased efficiency among the remaining vessels with improved catches; and a lowering of the costs of fishing and enhanced market prices for the catch.	Since the introduction of the quota, there has been an increase in the rate of increase towards winter fishing (maximising profits.	Although there are few actual data for analyses, there is a widely held perception that the efficiency, competitiveness and profitability of the industry had increased.
			The number of vessels and entitlement owners participating in the fishery saw a large decline in the first 2 years of quota management.	In some fisheries, the negative aspect of under-catching the TAC is that it can result in a considerable economic cost to the industry.

	General	South Australia	Tasmania	New Zealand
Socio-Economic Aspects	While good at reducing fishing capacity, this comes at social and economic costs: the windfall profits that may go to a select few at the initial allocation; the reduced employment opportunities for crew, captains, and shore support workers; effects of ITQs on processors and processing labourers; the increased cost of entry into the fishery; and various costs of consolidation of ownership in a select few.	With the incentive to maximise the profit obtained from their quota, operators concentrated on catching larger fish because of the higher prices received from higher canning conversion rates for larger fish and the price received for larger fish on the Japanese sashimi market.	Reduction in the number of boats and therefore in employment were negative impacts commonly raised. In 2002, there were about 240 vessels in the fleet, down from about 320 prior to the introduction of the Quota Management system in 1998. Ports that had few "home" based vessels lost economic activity as vessels' away trips declined in number and affected employment associated with the industry, especially regarding deckhands.	Government intervention in the form of QMS, while restricting access to particular commercial species to prevent further depletion of stocks, has in many cases separated ownership of quota from harvesting activities, with the result that smaller operators are finding it difficult to remain in the industry. Ownership of quota is now concentrated in the hands of a few major companies, and their vessels and processing facilities are located at major ports rather than in small coastal communities.
			Although no rural coastal towns in Tasmania are economically dependent on commercial rock lobster fishing, any decline in activity and employment in these places exacerbates already declining employment opportunities and infrastructure needs.	The downturn in fishing activity has had serious consequences for the economic and social viability of small coastal communities, and each of them is seeking to diversity its economic base by moving into tourism activities.
Social Aspects	The emphasis on cultural distinctiveness is a global phenomenon in which marginalised populations emphasise their local identities in terms of local "culture" in an attempt to survive.		It is possible that human capital and knowledge in the fishery is running down, as many older skippers are nearing retirement and in par, due to a number of owner-operators having consolidated their licenses at the expense of lessees.	While it is difficult to reach any firm conclusions on the social impacts of ITQs, Boyd and Dewees are not aware of any significant negative social and economic impacts on small fishing-dependent communities.

	General	South Australia	Tasmania	New Zealand
Social Aspects	Questions of social justice also refer to compensation for those crew members dispossessed of their livelihood by the vessel owner's decision to capitalise the value of harvesting rights in the quota market.		ITQs moved the fishery from a position of over-capitalisation to one of over-privatisation. There is a trend towards increased ownership of quota units by non-fishing investors and increased ownership by non-Tasmanians. Investor syndicates are now apparent in the Tasmania commercial rock lobster fishery and so called "quota catchers" are beginning to replace owner-operators on the water.	
			The high cost of quota units has now made it almost impossible for fish workers without capital to work their way up from deckhand to skipper, to eventually acquiring access rights and becoming owner-operators.	
Environmental Aspects		The introduction of output controls to the Southern Zone in 1993 has effectively controlled the harvest level.	The majority of positive responses related to improvement in rock lobster stocks, reduction in the number of boats and an end to the "race for fish".	A positive aspect of under-catching the TAC is that it helps to conserve the stock and may provide some rebuilding.
				Quota busting is known to occur in high-value species such as rock lobster, a fishery that had the highest estimated level of illegal catch, but industry is taking a more active role to reduce this.

	General	South Australia	Tasmania	New Zealand
Institutional Aspects	Some doubts do exist about the costs of monitoring ITQs. The need to attribute landings to specific vessels, and at the same time correlate these with harvesting rights through the quota market, may make the monitoring of ITQs more complicated. In general, however, the alleged cost effectiveness of ITQs is one of the most persuasive arguments in their favour.		Making it possible for one generation of owner-operators to receive windfall gains through the private market, has been at the expense of some longer-term inflexibility. For example, faced with a dearth of young fishers in the industry, the Tasmanian Government supported a draft proposal for government creation of quota units for the short-term use of new entrants, only to have this initiative thwarted by litigious quota owners, the majority of whom either never did fish, or had ceased to do so.	A high-profile enforcement presence at sea, combined with industry discussions, had reduced level of dumping. Severe penalties for quota infringements also reduced dumping.
	It may be naïve to think that the introduction of ITQs can lead to effective management outcomes without careful consideration of the institutional framework.		How might the relationship between state and market be approached differently in the Tasmanian commercial rock lobster fishery? One answer is to retain some degree of state ownership. Quota could be allocated for varying lengths of time and with flexible terms. Conditions could also be put on ownership and transferability of quota units.	The complicated nature of the QMS has required very complex computer systems to track catch against quota.
	Among lessons learned include the critical importance of decisions about transferability of quotas and the political and historical context and pre-existing industry structure to the acceptance, design and performance of ITQs.		Without careful consideration, quota management combined with individual and transferable input restrictions run the risk of over-empowering owners at the expense of responsible state management.	There is a requirement that all fish taken by commercial fishermen may now only be sold to licensed fish receivers. This is an essential requirement as product flow monitoring is an integral part of the enforcement approach.

	General	South Australia	Tasmania	New Zealand
Institutional Aspects	Care needs to be taken to design a workable system that does not need major modification and that can stand the test of time.			Fundamental change is often controversial, and gaining industry acceptance for ITQs was necessary. Consultation and communication were also important. It is essential that both concepts and details of the system be properly explained so industry can fully assess its implications for their own businesses and entire industry.
	Critical to the success of ITQ fisheries in meeting their economic and conservation objectives, is finding a way to monitor behaviour and enforce the rules of the system. An ITQ system is more data-intensive because individual vessel catches must be accurately recorded against their quotas.			It is important to think "up-front" about the legitimate claimants when allocating quota shares. A High Court injunction obtained by Maori in 1987 led to a great uncertainty within the industry but this was settled in 1992, making the Maori the single largest player in the industry. The settlement protected the livelihoods of existing quota holders by bringing security to the commercial fishing industry.

Compiled from: Annala, J. H. (1996); Boyd, R. O. and Dewees, C. M. (1992); Brandt, S. (2005); Campbell, D., Brown, D., and Battaglene, T. (2000); Eythorsson, E. (1996); Eythorsson, E. (2000); Frusher, S., Eaton, L., and Bradshaw, M. (2003); Groeneveld, J. C. (2003); Hersoug, B. and Holm, P. (2000); McCay, B. J. (1995); McCay, B. J. (2004); Palsson, G. and Helgason, A. (1995); Phillips, G., Kriwoken, L. and Hay, P. (2002); Skaptadottir, U. D. (2000); Sutinen, J. G. (1999); and Symes, D. and Crean, K. (1995).

Appendix 8B: Country Experiences on ITQs – Canada, Iceland, Netherlands, United States and South Africa

	Canada	Iceland	Netherlands	United States	South Africa
Fishery	Began with Atlantic Herring, and expanded to a wider number of fisheries, e.g. the Scotia-Fundy dragger groundfish fishery	Demersal or groundfish fisheries - cod, haddock, redfish, saithe, Greenland halibut and plaice	Sole and plaice since 1977	In 1990, surf clam and ocean quahog fishery in the mid-Atlantic region and in 1995, for halibut and sablefish in US waters off Alaska	Since 1984, the South Coast rock lobster fishery has been managed by enforcement of a TAC and restricted entry to vessels of quota holders.
Current Management Arrangement	Industry participation in management decisions emerged after, not before, the decision to move to ITQs. This is because, in comparison with the US, Canadian marine fisheries management has fewer requirements for public participation and a different tradition of industry involvement.	When first implemented in 1984, quotas were allocated to fishing vessels according to previous 3 years catch records and restrictions were set on transferability. Effort quotas introduced to appease boat owners dissatisfied with their initial allocation) were phased out in 1989; ITQs extended to all vessels over 6 tonnes, licensed to fish quota restricted species from 1991.	From individual vessel quotas introduced in 1977, a new management regime was introduced in 1993 relocating responsibility for quota management to "management groups".	The time taken between making a general agreement that some kind of individualised quota or boat quota would be a good way to manage the fishery, to reaching an agreement on ITQs was 11 years, largely because of disputes over the basis for making the original allocation.	Management strategy shifted from a solely TAC-managed fishery to one based on a TAC and a TAE during the 2000/01 fishing season.
		The Iceland ITQ had special equity-protecting features. Changes made in 1991 marked the full institution of ITQ system in the demersal fisheries. By the 1990 Fisheries Management Act, TAC-shares were allocated permanently to boat owners.			

	Canada	Iceland	Netherlands	United States	South Africa
Rationale for New Arrangement	Although the problem of overcapacity and over-fishing in the Canadian mobile gear fishery grew dramatically during late 70s to mid-80s, a 1989 resource crisis became the rationale for such change.	To curb the dramatic rise in domestic fishing effort and to reduce the high level of overcapitalisation in the industry. An ITQ was introduced in 1984 to prevent the collapse of the cod stock and make fishing more economical.		ITQs in surf clam fishery followed a 13-year period of regulation based on a vessel moratorium, overall quotas and time restrictions. It was a bureaucratic nightmare and an extremely capitalized system. By mid-1980s, each vessel was allowed to fish for only 6 hours every 2 weeks.	
Issues Faced by the Fishery		With the ITQ system is a profound change in economic and social policy, a move away from maximising social benefits of resources and protecting local community structures, to a more strongly market-oriented approach involving a fundamental restructuring of the fishing fleet and the processing sector.		Much of the resistance to the use of ITQs in the US centers on the concern that ITQs will change participants' relative positions in the fishery – in particular the fear that small-scale fishermen will be disadvantaged relative to larger producer.	Reallocation of access rights in South Africa under the apartheid system, ITQ systems were used in fishery management with the deliberate intent of maintaining control over resource wealth in order to support the perpetuation of racially based social inequality.
Economic Aspects	For the Nova Scotia "under 65' dragger" ITQ system, demands for coastal community economic viability and employment conflicted with the need for fleet rationalisation.	The system, based on a quick review of the first decade of ITQ in Iceland, had in fact improved the economic efficiency of the fishery.		The most striking change was a significant reduction in the number of vessels. Some firms have made a transition from harvesting clams to a new business model where they generate revenue by leasing property rights to harvesting firms.	

	Canada	Iceland	Netherlands	United States	South Africa
Economic Aspects		With progressive reduction in TACs and quotas, small boat owners got too little quota that is not enough to sustain an economically viable operation.		Increased efficiency is found among the SCOQ vessels in terms of amount of effort per vessel and per firm. Fishing hours per vessel increased, as did productivity per vessel.	
Socio-Economic Aspects	Trading of quota shares resulted in regional shifts in the landing of groundfish, whereby some ports emerged as major centres and others declined, reducing the processing sector employment available in them.	The reform resulted in massive redistribution of wealth and income. Winners are big quota owners and losers are fishermen who experienced a drop in income given the tendency towards a reduction of fishing crew-member's share of catch value. Fishing communities also lost quota shares and consequently their opportunity to earn income from fishing.		On balance, the claim that ITQs unfairly harm "small" fishermen, forcing them out of the fishery to the benefit of larger fleets and vertically integrated processors, is not borne out by the analysis of 17 years of data in the SAOQ. However, a survey of crew indicates that displaced workers generally tried to stay in fishing-related work but found this work to be scarce given downturns in other fisheries.	
	Crews are very unhappy with the reduction in the quality of life (due to working longer hours because the owners demand it). Working trips back to back brought fatigue and reduced crewmen's ability to work safely with heavy, swinging equipment operated on a moving platform.	Despite restrictions placed on the permanent sale of quotas to protect the local community's social investment in the cod fishery, there has been movement away from areas experiencing sharp declines in the cod fishery and strong accumulation of quotas around the successful processing center in the north.		Vessel owners generally reduced the crews' share when ITQs began or soon after. In effect, crew is paying for the purchase or leasing of ITQ. Given sharply reduced need for labour with the decline win fishing vessels participating, their bargaining position is weak.	

	Canada	Iceland	Netherlands	United States	South Africa
Social Aspects	Empirical evidence shows rapid concentration of ownership of ITQs in surf clam and ocean quahog fisheries as well as the groundfish fisheries of the Scotia-Fundy district of Canada.	This rapid concentration of ownership is true for the groundfish fisheries of Iceland. Many Icelanders were wary of the concentration of ITQs in the hands of the large vertically-integrated companies and the emergence of new relations of production associated with fishing for others.	Generally, with the rising value of ITQs, retirement and succession within family businesses have become problematic, and the solution of incorporation has its own costs that make it unacceptable to some.	Empirical evidence shows rapid concentration of ownership of ITQs in surf clam and ocean quahog fisheries as well as the groundfish fisheries of the Scotia-Fundy district of Canada.	
		In the "tenancy" system, the "quota-kings" made the rules; not only do they own most of the ITQs, they also control many of the plants that buy the catch.	Death and divorce can also force the exit of otherwise healthy firms from the fishery as people find themselves forced to sell fishing rights to meet inheritance taxes or divorce settlements.		
	In a study on role of ITQs in social stratification and cultural conceptions of an Acadian community of Nova Scotia, it was observed that there are strains imposed upon a close-knit community and egalitarian culture by rise of "fish lords" controlling ITQs.	Fisheries-dependent municipalities and coastal communities are heavily dependent upon quota owners for their survival and no one seems responsible for the victims of the system; the people living in communities which the quota owners have abandoned.		Specifically, the surf clam program decreased employment and it also decreased opportunities for young people to become vessel owners and for independent vessel owners to find markets for their clams.	

	Canada	Iceland	Netherlands	United States	South Africa
Social Aspects		Some communities are being marginalised by the loss of quotas, with those communities with less than 500 inhabitants have lost a much larger share of their quotas than the bigger communities.			
		Little attention has been paid to the social effects on family and work life in small villages that have not been able to take advantage of the new system. In Eyri, both village men and women are marginalised in the Icelandic fisheries.			
Environmental Aspects	The failure of Atlantic Canada's groundfishery can be largely attributed to an over-reliance on quota management and its process of setting and sub-dividing the TAC, and an adversarial relationship between government and fishers, which created an environment in which fishers operated illegally, dumped and discarded fish, and grossly misreported catches.	There is some evidence for an erosion of responsibility in fisheries as a result of ITQ management. Discarding of small and immature fish during fishing operations and the "high-grading" of the catch (the dumping of species of relatively low economic value) seem to be major problems in many fisheries.			

	Canada	Iceland	Netherlands	United States	South Africa
Institutional Aspects	To preserve community perceptions of equity, the Scotia-Fundy case is one where social concerns were to be protected by the use of caps on the proportion of a quota owned by any one entity, provisions preserving the right of ownership to practicing fishers and restrictions on transfer.	Icelanders in general do seem to be concerned with how production in the fisheries is organised and how access to the fishing stocks is defined and regulated. Economists and administrators must take heed of such considerations when implementing a system with such far-reaching transformational effects. The efficiency of such a system is likely to be jeopardised in the long run in the absence of public acceptance.		For the surf clam and ocean quahog, excessive concentration of shares would be adequately handled by monitoring the allocation of shares and working with agencies whose job it is to protect against monopoly formation.	Under-reporting of catches has allegedly taken place systematically throughout the 1990s. Systematic underreporting and over-quota catches are most likely the result of poor compliance, a situation worsened by the lack of sufficient resources for compliance purposes, such as funding and manpower.
	Early ITQ experiments such as for herring in the Canadian waters of the Bay of Fundy showed the importance of monitoring and enforcement: unreported landings weaken or even destroy a market for quotas.	The court cases filed demonstrate that the ITQ-legislation has not been sufficiently well designed from the start and that it did not anticipate the wide-ranging consequences of perpetual quota allocation. The legal framework must be carefully worked out to build a firm basis for as far reaching reform.		The Alaska Community Development Quota program for the species Pollock was created to bring those communities into the fisheries allocation system, explicitly recognising the special needs of communities as distinct from business firms or individuals.	The problem (seen from a management point of view) is the widespread lack of trust in the administration, their regulations and their officers, a fact which makes poaching all the more reasonable and acceptable at the grassroots levels.

	Canada	Iceland	Netherlands	United States	South Africa
Institutional Aspects		Despite critical attitude toward the system, the *basic principle* of fisheries management by some sort of transferable quotas now seems widely accepted by the Icelandic public. A consensus solution should take into account the insecure situation of fishing communities. It should safeguard the income of fishing crew, and include payments of resource rentals, taxes or cost recovery from those who have benefited from the system.			

Compiled from: Annala, J. H. (1996); Boyd, R. O. and Dewees, C. M. (1992); Brandt, S. (2005); Campbell, D., Brown, D., and Battaglene, T. (2000); Eythorsson, E. (1996); Eythorsson, E. (2000); Frusher, S., Eaton, L., and Bradshaw, M. (2003); Groeneveld, J. C. (2003); Hersoug, B. and Holm, P. (2000); McCay, B. J. (1995); McCay, B. J. (2004); Palsson, G. and Helgason, A. (1995); Phillips, G., Kriwoken, L. and Hay, P. (2002); Skaptadottir, U. D. (2000); Sutinen, J. G. (1999); and Symes, D. and Crean, K. (1995).

Appendix 9A: Perceived Positive and Negative Impacts of Status Quo – Input Controls

Management Arrangement	Positive Impacts	Negative Impacts
Economic	Pot controls allow fishermen to fish as much as he could, and allow young fishers to pay off their debts and remain in the industry.	For lessees, paying for pots you can't use is a killer. We could employ another person on every boat if we could get those pots back.
		The price of crays reflects problems with the marketing of the product. We should try to sell to northern hemisphere market in their summer time.
		It's getting to the stage where everything is costing money like that new sea lion device.
Social		Pot reductions cause more angst to fishermen.
		Pot reductions are an inequitable management tool which is continuously rendered ineffective by the greater effort or improved fishing techniques of the larger and more mobile operators. Their catches/pots continue to increase while the small operators' catch/pots generally remain the same. Consequently, the small operators shoulder the greatest burden for conservation under a pot reduction policy.
Environmental	There are no great problems in the industry right now so why change. But there should be more research done on the breeding stock from Dongara northwards.	With technological advances and increased effort, the exploitation rate in the industry is increasing and the independent breeding stock is going down.
	To build up the stock in the deep water would require quite serious measures.	The 77-mm gauge does not seem to offer any benefit.
	The current management program has proven successful in controlling stocks.	Temporary pot reductions have not had any effect on the sustainability of the industry because all it has done is to make the fishers fish twice as hard. The fishing effort increases to compensate for the loss of pots. Small operators have had to lease pots at an added expense to remain viable, therefore increasing the fishing effort again.
Institutional	We have input controls that are tools to use for our benefit. We can adapt and use the tools we are already familiar with. There's no reason why we can't have variations with the way we fish now.	The current management system can only work if it's managed and decisions are made; (but) there has been an overwhelming lack of decision making and this culture of not making decisions just resulted in a culture of greed that has just been allowed to run free.

Management Arrangement	Positive Impacts	Negative Impacts
	The industry works together with all bodies including Fisheries Department and the recreational sector. It is proactive.	The current system is good - the biggest problem has been the Minister's removal of the 150-pot rule.
	The quota system doesn't mean getting better just because others do it. We already have in force a de-facto quota system via pot license restrictions without the over-governed administration and enforcement cost which run with quota. Don't fix what isn't broken!	Since 1980, some 250 fishers have taken their boats out of the fishery not because of poor fishing but because of the continuous interference from fisheries management. Why is it that Zones B and A are singled out for increased management? Zone C lobsters are not a separate fishery.
		In the 60s and 70s, the industry was wealthy and healthy. More recently, advisory committees and subcommittees have complicated the industry to the extent that there are now fewer boats and less people involved in fishing.

Appendix 9B: Perceived Positive and Negative Impacts of Individual Transferable Quotas

Management Arrangement	Positive Impacts	Negative Impacts
Economic	Amalgamation of small licences and hiring fewer deckhands to keep costs down.	Quotas for those with relatively high catch rates would mean a reduction in income.
	The industry will stabilise itself and find a cost effective way of operating. A lot of fishermen on the coast have overcapitalised their boats and are now starting to realise that the monies that were there in the start aren't there now under the current economic climate.	A lot of experienced deckhands will end up leaving the industry and going to other sectors (e.g., mining). It would be harder to get them to hang around with no income during certain months. If they are more transient, it could be a problem since they spend most of their income in the community.
	Now that deckhands do not earn a lot of money fishing, the extra months after you had secured the quota would be used to make money elsewhere.	With the uncertainty in the beach price, fishers will not make any money and/or won't survive. This could result in an exit of these fishers from the industry.
	There would be a marketing advantage if supply was more stable and price would stabilise as well. Continuity of supply is a positive aspect.	This would place the industry in the hands of a few big boat/license owners and there will be a demise of the family-operated businesses in the industry.
	It would take the competition or the "race-to-fish" mentality.	Quotas will accelerate the problem faced by young skippers who will be forced out of the industry in view of high cost of entry to the fishery. Some skippers will be out of job since their ability to catch a good quantity of crays for the owners is the basis of their employment. Those who have debts will also find it more difficult to repay their loans.
		This would give the processors more leeway over what they are willing to pay for crays.
		The way it works now, there is only just enough money to cover the costs of repairs and stuff for fishing. If they put the quota in and spread it out over the whole season, there won't be enough money for maintenance.
		The quota system will give an automatic advantage to those well established in the business. Young skippers setting out to establish their own family business would be at a major disadvantage. Quotas put a ceiling on hard work and initiative for the fledging operator. It provides no incentive to start off in the industry and actively discourages those setting out, as well as limiting smaller operators.

Management Arrangement	Positive Impacts	Negative Impacts
Social	It would save a lot of relationships, for sure. A lot of guys have broken up with their "missus" because they spend too much time at sea. Time off would be better for family time.	I love fishing and enjoy what I do but if I can't catch a lot of crays, what's the point of being there for me?
	With a quota, you would be able to have the weekend off if you wanted to, and fish whenever you want. You would get the best value out of the crayfish.	A quota takes away the competition out of fishing. You set yourself goals and when you can't do that, you would probably lose interest in the industry real quick and move out.
	Fishing when the price is good may actually turn the industry back to smaller/day boats (and also because crew may be hard to get).	With the loss of deckhands, the sporting clubs will be affected because it is the young blokes that are in the sporting clubs. They are also involved in the voluntary sea search and rescue.
	There is an upside to having a lifestyle-based fishery. Having a bit more time off, that's a by-product, a positive one. You can definitely be more involved in community and sports stuff.	It's a bit unfair if one gets a smaller quota when his efficiency is higher than other fishermen. (Some of) those who favour quota are underachievers who want to drag everyone else down to their level.
		It will create more rifts, especially if quotas are different between zones.
		Our industry is touted as the best managed, environmentally sustainable. The lifestyle it provides is excellent; it is a family-based industry and provides the backbone to thriving coastal communities. Why change it? Quotas will result in corporate-based fishing companies run out of Perth or overseas, utilising big licenses on mobile fleets. Companies will have their service personnel; will negotiate equipment purchases without middlemen that live in the towns, etc. Skippers/Deckhands will be transients like miners and the towns will suffer.
Environmental	In terms of conservation, it may take the heat off the breeding grounds for a bit.	I don’t think the industry is in such dire straits that it needs a quota. The common view is that you only go to quotas when the industry is in danger of a collapse.
		Every conservation policy brought in over the last 20 years has been wasted and all the sacrifices fishers have made for the sake of the industry have effectively been made for the big boys and government. Leave industry as it; it's supposedly sustainable. Quota is brought only to industries in decline, not sustainable ones.

Management Arrangement	Positive Impacts	Negative Impacts
Institutional	Having a quota may actually result in the Fisheries Department not having to police as much. Once the fisher has secured all his allocated catch, then he's out of the fishery for the season.	Policing the catch is an issue. Given the long coastline, there are so many places where people can deliver black market crays and the compliance costs to ensure this does not happen do not come cheap.
		This could be very complicated to run as experience in other places like South Australia had experienced.
		Why change a management policy to quota after the New Zealand experience? All points to interference from Commonwealth public servants intent on forcing change for changes sake, not for the benefit of the fishery.
		The allocation of the quota is an issue. They have to divide it evenly since it can't be done on history, it's just too hard. Another issue is the transferability of the quota.
		With the ability to catch as much as possible, there is still the incentive to go to work. But if the quota set is below my average, why would I bother going to work? I would just sell up and move out.
		The paperwork is astronomical with a quota but a lot of the young guys aren't able to get much education and they will really struggle with the paperwork.
		Care must be taken in implementing quotas - equal numbers of units per pot and kilos per unit would be the best method of implementing quotas.
		Compliance costs are the scariest because we will have to pay for it under cost recovery.

Appendix 10: Measure of Community Resilience, 2005

Time-series indicators to describe the resilience or sensitivity of communities and regions to change[1] were used to provide an indication of the "fragility" or "robustness" of the community to change or shocks.

Resilience is the ability to cope with change. To express it more fully:

Resilience is the capacity of human groups or communities to cope with environmental, economic, political or other kinds of change stemming from internal or external factors. It is related to uncertainty, vulnerability and risk and it can be considered at various geographical and temporal scales. An alternative interpretation of resilience is the capacity and speed of an ecosystem to recover from a disturbance. This refers either to the elasticity of the ecosystem which enables it to accommodate change while maintaining its original state, or to the elasticity of an ecosystem which permits the assimilation of change by transformations of the ecosystem (Sustainability and Public or Private Environmental Management web-accessible database of glossary items relating to subjects of sustainability, 2005).

The selection of the indicators in measuring community resilience was restricted to those that are available in a time series format and for which 2001 Census data are available. In addition to Census data, two fishery-related indicators were also included in the computation of the resilience scores. Data from the Department of Fisheries were those of the 1991/92, 1996/97, 2001/02 and 2004/05 WRL seasons.

The specific time-series indicators used in measuring community resilience were percentage changes in:

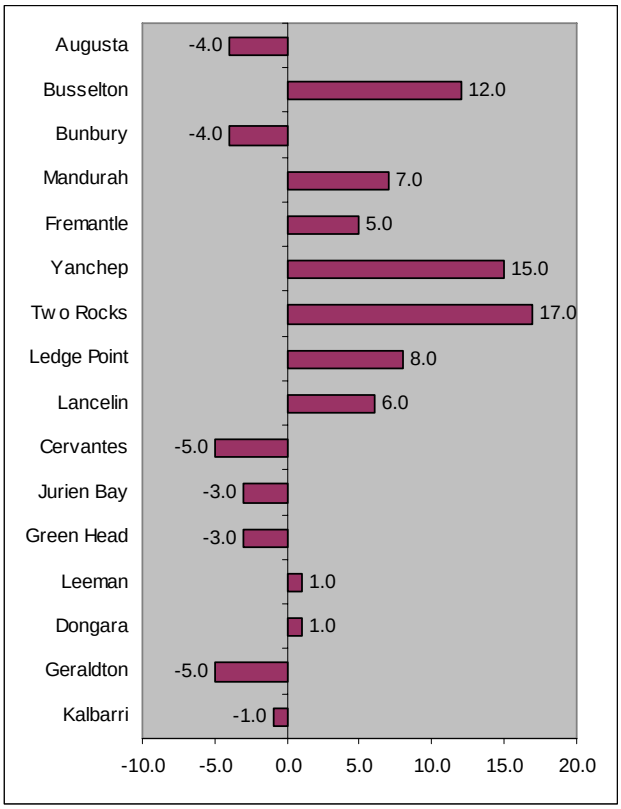
1. Total resident population;
2. Elderly dependency ratio defined as the number of elderly people for every 100 people of working age;
3. Child dependency ratio defined as the number of children for every 100 people of working age;
4. Number of occupied dwellings;
5. Labour force participation rate, calculated by expressing the number of persons in the labour force as a percentage of the population aged 15 years and over;
6. Unemployment rate defined as the number of unemployed people expressed as a percentage of the labour force;
7. Economic diversity, defined as the proportion of persons employed in the top three sectors to the total number of persons employed;
8. Total pot lifts for the whole season; and
9. Number of boats recorded in December.

[1] The approach used is similar to a study undertaken in 2002 for the Conservation Commission and the Forest Products Commission entitled Socio-Economic Assessment of the Forest Management Plan.

To derive the composite indicator of community resilience to change, the scoring system shown below was adopted, with resilience scores summed to provide a Total Resilience Score (TRS) for each community.[2] The TRS is based on the direction and magnitude of the percentage change in each of the indicators between the 1996 and 2001 census periods and between 2001/02 and 2004/05 WRL seasons. The scores vary between -27 to 27. Positive values indicate greater robustness to change. Negative values indicate greater fragility and more sensitivity to change.

Scoring System for Resilience		
Percent Change 1996-2001		Community Resilience Score
Greater than	-10.0	-3.0
Between	-10.0 - -5.0	-2.0
Between	-5.0 - -2.5	-1.0
Between	-2.5 – 2.5	0.0
Between	2.5 – 5.0	1.0
Between	5.0 – 10.0	2.0
Greater than	10.0	3.0

It should be noted that these measures are only indicative and should be treated with caution as they are limited by the availability of secondary data obtained from the Census of Population and Housing. The scores also need to be looked into vis-à-vis the number of persons engaged in the WRL fishery, with communities such as Augusta, Busselton, Bunbury, and Yanchep employing only a limited number (between 3 to 12 persons) and communities such as Geraldton, Fremantle, Dongara and Lancelin employing between 124 to 211 persons. The overall resilience scores may change with the inclusion/refinement of other indicators, as data becomes available during the course of this research.[3]



The combined TRS indicate that some communities have the capacity to handle change but others are less resilient and more sensitive to external changes.

[2] No TRS was computed for Seabird in view of the lack of time-series Census data.
[3] For example, once the community surveys are complete, indicators on social capital and human capital will be incorporated in the overall resilience scores.

THE UNIVERSITY OF WESTERN AUSTRALIA

Australian Government
Fisheries Research and Development Corporation

A SCENARIO ANALYSIS OF THE SOCIAL IMPACT OF THE WESTERN ROCK LOBSTER INDUSTRY MANAGEMENT OPTIONS ON FLEET HOSTING COMMUNITIES

(FRDC PROJECT NO. 2004/247)

FRDC FINAL REPORT
Part II – Profiles of Communities Hosting the WRL Fleet

December 2007

Veronica Huddleston
Matthew Tonts

Institute for Regional Development
The University of Western Australia
35 Stirling Highway, Crawley, WA 6009
http://www.ird.uwa.edu.au

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EXECUTIVE SUMMARY

This report is a companion document to the Final Report of the FRDC project entitled *A Scenario Analysis of the Social Impact of the Western Rock Lobster Industry Management Options on Fleet Hosting Communities*. It provides a comprehensive profile of each of the nineteen communities along the Western Australian coast that host the Western Rock Lobster Fishery (WRLF). The information presented in the detailed community profiles provided the baseline data for the assessment of the likely social consequences of changes in the management of the WRLF on specific communities.

In this report, information on the socio-economic conditions of the community is presented alongside the historical context of the development and growth of the rock lobster fishery. In Western Australia, the growth and development of the Western Rock Lobster Fishery benefited not only established centres and smaller villages. It was also responsible for the establishment of new settlements adjacent to fishing anchorages along the Western Australian coast.

The detailed profiles include information from both primary and secondary data sources. Primary data in the form of responses of managed fishery license holders to a postal survey, responses of community residents to a telephone survey, and transcripts of interviews were used in the preparation of the community profiles. The notes of six focus group discussions and twelve community workshops were also utilised. Secondary data sources included the Australian Bureau of Census, Department of Fisheries in Western Australia, Department for Planning and Infrastructure, Tourism Western Australia and the Western Australia Police Service. Data from the various local governments and regional development commissions were also used.

Each community profile contains four sections:

a) *Geographic Setting* is a short write-up of the location and geographic boundaries of the community as well as its climatic conditions;
b) *History and Development of the Town Site* traces the early settlement of the community and offers a picture of the nature of the town's development vis-à-vis the fishing industry in general and rock lobster fishing in particular;
c) *The People* presents the population and demographic characteristics of the communities and the family and household characteristics. Data on dwelling occupancy is also presented to provide an indication of seasonal changes in population size in these coastal communities. Employment and income data are also presented to provide an indication of the employment opportunities in these communities. A section on 'Community Identity, Integration and Participation' is included for each of the communities detailing the perceptions of the residents toward their communities and toward rock lobster fishing;
d) *The Local Economy* presents an overview of the economic, physical and governmental infrastructures that support each of the communities. The level of economic diversification is presented to assist in understanding the importance of business and commerce, fishing and tourism in the local economy.

Complementing the narrative community profiles are various graphical displays and tables of demographic, economic and fishery-specific data.

ACKNOWLEDGEMENTS

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- The fishers of the Western Rock Lobster Fishery and their wives and family members;
- The community residents and business owners/civic group representatives (including those involved in rock lobster processing) in all the nineteen communities included in the study;
- The participants in the postal survey, semi-structured interviews, focus group discussions, telephone survey, and community workshops for their cooperation and active participation in this research;
- The local government and elected officials in the study areas, e.g. the Shire of Northampton, the Mid West Development Commission, the City of Geraldton, the Shire of Irwin, the Shire of Coorow's Leeman Administration Centre, the Shire of Dandaragan, the Shire of Gingin, the City of Wanneroo, the City of Fremantle, and the South West Development Commission; and
- The personnel of the Department of Fisheries Western Australia in Perth and in Geraldton as well as the personnel of the Department for Planning and Infrastructure in Geraldton.

The funding support from the Fisheries Research and Development Corporation is also gratefully acknowledged.

LIST OF FIGURES

LIST OF ACRONYMS

ABC	Australian Broadcasting Corporation
ABS	Australian Bureau of Statistics
ADSL	Asymmetric Digital Standard Line
ASGC	Australian Standard Geographical Classification
ANZSIC	Australia and New Zealand Standard Industrial Classification
ATM	Automated Teller Machine
BMX	Bike Motor Cross
CD	Collection District
CDMA	Code Division Multiple Access
CWCPFA	Central West Coastal Professional Fisherman's Association
DLGRD	Department of Local Government and Regional Development
DOLA	Department of Land Information
DPI	Department for Planning and Infrastructure
EFTPOS	Electronic Fund Transfer at Point of Sale
EPA	Environmental Protection Authority
ESD	Ecologically Sustainable Development
FFC	Fremantle Fishermen's Co-operative
FGD	Focus Group Discussion
FHPA	Fish Habitat Protection Area
FM	Frequency Modulation
FRDC	Fisheries Research and Development Corporation
GSM	Global System for Mobile communications
GWN	Golden West Network
ISD	International Service Delivery
JDHMMC	Jurien and Districts Heritage and Maritime Museum Committee
KVA	Kilovolt ampere
MPS	Multi Purpose Service
MVA	Megavolt ampere
MWDC	Mid West Development Commission
PFA	Professional Fisherman's Association
RAAF	Royal Australian Air Force
SBS	Special Broadcasting Service
SLA	Statistical Local Area
STD	Standard Delivery
SWDC	South West Development Commission
TAFE	Tertiary and Further Education
TCDP	Turquoise Coast Development Project
UBD	Universal Business Directory
UC/L	Urban Centre/Locality
WA	Western Australia
WAPC	Western Australian Planning Commission
WCRL	West Coast Rock Lobster
WDC	Wheatbelt Development Commission
WHRL	Windy Harbour Rock Lobster
WIN TV	Wollongong Illawara New South Wales Television
WRL	Western Rock Lobster
WRLF	Western Rock Lobster Fishery

1.0 INTRODUCTION

> *Along the coastal fringe, the [Western Rock Lobster] fishery has permeated existing communities and spawned new ones, generating a complex bustling web of social and economic activity ….. It is now an inseparable part of the identity, character and culture of the west coast of Australia* (Gray, 1999: 1).

This report is a companion document to the Final Report of a three-year project funded by the Fisheries Research and Development Corporation (FRDC). It is one of the milestones of the research project entitled *A Scenario Analysis of the Social Impact of the Western Rock Lobster Industry Management Options on Fleet Hosting Communities.*

1.1 PURPOSE

This report contains the profiles of 19 communities along the Western Australian coast that host the Western Rock Lobster Fishery (WRLF). These profiles describe the present and historical socio-economic context of a fishery that operated out of a large number of ports along the central coast of Western Australia and a fishery that makes up a significant component of commercial fishing activity in Western Australia. These profiles also provide a description of the participation and involvement of fishers and community residents in the fishery. As reference documents, they provide the baseline data on which the assessment of the likely social consequences of changes in the management of the Western Rock Lobster fishery were made.

1.2 SELECTION OF COMMUNITIES

The history of the fishery as detailed by Howard Gray in 1999 and more recent developments concerning the mobility of the fleet, pointed to specific communities that were involved in the Western Rock Lobster fishery. The growth and development of the Western Rock Lobster fishery benefited the established centres such as Fremantle and Geraldton and smaller villages such as Dongara. The fishery was also responsible for the establishment of new settlements adjacent to suitable anchorages along the lower mid-west coast and the exploration of the potential for rock lobsters between Mandurah and Bunbury. More recently, the abundance of rock lobsters in the South West has brought large commercial fishing vessels into the area.

Prior to selecting the communities to be profiled, the research team looked into the catch and effort data from the Department of Fisheries for the 1989/90 to 2004/05 rock lobster fishing seasons. The data showed the landing ports, license concession, amount of catch, the number of vessels in operation, and the number of crew directly engaged in the fishery.[1] The landing ports (anchorage sites) used by rock lobster fishers in the A and B Zones are shown in Figure 1 and the landing ports (anchorage sites) used by C Zone fishers are shown in Figure 2.

[1] The concession indicates which zone of the fishery the license is allowed to operate in. There are three major zones in the Western Rock Lobster fishery. These zones are: south of latitude 30ºS or south of Green Head (Zone C), north of latitude 30ºS or north of Green Head (B Zone) and, within this northern area, a third offshore zone (A Zone) around the Abrolhos Islands.

(Source: Institute for Regional Development, 2007.)

Figure 1: Landing Ports Used by A and B Zone Rock Lobster Fishers

(Source: Institute for Regional Development, 2007.)

Figure 2: Landing Ports Used by C Zone Rock Lobster Fishers

The Fisheries data from 1989/90 to 2004/05 were used and matched with the population and demographic data of the Australian Bureau of Statistics (ABS) Census of Population and Housing for 1991, 1996 and 2001. In compiling the data at the community level, the geographic areas defined in the Australian Standard Geographical Classification (ASGC) were used.[2] These were:

1. Collection District (CD) – is the smallest spatial unit in the ASGC designed for use in census years for the collection and dissemination of Population Census data.

2. Statistical Local Area (SLA) - is a general purpose spatial unit and in non-Census years, is the smallest unit defined in the ASGC. In census years, an SLA consists of one or more whole CDs.

3. Urban Centre/Locality (UC/L) - groups CDs together to form defined areas according to population size criteria.[3] The UC/L Structure is used for the production of standard ABS statistical outputs from Population Censuses such as Selected Social and Housing Characteristics for Urban Centres and Localities and Community Profiles.

The choice of the communities also took into consideration that the management review process for the WRLF clearly specified that in the context of Ecologically Sustainable Development (ESD), the decision on which system to be adopted will be based on the management arrangement that "provides the greatest incentives and opportunity for growth in economic return for all sectors of the rock lobster industry and the Western Australian economy in general; and in the context of providing the best socio-economic benefit to the Western Australian communities, [one that] encourages the maintenance and development of regional communities" (Department of Fisheries, 2006:93).[4]

Of the 21 anchorage sites used by A and B Zone fishers and of the 26 anchorage sites used by C Zone fishers, a total of 19 coastal communities that have Census data based on the ASGC geographic areas were selected to be profiled. These communities were:

1. Kalbarri
2. Port Gregory
3. Horrocks
4. Geraldton
5. Dongara
6. Leeman
7. Green Head

[2] The main purpose of the ASGC is for collecting and disseminating geographically classified statistics. These are statistics with a 'where' dimension. The ASGC provides a common framework of statistical geography and thereby enables the production of statistics which are comparable and can be spatially integrated (<http://www.abs.gov.au/Ausstats/abs@.nsf/66f306f503e529a5ca25697e0017661f/a3658d8f0ad7a9b6ca256ad4007f1c42!OpenDocument> cited April 11, 2007.)

[3] An urban centre is a population cluster of 1,000 or more people who are classified as urban for statistical purposes while a locality is a population cluster of between 200 to 999 people who are classified as rural for statistical purposes (1996 Census Dictionary).

[4] Australia's National Strategy for Ecologically Sustainable Development 1992 defined ESD as "using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased." It is a concept that requires the integrated consideration of economic, social and environmental implications in making decisions and a long-term perspective when taking actions (for details, please see http://www.environment.gov.au/esd).

8. Jurien Bay
9. Cervantes
10. Lancelin
11. Ledge Point
12. Seabird
13. Two Rocks
14. Yanchep
15. Fremantle
16. Mandurah
17. Bunbury
18. Busselton
19. Augusta

Some of the neighbouring communities are presented together given that the social and economic facets of these communities are intertwined. This is true in the case of Port Gregory and Horrocks of the Shire of Northampton; Ledge Point and Seabird of the Shire of Gingin; and Two Rocks and Yanchep, both coastal wards of the City of Wanneroo.

Bunbury, Busselton and Augusta, all communities in the South West Region, are presented in only one community profile. There is a small but steady contingent of rock lobster fishers based in Bunbury and while the catch landed in Bunbury for the 1989/90 to 2004/05 fishing seasons have been fluctuating, there are rock lobster catches landed in Bunbury for every month of the fishing season. Rock lobsters have been landed in Busselton since the 1996/97 fishing season and, more recently, during all the months of the fishing season and not just during February to April. Augusta is the most south westerly town included in the fishing zones of the WRL Fishery. There is a small contingent of boats based in Augusta involved in the Windy Harbour Rock Lobster fishery.[5] The other communities of the South West were not included inasmuch as the rock lobster activities in these areas are only sporadic.

1.3 DATA SOURCES

In compiling the detailed profiles for the nineteen communities, information from both primary and secondary data sources were utilised. An extensive literature review of government, academic, institutional and internet sources was undertaken. Primary data in the form of responses of managed fishery license holders to a postal survey in 2004, responses of community residents to a telephone survey undertaken by the project in late 2005, and transcripts of interviews conducted between 2004 and 2006 were used in the preparation of the community profiles. The notes of focus group discussions and community workshops were also utilised. The secondary data sources included the Australian Bureau of Census data on population and housing and the Western Australian Department of Fisheries data on catch and effort and the list of license holders, skippers and crew in the fishery. Other secondary data used in the community profiles include data compiled by the local governments and the regional development commissions as well as other government departments such as the Department for Planning and Infrastructure, Tourism Western Australia and the Western Australia Police Service.

[5] As a result of declining catches over time and a high degree of non-profitability within the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Minister [of Fisheries] restructured the fishery under the Fisheries Adjustment Scheme from 17 December 1996. The rationalisation of the fishery reduced the number of boats authorised to fish, down to two boats and at the same time, reduced the number of pots by 60 per cent to 350 pots (200 and 150 pots, respectively) (Fisheries Department, 2002:7-8).

2.0 OVERVIEW OF COMMUNITY PROFILES

> *Historically, rural Australia was a place whose role was seen as the exploitation and transformation of natural resources – whether they were farming or grazing lands, forests, fisheries or mineral deposits. The economic and social role of rural towns reflected that purpose, in that they were essentially service centres for these primary industries. Today, however, the relationship between the economic condition of primary industries and the economic and social condition of rural communities is often much less strong and direct, and factors originating elsewhere in the economy are relatively more important in determining the circumstances of rural communities* (Stayner, 2005: 122).

2.1 PROFILE STRUCTURE

Each community profile contains four sections – Geographic Setting, History and Development of the Town Site, The People, and The Local Economy. *Geographic Setting* is a short write-up of the location and geographic boundaries of the community as well as its climatic conditions. A location map is also included, situating the community in relation to Perth and Geraldton.

History and Development of the Town Site traces the early settlement of the community and offers a picture of the nature of the town's development vis-à-vis the fishing industry in general and rock lobster fishing in particular. Information on the current condition of the community is also included in this section.

The People presents the population and demographic characteristics of the communities and the family and household characteristics. Data on dwelling occupancy is also presented to provide an indication of seasonal changes in population size in these coastal communities. Employment and income data are also presented to provide an indication of the employment opportunities in these communities. A section on 'Community Identity, Integration and Participation' is included for each of the communities detailing the perceptions of the residents toward their communities and toward rock lobster fishing.

The Local Economy presents an overview of the economic, physical and governmental infrastructures that support each of the communities. The level of economic diversification is presented to assist in understanding the importance of business and commerce, fishing and tourism in the local economy.

The section on fishing details the nature and character of commercial rock lobster fishery in the communities based on data from the Department of Fisheries. The physical infrastructure resources in terms of roads and transport, water and electricity, and communications existing in the community are outlined in the profiles. The construction and development of such infrastructure could be positive as it can provide a boost to tourism and residential development in the community. However, such infrastructure could also have a negative impact on settlement patterns and existing facilities and businesses. As the impact study on the completion of the Indian Ocean Drive between Lancelin and Cervantes pointed out:

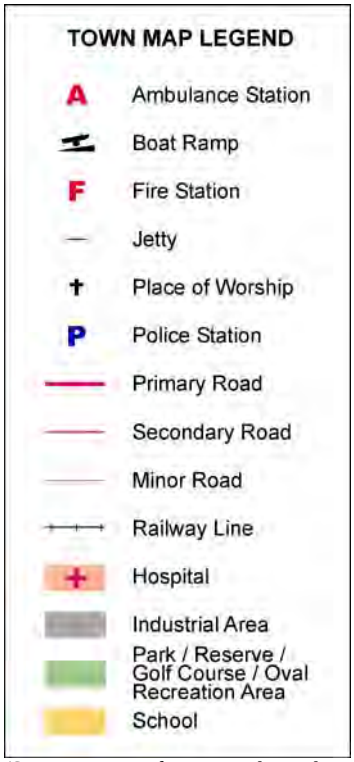
> *This road may also result in lower freight costs and faster product transport to the major markets in Perth and then to export. It is then possible that faster, more efficient transport links with Perth may result in the closure of local [rock lobster] processing plants as the improved transport efficiencies make onsite processing less viable* (Pracsys Management Consultants, 2003).

The profiles also incorporate the community's institutional resources in terms of government services, education and health, and law and order. The absence or presence of facilities such as secondary schools and hospitals was ranked highly by the residents in all the communities included in the study as the reason for moving into or out of, these communities.

2.2 FIGURES, GRAPHS AND TABLES

To complement the narrative community profiles, graphical displays and tables of demographic, economic, and fishery-specific data are included in each of the community profiles.

In the *History and Development of the Town Site* section is Figure 1 which presents the town map featuring the social and fishery-related infrastructure facilities existing in the community as of 2005. The map legend used for all the maps in this report is presented as Figure 3.[6]



(Source: Institute for Regional Development, 2007.)

Figure 3: Town Map Legend

[6] The sources used for these maps include the UBD Western Australia Country Road Atlas, 11th Edition, Universal Publishers Pty Ltd; UBD Street Directory (2006); Perth Streetsmart (2005); Roads and Tracks Western Australia 2005 (2nd Edition); Coastal Community, Business and Telephone Guide, 2004-2005, Central Midlands and Coastal Advocate; and Gingin Shire Directory, 2005-2006, Lancelin and Gingin Telecentres Inc.

In the section on *The People* are:

1. Figure 2: Trends in Population Size and Growth, 1981–2001: This combined vertical bar and line chart presents the number of resident population in the town in each of the Census periods and the population growth rate for the five-year period between Censuses;

2. Table 1: Population Indicators, 1991-2001: The information presented in this table include the resident population broken down by gender, the proportion of the young and the elderly in the population and the dependency ratios, the median age, the proportion of overseas-born residents, and the proportion of indigenous people in the total population;[7]

3. Figure 3: Population Distribution by Age, 2001: The population pyramid is a bi-directional bar chart indicating both the age configuration (in five-year intervals) and gender composition (females are represented by the left bars and males are represented by right bars) of the population;

4. Table 2: Family and Household Characteristics, 1991-2001: This table contains information on the number of 'couples with children', 'couples without children' and 'one-parent families' within each of the communities included in the study;

5. Table 3: Dwelling Characteristics, 1991-2001: Information on the number of occupied and unoccupied private dwellings is presented in this table, with the former classified in terms of structure (e.g. separate house, semi-detached, etc) and in terms of tenure (e.g. fully-owned, rented, etc). The table also presents the median monthly housing loan repayments and median weekly rents in each of the communities;

6. Table 4: Employment Indicators, 1991-2001: This table presents the number of people employed on full-time and part-time basis and the number of unemployed people, all broken down by gender, in the community. Both the unemployment rate and the labour force participation rates are presented in the table;[8]

7. Table 5: Individual, Family and Household Incomes, 1991-2001: Information on the annual (for 1991) and weekly (for 1996 and 2001) median income for individuals, families and households are presented in this table;[9]

[7] Used as a measure of the dependence that non-working people have on working people, the dependency ratio is defined as the number of children (0-14 years) and elderly people (over 65 years) for every 100 people of working age (15-64 years). The median age - or the age at which half the population is older and half is younger - is an indicator of the age composition of a population.

[8] Unemployment rate is defined as the number of unemployed people expressed as a percentage of the labour force while the Labour Force Participation Rate is the percentage of working-age persons in an economy who are employed or unemployed but looking for a job. It is calculated by expressing the number of persons in the labour force as a percentage of the population aged 15 years and over.

[9] The Census defines a family as two or more persons, one of whom is at least 15 years of age, who are related by blood, marriage, adoption, step or fostering, and who are usually resident in the same household. A household is defined as a group of two or more related or unrelated people who usually reside in the same dwelling, who regard themselves as a household and who make common provision for food or other essentials for living.

8. Figure 4: Respondents' Perception of the Community as a Place to Live: This pie chart displays information on whether the surveyed community respondents perceive their community as an 'excellent', 'good', 'fair' or 'poor' place to live;

9. Figure 5: Respondents' Attachment to the Community: This pie chart presents information on the residents' perceptions of 'strong to very strong attachment', 'some attachment' or 'little or no attachment' to their community;

10. Figure 6: Reasons for Living in the Community: This is a vertical bar chart that displays the reasons given by community respondents for living in the community;

11. Figure 7: Participation in Local Organisations: This vertical bar chart presents the proportion of surveyed respondents who reported participating in the various categories of local organisations in the community;

12. Figure 8A: Community Cohesiveness Scores across 19 Selected Communities: This is a scatter chart that shows the cohesiveness scores for all nineteen communities;[10] and

13. Figure 8B: Perceptions of Community Cohesiveness: This horizontal bar chart displays the proportion of surveyed respondents who agree, disagree or have neutral positions to certain statements that pertain to their community.

The section on *The Local Economy* contains the following:

1. Figure 9: Economic Diversity, 1991 – 2001: A vertical bar chart is used here to present the economic diversity of the community vis-à-vis the State and national levels. Details of employment by industry broken down by gender is presented as Appendix 1; [11]

2. Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90–2004/05: This combination vertical bar and line chart presents the amount of live weight catch of rock lobsters landed in the community as well as the number of boats recorded for the month of December in each of the fishing season. Appendix 2 provides information on the volume and value of wildcaught species landed in the

[10] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <*http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf*> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

[11] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

specific community while Appendix 3 provides further details of the rock lobster fishery in the community in terms of the volume of catch, total pot lifts, number of boats and number of persons engaged; [12]

3. Figure 11: Age of Skippers Residing in the Community, 2001/02 and 2004/05: This vertical bar chart displays the number of skippers by age groups (ten-year intervals) based on data from the Compliance Unit of the Fisheries Department;

4. Figure 12: Perceptions of the Rock Lobster Industry: This horizontal bar chart displays the proportion of surveyed respondents who agree, disagree or have neutral positions to certain statements that pertain to the rock lobster fishery;

5. Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People: This is a pie chart displaying the proportion of surveyed respondents who will or will not recommend, or are unsure about recommending, rock lobster fishing to young people in the community;

6. Figure 14: Number of Overnight Visitors, 2001/02–2004/05: This vertical bar chart presents the number of overnight domestic and international visitors to the area including the data table for ease of reference. A table showing the number and purpose of overnight visits is presented as Appendix 4;

7. Figure 15: Perceptions of Tourism Potential: This pie chart displays the proportion of respondents who agree, disagree, or have neutral positions with respect to the tourism potential of their community; and

8. Appendix 5 presents the crime data for each of the community vis-à-vis Western Australia and the Regional District to which the community is accredited to.

In some community profiles, an additional Figure 16 presents the current and proposed areas of Protected Fish Habitat in the West Coast Bioregion. For the community profile of the three South West communities (Bunbury, Busselton and Augusta), Figure 10 presents the trends in live weight catch for both the West Coast Rock Lobster (WCRL) Fishery and the Windy Harbour Rock Lobster Fisheries and Figure 11 presents the monthly trends in the WCRL fishery from 1989/90 to 2004/05.

[12] Pot lifts or pot drops, as a measure of fishing effort, represent usually a day's fishing, with the baited pot dropped (set) one day, left overnight and pulled (lifted) the next day. Depending on the weather, catch rates and other factors, the pot may not be pulled everyday (Gray, 1999:277). More recently, a lot of fishers are already doing 2 or 3 day pulls to manage the increasing costs of fuel (Community Workshop Notes, 2006).

DETAILED COMMUNITY PROFILES

KALBARRI

1.0 GEOGRAPHIC SETTING

Originally known as the 'Mouth of the Murchison', Kalbarri is a coastal resort and fishing town located 586 kilometres north of Perth (Latitude: 27° 42' South and Longitude: 114° 10' East). Situated along the southern bank of the Murchison River, it is almost surrounded by the Kalbarri National Park and by one of the most beautiful regions of wildflowers in Australia.[1] The coast line is exposed to long periods of wave activity mostly related to summer winds and storm events, although much of this wave activity is reduced by the limestone reefs and headlands.

Kalbarri lies within the Carnarvon sedimentary basin and experiences a Mediterranean climate of mild, wet winters and hot, dry summers, with average maximum temperatures ranging from 34 degrees Celsius in February and 21 degrees Celsius in July. The annual rainfall average in Kalbarri is only 379 mm, with rainfall tending to be constant during the rainy season between May and August (Kalbarri Visitor Centre Inc., 2005). While this seasonal rain creates roadside erosion, access to the town from the North West Coastal Highway is not affected.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[2]

Given Kalbarri's treacherous coastline, shipwrecks have played a large part in its history. This naval history dates back to the Batavia wreck in 1629, when the Dutch Naval Commander Pelsaert marooned two conspirators in Wittecarra Creek for their participation in a mutiny on the Batavia at the Abrolhos Islands.[3] The area was settled intermittently throughout the late nineteenth and early twentieth century by miners and fishermen. In 1848, the Geraldine Lead Mine was opened, paving the way for further mineral exploration that encouraged settlement development in the Mid West Region and helped develop agriculture (wool and wheat) and other mining industries in the region.[4]

In 1942, Reg and Sally Glass became the first residents at the 'Mouth of the Murchison' when they built a camp in the area. They also bought the first 'crayboat' that fished at the Mouth of the Murchison in 1946. Given its huge fishing (or wetlining) potential, Harold Ford built a number of small fisher huts in 1947 to house local fishermen. These huts were later purchased by the Glass family who turned them into guest cabins in 1949.

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[1] The Kalbarri National Park was declared an 'A' class reserve in 1963. Covering 186,000 hectares, it flanks the town site's eastern and southern boundaries (Shire of Northampton, 1994).

[2] This section is based on information from *Character Study Townscape Kalbarri*, Shire of Northampton, 1994, *Kalbarri Information*, 1993 and *Kalbarri Holiday Planner 2005/2006*, Kalbarri Visitor Centre Inc., 2005.

[3] The Abrolhos Islands lie about 60 kilometers west of Geraldton and consist of 122 islands clustered into three main groups: the Wallabi Group, Easter Group and Pelsaert Group, which extend from north to south across 100 kilometers of ocean (Abrolhos Islands, <http://www.westernaustralia.com/en/Media/Travel+Features/Australias+Coral+Coast/Abrolhos+Islands.htm> cited 05 February 2007).

[4] The Mid West Region of Western Australia extends along the west coast from Green Head to Kalbarri and more than 800 kilometers inland to Wiluna in the Gibson Desert. Its area of 472,336 square kilometers covers nearly a fifth of the State, and comprises nineteen local government authorities. The City of Geraldton is the region's commercial, administrative and service centre (*Indicators of Regional Development in WA*, Department of Local Government and Regional Development, March 2003).

Following the establishment of a rough track down the coast to Northampton, other commercial fishermen (such as Bill Fitch and Charlie Brown of Mandurah) followed suit and built a number of boarding camps. The government declared the 'Mouth of the Murchison' a town site in 1949 but it was not until 1951 that the town was renamed Kalbarri and formally gazetted as a development site for crayfishing and tourism.[5] Various quarter acre blocks along Grey Street were sold to existing residents at an average price of 60 pounds so they could move away from the foreshore. Most of the purchasers were crayfishermen and farming families who had previously visited the area. Throughout the period from 1950 to 1980, Kalbarri experienced population growth and improving town services.

In 1959, there were 21 residents in Kalbarri but by the late 1970s, the population had increased to an estimated 300 to 400 residents. The first school opened in 1959, along with the first Post Office and the creation of the first Bush Fire Brigade. In 1965, the first telephone line was installed and an airstrip constructed followed by, in 1966, the installation of a reticulated water supply constructed, in part, from resident's contributions.

Other health and sports amenities and associations were subsequently established in the 1970s such as the Silver Chain Centre, the Kalbarri Yacht Club and the Cricket Club. A number of tourist-related and commercial facilities were also constructed in the 1980s and in the 1990s as the local authorities and residents recognised their significance and importance to Kalbarri's economy. In 1992, the Allen Centre was opened, incorporating the Council offices, a tourist bureau, a library and a conference room (Plate 1).[6] Figure 1 shows the town map of Kalbarri that features the location of social and fishery-related facilities.[7]

Plate 1: Allen Centre in Kalbarri

(Source: Veronica Huddleston, 2005.)

[5] The name Kalbarri was chosen from a list of aboriginal words compiled by Daisy Bates in 1913. It is a man's name from a Murchison tribe and also the name of an edible seed. The aboriginal name for the area of Kalbarri has been recoded as "Wurdimarlu" (<http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+country+town+names+-+k> cited 16 March 2007).

[6] The Centre was named after Ron Allen, in recognition of approximately 20 years of service with the Shire of Northampton.

[7] The first streets were named after the explorer Grey and his party, district pioneers, and later after Kalbarri crayboats (Shire of Northampton, 1994).

(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Kalbarri, 2006

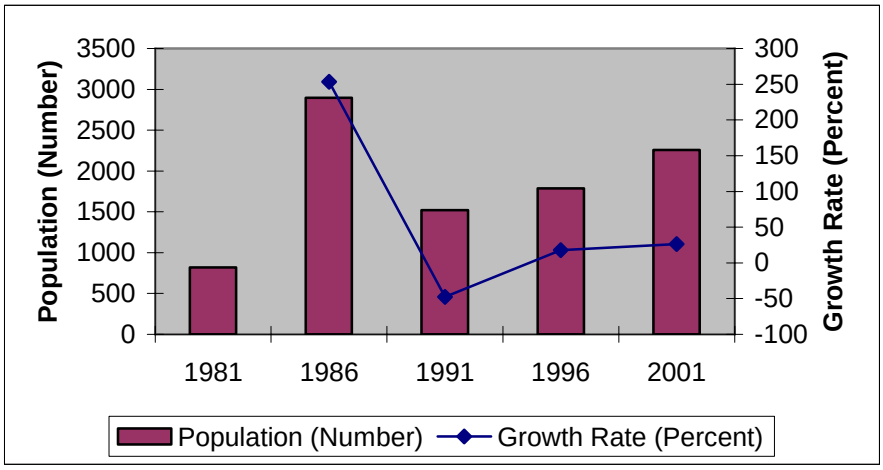
3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

Kalbarri has enjoyed a steady growth in its population since 1991, although there was a dramatic decline in population just prior to this from 1986 to 1991 (Figure 2).[8] Total population by 2001 reached 2,123 persons, up from 1,540 persons in 1991 (Table 1). In 2001, 19 per cent of Kalbarri's population were born overseas, primarily in the United Kingdom. A

[8] Census data refer to the population of Kalbarri as an urban centre/locality (UC/L). An urban centre is a population cluster of 1,000 or more people who are classified as urban for statistical purposes (1996 Census Dictionary).

number of residents have also come from New Zealand, Ireland and Germany. The aboriginal heritage of the Kalbarri region is largely unknown as there is limited information available on the Nanda tribe associated with Kalbarri, mainly made up of the Nanda Aboriginal people who have established a small community 50 kilometres east of the town site (Shire of Northampton, 1994). Less than 1 per cent of the population in 2001 was of indigenous Australian descent.



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981 - 2001, Kalbarri

Of the 2001 population, Christians made up the majority (65%) while those who reported having no religion made up 17 per cent. Of the Christian population, the majority were Anglicans (43%), followed by the Catholics (29%) and the Uniting Church (12%).

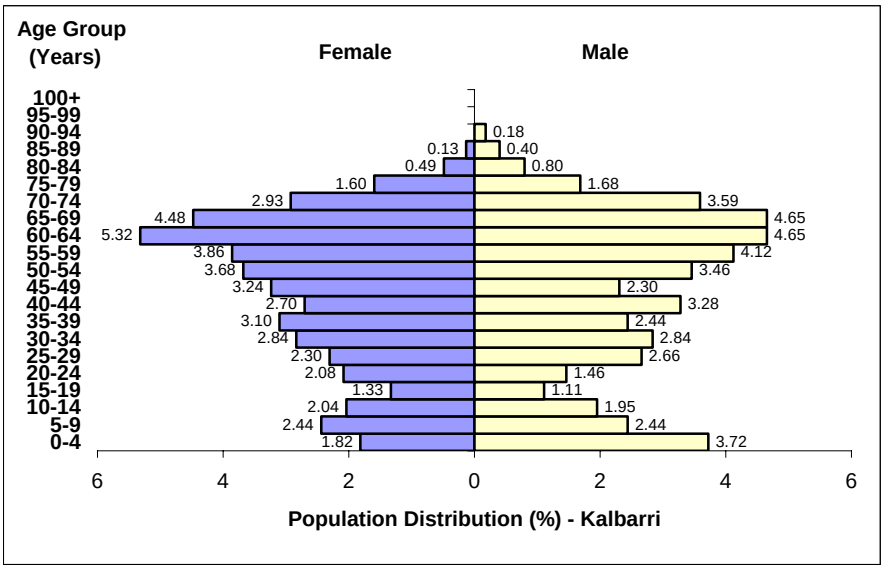
Table 1: Population Indicators, 1991-2001 - Kalbarri

Urban Centre/Locality	***1991***	***1996***	***2001***
Total Resident Population	1,540	1,720	2,123
Male	791	832	1,046
Female	749	888	1,077
Population under 15 years	258	284	325
Population of employable age	1,035	1,106	1,326
of which: Population aged 15-19	43	45	55
Population over 65 years	247	330	472
Dependency Ratio /a	48.8	55.5	60.1
Child Dependency Ratio	24.9	25.7	24.5
Elderly Dependency Ratio	23.9	29.8	35.6
Median Years	40	43	48
% of Overseas Born	20.9	17.8	18.6
% of Indigenous Population	0.0	0.5	0.8

/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

The dependency ratio in 2001 is 60.1, up by 11 percentage points since 1991.[9] Kalbarri also had a high median population age of 48 years in 2001, compared to 40 years in 1991, highlighting the large proportion of retired resident population (Figure 3). The attraction of Kalbarri to retirees is demonstrated by the 43 per cent increase in the number of resident population over the age of 65 years from 1996 to 2001. The population distribution in 2001 featured a low secondary school age population and a low 'young adult' population in Kalbarri. This may be due to secondary school and high school age children being sent to boarding schools in either Perth or Geraldton. Thirty-two per cent of the population in Kalbarri reported completing Year 10 schooling in 2001. A further 30 per cent completed Year 12 schooling.



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Kalbarri

The number of couples without children increased by 50 per cent from 1996 to 2001 (Table 2). While the proportion of total households classified as 'couple families with children' decreased by 9 percentage points, the town is still seen by the residents as a good place to raise children. As one community resident (No. 067, 2005) noted, "Kalbarri is a wonderful place to bring up kids. It's safe."

3.2 DWELLING CHARACTERISTICS

A 'separate (detached) house' was the most popular type of private occupied dwelling in Kalbarri in 2001, registering an increase of 25 per cent from 1996 to 2001 (Table 3). The number of 'flats, units or apartments' in the town, most of which catered to the growing tourist market, also increased by 32 per cent during the same period.

The number of unoccupied private dwellings registered a decrease from 1996 to 2001. The proportion of unoccupied dwellings to total dwellings in Kalbarri was 16 per cent in 2001, an improvement over the 22 per cent registered in 1996.

[9] Defined as the number of children (less than 14 years) and elderly people (over 65 years) for every 100 people of working age (15-64 years), the dependency ratio is used to measure the dependence that non-working people have on working people.

Table 2: Family and Household Characteristics, 1991-2001 - Kalbarri			
Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	98	121	128
Couple Family without Children	100	131	196
One Parent Family	20	25	43
Other Family	9	0	6
Total	227	277	373
Proportion of Couple Families with Children to Total Families	43.2	43.7	34.3
Proportion of Couple Families without Children to Total Families	44.1	47.3	52.5
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Table 3: Dwelling Characteristics, 1991-2001 - Kalbarri			
Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	528	697	943
By Structure			
Separate House	270	330	412
Semi Detached	36	17	17
Flat, Unit or Apartment	24	119	157
Other /a	198	231	228
Not Stated	0	0	129
By Tenure			
Fully-Owned	199	300	419
Being Purchased	87	94	130
Rented	173	217	227
Other	69	27	73
Not Stated		59	94
Unoccupied Private Dwellings	216	196	186
Median Monthly Housing Loan Repayments	$401 - $475	n.a.	$600 - $799
Median Weekly Rent	$108 - $137	n.a.	$100 - $149
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Of the occupied private dwellings in 2001, 44 per cent were fully-owned, 24 per cent were rented and 14 per cent were being purchased at the time of Census data collection. While the monthly loan repayments have increased since 1991, the weekly rental payments have changed little over the ten-year period to 2001. The median weekly rental payment in Kalbarri is the same as those paid by most West Australians.

A number of residents noted the benefits of the huge expansion in residential areas in the Kalbarri town site in recent years. One rock lobster fisher (No. 183, 2005) expressed concern that "The uncontrolled growth in the population is a bit worrisome because Kalbarri may lose the natural beauty that attracted people to the town in the first place."

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

Of the 740 people employed in 2001 (up by 148 since 1991), 49 per cent were full-time workers while 49 per cent worked part-time (Table 4). In this same period, there were almost as many women employed as men, although the majority of employed females held part-time employment. The unemployment rate in Kalbarri of 7.7 per cent in 2001 (which had decreased from a high of 14 per cent in 1991) was lower than both the Western Australian and the national rates. A local business owner noted that, "People think it is hard to get work around Kalbarri, but when you look around, it's not really that hard especially with the increase in building activities" (Focus Group Discussion Notes, 2005).

Table 4: Employment Indicators, 1991-2001 - Kalbarri

Urban Centre/Locality	*1991*	*1996*	*2001*
Employed	592	608	740
Male	322	343	376
Female	270	265	364
Full Time	287	288	364
Male	185	189	215
Female	102	99	149
Part Time	261	305	361
Male	111	147	158
Female	150	158	203
Not Stated	44	15	15
Male	26	7	3
Female	18	8	12
Unemployed	98	87	62
Male	68	63	41
Female	30	24	21
Total Labour Force	690	695	802
Male	390	406	417
Female	300	289	385
Unemployment Rate (in percent)	14.2	12.5	7.7
Male	17.4	18.2	9.8
Female	10.0	4.5	5.5
Labour Force Participation Rate	53.8	48.4	44.6
Male	60.8	55.9	46.6
Female	46.8	40.7	42.6

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

The average weekly income of employees in Kalbarri has not changed since 1996. Employees received $200-299 per week (Table 5). This median weekly individual income compared well to adjacent communities, but was lower than the state or national averages. As one business person noted, "This might be the result of the fact that labour in Kalbarri is cheap with starting rates of $10-15 an hour" (Focus Group Discussion Notes, 2005). The median weekly income for households has, nevertheless, increased by $200 over the five-year period from 1996 to 2001 (from $300-499 in 1996 to $500-599 in 2001).

Table 5: Individual, Family and Household Incomes, 1991-2001 - Kalbarri			
Urban Centre/Locality	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$12,001 - $16,000	$200 - $299	$200 - $299
Median Income for Families	$20,001 - $25,000	n.a.	$500 - $599
Median Income for Households	$20,001 - $25,000	$300 - $499	$500 - $599
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[10]

In 2005, 96 per cent of respondents indicated that as a community, Kalbarri was a 'good place' to 'excellent place' to live in (Figure 4). The majority (88%) also responded that they had a 'strong to very strong attachment' to the community (Figure 5). This may be accounted for by the high number of respondents (59 of 82) who have lived in Kalbarri for over six years, 30 of whom have lived in Kalbarri for more than 15 years. Eighty per cent of community respondents indicated that they see themselves living in Kalbarri five years from now. One community resident (No. 089, 2005) noted that, "When you come into a town that's very small, it was the people you know and bonded with that made you stay. We've seen everybody grow up. We love this town. It's been kind to us and we've made a good living out of it over the years."

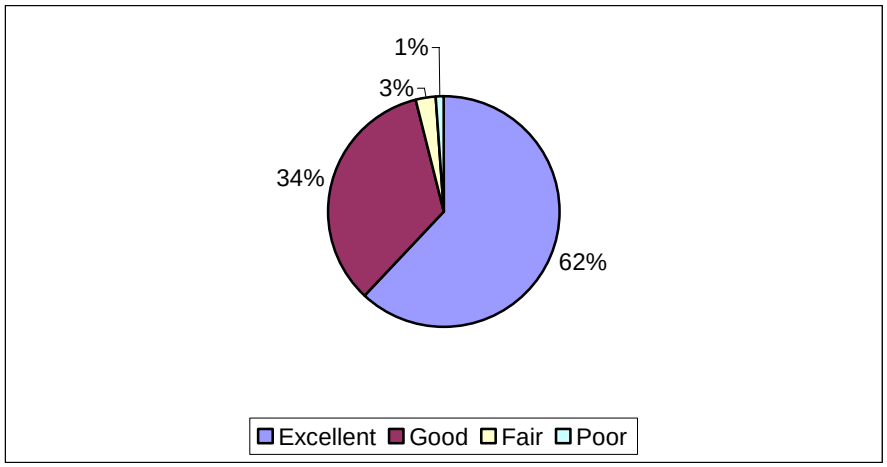


Figure 4: Respondents' Perception of Kalbarri as a Place to Live

[10] This section is based on the results and analysis of the responses of 82 community residents (40 males and 42 females) who participated in a telephone survey conducted in November-December 2005 and 18 residents who participated in semi-structured interviews conducted in 2005. A Focus Group discussion was also convened in Kalbarri in November 2005 with 4 participants. Seventy-nine per cent of the 82 survey respondents were born in Australia and New Zealand. A majority (61%) belonged to the 55-64 years, over 65 years and 45-54 age groups. Those with young family households with children mainly under 14 and older couples with no children at home comprised the majority of the respondents (59%). Most respondents fully owned their houses (57%), engaged in full-time employment (40%) and completed Year 10 or equivalent schooling (30%). Five of the survey participants were engaged in the rock lobster industry.

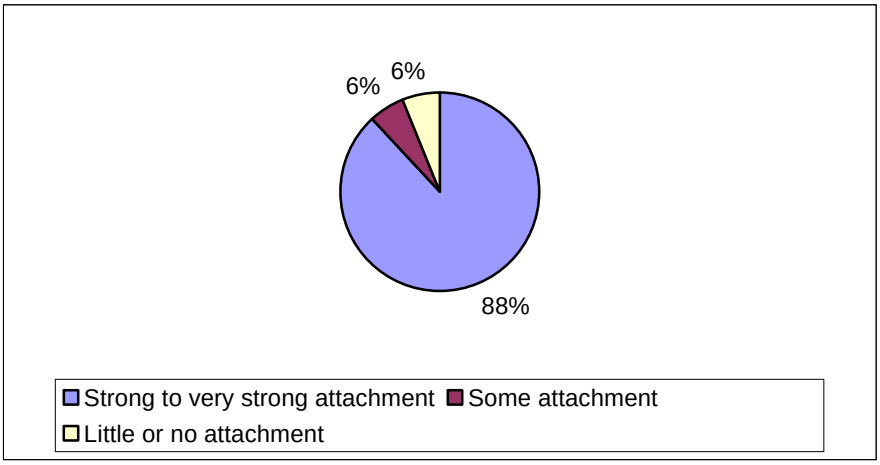


Figure 5: Respondents' Attachment to Kalbarri

As many community respondents indicated (42%), the lifestyle that Kalbarri provides is a major reason for living in this town (Figure 6). Of those surveyed, 20 per cent indicated that the beach, ocean and the environment was one of the main reasons why they live in Kalbarri while 15 per cent reported that work opportunities brought them to Kalbarri. Another 13 per cent indicated Kalbarri was a good place to retire. As one community resident (FGD No. 27, 2005) elaborated, "The lifestyle in Kalbarri is what I like most – relaxed mode of activities, close proximity to the escarpment, the wildflowers, fishing and boating, and the physical beauty of the place."

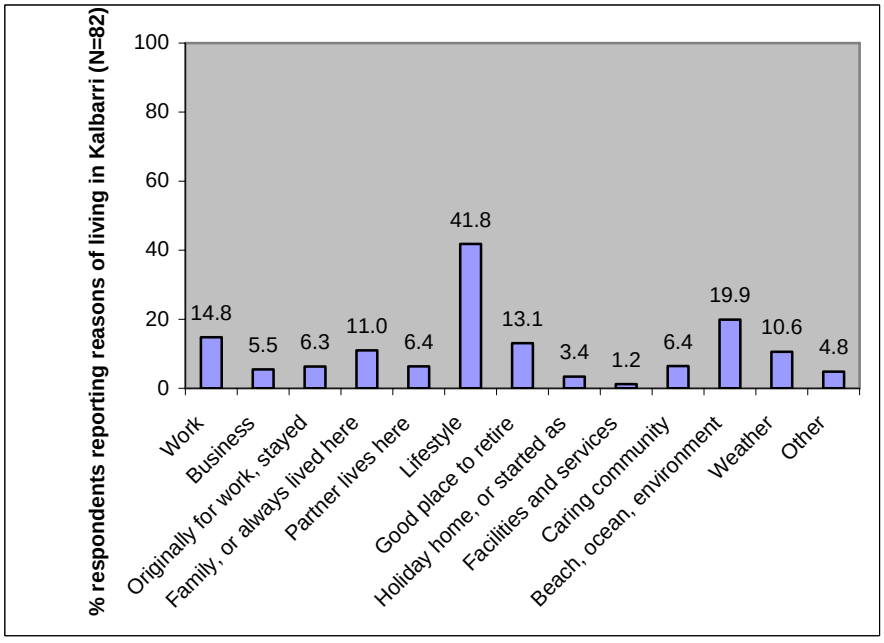


Figure 6: Reasons for Living in Kalbarri

While some residents find living in a small town such as Kalbarri restrictive in the sense that "you cannot voice your opinions so vocally and you've got to conform totally" (Interviewee No. 183, 2005), some residents reported that they like living in Kalbarri because "the small size of the town is actually appealing" (Interviewee No. 069, 2005). A high proportion of respondents (92%) indicated that they 'nearly always run into people they know while shopping'. In terms of neighbourhood connections, 55 per cent of respondents (45 out of 82) indicated 'they know most of the people in the neighbourhood'.

Services such as vehicle repairs, doctors, dentists and banks were predominantly available and accessed by residents locally. There are a number of good mechanics and automotive specialists as well as the RAC. EFTPOS facilities and four ATMs are also available throughout the town. However, certain services such as higher education, training and specialist medical attention have to be obtained in Geraldton or Perth. Local community events were never attended by only 14 per cent of Kalbarri respondents and 35 per cent of respondents indicated that they attended community events three or more times a year. The majority of respondents (86%) suggested they had no involvement in voluntary state emergency, fire or rescue services.

In terms of involvement in local organisations, 57 per cent indicated that they belong to a local sports or recreation organisations (Figure 7). Of the surveyed respondents, 24 per cent belonged to cultural, educational or hobby groups while 22 per cent belonged to ratepayers association or chamber of commerce.

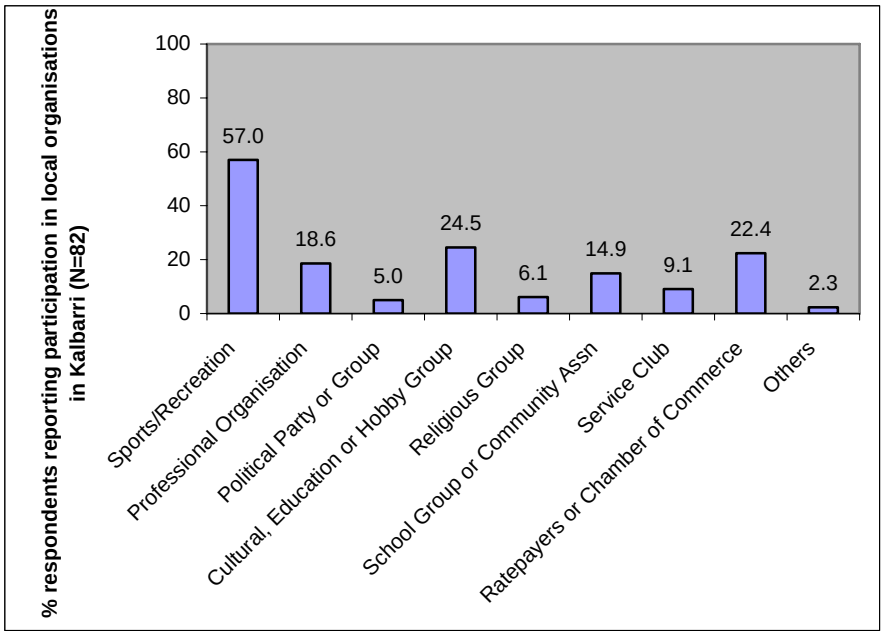


Figure 7: Participation in Local Organisations in Kalbarri

Kalbarri residents perceive their community as a cohesive one, with surveyed respondents having strong agreement levels that 'if there was a serious problem, people would get together and solve it' (Figures 8A and 8B).[11] Residents also generally feel that 'there is strong support

[11] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

for community events' and that Kalbarri is 'an active community where people get involved in local issues and activities'.

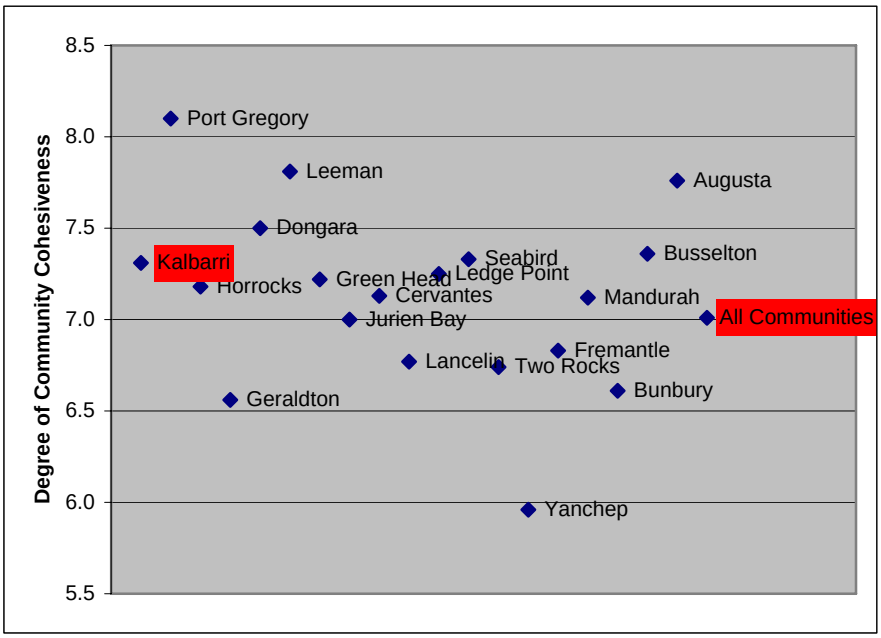


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

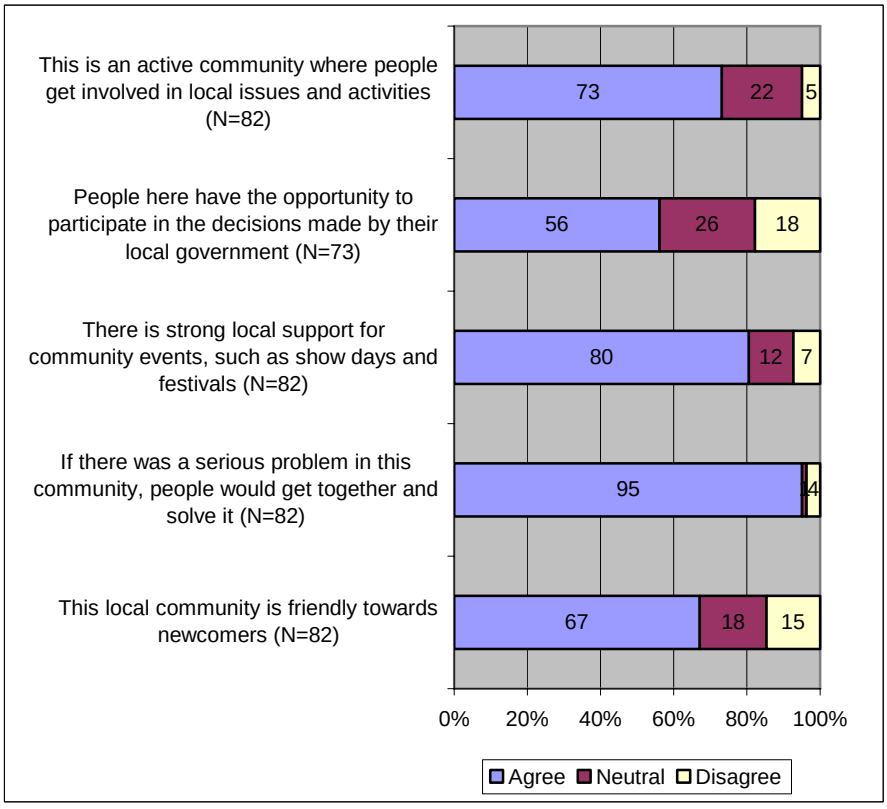
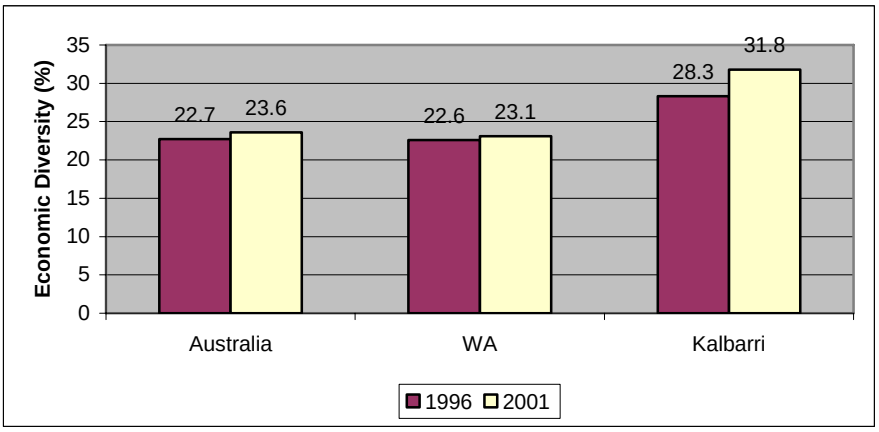


Figure 8B: Perceptions of Community Cohesiveness, Kalbarri

4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

The accommodation, cafes and restaurants industry division employed the largest number of workers in Kalbarri between 1996 and 2001 (15% and 19% of total employment, respectively), reflecting the importance of tourism to the town's economic well-being (Appendix 1). The retail trade and the agriculture, forestry and fishing divisions were also major employers in 2001 (14% and 8% of total employment, respectively). Mining employed 2 per cent of Kalbarri's working population, although there is a much larger mining industry in the local Shire of Northampton and in the region as a whole. In terms of economic diversity, Kalbarri's local economy is less diversified compared with the Western Australian economy and the Australian economy as a whole.[12] As Figure 19 shows, close to one third of total employment in 2001 is accounted for by the three industry subdivisions of accommodation, cafes and restaurants; education; and business services.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 - 2001, Kalbarri

The majority of the workers in the agriculture, forestry and fishing division worked in the rock lobster fishery. Some business owners recognised that 'crayfishing has a role to play in the town as tourists like the opportunity to wander down the jetty and purchase fresh crays" but reported "that there's a lot more to Kalbarri than crayfishing" (Focus Group Discussion Notes, 2005). Rock lobster fishers who were interviewed also reported that the dominance of the fishing industry in Kalbarri had declined over time. As one rock lobster fisher (No. 070, 2005) commented:

> *Fishing doesn't affect the town anymore. It used to really have a big effect on the town but now the town is pretty self-sufficient. Fishing just provided the impetus to generate infrastructure in the town such as roads, power and the jetty. Fishers still contribute money for dredging the canal but the town doesn't rely on fishing income to survive.*

[12] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

4.1.1 Fishing

Kalbarri remains a major service centre to the local fishing industries fleet of boats that fish for rock lobsters, scallops and finfish species such as cod, shark and dhufish. Most of the catch is transported to Geraldton for processing. To ensure that commercial fishing vessels can gain access to the ocean entrance of the Murchison River for the start of the crayfishing season, annual maintenance dredging is usually undertaken from October to December (Plate 2).

Plate 2: Dredging at the Murchison River

(Source: Veronica Huddleston, 2005.)

Fishing-related infrastructure in Kalbarri consists of a service jetty with a length of 79 meters and an overall width of 7 meters, including chafers (Department for Planning and Infrastructure, 2003). There are 32 commercial boat pens and 42 mooring allocations at the Kalbarri Maritime Facility, as well as fuel service (Plate 3). Two boat launching ramps located to the east of the commercial boat pens and next to the Kalbarri Sea Search and Rescue building are owned and operated by the Shire of Northampton. The Department of Transport is also assisting the Kalbarri Professional Fishermen's Association in the development of a boat-lifting facility to serve the area.

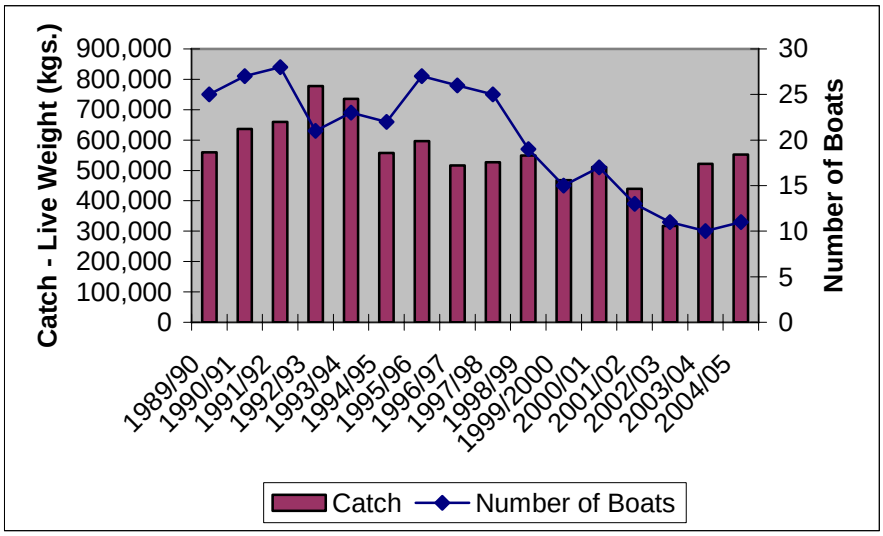
Plate 3: Service Jetty in Kalbarri

(Source: Veronica Huddleston, 2005.)

The rock lobster catch (both volume and value) landed in Kalbarri in the 2002/03 to 2004/05 fishing seasons accounted for between 7 per cent and 10 per cent, respectively, of the total rock lobster catch in the Mid West Region (Appendix 2). The rock lobster fishing fleet in

Kalbarri operates in two of the three zones of the rock lobster fishery, with the majority of the boats fishing in Zone B (90% in 2004/05).[13] The volume of live weight catch landed by Zone B fishers in Kalbarri in 2004/05 made up 69 per cent of total catch volume.

There is a marked decrease in the number of boats operating from Kalbarri, from a high of 28 in 1991/02 to a low of 10 in 2003/04 (Figure 10). As a result of this, there is a decreasing trend in total catch weight since the early 1990s, with a significant decrease in the early 2000s. As of 2004/05, however, the catch weight recovered from 317,008 kilograms in 2002/03 to 552,397 kilograms (Appendix 3).



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Kalbarri

Interviews with rock lobster fishers in Kalbarri indicated that, "there are only a few permanent boats in town, including a few that are on leasing arrangements (probably around 40 per cent)" (Interviewee No. 089, 2005), and that "bigger boats camp out a lot during the reds and the smaller boats fish a bit more local and closer to home" (Interviewee No. 090, 2005). It was also noted that there are a lot more boats that come to Kalbarri once the Big Bank season starts. One rock lobster fisher (No. 069, 2005) commented that:

> *Over-investment has probably caused a lot of work pressures as the debt associated with a larger boat and then having to buy more pots make fishers work harder. Those with larger licenses are spending time in extended trips at sea, 4 and 5 day trips as a standard. Investors or absentee owners inflict more and more pots on the boats looking for more and more catch. With working on these bigger licenses, fishers barely get any time to do anything.*

[13] The number of boats licensed to fish for rock lobsters in the various zones is carefully controlled. Provided certain conditions are met, boat/license owners are able to transfer their pot entitlements between fishing zones (A, B or C zones). The zones are defined as follows: Zone A – Abrolhos Islands; Zone B – coastal fishery from 21º 44' S to 30º S excluding the A zone; Zone C – the waters between 30º south latitude and 34º 24' south latitude excluding all waters on the south coast east of 115º 4' east longitude; and Big Bank (Department of Fisheries, 2002: 5).

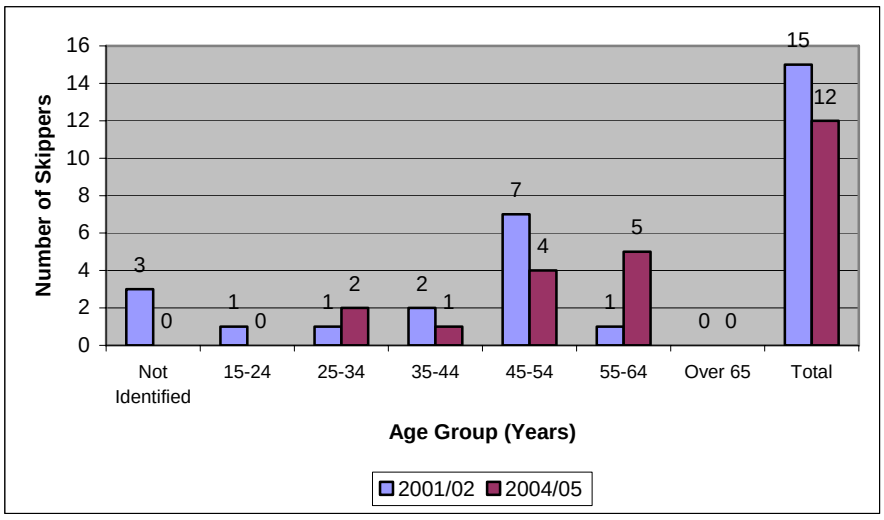
The decline in the number of boats has resulted in a corresponding decrease in the number of skippers. This decline could also be attributed to the following:

> *With a skipper's ticket, I will not put myself in a position of having to rely on it to get an income from fishing. I will just use it as a stepping stone to drive charter boats or drive other tendered vessels" (Interviewee No. 070, 2005).*

> *A large part of the industry is not able to get crew these days because they are all working out of the mines. Even if the good times come back to the fishery, we cannot assume that these guys will come back. They've seen a life outside of fishing and most of them were asking themselves why they didn't do it sooner (Interviewee No. 069, 2005).*

Of skippers who reside in Kalbarri in 2004/05, the majority were in the age groups of 55-64 years and 45-54 years, using between 81 and 130 pots during the rock lobster season (Figure 11). One rock lobster fisher (No. 089, 2005) noted that:

> *Most of the fishers in the Kalbarri fleet are getting older and it has been a hard slog. It's very competitive now. I used to just like catching them as it was something I was good at doing. The money side was not number one. But the young ones are different and there may not be enough experienced people left in the fishery.*



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Kalbarri, 2001/02 and 2004/05

Figure 12 shows the perceptions that community residents in Kalbarri have about the rock lobster fishery. As was highlighted in the Focus Group Discussion held with business owners in 2005 and in various individual interviews, rock lobster fishing is no longer a significant industry in Kalbarri. There are low levels of agreement to the statements that 'the decrease in the number of rock lobster skippers and deckhands is a significant problem' and that 'the rock lobster fishery and processing sector is a good source of employment for people in this

community'. While there is recognition that there are businesses that benefit from crayfishing, only 40 per cent of surveyed respondents agreed that 'the economic viability of the community is closely linked to the viability of the rock lobster industry'.

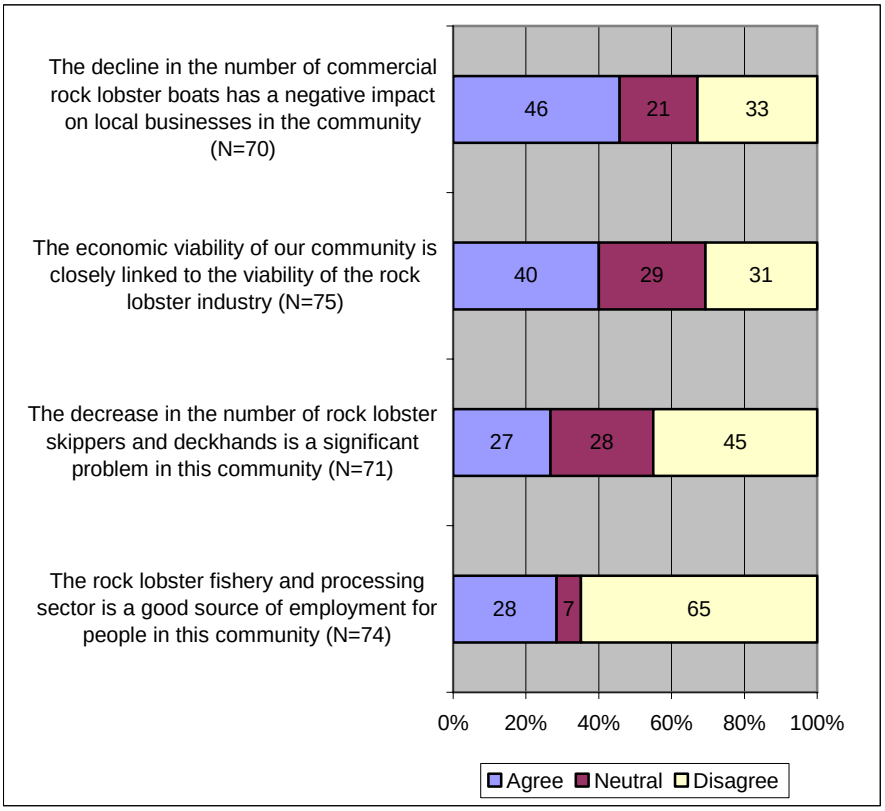


Figure 12: Perceptions of the Rock Lobster Industry, Kalbarri

On the question of whether they will encourage young people to be involved in rock lobster fishing, 43 per cent of community respondents reported that they would do so (Figure 15). Thirty-five per cent gave a negative response while 22 per cent have not made up their mind. One rock lobster fisher (No. 067, 2005) noted that "Fishing has been pretty good to us and it's still a good source of income even thought the last couple of years had been tough."

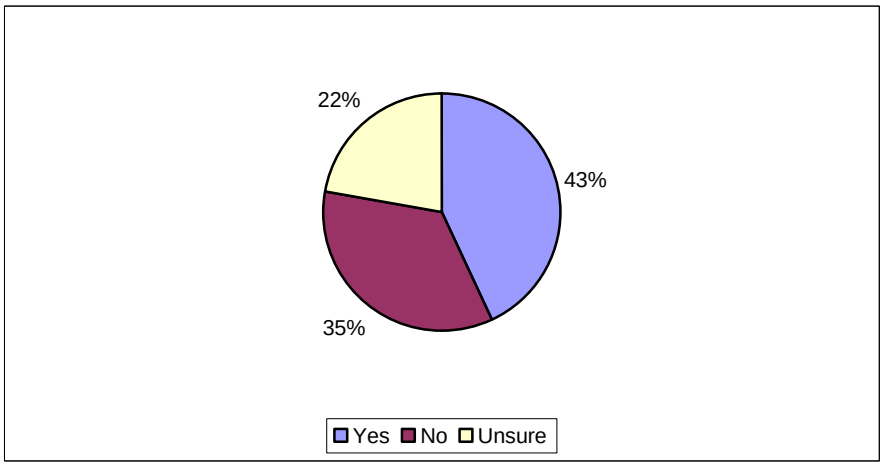


Figure 15: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Kalbarri

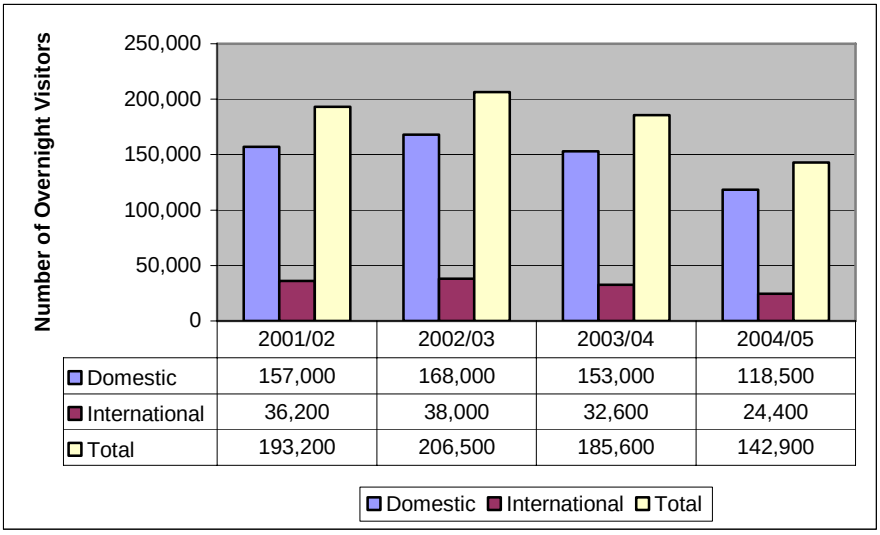
4.1.2 Tourism

Kalbarri is one of Western Australia's most popular holiday destinations, and ranks as the premier tourist destination in the Mid West Region and the Shire of Northampton.[14] Kalbarri attracts 160,000 visitors per year who contribute $10 million to the town's economy. Tourism in Kalbarri is based around spectacular natural resources, including the Kalbarri National Park, Red Bluff and the local wildflowers (Plates 4A and 4B).

Plates 4A and 4B: Kalbarri's Landscape and Wildflowers

(Source: Paul Huddleston, 2002.)

Recent developments in the tourism sector have seen growth in adventure tourism, including absailing and rock climbing. The construction of a regional air strip and the costal link highway between Port Gregory and Kalbarri resulted in increased tourist arrivals in Kalbarri. Domestic and international overnight visitor numbers have remained relatively constant since 2001/02, the purpose of which is mainly for holiday and leisure time (Figure 14 and Appendix 4).



(Source of Data: Tourism Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, Shire of Northampton

[14] The Shire of Northampton, with an area of 13,513 square kilometers, is bounded by the Chapman Valley, Shark Bay, Mullewa and Murchison Shires and the Indian Ocean (<http://www.northampton.wa.gov.au/our_shire/boundaries.html> cited 04 October 2006).

Some business owners recognise that "Kalbarri is now more of a holiday resort than a fishing village" and that "with its gorges and pretty natural surroundings, Kalbarri is an amazing place and tourism is getting bigger" (Focus Group Discussion Notes, 2005). Nevertheless, only 33 per cent of the community residents who participated in the survey were optimistic of further tourism potential in Kalbarri (Figure 15). A higher proportion (45%) does not agree with the statement that 'the coast around this community is suitable for more tourism activities than we have at present'. This may be reflective of the need for more tourism facilities since as one rock lobster fisher (No. 070, 2005) noted, "it would be nice to be able to go somewhere that was open late, if not a 24-hour food outlet, at least some place where you can get petrol or food after 9:00 P.M."

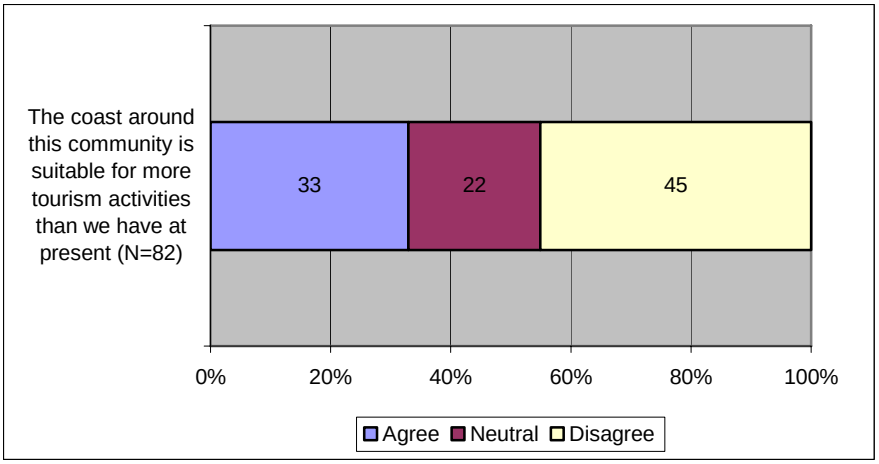


Figure 15: Perceptions of Tourism Potential, Kalbarri

One business owner remarked on the importance of ensuring that there are sufficient fishing stocks in Kalbarri (e.g. demersal and other fish stocks) since "families come to Kalbarri to enjoy fishing and during their stay, spend between $200 to $300 on fuel, food, bait and accommodation. This number will decline if there are no fish. They will go to Exmouth or Shark Bay" (Focus Group Discussion Notes, 2005). This problem is being addressed by protective management measures to ensure that the marine habitat and bio-diversity in the West Coast remain in good condition. As part of this program, a Blue Holes Fish Habitat Protection Area (FHPA) is proposed for Kalbarri (Figure 16). Following the release for public comment of the draft management plan for the Blue Holes FHPA, a final management plan is being prepared for Ministerial approval (Department of Fisheries, 2005: 11).

4.1.3 Business and Commerce

Kalbarri has a small but diverse retail sector, providing goods and services to the local and regional population, as well as for tourists. The main commercial areas are located on the Grey Street and Porter Street intersection, with most shops open seven days a week (Plate 5). There are also a number of restaurants and take-away outlets that serve food and beverages until 8:00 or 9:00 P.M. The growth in tourism is slowly contributing to the increased viability of the retail sector in the town.

Kalbarri has a small light industrial area located along the extension of Porter Street to the east of the town. It consists of various light industrial businesses such as smash repairs and mechanical workshops, a garden nursery, horticultural services, cabinet maker, fish factory,

builders' yards and storage sheds. A smaller industrial area located further into the town contains the Western Power Supply Station, a transport company, cement and gravel business yard, and the western rock lobster reception facility (receival depot).

(Source: <http://www.fish.wa.gov.au/docs/sof/2003/sof20032004-0202.pdf>)

Figure 16: Current and Proposed Areas of Protected Fish Habitat in the West Coast Bioregion

Plate 5: Shops along Grey and Porter Streets

(Source: Veronica Huddleston, 2005.)

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

Approximately 166 kilometres north of Geraldton, Kalbarri is a relatively isolated community. Kalbarri is accessible by two sealed roads, the first is 66 kilometres off the North-West Highway on the Ajana-Kalbarri Road and the second is the George Grey Drive that follows the coastline from Port Gregory. Trans WA and Greyhound provide bus service to Kalbarri from Perth three days a week. A taxi service operates in Kalbarri from dawn until around 9:00 P.M. A local transport company, Kalbarri Carriers, also provides freight services between Perth and Kalbarri twice a week.

Kalbarri also supports a maritime facility for both commercial and recreational boats. There is also a newly constructed, sealed air strip located 10 kilometres east of Kalbarri. Great Western Airlines flies to Kalbarri three times a week from Perth.

4.2.2 Water and Electricity

Kalbarri draws its water from the Tumblagooda Sandstone aquifer that outcrops predominantly in the town proper along the Murchison River. Water supply and infrastructure is managed by the Water Corporation, who also manages the community waste water plant. There is also a spring site near the Allen Centre where the Kalbarri Spring Water is bottled for retail sale locally and in other commercial centres within the region.

Kalbarri is connected to the main northwest power grid via Northampton. To boost the power supply in Kalbarri, the State Energy Commission of Western Australia built a solar power technology facility in 1994.

4.2.3 Communications

Modern telecommunications are available in Kalbarri and include STD, ISD, facsimile and teleconferencing. These services are provided through the Kalbarri Community Telecentre. Mobile phone service is also available in the community and there is CDMA coverage available outside of the town. Some of the on-going telecommunications issues facing residents of Kalbarri include the insufficient capacity of land lines, poor mobile coverage, and high tariffs. More than 20 per cent of all Kalbarri residents have access to personal home computers and access to the internet.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

Kalbarri is one of the communities that make up the Shire of Northampton. Most of the Shire's facilities are located in Northampton, the Shire's administrative centre. However, the Allen Community Centre constructed in 1992, located on the main street (Grey Street), hosts a branch of the Shire of Northampton and offers a large meeting space for local community groups, a local library and a tourist bureau (Shire of Northampton, 1994).

4.3.2 Education and Health

Prior to 2001, educational facilities were only available for primary school children. In 2001, the Kalbarri District Senior High School opened that, for the first time, accommodated students from kindergarten through to Year 12. Enrolment rates in primary and secondary level were estimated to be 92 per cent and 87 per cent, respectively, in 2001.

The Kalbarri Health Centre provides multi purpose services to treat emergencies, foster preventative health measures and the promotion of health. The Centre also supports individuals and families in their homes, reducing the impact of disease or trauma, and maintaining the independence and quality of life. Kalbarri faces difficulties in the recruitment and retention of health professionals, and is reliant upon Geraldton and Perth for secondary and tertiary services.

4.3.3 Law and Order

The Kalbarri police station is staffed with three police officers who work in association with the local emergency services. Kalbarri also has a local Court House.

The reported rates of crime in Kalbarri are generally small compared with the Mid-west and Gascoyne District (Appendix 5). For example, at the district level, Kalbarri's crime statistics represent only 1 per cent of assaults and burglaries. According to the Western Australian police, Kalbarri has excessive problems with alcohol abuse, particularly among juveniles. This problem is notable during school holiday periods, long weekends, and the Easter and New Year's Eve periods. Community members have nonetheless expressed the view that Kalbarri is a safe place with one rock lobster fisher (No. 067, 2005) commenting that "Kalbarri's record in terms of criminal incidents is good. We still leave our keys in our car at night."

Appendix 1: Employment by Industry Division, 1991-2001 - Kalbarri									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	47	17	64	39	18	57	48	14	62
of which: Rock Lobster Fishing			--			6			10
Mining	6	0	6	8	3	11	15	0	15
Manufacturing	32	6	38	24	3	27	30	12	42
of which: Seafood Processing			--			0			3
Electricity, Gas and Water Supply	3	0	3	7	0	7	9	0	9
Construction	27	6	33	46	3	49	42	7	49
Wholesale Trade	42	50	92	10	6	16	13	6	19
Retail Trade				44	44	88	41	65	106
Accommodation, Cafes and Restaurants	Not a separate sector			35	61	96	53	94	147
Transport and Storage	28	11	39	25	20	45	16	16	32
Communication Services	6	3	9	5	3	8	3	0	3
Finance and Insurance	23	17	40	0	6	6	6	6	12
Property and Business Services				29	23	52	33	31	64
Government Administration and Defence	6	3	9	14	9	23	12	6	18
Education	Not a separate sector			9	16	25	16	28	44
Health and Community Services	22	57	79	7	42	49	14	38	52
Cultural and Recreational Services	43	58	101	6	10	16	9	6	15
Personal and Other Services				21	12	33	19	20	39
Non-classified/Non-stated	40	38	78	9	12	21	15	12	27
Total for All Industries	325	266	591	338	291	629	394	361	755
Share of Agriculture, Forestry and Fishery to Total Employment	14.5	6.4	10.8	11.5	6.2	9.1	12.2	3.9	8.2
Share of Top Three Sectors to Total Employment	40.6	62.0	46.0	38.2	50.5	38.3	36.3	54.6	42.0
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a, 2002/03 - 2004/05 - Western Australia and the Mid West Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Mid West Region	2,075	2,510	2,512	5,628	6,495	6,159
of which: Kalbarri's Share (%)	13.9	11.3	10.6	26.3	22.6	22.4
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Mid West Region	53	15	13	694	196	170
of which: Kalbarri's Share (%)	--	--	--	--	--	--
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Mid West Region	4,932	5,385	5,425	120,582	102,322	116,632
of which: Kalbarri's Share (%)	7.0	10.0	10.5	7.0	10.0	10.5
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Mid West Region	5,851	615	5,345	20,122	2,364	19,307
of which: Kalbarri's Share (%)	0.3	1.6	0.4	2.1	7.4	2.5
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Mid West Region	12,936	8,552	13,308	147,324	111,685	142,409
of which: Kalbarri's Share (%)	5.1	9.6	7.5	7.0	10.5	10.3

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Kalbarri						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Kalbarri	659,604	516,913	439,171	317,008	521,781	552,397
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Kalbarri	569,220	494,719	448,097	339,792	390,660	426,580
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Kalbarri	28	26	13	11	10	11
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Kalbarri	64	66	37	31	28	29

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - Shire of Northampton								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	109,500	69.7	118,000	70.2	100,500	65.7	87,000	73.4
Visiting Friends/Relatives	12,500	8.0	17,500	10.4	17,000	11.1	11,000	9.3
Business /c	22,500	14.3	17,500	10.4	14,500	9.5	2,500	2.1
Other /d	500	0.3	3,500	2.1	4,500	2.9	5,500	4.6
Total	157,000	100.0	168,000	100.0	153,000	100.0	118,500	100.0
International Visitors								
Holiday/Leisure	35,700	98.6	37,600	98.9	32,300	99.1	23,900	98.0
Visiting Friends/Relatives	200	0.6	200	0.5	100	0.3	300	1.2
Business	0	0.0	0	0.0	0	0.0	0	0.0
Other	500	1.4	200	0.5	300	0.9	400	1.6
Total	36,200	100.0	38,000	100.0	32,600	100.0	24,400	100.0
Total Visitors								
Holiday/Leisure	145,200	75.2	155,600	75.4	132,800	71.6	110,900	77.6
Visiting Friends/Relatives	12,700	6.6	17,700	8.6	17,100	9.2	11,300	7.9
Business	22,500	11.6	17,500	8.5	14,500	7.8	2,500	1.7
Other	1,000	0.5	3,700	1.8	4,800	2.6	5,900	4.1
Total	193,200	100.0	206,500	100.0	185,600	100.0	142,900	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Kalbarri				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Mid West/Gascoyne District	1,045	1,147	1,155	1,348
in which: Kalbarri (number)	12	11	13	16
as percent of the District	1.1	1.0	1.1	1.2
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Mid West/Gascoyne District	1,417	1,375	1,343	1,213
in which: Kalbarri (number)	5	5	5	5
as percent of the District	0.4	0.4	0.4	0.4
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Mid West/Gascoyne District	815	667	661	569
in which: Kalbarri (number)	10	3	8	4
as percent of the District	1.2	0.4	1.2	0.7
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Mid West/Gascoyne District	36	40	43	25
in which: Kalbarri (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Mid West/Gascoyne District	234	206	222	238
in which: Kalbarri (number)	3	4	2	0
as percent of the District	1.3	1.9	0.9	0.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

PORT GREGORY and HORROCKS

1.0 GEOGRAPHIC SETTING

Port Gregory and Horrocks are small holiday and fishing villages situated within the Shire of Northampton. Horrocks is approximately 510 kilometres north of Perth while Port Gregory is a further 30 kilometres northward. With the completion of the coastal road from Port Gregory to Kalbarri and the impending extension of the coastal road south to Horrocks, the Shire of Northampton recognises the need for increased planning, management and the protection of the foreshores and coastal areas of these two townships (Shire of Northampton, 2005:5).

As with many of the coastal towns in this region of Western Australia, Port Gregory and Horrocks experience a Mediterranean climate with hot, dry summers and cool, wet winters.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITES[1]

Europeans first passed through Port Gregory and Horrocks during in the late 1830s. Further exploration in 1847 encouraged the development of pastoralism. In 1848, lead ore deposits were discovered in the Murchison River by A.C. Gregory. The Geraldine Mine, considered to be the first lead mine in Australia, began operations in 1850. Due to the mine's remote location, a port was necessary to assist in the export of the mine's output and Port Gregory was established in 1853. Although the port was operational, it was not entirely safe. Six vessels were wrecked on the fringing reef between 1853 and 1867, the most notable of which was the Mary Queen of Scots which sunk in 1855. Over time, the port's importance diminished and in its place, a small fishing fleet was established.

F.T Gregory (brother of A.C. Gregory) arrived in Port Gregory with 60 convicts with the intent of hiring them out as pastoralists. The Lynton Hiring Depot was built to house the convicts. The remains of the depot still exist today.

Today, Port Gregory remains a small coastal settlement, supported by tourism, beta carotene production, fishing, holiday accommodation and heritage sites (Shire of Northampton, 2005:35). Figure 1A shows the town map of Port Gregory that features the location of social and fishery-related infrastructure facilities. The town has only minimal services, e.g. caravan park, small holiday cottage complex, and a general store and basic public amenities such as the toilet block and picnic and rest facilities overlooking the beach front (Plate 1). One interviewee (No. 200, 2006) noted that, "[To like Port Gregory] you have to be the type of person who likes the quietness and very basic facilities in the town." Boats can be launched on either side of the jetty with access provided by a gravel ramp, making Port Gregory a popular place for holiday makers who bring their own fishing boats.

[1] This section is based on information from Gibbs, M. (1997), Landscapes of Meaning, *Studies in Western Australian History*; Shire of Northampton (2005), *Coastal Strategy*; Port Gregory, 8 February 2004, <http://www.smh.com.au/news/western-australia/port-gregory/2005/02/17/1108500208650.html> (cited 02 September 2005), and the Indian Ocean Drive, 2005: 45-46.

(Source: Institute for Regional Development, 2006.)

Figure 1A: Town Map of Port Gregory, 2006

The town of Port Gregory also abuts Hutt Lagoon, a large marine pink lagoon coloured by the presence of algae known as beta carotene in the waters (Plate 2).[2] The lagoon is mined both for its salt and for its food colouring properties.

Plates 1 and 2: Public Amenities Overlooking Port Gregory Beach and Pink Lake

(Source: Veronica Huddleston, 2005.)

To the south of Port Gregory lies the town of Horrocks, named after Joseph L. Horrocks, a Cornish man who arrived in Australia in 1852 after being convicted of forgery (Gibbs, 1997). Joseph Horrocks had basic medical knowledge and consequently was sent north to assist at the Lynton Hiring Depot. In 1856, he was conditionally pardoned but rather than return to the United Kingdom he remained in Western Australia and assisted in establishing and managing a number of mines in the region, most notably the Wanerenooka Mine and the Gwalla Mine. Joseph Horrocks also considered it beneficial to establish a sense of order within the fledging community and assisted in the construction of a 'non-denominational' church and later, in 1863, a primary school. The school was one of the first in the Mid West Region. While the school's original location remains unknown, it is thought to have been located close to the current town site of Northampton.

Like Port Gregory, Horrocks is mainly a holiday and recreation centre. Unlike Port Gregory, however, is has more potential to accommodate additional population, with the new release of residential land areas to the east and south of the existing town. Figure 1B is the town map of Horrocks, featuring the location of social and fishery-related infrastructure facilities. Residents welcome the positive changes being experienced by Horrocks. One community resident (No. 202B, 2006) noted that "More money is being spent in the town now to put in new facilities." However, one community resident (No. 202A, 2006) noted that "Horrocks is a nice and quiet town and we like it as it is. We would not want it to be over-exposed to outsiders in a way that other areas have."

[2] Carotene is an organic chemical compound occurring in several forms in plants and producing an orange or red colour. Carotene is a source of Vitamin A (Encarta Dictionary).

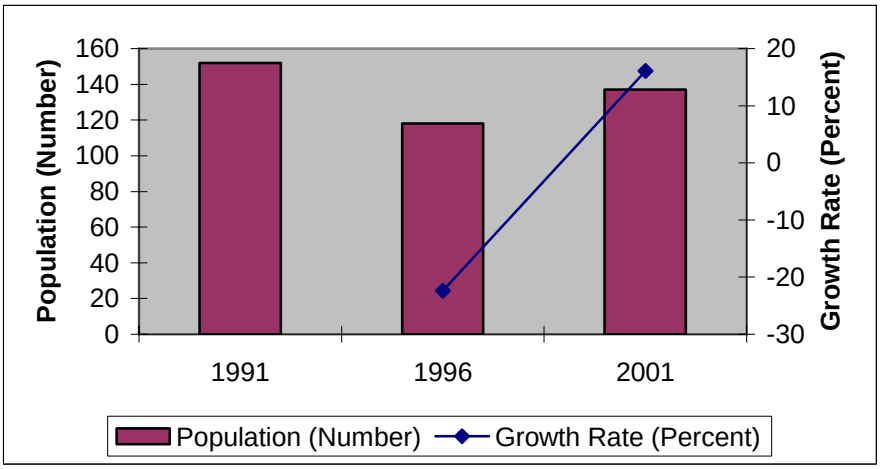
(Source: Institute for Regional Development, 2006.)

Figure 1B: Town Map of Horrocks, 2006

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

The population of Horrocks decreased between 1991 and 1996 but, subsequently, increased to 137 by 2001 (Figure 2).[3] Based on the 2001 census data, Port Gregory had a total resident population of 84 persons (Table 1). The population of both towns is expected to grow in the near future. In preparation for this growth, the Shire of Northampton is developing strategic plans to address this growth and the subsequent pressures it will place on the local environment, infrastructure and services (Shire of Northampton, 2005).



(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1991-2001, Horrocks

The median age in Port Gregory and Horrocks (58 years and 54 years, respectively) is substantially higher than the Western Australian median age of 34 years. The median age in Horrocks has steadily increased over the last decade, reflecting a high elderly dependency ratio[4]. Horrocks' elderly dependency ratio has increased from 28 to 31 while Port Gregory has an elderly dependency ratio of 32. Both these figures are higher than the Western Australian elderly dependency ratio of 17, indicating that medical and aged care services will be required to meet the necessary social infrastructure to support an aging population.

The population distributions in Horrocks and Port Gregory demonstrate that a large proportion of the population is over 40 years of age and predominantly male (Figure 3). Over the ten years between 1991 and 2001, Horrocks exhibited a decreasing trend in its resident female population and conversely, an increasing trend in the number of male residents. Port Gregory's younger population (under 30 years of age) is 100 per cent female while Horrocks has a more even distribution between the sexes throughout the age profile.

[3] Census data refer to the population of Port Gregory and Horrocks as collection districts. A census Collection District (CD) is the smallest geographic area defined in the Australian Standard Geographical Classification (ASGC) (1996 Census Dictionary).

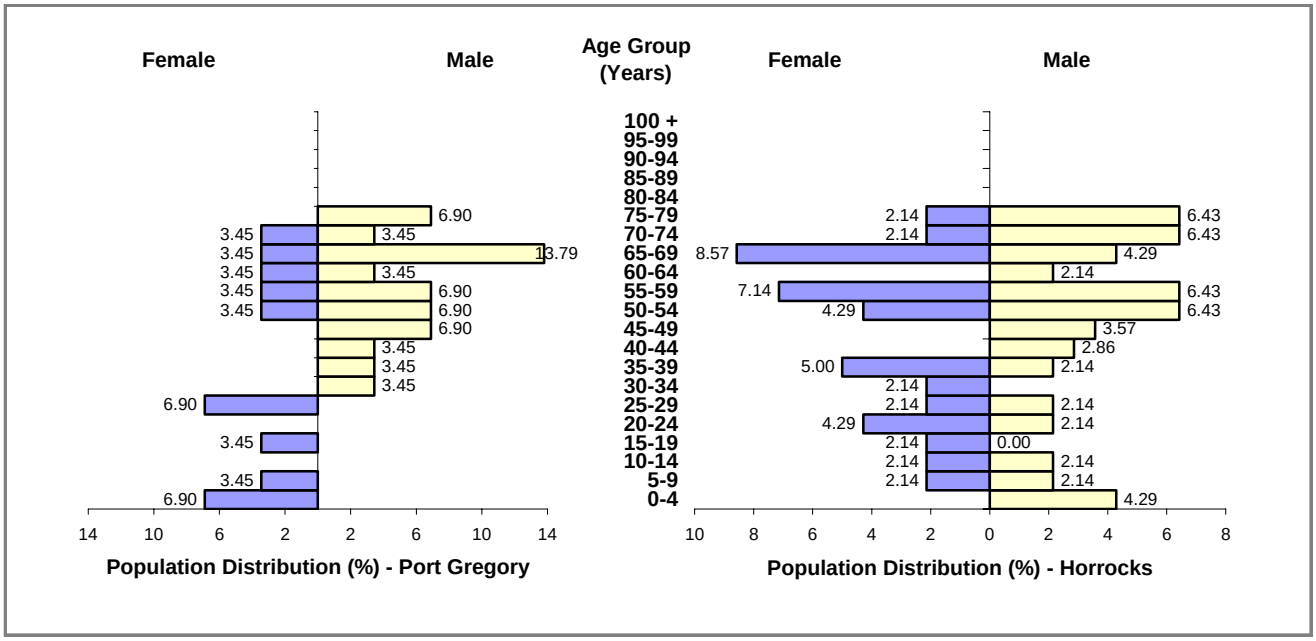
[4] Used as a measure of the dependence that non-working people have on working people, the elderly dependency ratio is defined as the number of elderly people (over 65 years) for every 100 people of working age (15-64 years).

Table 1: Population Indicators, 1991-2001 - Port Gregory and Horrocks				
Collection Districts	***Port Gregory /a***	***Horrocks***		
	2001	***1991***	***1996***	***2001***
Total Resident Population	84	152	118	137
Male	51	68	58	75
Female	33	84	60	62
Population under 15 years	9	18	21	18
Population of employable age	48	91	61	77
of which: Population aged 15-19	3	6	3	3
Population over 65 years	27	43	36	42
Dependency Ratio /b	42.9	40.1	48.3	43.8
Child Dependency Ratio	10.7	11.8	17.8	13.1
Elderly Dependency Ratio	32.1	28.3	30.5	30.6
Median Years	58	46	41	54
% of Overseas Born	12.3	12.9	13.5	14.0
% of Indigenous Population	0.0	0.0	2.2	0.0

/a No data is available prior to the 2001 Census of Population and Housing.

/b Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data : ABS 1991, 1996 and 2001 Census of Population and Housing.)



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Port Gregory and Horrocks

Census data also indicate that in 2001, 14 per cent and 12 per cent of the population of Horrocks and Port Gregory, respectively, were born overseas. At the same time, there was no indigenous population recorded in the Census in either town.

The family and household characteristics of both Horrocks and Port Gregory are classified as 'couple families'. Over the ten-year period between 1991 and 2001, there was an overall decrease in the number of 'couple families with children' and a rise in 'couple families without children' in Horrocks (Table 2). Port Gregory also has a greater proportion of households classified as 'couple families without children'.

Table 2: Family and Household Characteristics, 1991-2001 - Port Gregory and Horrocks

Collection Districts	*Port Gregory /a*	*Horrocks*		
	2001	*1991*	*1996*	*2001*
Couple Family with Children	6	16	18	13
Couple Family without Children	8	18	12	22
One Parent Family	0	0	0	0
Other Family	0	0	0	0
Total	14	34	30	35
Proportion of Couple Families with Children to Total Families	42.9	47.1	60	37.1
Proportion of Couple Families without Children to Total Families	57.1	52.9	40	62.9

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data : ABS 1991, 1996 and 2001 Census of Population and Housing.)

One rock lobster fisher (No. 007, 2004) noted that:

> *A lot of families have left the town. We used to have 16 kids on the school bus here but now there are only three. And they're the children of those working in the mines. There are no families that have been here 10 years or more who have kids on the bus because they are all in the wrong age group.*

3.2 DWELLING CHARACTERISTICS

There are 72 occupied private dwellings in Horrocks and 39 in Port Gregory in 2001 (Table 3). Of these, 69 per cent in Horrocks and 44 per cent in Port Gregory are 'separate houses', with 46 per cent and 62 per cent, respectively, classified as 'fully-owned'. In Port Gregory, 49 per cent of private dwellings remain unoccupied and in Horrocks, the number of unoccupied private dwellings increased by 15 per cent from 1991 to 2001 (89 to 102 dwellings). The percentage of unoccupied dwellings in both towns is substantially higher than the Western Australian average of 10 per cent. Rental accommodation for fishers, both professional and recreational, is available during peak fishing seasons. As Horrocks is a growing tourist destination, a number of the unoccupied houses also support the tourist industry.

Housing numbers may increase in the coming years in conjunction with planned road transport developments. Important in this respect will be the link road between Port Gregory and Horrocks. Recent strategic plans emphasise that both town sites will encounter rapidly expanding populations (Mid West Development Commission, 2005) [MWDC].

Table 3: Dwelling Characteristics, 1991-2001 - Port Gregory and Horrocks

Collection Districts	***Port Gregory*** */a*	***Horrocks***		
	2001	***1991***	***1996***	***2001***
Occupied Private Dwellings	39	81	62	72
By Structure				
Separate House	17	53	50	50
Semi Detached	0	0	0	0
Flat, Unit or Apartment	0	0	0	0
Other /b	22	28	12	22
Not Stated	0	0	0	0
By Tenure				
Fully-Owned	24	42	32	33
Being Purchased	3	10	8	10
Rented	3	19	19	17
Other	6	10	0	6
Not Stated	3		3	6
Unoccupied Private Dwellings	37	89	98	102
Median Monthly Housing Loan Repayments	n.a.	$551 - $625	n.a.	$1,000 - $1,199
Median Weekly Rent	$150 - $199	$48 - $77	n.a.	$100 - $149

/a No data is available prior to the 2001 Census of Population and Housing.

/b For 1991, Other Dwellings includes caravans, etc. in caravan parks.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

There is zero unemployment in Port Gregory and 8.5 per cent unemployment in Horrocks in 2001, with more females employed than males. Since 1996, there has been an increase in the number of persons employed in Horrocks (Table 4). Of those employed in both towns, half were employed full-time and 40 per cent were part-time workers.

The median individual income per week was $200 - $299 in Horrocks, while Port Gregory's median individual income per week was $300-$399 (Table 5). These individual income levels are comparable with the Western Australian and Australian averages. However, the median weekly incomes for families and households in 2001 were less than the national and state averages in both towns. For example, the median weekly household income in Port Gregory was only $400-$499 and $500-$599 in Horrocks, compared to the $700-799 Australian and Western Australian levels.

Table 4: Employment Indicators, 1991-2001 - Port Gregory and Horrocks				
Collection Districts	***Port Gregory /a***	***Horrocks***		
	2001	***1991***	***1996***	***2001***
Employed	21	47	40	65
Male	13	31	23	36
Female	8	16	17	29
Full Time	12	29	19	35
Male	7	22	16	21
Female	5	7	3	14
Part Time	9	12	15	27
Male	6	6	7	12
Female	3	6	8	15
Not Stated	0	6	6	3
Male	0	3	0	3
Female	0	3	6	0
Unemployed	0	9	3	6
Male	0	9	0	3
Female	0	0	3	3
Total Labour Force	21	56	43	71
Male	13	40	23	39
Female	8	16	20	32
Unemployment Rate (in %)	0.0	16.1	7.0	8.5
Male	0.0	22.5	0.0	7.7
Female	0.0	0.0	15.0	9.4
Labour Force Participation Rate	28.0	41.8	44.3	59.7
Male	25.5	54.8	44.2	61.9
Female	33.3	26.2	44.4	57.1

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Table 5: Individual, Family and Household Incomes, 1991-2001 - Port Gregory and Horrocks				
Collection Districts	***Port Gregory /a***	***Horrocks***		
	2001	***1991***	***1996***	***2001***
	Weekly	***Annual***	***Weekly***	***Weekly***
Median Income for Individuals	$300 - $399	$8,001 - $12,000	$200 - $299	$200 - $299
Median Income for Families	$600 - $699	$20,001 - $25,000	n.a.	$800 - $999
Median Income for Households	$400 - $499	$16,001 - $20,000	$300 - $499	$500 - $599

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[5]

A majority of the residents in both Port Gregory and Horrocks who participated in the community survey undertaken in late 2005 have been living in these towns for more than 15 years and expect to still be living there in five years time. These residents gave a 'good' to 'excellent' rating for these towns as places to live (Figure 4). Port Gregory respondents reported that they have 'very strong attachment' to the town while Horrocks residents reported 'strong attachment' to the town (Figure 5). A majority of the respondents in both towns reported high levels of neighbourhood connections in terms of 'knowing most of the people in the neighbourhood' and running into people they know 'nearly always' when shopping. This is not surprising given the small population levels in these towns.

Residents of Port Gregory choose to live there because of family or the fact that they have always lived in the town (Figure 6). Farming was also given as one of the main reasons for living in Port Gregory. As one rock lobster fisher (No. 008, 2004) noted, "All my friends are on the farms and I like going out there and giving them a hand whenever I can." In the case of Horrocks, the main reason cited for choosing to live in the town was the beach, ocean and the overall environment and lifestyle, summed up by one interviewee (No. 202A, 2006) who stated that "Horrocks is a nice quiet town. I love being near the ocean and I love the lifestyle." Other reasons cited by respondents were work and the town being a good place to retire.

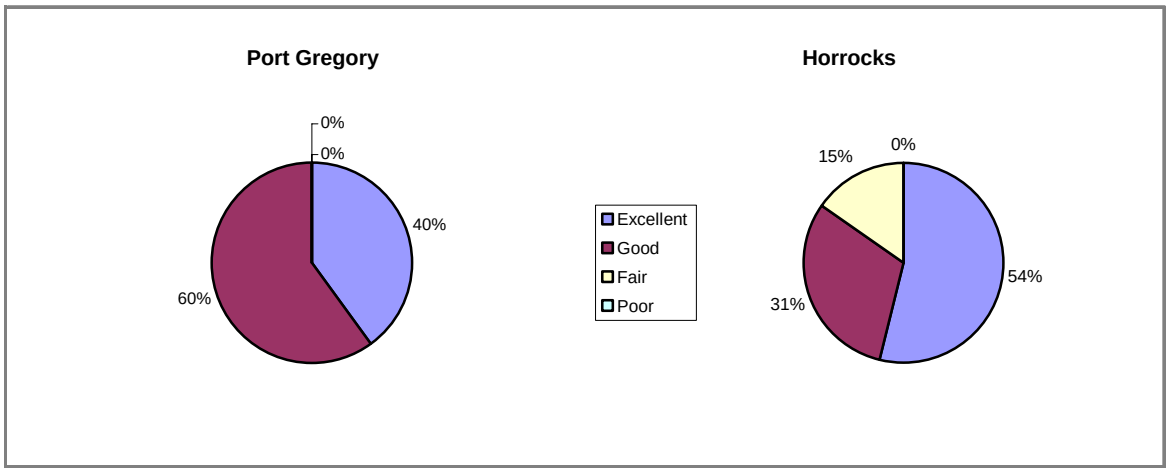


Figure 4: Respondents' Perception of Port Gregory and Horrocks as a Place to Live

Access of basic services such as medical clinics, general practitioners and primary schools are available within the Shire of Northampton. More sophisticated levels of services can be availed in either Geraldton or Perth. Mechanical automotive and boat services are mainly accessed in Geraldton. During the community workshop held in Northampton in June 2006, one rock lobster fisher noted that, "We only do minor stuff in these towns but if something

[5] This section is based on the results and analysis of the responses of 18 community residents who participated in a telephone survey conducted in late 2005 and 6 residents who participated in the semi-structured interviews conducted in 2004 and 2006 (one interview was conducted by telephone). A majority of the survey respondents were born in Australia and New Zealand (83%), fully owned their houses (72%), and older couples with no children at home or mature singles (67%). All survey respondents permanently live in Port Gregory and Horrocks all year round. Four survey participants were engaged in the rock lobster industry. Notes of the community workshop attended by 8 participants conducted in June 2006 were also used in the analysis.

goes wrong, you ring someone in Geraldton. The majority of the maintenance on the boats is done in Geraldton" (Community Workshop Notes, 2006).

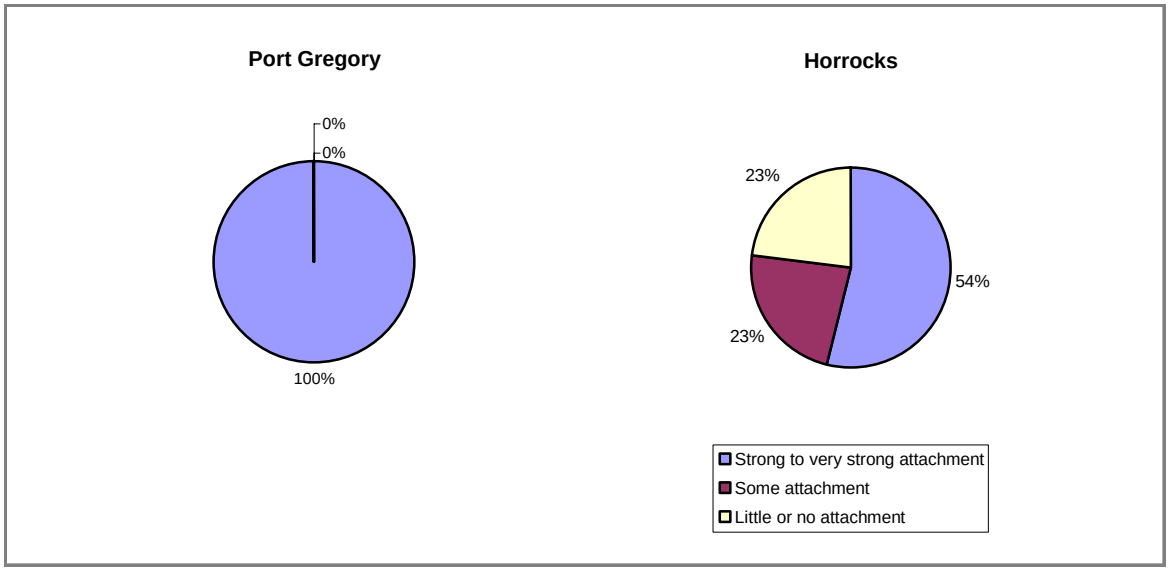


Figure 5: Respondents' Attachment to Port Gregory and Horrocks

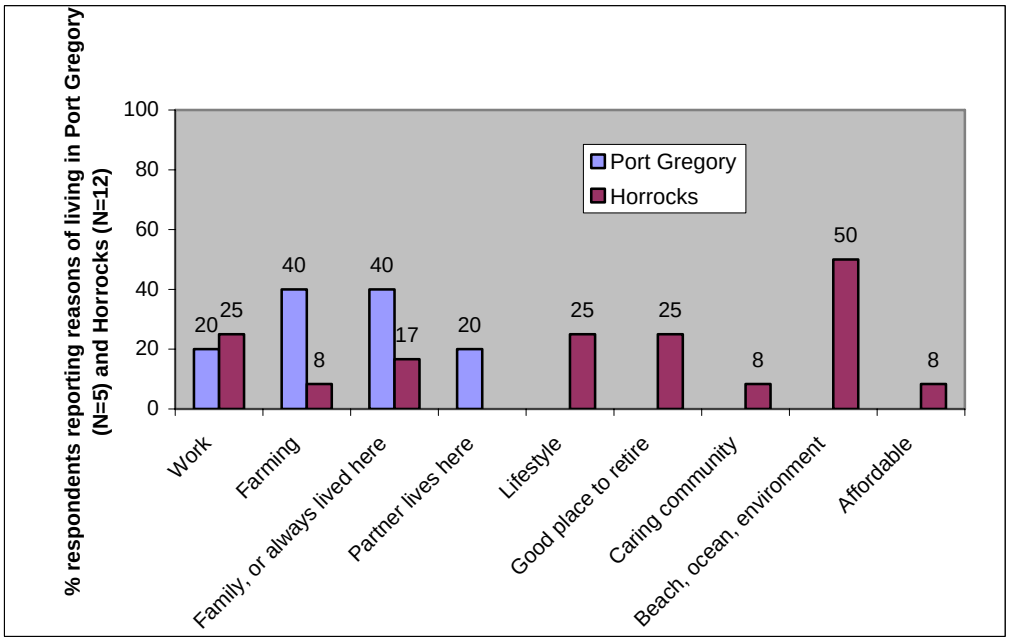


Figure 6: Reasons for Living in Port Gregory and Horrocks

Participation in local organisations such as sports or recreation organisations is negligible among Port Gregory respondents but in Horrocks, more than half indicated that they belong to a local sports or recreation organisations (Figure 7). Most of those surveyed reported attending local community events at least twice a year. As for contributing either money or time to community projects, there is a higher percentage of respondents who would rather give money than time in Horrocks but the reverse was reported in Port Gregory.

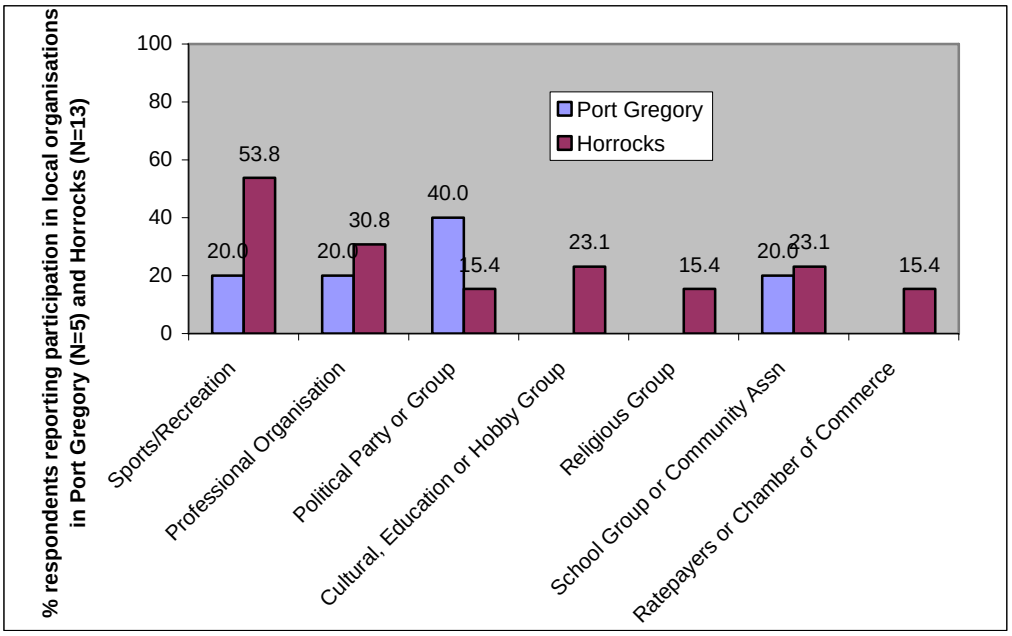


Figure 7: Participation in Local Organisations in Port Gregory and Horrocks

Residents of Port Gregory and Horrocks perceive their community as cohesive communities (Figures 8A and 8B).[6] Respondents in both towns have high levels of agreement to the statement that 'if there was a serious problem in the community, the residents would get together and solve it' (Figure 8B). One Horrocks resident (No. 202A, 2006) noted that "Everyone pitches in when things need to get done." In Port Gregory, one community resident (No. 200, 2006) noted that, "[Locals] help and volunteer to do things like the shelter shed."

On the questions related to the availability of employment opportunities and the access to training facilities to improve qualifications and skills, the low ratings reported by respondents were indicative of the limited employment potential in these two towns. One interviewee noted that in addition to people in Port Gregory moving out for job prospects offered in other areas, there is also the problem of limited housing since "there are not a lot of housing for rent that could accommodate outsiders even if they want to reside here" (Interviewee No. 200, 2006).

[6] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

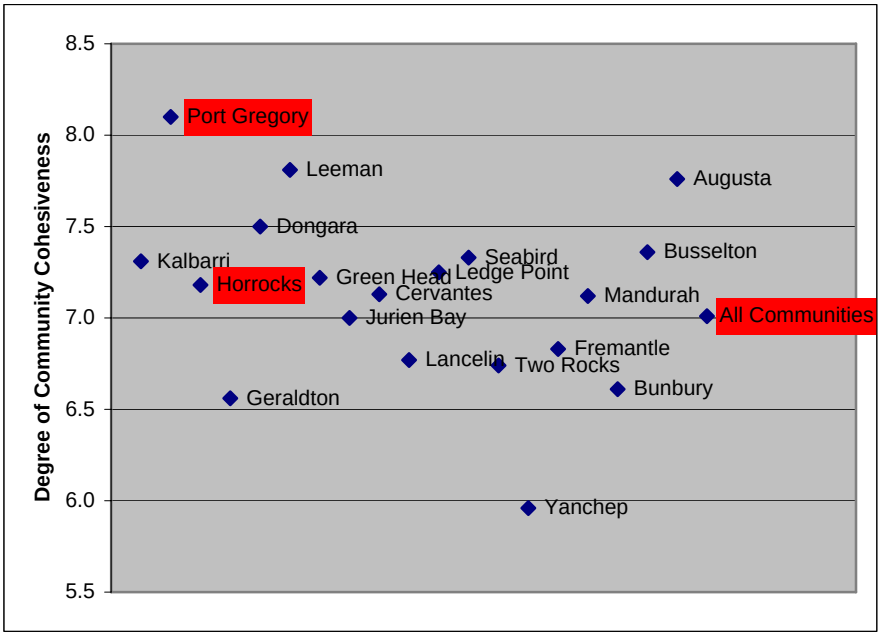


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

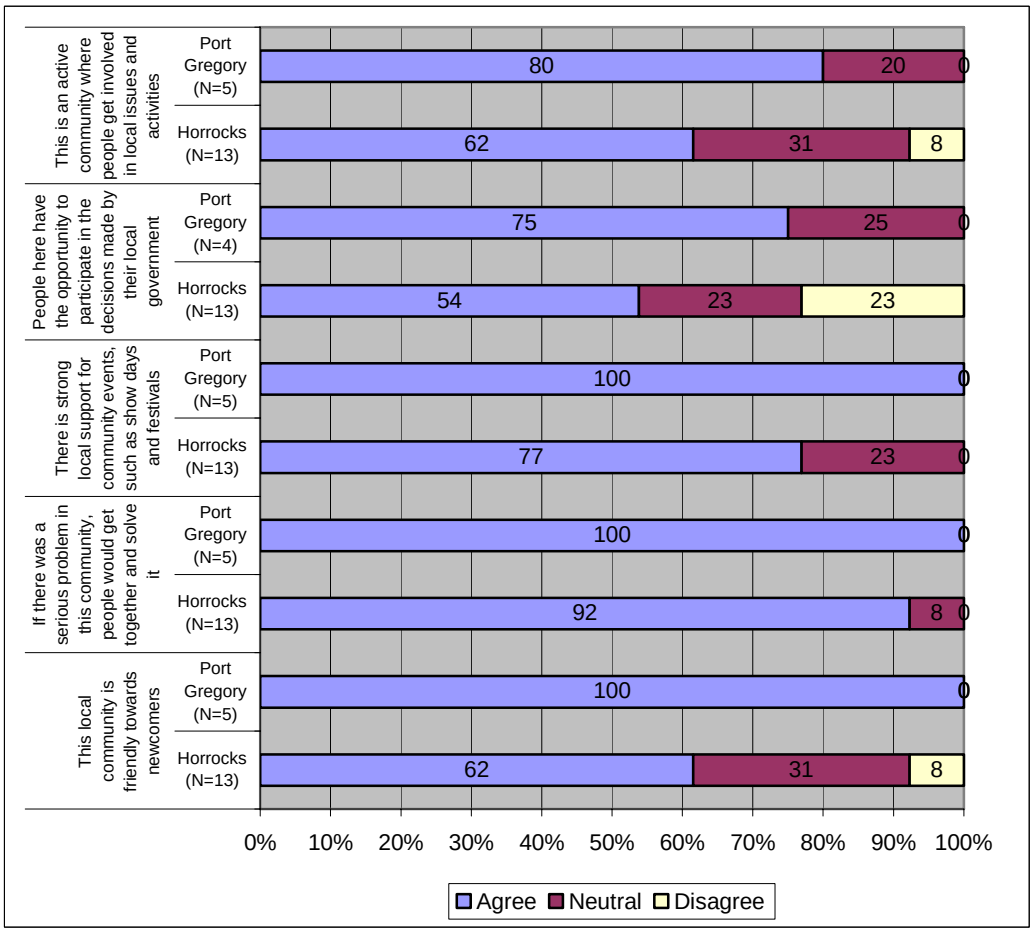
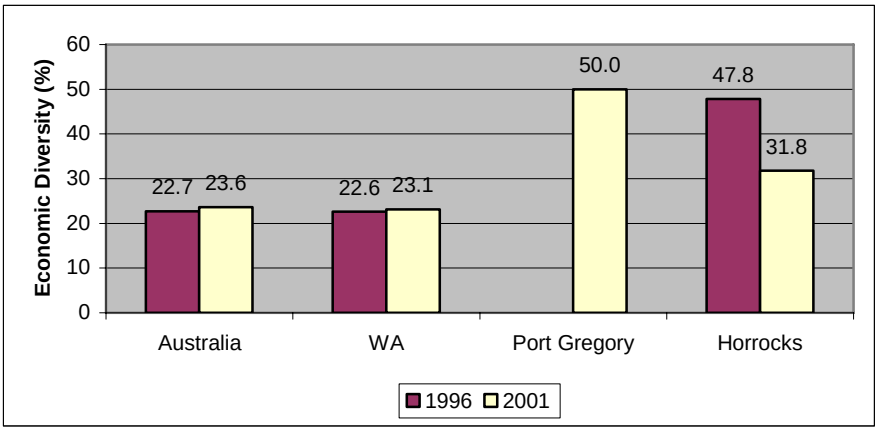


Figure 8B: Perceptions of Community Cohesiveness, Port Gregory and Horrocks

4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

The agriculture, forestry and fishery industry division continues to be the major employer in both Port Gregory and Horrocks (Appendix 1). Tourism is also an important industry in Horrocks with 17 per cent of employed individuals working in the tourism-related areas. For Port Gregory, the mining industry division and the property and business services industry division also contributed 20 per cent each in local employment generation. Both towns, particularly Port Gregory, remain dependent on a few industry subdivisions providing employment to the town and exhibited less diversified economies as compared to Western Australia and the whole of Australia (Figure 9).[7]



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 - 2001, Port Gregory and Horrocks

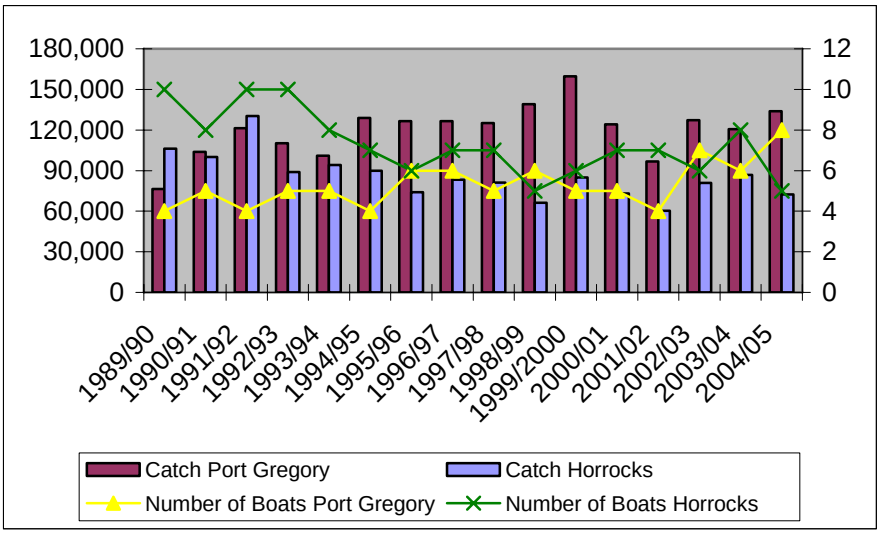
For 2001, half of those employed in Port Gregory were employed by the accommodation, cafes and restaurants industry subdivision, followed by metal ore mining and commercial fishing. In comparison, almost one third of those employed in Horrocks were involved in government administration, followed by those working in any of the following industry subdivisions: health services; education; commercial fishing; petroleum, coal, chemical and associated product manufacturing; general construction; personal and household good retailing; and accommodation, cafes and restaurants.

4.1.1 Fishing

As a proportion, Horrocks and Port Gregory contribute only a small part (under two per cent in 2004-5) of the State's total fish catch, either by volume or cash receipts (Appendix 2). The bulk of this catch is in rock lobster fishing.

[7] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

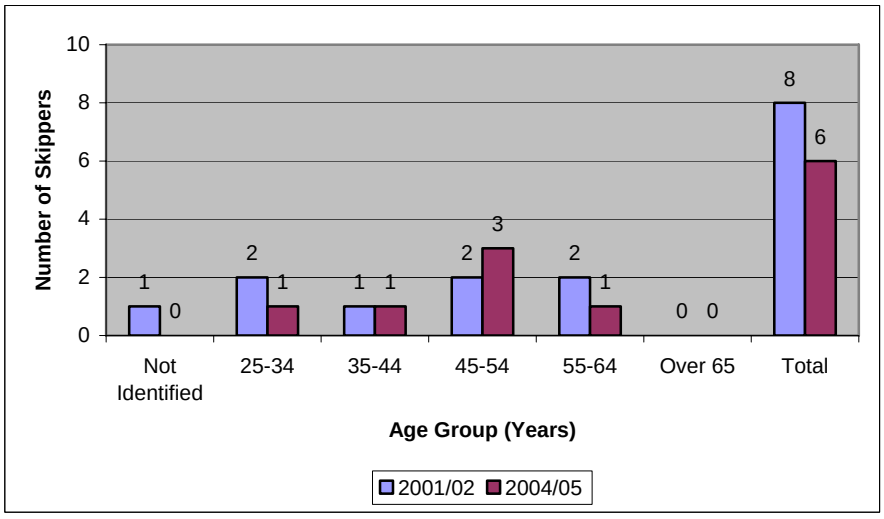
There are a limited number of rock lobster boats that are based in these towns (Appendix 3). In Port Gregory, the last few years has seen a rise from 4 boats in 2001/02 to 8 boats in 2004/05. The overall catch of rock lobsters landed in Port Gregory has fluctuated but since 1994/95, the catch has been relatively consistent at 128,000 kilograms (Figure 10). Conversely, in Horrocks there has been a 50 per cent decline in the number of crayfishing boats operating in the area between 1989/90 and 2004/05. The change in boat numbers, however, has not directly impacted upon the catch weight which has remained relatively constant at 73, 500 kilograms since 1992/93.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Port Gregory and Horrocks

Of the skippers who indicated that their places of residence are Port Gregory and Horrocks, the majority are in the 45-54 age group (Figure 11). Most fishers have pot holdings averaging between 90-110 pots. One rock lobster fisher (No. 201, 2006) reported that "fishers most of the time lease a few pots to make up for the pot reductions."



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Port Gregory and Horrocks, 2001/02 and 2004/05

Participants in the community workshop held in Northampton in June 2006 indicated that rock lobster fishing will still be part of the communities of Port Gregory and Horrocks as long as there remains a reasonable income to be made (Community Workshop Notes, 2006). One rock lobster fisher (No. 007, 2004) noted, however, that:

> *Younger people know the basics of rock lobster fishing but we want them to have a trade. The industry seems to be a bit insecure and often changing so it's good for the young ones to have a [alternative] trade.*

On their perceptions of the rock lobster industry, community residents in both towns do not see rock lobster fishing as having any significant impact on their communities (Figure 12). It is therefore not surprising that 80 per cent of Port Gregory respondents indicated they would not encourage young people to be involved in rock lobster fishing (Figure 13). In Horrocks, only 38 per cent indicated they will do so and 46 per cent were unsure.

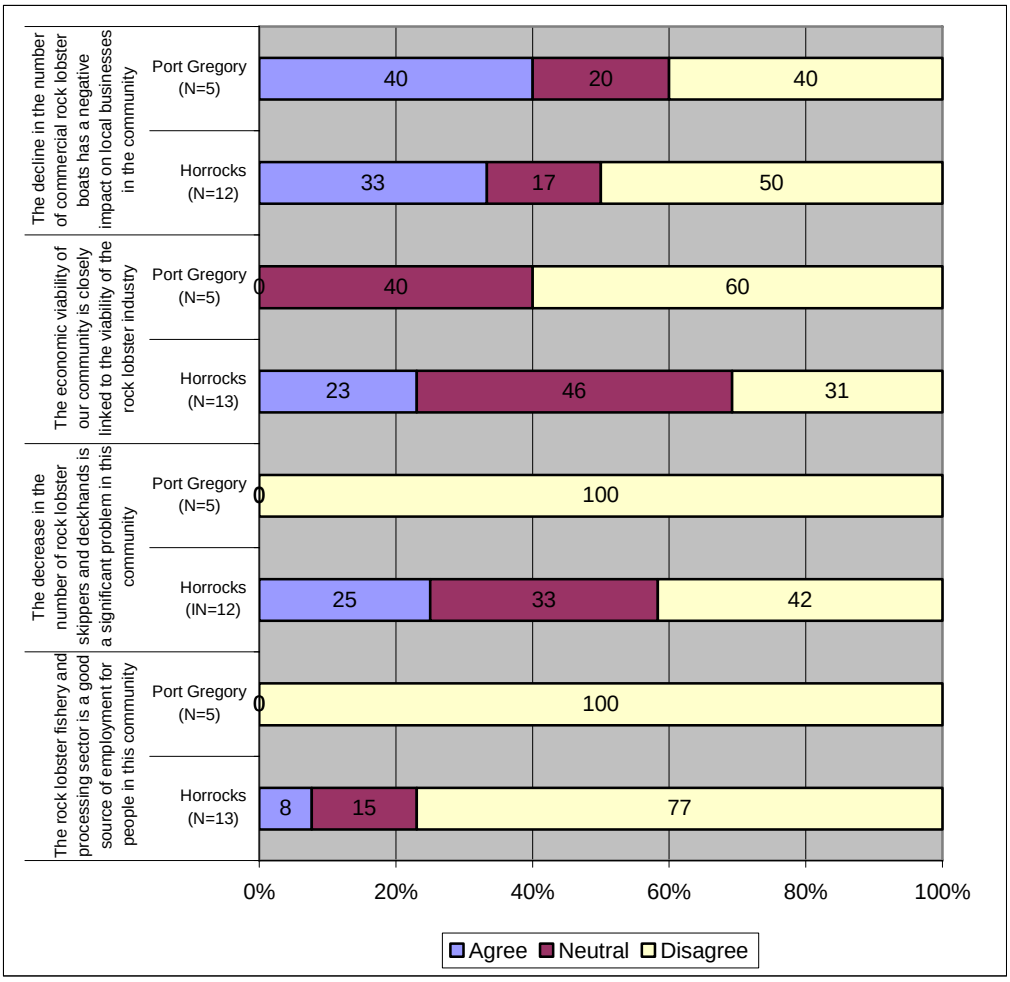


Figure 12: Perceptions of the Rock Lobster Industry, Port Gregory and Horrocks

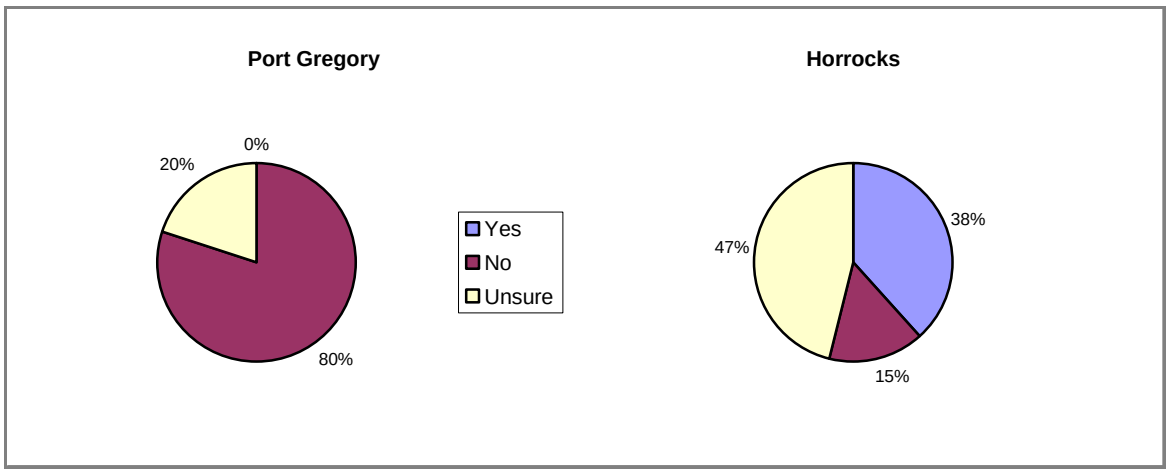


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Port Gregory and Horrocks

In terms of maritime facilities, Port Gregory has a wooden service jetty situated in open waters and protected by the reef while Horrocks has only a recreational jetty (Plates 3A and 3B). Fuel is available from the Port Gregory service jetty, with the fuel levy used for its maintenance and repair. Local fishers involved in the management of the jetty in Port Gregory noted that the jetty is under pressure, primarily from the bigger boats that fish in the Abrolhos Islands that arrive at night in rough weather and all the trucks that relieve them of their catch (Community Workshop Notes, 2006). Workshop participants also acknowledged the importance of the jetty to recreational fishers who come to their towns for holidays. One participant noted that "if the jetty is not there, it will be a big loss to the town."

Plates 3A and 3B: Service Jetty in Port Gregory and Recreational Jetty in Horrocks

(Source: Veronica Huddleston, 2005.)

4.1.2 Tourism

While both Port Gregory and Horrocks rely on the seasonal fishing industry to support the majority of people within their towns, tourism is an important part of the economy. Peak periods for tourists occur between November and April particularly around weekends and school or public holidays. There are caravan parks and self-contained cottages in both towns and certain private dwellings are also rented out to tourists (Plates 4A and 4B).

A number of attractions both in and close to the towns encourage many tourists to visit. Just south of Horrocks is the mouth of Bowes River, a popular surfing spot. Furthermore,

aboriginal caves along the Bowes River have been discovered containing traditional rock art. Swimming and relaxation are also enjoyed in the sheltered lagoons and beaches. Port Gregory's attractions include wild flowers throughout spring time and the ruins of the original settlement still exist nearby, most notably the Lynton Convict Hiring Depot.

Plates 4A and 4B: Caravan Park and Beachside Cottages in Horrocks

(Source: Veronica Huddleston, 2005.)

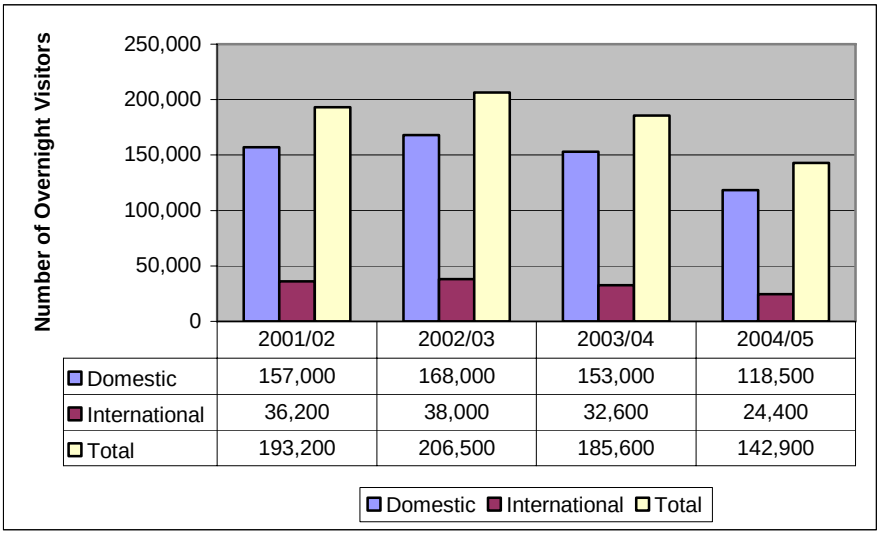
Recreational fishers are able to catch mulloway and tailor at the mouth of Bowes River and closer to Horrocks and Port Gregory, whiting, skipjack, herring, garfish and even octopus are plentiful. Visitors to Port Gregory can also see the Hutt Lagoon, colloquially termed the 'Pink Lake' for the pink algae growth in its waters.

Existing tourist facilities in Horrocks include a jetty, shade shelters (Plate 4) and picnic tables, toilets and showers, barbecues, lookout, tennis courts, golf course, community kitchen, sports ground, car parking and playground (Shire of Northampton, 2005).

Plate 4: Shade Shelter in Horrocks

(Source: Veronica Huddleston, 2005.)

While there are no specific statistics on the number of overnight visitors to either of the communities, empirical evidence points to a high influx of tourists to both Port Gregory and Horrocks during the holiday months. However, tourism data for the Shire of Northampton indicates a decline in the number of overnight visitors since 2002/03 (Figure 14 and Appendix 4).



(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, Shire of Northampton

Tourism in Port Gregory and Horrocks is nevertheless expected to increase when the coastal linking road between the two towns is completed. Residents, however, are less optimistic about the tourism potential of their communities, with only 20 per cent and 38 per cent of those surveyed agreeing to the statement that 'the coast around this community is suitable for more tourism activities than we have' (Figure 15).

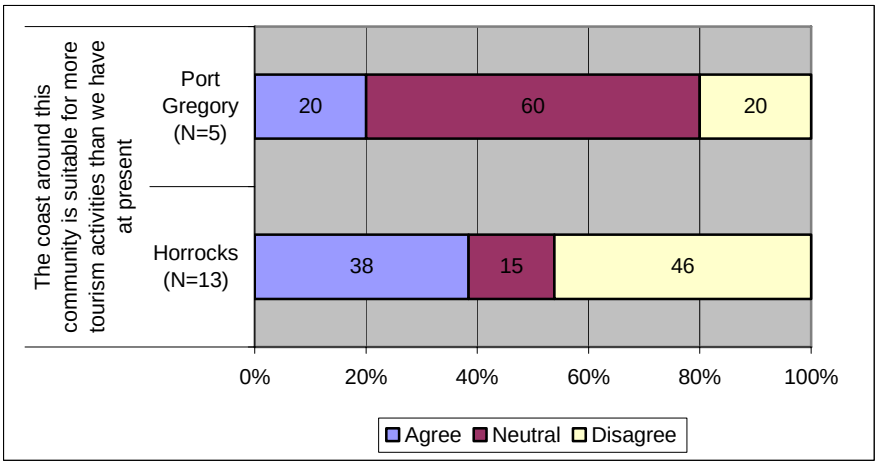


Figure 15: Perceptions of Tourism Potential, Port Gregory and Horrocks

4.1.3 Business and Commerce

Port Gregory and Horrocks are both small, fishing villages with limited resident populations. Both towns have a general retail store selling the daily papers, bread, milk and general supplies. Port Gregory also has a bottle-shop attached to the general store. There are also small cafes/restaurants in Horrocks and a general store in Port Gregory (Plates 5A and 5B). One interviewee (No. 202A, 2006) noted that, "The seasonal/cyclical nature of the business is one of the major challenges in doing business in these towns."

Plates 5A and 5B: Horrocks Jetty Café and Port Gregory General Store

(Source: Veronica Huddleston, 2005.)

4.2 INFRASTRUCTURE SUPPORT

Port Gregory and Horrocks have been identified in the Batavia Coast Strategy as important local centres for the provision of services to their hinterlands (Batavia Coast Steering Group, 2001). The provision of greater infrastructure will be required in coming years, especially with the expected pressure from an increase in permanent residents and increasing visitor numbers (Shire of Northampton, 2005).

4.2.1 Roads and Transport

Both towns are linked to Northampton by separate roads, both branching from the North West Coastal Highway. Accessibility to both these areas is expected to increase with the development of George Grey Drive and the Port Gregory to Horrocks Road (White Cliffs Road).

4.2.2 Water and Electricity

Horrocks' water supply is managed by the Water Corporation while Port Gregory's water supply is managed by the Shire of Northampton. The Port Gregory water supply is considered limited and will restrict further growth in the town (MWDC, 2003).

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

Port Gregory and Horrocks are both situated within the Shire of Northampton. The local administration office built in 1898 in Northampton was extensively extended and modified in 1984 and again in 2001, to service all of the communities of the Shire. A community resident of Port Gregory (No. 008, 2004) noted that, "the Shire comes out to the town every now and then and supply stuff but they pretty much leave it to the people in the town to do things." In Horrocks, one resident (No. 202A, 2006) noted that, "they are quite happy with Shire officials. They are approachable, helpful and easy to talk to."

Port Gregory has a maritime facility consisting of one wooden service jetty that was constructed in 1980. The Department of Planning and Infrastructure oversees the management of this facility, with maintenance provided by local rock lobster fishers in the town.

4.3.2 Education and Health

There are no local schools in either Horrocks or Port Gregory. Children of school age travel to Northampton where there are two primary schools. The St. Mary's Catholic School and the Northampton District High School accommodate children from primary school age through to year 10. The Binnu Primary School which is 38 kilometres north of Port Gregory also offers primary education. For secondary schooling beyond year 10, children are required to either travel to the Kalbarri District High School or to the various public and private schools offered in Geraldton (via the Northampton shuttle bus service). Health facilities are also located in the central town of Northampton where there is a District Hospital.

4.3.3 Law and Order

There is no permanent police presence in either town site but both towns are policed by the Northampton Police unit. Over the last seven years, the towns of Port Gregory and Horrocks have experienced little to no crime (Appendix 5). While both areas experience low crime rates, there are reported disturbances during the peak tourist seasons. As reported by the Western Australia Police Service, there were only two assault offences reported in both Port Gregory and Horrocks in 2004/05.

Appendix 1: Employment by Industry, 1991-2001 - Port Gregory and Horrocks												
Collection Districts	***Port Gregory /a***			***Horrocks***								
	2001			***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	6	3	9	16	3	19	10	3	13	15	6	21
of which: Rock Lobster Fishing			0			--			0			3
Mining	3	3	6	0	0	0	3	0	3	3	0	3
Manufacturing	0	0	0	6	0	6	3	0	3	0	6	6
of which: Seafood Processing			0			--			0			0
Electricity, Gas and Water Supply	0	0	0	0	0	0	0	0	0	0	0	0
Construction	3	0	3	3	0	3	3	0	3	0	3	3
Wholesale Trade	3	0	3	3	3	6	0	0	0	0	0	0
Retail Trade	0	0	0				0	3	3	3	3	6
Accommodation, Cafes and Restaurants	3	0	3	Not a separate sector			0	0	0	6	6	12
Transport and Storage	0	0	0	0	0	0	0	0	0	0	0	0
Communication Services	0	0	0	0	0	0	0	0	0	0	0	0
Finance and Insurance	0	0	0	6	3	9	0	3	3	0	0	0
Property and Business Services	0	6	6				0	0	0	0	0	0
Government Administration and Defence	0	0	0	3	0	3	3	3	6	6	0	6
Education	0	0	0	Not a separate sector			6	3	9	3	6	9
Health and Community Services	0	0	0	0	4	4	0	6	6	0	3	3
Cultural and Recreational Services	0	0	0	0	0	0	0	0	0	0	0	0
Personal and Other Services	0	0	0				0	0	0	0	0	0
Non-classified/Non-stated	0	0	0	3	6	9	0	0	0	0	3	3
Total for All Industries	18	12	30	40	19	59	28	21	49	36	36	72
Share of Agriculture, Forestry and Fishery to Total Employment	33.3	25.0	30.0	12.9	15.8	32.2	35.7	14.3	26.5	41.7	1.7	29.2
Share of Top Three Sectors to Total Employment	66.7	100.0	70.0	70.0	52.6	57.6	67.8	57.1	57.1	66.7	50.0	58.3

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Appendix 2: Catch and Value of Wildcaught Species/a, 2002/03 - 2004/05 - Western Australia and the Mid West Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Mid West Region	2,075	2,510	2,512	5,628	6,495	6,159
of which: Port Gregory's Share (%)	1.2	0.4	0.2	2.5	0.8	0.3
of which: Horrocks' Share (%)	0.0	0.0	0.0	0.1	0.0	0.0
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Mid West Region	53	15	13	694	196	170
of which: Port Gregory's Share (%)	--	--	--	--	--	--
of which: Horrocks' Share (%)	--	--	--	--	--	--
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Mid West Region	4,932	5,385	5,425	120,582	102,322	116,632
of which: Port Gregory's Share (%)	2.5	2.2	2.4	2.5	2.2	2.4
of which: Horrocks' Share (%)	1.6	1.5	1.3	1.6	1.5	1.3
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Mid West Region	5,851	615	5,345	20,122	2,364	19,307
of which: Port Gregory's Share (%)	0.1	0.5	0.2	0.1	0.4	0.1
of which: Horrocks' Share (%)	0.1	0.5	0.1	0.0	0.3	0.1
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Mid West Region	12,936	8,552	13,308	147,324	111,685	142,409
of which: Port Gregory's Share (%)	1.2	1.5	1.2	2.1	2	2.1
of which: Horrocks' Share (%)	0.7	1.0	0.7	1.3	1.4	1.1

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the are afrom which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Port Gregory and Horrocks						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Port Gregory	121,254	126,643	96,631	127,149	120,681	133,893
Horrocks	130,259	83,368	60,397	80,859	86,888	72,275
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Port Gregory	129,411	120,006	114,687	127,399	127,003	151,567
Horrocks	132,994	90,528	91,414	95,287	99,899	90,181
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Port Gregory	4	6	4	7	6	8
Horrocks	10	7	7	6	8	5
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Port Gregory	11	14	12	22	18	22
Horrocks	25	21	20	17	23	15

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 4: Number and Purpose*/a* of Overnight Visits, 2001/02 - 2004/05 - Shire of Northampton								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	109,500	69.7	118,000	70.2	100,500	65.7	87,000	73.4
Visiting Friends/Relatives	12,500	8.0	17,500	10.4	17,000	11.1	11,000	9.3
Business /c	22,500	14.3	17,500	10.4	14,500	9.5	2,500	2.1
Other /d	500	0.3	3,500	2.1	4,500	2.9	5,500	4.6
Total	157,000	100.0	168,000	100.0	153,000	100.0	118,500	100.0
International Visitors								
Holiday/Leisure	35,700	98.6	37,600	98.9	32,300	99.1	23,900	98.0
Visiting Friends/Relatives	200	0.6	200	0.5	100	0.3	300	1.2
Business	0	0.0	0	0.0	0	0.0	0	0.0
Other	500	1.4	200	0.5	300	0.9	400	1.6
Total	36,200	100.0	38,000	100.0	32,600	100.0	24,400	100.0
Total Visitors								
Holiday/Leisure	145,200	75.2	155,600	75.4	132,800	71.6	110,900	77.6
Visiting Friends/Relatives	12,700	6.6	17,700	8.6	17,100	9.2	11,300	7.9
Business	22,500	11.6	17,500	8.5	14,500	7.8	2,500	1.7
Other	1,000	0.5	3,700	1.8	4,800	2.6	5,900	4.1
Total	193,200	100.0	206,500	100.0	185,600	100.0	142,900	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Port Gregory and Horrocks				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Mid West/Gascoyne District	1,045	1,147	1,155	1,348
of which: Port Gregory (number)	0	0	0	1
as percent of the District	0.0	0.0	0.0	0.1
of which: Horrocks (number)	0	1	0	1
as percent of the District	0.0	0.1	0.0	0.1
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Mid West/Gascoyne District	1,417	1,375	1,343	1,213
of which: Port Gregory (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
of which: Horrocks (number)	2	0	0	0
as percent of the District	0.1	0.0	0.0	0.0
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Mid West/Gascoyne District	815	667	661	569
of which: Port Gregory (number)	0	1	0	0
as percent of the District	0.0	0.1	0.0	0.0
of which: Horrocks (number)	0	0	1	0
as percent of the District	0.0	0.0	0.2	0.0
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Mid West/Gascoyne District	36	40	43	25
of which: Port Gregory (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
of which: Horrocks (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Mid West/Gascoyne District	234	206	222	238
of which: Port Gregory (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
of which: Horrocks (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

GERALDTON

1.0 GEOGRAPHIC SETTING

Geraldton is the principal service and administrative centre for the Mid West Region of Western Australia.[1] The town services a diverse and large area containing pastoral and agricultural industries, mining, and a lucrative fishing industry. Geraldton City is located on Champion Bay, 424 km northwest of Perth at 28° 46' Latitude South and 114° 37' Longitude East.

Geraldton experiences a Mediterranean climate with mild wet winters and hot, dry summers. Most of the rain falls between May and September with an average yearly rainfall close to 450 millimetres. Winds are experienced throughout the year both from an easterly direction in the mornings to onshore sea breezes during the afternoons. Summer sea breezes often reach 25 knots (46 km/h) or more near the coast. Geraldton is one of the sunniest areas in Australia with, on average, nearly 11 hours per day of sunshine.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[2]

The Geraldton area was first explored by George Grey in 1839, a visit that stimulated European interest in establishing a town on the Mid West coast of Western Australia. While Grey's report about good pastures encouraged other Swan River settlers to make brief visits, these visitors chose to settle in other parts of the Western Australian coastline. This set back the establishment of a town at Champion Bay for a few years.

In the late 1840s, Augustus Gregory led one of two exploration parties to find suitable land for the colony's economy. Heading northwards, Gregory's group confirmed the pastoral potential of the Mid West coastal region and also discovered galena (lead ore) on the Murchison River in 1848. With the first ore exports from the Murchison mines made from Champion Bay, the establishment of a town at Champion Bay gathered momentum in late 1849.

Although the town site of Geraldton was surveyed in 1850, the town remained little more than a military guard outpost assigned to protect the Geraldine mine and a new guano harvesting venture at Shark Bay. The leases taken up by a group of Avon pastoralists in the Geraldton hinterland provided additional stimulus for the community's development and in 1851, the first sale of Geraldton lots was made by public auction in Perth. Over the years, the town

[1] The Mid West Region of Western Australia extends along the west coast from Green Head to Kalbarri and more than 800 kilometers inland to Wiluna in the Gibson Desert. Its area of 472,336 square kilometers covers nearly a fifth of the State, and comprises nineteen local government authorities. The City of Geraldton is the region's commercial, administrative and service centre (*Indicators of Regional Development in WA*, Department of Local Government and Regional Development, March 2003).

[2] This section is based on information from *Geraldton: 150 Years, 150 Lives*, Local Studies Department, Geraldton Regional Library, 2001; *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999; and *About the Abrolhos Islands*, <http://www.fish.wa.gov.au/docs/pub/AbrolhosVisiting/index.php?0502> (cited 07 February 2007).

slowly grew: convicts arrived in 1856; a jetty built at the bottom of Gregory Street in 1857; and, a sea wall built by men from the depot in 1862. Among the convict arrivals were a few fishers, fishmongers, shipwrights and sail makers.

In 1871, the resident population reached approximately 500 and during the same year, Geraldton became a formal municipality. The following years saw more developments in Geraldton: the erection and commissioning of the Point Moore lighthouse in 1877; the official opening of the railway line from Geraldton and Northampton in 1879; and, a new rail jetty built at the foot of Durlacher Street in 1893. Public buildings including the Council Chambers were officially opened in 1897.

The early 1900s saw the fishing industry established in Geraldton, predominantly by immigrants from Norway, Denmark, Sweden, Finland, and later, from Italy. Compared to most city occupations, fishing provided a marginal livelihood but developed as a way of life for many families. A number of individuals fished the nearby reefs and shallow waters while several groups (mostly Italians and Scandinavians) fished in the Houtman Abrolhos Islands' waters from their anchorage in Geraldton.

The Houtman Abrolhos Islands, commonly referred to as "The Abrolhos", lie 60 kilometres west of Geraldton. Named after Portuguese Commander Frederik de Houtman, the 122 islands are clustered into three main groups – Wallabi, Easter and Pelsaert – and spread from north to south across 100 km of ocean (Plates 1A and 1B). The islands abundant bird and marine life provided the basis for the guano and fishing industries that emerged during the colonial period. Guano was mined on a commercial scale from the 1880s to the 1920s, and again in the mid-1940s. The Abrolhos were noted as a potential commercial crayfish site as early as 1904, with an estimated 50 per cent of Western Australia's lobster fishery egg production coming from the area.

Plates 1A and 1B: Aerial Shots of the Houtman Abrolhos Islands

(Sources: <http://www.coates.iinet.net.au/tours/> and <http://www.totaltravel.com.au/travel/wa/gascoyne/carnarvon/guide/abrolhos_islands> cited 07 February 2007.)

Geraldton fishers formed a local association in 1939 to petition support for the industry. But with the outbreak of war in September 1939, the number of boats fishing in Geraldton declined to about 10 from the previous 40-50 boats. Traditional fishers were interned under the 'alien' regulations when Italy entered the war in June 1940. In 1944, as the demand for rock lobsters by United States service personnel increased, efforts were made to release the Italians from internment to enable them to return to fishing. The canning of rock lobster also

flourished in 1945 and the industry became an attractive occupation. Significant market opportunities for rock lobsters in the United States brought about an increase in the number of individuals engaged in rock lobster fishing.

With the abundance of rock lobster and catches in the sheltered waters of the Abrolhos Islands, temporary camps started to be constructed which gradually developed into structures that were more permanent. To address over-fishing and the growing animosity among fishers based in Geraldton and in Fremantle, zones were established in the fishery in 1948. Regulations were introduced requiring the Abrolhos catch to be landed alive at Geraldton. New factories for lobster processing opened in Geraldton offering incentives to fishers to supply them with lobsters. In 1951, Geraldton fishers who wanted more organised marketing of rock lobsters formed the Geraldton Fishermen's Cooperative. Since its foundation, the Cooperative consolidated and expanded its activities to provide many of the needs of fishers, including slipways and engineering facilities (Plate 2).

Plate 2: Geraldton Fishermen's Cooperative Facilities

(Sources: Veronica Huddleston, 2005 and Neil Drew, 2004.)

In addition to the growth of the fishing industry, the rapid expansion and development of industries in the Mid West region resulted in the growth of Geraldton. Its population continued to grow as Geraldton played a major role in the development and servicing of mining and farming activities in the Mid West region. Geraldton was proclaimed a city in 1988, providing most of the infrastructure requirements to service the surrounding shires. Figure 1 shows the town map of Geraldton that features the location of social and fishery-related infrastructure facilities.

Since 2002, a number of major projects and initiatives have been undertaken and completed in Geraldton. A strategic plan for the Geraldton community was completed and work progressed on the Foreshore and Central Business District Redevelopment Project and the Port Enhancement and Southern Transport Corridor Projects. Participants in Focus Group Discussions held in Geraldton in late 2005 attributed the positive atmosphere generally felt by Geraldton residents to community leaders, with one participant (No. 02, 2005) noting that:

> *The positive changes in Geraldton can be attributed to changes in the vision of community leaders, people with new ideas who see the potential of Geraldton and has a strong vision for the area. We have good leaders and there are many businesspersons in town who are proactive.*

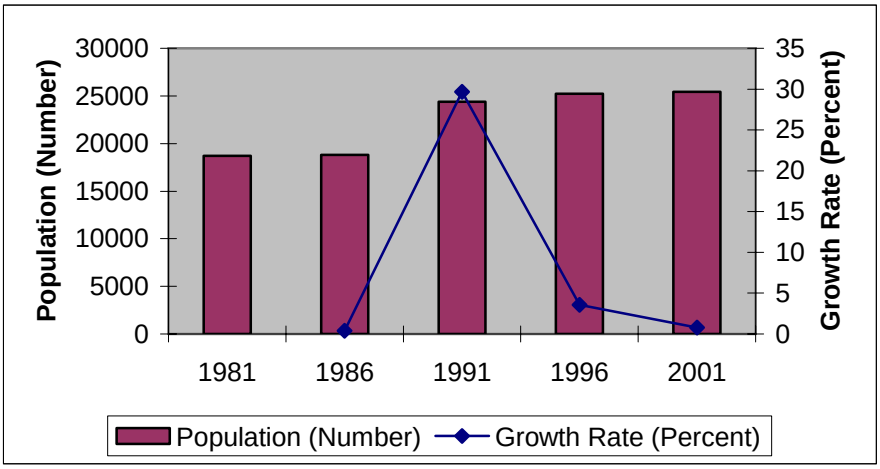
(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Geraldton, 2006

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

Figure 2 indicates the trends in population size and population growth rate for Geraldton from 1981 to 2001.[3] After exhibiting a sharp increase in population from 1986 to 1991 (30%), Geraldton's population stabilised at 25,000 residents. With recent State Government investments in the City and the more recent growth in the mining industry, the population of Geraldton is expected to grow in 2006.



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981 - 2001, Geraldton

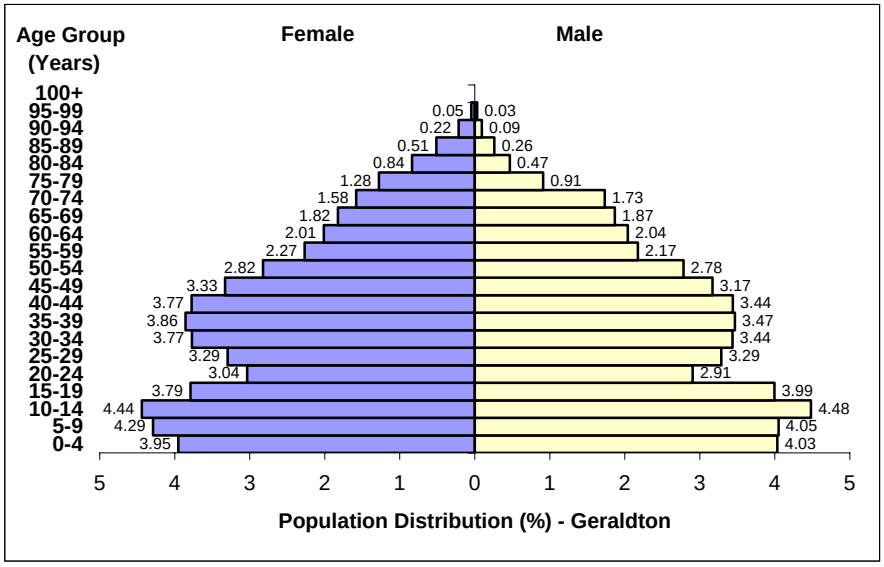
The median age of Geraldton's population is 32 years (Table 1). This compares well with the Australian median age of 32 years and the Western Australian median age of 31 years. The number of males in the population is slightly higher than females (51%) and a quarter of its population are under the age of 14 years. Geraldton has a relatively large population of indigenous Australians (9% of total residents) compared to other coastal centres between Kalbarri and Augusta. This is not surprising since historical accounts left by early European travellers and anthropologists indicated a large population of aborigines were resident in the Geraldton area and in the surrounding hinterland (Geraldton Regional Library, 2001).

According to the 2001 national census data, Geraldton's overseas-born population were primarily Europeans (31 %) followed by immigrants from Asia (11 %). New Zealanders constituted nine percent of the overseas-born residents. In terms of religious affiliation, 68% of Geraldton's population in 2001 were Christians, predominantly Catholics and Anglicans. A sizeable 18 per cent of the population reported practicing no religion while another 11 per cent did not state their religious affiliation. Thirty-two per cent of Geraldton's population in 2001 reported finishing Year 10 schooling while 26 per cent finished Year 12.

[3] Data for 1981 and 1986 refer to the population of the town of Geraldton while data from 1991 onwards refer to the population of Geraldton as an urban centre/locality. An urban centre is a population cluster of 1,000 or more people who are classified as urban for statistical purposes (1996 Census Dictionary).

Table 1: Population Indicators, 1991-2001 - Geraldton			
Urban Centre/Locality	***1991***	***1996***	***2001***
Total Resident Population	24,449	25,148	25,323
Male	12,152	12,483	12,369
Female	12,297	12,665	12,954
Population under 14 years	6,499	6,460	6,421
Population of employable age	15,850	16,160	15,936
of which: Population aged 15-19	2,105	2,027	1,980
Population over 65 years	2,100	2,528	2,966
Dependency Ratio /a	54.3	55.6	58.9
Child Dependency Ratio	41.0	40.0	40.3
Elderly Dependency Ratio	13.2	15.6	18.6
Median Years	29	30	32
% of Overseas Born	14.4	13.6	12.7
% of Indigenous Population	5.7	7.1	8.7
/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Figure 3 presents the population distribution by age in 2001, highlighting the large proportion of total residents under the age of 14 years of age. There is also a noticeable decline in the number of people between the ages of 20-35. This may be due to the limited tertiary educational facilities as well as other trades training opportunities, limited employment or perceived limited social opportunities in Geraldton as compared with larger cities such as Perth. One focus group participant (No. 025, 2005) noted that, "Geraldton remains a fantastic place to live in and it has lots to offer. But until they [local government] address infrastructure bottlenecks and adopt strategic planning, I can't see us going ahead."



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Geraldton

In 2001, 79 per cent of the households in Geraldton were characterised as family households and the remaining 21 per cent were single person's households (Table 2). However, there has been a change in the structure of family households in Geraldton since 1991. A decrease in the number of 'couple families with children' was recorded over the ten-year period between 1991 and 2001. Meanwhile, there has been an increase in the number of 'couple families without children'. The number of single parent families also increased by 46 per cent over the same ten-year period.

Table 2: Family and Household Characteristics, 1991-2001 - Geraldton

Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	3,253	3,091	2,946
Couple Family without Children	1,817	2,134	2,285
One Parent Family	904	1,015	1,318
Other Family	82	97	73
Total	6,056	6,337	6,622
Proportion of Couple Families with Children to Total Families	53.7	48.8	44.5
Proportion of Couple Families without Children to Total Families	30.0	33.7	34.5

(Source of Data: ABS 1991, 1996, and 2001 Census of Population and Housing.)

3.2 DWELLING CHARACTERISTICS

Of the estimated dwellings in the Geraldton urban centre in 2001, separate housing was popular, accounting for 78 percent of existing private dwellings (Table 3). Eleven per cent of the dwellings were 'semi-detached' (duplex) houses. Apartment culture was not common in Geraldton with only 7 per cent of estimated dwellings consisting of apartments, units or flats. Thirty-two per cent of the occupied private dwellings were fully-owned in 2001. Rented dwellings made up the same proportion. Unoccupied private dwellings made up only 11 per cent of the estimated dwellings in the Geraldton urban centre. This proportion compares well with other coastal communities.[4] Median weekly rent ranged from $100 to $149, comparable to the median weekly rent for the whole of Western Australia.

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

In 2001, 63 per cent of the Geraldton urban centre was of employable age (15-64 years). With 9,891 persons employed and 1,380 unemployed, the remaining 29 per cent of the employable population was not in the labour force (Table 4). Geraldton's unemployment rate of 12.2 per cent in 2001 was higher than the 7 per cent and 8 per cent unemployment rates recorded for Australia and Western Australia, respectively, accounted for by a mismatch between supply and demand for labour related to the skills and educational qualifications of the labour force. With the recent boom in the mining and construction sectors, it is likely that the present unemployment rate is significantly lower.

[4] The proportion of unoccupied dwellings to total dwellings is 60 per cent in Lancelin and Green Head and more than 70 per cent in Ledge Point and Seabird compared to 15-20 per cent in Dongara, Kalbarri, Mandurah, Two Rocks, Busselton and Yanchep.

Table 3: Dwelling Characteristics, 1991-2001 - Geraldton			
Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	8,116	9,116	9,521
By Structure			
Separate House	6,142	7,211	7,472
Semi Detached	1,006	997	1,045
Flat, Unit or Apartment	305	486	654
Other /a	318	357	316
Not Stated	345	65	32
By Tenure			
Fully-Owned	2,615	2,946	3,063
Being Purchased	2,197	2,521	2,785
Rented	2,825	3,300	3,070
Other	479	52	245
Not Stated		297	356
Unoccupied Private Dwellings	700	1,100	1,129
Median Monthly Housing Loan Repayments	$401-$475	n.a.	$600 - $799
Median Weekly Rent	$78-$107	n.a.	$100 - $149
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Table 4: Employment Indicators, 1991-2001 - Geraldton			
Urban Centre/Locality	***1991***	***1996***	***2001***
Employed	9,134	10,024	9,891
Male	5,183	5,641	5,383
Female	3,951	4,383	4,508
Full Time	5,847	6,370	5,995
Male	4,039	4,362	3,987
Female	1,808	2,008	2,008
Part Time	2,772	3,366	3,589
Male	841	1,116	1,225
Female	1,931	2,250	2,364
Not Stated	515	288	307
Male	303	163	171
Female	212	125	136
Unemployed	1,900	1,326	1,380
Male	1,321	857	903
Female	579	469	477
Total Labour Force	11,034	11,350	11,271
Male	6,504	6,498	6,286
Female	4,530	4,852	4,985
Unemployment Rate (in percent)	17.2	11.7	12.2
Male	20.3	13.2	14.4
Female	12.8	9.7	9.6
Labour Force Participation Rate	61.5	60.7	59.6
Male	73.4	70.5	68.5
Female	49.8	51.2	51.2
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Of the total employed population, 61 per cent were employed on a full-time capacity while 36 per cent were employed part-time. Full-time workers were predominantly male (66%) while the reverse was exhibited for part-time workers where 66 per cent were females.

Income for individuals, families and households has increased over the ten-year period from 1991 to 2001 (Table 5). Weekly income for individuals has increased by $100 since 1996, making the median weekly individual income of $300-399 earned by Geraldton workers the same as those of the rest of Australia and Western Australia. Median weekly household incomes recorded at $600-699, however, remain low compared to the Australian and Western Australian median household incomes.

Table 5: Individual, Family and Household Incomes, 1991-2001 - Geraldton

Urban Centre/Locality	*1991*	*1996*	*2001*
	Annual	*Weekly*	*Weekly*
Median Income for Individuals	$12,001-$16,000	$200-299	$300 - $399
Median Income for Families	$25,001-$30,000	n.a.	$700 - $799
Median Income for Households	$25,001-$30,000	$500-699	$600 - $699

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[5]

A large percentage of the community respondents (65%) have lived in Geraldton for more than 15 years. Almost 1 in 2 respondents said that two or more generations of their family had lived in the area. Seventy-eight per cent of respondents indicated that they would still live in Geraldton in five years time. Geraldton was considered by 85 per cent of respondents as a 'good' to 'excellent' place to live (Figure 4). 'Strong to very strong attachment' to Geraldton was reported by 61 per cent of survey respondents (Figure 5). At the neighbourhood level, 55 per cent of survey respondents said that they knew 'many to most of the people' in their neighbourhood and 61 per cent indicated that they 'nearly always' run into people they know while shopping.

Figure 6 shows that 46 per cent of survey respondents choose to live in Geraldton because of the lifestyle. Other major reasons for living in the community include the beach, ocean and the environment (37%), family connections (33%) and work opportunities (30%). As a number of Geraldton residents pointed out:

> *The lifestyle is great, living by the ocean, the climate and marine environment. The place is big enough but small enough at the same time. It is a very close knit town (FGD Participant No. 19, 2005).*

[5] This section is based on the results and analysis of the responses of 117 community residents who participated in a telephone survey conducted in late 2005. These respondents were mostly born in Australia and New Zealand (76%), live in separate houses (91%), and fully own their houses (42%). Thirty-five per cent of respondents constitute young families with children less than 14 years and 26 per cent were in the 25-34 age group. Twenty-six per cent finished Year 12 schooling. The analysis also included the responses of 29 residents who participated in semi-structured interviews and 21 participants of three Focus Group Discussions held in Geraldton in 2005.

I just like the fact that here, you can talk to people and you can walk around any time of the day or night and be safe. I like the general honesty of people and the fact that they are pretty easy-going (FGD Participant No. 20, 2005).

We are happy here, this is where work is and it's a great place to have a home, and the kids come here every now and then and we love it (Interviewee No. 060, 2005).

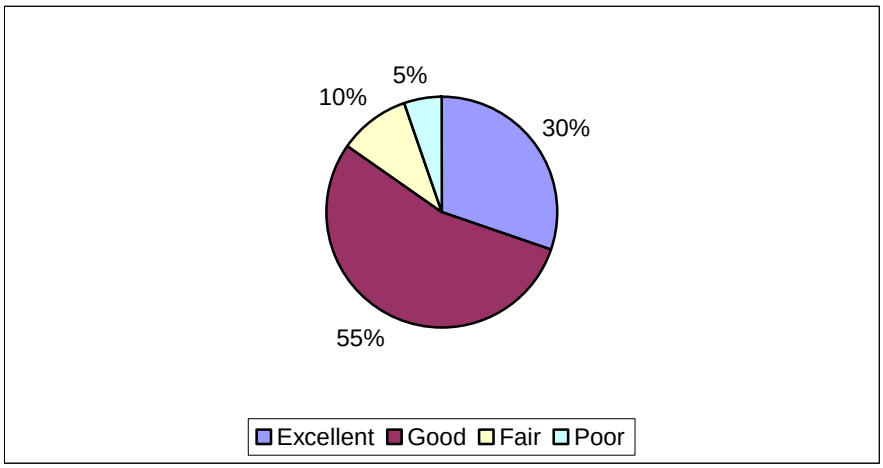


Figure 4: Respondents' Perception of Geraldton as a Place to Live

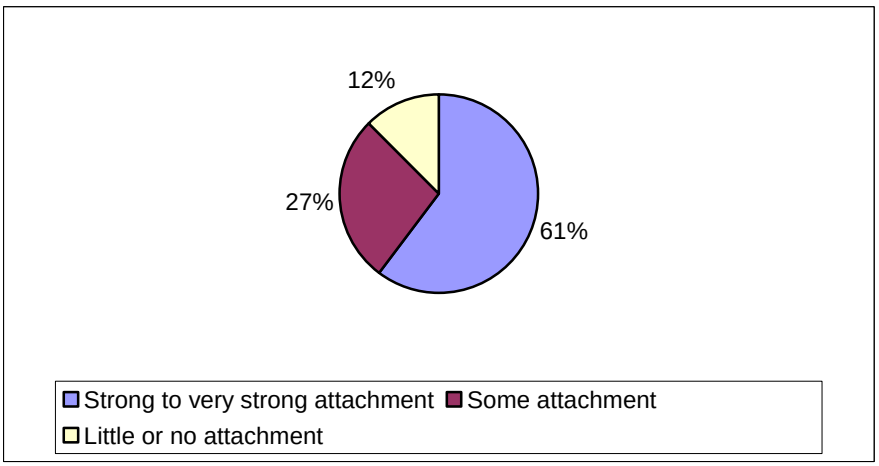


Figure 5: Respondents' Attachment to Geraldton

Within the local community, most respondents reported that they used local services for mechanical maintenance of boats, banking, dentistry and medical services. One community resident (No. 005, 2004) noted, "The facilities in Geraldton are fantastic and the town is growing." Residents in nearby communities also use the facilities in Geraldton.

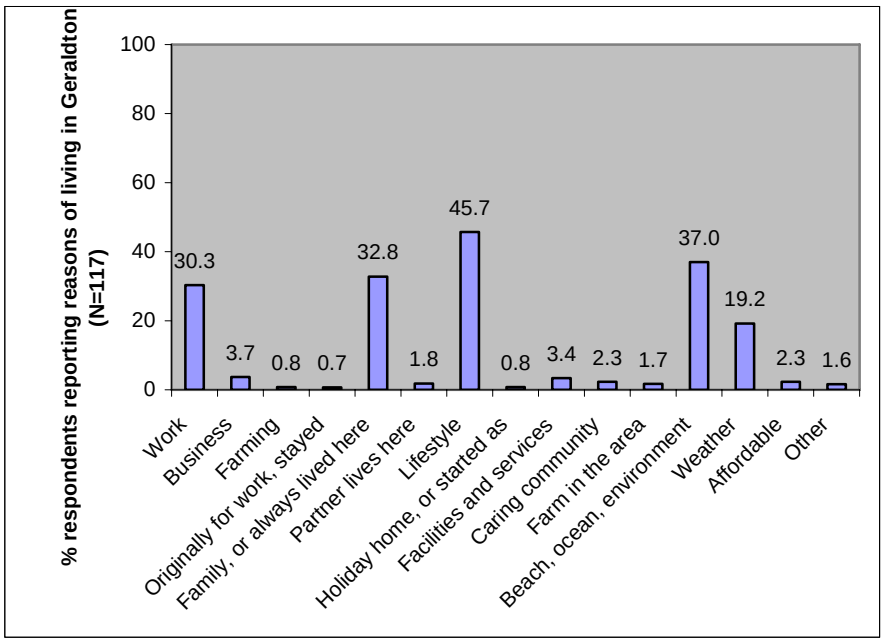


Figure 6: Reasons for Living in Geraldton

Participation of Geraldton residents in local organisations was more varied compared to the smaller communities located in the region (Figure 7). Forty-six per cent of surveyed respondents reported that they participated in local sports and recreation organisations and 41 per cent participated in local ratepayers association or the chamber of commerce. There was also greater participation in cultural, education or hobby groups (22%), professional organisations (21%) and religious groups (19%). However, 73 per cent of the respondents indicated that they had not participated in projects to develop new services, activities or facilities in the area and 9 out of 10 respondents are not involved in voluntary state emergency services.

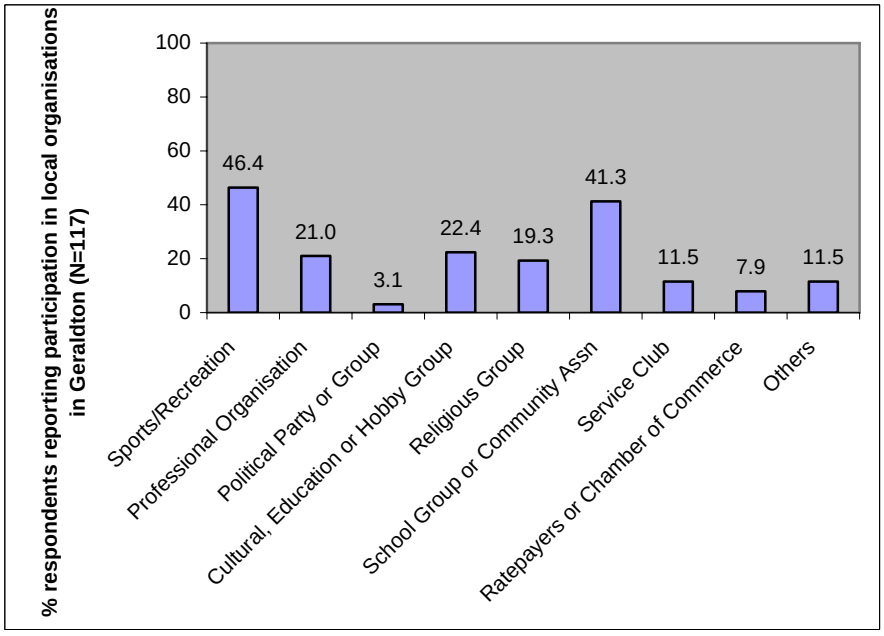


Figure 7: Participation in Local Organisations in Geraldton

The community cohesiveness score of 6.56 for Geraldton is lower than the scores of the 19 other communities included in this survey, but the residents' perception of their community still display a high degree of cohesiveness (Figures 8A and 8B).[6] There is strong local support for community events. Only 17 per cent of surveyed respondents indicated not attending any of the local community events in a year while the rest had attended a local event at least once during a year. There is a general perception that 'the community is friendly towards newcomers'. However, the close-knit feel of the community can also be viewed as exclusionary, with one community resident (No. 060, 2005) noting, "From a social perspective, it is difficult to be in Geraldton. You feel you are an interloper since it is a very cliquey community."

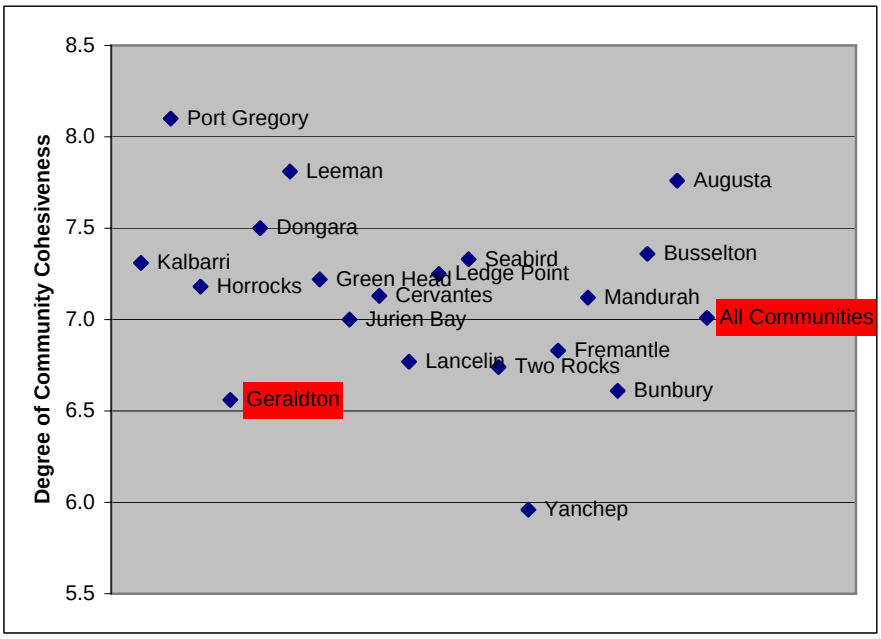


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

[6] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

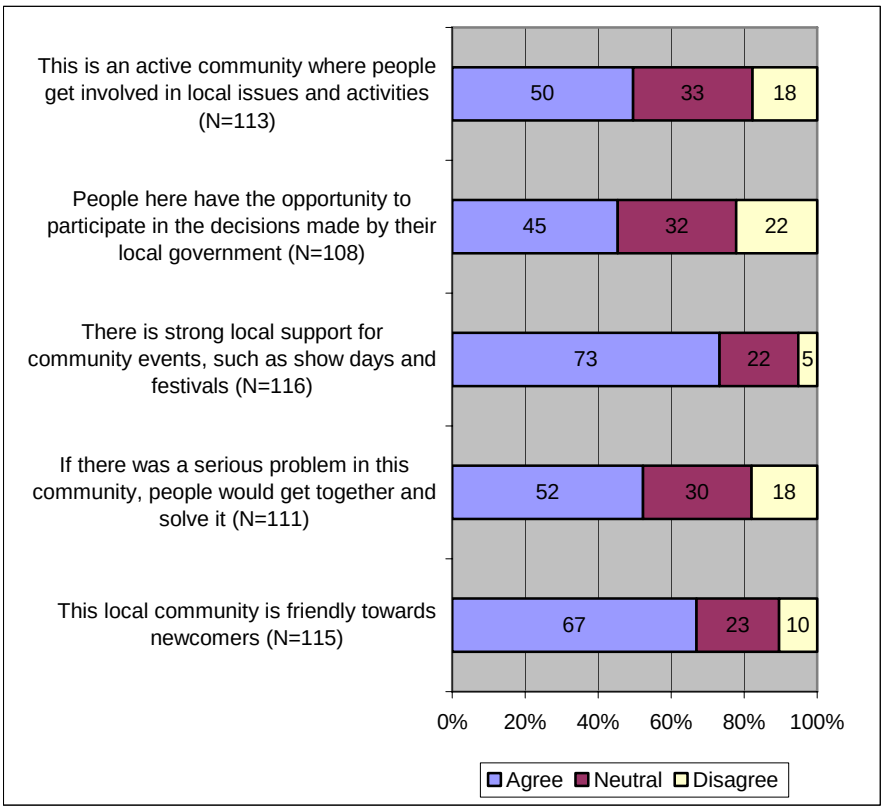


Figure 8B: Perceptions of Community Cohesiveness, Geraldton

4.0 THE LOCAL ECONOMY

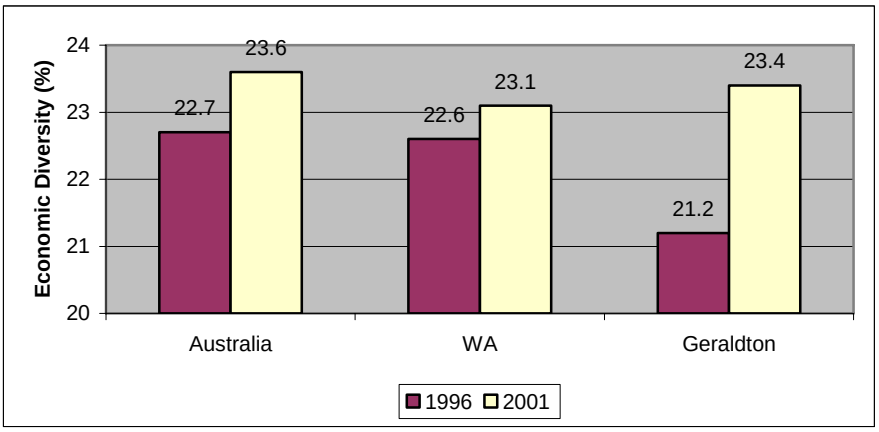
4.1 ECONOMIC ACTIVITIES

2001 employment in Geraldton was distributed across all of the different industrial divisions (Appendix 1). Retail trade provided the primary source of employment (19 %), particularly for female workforce members. The health and community services industry division in conjunction with the education industry division accounted for a further 19 per cent of total employment in the same period as Geraldton is the regional health and educational service centre for the Mid West Region. Other major employers in 2001 included the construction industry division, property and business services division, and the manufacturing division, including seafood processing.

The data on employment between 1996 and 2001 is indicative of the diversification of economic activities in Geraldton over the decade.[7] As Figure 9 shows, the Geraldton economy compared well in terms of economic diversity with the Australian and Western Australian economies. Close to 25 per cent of those employed in 2001 worked for the

[7] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

education industry subdivision, followed by food retailing and personal and household goods retailing.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 - 2001, Geraldton

In 2001, Geraldton also continued to rely on primary industries such as agriculture and fishing, despite the severe impact of the drought on agricultural production levels. Agricultural production in Geraldton's hinterland included the production of grain crops, livestock (beef and lamb), wool, olives and grapes. Fruit and vegetable crops were also produced during the period. The agriculture, forestry and fishing industry division employed 5.1 percent of Geraldton's workforce in 2001, with 30 per cent of this sector's employment related to the rock lobster fishery.

4.1.1 Fishing

Geraldton, along with Fremantle, has had a long association with the commercial fishing industry. The total estimated value of fish products taken by the 'wild capture fisheries' that have been landed in Geraldton constituted between 35 and 41 per cent of the total catch landed in the entire Mid West region (Appendix 2). In addition to the Western Rock Lobster Fishery, commercial fishing activities in the Geraldton mainland and the Abrolhos Islands include southern saucer scallops and demersal scalefish such as dhufish, pink snapper, baldchin groper, coral trout and sharks (Department of Fisheries, 2005). Pearls are also cultivated in various areas around the Abrolhos Islands.

Fishery-related facilities located in Geraldton include the Batavia Coast Marina. Officially opened in 1995, it has 50 floating pens in the harbour and a double boat launching ramp with two finger jetties (Department for Planning and Infrastructure, 2003). The marina is expected to become a major tourist attraction for Geraldton, with a walkway that provides a place for pedestrians to view the harbour and the recently opened Western Australian Museum located in the marina (Plates 3A and 3B).

The growth of the rock lobster industry has resulted in the development of other industries in Geraldton, in addition to the crayfish processing factories. These have included shipbuilding and design, bait storage, marine electronics and engine fitting and fabrication. At this studies focus group discussions held in Geraldton, participants noted that "rock lobster fishers had contributed to the community through spin-offs and flow-on work for boat building, engine fitters and fabricators, and the building industry in general" and that "crayfishing has a lot of

associated industries such as boat builders and mechanics" (Focus Group Discussion Notes, 2005). One rock lobster fisher (No. 079, 2005) noted that:

> *All the boat maintenance is usually done in Geraldton, e.g. motors, mechanics, aluminium and fibre glass repairs, marine electronics, pot building, etc. But the Abrolhos Islands' fishers support the town in other ways as well. Because we all live there, we buy white goods and employ electricians and other tradesmen since we basically have a whole other house there.*

Plates 3A and 3B: Batavia Coast Marina Harbour and the Western Australian Museum, Geraldton

(Source: Veronica Huddleston, 2005.)

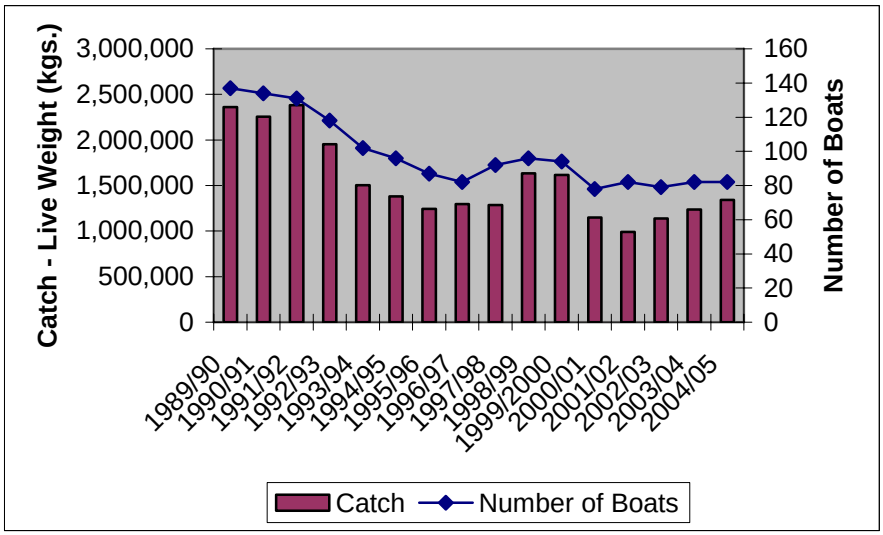
Rock lobster fishers holding an A Zone license live in permanent camps in 22 out of the 122 islands in the Abrolhos Islands from March 15 to June 30 each year.[8] Associated with these camps are air strips, jetties, moorings and pontoons (Plates 4A and 4B). Improvements to these camps include community buildings (4), schools (5), sports/play areas (2), a church and a nursing post (Western Rock Lobster Council, 2006). The Abrolhos Islands Silver Chain Health Centre provides 24 hours/7 days a week health service from March to June.

Plates 4A and 4B: Big Pigeon and North Island, The Abrolhos Islands

(Sources: Fred Tucker and John Fitzhardinge, 2005.)

[8] The number of boats licensed to fish for rock lobsters in the various zones is carefully controlled. Provided certain conditions are met, boat/license owners are able to transfer their pot entitlements between fishing zones (A, B or C zones). The zones are defined as follows: Zone A – Abrolhos Islands; Zone B – coastal fishery from 21º 44' S to 30º S excluding the A zone; Zone C – the waters between 30º south latitude and 34º 24' south latitude excluding all waters on the south coast east of 115º 4' east longitude; and Big Bank (Department of Fisheries, 2002: 5).

In December 2004, the Geraldton rock lobster fleet directly employed 14 per cent of the total number of persons engaged in the rock lobster fishery (Appendix 3). This number has decreased over time as the number of boats in the Geraldton fleet declined. The number of boats declined from 136 in 1989/90 to 82 in the 2004/05 fishing season (Figure 10). Consequently, the total live weight catch landed in Geraldton dropped from 2,359 tonnes to 1,343 tonnes during the same period.



(Source of Data: Department of Fisheries, Western Australia.)

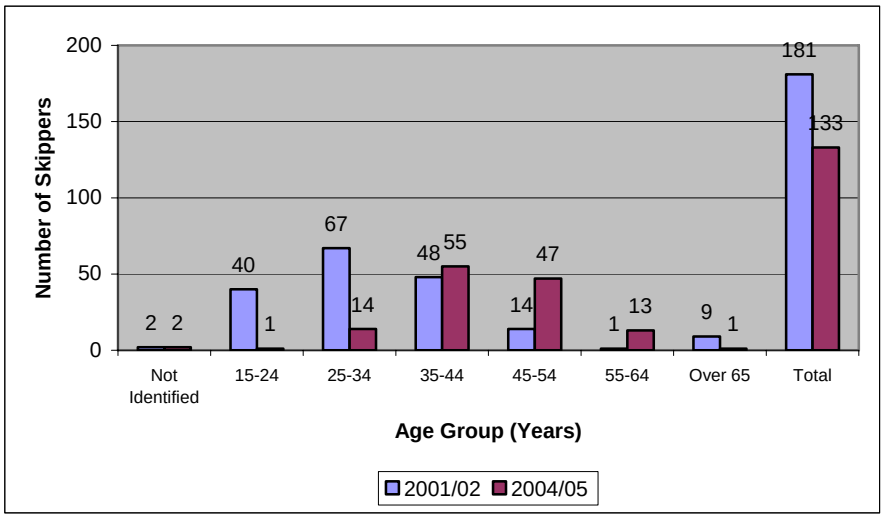
Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 – 2004/05, Geraldton

The number of skippers residing in Geraldton has also declined from 181 skippers in 2001/02 to 133 skippers in the 2004/05 fishery season (Figure 11). Three-fourths of the remaining skippers operate in the A Zone and the remaining 25 per cent operate in the B Zone. Utilising between 90 and 130 pots during the season, 35 per cent do not lease additional pots while 15 per cent lease over a 100 additional pots. Of the skippers who reside in Geraldton, 64 per cent use Geraldton as their anchorage. The rest of the skippers use Freshwater Point, Seven Mile Beach and anchorages in other communities as far south as Leeman and as far north as Kalbarri. One rock lobster fisher (Community Workshop Notes, 2006) noted that:

> *The experienced and older fishers are moving their operations back to the bigger towns like Geraldton or Dongara because there is nothing anymore in the smaller communities that fishers can relate to. Our kids have grown up, they're not babies anymore to play on the beach, they now have their own lives, and we're the ones who are not having a social life in the smaller communities.*

The majority of skippers are in the 35-44 and 45-54 age groups (77%). During the community workshop held in Geraldton in July 2006, it was noted that (Community Workshop Notes, 2006):

[The fishery] had lost guys who were family men who put the kids through school because we used to have good incomes. But the industry has gone through a rough couple of years when prices dropped and the income levels dropped. [As a result,] the guys who have long been established in the industry have moved on to more secure jobs. These days, we're ending up with more of the lifestyle type of guys.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Geraldton, 2001/02 and 2004/05

The financial and physical stress associated with fishing could also account to the decline in the number of skippers and deckhands in the fishery. One rock lobster fisher (No. 085, 2005) noted that, "Just wondering if at the end of the season, you're going to make enough money to pay all your loans, pay your license and your insurance, and your fuel bill, can contribute to the stress you face with fishing." One focus group participant (No, 15, 2005) noted that "It's a hard job being a deckhand and it is a dangerous job. So if the money is not there, they're not going to do it."

Despite the declining numbers engaged in the fishery, survey respondents in Geraldton have high levels of agreement that 'the rock lobster fishery and processing sector is a good source of employment for workers in the community' (Figure 12). Geraldton respondents also gave relatively higher rating of agreement to the statement that 'the economic viability of the community is closely linked to the viability of the rock lobster industry'.

Some respondents felt that the industry requires more regulation (6%) and a further 2 per cent advocated that the introduction of quotas would be a better way of regulating the size of the catch. There was also a general agreement (65 %) among survey respondents that there was a negative effect on local businesses caused by the declining number of commercial rock lobster boats in service. As one rock lobster fisher (No. 078, 2005) noted:

The flow-on from fishing is huge is this town. When the season finishes at the Islands, the taxis automatically get more business, there's more socialising that is done in terms of functions [/get-togethers] when we get back from the Islands. Also, many fishers have financial investments in the town either on other businesses or real estate.

While there were concerns for the future of the industry, 48 per cent of surveyed respondents indicated that they would encourage young people to work in the rock lobster industry (Figure 13). Participants to the community workshop nevertheless noted that most fishers who have sons encourage them to pursue trades and gain experience in them before taking up fishing as an occupation (Community Workshop Notes, 2006).

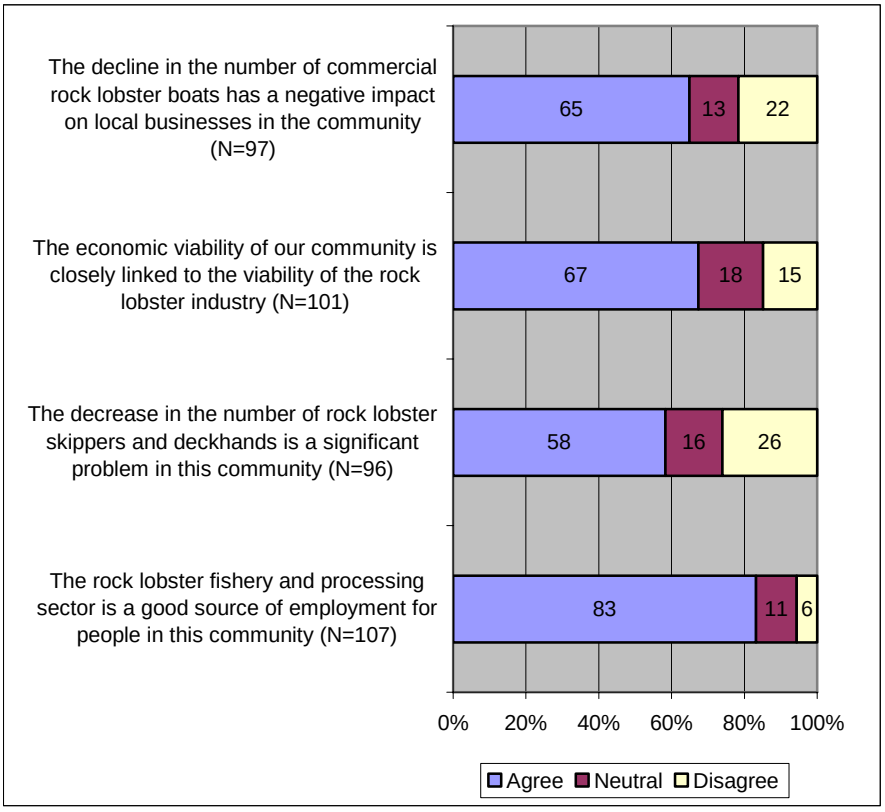


Figure 12: Perceptions of the Rock Lobster Industry, Geraldton

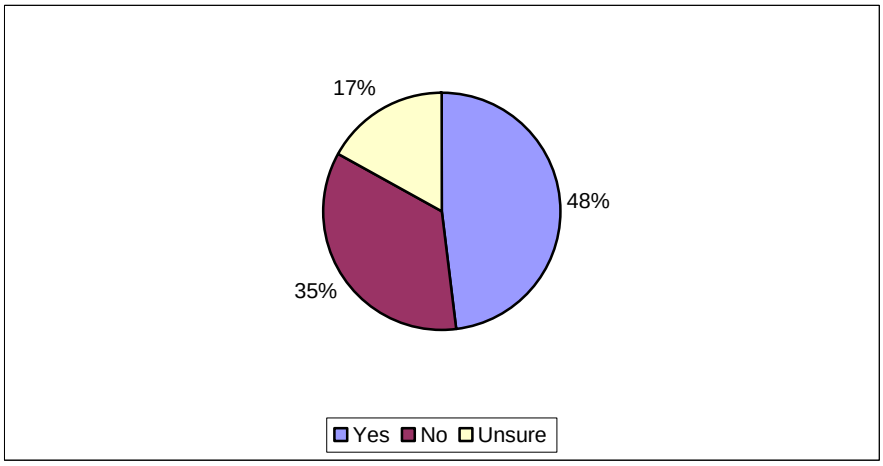


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Geraldton

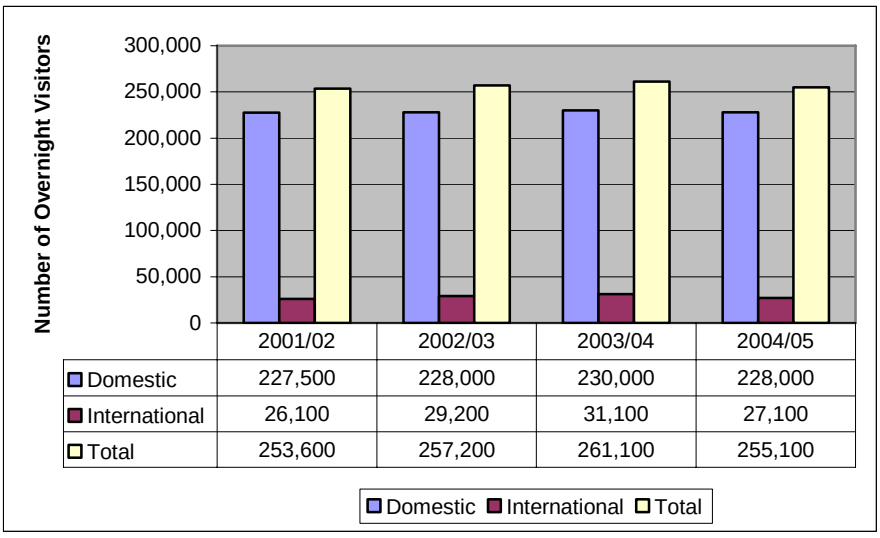
4.1.2 Tourism

Geraldton has a growing tourism industry which is actively pursued by local businesses and supported by local officials. Recent developments on the foreshore, e.g. the Geraldton Marina, and in the central business district have contributed to increasing numbers of tourist visitors to Geraldton. Geraldton offers a range of tourist attractions ranging from historic buildings and water sports activities, e.g. windsurfing and kite surfing, to tours along Fisherman's Wharf, live cray factory tours and aquatic and recreational activities in the Abrolhos Islands (Plates 5A, 5B and 5C).

Plates 5A, 5B and 5C: Bill Sewell Complex, Windsurfing and Live Cray Factory Tour

(Sources: <http://www.geraldtontourist.com.au/ and htpp://www.brolos.com.au/>, cited on 22 February 2007.)

Data collected from domestic and international overnight visitors to the Geraldton show that the majority of tourists are domestic visitors (Figure 14). In 2004/05, 44 per cent of overnight tourists came to Geraldton for holiday and leisure purposes while 32 per cent visited friends and family/relatives (Appendix 4). The rest of the tourists came for business and other purposes.



	2001/02	2002/03	2003/04	2004/05
Domestic	227,500	228,000	230,000	228,000
International	26,100	29,200	31,100	27,100
Total	253,600	257,200	261,100	255,100

(Source of Data: Tourism Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 – 2004/05 – City of Geraldton

Participants in the focus group discussions held in Geraldton echoed the sentiments expressed by a majority of surveyed communities along the northern coasts that 'the coast around the community is suitable for more tourism activities than we have at present' (Figure 15). In one of the focus group discussions, it was noted that "tourism is on the increase. There is an attitude change among locals and a greater acceptance of tourism as an industry for the town" (Focus Group Discussion Notes, 2005).

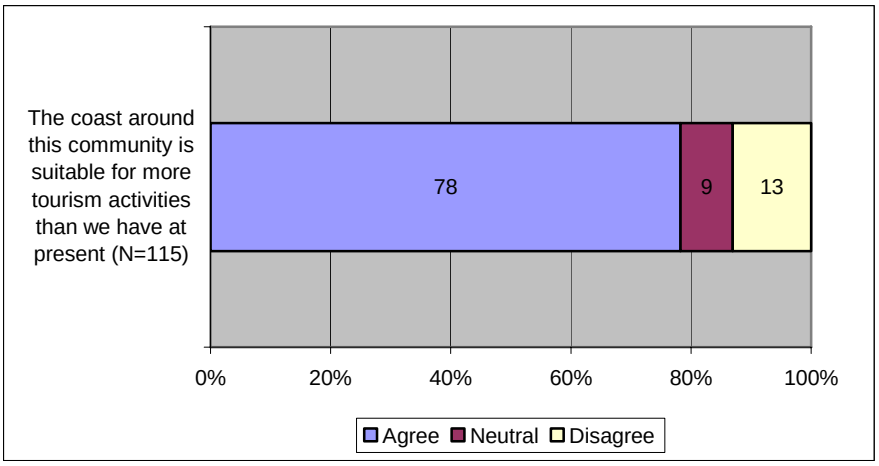


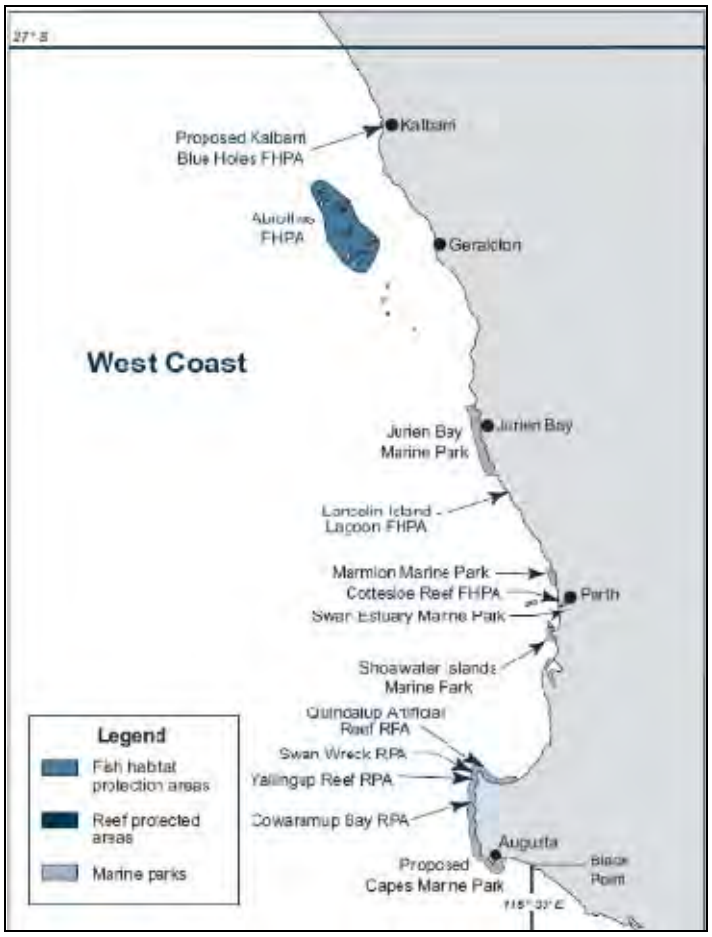
Figure 15: Perceptions of Tourism Potential, Geraldton

With respect to tourism activities in the Abrolhos Islands, visitors to the islands are mostly invitees or family members of commercial fishing license holders and those who arrive on diving or fishing charters. In order to ensure that the marine habitat and bio-diversity are sustained, specific Fish Habitat Protection Areas have been identified in Western Australia, including in the Abrolhos Islands (Figure 16). In 2003/04, recommendations for the development of a land-based tourism facility in the Abrolhos Islands were implemented.

4.1.3 Business and Commerce

A wide range of business and services related activities are carried out in Geraldton. These include banking, investment and financial services, building and home maintenance supplies, real estate, wholesale and retail enterprises along with hospitality and accommodation facilities (Plate 6A). Retail trade is a major economic function in Geraldton and it contributes $405.6 million annually to the local economy (Department of Local Government and Regional Development, 2001) [DLGRD]. Geraldton is also home to many manufacturing activities servicing the fishing, agriculture and mining industries, including boat-building, mineral sands processing, phosphate works and quicklime plants (Plate 6B).

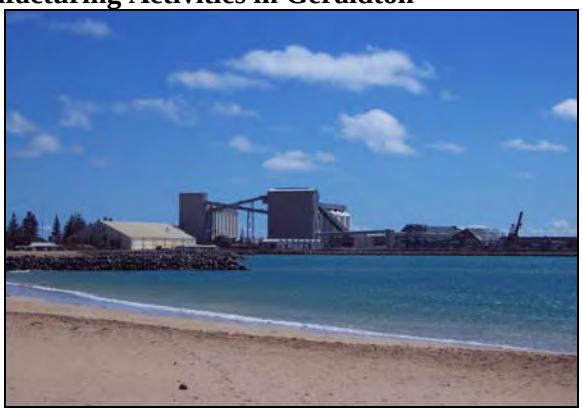
Light industrial land is available in various lot sizes in the Geraldton/Greenough area. Geraldton's major industrial estate, the Narngulu Industrial Estate, is located just five kilometres southeast of the city. Established in 1980, the estate has a total area of 741 hectares, of which 541 hectares cater for general industry and the remainder have been set aside for more noxious and hazardous industrial uses (DLGRD, 2001).



(Source: <http://www.fish.wa.gov.au/docs/sof/2003/sof20032004-0202.pdf>)

Figure 16: Current and Proposed Areas of Protected Fish Habitat in the West Coast Bioregion

Plates 6A and 6B: Retail and Manufacturing Activities in Geraldton



(Source: Veronica Huddleston, 2005.)

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

The region is serviced with a network of major sealed roads that connect Geraldton to Perth, the North West and the community's economic hinterland. Of particular importance was the sealing of east-west road under the Transform WA Program. This road now links the resource rich hinterland with Geraldton and the Geraldton Port (Plate 7). Geraldton is the regional hub for the rail network, linking the port with producers in the inland region. Heavy haulage traffic through Geraldton and along the Geraldton foreshore has prompted recent efforts to restructure Geraldton's road network, diverting port and heavy industrial traffic around the city centre.

With major redevelopment undertaken in recent years, the Port of Geraldton is now one of Australia's busiest ports (Geraldton Newspapers Ltd., 2005:33). Activities in the port include the export of agricultural and mineral products and the import of fertiliser, mineral sands and petroleum products.

Plate 7: Geraldton Port Facilities

(Source: Geraldton Southern Transport Corridor Project Authority and Geraldton City Council, 2004.)

Westrail operates the region's railway service from its main depot at Narngulu, five kilometres from the City of Geraldton. Rail transport is now confined to the bulk haulage of products such as grain, fertiliser, mineral sands, talc, coal and sodium cyanide. Geraldton has a regional airport with Skywest and Skippers operating daily services between Perth and Geraldton and to the North West.

4.2.2 Water and Electricity

Geraldton has a relatively secure supply of gas, water and electricity. It is serviced by the Mid West Gas Pipeline operating between Geraldton and Mount Magnet. The Water Corporation operates water supply schemes in Geraldton, sourcing most of its water from underground aquifers located to the south of Geraldton. Geraldton's electricity supply comes from a 132 kilovolts substation in Geraldton which also provides electricity to the smaller communities in Geraldton's hinterland.

4.2.3 Communications

Geraldton has an adequate telecommunications system. Most residents have access to land based telecommunications services along with mobile phone coverage. CDMA coverage is available to the smaller centres in Geraldton's hinterland. There are a number of internet providers servicing Geraldton, and ADSL is available. 2001 census data indicated that nearly one third of Geraldton's population used a computer at home and had access to internet facilities. The commercial fishing fleet uses satellite navigation equipment as well as sea phone facilities for communications between Abrolhos Island and Geraldton. Ten per cent of the households in the Mid West require special equipment such as satellite receptors or aerials with masthead amplifier to receive radio and television communications (Telecommunications, 2004).

An ABC radio station is located in Geraldton as well as two commercial FM stations, broadcasting to Geraldton and neighbouring towns. State and national newspapers as well as local newspapers such as the Geraldton Guardian, Mid West Times and Yamaji News are available daily in Geraldton.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

The City of Geraldton has centre town offices that provide a range of community services (Plate 8). As a major service centre for many inland and smaller coastal communities, Geraldton is the location for a large number of State and Commonwealth agencies. In addition, Geraldton has a library, an art gallery, a local theatre and environmental and infrastructure services inclusive of environmental health officers. The local government authority also maintains public recreational areas and beaches.

Plate 8: Geraldton Civic Centre

(Source: <http://www.geraldton.wa.gov.au/>, cited on 22 February 2007.)

4.3.2 Education and Health[9]

[9] The information in this section is based on the *Batavia Coast Strategy – Coastal Planning Group*, Landvision, 2004 and *Geraldton Health Service Annual Report 2001/2002*, Department of Health, 2002.

Geraldton's educational facilities include: 15 primary schools (5 of which are private); 4 secondary schools (3 private and a 2-campus government school); and a regional TAFE campus. Given its youthful population structure, Geraldton has a high enrolment rate at primary school level and secondary school level. The proportion of the adult population with tertiary level degree or diploma, however, was lower than the State's average of 28 per cent. This could be explained by the limited access to university facilities in Geraldton which will hopefully be addressed by recent efforts to establish a combined universities campus in the community.

The importance of the marine resources in the Mid West region has prompted the development of a Fishing Industry Education Training Centre by the Central West College of Tertiary and Further Education (TAFE) and the WA Department of Training. This is being complemented by the establishment of a Multi-Purpose Marine Centre by the Mid West Development Commission and the Department of Commerce and Trade.

Geraldton has a large regional hospital campus with 65 beds, comprising accident and emergency, medical, surgical, children's, maternity, intensive nursing, chemotherapy unit, day surgery and a renal dialysis unit. Allied health services (speech pathology, physiotherapy, occupational therapy, pharmacy and audiology) are also available at the hospital. There is also a private hospital (St John of God Hospital) with 60 beds that offer medical, surgical, acute care and palliative care. In addition to hospitals, there is an adjoining specialist centre which includes: three general surgeons, orthopaedic surgeon, obstetrician and gynaecologist, physician and anaesthetist and visiting specialists. Geraldton has 31 visiting specialists, specialising in a wide range of medical disciplines who visit Geraldton at least once a month. There are 28 private general practitioners in Geraldton. The community also provides medical services specifically catering to aboriginal communities and a Community Health and Development Centre.

4.3.3 Law and Order

The Geraldton police sub-district covers the regional areas of the Mid West Region. This includes the City of Geraldton, the Shire of Greenough, part of the Shire of Chapman Valley and the Abrolhos Islands. Geraldton's crime rate is substantially higher than can be found in many other areas of the Mid West and Gascoyne District as it is a major centre with a higher population.

Geraldton experiences high rates of personal assault crimes representing 22 percent of the Police District's crime in this category. There are also higher reported rates of stolen vehicles, robbery and burglary (Appendix 5). One rock lobster fisher (No. 024, 2004) noted that "with the influx of people from the inland towns, there seem to be more law and order infractions and anti-social behaviour in Geraldton [such as] physical abuse, drug use and stealing."

Appendix 1: Employment by Industry, 1991-2001 - Geraldton									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	372	108	480	372	122	494	381	119	500
of which: Rock Lobster Fishing			--			57			160
Mining	229	42	271	212	26	238	261	31	292
Manufacturing	394	181	575	480	150	630	512	117	629
of which: Seafood Processing			--			44			26
Electricity, Gas and Water Supply	149	9	158	115	18	133	87	7	94
Construction	614	100	714	753	126	879	683	102	785
Wholesale Trade	1,105	1,011	2,116	435	182	617	394	153	547
Retail Trade				790	921	1,711	894	1,011	1,905
Accommodation, Cafes and Restaurants	Not a separate sector			136	330	466	144	359	503
Transport and Storage	437	73	510	420	84	504	349	77	426
Communication Services	83	63	146	92	26	118	67	33	100
Finance and Insurance	296	367	663	99	151	250	78	120	198
Property and Business Services				448	327	775	393	361	754
Government Administration and Defence	214	104	318	246	177	423	226	202	428
Education	Not a separate sector			267	567	834	245	598	843
Health and Community Services	624	1,216	1,840	182	702	884	180	802	982
Cultural and Recreational Services	259	437	696	64	57	121	72	89	161
Personal and Other Services				244	210	454	266	199	465
Non-classified/Non-stated	468	345	813	287	202	489	141	124	265
Total for All Industries	5,244	4,056	9,300	5,642	4,378	10,020	5,373	4,504	9,877
Share of Agriculture, Forestry and Fishery to Total Employment	7.1	2.7	5.2	6.6	2.8	4.9	7.1	2.6	5.1
Share of Top Three Sectors to Total Employment	44.7	65.7	50.2	35.9	50.0	34.7	38.9	53.5	37.8
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/*a, 2002/03 - 2004/05* - Western Australia and the Mid West Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Mid West Region	2,075	2,510	2,512	5,628	6,495	6,159
of which: Geraldton's Share (%)	78.5	83.2	85.5	59.3	66.1	68.7
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Mid West Region	53	15	13	694	196	170
of which: Geraldton's Share (%)	53.5	24.6	22.8	69.3	39.3	37.5
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Mid West Region	4,932	5,385	5,425	120,582	102,322	116,632
of which: Geraldton's Share (%)	33.7	31.8	32.0	33.7	31.8	32.0
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Mid West Region	5,851	615	5,345	20,122	2,364	19,307
of which: Geraldton's Share (%)	82.8	85.5	89.7	81.6	82.6	88.3
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Mid West Region	12,936	8,552	13,308	147,324	111,685	142,409
of which: Geraldton's Share (%)	62.8	51.2	60.9	41.3	35.2	38.8

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Geraldton and the Abrolhos Islands						
	1991/1992	*1996/1997*	*2001/2002*	*2002/2003*	*2003/2004*	*2004/2005*
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Geraldton	2,381,094	1,294,713	989,204	1,138,404	1,235,946	1,343,424
Abrolhos Islands	438,532	1,350,111	1,157,549	1,338,477	1,350,830	1,411,364
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Geraldton	2,475,025	1,268,727	1,161,050	1,141,967	1,102,977	1,165,884
Abrolhos Islands	401,338	925,016	911,252	963,536	931,541	881,402
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Geraldton	131	82	82	79	82	82
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Geraldton	314	202	213	205	198	211
(Source of Data: Department of Fisheries, Western Australia.)						

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - City of Geraldton								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	82,000	36.0	81,000	35.5	86,000	37.4	89,000	39.0
Visiting Friends/Relatives	61,500	27.0	58,800	25.8	63,000	27.4	73,000	32.0
Business /c	58,000	25.5	65,000	28.5	57,500	25.0	41,000	18.0
Other /d	11,500	5.1	11,500	5.0	13,000	5.7	13,500	5.9
Total	227,500	100.0	228,000	100.0	230,000	100.0	228,000	100.0
International Visitors								
Holiday/Leisure	23,500	90.0	26,700	91.4	28,700	92.3	23,500	86.7
Visiting Friends/Relatives	1,100	4.2	1,200	4.1	1,200	3.9	2,100	7.7
Business	700	2.7	700	2.4	700	2.3	600	2.2
Other	900	3.4	700	2.4	500	1.6	900	3.3
Total	26,100	100.0	29,200	100.0	31,100	100.0	27,100	100.0
Total Visitors								
Holiday/Leisure	105,500	41.6	107,700	41.9	114,700	43.9	112,500	44.1
Visiting Friends/Relatives	62,600	24.7	59,700	23.2	64,200	24.6	75,100	29.4
Business	58,700	23.1	65,700	25.5	58,200	22.3	41,600	16.3
Other	12,400	4.9	12,200	4.7	13,500	5.2	14,400	5.6
Total	253,600	100.0	257,200	100.0	261,100	100.0	255,100	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Geraldton				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Mid-West/Gascoyne District	1,045	1,147	1,155	1,348
of which: Geraldton (number)	216	253	255	359
as percent of the District	20.7	22.1	22.1	26.6
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Mid-West/Gascoyne District	1,417	1,375	1,343	1,213
of which: Geraldton (number)	206	219	178	228
as percent of the District	14.5	15.9	13.3	18.8
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Mid-West/Gascoyne District	815	667	661	569
of which: Geraldton (number)	154	109	87	105
as percent of the District	18.9	16.3	13.2	18.5
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Mid-West/Gascoyne District	36	40	43	25
of which: Geraldton (number)	15	18	13	5
as percent of the District	41.7	45.0	30.2	20.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Mid-West/Gascoyne District	234	206	222	238
of which: Geraldton (number)	48	36	28	54
as percent of the District	20.5	17.5	12.6	22.7

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

DONGARA

1.0 GEOGRAPHIC SETTING

Dongara (and its twin town Port Denison) is situated at the mouth of the Irwin River on Arunine Bay. Located at latitude 29° 15' South and longitude 114° 56' East, it is 351 kilometres northwest of Perth and 75 kilometres south of Geraldton.

Dongara experiences a mild, Mediterranean climate with cool, wet winters and dry, hot summers. The annual rainfall is approximately 450 millimetres falling mainly between May and September. The mean daily temperature ranges from a maximum of 24 degrees to a minimum of 14.5 degrees.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[1]

In 1839, Captain George Grey led a shipping expedition from the Swan River Colony to the areas north of the Murchison River. When his boats and supplies were destroyed in a cyclone, Captain Grey and his party were forced to walk from Gantheaume Bay (near Kalbarri) to Perth. The ill-fated expedition resulted in the exploration of the pastoral country and the naming of the Irwin River.[2]

Captain Grey's journey and his subsequent reports of good land encouraged Augustus Charles Gregory and Francis and Henry Churchman to travel north from Perth. In 1846, the Gregory brothers found good grazing land and a coal seam in the Mingenew area along the Irwin River. In the late 1840s, the area was explored further by Lieutenant Helpmann who, upon following the Irwin River to its source, reached the present day sites of Dongara and Port Denison.

The first settlers arrived in Dongara in 1850, coming into contact with the Wattandee, the Aboriginal people of the region. The town site was surveyed in 1852 and was named 'Dhungarra', a local Aborigine word meaning "meeting place for seals".

The development of the town was hindered by its great distance from the Swan Colony and the slowness of available transport at that time. The loss of the sailing ship 'Leander' in 1853 when it struck a reef at Dongara (now bearing its name) also played a part in hindering the settlement of the area. The small settlement slowly grew throughout the 1860s as ex-convicts settled in the area to farm the river flats. A flour mill was built in 1865 to accommodate the areas growing wheat harvest. The following year, a road from Dongara to Mingenew was completed and a jetty was built to the south of Dongara. The port, known at that time as Port Irwin and later renamed Port Denison, resulted in greater access into the area. Lanterns were lit at night to guide ships through the dangerous off-shore reefs.

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[1] This section is based on information from *Shire of Irwin – History*, <http://www.irwin.wa.gov.au/our_council/history>, (cited on 13 October 2004), *Dongara*, <http://www.smh.com.au/news/Western-Australia/Dongara/2005/02/17/1108500208401.html>, (cited 23 February 2007), and *The Western Rock Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999.

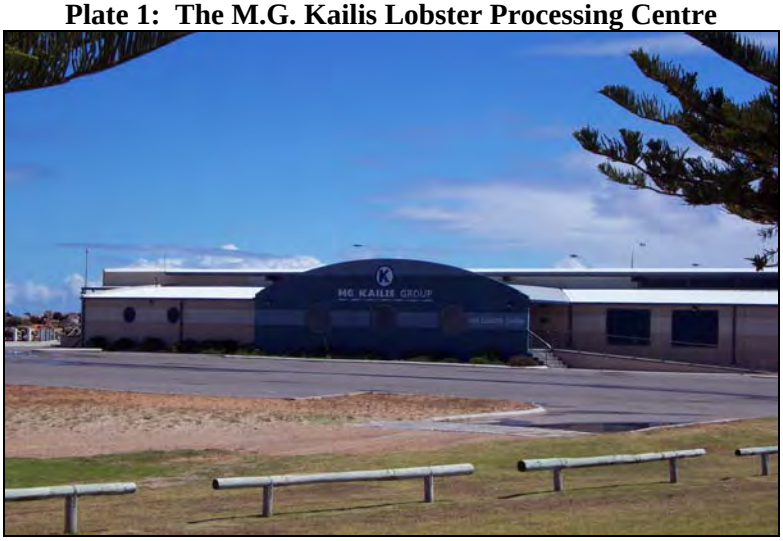
[2] Captain Grey named the Irwin River after his friend Major Frederick Chidley Irwin who was, at that time, the commandant of the Swan River settlement.

In 1871, the Irwin Road Board was formed. In its early years, meetings were held at the Courthouse, established in Dongara, along with a school and a police station, in the early 1870s. The community continued to grow slowly and by the late 1880s, an Anglican Church (St. John the Baptist) and a Methodist Church were constructed in the community. Developments were not limited to Dongara but extended as well to Port Denison. When a bridge was built between Dongara and Port Denison in 1889, the two towns became known as the 'twin-towns' of Dongara-Port Denison.

Port Denison served as a seaport for the agricultural products of the region until the Midland Railway line was built. When Geraldton became the regional centre of the Mid West region, the primary attraction of Dongara and Port Denison shifted to being a summer holiday retreat for local farmers, with fishing and crayfishing as holiday pastimes. The railway provided a convenient avenue for selling 'cackas' or undersized crayfish and Dongara developed a wide reputation for its 'unique' small and sweet 'species called 'Dongara crays'.[3]

The development of the crayfishing industry brought boom times not only to the established centres of Geraldton and Fremantle but also to smaller villages such as Dongara. A second jetty was built in Port Denison in 1959. In 1962, M.G. Kailis took over the ailing local crayfishing factory established by the Yamanis brothers in the town in the late 1950s. After convincing local fishers to work for them, the Kailis family became benefactors of the town for many decades, culminating in the construction of a multi-million dollar live lobster processing centre in Dongara (Plate 1). Fishing families made Dongara as their permanent base, some local farmers turned fishers, and support industries (e.g. ship's chandlers and boat builders) have appeared in the community.

Plate 1: The M.G. Kailis Lobster Processing Centre



(Source: Veronica Huddleston, 2005.)

A third jetty was completed in Port Denison, as part of their marina re-development, in 1979. The Port Denison marina is one of the largest in Western Australia, with 80 commercial moorings and 23 recreational moorings in the harbour (Plate 2A). A commercial jinker ramp, constructed and administered by the Dongara Professional Fisherman's Association (PFA), is located near the service jetty (Department for Planning and Infrastructure, 2003).

[3] At the time, the public did not generally view the taking of undersized crayfish as a serious offence and there was little stigma attached to being caught, as, after all, most in the community enjoyed a cheap or bartered sack of 'cackas' (Grey, 1999, p.116).

The Dongara PFA in cooperation with the local community also re-developed an old customs shed into a community centre on the waterfront (Plate 2B). Financed through the raffling of lobster pot licenses, the Fishermen's Hall was cited during the Focus Group Discussion held in Dongara in 2005 as "one of the concrete contributions of crayfishers. It is one of the few facilities [in Dongara] that can be rented by families and groups for functions and parties" (Focus Group Discussion Notes, 2005).

Plates 2A and 2B: The Port Denison Boat Harbour and the Dongara Fishermen's Hall

(Source: Veronica Huddleston, 2005.)

With the growth of other industries and the closure of the M.G. Kailis factory in 2005, the town is no longer solely reliant on the fishing industry. There is recognition, nonetheless, of the role that crayfishing played in the development of the town as evidenced by the rock lobster on a boat statue constructed at the entrance to the town (Plate 3). The town map of Dongara-Port Denison features the location of social and fishery-related infrastructure facilities (Figure 1).

Plate 3: Lobster on the Boat Statue in Dongara

(Source: Veronica Huddleston, 2005.)

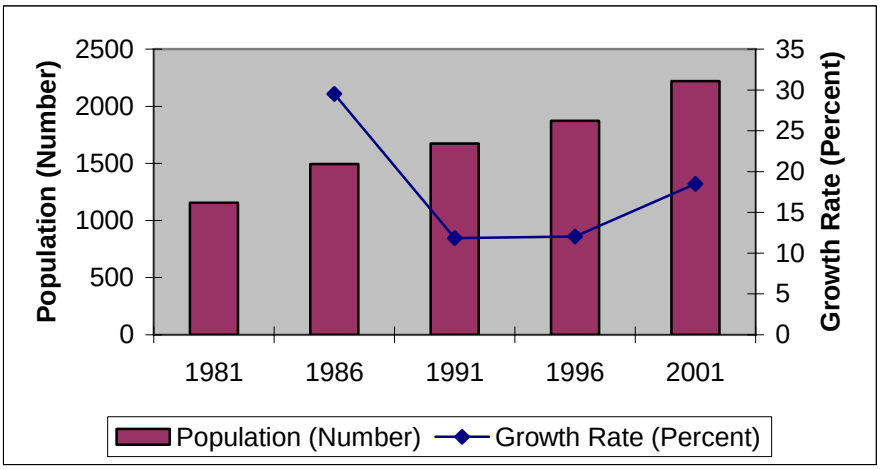
(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Dongara–Port Denison, 2006

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

Improved facilities have made Dongara an attractive holiday and retirement village and have resulted in a steady increase in its population since 1981 (Figure 2).[4] There was a 30 per cent increase in total population between 1981 and 1986 that, subsequently, stabilized to a 12 per cent growth rate between 1986 and 1996. Dongara registered a sharp increase (18 %) in population between 1996 and 2001 as it continued to attract families wishing to take advantage of the secondary education offered in the town and its proximity to Geraldton.



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981-2001, Dongara

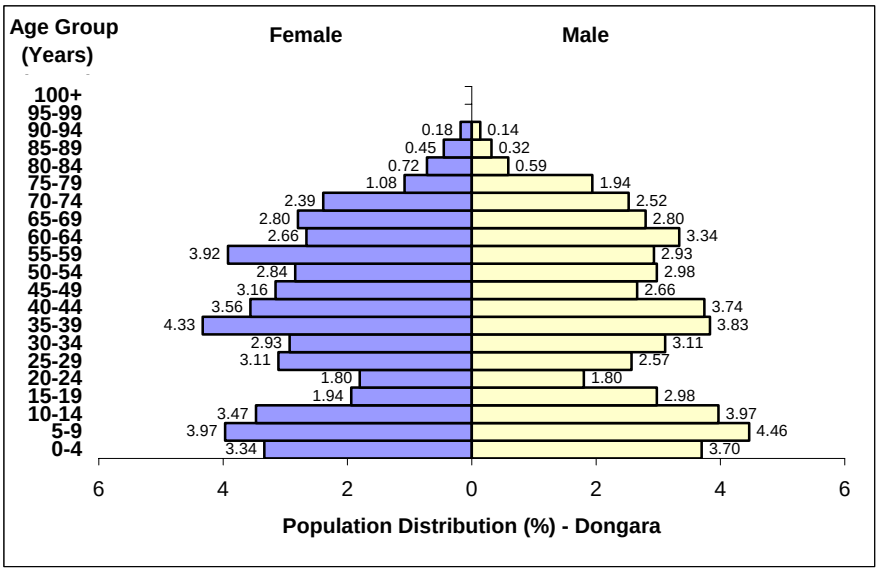
The slight predominance of males in Dongara's population exhibited in the 1991 Census continued in 2001, with males constituting 51 per cent of the total population (Table 1). The number of residents over 65 years old continued to grow, albeit at a slower growth rate of 14 per cent compared to the 49 per cent growth it exhibited between 1991 and 1996. Between 1996 and 2001, the number of residents less than 15 years of age increased by 23 per cent. The median age of Dongara's residents is 38 years, higher than the Australian median age of 32 years and the Western Australian median age of 31 years.

In 2001, the majority of the population in Dongara were born in Australia (86%). Fourteen per cent of the population of Dongara in 2001 was born overseas. Those born in the United Kingdom and New Zealand constituted the majority of overseas-born residents (58%). The rest were born in countries such as Germany, the Netherlands, Canada and Ireland as well as in Asian countries such as Indonesia, the Philippines and Singapore. Two per cent of the population in the Dongara urban centre was recorded as being of Indigenous Australian descent.

[4] Census data refer to the population of Dongara as an urban centre/locality (UC/L). An urban cluster is a population cluster of 1,000 or more people who are classified as urban for statistical purposes (1996 Census Dictionary). The Dongara UCL consists of census collection districts 5021802 to 5021806 and covers both towns of Dongara and Port Denison.

Table 1: Population Indicators, 1991-2001 - Dongara			
Urban Centre/Locality	***1991***	***1996***	***2001***
Total Resident Population	1,649	1,868	2,196
Male	850	960	1,117
Female	799	908	1,079
Population under 15 years	390	413	508
Population of employable age	1,051	1,146	1,335
of which: Population aged 15-19	80	76	109
Population over 65 years	208	309	353
Dependency Ratio /a	56.9	63.0	64.5
Child Dependency Ratio	37.1	36.0	38.1
Elderly Dependency Ratio	19.8	27.0	26.4
Median Years	34	37	38
% of Overseas Born	14.9	15.0	13.8
% of Indigenous Population	1.0	2.2	2.1
/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

The population distribution by age in 2001 shows that there were less people in Dongara aged 15-19 years and 20-24 years (Figure 3). There was also a reasonably large population of residents less than 15 years and those over 55 years, resulting in a dependency ratio of 64.[5] This dependency ratio is higher than the Western Australian dependency ratio of 48 per cent and the Australian dependency ratio of 50 per cent.



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Dongara

[5] Defined as the number of children (less than 14 years) and elderly people (over 65 years) for every 100 people of working age (15-64 years), the dependency ratio is used to measure the dependence that non-working people have on working people.

In terms of family and household characteristics, there was a higher proportion of 'couple families' without children in Dongara in 2001 than there was in 1991 (Table 2). The proportion of 'couple families' with children continued to decrease over the ten-year period between 1991 and 2001. 'One parent' family households increased by 52 per cent, from 46 households in 1991 to 70 households in 2001. The mean household size in Dongara in 2001 was 3.1.

Table 2: Family and Household Characteristics, 1991-2001 - Dongara			
Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	212	214	258
Couple Family without Children	186	235	282
One Parent Family	46	54	70
Other Family	3	0	0
Total	447	503	610
Proportion of Couple Families with Children to Total Families	47.4	42.5	42.3
Proportion of Couple Families without Children to Total Families	41.6	46.7	46.2
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.2 DWELLING CHARACTERISTICS

The most popular type of dwellings in Dongara in 2001 continued to be 'separate' (detached) houses (Table 3). There were few apartments or semi-detached houses available for residents. Most people either owned or were in the process of purchasing their dwelling (64%) and a significant number of the population lived in rented dwellings (30%).

Table 3: Dwelling Characteristics, 1991-2001 - Dongara			
Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	625	754	917
By Structure			
Separate House	491	585	731
Semi Detached	41	45	51
Flat, Unit or Apartment	39	23	38
Other /a	51	91	94
Not Stated	3	10	3
By Tenure			
Fully-Owned	232	300	362
Being Purchased	125	160	229
Rented	225	252	271
Other	43	4	31
Not Stated		38	24
Unoccupied Private Dwellings	156	204	235
Median Monthly Housing Loan Repayments	$401-$475	n.a.	$600 - $799
Median Weekly Rent	$78-$107	n.a.	$100 - $149
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Of the estimated 1,152 private dwellings in the Dongara urban area in 2001, 20 per cent were not occupied. This proportion of unoccupied private dwellings compares well with other coastal communities in Western Australia such as Kalbarri in the north and Mandurah in the south. The median weekly rent of $100-$149 is comparable to the median weekly rent for the whole of Western Australia.

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

The total labour force in Dongara increased by 20 per cent in the 1996-2001 period compared to 9 per cent in the 1991-1996 period (Table 4). Eighty-five per cent of the population in 2001 was employed, of which 54 per cent had full time employment. Of those employed in 2001, the male workers were mainly employed full-time while female workers were mostly engaged in part-time employment. The overall unemployment rate of 15 per cent was higher than the State and national rates of 8 per cent and 7 per cent, respectively. While unemployment remained high, the 2001 unemployment rate registered an improvement over the 1991 level (15% in 2001 as compared to 20% in 1991).

Table 4: Employment Indicators, 1991-2001 - Dongara

Urban Centre/Locality	*1991*	*1996*	*2001*
Employed	554	622	771
Male	322	356	412
Female	232	266	359
Full Time	329	341	419
Male	247	227	272
Female	82	114	147
Part Time	198	265	327
Male	54	113	125
Female	144	152	202
Not Stated	27	16	25
Male	21	16	15
Female	6	0	10
Unemployed	140	134	135
Male	115	96	89
Female	25	38	46
Total Labour Force	694	756	906
Male	437	452	501
Female	257	304	405
Unemployment Rate (in percent)	20.2	17.7	14.9
Male	26.3	21.2	17.8
Female	9.7	12.5	11.4
Labour Force Participation Rate	55.1	52.0	53.7
Male	68.8	60.8	59.1
Female	41.2	42.7	48.2

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

The median weekly individual income of Dongara residents increased between 1996 and 2001, from $200-$299 per week in 1996 to $300-$399 per week in 2001 (Table 5). The median income for households also increased over the same period. This may be due to the increased employment of women, as evidenced by the increased labour force participation rate of women in the community.

Table 5: Individual, Family and Household Incomes, 1991-2001 - Dongara			
Urban Centre/Locality	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$8,001-$12,000	$200-299	$300 - $399
Median Income for Families	$25,001-$30,000	n.a.	$700 - $799
Median Income for Households	$20,001-$25,000	$300-499	$500 - $599
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[6]

Of the residents who participated in the community survey, 69 per cent lived in the community between 6-15 years and over 15 years. The Dongara urban centre has a high percentage of people (84%) who feel that they are likely to still be living there in five years time. About 9 out of 10 respondents rated Dongara-Port Denison as a 'good' and 'excellent' place to live (Figure 4). Around 80 per cent of respondents felt a 'strong' to 'very strong' attachment to the community (Figure 5). The level of neighbourhood connections within the community is strong, with community respondents reporting that they know 'many people in their neighbourhood' and that they 'nearly always run into people they know when shopping'.

Lifestyle and the beach, ocean and environment were among the primary reasons cited by surveyed respondents for why they live in the community (Figure 6). Work was also cited as an important reason for living in Dongara-Port Denison. Some respondents also identified their family connections as one of the reasons for living there.

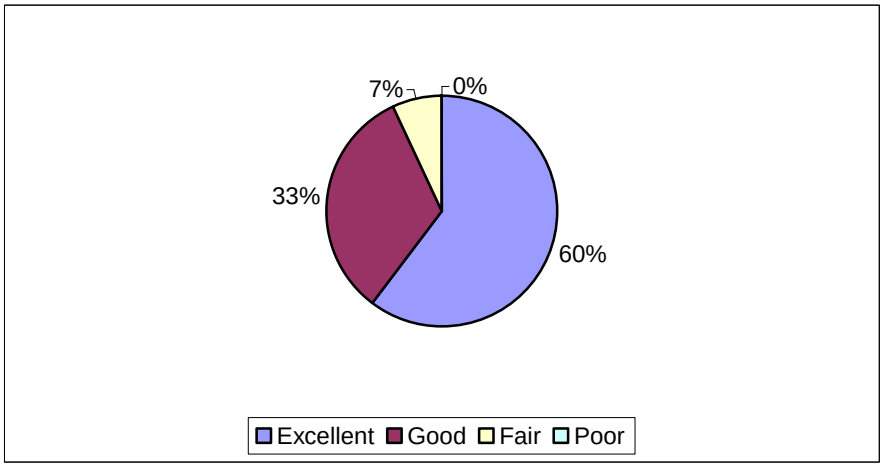


Figure 4: Respondents' Perception of Dongara as a Place to Live

[6] This section is based on the results and analysis of the responses of 87 community residents residing in Dongara and Port Denison who participated in a telephone survey conducted in late 2005 and 17 residents who participated in semi-structured interviews conducted in 2004. A majority of the 87 survey respondents were born in Australia and New Zealand (90%). In terms of family characteristics, 25 per cent of surveyed respondents were older couples with no children and 23 per cent were young families with children less than 14 years old. Almost all the respondents (95%) live in separate (detached houses). Thirty seven per cent fully owned their houses while 32 per cent were paying off mortgages. Those who were renting constituted 29 per cent of the surveyed respondents. In terms of work status, 32 per cent were employed full-time, 29 per cent were retired or semi-retired and 15% were employed part-time. Twenty-five per cent of the surveyed respondents finished Year 12 schooling, 17 per cent finished Year 10 and 16 per cent each finished Year 11 and Diploma degrees. Of the 87 community respondents, 18 were engaged in the rock lobster industry.

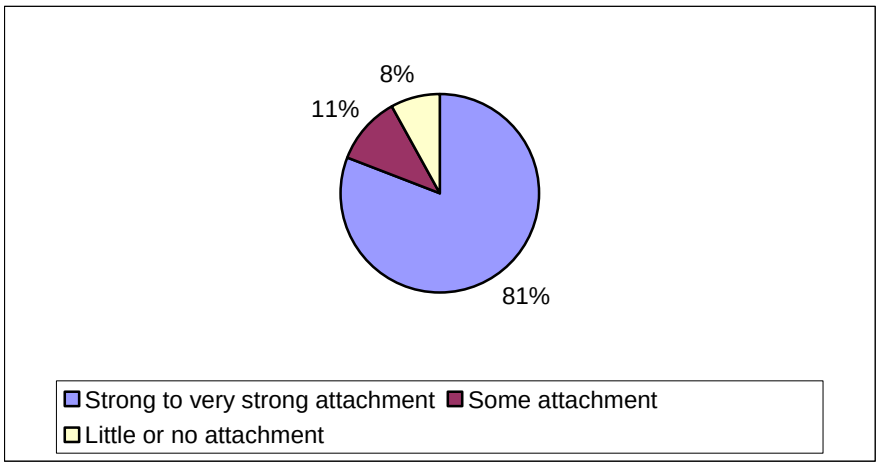


Figure 5: Respondents' Attachment to Dongara

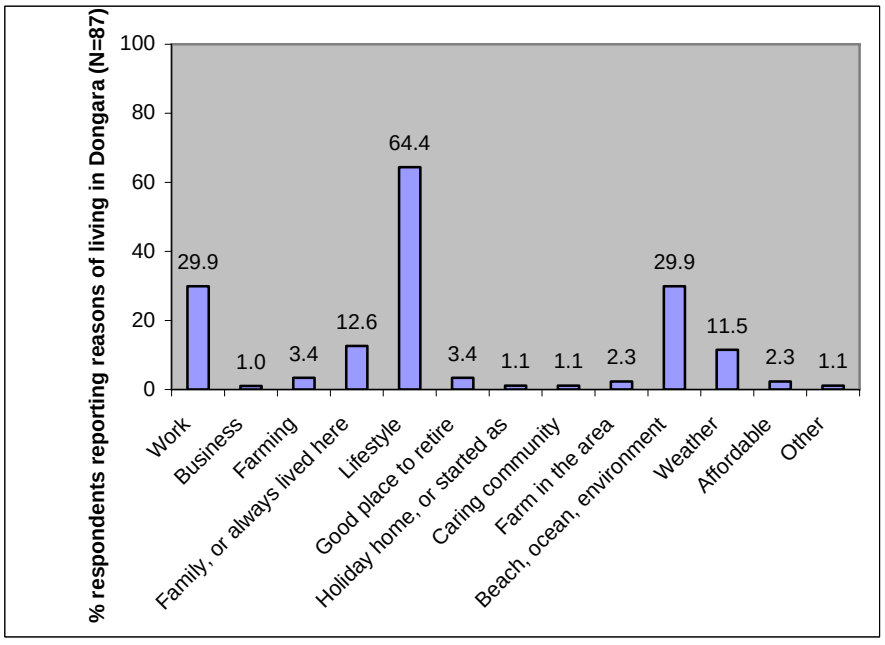


Figure 6: Reasons for Living in Dongara

Many of the essential services such as banking, general medical and dental care and police officers are accessed locally, though specialist medical attention is still largely sourced in Geraldton. Eighty-seven per cent reported that they do not participate at all in projects to develop new services or facilities. Community respondents were also more interested in support the development of community projects through money rather than personal time.

As Figure 7 indicates, involved in community organisations was mainly confined to local sports associations (49%), professional associations (21%) and school groups or community associations (20%). As was the case for most of the central and northern communities, sports play a major role in the community and ample sports and recreational facilities are provided. The Irwin Recreation Centre in Dongara has facilities for tennis, badminton, squash, basketball and football (Plate 4A). Located next to the Centre is the Denison Bowling Club (Plate 4B). The surveyed respondents also reported participation in cultural education or hobby groups, religious groups and ratepayers associations.

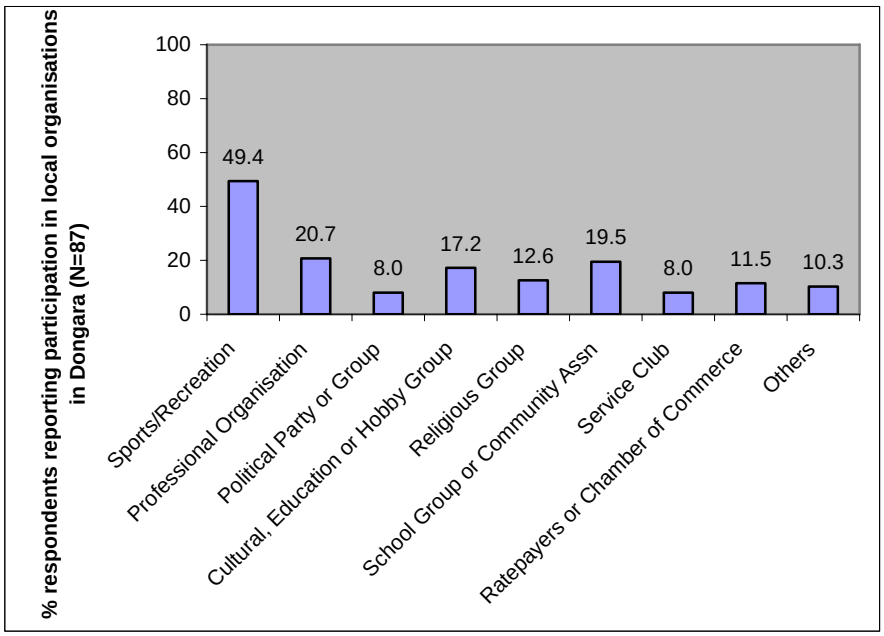


Figure 7: Participation in Local Organisations in Dongara

Plates 4A and 4B: The Irwin Recreation Centre and the Denison Bowling Club

(Source: Veronica Huddleston, 2005.)

In terms of cohesiveness, surveyed respondents gave an overall perception of the Dongara as a highly cohesive community (Figure 8A).[7] Community respondents gave high levels of agreement on the 'strong local support for community events' (Figure 8B). Almost half of those surveyed reported attending local community events three or more times a year.

[7] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

Residents of Dongara-Port Denison also highly agree that people would get together to solve serious problems in the community and that people in the community get involved in local issues and activities.

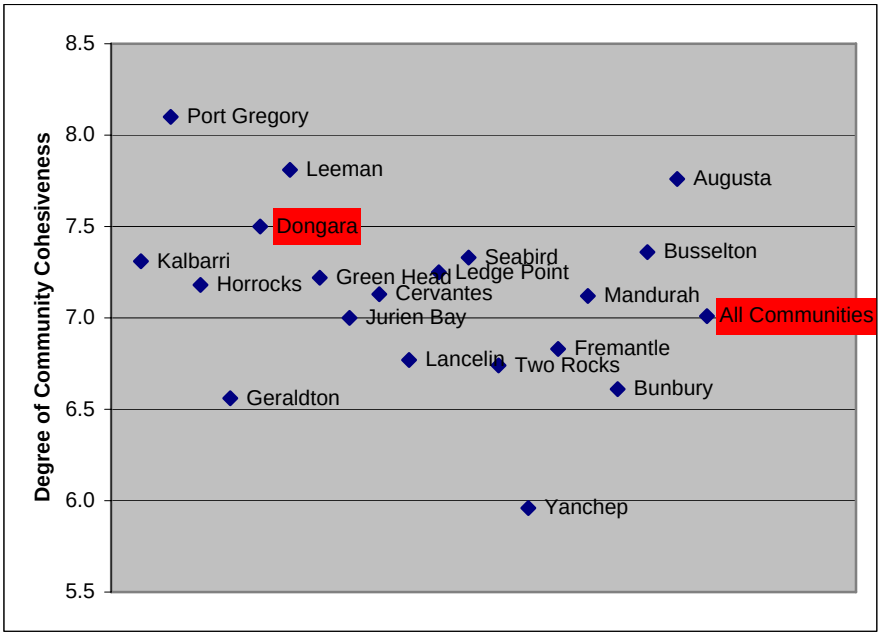


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

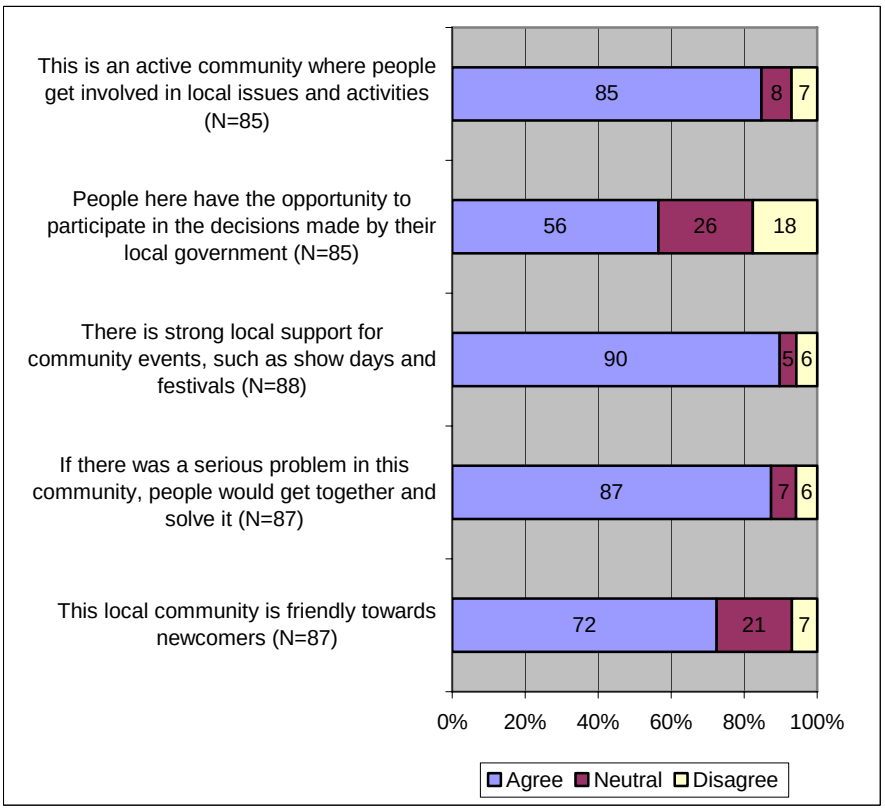


Figure 8B: Perceptions of Community Cohesiveness, Dongara

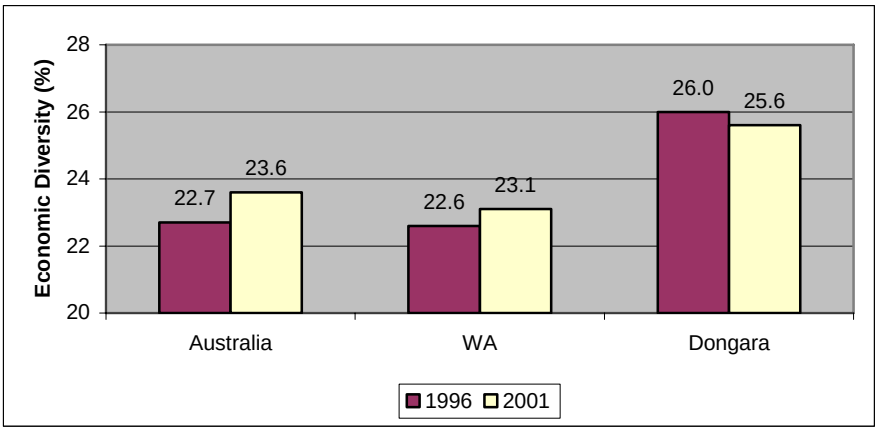
4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

The agriculture, forestry and fishery industry division employed the majority of the labour force in the Dongara urban centre, accounting for 18 per cent of total employment in 2001 (Appendix 1). The rock lobster fishery accounted for 41 per cent of this total. The retail trade industry division was the second largest employer (17%), followed by the construction industry (10%), manufacturing (9%), and the accommodation, cafes and restaurant industry division (8%).

Dongara is also fast becoming a service centre to the growing mining industry in nearby Shires. A recent major discovery of valuable mineral sands 25 kilometres south of Dongara is predicted to result in increased employment opportunities for residents and businesses in the community. The development of gas sites and gas processing plants in Dongara as well as onshore oil fields located about 65 kilometres south of Geraldton in the Perth Basin will continue to benefit the community through increased employment.

Between 1996 and 2001, the level of economic diversity of the Dongara urban centre was relatively lower compared to the Australian and Western Australian economic averages (Figure 9).[8] The major industry subdivisions that provided employment to the workforce in Dongara in 2001 were commercial fishing; accommodation, cafes and restaurants; and food retailing.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 - 2001, Dongara

There is an increasing recognition and appreciation by community residents of the benefits of broader-based development. During the focus group discussion held in Dongara in 2005, participants noted that:

[8] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

Crayfishing will always play a big part in the town for work and income purposes and will always be an industry of the town. It is a significant economic contributor. But other industries are growing in importance such as the mineral exploration east of the agricultural land and new farming opportunities in olive growing. There are also new industries such as gourmet food and tourism (Focus Group Discussion Notes, 2005).

4.1.1 Fishing

Dongara accounts for 16 per cent of the total estimated catch of wild caught species in the Mid West region in 2004/05 (Appendix 2).[9] In addition to rock lobsters, professional fishers also catch a number of scale and fin fish including snapper, groper and dhufish. Nearby Seven Mile Beach hosts an onshore abalone aquaculture project which is expected to support the declining abalone production levels in Australia.

Dongara is a major service centre for the rock lobster industry in the Shire of Irwin, providing boat maintenance and building, housing, social and other services. M.G. Kailis Pty Ltd constructed a new 'state of the art' live rock lobster processing facility on the foreshore of the Port Denison marina in 2002. The facility, which employed a lot of women from the community, is currently used only in a limited capacity since the 2005 merger of M.G. Kailis and James Bowes Pty Ltd, based in Geraldton.

In 1991/92, the fishing harbour at Dongara-Port Denison was home to 70 rock lobster boats (Appendix 3). The live weight catch of rock lobsters landed in Dongara decreased steadily between 1989/90 and 1995/96 (Figure 10). Since then, the catch has stabilised at 800,000 kilograms. There has been a decrease in the number of boats that operate out of Dongara. The number of people directly engaged as crew members in the fishery has also declined, down by 31 persons between 1991/92 and 2004/05. A number of boats from other communities such as Geraldton or Kalbarri continue to operate from small bays south of Dongara-Port Denison, especially during the 'whites' season.[10] Some of the Dongara fishers also use other anchorages such as Leeman, Freshwater Point and Kalbarri.

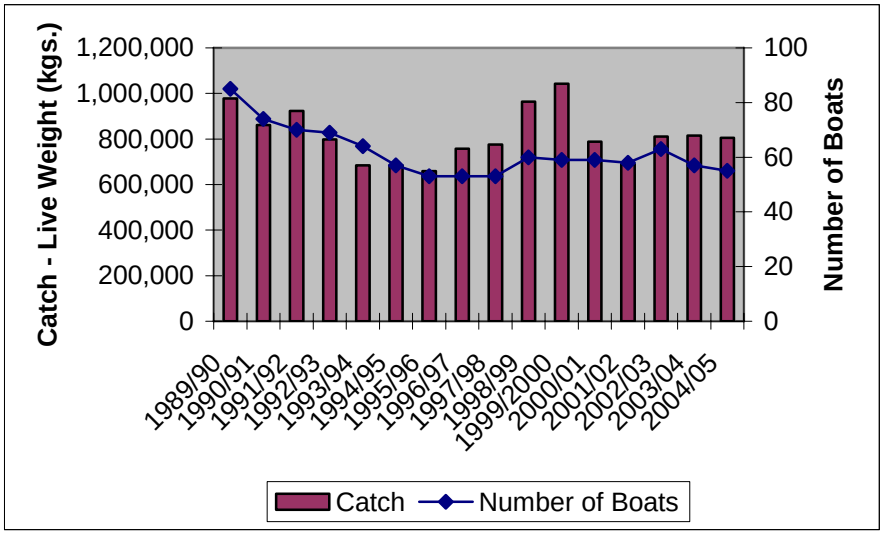
The fishing fleet in Dongara-Port Denison operate in Zone A and Zone B of the rock lobster fishery.[11] Data on the fishery from 1989/90 to 2004/05 indicates a zonal shift, with majority of the boats operating in Zone A prior to 1998-99 and a majority fishing in Zone B from 1998-99 onwards. One factor that may account for this is the longer hours of fishing faced by fishers going to the Abrolhos Islands, with one rock lobster fisher (No. 018, 2004) pointing

[9] The Mid West Region of Western Australia extends along the west coast from Green Head to Kalbarri and more than 800 kilometres inland to Wiluna in the Gibson Desert. Its area of 472,336 square kilometres covers nearly a fifth of the State, and comprises nineteen local government authorities. The City of Geraldton is the region's commercial, administrative and service centre (*Indicators of Regional Development in WA*, Department of Local Government and Regional Development, March 2003).

[10] 'Whites' refer to the adolescent phase of the western rock lobster, evidenced externally by a moult to a pale exoskeleton, lasting several weeks. They usually reach legal size with this moult, and are typically hungry, so they represent a significant part of the catch, this portion of the season being referred to as 'the whites' (Gray, 1999: 277).

[11] The number of boats licensed to fish for rock lobsters in the various zones is carefully controlled. Provided certain conditions are met, boat/license owners are able to transfer their pot entitlements between fishing zones (A, B or C zones). The zones are defined as follows: Zone A – Abrolhos Islands; Zone B – coastal fishery from 21º 44' S to 30º S excluding the A zone; Zone C – the waters between 30º south latitude and 34º 24' south latitude excluding all waters on the south coast east of 115º 4' east longitude; and Big Bank (Department of Fisheries, 2002: 5).

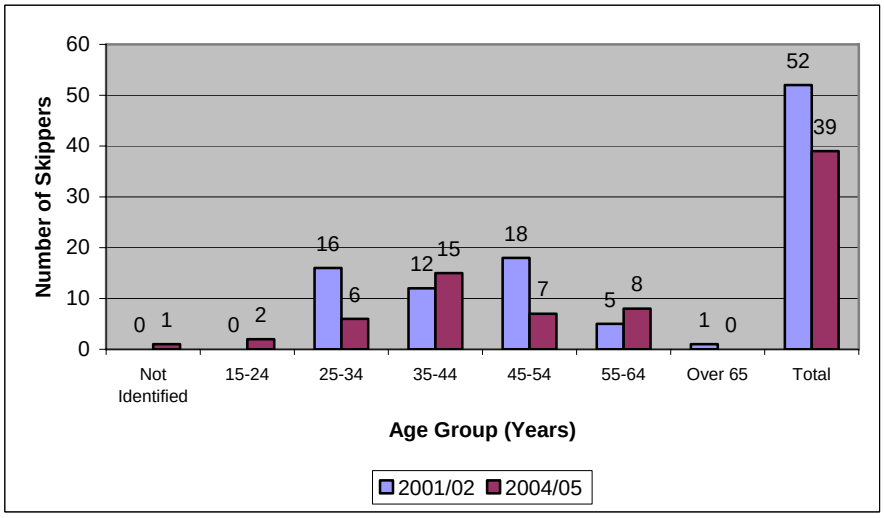
out that "Fishers who work in the Islands usually work longer days. They leave here about 2:00 A.M. and they don't get back until late afternoon."



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Dongara

The number of skippers who live in Dongara-Port Denison has declined to 39 in 2004/05 from 52 in 2001/02 (Figure 11). Compared to the 2001/02 season that registered 88 per cent of skippers in the 25-54 age groups, skippers aged 25-54 constituted only 72 per cent of the total number of skippers in 2004/05. A majority of these skippers are in the 35-44 age group (38%) and use between 101-110 pots during the season (33%). While there are some fishers who operate smaller licences, 46 per cent of skippers operate pots from between 111-120 to over 151 pots. On the difficulties faced by fishers with smaller licences was noted by one rock lobster fisher (No. 023, 2004) who indicated that "where I fish, there are people who have more pots and at certain times of the year, it's a bit harder to find somewhere to put your pots in". Other fishers point to the advantages of smaller licenses, with one fisher (No. 028, 2004) noting that "The way we fish comes down to a lifestyle thing. A late day is 2:30 P.M. and then you have days when you are in at lunchtime and you can go and pick up your kids from school".



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Dongara, 2001/02 and 2004/05

Community residents, when asked about their perceptions of the rock lobster fishery, generally agree that there is a close link between the economic viability of their community and the viability of the rock lobster fishery (Figure 12). There is also general agreement that 'the rock lobster fishery and processing sector is a good source of employment for people in the community'. There was general concern among those who participated in the focus group discussion on the social and family problems that may arise from the limited operations of the M.G. Kailis processing plant since "a lot of women in the community work in the factory and generate additional income for the family" (Focus Group Discussion Notes, 2005).

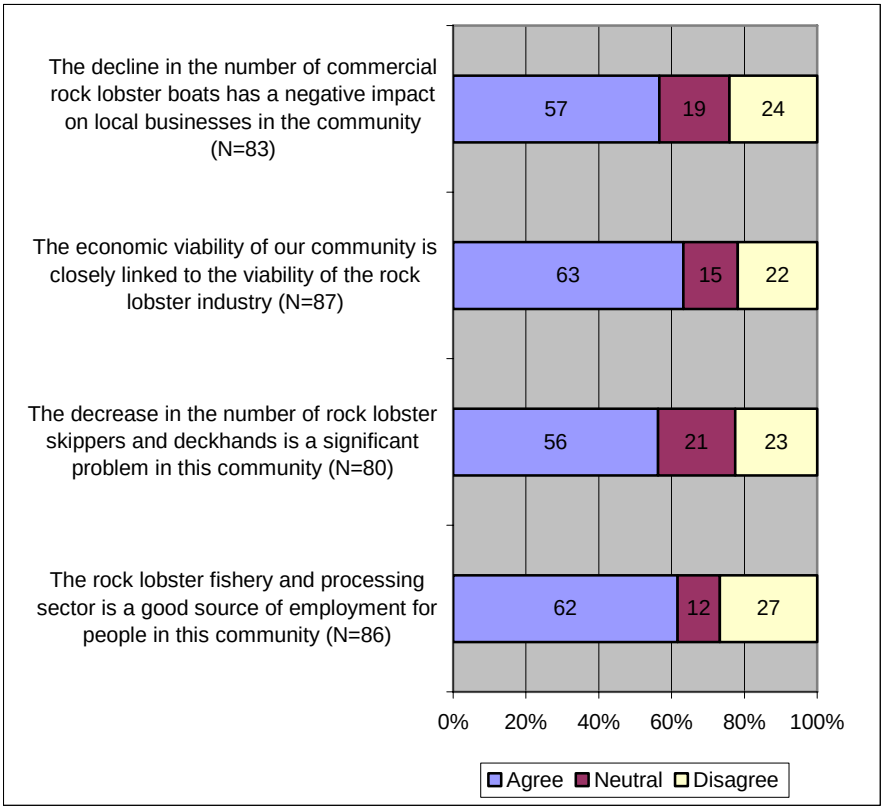


Figure 12: Perceptions of the Rock Lobster Industry, Dongara

On whether they would encourage young people to be involved in rock lobster fishing, 53 per cent of surveyed respondents indicated they would and 34 per cent said they would not do so (Figure 13). This was one of the highest proportions among the 19 communities included in the survey. Participants in the community workshop held in Dongara in July 2006, however, noted that:

> *If rock lobster fishing is actually marketed as an industry that has a balance between work and play, they would actually start taking away workers from the mining industry because people will look at lifestyle. They can live in this beautiful town with their families and work in the same days as those working in other sectors (Community Workshop Notes, 2006).*

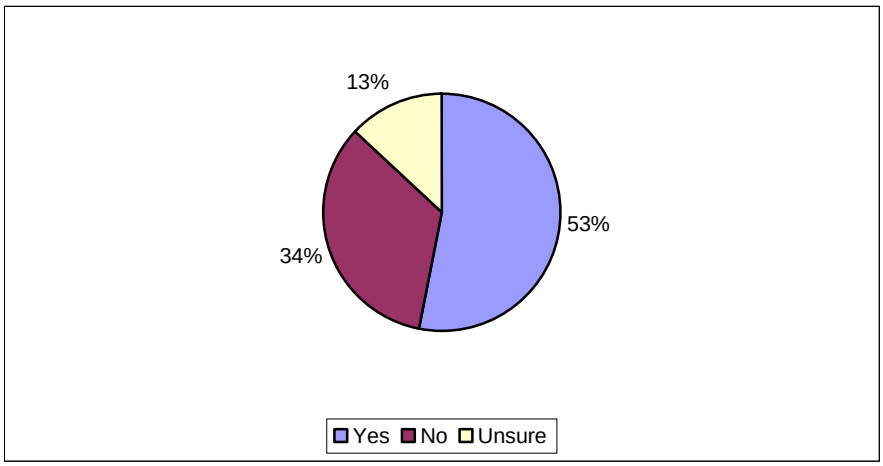


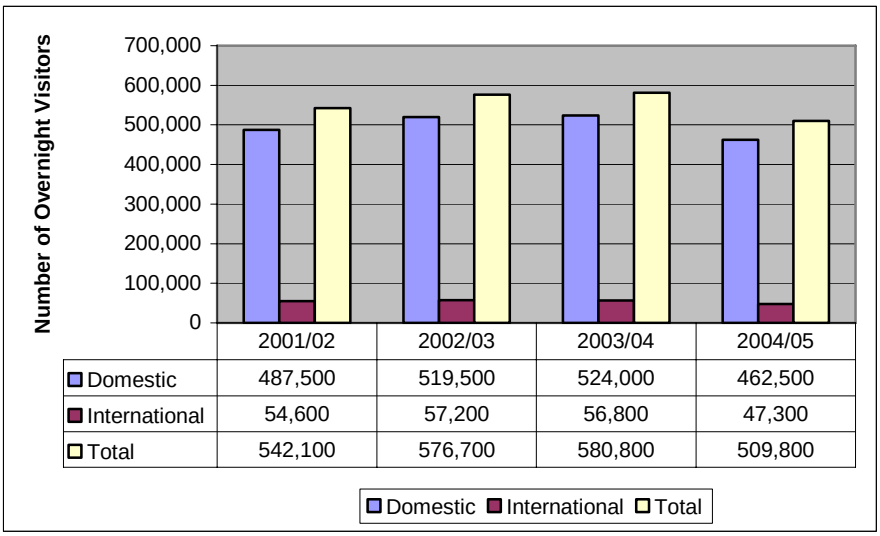
Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Dongara

4.1.2 Tourism

Dongara has long been a holiday destination for the farm residents of its hinterland and adjacent Shires. But more recently, tourism has been a growing industry, with marketing efforts attracting international and state day visitors. The opening of a major road from the Brand Highway directly into Port Denison, has led to an increasing number of tourists visiting the town. Tourist related business activity has increased accordingly and future plans for the areas development include a 40 unit tourist resort in Port Denison, a further release of 52 building blocks at North Shore, and a theme and recreation park on the foreshore of Port Denison. The benefits of promoting tourism were also highlighted by participants during the community workshop because "tourism is a big revenue generator. You've got accommodation, fuel, food and restaurants, car rentals, etc. that will benefit from tourism promotion" (Community Workshop Notes, 2006).

Figure 14 highlights the number of overnight visitors to the Mid-West region of Western Australia showing a much higher rate of domestic tourists over international tourists. Overnight tourist numbers have remained relatively constant since 2001/02 with a slight fall in the 2004/05 period. Of the domestic overnight visitors, the reasons they come to the region range from holiday, visiting friends/family and business purposes (Appendix 4). However, international tourists staying overnight in the Mid-West region come largely for holiday and leisure time.

With the increasing recognition of the benefits of tourism to their community, surveyed respondents remain optimistic of the tourism potential of the area. Sixty-seven percent of surveyed respondents provided high levels of agreement to the statement that 'the coast around this community is suitable for more tourism activities than we have' (Figure 15). The Dongara urban centre provides accommodation for tourists ranging from backpackers to farm accommodation and private houses (B & B's) to caravan parks and motels.



(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, Mid West Region

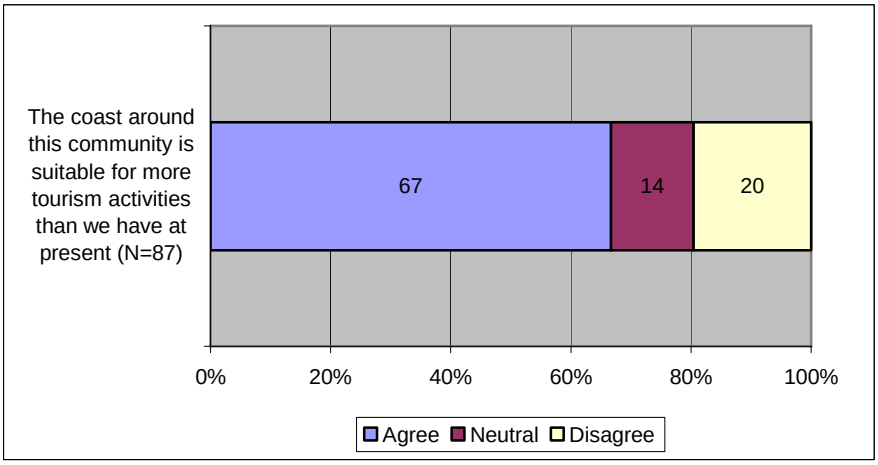


Figure 15: Perceptions of Tourism Potential, Dongara

4.1.3 Business and Commerce

The Dongara business and community services telephone directory lists over 300 establishments covering a wide range of retail trade activities. There are currently efforts being made to further develop Dongara's light industrial area which house most of the building and maintenance industries, a number of which service the fishing industry (Plates 5A and 5B).

Plates 5A and 5B: Businesses in the Dongara Light Industrial Area

(Source: Veronica Huddleston, 2005.)

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

Dongara has a well developed and maintained road network. Recent improvements to the road linking the Brand Highway and Denison-Dongara have increased visitor traffic flow through the town and overall access to Dongara, in general. There are a number of sealed roads which connect inland agricultural towns with Dongara such as the Midlands Road which links Dongara to Moora. The main street of Dongara, Moreton Terrace, is lined with Moreton Bay Fig trees planted in 1906.

The nearest airport is the Geraldton Regional Airport. The Australia Railroad Group operates the Mid-west railway, with the main depot at Narngulu, 13 kilometres from the Port of Geraldton. One line passes through Northam, Wongan Hills, Perenjori and Mullewa, while the other passes through Moora, Three Springs, and Dongara. Another line branches off at Dongara to service the mineral sands deposits at Eneabba.

4.2.2 Water and Electricity

The community has a relatively secure water supply, drawing water from the Allanooka Scheme and Wye Springs well field. The Water Corporation operates both a water system and a waste water treatment plant at Dongara. The power supply to the coastal communities between Dongara and Guilderton, to the south, is provided by a 33 kilovolt feeder drawn from Western Power's substations in the region. The substations are connected to the main south west power system.

4.2.3 Communications

Most residents in Dongara have access to a land based telephone network. These include STD, ISD, facsimile and teleconferencing facilities. Mobile phone reception is also available in the town although coverage outside of the town remains poor. CDMA coverage is available in adjacent settlements. Census data for 2001 recorded that 37 per cent of Dongara's population uses a computer at home, and 29 per cent had access to the internet at their residences.

Dongara has a Telecentre that was established in the community through the efforts of councilors and local community members. The centre currently has 12 computers, scanners and high quality printers as well as a photocopier, laminator, video conferencing facilities and a digital camera. A private study is currently being developed to give residents computer access to online university or TAFE courses.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

The Shire of Irwin has administrative jurisdiction over Dongara-Port Denison. The Shire has a local office located on Waldeck Street in Dongara. State and Federal government agencies that have offices in the Dongara urban centre include the Department of Fisheries, Coast Watch, Australian Customs Service and Australia Post.

4.3.2 Education and Health

The Dongara District school system caters for over 400 students from kindergarten to Year 12. In 2001, enrolment rates in both the primary and secondary schools are high at 97 per cent and 89 per cent, respectively. The existence of a district high school in Dongara was cited as among the reasons for the movement of families into the community. As one rock lobster fisher (No. 015, 2004) noted, "We moved up here from Leeman because we have kids getting into high school and we don't want them to go to boarding school". Participants in the focus group discussion also noted that Dongara is also ideally situated because "you can have access to private schools in Geraldton" (Focus Group Discussion Notes, 2005).

There are two full time general practitioners serving the Dongara urban centre in addition to Silver Chain services. The Dongara Health Service was converted to a Multi Purpose Service (MPS) in August 2000 (Plate 6). The MPS provides a number of services including: acute and emergency care, patient assisted travel scheme and, home and community care services. The MPS has enabled the pooling of Commonwealth and State health and aged care funds within the areas of Dongara, Eneabba and Mingenew and has resulted in the flexible application of these funds across all health and aged care programs. Nonetheless, as noted during the focus group discussion, "Health care for the aged is a problem in view of the growing number of older people" (Focus Group Discussion Notes, 2005). Dongara residents still access more advanced hospital and specialist medical services in Geraldton or Perth.

Plate 6: The Dongara Health Centre

(Source: Veronica Huddleston, 2005.)

4.3.3 Law and Order

Compared with the crime levels of the greater Mid West/Gascoyne region, Dongara has low crime rates (Appendix 5). A police station stationed in Dongara continues to keep the rate of crime in the Dongara urban centre at low levels. Of reported crimes in 2004/05, there were nine burglary cases and six assault cases reported. As noted by one community resident (No. 026, 2004), "Even with a few burglaries, Dongara is a still a pretty safe town".

Appendix 1: Employment by Industry, 1991-2001 - Dongara									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	76	31	107	77	33	110	102	32	134
of which: Rock Lobster Fishing			--			29			55
Mining	9	3	12	17	3	20	33	3	36
Manufacturing	27	6	33	29	14	43	46	19	65
of which: Seafood Processing			--			6			9
Electricity, Gas and Water Supply	3	0	3	0	0	0	0	0	0
Construction	46	10	56	46	13	59	61	13	74
Wholesale Trade	45	53	107	12	7	19	17	3	20
Retail Trade				40	45	85	41	82	123
Accommodation, Cafes and Restaurants	Not a separate sector			26	39	65	12	49	61
Transport and Storage	6	3	9	15	3	18	18	0	18
Communication Services	4	6	10	6	3	9	0	0	0
Finance and Insurance	15	9	107	7	6	13	0	15	15
Property and Business Services				18	11	29	21	13	34
Government Administration and Defence	22	9	31	21	9	30	16	12	28
Education	Not a separate sector			6	30	36	3	35	38
Health and Community Services	28	44	72	6	22	28	3	45	48
Cultural and Recreational Services	18	45	107	3	0	3	0	3	3
Personal and Other Services				15	13	28	16	7	23
Non-classified/Non-stated	19	15	34	22	17	39	10	11	21
Total for All Industries	318	234	552	366	268	634	399	342	741
Share of Agriculture, Forestry and Fishery to Total Employment	7.1	2.7	5.2	6.6	2.8	4.9	7.1	5.1	2.6
Share of Top Three Sectors to Total Employment	52.5	60.7	58.2	44.5	43.7	41.0	52.4	51.5	44.7
(Source of Data: ABS 1991, 1996 nad 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a , 2002/03 - 2004/05 - Western Australia and the Mid West Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Mid West Region	2,075	2,510	2,512	5,628	6,495	6,159
of which: Dongara's Share (%)	2.2	1.9	1.8	5.6	4.9	4.8
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Mid West Region	53	15	13	694	196	170
of which: Dongara's Share (%)	0.0	0.0	0.0	0.0	0.0	0.0
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Mid West Region	4,932	5,385	5,425	120,582	102,322	116,632
of which: Dongara's Share (%)	18.8	18.4	17.9	19.8	18.4	17.9
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Mid West Region	5,851	615	5,345	20,122	2,364	19,307
of which: Dongara's Share (%)	0.6	4.4	0.9	0.5	3.2	0.7
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Mid West Region	12,936	8,552	13,308	147,324	111,685	142,409
of which: Dongara's Share (%)	8.0	12.5	9.3	16.6	17.2	15.7

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Dongara						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Dongara	922,771	758,013	689,323	811,434	814,872	805,512
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Dongara	987,270	823,390	889,262	872,751	831,062	780,394
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Dongara	70	53	58	63	57	55
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Dongara	171	139	153	166	151	140

Source of Data: Department of Fisheries, Western Australia.

Appendix 4: Number and Purpose/a of Overnight Visits, 2001/02 - 2004/05 - Mid West Region								
	2001/2002		2002/2003		2003/2004		2004/2005	
	Visitors	Percent	Visitors	Percent	Visitors	Percent	Visitors	Percent
Domestic Visitors								
Holiday/Leisure /b	219,000	44.9	237,000	45.6	232,000	44.3	215,500	46.6
Visiting Friends/Relatives	92,000	18.9	107,500	20.7	114,000	21.8	114,500	24.8
Business /c	132,500	27.2	134,500	25.9	132,000	25.2	91,500	19.8
Other /d	20,000	4.1	27,500	5.3	30,500	5.8	26,500	5.7
Total	487,500	100.0	519,500	100.0	524,000	100.0	462,500	100.0
International Visitors								
Holiday/Leisure	50,900	93.2	54,000	94.4	53,800	94.7	42,300	89.4
Visiting Friends/Relatives	1,900	3.5	1,900	3.3	1,800	3.2	3,400	7.2
Business	1,200	2.2	1,000	1.7	800	1.4	900	1.9
Other	1,500	2.7	1,300	2.3	1,700	3.0	2,200	4.7
Total	54,600	100.0	57,200	100.0	56,800	100.0	47,300	100.0
Total Visitors								
Holiday/Leisure	269,900	49.8	291,000	50.5	285,800	49.2	257,800	50.6
Visiting Friends/Relatives	93,900	17.3	109,400	19.0	115,800	19.9	117,900	23.1
Business	133,700	24.7	135,500	23.5	132,800	22.9	92,400	18.1
Other	21,500	4.0	28,800	5.0	32,200	5.5	28,700	5.6
Total	542,100	100.0	576,700	100.0	580,800	100.0	509,800	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Dongara				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Mid West/Gascoyne District	1,045	1,147	1,155	1,348
of which: Dongara (number)	6	9	21	6
as percent of the District	0.6	0.8	1.8	0.4
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Mid West/Gascoyne District	1,417	1,375	1,343	1,213
of which: Dongara (number)	10	1	6	3
as percent of the District	0.7	0.1	0.4	0.2
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Region WA	6,087	5,586	4,633	3,897
Mid West/Gascoyne District	815	667	661	569
of which: Dongara (number)	9	3	11	9
as percent of the District	1.1	0.4	1.7	1.6
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Region WA	237	215	200	231
Mid West/Gascoyne District	36	40	43	25
of which: Dongara (number)	n.a.	n.a.	n.a.	n.a.
as percent of the District	n.a.	n.a.	n.a.	n.a.
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Region WA	1,717	1,839	1,604	1,331
Mid West/Gascoyne District	234	206	222	238
of which: Dongara (number)	5	1	3	2
as percent of the District	2.1	0.5	1.4	0.8

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

LEEMAN

1.0 GEOGRAPHIC SETTING

Leeman is located 295 kilometres north of Perth or 155 kilometres south of Geraldton (Latitude: 29° 57' South and Longitude: 114° 59' East). It originated as a fishing community in the late 1950s and is one of the coastal towns that make up the Shire of Coorow. The town's northern boundary, however, is situated in the Shire of Carnamah.

Leeman enjoys a typical Mediterranean climate, characterised by hot dry summers and mild wet winters. The average monthly maximum ranges from 19.3 degrees celsius in July to 30.8 degrees celsius in February. The town relies upon the sea breezes to bring a cooling effect to their hot summers.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[1]

Based on historical accounts of European occupation, Leeman was named after a resourceful Dutch sailor and navigator Abraham Leeman van Santwits who was shipwrecked in the Fishermen Islands to the southwest of the tiny settlement in 1658. Leeman was a member of the crew of the Waeckende Boey (meaning Watch Buoy) that searched the Western Australian coast for survivors of the Vergulde Draeck that disappeared two years earlier. With resourcefulness and determination, Leeman and his crew managed to sail north and eventually reached Batavia (Jakarta) on an open boat.

Local stories about the settlement of the community indicate that in the early 1900s, local farmers and other rural residents sought out the central coast as a holiday destination to escape the heat of the inland districts in the summer. Families from towns such as Three Springs, Carnamah, Eneabba, Perenjori and Coorow travelled to the coast at the end of the harvest and during school holidays. They camped at first and then subsequently constructed temporary shacks.

The construction of coastal shacks intensified in the 1950s. It started in August 1957 when Lawrie and Ray Wann, Max Lloyd and Tom Taylor who were crayfishers from Rockingham explored the coast seeking a safe anchorage. Following the tracks made by patrols from World War II, they reached a place then known as Snag Island in November 1957 and erected tents under the Ti trees found along the foreshore. Other fishermen like Vic and Alex Wann, Eddie Daw and Ray McDonald from Geraldton followed, resulting in large numbers of 'squatter camps' in the area. In 1958, sturdier homes were built from driftwood found lying on the beaches. Snag Island was gazetted as a town in 1962 and the name was changed to Leeman in 1971, following the opening of the primary school of the same name. Figure 1 shows the town map of Leeman that features the location of social and fishery-related infrastructure.

[1] This section is based on information from the Coorow Shire Townscape Program Draft Character Study, Townscape Analysis and Proposals/Plan, May 1999; *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999; *Coorow: They're Helping Themselves to a Better Life*, Skywest Airlines In-flight Magazine, July-August 2001, pp. 6-7; and <http://www.walkabout.com.au/locations/WALeeman.shmtl> (cited 21 January 2005).

(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Leeman, 2006

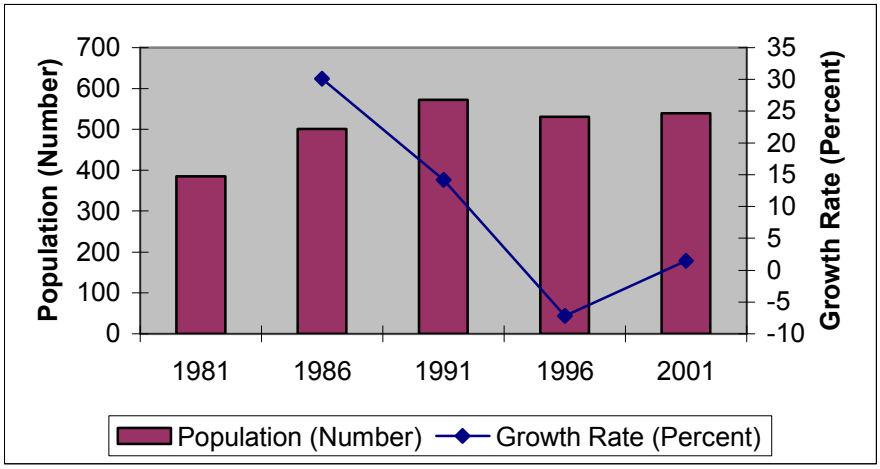
With the development of the mineral sands industry in the 1970s, Leeman became home to families that worked at the mineral sands mine at Eneabba. A number of the houses in the area were built by the mining company for their staff. However, in 2003, Iluka Resources Ltd. consolidated its mining operations and most of its workers are now employed on a "fly in – fly out" basis.[2] This has resulted in many of the workers relocating in other areas such as Dongara.

[2] This basis of employment in the mining sector is where the miners' "home" and family remains in a major city and the miners fly out to their mine for two weeks of solid work and then fly home for one week of rest. The roster may vary from site to site, 3 weeks on/1 week off rosters are not uncommon and the working away period can be for much longer than 2 or 3 weeks (<http://en.wikipedia.org/wiki/Mining_in_Australia>, cited 30 January 2007).

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

The construction of the Brand Highway in the early 1970s, the bitumisation of the Leeman Road in 1977, and the construction of the Cliff Head South Road in 1991 resulted in Leeman becoming more accessible. This resulted in increased in-migration and Leeman's population increased steadily until it declined in 1996 and, thereafter, remained stable until 2001 (Figure 2).[3]



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth Rate, 1981 - 2001, Leeman

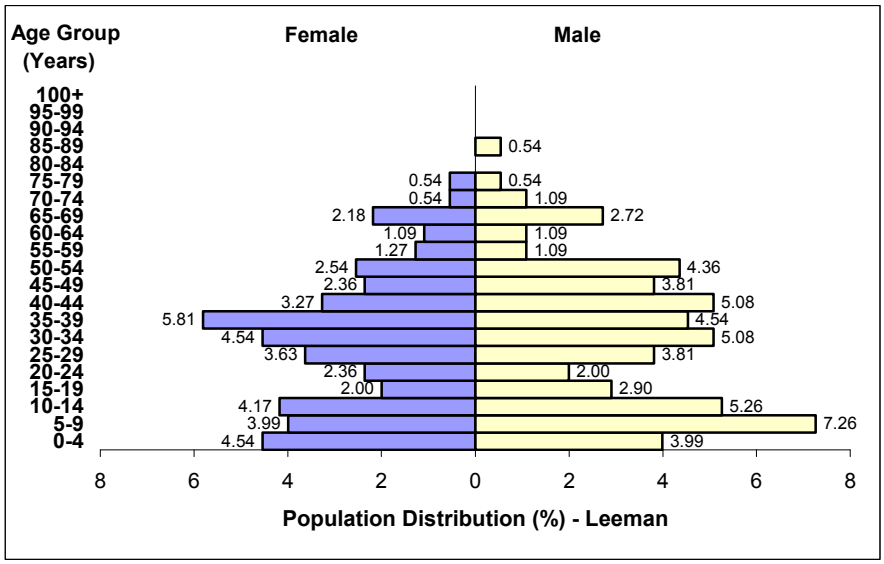
In 2001, 60 per cent of Leeman's resident population were Christians, predominantly Catholics. Twenty-six per cent reported no religion and 10 per cent did not indicate the practice of any religion. In terms of schooling, 36 per cent of the population finished Year 10, 14 per cent finished Year 11, and 25 per cent finished Year 12.

Figure 3 shows the population distribution in Leeman by age groups based on 2001 Census data. Sixty-three per cent of the population were in the employable age range of 15 to 64 years and predominantly males (54%). This can be related to the importance of fishing and mining, both of which are male-dominated industries. The 5-9 years and 10-14 years age groups, however, also register a significant number of males.

Twenty-nine per cent of Leeman's population in 2001 was made up of individuals below 14 years of age and those over 65 years made up 8 per cent (Table 1). Compared to 1991, however, the proportion of the young population (0-14 years) declined from 36 per cent to 29 per cent in 2001. The reverse is true for those over 65 years. The increasing proportion of those over 65 years had resulted in an increase in the median age in Leeman from 28 years in 1991 to 32 years in 2001. This median age is comparable with the Western Australian average of 34 years in 2001.

[3] Census data refer to the population of Leeman as an urban centre/locality (UC/L). A locality is a population cluster of between 200 to 999 people who are classified as rural for statistical purposes (1996 Census Dictionary).

The majority of Leeman's resident population in 2001 was Australian born, with only 11 per cent born overseas, mostly in the United Kingdom and New Zealand. The indigenous population comprised only 3 per cent of the population.



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Leeman

Table 1: Population Indicators, 1991-2001 - Leeman

Urban Centre/Locality	*1991*	*1996*	*2001*
Total Resident Population	570	506	551
Male	283	272	304
Female	287	234	247
Population under 15 years	205	170	161
Population of employable age	340	318	345
of which: Population aged 15-19	12	19	27
Population over 65 years	25	28	45
Dependency Ratio /a	67.6	59.1	59.7
Child Dependency Ratio	60.3	53.4	46.7
Elderly Dependency Ratio	7.4	5.7	13.0
Median Years	28	27	32
% of Overseas Born	16.4	11.8	10.6
% of Indigenous Population	0.0	1.1	3.3

/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Of the 146 families living in Leeman in 2001, more than half were characterised as 'couple family' households (Table 2). Those with children of less than 15 years of age made up the bulk of the 'couple family' type. Even though the proportion of couple families with children vis-à-vis total families had declined (from 68% in 1991 to 54% in 2001), residents in Leeman consider their community a good and safe place to raise children.

Table 2: Family and Household Characteristics, 1991-2001 - Leeman			
Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	98	85	79
Couple Family without Children	40	47	52
One Parent Family	3	11	12
Other Family	3	0	3
Total	144	143	146
Proportion of Couple Families with Children to Total Families	68.1	59.4	54.1
Proportion of Couple Families without Children to Total Families	27.8	32.9	35.6
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.2 DWELLING CHARACTERISTICS

Between 1991 and 2001, the number of private dwellings in Leeman increased by 18 per cent (Table 3). Twenty-nine per cent of the total dwellings in Leeman in 2001 were unoccupied. 'Separate' (detached) houses constituted 86 per cent of the occupied private dwellings in 2001. In terms of tenure, most of the dwellings were rented properties (43%). The proportion of fully-owned private dwellings had increased from 22 per cent in 1991 to 29 per cent in 2001, as a result of the sale of the houses originally built by Iluka Resources for their mining workforce. The median weekly rent of $50-$99 in 2001 was lower than those commanded by rental properties in other coastal communities and the whole of Western Australia ($100-$149 per week). This may be accounted for by the subsidised rental payments of those who work for Iluka Resources Ltd.

Table 3: Dwelling Characteristics, 1991-2001 - Leeman			
Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	188	180	212
By Structure			
Separate House	164	170	183
Semi Detached	0	0	0
Flat, Unit or Apartment	8	0	3
Other /a	13	10	23
Not Stated	3	0	3
By Tenure			
Fully-Owned	42	45	62
Being Purchased	33	39	41
Rented	103	87	91
Other	10	6	9
Not Stated		3	9
Unoccupied Private Dwellings	65	72	86
Median Monthly Housing Loan Repayments	$476-$550	n.a.	$800 - $999
Median Weekly Rent	$0-$47	n.a.	$50 - $99
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

The main employers in Leeman in 2001 were the mining industry and the agriculture, fishery and forestry industry (Appendix 1), both of which are male-dominated industries. Retail trade and construction also supported employment in the community, with the former mainly employing female workers and the latter employing mainly males.

Of the total employed residents in 2001, 61 per cent worked full-full time and the remainder worked on part-time basis (Table 4). Full time employment was male-dominated while females made up the bulk of those engaged in part-time employment. In 2001, Leeman's unemployment rate of 7.6 per cent compared well with the Western Australian and national rates of 7.5 of 7.4 per cent, respectively.

Table 4: Employment Indicators, 1991-2001 - Leeman

Urban Centre/Locality	*1991*	*1996*	*2001*
Employed	212	228	220
Male	135	141	137
Female	77	87	83
Full Time	150	168	134
Male	117	122	96
Female	33	46	38
Part Time	53	60	73
Male	15	19	31
Female	38	41	42
Not Stated	9	0	13
Male	3	0	10
Female	6	0	3
Unemployed	24	16	18
Male	13	13	15
Female	11	3	3
Total Labour Force	236	244	238
Male	148	154	152
Female	88	90	86
Unemployment Rate (in percent)	10.2	6.6	7.6
Male	8.8	8.4	9.9
Female	12.5	3.3	3.5
Labour Force Participation Rate	64.7	72.6	61.0
Male	80.4	83.7	71.4
Female	48.6	59.2	48.6

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

The median weekly individual income for Leeman in 2001 was $400-499 (Table 5). This median income for individuals per week was higher than the rates found in other coastal communities and as compared to the Australian and Western Australian individual income levels. Despite the reduction in the number of mining employees as a result of major organisational restructuring undertaken by Iluka Resources Ltd., mining remains a viable employment alternative for Leeman residents.

Table 5: Individual, Family and Household Incomes, 1991-2001 - Leeman			
Urban Centre/Locality	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$16,001-$20,000	$500-599	$400 - $499
Median Income for Families	$35,001-$40,000	n.a.	$800 - $999
Median Income for Households	$35,001-$40,000	$700-799	$800 - $999
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[4]

Half of the survey respondents in Leeman have lived there for more than 5 years and 43 per cent had lived in the community for more than 15 years. Seventy-five per cent of those surveyed expect to still be living in Leeman 5 years from now. Described by interviewees as 'a beautiful spot', 'a seaside fishing community with quaint and basic facilities' and 'a town with a real good feel about it', Leeman received one of the highest level of endorsement as an 'excellent place' or a 'good place' to live (Figure 4).

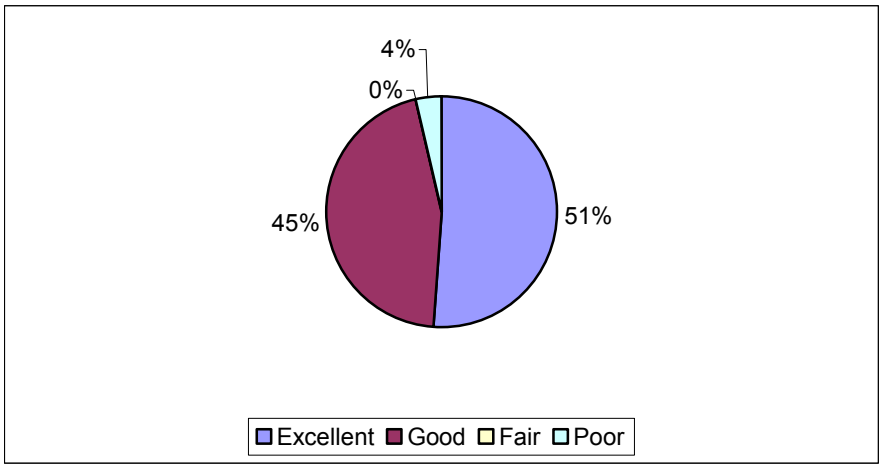


Figure 4: Respondents' Perception of Leeman as a Place to Live

Almost all survey respondents reported 'strong to very strong feelings of attachment' to Leeman (Figure 5). People in Leeman reported high levels of 'knowing most of the people in the neighbourhood' (71%) and 'nearly always' running into people they know while shopping (91%).

[4] This section is based on the results and analysis of the responses of 19 community residents who participated in a telephone survey conducted in late 2005 and 20 residents who participated in semi-structured interviews conducted in 2004 and early 2005. All of the 19 residents who participated in the survey were born in Australia. A majority of those surveyed finished Year 10 schooling (45%), were in full and part-time employment (53%), fully owned their houses (47%), and consisted of young families with children below 14 years (39%). Three survey participants were engaged in the rock lobster industry. Notes of the community workshop held in Leeman in 2006 were also utilised in the analysis.

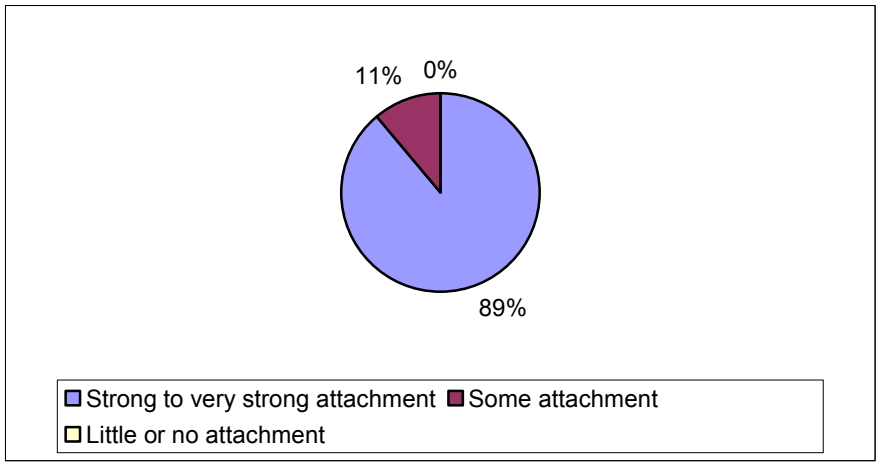


Figure 5: Respondents' Attachment to Leeman

The main reasons cited for choosing to live in Leeman were lifestyle and work (Figure 6). Leeman's isolation and its smaller population were among the factors that continue to attract people to the town although one interviewee noted that to stem the flow of people moving out of the community, "Leeman needs more infrastructure and better health and educational facilities" (Interviewee No. 097, 2004).

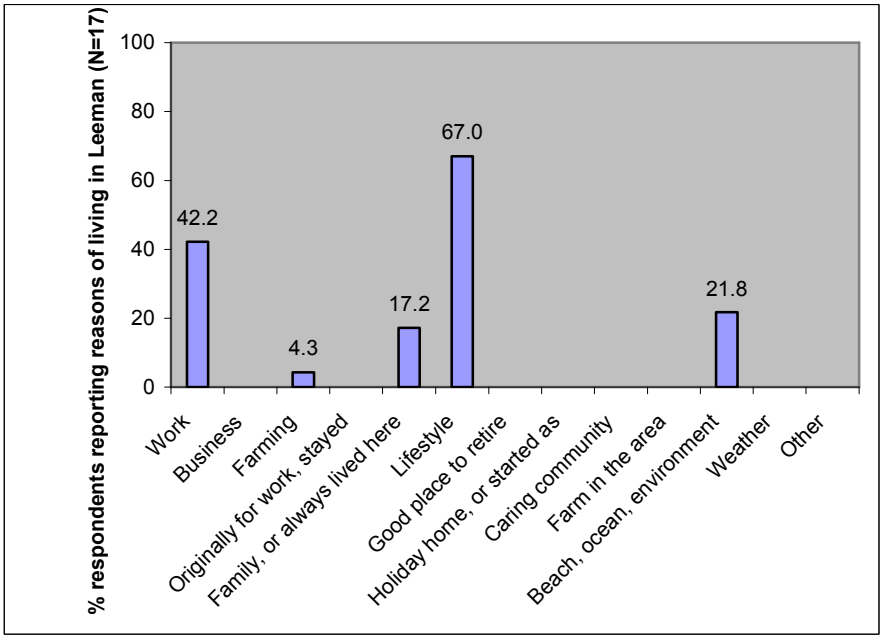


Figure 6: Reasons for Living in Leeman

One of the setbacks of living in Leeman was that "the wives have nothing to do since there are only few full-time work opportunities" (Interviewee No. 130, 2004). However, one community resident (No. 174, 2005) noted that:

> *A number of women in Leeman do volunteer work. They are with the St. John's ambulance, with the emergency services group and with the fire brigade. If there's a fire, there will always be women who will put up a caravan and serve sandwiches. Women also contribute through bake sales to raise funds for the school.*

Half of the residents surveyed reported attending local community events three or more times in a year but 60 per cent reported that they do not participate at all in projects to develop new service or facilities. The perception among the respondents who participated in the survey was that people in Leeman are not willing to contribute money to or time for community projects. Only 18 per cent of those surveyed agreed to the statement that 'many people will contribute time to community projects' and an even smaller 13 per cent agreed to the statement that 'many people will contribute money to community projects'.

In terms of residents' participation in local organisations, 66 per cent of surveyed respondents reported that they participated in local sports or recreation organisations (Figure 7). Additionally, survey respondents reported that they participated in cultural, education or hobby organisations (19%), school group or community associations (17%), and professional organisations (16%).

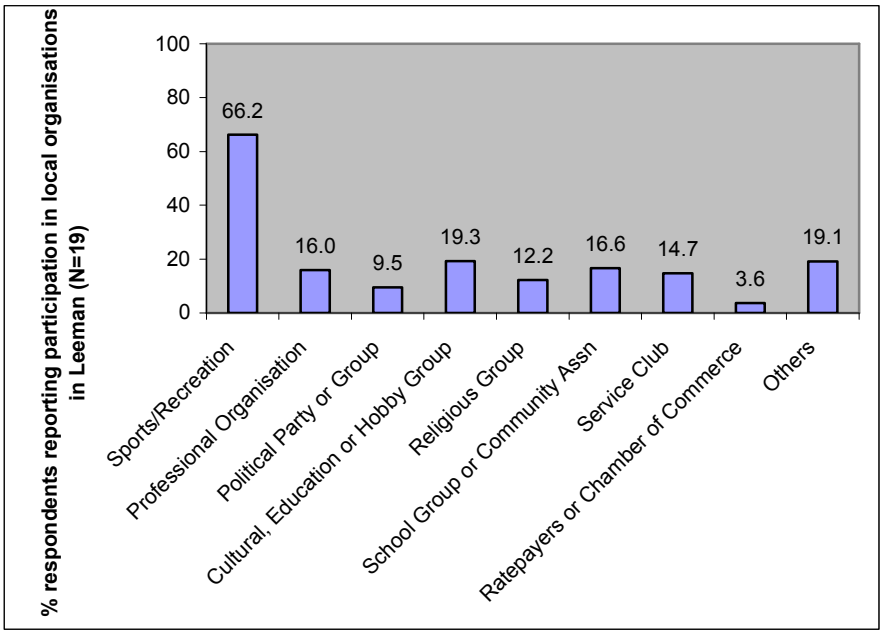


Figure 7: Participation in Local Organisations in Leeman

The Leeman Recreation Centre caters for a number of sports that include basketball, netball, badminton, volley ball and tennis. A bowling green and a football oval form part of the Leeman Country and Sporting Club opened in 1973. The community's strong sports orientation was summed up by one interviewee who noted that:

> *Leeman is quite sporting-orientated. If you are sports-orientated, you'd fit very well. If you're not, it can be very hard and it can get quite cliquey. The town is still sociable but the different working hours between the miners and the fishers tend to affect the socialisation process (Interviewee No. 131, 2004).*

The declining vitality of the town in recent years is a result of the reduced number of people who work in the mines and live in Leeman as well as the increased mobility of the fishing fleet. Some community residents noted that:

> *When we first came to live in Leeman, mining was a lot bigger and the miners back then put a lot in terms of donations and support. But a lot of them are 'fly-in/fly-out' now or doing shift work so they only live here for a week and then they go so they don't really socialise a lot (Interviewee No. 126, 2004).*

> *There used to be more activities in the town and more teams to play sports but now there's only a few. With the increasing tendency for mobility, the crew can't play football regularly and fishers miss the community meetings and the basketball finals in February (Interviewee No. 156, 2004).*

Survey respondents in Leeman perceive that their community is overall a cohesive community (Figures 8A and 8B).[5] They have high levels of agreement that 'if there was a serious problem, people would get together and solve it', that 'the local community is friendly towards newcomers' and that 'there is strong local support for community events, such as show days and festivals'. One community resident (No. 174, 2005) summed it up as follows:

> *Yes, the town is very helpful. For instance, when [someone's] house burned down and the family lost everything, the community rallied behind them immediately. Money was allocated and people came along with donations. Generally speaking, everyone pulls together and gets together to do things.*

[5] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

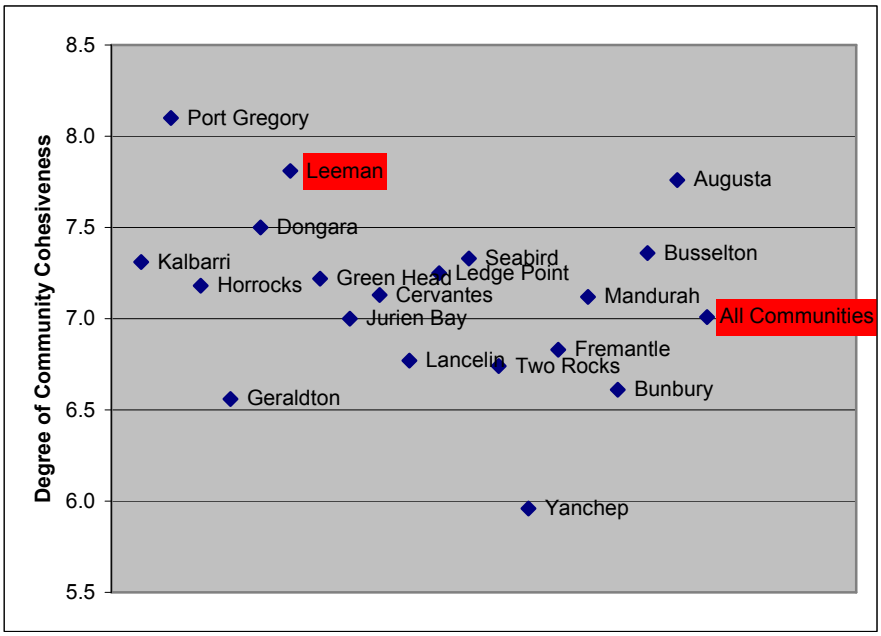


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

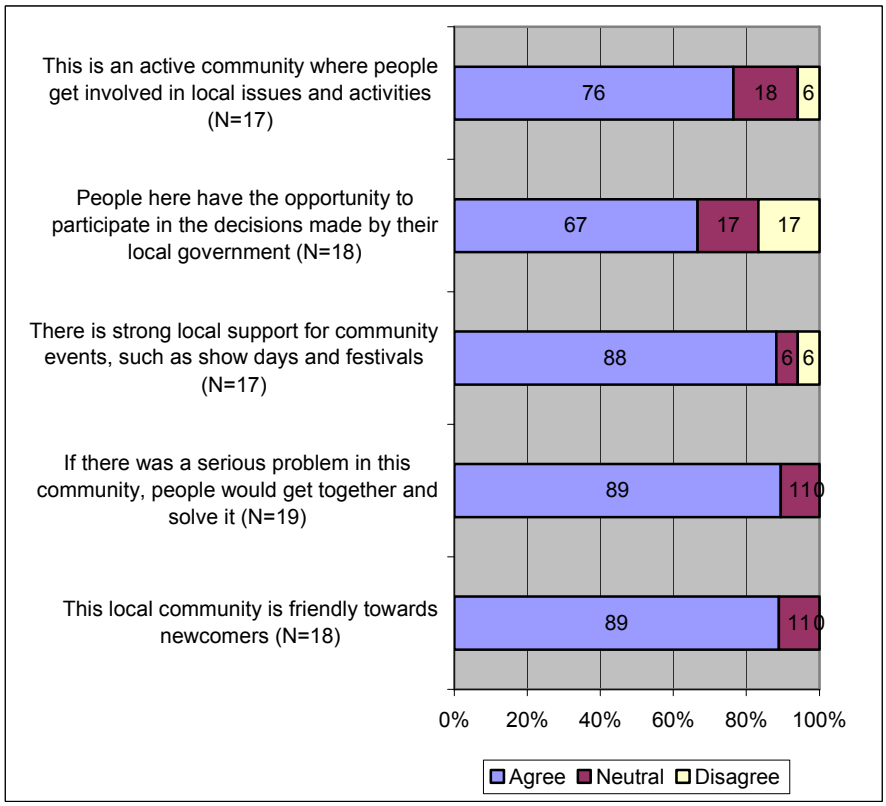


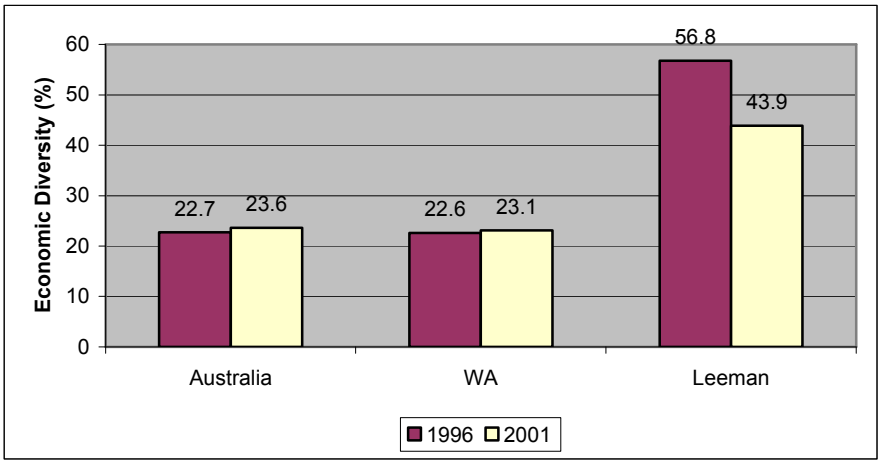
Figure 8B: Perceptions of Community Cohesiveness, Leeman

4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

As Appendix 1 shows, the mining industry division was still the primary employer in Leeman in 2001 but its share of total employment has been steadily declining since 1991. The agriculture, forestry and fishery industry division was the next biggest employer, with rock lobster fishers accounting for 61 per cent of the total number of persons employed in the whole sector. In contrast with the mining industry, the share of agriculture, forestry and fishing to total employment had increased from 8 per cent in 1991 to 14 per cent in 2001. Other industry divisions such as retail trade and construction also registered increased employment from 1991 to 2001.

The level of economic diversification in Leeman was considerably lower compared to the Australian and the Western Australian economies (Figure 9).[6] Nevertheless, between 1996 and 2001, there had been a higher diversification of economic activities in Leeman. The metal ore mining industry subdivision employed the largest number of workers in 2001, followed by the commercial fishing industry subdivision and the education industry subdivision. The sale of houses owned by the mining company was seen by some residents as a good thing with one interviewee (No. 135, 2004) commenting that "it will bring in new people, not just those who are in fishing and mining, that the town will need to move ahead".



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Leeman

4.1.1 Fishing Industry

Professional crayfishing first started in Leeman around 1956. The catch was initially sold to freezer boats but later, it was transported by a DC 10 aircraft to Fremantle (Townscape Analysis and Proposal for Leeman, 1999). Crayfishing is still a major industry in Leeman,

[6] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

providing employment not only for fishers but to the employees of the three licensed crayfish reception facilities (receival depots) that operate in Leeman. There are no supporting industries that directly support the fishing in Leeman such as boat mechanics, hydraulics and electronics. The contribution of the rock lobster industry to the community was summed up by one rock lobster fisher (No. 157, 2004) as follows:

> *With about 18-20 permanent boats (half of which are owner-operated), and when you consider that at least half of them have 2 crew, there are three families off each boat. So, you are looking at about 50 families involved in fishing in Leeman. That's not counting the ones picking up the lobsters at the factories and driving the trucks. Without these families involved in the industry, there'd be nothing in Leeman.*

Rock lobsters landed in Leeman account for 8 per cent of the catch of the Mid West Region (Appendix 2).[7] Wetlining also forms part of the local industry with fish species such as snapper, dhufish, groper and shark caught by the professional fishers.[8] On average, 35 boats use Leeman as their anchorage point, with most of the crew living locally in Leeman or Green Head.

A few fishers still live in the coastal shacks at Dumper Bay and Coolimba.[9] Many of the crew are seasonal residents who return to Perth or other areas during the off-season (July to November).

The Leeman rock lobster fishing fleet operates in the three zones of the rock lobster fishery, but the majority (60%) operate in Zone B.[10] Thirty-four per cent of the boats fish out of Leeman between November and March and then move to Zone A when the season opens in this zone in mid-March. As one rock lobster fisher (No. 123, 2004) noted, "Leeman fishers are cut into two categories – the fishers who live in town who fish here and the other group who live in Leeman for the whites".[11] Local business and residents appreciate the contribution of the large influx of fishers during the 'whites' season. During the community workshop held in Leeman, rock lobster fishers noted that:

[7] The Mid West Region of Western Australia extends along the west coast from Green Head to Kalbarri and more than 800 kilometers inland to Wiluna in the Gibson Desert. Its area of 472,336 square kilometers covers nearly a fifth of the State, and comprises nineteen local government authorities. The City of Geraldton is the region's commercial, administrative and service centre (*Indicators of Regional Development in WA*, Department of Local Government and Regional Development, March 2003).

[8] Wetlining refers to line fishing for scale/fin fish (snapper, groper, jewfish [or dhufish] and is also called scale or fin fishing (Gray, 1999:277).

[9] Coolimba, located less than 10 kilometers north of Leeman, contains an area of over 900 hectares with nearly 5.5 kilometers of coast line. Along with Illawong (an area of about 130 hectares with over 1.5 kilometers of coast line located 26 kilometers north of Leeman), it is identified in previous planning as preferred nodes for professional fishers leasehold lots (Carnamah Coorow Coastal Strategy Issue Paper 1, 2006:7).

[10] The number of boats licensed to fish for rock lobsters in the various zones is carefully controlled. Provided certain conditions are met, boat/license owners are able to transfer their pot entitlements between fishing zones (A, B or C zones). The zones are defined as follows: Zone A – Abrolhos Islands; Zone B – coastal fishery from 21º 44' S to 30º S excluding the A zone; Zone C – the waters between 30º south latitude and 34º 24' south latitude excluding all waters on the south coast east of 115º 4' east longitude; and Big Bank (Department of Fisheries, 2002: 5).

[11] 'Whites' refer to the adolescent phase of the western rock lobster, evidenced externally by a moult to a pale exoskeleton, lasting several weeks. They usually reach legal size with this moult, and are typically hungry, so they represent a significant part of the catch, this portion of the season being referred to as 'the whites' (Gray, 1999:277).

> *Traditionally, Leeman gets a lot of fishers from Geraldton or the Islands during the whites. They come here, rent houses, and spend in the Club and in the town. They are part of the face and identity of the fishing community in Leeman. They are critical to the town to the extent that if they did not come here regularly, there are a lot of activities and businesses that would not be sustainable in town (Community Workshop Results, 2006).*

Leeman is considered by most fishers as a 'very stable' and 'less expensive' fishing area since one doesn't have to go a long way to the fishing grounds. As one postal survey respondent (No. 011, 2004) commented, "The lifestyle rock lobster fishing provides is excellent. It is a family-based industry and provides the backbone to thriving coastal communities." While it is recognised that fishing is a hard physical work and that it is a very competitive industry, "one of its best attractions is the quick money" (Interviewee No. 097, 2004).

About half of the resident fishers in the community operate on the basis of pot leasing arrangements. Some fishers lease 1-10 pots while some lease 100-110 pots. Among the problems faced by lease fishers based in Leeman include the following:

> *It is hard to make money when leasing because of the low beach prices.[12] You struggle to make money because the fixed cost is such a large percentage of your turnover. Now that oil prices on the rise, this will mean an even bigger problem for lease fishers. Owner-operators have a bit more control on their costs so there're still okay (Interviewee No. 097, 2004).*

> *I had been fishing for 18 years and for the past 8 years, I had been leasing a whole license. Every year, it has become increasingly difficult to procure a fair lease deal with the license holders. Before leasing became popular, the license holder provided a boat and gear and the skipper provided the crew and paid running expenses, the catch proceeds were split 60/40. With the 60 per cent proceeds, the skipper paid all the expenses except boat refits and maintenance. These deals are now rare, most skippers receive 15-17 per cent wage only. Those entering the crayfishing industry without a family license have to lease a license. From our experience, the lessee takes all the risk, by having to own the boat and gear and pay all the expenses including the crew and the lease. The lease price is set by the lessor who demands either a set price per pot or a factor of the average price per pot, usually on a take it or leave it basis. Both of these are usually very high, approximately 50-60 per cent of the catch (based on industry average catch per pot). A system like this does not allow for bad years, which occur in all primary industries. For instance, in this town alone, three lessees are not leasing next year or being forced out due to the lease price being too high and the low average price per kilo. Those that remain will not make a profit for the year. [One way of addressing this problem is for] the lessor and the lessee to take equal risks and allow a sharing of the catch that allows the lessee to cover the cost of leasing and still make a profit (Postal Survey Respondent No. 588, 2004).*

[12] 'Beach' price refers to the average price paid to fishermen selling their catch directly to licensed rock lobster processors (Department of Fisheries, 2002:13).

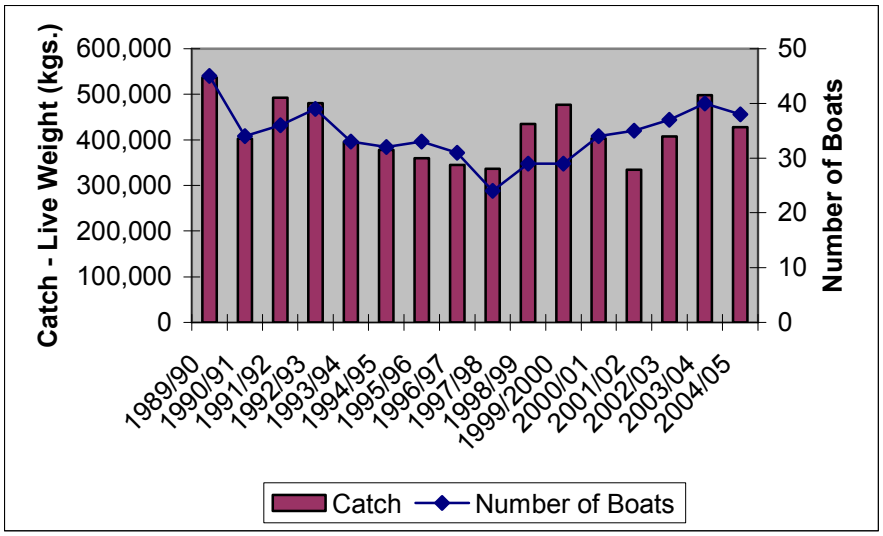
Those who are leasing a license have to fish harder to keep afloat financially. The fishers of old used to be "solar-powered" – they didn't get up until the sun was up and were home before the sun came down. Most of them were in by 12 noon. Now the guys go long before the sun does up and are still not at home by 3:00 P.M. (Interviewee No. 156, 2004).

In terms of fishery-related facilities, Leeman has a jetty, fuel service, crayfish reception facilities (receival depots) and boat ramps. These facilities are located mostly on the ocean beach front, a reflection of the industry's prominence in the early development of the community (Plates 1A and 1B). The "L"-shaped timber jetty constructed in 1982 is situated in open waters and has an offshore reef that provides limited protection (Department for Planning and Infrastructure, 2003). This jetty, maintained through the fuel levy paid by jetty users, is used by professional fishers but also by a large number of amateur fishers that come to Leeman each year.

Plates 1A and 1B: Timber Jetty in Leeman

(Source: Veronica Huddleston, 2004.)

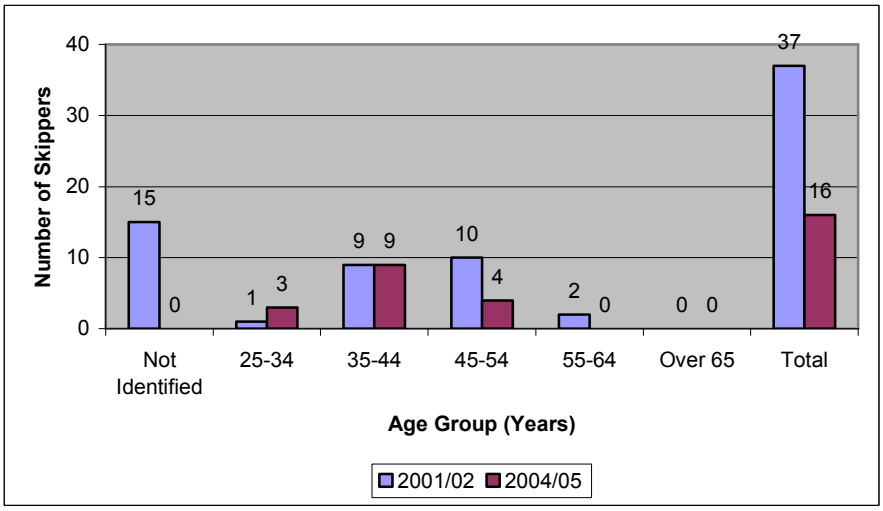
Both catch volumes and the number of boats stationed in Leeman show fluctuating trends (Figure 10). But as one rock lobster fisher noted during the Leeman community workshop, "We don't have huge fluctuations in our catch; we don't have really good years and we don't have really bad years." During the 1997/98 season, Leeman experienced a significant drop in both catch volume and number of boats as compared to the 1990/91 season but since 1998, the trend has stabilised. In 2004/05, 38 boats were based in Leeman, engaging 96 crew members (Appendix 3).



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Leeman

While the number of skippers residing in Leeman has decreased since the 2001/02 season, their age structure has remained the same (Figure 11). The majority of skippers who are residents of Leeman were in the 35-44 years age category and used an average of 81-110 pots during the rock lobster season. In 2004/05, there was a marked decrease in skippers aged between 45-54 years over the 2001/02 fishing season. As one rock lobster fisher (No. 156, 2004) noted, "Some have sold up and gone. They have either grown old and their kids don't want to take on a smaller license. Some probably lease most of their license."



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Leeman, 2001/02 and 2004/05

On their perceptions of the rock lobster industry, Leeman residents agree strongly that 'the decline in the number of commercial rock lobster boats has had a negative impact on local businesses in the community' (Figure 12). They also highly agree that 'the rock lobster fishery and processing sector is a good source of employment for people in the community'.

One interviewee (No. 131, 2004) observed that, "At the end of the fishing season, we lose all the money and the interaction within the town."

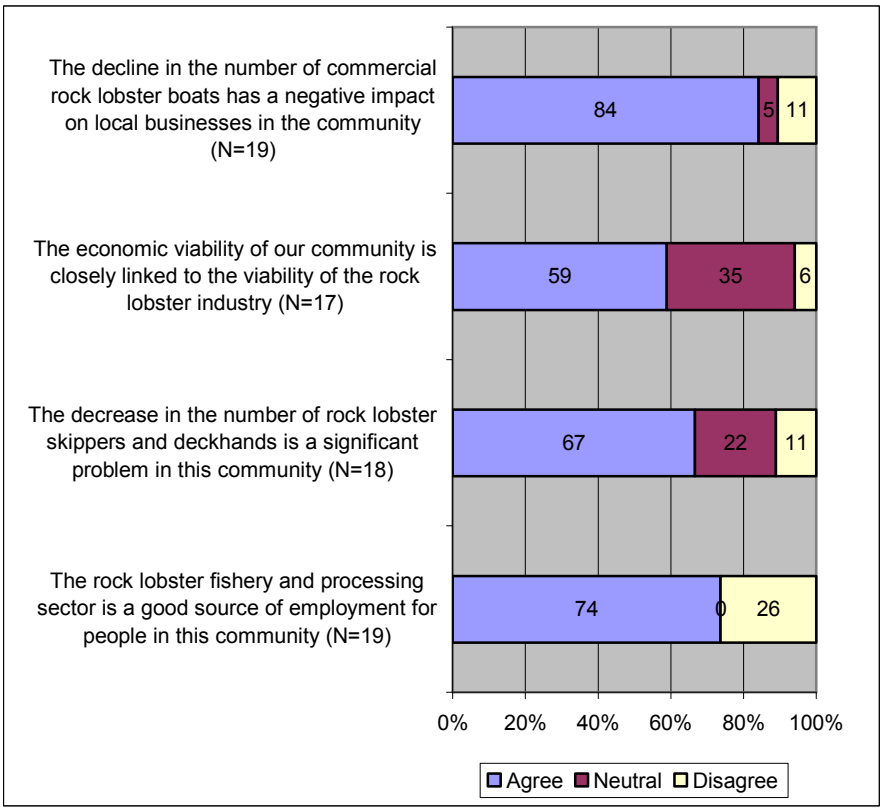


Figure 12: Perceptions of the Rock Lobster Industry, Leeman

On the question of whether they would encourage young people to be involved in rock lobster fishing, 52 per cent of survey respondents gave a negative response and 21 per cent were not sure (Figure 13). Even some of the current fishers in the community indicated that they would like to see their children get a trade first before fishing. Only 27 per cent of survey respondents indicated that they would encourage young people in Leeman to enter the rock lobster industry.

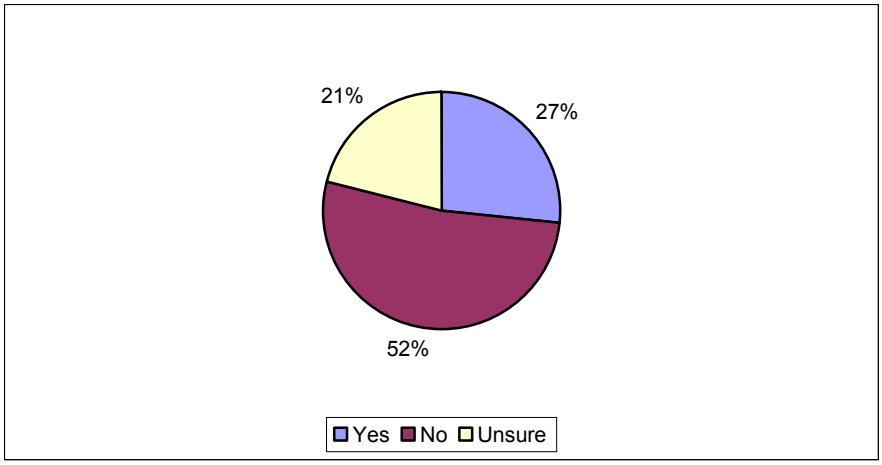


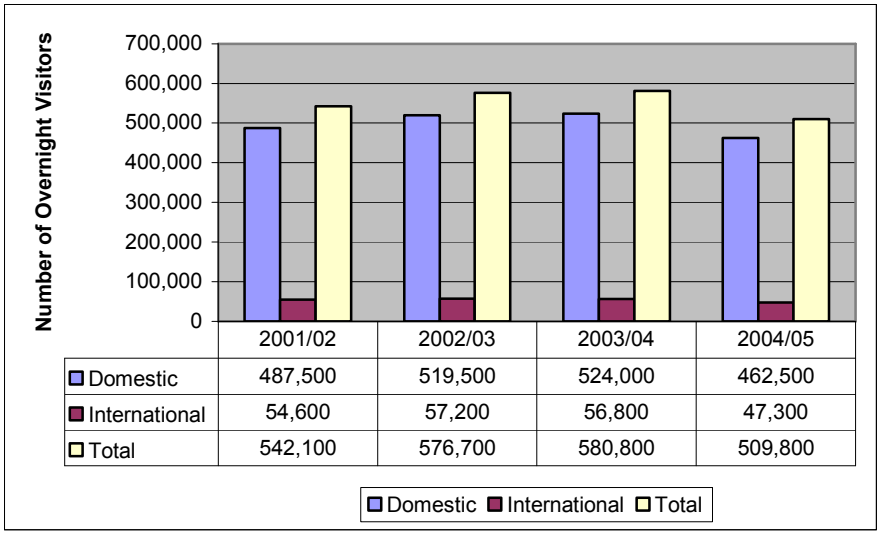
Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Leeman

4.1.2 Tourism

With its good beach and offshore fishing activities, Leeman is a popular destination to tourists and holiday makers from the state (Plates 2A and 2B). The number of overnight tourists has been generally increasing since 2001/02 but decreased slightly in 2004/05 (Figure 14). There are few international tourists travelling to the region, but those that do are primarily there for general tourism (Appendix 4).

Plates 2A and 2B: Ti Tree Cove/Little Bay and Private Jetty in Leeman

(Source: Veronica Huddleston, 2004.)



	2001/02	2002/03	2003/04	2004/05
Domestic	487,500	519,500	524,000	462,500
International	54,600	57,200	56,800	47,300
Total	542,100	576,700	580,800	509,800

(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 – 2004/05, Mid West Region

One of the popular tourist attractions in Leeman are the caves in the Stockyard Gully National Park located in the eastern side of the town. The area also benefits from an abundance of bird species. There is also a large population of sea lions on the Beagle Islands, located north of Leeman. Lake Indoon, east of Leeman, is a popular picnic and camping spot with basic facilities. The freshwater lake is suitable for recreational boating, canoeing and water skiing. Many windsurfers also come to Leeman which possesses very good conditions for this sport. Leeman is also rich with wildflowers and flowering native plants can be seen from late July until November each year. The Leeman Caravan Park and Tamarisk Court Holiday Units in Leeman provide accommodation facilities for visitors to the area.

In terms of the tourism potential, only 61 per cent of survey respondents indicated their agreement that 'the coast around the town site is suitable for more tourism activities than we have at present' (Figure 15). This can be attributed to the fact that only basic tourism facilities exist in the town. One community resident (No. 158, 2004) summed up the tourism challenge in the community as follows:

> *Probably the two major problems that we have in Leeman at present are that we don't have enough accommodation to cater to an increasing number of tourists and we are starving for a restaurant or a food outlet in town. People here go to Jurien Bay for meals. The club has an outlet but how many times can you go to the same place to eat?*

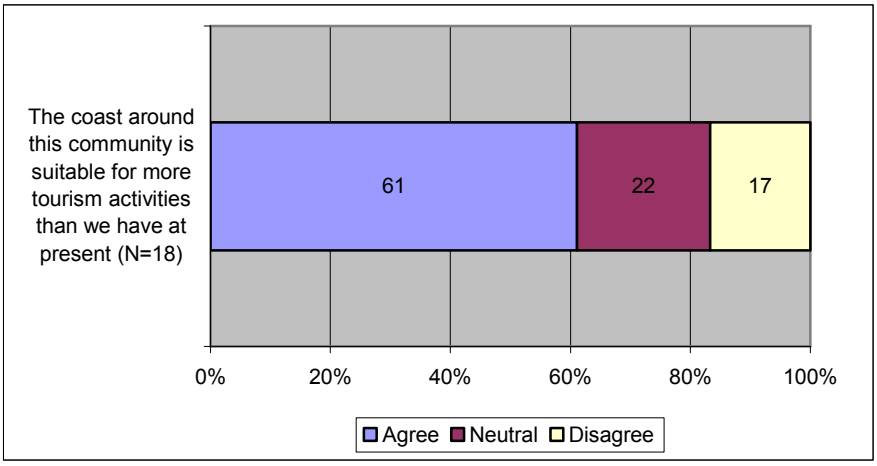


Figure 15: Perceptions of Tourism Potential, Leeman

4.1.3 Business and Commerce

Leeman has three main commercial zones. These zones include takeaway shops, gift shop, video shop, hairdressers, hardware, restaurant and club areas, and two general stores, one with the Post Office and the other with a bottle shop license. Most residents indicated that they do their major shopping in Jurien Bay, Geraldton or Perth and only shop for daily consumables in the town. The main industrial area is located east of the main urban part of Leeman with sheds and fenced yards. Among the businesses located in the industrial area are a plant nursery, earth moving companies and a machinist.

Leeman also has a Telecentre that has a range of rental equipment such as videoconferencing equipment, computers and printers, scanners, photocopiers, facsimile, laminator, and a web camera (Plate 3). It is a valuable resource, providing opportunities and assistance to local residents to access technology in order to operate their business. Farmers and some local traders use the Telecentre for compiling their business statements and deckhands use it to obtain business registration numbers (Destinations Magazine, September – October 2001, p. 33). The Telecentre also hosts accredited TAFE courses, non-accredited courses and various other lifestyle and educational courses.

Plate 3: Leeman Telecentre

(Source: Veronica Huddleston, 2004.)

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

Leeman is located along the Indian Ocean Drive which becomes Leschenaltia Drive within the town limits. There are five entrance roads into the community, all of them with good bitumen surfaces. The more significant entry off the highway into town is Ruddock Street which has direct visual link to the ocean. The street pattern in the town consists of a gentle meandering road system based on a grid with some walk ways connecting the *cul de sacs*.

4.2.2 Water and Electricity

Potable water is supplied by a water tank located close to the industrial area. Electricity was connected in 1976 to service the residents in the central urban area of Leeman. However, potable water, electricity and sewerage services are not available to any of the land north of Leeman and there are no current plans to provide them (Carnamah-Coorow Coastal Strategy Issue Paper 1, 2006:7).

4.2.3 Communications

A telephone land line service operates in Leeman and many residents use the Telstra Digital Mobile Telephone Network. Residents get local information and details of local events through the Snag Island News.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Administration[13]

Leeman, together with Green Head and Coorow, make up the Shire of Coorow, an area of 4,137 square kilometres with approximately 1,500 people. Prior to 1962, Leeman was under the jurisdiction of the Carnamah Roads Board. The Shire Administration Centre based in Leeman provides a number of services that include environmental health, building and town planning services, ranger services, library services, licensing; and other community services.

[13] This section is based on the information from the Shire of Coorow <http://www.coorow.wa.gov.au/council> (cited 04 October 2006) and the Coorow Shire Townscape Program Draft Character Study, Townscape Analysis and Proposals/Plan, May 1999.

4.3.2 Education and Health

Leeman has a kindergarten for four-year olds, a pre-primary school for five-year olds and a primary school for Years 1 to 7 (Plate 4). The three schools have an enrolment of 70 students. Once students reach Junior High School, they must study at the Jurien District High School or go to boarding schools in Perth or Geraldton. Interviewed residents indicated that the lack of facilities for the schooling of their children is a major cause of out-migration from Leeman.

Plate 4: Leeman Primary School

(Source: Veronica Huddleston, 2004.)

Medical services are provided by visiting doctors from Jurien Bay and Dongara who hold weekly clinics at the Leeman Medical Centre, directly located across from the Police Station. Leeman is also served by a Silver Chain nursing post with a resident Silver Chain Nurse.

4.3.3 Law and Order

Three officers currently man the Leeman Police Station. They are also responsible for ensuring peace and order in Green Head. Most of the crimes committed by the residents of Leeman are related to anti-social behaviour or are drug or alcohol-related. Some residents credit the building of the Police Station in 1996 as having had a 'substantial positive impact on alcohol and drug abuse in the town'.

Opportunist crimes, e.g. burglaries, are more common during the Christmas/summer holiday periods given the increased number of tourists and holiday-makers visiting the town. Community residents commented that Leeman is a 'really safe town' but that "over the holidays, we lock everything up. We even worry about our outboards and dinghies down at the jetty. As soon as you have an influx of people, you get crime" (Interviewee No. 157, 2004). Appendix 5 highlights the very low rates of crime in Leeman in comparison to other centres in the Mid West and Gascoyne Districts of Western Australia.

Appendix 1: Employment by Industry, 1991-2001 - Leeman									
Urban Centre/Locality	*1991*			*1996*			*2001*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
Agriculture, Forestry and Fishery	9	8	17	14	9	23	23	10	33
of which: Rock Lobster Fishing			--			9			20
Mining	86	31	117	80	26	106	57	11	68
Manufacturing	3	0	3	3	0	3	3	3	6
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	0	0	0	0	0	0	3	0	3
Construction	10	0	10	13	3	16	20	3	23
Wholesale Trade	9	3	12	3	0	3	3	3	6
Retail Trade				9	10	19	12	14	26
Accommodation, Cafes and Restaurants	Not a separate sector			6	12	18	3	6	9
Transport and Storage	0	0	0	3	0	3	3	0	3
Communication Services	0	0	0	0	0	0	3	0	3
Finance and Insurance	6	3	9	0	0	0	0	0	0
Property and Business Services				3	4	7	3	4	7
Government Administration and Defence	3	0	3	3	0	3	6	3	9
Education	Not a separate sector			3	16	19	0	13	13
Health and Community Services	3	14	17	0	0	0	0	16	16
Cultural and Recreational Services	6	12	18	0	3	3	0	3	3
Personal and Other Services				0	0	0	9	0	9
Non-classified/Non-stated	6	3	9	3	3	6	6	0	6
Total for All Industries	141	74	215	143	86	229	154	89	243
Share of Agriculture, Forestry and Fishery to Total Employment	6.4	10.8	7.9	9.8	10.5	10.0	14.9	11.2	13.6
Share of Top Three Sectors to Total Employment	74.5	77.0	70.7	74.8	62.8	64.6	64.9	48.3	52.3
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a , 2002/03 - 2004/05 - Western Australia and the Mid West Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Mid West Region	2,075	2,510	2,512	5,628	6,495	6,159
of which: Leeman's Share (%)	2.7	1.2	1.2	4.0	2.5	2.5
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Mid West Region	53	15	13	694	196	170
of which: Leeman's Share (%)	--	--	--	--	--	--
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Mid West Region	4,932	5,385	5,425	120,582	102,322	116,632
of which: Leeman's Share (%)	9.3	10.1	8.8	9.3	10.1	8.8
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Mid West Region	5,851	615	5,345	20,122	2,364	19,307
of which: Leeman's Share (%)	0.1	0.8	0.2	0.1	0.6	0.1
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Mid West Region	12,936	8,552	13,308	147,324	111,685	142,409
of which: Leeman's Share (%)	4.2	6.8	4.6	7.9	9.4	7.7

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Leeman						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Leeman	492,835	344,870	334,085	407,256	498,250	427,897
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Leeman	541,323	356,778	457,805	454,103	477,957	402,398
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Leeman	36	31	35	37	40	38
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Leeman	88	78	93	97	99	96
(Source of Data: Department of Fisheries, Western Australia.)						

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - Mid West Region								
	2001/2002		*2002/2003*		*2003/2004*		*2004/2005*	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	219,000	44.9	237,000	45.6	232,000	44.3	215,500	46.6
Visiting Friends/Relatives	92,000	18.9	107,500	20.7	114,000	21.8	114,500	24.8
Business /c	132,500	27.2	134,500	25.9	132,000	25.2	91,500	19.8
Other /d	20,000	4.1	27,500	5.3	30,500	5.8	26,500	5.7
Total	487,500	100.0	519,500	100.0	524,000	100.0	462,500	100.0
International Visitors								
Holiday/Leisure	50,900	93.2	54,000	94.4	53,800	94.7	42,300	89.4
Visiting Friends/Relatives	1,900	3.5	1,900	3.3	1,800	3.2	3,400	7.2
Business	1,200	2.2	1,000	1.7	800	1.4	900	1.9
Other	1,500	2.7	1,300	2.3	1,700	3.0	2,200	4.7
Total	54,600	100.0	57,200	100.0	56,800	100.0	47,300	100.0
Total Visitors								
Holiday/Leisure	269,900	49.8	291,000	50.5	285,800	49.2	257,800	50.6
Visiting Friends/Relatives	93,900	17.3	109,400	19.0	115,800	19.9	117,900	23.1
Business	133,700	24.7	135,500	23.5	132,800	22.9	92,400	18.1
Other	21,500	4.0	28,800	5.0	32,200	5.5	28,700	5.6
Total	542,100	100.0	576,700	100.0	580,800	100.0	509,800	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Leeman				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Mid West/Gascoyne District	1,045	1,147	1,155	1,348
of which: Leeman (number)	2	5	1	4
as percent of the District	0.2	0.4	0.1	0.3
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Mid West/Gascoyne District	1,417	1,375	1,343	1,213
of which: Leeman (number)	0	4	2	1
as percent of the District	0.0	0.3	0.1	0.1
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Mid West/Gascoyne District	815	667	661	569
of which: Leeman (number)	0	1	7	0
as percent of the District	0.0	0.1	1.1	0.0
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Mid West/Gascoyne District	36	40	43	25
of which: Leeman (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Mid West/Gascoyne District	234	206	222	238
of which: Leeman (number)	1	1	1	0
as percent of the District	0.4	0.5	0.5	0.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

GREEN HEAD

1.0 GEOGRAPHIC SETTING

Located 288 kilometres north of Perth, Green Head is situated half way between Leeman and Jurien Bay. Like most coastal settlement along the central coast, it owes its early development to the growth of the rock lobster industry. In more recent years, it has attracted holiday home development and is currently experiencing a surge in residential development.

Green Head is nestled on the West Australian coast (Latitude: 30° 04' South and Longitude: 114° 58' East) and has an attractive coastline of rocky headlines, sheltered bays and offshore islands. The area is rich in fauna and has a large bird population. Nearby Fisherman's Island is a breeding colony for sea lions.

The community experiences a southern Mediterranean climate, with hot dry summers and mild wet winters. While August is generally the coldest month (with a maximum average of 19.3 degrees Celsius and a minimum average of 9.3 degrees Celsius), the climate provides for a comfortable living environment all year round.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[1]

Early historical records indicate that in the 1600's, the first known Europeans to visit the Green Head coast were Dutch sailors en route to Indonesia for trade purposes. During this historical period, several Dutch ships were wrecked on the West Australian reefs. One of these ships was the Vergulde Draecke" (Gilt Dragon). Abraham Leeman and the crew of the 'Waeckende Boey' (Watch Buoy) were sent to search for survivors of the Gilt Dragon, marooned on Fisherman's Island just south of Green Head in 1658.[2]

In more contemporary times personal accounts, particularly of the Bates family from Three Springs, indicated that inland families came to spend their holidays at Green Head's Dynamite Bay in the early 1920s. They came by truck and carried all they needed with them including water. Commencing in the 1930s, beekeepers travelled to the coastal strip to take advantage of the proliferation of wildflowers that grew in the area. Tales of their visits to the area were said to include 'being bogged down in treacherous sand'. In 1941, the 25th Battalion of the Army used Green Head as their base to watch the coastline for enemy craft, during which time a useable track to the coast was created.

With the growing rock lobster industry in the 1950s, fishermen started settling in Green Head in 1957 to live in close proximity to the fishing grounds. The first fishermen to settle in the area were Chris Russell, Les Wilkes and Ken Walton. They first lived in tents on

[1] This section is based on information from the Green Head Character Study, Townscape Analysis and Townscape Proposals, December 1999; Community, Business and Telephone Guide, 2004-2005; and <http://www.smh.com.au/news/Western-Australia/Leeman/2005/02/17/1108500208260.html> (cited 21 January 2005).

[2] The town of Leeman, located 14 kilometers north of Green Head, was named after this Dutch sailor and navigator.

Fisherman's Island prior to building shacks on the mainland. The arrival of more fishermen, including Keith House and Doug Morphett, resulted in the construction of more fishing camps and coastal shacks in the area.

Gazetted on January 7, 1966, the first freehold lots in the Green Head town site were auctioned at the Coorow Shire Hall three years later in 1969.[3] Prior to this auction, larger blocks located fronting the jetty, were allocated in 1967 to fishermen for residential and storage purposes. The first buildings constructed in Green Head were fishermen's shacks. Figure 1 shows the town map of Green Head that features the location of social and fishery-related infrastructure facilities.

(Source: Institute for Regional Development, 2006.)

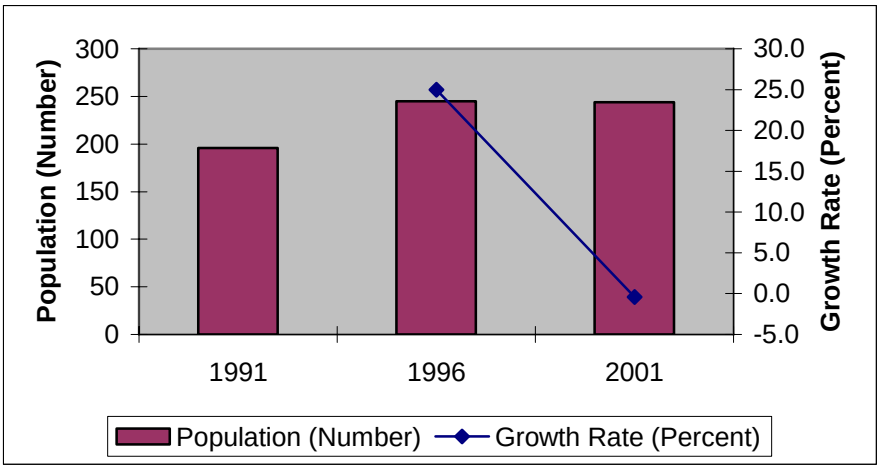
Figure 1: Town Map of Green Head, 2006

[3] The lots sold were Bryant Street, McGilp Street, Bierman Street, Ocean View Drive, Battersby Road, Kau Street and Farley Street, with prices ranging from $360 to $1,200 per lot. Prior to this auction, larger blocks located in front of the jetty were allocated to fishers for residential and storage purposes.

3.0 THE PEOPLE

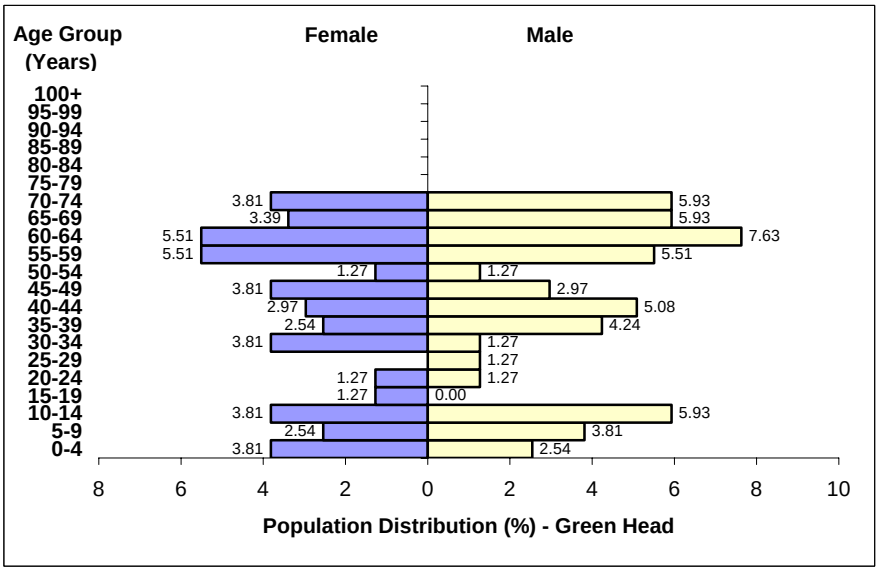
3.1 POPULATION CHARACTERISTICS

Green Head's population grew by 25 per cent from 1991 to 1996 and stabilised in 2001 (Figure 2).[4] Males represented 55 per cent of the population in 2001, a slightly higher percentage than the 51 per cent registered in 1996. As Figure 3 shows, males are more significant in the older age groups (60 years old and over) and in the 10-14, 35-39 and 40-44 age groups.



(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth Rate, 1991 - 2001, Green Head



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Green Head

[4] Census data refer to the population of Green Head as an urban centre/locality (UC/L). A locality is a population cluster of between 200 to 999 people who are classified as rural for statistical purposes (1996 Census Dictionary).

The median age of 46 years in Green Head was relatively high, compared to both the Western Australian and Australian median age of 34 years and 35 years, respectively (Table 1). The increase in the population over 65 years could be partly attributed to the attraction of the town to retirees from either the rural farming areas or the urban areas of the state. As one community resident (No. 139, 2004) noted, "We have a lot of retirees here and a lot of them put in time in the community working as free volunteers."

Table 1: Population Indicators, 1991-2001 - Green Head

Urban Centre/Locality	*1991*	*1996*	*2001*
Total Resident Population	213	257	236
Male	104	132	129
Female	109	125	107
Population under 15 years	50	68	53
Population of employable age	149	160	138
of which: Population aged 15-19	6	3	3
Population over 65 years	14	29	45
Dependency Ratio /a	43.0	60.6	71.0
Child Dependency Ratio	33.6	42.5	38.4
Elderly Dependency Ratio	9.4	18.1	32.6
Median Years	33	41	46
% of Overseas Born	16.1	22.2	10.5
% of Indigenous Population	0.0	0	4.1

/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

More than 60 per cent of the population are in the economically active age groups of 15-64 years. Eighty-nine per cent of Green Head's resident population in 2001 were born in Australia. Of the 11 per cent who were born overseas, the majority was born in the United Kingdom. Other nationalities came from New Zealand, the Netherlands and Egypt. The indigenous population in the community made up 4 per cent of the total population. In terms of years of schooling: 15 per cent reported finishing Year 9; 41 per cent reported completing Year 10; and, 14 per cent reported completing secondary school (Year 12).

Based on religious affiliation, the 2001 Census indicated that 67 per cent of Green Head's population was Christian, predominantly Anglicans. Twenty-two per cent reported no religious affiliation and the remainder did not provide any response. While there are no churches in Green Head, a Christian fellowship is held every Sunday at the Green Head Community Centre. Some residents also go to Leeman where a Catholic church provides weekly services.

The decline in the number of population below 15 years of age could be partly attributed to the decline in the number of couple family households with children (Table 2). From 1996 to 2001, the family and household configuration of Green Head shifted to 'couple families without children'. Residents who have children, nonetheless, find living in Green Head conducive to raising children, with one resident (No. 103, 2004) commenting that:

We like the freedom of the lifestyle for the kids. You can let the kids go to the shop, walk down the beach and not worry about them. You know who they are mixing up with after school. Since the kids grew up here, they do not miss going to the movies or enrolling in dance classes. They have the beach, fishing and surfing to fill up their time.

During the community workshop held in Green Head in June 2006, participants noted that increasingly, Green Head is becoming a popular residential community for those who work in the mines. As one participant put it (Community Workshop Results, 2006):

Those who work in the mines (as far as Queensland) live in town and have their own homes here. While working in the mines, their family lives here. They know they're secure and the kids are safe. Knowing their families are safe is a huge thing for those working in the mines, especially those with young families.

Table 2: Family and Household Characteristics, 1991-2001 - Green Head

Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	24	30	22
Couple Family without Children	18	34	39
One Parent Family	0	0	3
Other Family	0	0	3
Total	42	64	67
Proportion of Couple Families with Children to Total Families	57.1	46.9	32.8
Proportion of Couple Families without Children to Total Families	42.9	53.1	58.2

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.2 DWELLING CHARACTERISTICS

There are more unoccupied dwellings in Green Head than occupied ones (Table 3). The proportion of unoccupied dwellings to total dwellings is one of the highest among the communities hosting the rock lobster fleet.[5] This could be attributed to a significant number of homes in the area being kept as holiday homes. One community resident (No. 168, 2004) noted the problem associated with low occupancy rates in Green Head and commented that:

We have so many houses here that are not actually lived in more often; they just stay empty. Some people might use them only for a few weeks each year. If they were more permanent, it would bring job opportunities for local tradesmen.

[5] The proportion of unoccupied dwellings to total dwellings is 60 per cent in Lancelin and Green Head and more than 70 per cent in Ledge Point and Seabird compared to 15-20 per cent in Dongara, Kalbarri, Mandurah, Two Rocks, Busselton and Yanchep.

In 2001, separate (detached) houses made up the bulk of the occupied private dwellings in Green Head (90%), most being fully owned or in the process of being purchased (78%). The median monthly housing loan repayment was lower compared to the total Australian and Western Australian median loan repayment ($800-$899 for both). The median weekly rent was comparable to that of Western Australia and lower to the total Australian median weekly rent of $150-$199.

Table 3: Dwelling Characteristics, 1991-2001 - Green Head

Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	78	96	96
By Structure			
Separate House	64	85	86
Semi Detached	7	6	3
Flat, Unit or Apartment	0	0	0
Other /a	7	5	0
Not Stated	0	0	7
By Tenure			
Fully-Owned	28	54	55
Being Purchased	19	20	20
Rented	18	17	18
Other	13	0	3
Not Stated		5	0
Unoccupied Private Dwellings	112	142	161
Median Monthly Housing Loan Repayments	$551-$625	n.a.	$600 - $799
Median Weekly Rent	$78-$107	n.a.	$100 - $149

/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.3 EMPLOYMENT AND INCOME

Eighty-three per cent of Green Head's total labour force was employed in 2001, 60 per cent of whom were in full-time employment (Table 4). Green Head had one of the highest rates of unemployment (16.1 per cent) in 2001, compared to the Western Australian and national unemployment rates of 7.5 per cent and 7.4 per cent, respectively. Full time employees were predominantly males while females employees made up the bulk of the part-time workers.

Residents noted that when families migrate out of Green Head it is because of 'better work opportunities elsewhere'. Meanwhile, some residents continue to live in Green Head while working in nearby towns such as Jurien Bay or working on inland farms. One resident (No. 108, 2004) noted that "there are only limited employment opportunities in Green Head." In addition to finding work in Jurien Bay, many residents are taking advantage of work opportunities created in the mining sector and in the construction of the Emu Downs Wind Farm located 30 kilometers east of Cervantes (Community Workshop Results, 2006) (Plate 1).

Plate 1: Emu Downs Wind Farm, Shire of Dandaragan

(Source: Veronica Huddleston, 2006.)

Table 4: Employment Indicators, 1991-2001 - Green Head			
Urban Centre/Locality	***1991***	***1996***	***2001***
Employed	67	60	77
Male	46	40	41
Female	21	20	36
Full Time	35	38	46
Male	29	31	33
Female	6	7	13
Part Time	23	22	31
Male	8	9	8
Female	15	13	23
Not Stated	9	0	0
Male	9	0	0
Female	0	0	0
Unemployed	17	32	16
Male	14	23	10
Female	3	9	6
Total Labour Force	84	92	93
Male	60	63	51
Female	24	29	42
Unemployment Rate (in percent)	20.2	34.8	17.2
Male	23.3	36.5	19.6
Female	12.5	31.0	14.3
Labour Force Participation Rate	51.5	48.7	50.8
Male	70.6	61.8	51.0
Female	30.8	33.3	50.6
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Table 5 indicates that Green Head has a median weekly individual income of $200-299, lower than the median weekly individual income registered for the whole of Western Australia. It also has one of the lowest median weekly individual incomes of the communities located in the Central West Coast area. The median weekly income for households also registered a decline compared to the 1996 level.

Table 5: Individual, Family and Household Incomes - Green Head			
Urban Centre/Locality	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$8,001-$12,000	$160-199	$200 - $299
Median Income for Families	$25,001-$30,000	n.a.	$500 - $599
Median Income for Households	$16,001-$20,000	$500-699	$400 - $499
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[6]

A high proportion of Green Head residents gave their community a high level of endorsement as an 'excellent place' or 'good place' to live (Figure 4). Forty per cent of the survey respondents have lived in Green Head for less than 5 years while 33 per cent have lived there for more than 15 years. The majority of survey respondents (88%) reported 'strong attachment' or 'very strong attachment' to Green Head (Figure 5). They also reported high levels of 'knowing most of the people in the neighbourhood' and 'nearly always running into people they know while shopping'.

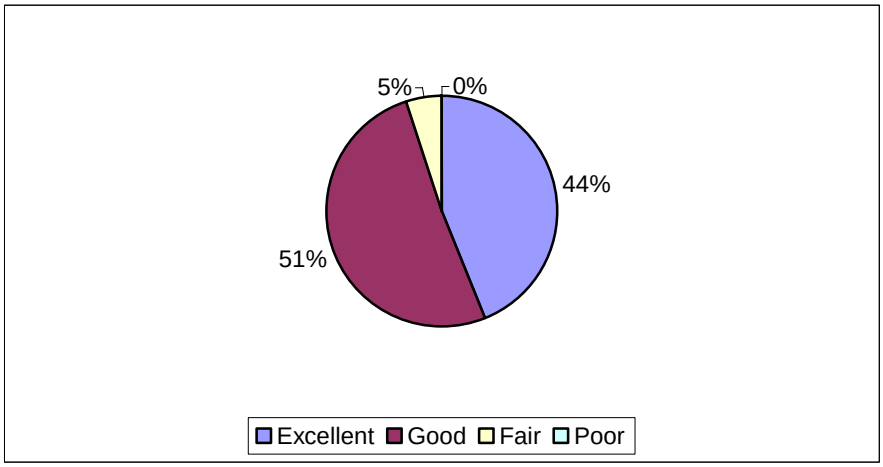


Figure 4: Respondents' Perception of Green Head as a Place to Live

As Figure 6 shows, the main reasons cited by survey respondents on why they live in Green Head are the beach, ocean and the overall environment (53%) and lifestyle (40%). Among the comments of community residents on Green Head were the following:

[6] This section is based on the results and analysis of the responses of 16 community residents who participated in a telephone survey conducted in November-December 2005 and on the 12 residents who participated in semi-structured interviews conducted in 2004. The majority of the 16 residents who participated in the survey were born in Australia (86%) and the rest were born in the United Kingdom. A majority of those surveyed fully owned their houses (60%), were retired or semi-retired (47%), finished Year 10 schooling (40%), and consisted of older couples with no children at home (40%). Only one of the survey participants was engaged in the rock lobster industry. Notes of the community workshop held in Green Head in 2006 were also utilised in the analysis.

With the improved roads to Green Head, a lot of people now know where it is. It is very popular because of the lifestyle and the lovely beach facility and the boat ramp and fishing's still good (Interviewee No. 168, 2004).

While living here has its down sides, we have the best of both worlds. Most of the people who live in this town are pretty trustworthy and honest. We have the nice serenity of a quiet, small coastal town and yet, we are only 3 hours away from Perth or we're only an hour and a half from a major town (Interviewee No. 105, 2004).

All things considered, Green Head is really quite a nice little town. It's just so peaceful, so quiet and so happy. We don't have to lock our front doors and our cars. It is a smaller town and everybody knows each other (Interviewee No. 139, 2004).

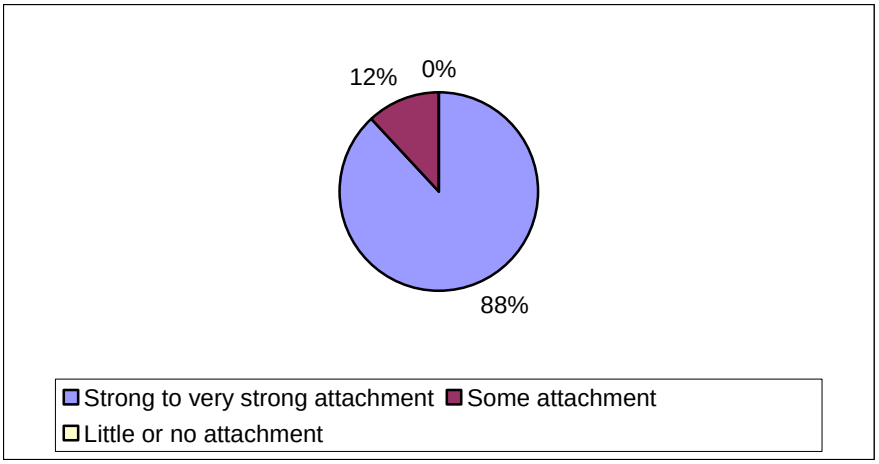


Figure 5: Respondents' Attachment to Green Head

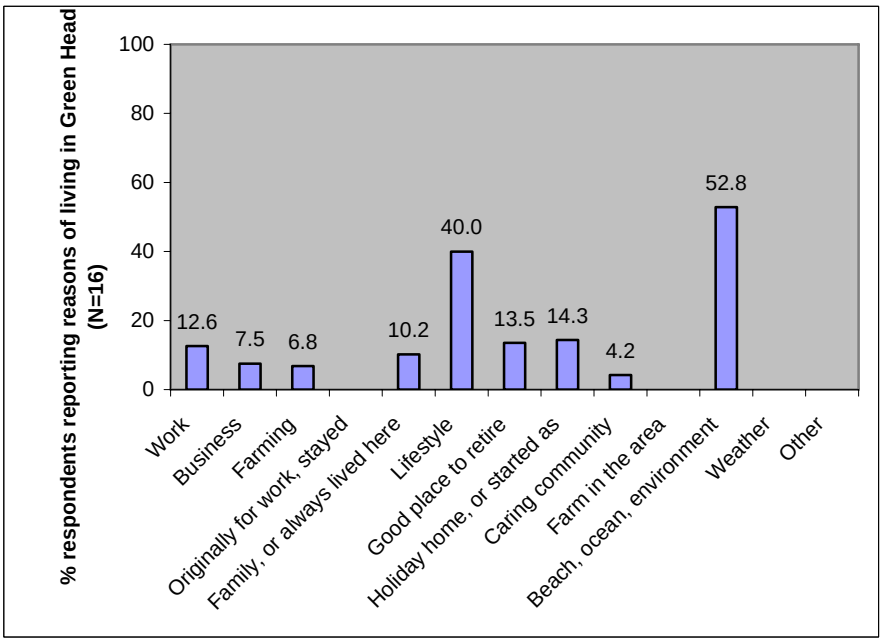


Figure 6: Reasons for Living in Green Head

Similar to residents in the nearby town of Leeman, Green Head residents ranked participation in local sports or recreation organisations highly over participation in other local community groups (Figure 7). Green Head has a golf club, bowling club, tennis club and darts association, all of which are affiliated with the Green Head Sporting Club. The Club House has both a bar and kitchen facilities, manned by local volunteers. The Green Head Community Centre has an indoor badminton court and outdoor net ball and basketball facilities (Plate 2A). Located beside it is a BMX (bike motor cross) play track used mostly by the younger residents of the community (Plate 2B).

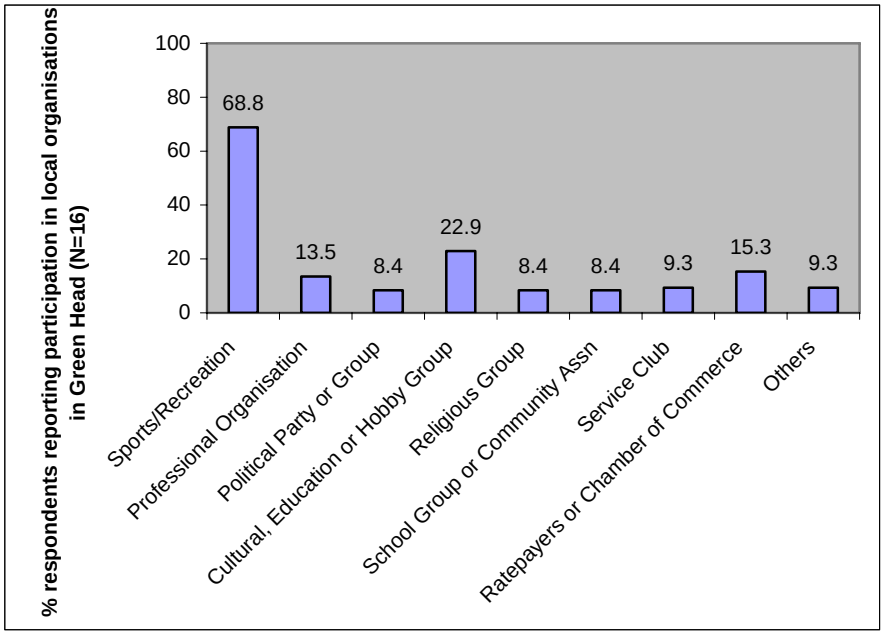


Figure 7: Participation in Local Organisations in Green Head

Plates 2A and 2B: Green Head Community Centre and BMX Play Track

(Source: Veronica Huddleston, 2004.)

Survey respondents also reported that they participate in cultural, education or hobby groups (23%), ratepayer associations or the local chamber of commerce (15%). There is a Country Women's Association chapter in Green Head, a Ratepayers Association and a Play Group. Residents also participate in the Volunteer Coastal Bushfire Brigade Group based in Leeman. Comments obtained from the studies workshop participants indicated the difficulties that local organisations have in the Green Head. One such comment is as follows (Community Workshop Results, 2006):

> *The great loss of the 60 year olds in the town is on the volunteering side of things, in terms of the loss of people who run the bowling club and other sporting events. There have also been, in the past couple of years, a lot more single parents/mothers who live in the community. This will also have an effect in terms of the time spent on community activities and their level of community involvement.*

Overall, based on the responses of surveyed community residents, Green Head is a cohesive community (Figures 8A and 8B).[7] Residents have high levels of agreement that 'if there was a serious problem, people would get together and solve it'. Respondents also are in general agreement that there is strong support for community events. Survey respondents were of the view, however, that people in Green Head are more likely to contribute money (36% in agreement) than to contribute time (20% in agreement) for community projects. Most of those surveyed (75%) reported attending local community events, some once, some twice and some more than three times. Almost the same proportion, however, reported that they do not participate at all in projects to develop new services or facilities. Eighty-five percent reported not having any involvement in voluntary emergency, fire or rescue services. During the community workshop, it was commented that (Community Workshop Results, 2006):

> *In the early days, there was a culture of helping out, e.g. digging wells and carting water, given the isolation of the place. These were done as a community but as crayfishing grew in size and their income levels increased, this community spirit sort of died.*

4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

In 2001, the major employer in Green Head was the agriculture, forestry and fishery industry division, accounting for 28 per cent of total employment (Appendix 1). Of this number, forty-three per cent were rock lobster fishers. Other industries that provide employment for the communities' residents are the retail trade industry division; accommodation, cafes and restaurant industry division; and the construction industry division.

[7] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

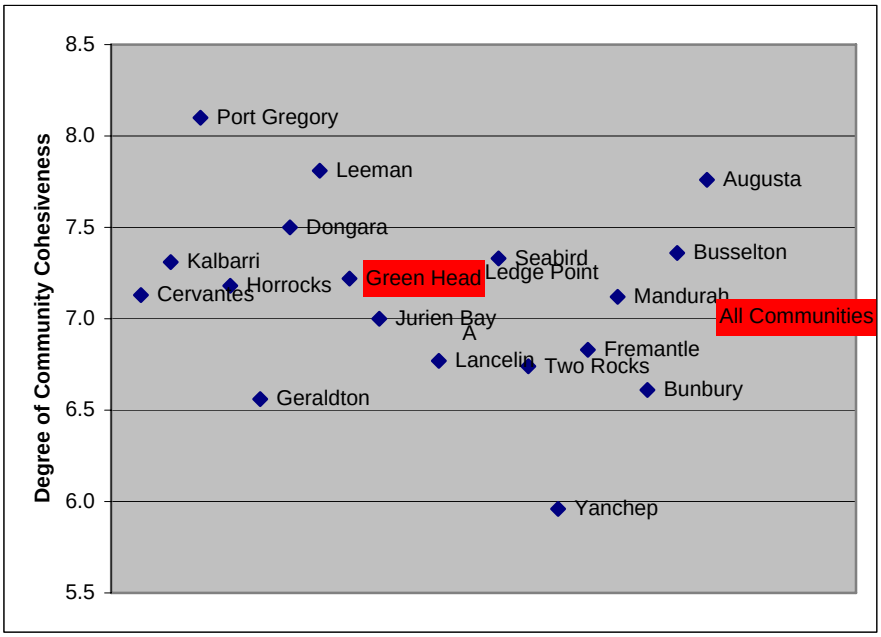


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

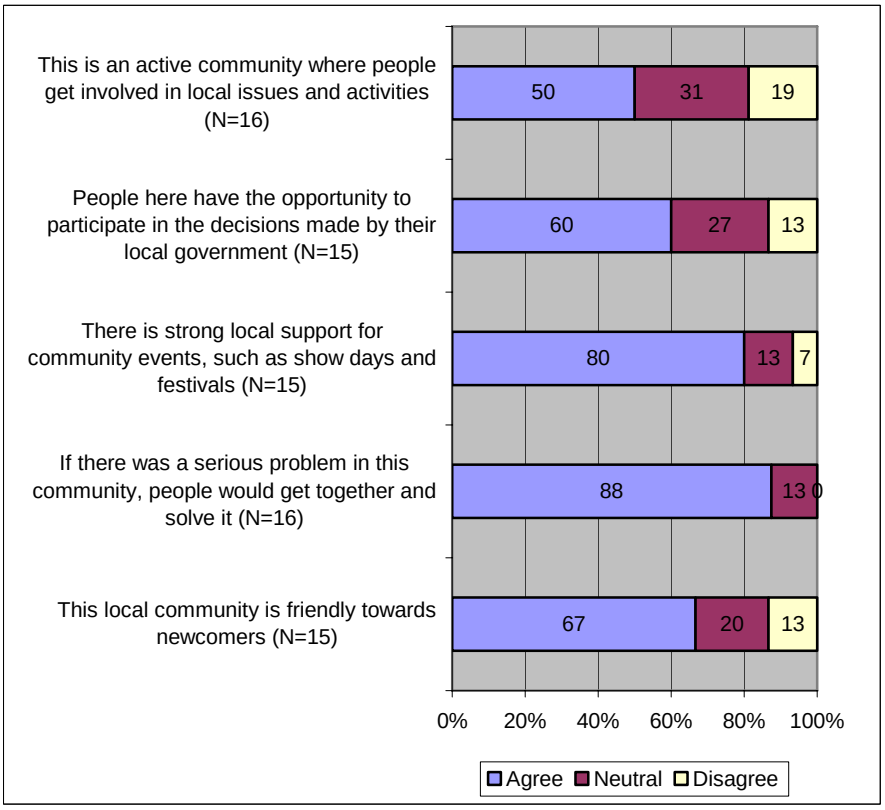
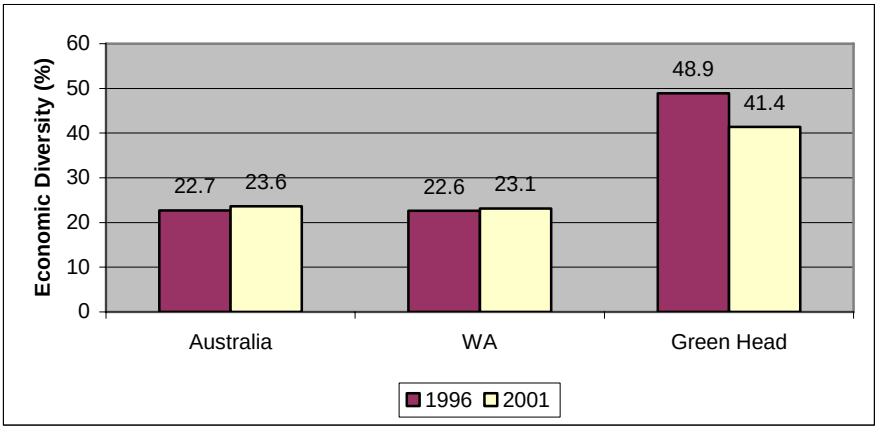


Figure 8B: Perceptions of Community Cohesiveness, Green Head

While there has been some diversification of economic activities in Green Head between 1996 and 2001, the economic base of the community is still far less diversified than the Western Australia and the Australian economy, in general (Figure 9).[8] Over 40 per cent of those employed in 2001 worked in the commercial fishing industry subdivision, construction trade services industry subdivision and the metal ore mining industry subdivision.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Green Head

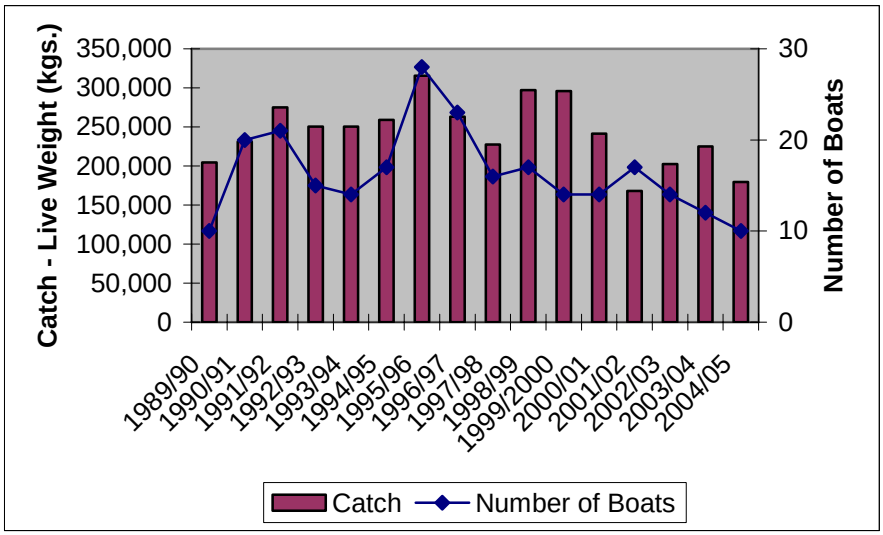
4.1.1 Fishing Industry

Since 1997/98, the number of boats using Green Head as its anchorage and the quantity of rock lobsters caught by fishers in the area has been declining steadily (Figure 10). A rock lobster fisher (No. 102, 2004) noted that, "There used to be more boats based here in Green Head. Now, there are usually only between 10-12 permanents. About two-thirds are owner-operators and one-third lease on a percentage basis." Cray fishing is nevertheless still one of the major industries in the community, providing seasonal employment to the local population. The bulk of the catch in the fishing sector of Green Head is comprised of rock lobsters although some fishermen are involved in wetlining for snapper, dhufish and groper that are sent to markets in Perth.[9] Appendix 2 shows that Green Head fishers contributed 3.0 to 4.0 per cent of the total rock lobsters caught in the Mid West region.

Fishing-related facilities in Green Head consist of an industrial jetty constructed in 1982 to service the rock lobster fleet stationed in Green Head during the rock lobster season (Plates 3A and 3B). Fuel is available from the service jetty. In 2000, a new recreational dual lane concrete boat ramp with a catwalk was constructed in Green Head (Department for Planning and Infrastructure, 2003). There is another single lane boat ramp with car parking facilities located at South Bay. Both of these ramps are owned and operated by the Shire of Coorow.

[8] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

[9] Wetlining refers to line fishing for scale/fin fish (snapper, groper, jewfish [or dhufish] and is also called scale or fin fishing (Gray, 1999:277).



(Source of Data: Department of Fisheries, Western Australia.)

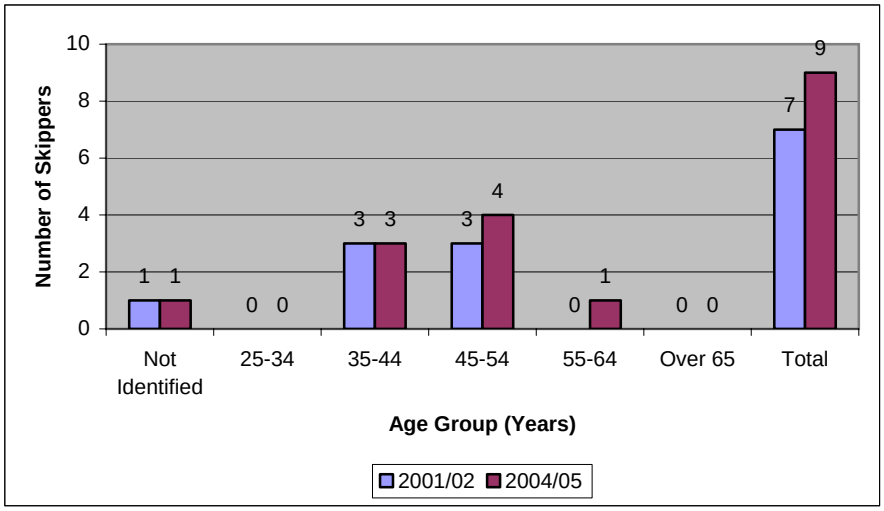
Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Green Head

Plates 3A and 3B: Jetty off Anchorage Bay and the Rock Lobster Boats in Green Head

(Source: Veronica Huddleston, 2004.)

The rock lobster fishing fleet anchored in Green Head operates mainly in Zone C of the fishery, although there are a few boats with a license to operate in Zones A and B that use Green Head as anchorage (Appendix 3).[10] The number of skippers residing in Green Head increased from 7 in 2001/02 to 9 in 2004/05 (Figure 11). The majority are in the 35-54 age groups and use between 81-110 pots during the rock lobster season. One rock lobster fisher (No. 102, 2004) commented that, "We used to come here to Green Head only to fish and stay for the season, but since the kids started school, we're permanently here."

[10] The number of boats licensed to fish for rock lobsters in the various zones is carefully controlled. Provided certain conditions are met, boat/license owners are able to transfer their pot entitlements between fishing zones (A, B or C zones). The zones are defined as follows: Zone A – Abrolhos Islands; Zone B – coastal fishery from 21º 44' S to 30º S excluding the A zone; Zone C – the waters between 30º south latitude and 34º 24' south latitude excluding all waters on the south coast east of 115º 4' east longitude; and Big Bank (Department of Fisheries, 2002: 5).



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Green Head, 2001/02 and 2004/05

Survey respondents possess strong levels of agreement that 'the decrease in the number of rock lobster skippers and deckhands is a significant problem in the community' (Figure 12). One factor that accounts for this is the noticeable increase in the population of the town once the fishing season starts. Some residents commented that "years ago, there used to be more fishers from other towns who come to Green Head and who stayed in the town to fish such as the Portuguese fishers. But they no longer come these days" (Community Workshop Results, 2006). There is also a relatively high level of agreement among survey respondents that 'the economic viability of the community is closely linked to the viability of the rock lobster industry' even as sentiments were expressed that "Tourism is getting bigger here. Now that we have good roads, the town gets filled up and more people buy locally" (Interviewee No. 103, 2004).

Responding to the question of whether they will encourage young people to be involved in rock lobster industry, 41 per cent of the community residents who participated in the survey indicated that they will not do so. Another 26 per cent were not sure of their response to this question (Figure 13). Respondents in Green Head, together with those from Jurien Bay and Cervantes, expressed concerns that big business and large boats were taking over the industry and pushing small operators out of the industry. Workshop participants also commented that some fishers only stay in Green Head for short periods of time (Community Workshop Results, 2006).

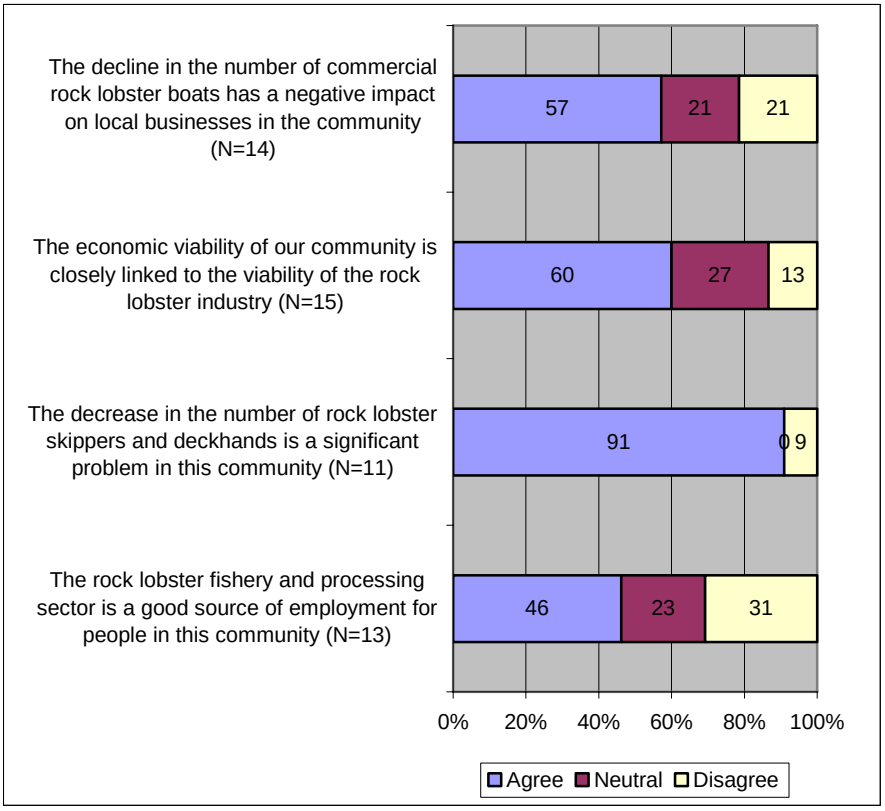


Figure 12: Perceptions of the Rock Lobster Industry, Green Head

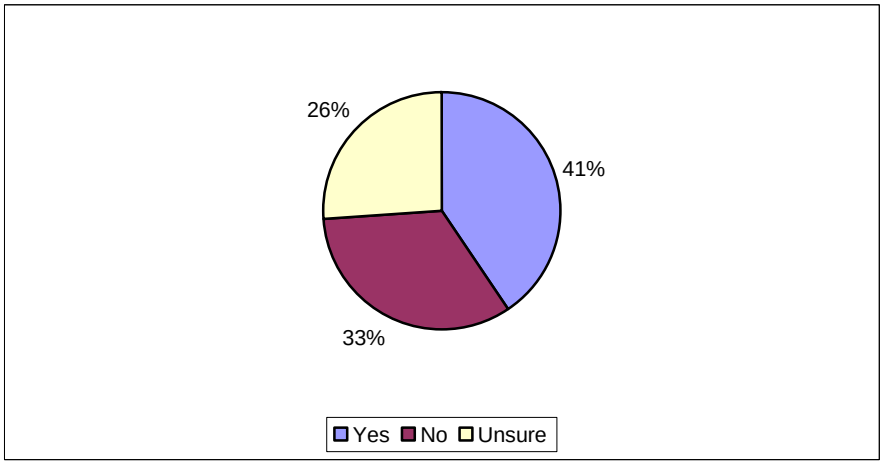
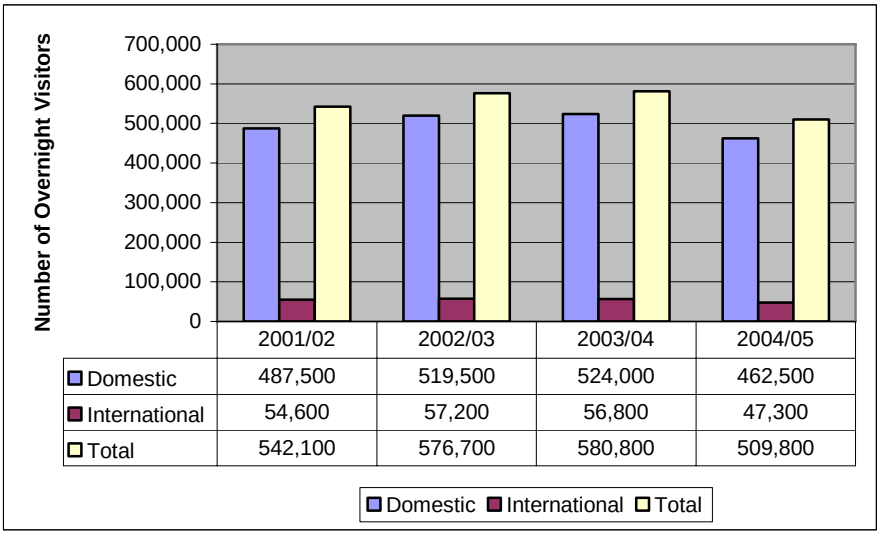


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Green Head

4.1.2 Tourism

Green Head is located within the Mid West Region of Western Australia where a majority of the tourists are domestic travellers (Figure 14).[11] Notwithstanding a minor decrease in overnight tourist numbers to the Mid West Region during 2004/05, the number of visitors has been relatively stable since 2001/02. These domestic tourists visit the region generally for holiday and leisure purposes but a substantial proportion also visit friends and family or come for business purposes (Appendix 4).



	2001/02	2002/03	2003/04	2004/05
Domestic	487,500	519,500	524,000	462,500
International	54,600	57,200	56,800	47,300
Total	542,100	576,700	580,800	509,800

(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, Mid West Region

One of the tourist attractions to the south of Green Head is Fisherman's Island, which is home to large colonies of sea lions and numerous species of sea birds. Sea Lion Charters, which makes regular trips to Fisherman's Island, operates from the Green Head anchorage. Dynamite Bay in Green Head also offers tourists and residents a safe and protected swimming area that is shaped almost like a complete circle. The wide expanse of South Bay offers several kilometres of sandy beaches with surf and swimming. Diving is also a popular pastime for visitors to Green Head. Another tourist attraction is Mt. Lesueur National Park situated south-east of Green Head, which offer a number of walking tracks to view a wide variety of flora and fauna.

Green Head has a caravan park that provides accommodation facilities to visitors to the town. A number of bed and breakfast establishments are also present in Green Head, including Macca's Mooring, who cater largely to the increasing number of overseas visitors from Europe and South Africa ("*Boom Times are coming to the Coast*, Destinations Magazine, September-October 2001, p. 32).

[11] The Mid West Region of Western Australia extends along the west coast from Green Head to Kalbarri and more than 800 kilometers inland to Wiluna in the Gibson Desert. Its area of 472,336 square kilometers covers nearly a fifth of the State, and comprises nineteen local government authorities. The City of Geraldton is the region's commercial, administrative and service centre (*Indicators of Regional Development in WA*, Department of Local Government and Regional Development, March 2003).

Community respondents were optimistic of the tourism potential of Green Head, with 80 per cent indicating agreement to the statement that 'the coast around this community is suitable for more tourism activities than we have at present' (Figure 15). Based on the Green Head Townscape Plan, residents indicated that they prefer that the Green Head identity remain by maintaining the 'peaceful laid-back lifestyle' of the community and by 'protecting and promoting the simple delights of the coast' (Townscape Analysis and Townscape Proposals, 1999).

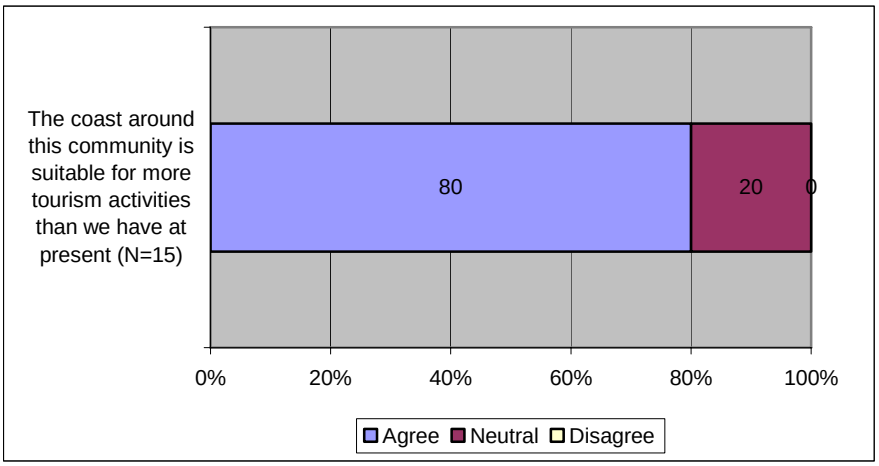


Figure 15: Perceptions of Tourism Potential, Green Head

4.1.3 Business and Commerce

Green Head has an industrial area located on the northeast boundary of the town. Among the businesses operating in the industrial area are a carpentry and joinery business and a sand/soil supply and excavation business. The Green Head Caravan Park marks the beginning of the commercial area. It has a takeaway food outlet and a gas supply service. Groceries, liquor, fuel and postal services are catered for by the General Store (Plate 4A). Prior to 2005, there used to be a supermarket located at the entrance of Dynamite Bay, with adjoining shops (Plate 4B). One interviewee (No. 139, 2004) commented that 'the challenge facing local businesses is the competition with bigger shops in Jurien Bay since they are close by and easy to get to."

Plates 4A and 4B: Green Head General Store and Supermarket

(Source: Veronica Huddleston, 2004.)

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Road and Transport

There are two entrance roads to Green Head. The northern entrance from the Indian Ocean Drive is by way of Green Head Road, which divides the town from east to west and cuts through the residential zones. The southern entrance is by way of Lakes Road, which passes by the Sporting Club and terminates in a T-junction with Green Head Road. There is no public transportation available within the community.

A majority of the roads in Green Head are bitumen and mostly unkerbed. A formal dual use path has been constructed along the eastern side of Green Head Road. Most of the scenic areas have undesignated walking paths and trails.

4.2.2 Water and Electricity

Potable water, electricity and sewerage are available in Green Head. During the wet winter months, extensive flooding presents a major problem to residents in some areas of Green Head. The need to address this problem had been raised during the Townscape Planning consultation.

4.2.3 Communications

Residents in Green Head have access to land-based telephone lines and digital mobile phone coverage.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Administration

Green Head falls under the administrative jurisdiction of the Shire of Coorow, an area of 4,137 square kilometres with approximately 1,500 people. The Administration Centre based in Leeman provides a number of services that include environmental health, building and town planning services; ranger services; library; licensing; and community services.

4.3.2 Education and Health

There are no schools in Green Head. Pre-primary and primary school children commute daily by bus to the school in Leeman. Older students go to the Jurien District High School in Jurien Bay, or alternatively attend boarding schools in Perth or Geraldton.

Green Head residents avail of community medical services in Leeman where visiting doctors from Three Springs and Dongara hold weekly clinics. The community also utilises medical services in Jurien Bay, 33 kilometers south of Green Head. One community resident (No. 103, 2004) noted the problem facing the older residents in the town as follows:

> *The thing that affects the older residents in the town is that eventually they have to move away to access medical facilities. They can't drive and the facilities are too far for them and they have to go to medical facilities regularly.*

4.3.3 Law and Order

Police services in Green Head are provided through the three-person force Police Station based in Leeman. The town is relatively peaceful, with only a few reported opportunist crimes such as theft and burglaries during the Christmas/summer months. In comparison to the Mid West Region, Green Head experiences essentially no crime (Appendix 5). As one community resident (No. 139, 2004) commented, "There's never really been any crime, as far as crime goes, committed in Green Head."

Appendix 1: Employment by Industry, 1991-2001 - Green Head									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	10	7	17	9	0	9	12	9	21
of which: Rock Lobster Fishing			--			3			9
Mining	13	3	16	14	0	14	4	0	4
Manufacturing	3	0	3	3	0	3	3	3	6
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	0	0	0	0	0	0	0	0	0
Construction	0	0	0	3	3	6	6	3	9
Wholesale Trade	3	4	7	3	0	3	5	0	5
Retail Trade				3	3	6	3	6	9
Accommodation, Cafes and Restaurants	Not a separate sector			3	3	6	0	9	9
Transport and Storage	0	0	0	0	0	0	0	3	3
Communication Services	0	0	0	0	0	0	0	0	0
Finance and Insurance	0	0	0	0	0	0	0	0	0
Property and Business Services				0	3	3	0	3	3
Government Administration and Defence	0	0	0	6	3	9	0	0	0
Education	Not a separate sector			3	3	6	0	0	0
Health and Community Services	0	3	3	0	0	0	0	0	0
Cultural and Recreational Services	3	6	9	0	0	0	0	0	0
Personal and Other Services				0	0	0	3	3	6
Non-classified/Non-stated	9	3	12	0	0	0	0	0	0
Total for All Industries	41	26	67	47	18	65	36	39	75
Share of Agriculture, Forestry and Fishery to Total Employment	24.4	26.9	25.4	19.1	0.0	13.8	33.3	23.1	28.0
Share of Top Three Sectors to Total Employment	63.4	65.4	62.7	61.7	50.0	49.2	63.9	61.5	52.0
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/*a*, 2002/03 - 2004/05 - Western Australia and the Mid West Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Mid West Region	2,075	2,510	2,512	5,628	6,495	6,159
of which: Green Head's Share (%)	0.6	0.5	0.5	0.6	0.8	0.8
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Mid West Region	53	15	13	694	196	170
of which: Green Head's Share (%)	--	--	--	--	--	--
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Mid West Region	4,932	5,385	5,425	120,582	102,322	116,632
of which: Green Head's Share (%)	3.9	4.0	3.2	3.9	4.0	3.2
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Mid West Region	5,851	615	5,345	20,122	2,364	19,307
of which: Green Head's Share (%)	0.1	0.6	0.1	0.1	0.4	0.1
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Mid West Region	12,936	8,552	13,308	147,324	111,685	142,409
of which: Green Head's Share (%)	1.7	2.7	1.7	3.3	3.7	2.8

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated thaty they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Green Head						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Green Head	275,095	263,076	167,908	202,294	224,960	179,707
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Green Head	308,317	313,353	209,378	180,121	154,357	147,393
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Green Head	21	23	17	14	12	10
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Green Head	58	62	49	40	33	31

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - Mid West Region								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	219,000	44.9	237,000	45.6	232,000	44.3	215,500	46.6
Visiting Friends/Relatives	92,000	18.9	107,500	20.7	114,000	21.8	114,500	24.8
Business /c	132,500	27.2	134,500	25.9	132,000	25.2	91,500	19.8
Other /d	20,000	4.1	27,500	5.3	30,500	5.8	26,500	5.7
Total	487,500	100.0	519,500	100.0	524,000	100.0	462,500	100.0
International Visitors								
Holiday/Leisure	50,900	93.2	54,000	94.4	53,800	94.7	42,300	89.4
Visiting Friends/Relatives	1,900	3.5	1,900	3.3	1,800	3.2	3,400	7.2
Business	1,200	2.2	1,000	1.7	800	1.4	900	1.9
Other	1,500	2.7	1,300	2.3	1,700	3.0	2,200	4.7
Total	54,600	100.0	57,200	100.0	56,800	100.0	47,300	100.0
Total Visitors								
Holiday/Leisure	269,900	49.8	291,000	50.5	285,800	49.2	257,800	50.6
Visiting Friends/Relatives	93,900	17.3	109,400	19.0	115,800	19.9	117,900	23.1
Business	133,700	24.7	135,500	23.5	132,800	22.9	92,400	18.1
Other	21,500	4.0	28,800	5.0	32,200	5.5	28,700	5.6
Total	542,100	100.0	576,700	100.0	580,800	100.0	509,800	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Green Head				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Mid West/Gascoyne District	1,045	1,147	1,155	1,348
of which: Green Head (number)	1	0	0	0
as percent of the District	0.1	0.0	0.0	0.0
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Mid West/Gascoyne District	1,417	1,375	1,343	1,213
of which: Green Head (number)	0	1	0	0
as percent of the District	0.0	0.1	0.0	0.0
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Mid West/Gascoyne District	815	667	661	569
of which: Green Head (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Mid West/Gascoyne District	36	40	43	25
of which: Green Head (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Mid West/Gascoyne District	234	206	222	238
of which: Green Head (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

JURIEN BAY

1.0 GEOGRAPHIC SETTING

Situated 266 kilometres north of Perth (Latitude: 30° 18' South and Longitude: 115° 02' East), Jurien Bay is the largest of the Shire of Dandaragan's coastal settlements. The town is named after Jurien Bay that extends 9 kilometres across from Island Point at the southern end to North Head at the northern end. This large expanse of water is comparatively sheltered by a string of reefs and islands.

Jurien Bay is generally characterised by mild, wet winters and hot, dry summers. Winter temperatures are between 9 to 12 degrees Celsius and summer temperatures reach between 26 and 30 degrees Celsius. The evening minimums are generally below 20 degrees Celsius as the afternoon sea breeze brings cool relief to the coastal areas. Jurien Bay receives an average annual rainfall of 519 mm.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[1]

The coastline of Jurien Bay had been known to Europeans since the seventeenth century. Between 1801 and 1804, a French exploratory and scientific expedition of three sailing ships – the Geographe, the Naturaliste and the Casuarina – explored and surveyed the West Australian coastline. The French expedition led by Thomas Nicholas Baudin and Louis-Claude Desaules de Freycinet in the 1800s mapped and named much of the area. Jurien Bay (Le Bai de Jurien Bay) was named in honour of Charles Marie Jurien, an administrator in the French Navy. Similarly, Mount Lesueur, east of Jurien Bay, was named after Charles Alexander Leseuer, the ship's artist on the Geographe and Mount Peron was named after the ship's naturalist and botanist, Francois Peron.

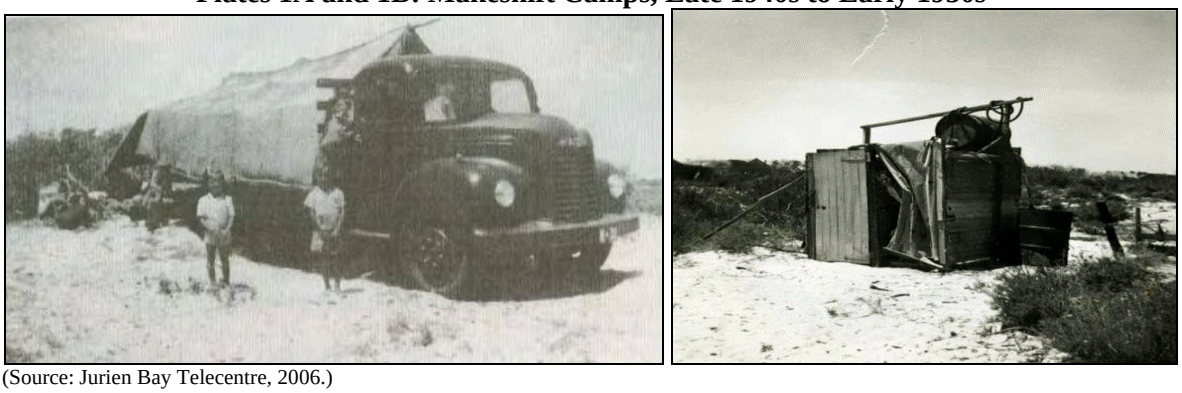
Initial settlement of the Jurien Bay area occurred in the mid 1850s when Walter Padbury purchased land around Jurien Bay. His nephew, John Grigson, managed the property and became the original pioneer in the area. The construction of a jetty in 1885 allowed a more direct and rapid route to the markets for the wool and hides produced in the area.

In the early to mid 1920s, Mary Lindsay purchased land in Jurien Bay as part of her vision for the coast as a place for more permanent settlement. Mrs. Lindsay was responsible for the construction of the first church in Jurien Bay. She also constructed a timber and asbestos house on Lindsay Street that was used by holiday-makers in the late 1940s and early 1950s. With rising demand from amateur fishers and holiday makers, this period also saw the construction of a myriad of makeshift tents and shelters near the beach (Plates 1A and 1B).

[1] This section is based on information from *A Look at Jurien, 1658-1996* (Jurien and Districts Heritage and Maritime Museum Committee, 1996); *Plateau, Plain and Coast: A History of Dandaragan* (Shire of Dandaragan, 1993); Jurien Bay, 8 February 2004, <http://www.theage.com.au/news/western-australia/jurien-bay/2005/02/17/1108500208485.html> (cited 28 April 2006); and Jurien Bay, <http://www.walkabout.com.au/locations/WAJurienBay.shtml> (cited 21 January 2005).

When the rock lobster export market began to develop in the 1950s, people began to build permanent residences in the area. The first permanent residents included farmers from nearby inland towns who found crayfishing and farming as compatible activities given the complementarity of the respective seasons. Attracted by the jetties, boat ramps, and the islands, holiday-makers began building accommodation and squatter shacks were erected to the south of the first surveyed town lots. This area was named "Cacker Alley" because this was where bags of undersized crayfish were brought ashore for transport and sale around the countryside and to Perth (Plate 2).

Plates 1A and 1B: Makeshift Camps, Late 1940s to Early 1950s



(Source: Jurien Bay Telecentre, 2006.)

Plate 2: Cacker Alley, 1960 (Now known as Snook Reserve)

(Source: Jurien Bay Telecentre, 2006.)

The town site was gazetted in December 1956 and officially named Jurien Bay. However, the Nomenclature Committee informed the Dandaragan Road Board of their preference to call the town site Jurien. While the Board did not object, they sent a letter indicating that people would always know it as Jurien Bay (Jurien and Districts Heritage and Maritime Museum Committee, 1996) [JDHMMC].[2]

The first survey for the auction of house blocks within the town site was undertaken in 1956. This development paved the way for a considerable expansion of the town and the permanent population increased rapidly. The rough airstrip in the town was upgraded in the late 1960s and early 1970s. The State Public Works Department supplied the town with water in 1968 and during the same year, a private company installed a Power House that supplied the town with electricity. Further public institutions were built in the mid-1960s, such as the Jurien Bay Primary School, the Jurien Bay Hotel-Motel and the Silver Chain Centre. These were a

[2] In early 1999, the Dandaragan Shire applied and was granted the name change to Jurien Bay (Geographic Name Approvals in Western Australia, DOLA, Vol. 15, No. 1 and 2, p. 28).

result of various campaigns by community organisations for essential amenities and improvement for the town. Numerous sporting, social and service groups also formed organised clubs in the town. Figure 1 shows the town map of Jurien Bay that features the location of social and fishery-related infrastructure facilities.

(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Jurien Bay, 2006

Crayfishing became an important part of life in the settlement and the industry steadily grew. In the early 1960s, Ross International Fisheries, Planet Fisheries and the Fremantle Fishermen's Cooperative installed factories and jetties in Jurien Bay. The Fremantle Fishermen's Co-operative (FFC) continued to be active even when Ross Fisheries and Planet Fisheries closed their factories in the late 1960s, introducing the export of live crays and building a new facility to accommodate this trade.

In 1979, the Central West Coast Professional Fishermen's Association and the Dandaragan Shire Council lobbied for funding for a Small Boat Harbour in Jurien Bay to provide safe mooring facilities to local fishermen (JDHMMC, 1996). An enclosed marina located in the north of the existing town site was subsequently completed for use by the commercial fishing fleet in January 1988. The official opening in November 1988 was combined with the first Blessing of the Fleet ceremony in Jurien Bay. Subsequent developments included the establishment of boat-lifting and repair facilities, a marine research centre and an office of the Department of Fisheries (Plates 3A and 3B). In 1998-99, FFC changed to a private company and called itself Bluewave Seafood Ltd. After running into financial difficulties, Bluewave Seafood Ltd. closed its rock lobster operations and its factory in Jurien Bay in 2004 (Plate 4).

Plates 3A and 3B: Boat-lifting and Repair Facilities in Jurien Bay

(Source: Veronica Huddleston, 2004.)

Plate 4: Bluewave Seafood Ltd.'s Processing Plant in Jurien Bay

(Source: Veronica Huddleston, 2004.)

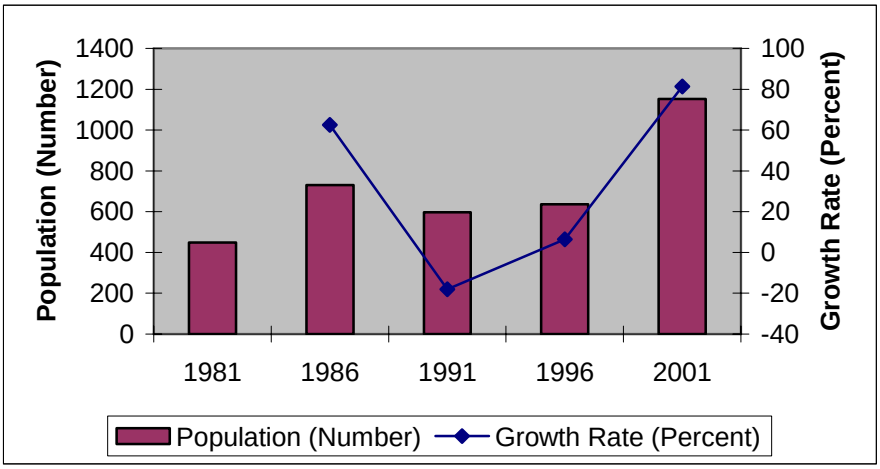
A community resident (No. 142, 2004) summed up the contribution of rock lobster fishing in the increased settlement and development of Jurien Bay as follows:

> *[Crayfishing had been] really good for Jurien. The fishers helped make everything happen, they built things, they initiated bowling clubs, footy clubs, the Parents and Citizens Association, the Progress Association, the ambulance, etc.*

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

Since 1981, the total population of Jurien Bay has been increasing rapidly, with the resident population reaching 1,138 persons in 2001 (Figure 2).[3] Some community residents indicated that 'Jurien Bay has most of the amenities (e.g. school, hospital, marina, Shire office, fire station, grocery, etc.) that make living in the town good' and that 'there seems to be a lot going for the senior citizens'. In addition to the growth in the retiree population, the significant increase in the population of the town could be attributed to a number of factors. These include the construction of the coast road from Cervantes to Dongara and the relocation of the Shire offices to the town site from Dandaragan to Jurien Bay in 2002.



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981-2001, Jurien Bay

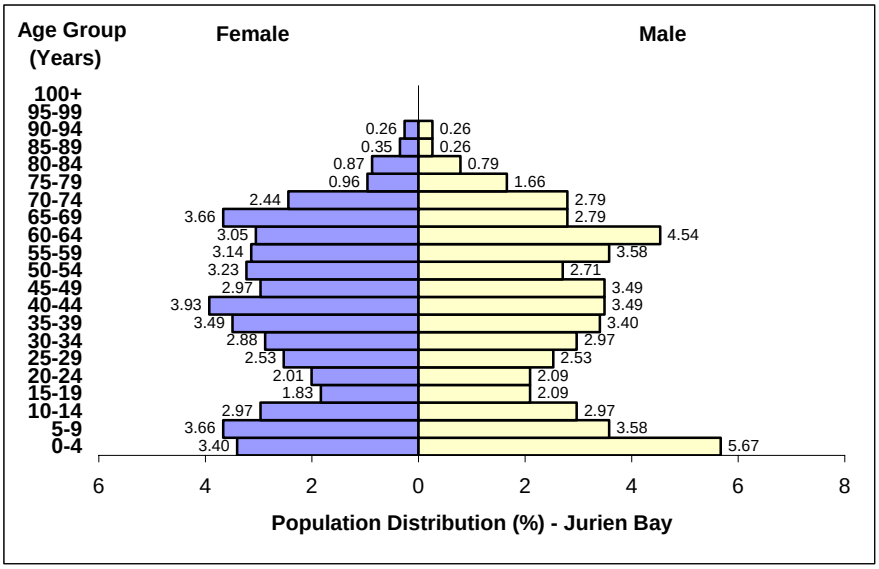
Figure 3 shows the population distribution in Jurien Bay by age groups based on Census data for 2001. There is a minor disparity between the genders with males in the population being more significant in the age groups less than 4 years and 60-64 years and females being more significant in the 65-69 years age group. This difference between the genders has slightly declined over time, with males representing 56 per cent in 1991 to 52 per cent in 2001 (Table 1).

The median age in Jurien Bay in 2001 is 40 years compared to 30 years in 1991, indicating a migration of older people into the town. Those aged over 65 years made up 17 per cent of the resident population, compared to only 10 per cent in 1991. Over this ten-year period, Jurien Bay experienced an increasing elderly dependency ratio that has implications in terms of future requirements for social infrastructure such as health care.[4] Retirees, nonetheless,

[3] Census data refer to the population of Jurien Bay as an urban centre/locality (UC/L). An urban centre is a population cluster of 1,000 or more people who are classified as urban for statistical purposes (1996 Census Dictionary). For 1996-2001, the population growth rate is 80 per cent. This sharp increase in population growth is due to two factors – the significant population growth in one of the collection districts comprising Jurien Bay and the inclusion of a third collection district in the redefined boundaries of the urban centre of Jurien Bay (Garner, Margaret, margaret.garner@abs.gov.au "Jurien Bay". Personal e-mail, 20 December 2006). The population increase for the comparable collection districts for 1996 and 2001 is 18 per cent.

[4] Used as a measure of the dependence that non-working people have on working people, the elderly dependency ratio is defined as the number of elderly people (over 65 years) for every 100 people of working age (15-64 years).

contribute greatly to Jurien Bay's income and development to such an extent that "Retirement is considered as the town's third major industry, behind fishing and tourism" (Shire of Dandaragan, 1997:9).



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Jurien Bay

Table 1: Population Indicators, 1991-2001 - Jurien Bay			
Urban Centre/Locality	***1991***	***1996***	***2001***
Total Resident Population	573	631	1,138
Male	324	341	592
Female	249	290	546
Population under 15 years	166	151	255
Population of employable age	352	398	687
of which: Population aged 15-19	16	16	45
Population over 65 years	55	82	196
Dependency Ratio /a	62.8	58.5	65.6
Child Dependency Ratio	47.2	37.9	37.1
Elderly Dependency Ratio	15.6	20.6	28.5
Median Years	30	36	40
% of Overseas Born	9.9	12.4	12.0
% of Indigenous Population	0.5	0.5	1.0
/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

The Census data for 2001 indicates that 12 per cent of the population in Jurien Bay was born overseas, primarily in the United Kingdom and New Zealand, and that the indigenous group made up 1 per cent of the population. Christians, predominantly Catholics, made up 56 per cent of the population. Twenty-five per cent reported having no religion while a further 16 per cent did not provide any response.

A higher percentage of Jurien Bay's population reported completing schooling up to Year 10 (34%) compared to those completing Year 12 (24%). Females comprise the majority of those completing schooling up to Year 12. Those who completed Year 8 comprised 12 per cent of the population while those who completed Year 9 and Year 11 comprised 10 per cent each.

The average household size in Jurien Bay comprised 3.0 persons. Over 80 per cent of the households in Jurien Bay were characterised as 'couple family' households, with a declining proportion of 'couples with children' and an increasing proportion of 'couples without children' (Table 2). This may be attributed to the fact that while Jurien is still regarded as conducive to raising families, there is a higher increase in the number of older couples who have no children at home choosing to live in Jurien Bay.

Table 2: Family and Household Characteristics, 1991-2001 - Jurien Bay

Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	73	69	108
Couple Family without Children	55	66	162
One Parent Family	7	20	36
Other Family	3	3	5
Total	138	158	311
Proportion of Couple Families with Children to Total Families	52.9	43.7	34.7
Proportion of Couple Families without Children to Total Families	39.9	41.8	52.1

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.2 DWELLING CHARACTERISTICS

Table 3 indicates that of the over 500 occupied dwellings in the town in 2001, 85 per cent were classified as 'separate houses' (single detached). The number of dwellings fully-owned by residents has increased over time, from 43 per cent in 2001 compared to 40 per cent in 1991. In the same period, 28 per cent rented their property and 18 per cent were in the process of purchasing their property. Close to 40 per cent of the dwellings were unoccupied, a high percentage compared to the Western Australian average of 10 per cent.

An increase in the number of dwellings in Jurien Bay is expected with the proposed Turquoise Coast Development Project (TCDP) involving 2,000 hectares of land south of the existing town site, rezoned for development in 1997. The project has received conditional approval from the Environmental Protection Authority for the development of more than 8,000 residential lots (EPA, 2001). Associated resort facilities are expected to boost local hotel accommodation, upgrade the facilities at the existing marina and develop an airport capable of handling larger aircraft. The rate of development will depend largely on the ability of the project to compete successfully with other coastal retirement/resort development projects in other areas of Western Australia. The immediate significance of the project, however, lies in the fact that it reinforces Jurien Bay's status as a major service centre on the Central Coast (WAPC, 1996).

Table 3: Dwelling Characteristics, 1991-2001 - Jurien Bay			
Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	218	271	505
By Structure			
Separate House	181	211	428
Semi Detached	16	9	19
Flat, Unit or Apartment	0	3	5
Other /a	18	48	38
Not Stated	3	0	15
By Tenure			
Fully-Owned	87	97	217
Being Purchased	41	47	93
Rented	65	107	140
Other	25	6	21
Not Stated		14	34
Unoccupied Private Dwellings	177	193	307
Median Monthly Housing Loan Repayments	$301 - $400	n.a.	$800 - $899
Median Weekly Rent	$78 - $107	n.a.	$100 - $149
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Notwithstanding the progress of TCDP, land sales in Jurien Bay are on the rise, with sales generated mostly from retirees and young investors from Perth and other areas. One interviewee (No. 153, 2004) noted that:

> *The demographics [of the real estate market] have changed fairly. The buyers traditionally were Wheatbelt farmers who buy their holiday homes here and local people centred on the fishing industry. It's all changed pretty much. [We get] a lot of self-funded retirees in town now and our major source of buyers is investors from Perth and the metro area.*

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

Since 1991, there has been a marked increase in the number of persons employed in Jurien Bay (Table 4). Of the total number of persons employed in 2001, 57 per cent were in full-time employment as compared to 38 per cent working part-time. Males comprised the bulk of those employed full time (64%) while females made up a larger percentage of those employed part-time (61%).

Jurien Bay registered a 10 per cent unemployment rate in 2001. This was an improvement over the 25 per cent rate registered in 1991. Part of this decline can be explained by the fact that the proportion of the population working or looking for work in Jurien Bay has exhibited a declining trend, largely attributed to the decline in the labour force participation rate for men from 67 per cent in 1991 to 56 per cent in 2001). Meanwhile, female labour force participation was relatively steady over the same period. Retail trade, characterised by more female employment, was the major employer in Jurien Bay in 2001. Other female-dominated industries in Jurien Bay were property and business services, education, and health and community services.

Table 4: Employment Indicators, 1991-2001 - Jurien Bay			
Urban Centre/Locality	***1991***	***1996***	***2001***
Employed	179	222	407
Male	109	149	220
Female	70	73	187
Full Time	103	140	231
Male	75	114	147
Female	28	26	84
Part Time	66	79	154
Male	27	32	60
Female	39	47	94
Not Stated	10	3	22
Male	7	3	13
Female	3	0	9
Unemployed	59	52	47
Male	48	33	31
Female	11	19	16
Total Labour Force	238	274	454
Male	157	182	251
Female	81	92	203
Unemployment Rate (in %)	24.8	19.0	10.4
Male	30.6	18.1	12.4
Female	13.6	20.6	7.9
Labour Force Participation Rate (in %)	58.5	57.1	51.4
Male	66.8	68.4	55.5
Female	47.1	43.0	47.1
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

The median weekly individual income of persons in Jurien Bay is comparable to the overall Western Australian median income. The majority of the working age population received between $300 and $399 per week (Table 5). While the median income for households in Jurien Bay registered an increase over the 1996 levels, their median income is below the Australian and Western Australian levels of $700-799 per week.

Table 5: Individual, Family and Household Incomes, 1991-2001 - Jurien Bay			
Urban Centre/Locality	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$12,001 - $16,000	$200 - $299	$300 - $399
Median Income for Families	$25,001 - $30,000	n.a.	$600 - $699
Median Income for Households	$20,001 - $25,000	$300 - $499	$500 - $599
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[5]

In Jurien Bay, 9 out of 10 respondents rated their community as either an 'excellent place' or 'good place' to live (Figure 4). Of the survey respondents, 86 per cent reported 'strong to very strong feelings of attachment' to the community (Figure 5). On the question of whether they still expect to be living in Jurien Bay in five years time, 80 per cent indicated positive response.

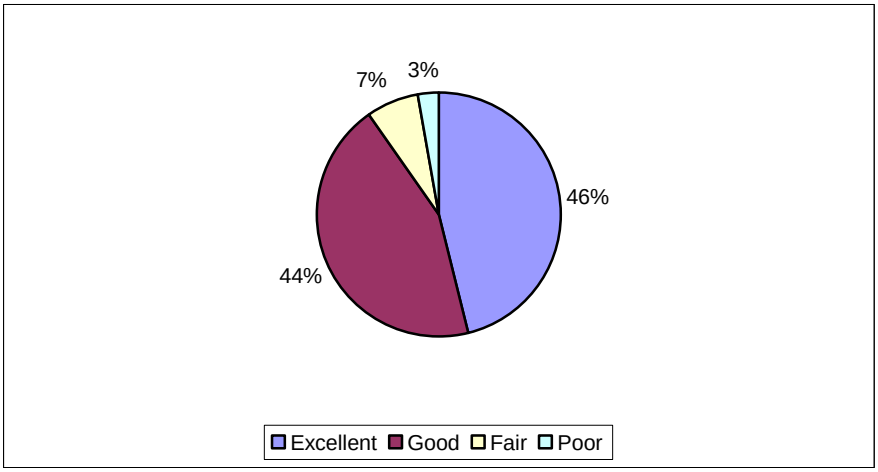


Figure 4: Respondents' Perception of Jurien Bay as a Place to Live

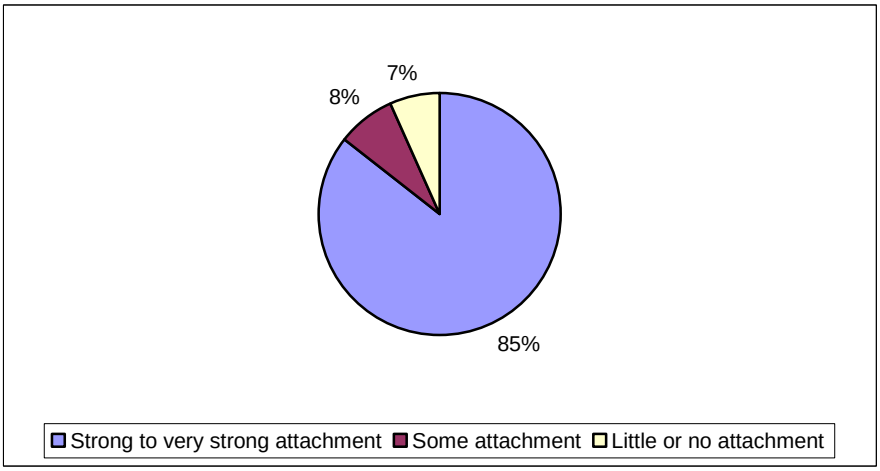


Figure 5: Respondents' Attachment to Jurien Bay

Lifestyle is the major reason for living in Jurien Bay, followed by the beach, ocean and the coastal environment (Figure 6). Work opportunities are also a major attraction for living in the community. On the reasons why people move out of Jurien Bay, community residents noted that 'schooling past year 10 could be a major factor' and that 'medical reasons also play a role'. Others have pointed to the 'lack of social activities and amenities, e.g. no movie houses, etc'.

[5] This section is based on the results and analysis of the responses of 83 community residents who participated in a telephone survey conducted in late 2005 and 29 residents who participated in semi-structured interviews conducted in 2004 and early 2005. A majority of the 83 survey respondents were born in Australia and New Zealand (84%) and belonged to the 55-64 years and over 65 years age groups (47%). Most were older couples with no children at home (37%), fully owned their houses (55%), and had full-time employment (41%). Twenty-seven percent had Year 10 or equivalent schooling. Ten survey participants were engaged in the rock lobster industry. Notes of the community workshop held in Jurien Bay in 2006 were also utilised in the analysis.

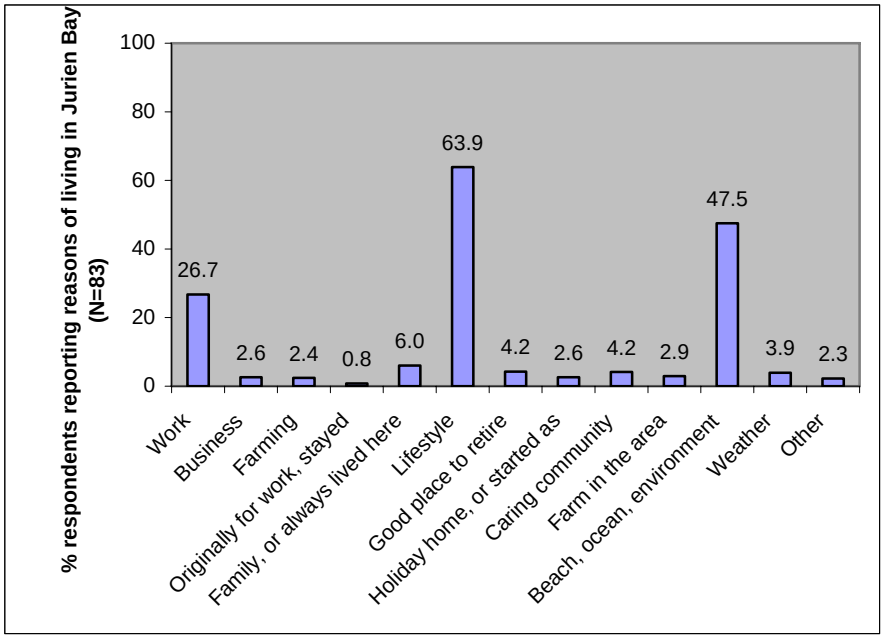


Figure 6: Reasons for Living in Jurien Bay

People in Jurien Bay reported that they found that 'knowing their neighbours' and 'running into people they know when shopping' as attractive aspects of living in Jurien Bay. Community residents noted that Jurien Bay is a 'close-knit community where everyone knows and supports everyone' and where 'you know a lot of people in the town and you know mostly what goes on in the town'.

Almost half of those surveyed reported attending local community events three or more times in a year. There was a general agreement among survey respondents that there is strong local support for community events. One rock lobster fisher (No. 099, 2004) noted that "the annual blessing of the fleet is a big affair supported by the community" (Plates 5A, 5B, 5C and 5D).

Plates 5A, 5B, 5C and 5D: Decorated Boats, Sack Race and Fire Brigade Demonstration at the Annual Blessing of the Fleet Celebration in Jurien Bay, 2004

(Source: Veronica Huddleston, 2004.)

The attachment of the youth to the community was lower than the general population, with a couple of young people stating that (Interviewee Nos. 164 and 165, 2004):

> *Those in the 13-18 age group find Jurien Bay boring. There's nothing to do and the Shire doesn't care about teenagers. They always say there are no funds available when action is needed on some of the suggestions that teenagers make. For example, they wouldn't even consider having a controlled concert, with parents involved, because [of the costs].*

> *It's like living in a fish bowl. It is a caring town, but it can be too much since everyone knows what each is doing. Boys can play sports like football, but there are limited opportunities for girls. Female teenagers need a place to go to other than a beach.*

Of those surveyed, 61 per cent reported that they do not participate at all in projects to develop new services or facilities in the community. Involvement in voluntary state emergency services and fire or rescue services was reported by 25 per cent of the respondents. There is a perception that people are more willing to contribute money than time to community projects. A local rock lobster fisher reflected that 'the older ones still do volunteer work but the younger ones don't seem to join in to volunteer and help out'.

Sports and recreation activities are well attended and catered for within the town (Plates 6A and 6B). The Jurien Bay Community Centre, operated by the Shire, boasts a large, modern, multi-purpose Indoor Recreation Centre, as well as squash courts, ovals, bowling greens, a golf course, tennis courts and a recreational standing camp. The strong orientation towards sports is reflected in the 67 per cent participation rate of Jurien Bay residents in local sports or recreation organisations (Figure 7).

Plates 6A, 6B and 6C: Participants in the Corporate Lawn Bowls Competition in Jurien Bay, 2004

(Source: Veronica Huddleston, 2004.)

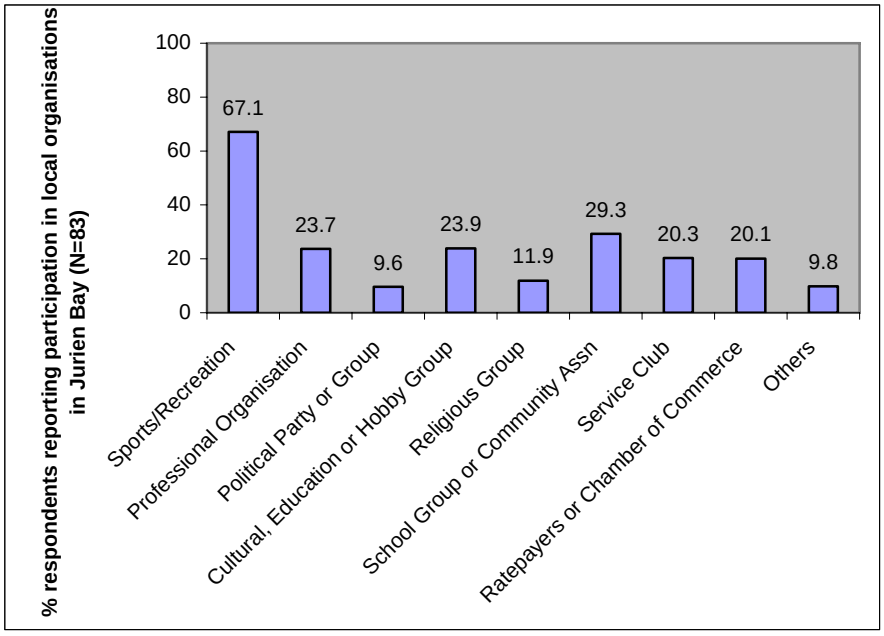


Figure 7: Participation in Local Organisations in Jurien Bay

Survey respondents reported participation in school group, neighbourhood or community associations (29%) and in local cultural, education or hobby associations (24%) and professional organisations (24%). Among the community organisations active in Jurien Bay are the Jurien Bay Progress and Tourism Association, the Country Women's Association, and the Central West Coast Senior Citizens' Group. The Senior Citizens Centre in Jurien Bay offers a focal point for social activities for the elderly not only in Jurien Bay itself but also those who live in Cervantes.

Overall, Jurien Bay residents perceive their community as a cohesive community (Figures 8A and 8B).[6] Jurien Bay residents have high levels of agreement that 'if there was a serious problem, people would get together and solve it'. Residents also generally feel that the community is friendly towards newcomers and that there is strong support for community events. The community cohesiveness score of 7.01 for Jurien Bay respondents was within the middle range of the scores generated for the 19 communities included in the survey.

[6] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

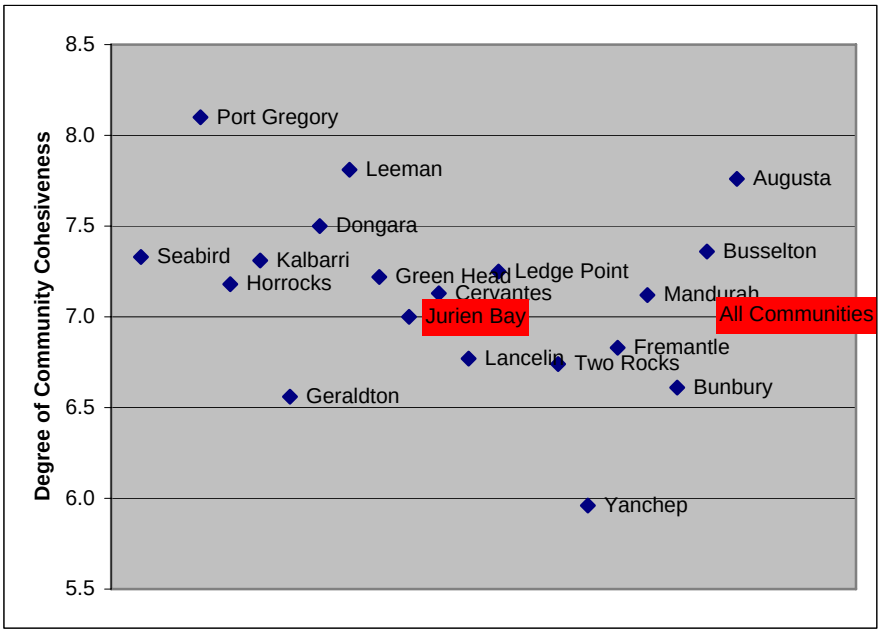


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

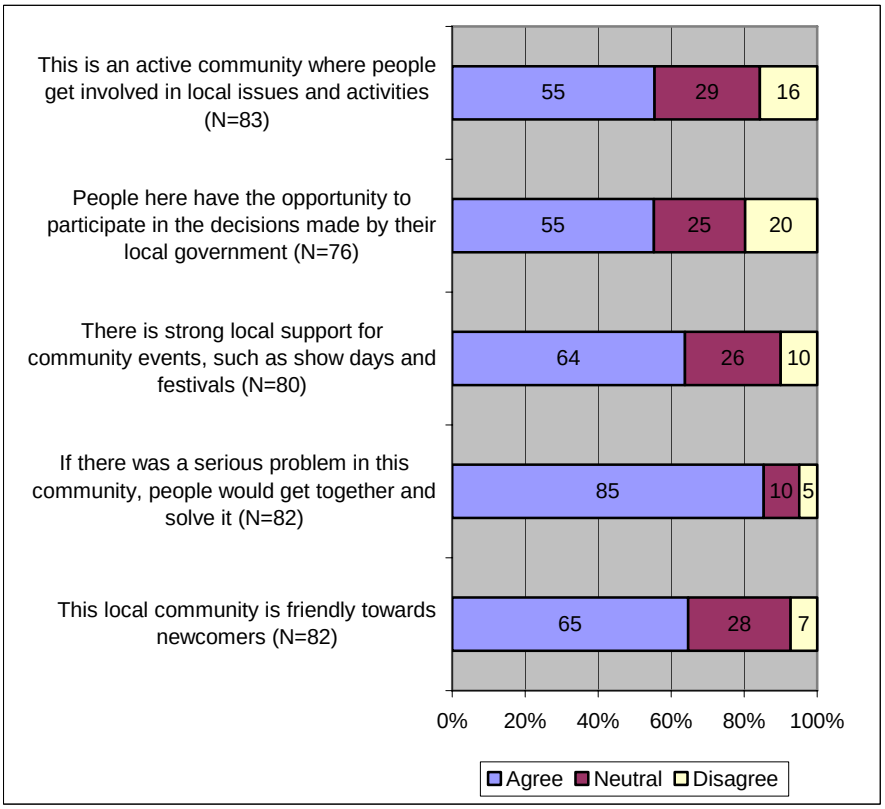
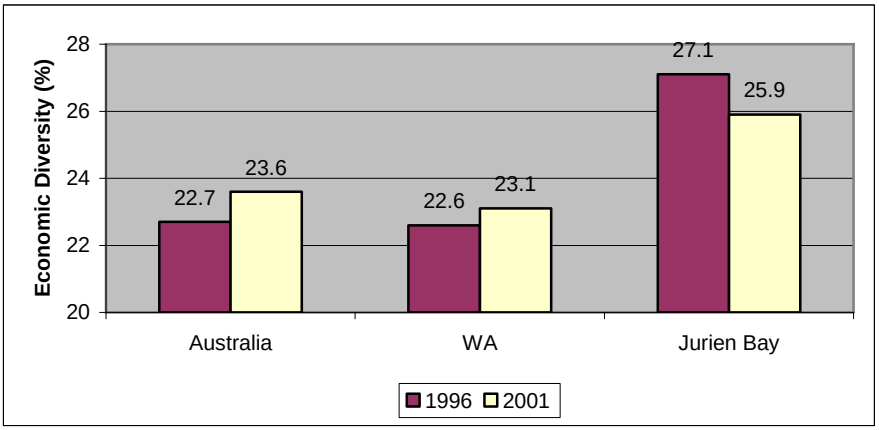


Figure 8B: Perceptions of Community Cohesiveness, Jurien Bay

4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

Data on employment by industry shows that the agriculture, forestry and fishery industry division was a major employer in Jurien Bay from 1991 to 2001, with rock lobster fishers comprising 41 per cent of the total number of persons employed in 2001 (Appendix 1). However, there has been a relative decline in this industry division's share of total employment, from 13 per cent in 1996 to 11 per cent in 2001. In 1996, the three major industry subdivisions that provided employment to the Jurien Bay workforce were food retailing, commercial fishing and education. By 2001, the accommodation, cafes and restaurants industry subdivision was one of the three main employers, together with the education and food retailing industry subdivisions. Figure 9 provides evidence of the diversification of economic activities in Jurien Bay between 1996 and 2001.[7]



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 - 2001, Jurien Bay

This trend towards diversification and the need to diversify were noted by some interviewees who stated that:

> *Jurien's gone from being fishing-orientated to [being] business-orientated. [There's] a more diversified workforce, diversified businesses, and in terms of fishing personnel, they would certainly be in the minority (Interviewee No. 142, 2004).*

> *There is a lot less permanent boats here than what there was in the early to mid-nineties. [This decline] would have had a huge impact if we didn't have other people coming into town and bringing their families with them and living here permanently. As the town grew, we started to get Western Power workers come and live permanently in the town. Another example is the Water Corporation;*

[7] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

they have one or two families stationed in town permanently. Electricians and tradesmen have come to town and brought their families. You've got all these sort of services coming and that has helped (Interviewee No. 163, 2004).

4.1.1 Fishing Industry

The growth of the crayfishing industry in Jurien Bay saw the establishment of the Fremantle Fishermen's Cooperative processing plant and the construction of a jetty in the 1960s. Further advancement occurred in 1987 with the opening of the Jurien Bay Marina, constructed at a cost of $8 million. The marina provided the professional fishing community with 72 commercial pens, with all pens having access to power and water supplies. The marina has boat launching facilities, a boat lifter and a large hard stand area complete with an undercover area. To accommodate larger vessels in the marina, a number of pens were modified in 1996.

Rock lobsters make up a significant component of commercial fishing activity in the Wheatbelt Region (Appendix 2).[8] For the 2002/03 to 2004/05 fishing seasons, 94 per cent of the total catch of all species in tonnes and 99 per cent of the total estimated value of the catch in the Wheatbelt Region were accounted for by rock lobsters. Of this total catch, the rock lobster catch (both volume and value) landed in Jurien Bay was 18 per cent of the total rock lobster catch in the Wheatbelt Region as a whole. Other species caught in Jurien Bay include fish, crabs and molluscs.

Fishery-related facilities also exist in Jurien Bay (Plates 7A and 7B). There are several crayfish reception facilities (receival depots) located within the harbour confines. The harbour is fully integrated including land-backed facilities, affording Jurien Bay a broad range of community benefits – recreational, tourism, commercial and industrial.

Plates 7A and 7B: Crayfish Receival Depots in Jurien Bay

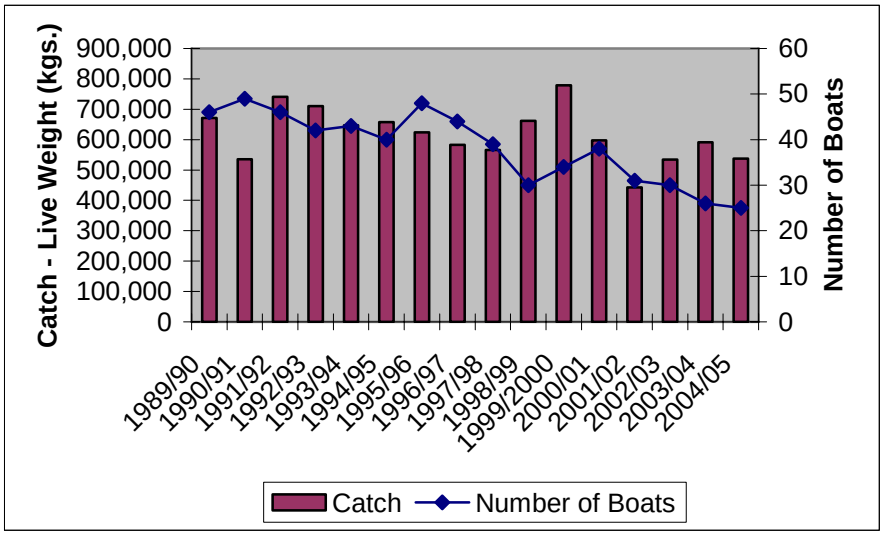
(Source: Veronica Huddleston, 2004.)

Since 1990, there has been a decline in the number of boats operating in the rock lobster fishery from Jurien Bay and the catch data shows fluctuating trends (Figure 10). Prior to the lifting of the 'Home Porting Rule' in 1992, under which commercial fishing vessels had to nominate one port in which they would off load their catch, there were 46 commercial fishing vessels based in Jurien Bay (Appendix 3). In 2004/05, there were only 25 boats based at Jurien Bay. Early exposure and family fishing operations had encouraged the Jurien Bay fishers to enter the rock lobster fishery, but it was noted that 'a lot of boats were sold out due to health reasons, divorce and financial problems'.

[8] Covering an area of 154,000 square kilometers, the Wheatbelt Region adjoins Perth and extends from the Indian Ocean in the northwest, to the western edge of the Goldfields and to the northern border of the Great Southern Region (Patterson Market Research, 1999).

The decline of rock lobster fishing in Jurien Bay is summed up in the following words of a rock lobster fisher (Interviewee No. 120, 2004):

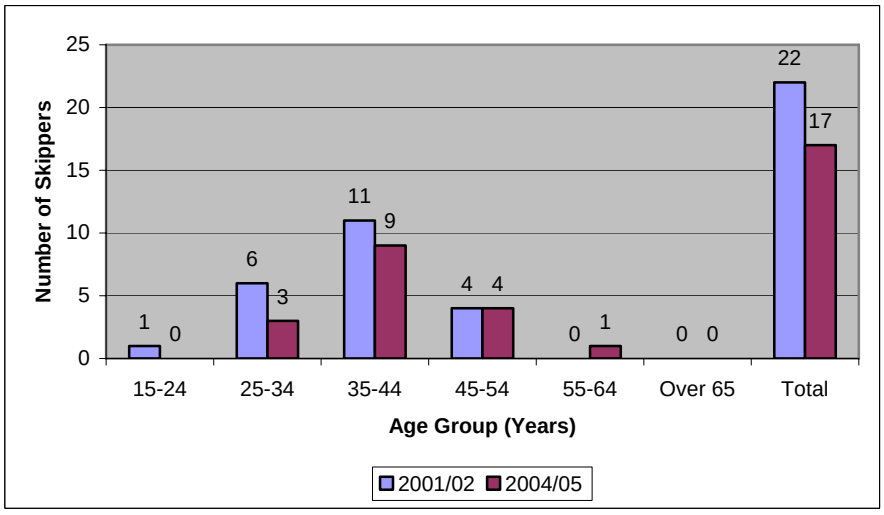
> *Jurien Bay was once a crayfishing town with 2 processing factories that employed 150 people between them with truck drivers, freezer workers, processing workers, etc. We used to have 40-45 local boats. Now it's a crayfishing town with 14-15 boats. It's not what it used to be.*



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Jurien Bay

The number of skippers and deckhands engaged in the rock lobster fishery also showed a decline during this same period (1989/90 – 2004/05). Of the skippers who indicated Jurien Bay as their residence, 50 per cent were between 35 and 44 years old and used an average of 101-130 pots during the rock lobster season (Figure 11). There was a noticeable decline in the number of skippers in the 25-34 and 35-44 age groups, reflecting the sentiment expressed by fishers in Jurien Bay that the 'fishing industry has always been predominantly [made up of] young people but now you see more family men employed'.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Jurien Bay, 2001/02 and 2004/05

On their perceptions of the rock lobster industry, community residents in Jurien Bay have strong levels of agreement that 'the decline in the number of commercial rock lobster boats had a negative impact on local businesses' (Figure 12). While there is general agreement that 'the economic viability of the community is closely linked to the viability of the rock lobster industry', business people also noted that 'business with crayfishers is no longer a major part of their operations because there are only a few of them now'.

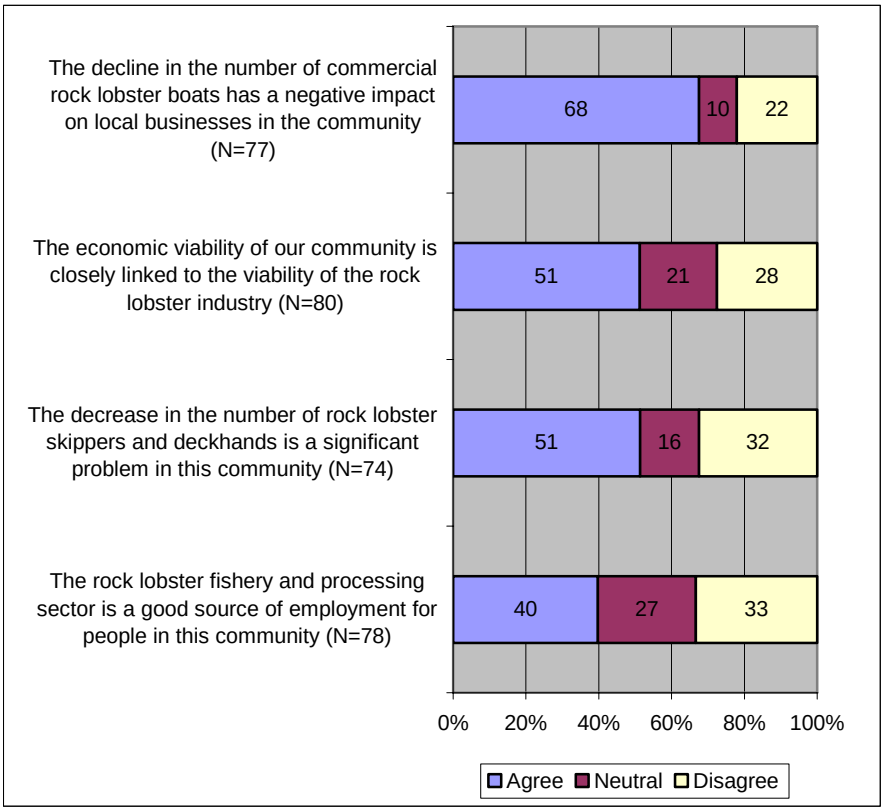


Figure 12: Perceptions of the Rock Lobster Industry, Jurien Bay

On the question of whether they would encourage young people to become involved in the commercial rock lobster fishery, 57 per cent of the respondents gave a negative response (Figure 13). Only 28 per cent of those surveyed indicated they would encourage young people to enter the rock lobster industry. The remaining 15 per cent have not made up their mind.

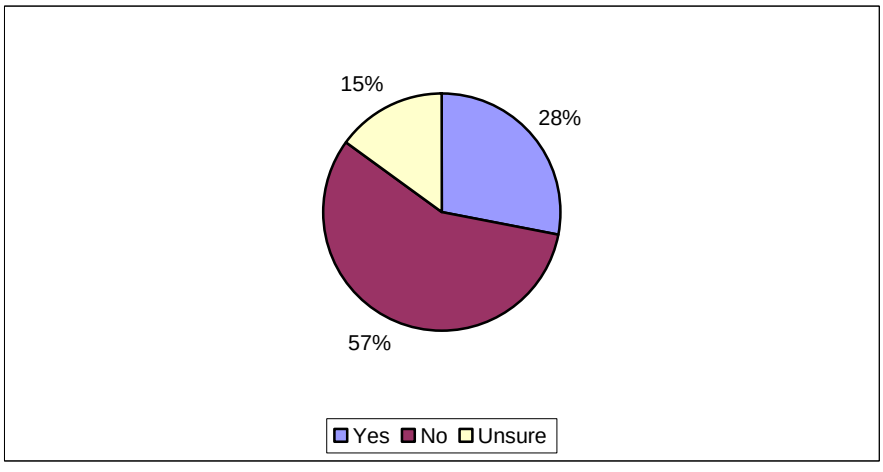
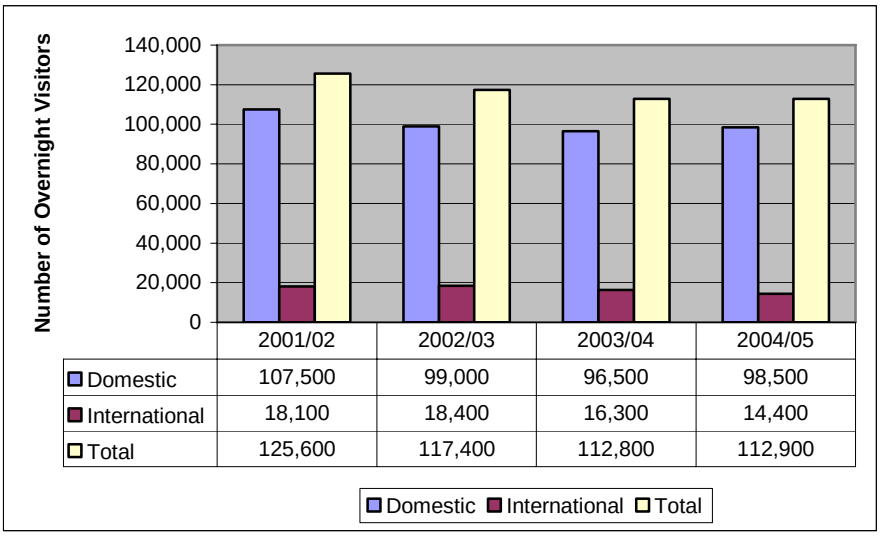


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Jurien Bay

4.1.2 Tourism

Jurien Bay forms part of the Shire of Dandaragan, together with Cervantes, Badgingarra, Dandaragan and Regans Ford. The majority of visitors to the Shire visit for holiday or leisure activities (Appendix 4). Domestic tourists comprise the bulk of visitors, averaging between 81 to 83 per cent of overnight visitors to the shire for the 2001/02-2004/05 period. As Figure 14 indicates, the number of overnight tourists to the area had slightly declined since 2001/02. International visitors have increased the number of days that they stay in the area from 1.4 days in 2001/02 to 2 days in 2004/05.



	2001/02	2002/03	2003/04	2004/05
Domestic	107,500	99,000	96,500	98,500
International	18,100	18,400	16,300	14,400
Total	125,600	117,400	112,800	112,900

(Source of Data: Tourism Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 – 2004/05, Shire of Dandaragan

Jurien Bay is protected by islands and reefs that provide sheltered waters for a number of recreational aquatic activities offered by the town including recreational fishing and crabbing. Jurien Bay is recognised as one of the finest locations on the central coast for catching snapper, dhufish and the baldchin groper. Facilities available to the public include boat ramps, jetties and fuelling facilities. Pens are also available for hire.

Tourists generally visit Jurien Bay from November to April, with the peak periods being public and school holidays. Accommodation is provided for by the Jurien Bay Hotel and the Jurien Bay Caravan Park, complemented by private rental accommodation and holiday homes.

Residents of Jurien Bay remain optimistic of the tourism potential of the area, with 83 per cent providing high levels of agreement to the statement that 'the coast around this community is suitable for more tourism activities than we have' (Figure 15). It was noted, however, that there is a 'need to have top quality tourist amenities to bring tourists who will spend their money in the town'.

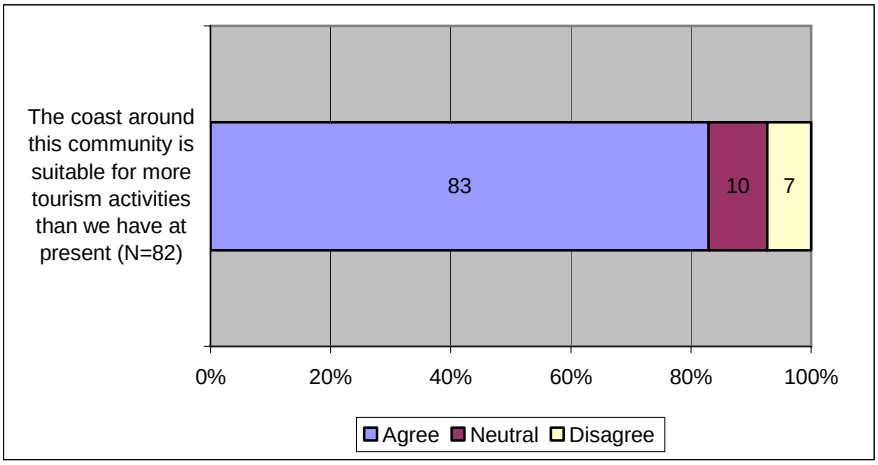


Figure 15: Perceptions of Tourism Potential, Jurien Bay

Jurien Bay is also one of the areas identified by the Government for its habitat and biodiversity protection program, ensuring that key fishing grounds remain in good condition. The Jurien Bay Marine Park, formally declared in August 2003, covers the section of the central west coast between Wedge Island and Green Head (Figure 16).

(Source: <http://www.fish.wa.gov.au/docs/sof/2003/sof20032004-0202.pdf>)

Figure 16: Current and Proposed Areas of Protected Fish Habitat in the West Coast Bioregion

Entrusted to the Marine Parks and Reserves Authority, the marine park is managed by the Department of Conservation and Land Management in partnership with local authorities. A small section of the marine park has been allocated as a sanctuary zone where activities are restricted but a full range of marine activities such as fishing, swimming and diving are allowed in the majority of the marine park.

The Department of Fisheries has been working on the preparation of orders under the Fish Resources Management Act of 1994 in order to modify fisheries regulations in accordance with the final Jurien Bay Marine Management Plan (Department of Fisheries, 2005:11).

4.1.3 Business and Commerce

As Jurien Bay's population has grown, the number of businesses and community facilities has also increased. In 1998, there were 90 businesses operating within the town, including a bank and a variety of retail, service and light industrial and commercial operators (Shire of Dandaragan and WDC, 1998). In 2004, close to 150 businesses were listed in the Jurien Bay telephone directory. Most industries are located in the town's designated industrial or commercial zones.

A number of business people interviewed indicated that their sales to related trades (e.g. marine fabricators) have also gone down. On the relative impact of the declining boat numbers of the Western rock lobster fishery in Jurien Bay, the impact of the closure of the lobster processing plant (Bluewave) was considered of significant importance. One interviewee (No. 148, 2004) noted that, "the loss of people working in the processing plant has directly impacted on local shops and businesses."

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

Jurien Bay is connected to the Brand Highway by the 39 kilometres Jurien Bay east road. The inland town of Moora, 120 kilometres to the east, is the closest service centre to Jurien Bay. Cervantes, the nearest neighbouring town, can now be reached through the Indian Ocean Drive. The establishment of this coastal road provides an opportunity for Jurien Bay to be in a better position to become the commercial and Government service centre for the Central West coast.

Transport within Jurien Bay is limited to private vehicles and one taxi. The roads inside the town are bituminised and maintained regularly. A majority of these roads have kerbing and adjacent footpaths. A charter bus service is based within the town and a passenger bus service also operates between Perth and Geraldton along the Brand Highway on a daily basis. Jurien Bay is also serviced by four truck haulage companies and is on the route of other commercial transport and courier companies. Jurien Bay has a small airstrip used by private and charter aviators and the Royal Flying Doctors.

4.2.2 Water and Electricity

There is adequate water supply in Jurien Bay stored in a 4.5 million litre capacity tank situated three kilometres east of the town site. Water is supplied through four electronic submersible bores with a pumping capacity of one million litres per day each. With the high

transformer capacity on the service lines, there is an existing additional capacity of 1 Megavolt ampere (M.V.A.) units for use of Jurien Bay residents. Further capacity can be supplied, if required.

4.2.3 Communications

Jurien Bay has a Telephone Line Service and a Digital Radio Concentrated Service. Satellite dish receivers can also be provided upon request. A fibre optic cable system has also been installed and a Telstra Mobile Net Digital mobile phone service was introduced in early 1998.

A Telecentre also operates in Jurien Bay, equipped with high technology facilities and staffed by a coordinator and volunteers. This non-profit local community centre provides services that include computer instruction, secretarial/bookkeeping services, video conferencing and design and printing facilities.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Administration

A few years after Jurien Bay was designated as the major service centre on the Central Coast, the Shire of Dandaragan decided to relocate its administrative headquarters to Jurien Bay (Plate 8). Both the Departments of Transport and Fisheries have offices located within the Harbour Precinct. Other government agencies based within Jurien Bay include the Department of Land Conservation and Land Management, Australia Post and the Volunteer Fire Brigade.

Plate 8: Shire of Dandaragan Administrative Office in Jurien Bay

(Source: Veronica Huddleston, 2004.)

4.3.2 Education and Health

The Jurien Bay District High School has over 250 students (Plate 9A). Officially opened in 1966, the school has seen the addition of a pre-primary classroom in 1976 and Year 8 schooling in 1988. Modern computer communication and a Westlink satellite dish have also been installed at the school. A TAFE also operates in Jurien Bay and provides several training and skill development opportunities for the residents of Jurien Bay and other

neighbouring areas.[9] Several play groups and organisations coordinating pre-compulsory education are also active in Jurien Bay.

A multi-purpose Health Centre was constructed in September 2000 to cater to the health needs of Jurien Bay's growing population (Plate 9B). Services offered include an accident and emergency department staffed by registered nurses seven days a week.[10] The Health Centre arranges land or air transfers of very sick individuals to Moora, Perth or Geraldton, as required. About 9 out of 10 individuals who participated in the community survey used the services of the local general practitioner, although specialist medical services must still be primarily accessed in Perth.

Plates 9A and 9B: Jurien Bay District High School and Health Centre

(Source: Veronica Huddleston, 2004.)

4.3.3 Law and Order

The Jurien Bay Police Station is staffed by six police officers. The number of reported crimes has not significantly increased since 2001/02 (Appendix 5). Although an increasing number of assault offences have been reported in 2004/05, these offences made up a small percentage of the total crimes reported for the period in the Wheatbelt Region. It was noted that incidences reported to the Police predominantly involved 'anti-social behaviour related to drug and alcohol use and opportunistic crimes normally observed during the Christmas/holiday season'.

[9] Technical and Further Education or TAFE institutions are a type of adult education organisation in Australia offering a wide range of predominantly vocational tertiary education courses (<http://en.wikipedia.org/wiki/Technical_and_Further_Education> cited 15 November 2006).

[10] Other services provided by the Health Centre are: dental practice, physiotherapist, podiatry, audiology, dietitian, counselling, child health clinic, immunisation, home and community care, ultra-sound radiography and speech pathology and occupational therapy.

Appendix 1: Employment by Industry, 1991-2001 - Jurien Bay									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	20	3	23	21	12	33	38	3	41
of which: Rock Lobster Fishing			--			0			17
Mining	0	0	0	7	0	7	18	3	21
Manufacturing	7	6	13	16	3	19	18	7	25
of which: Seafood Processing			--			3			6
Electricity, Gas and Water Supply	0	0	0	15	0	15	6	0	6
Construction	18	0	18	28	3	31	22	0	22
Wholesale Trade	16	15	31	7	0	7	4	3	7
Retail Trade				13	15	28	25	41	66
Accommodation, Cafes and Restaurants	Not a separate sector			4	4	8	13	19	32
Transport and Storage	3	3	6	6	6	12	7	0	7
Communication Services	0	3	3	10	0	10	0	3	3
Finance and Insurance	9	6	15	6	3	9	0	6	6
Property and Business Services				3	3	6	6	18	24
Government Administration and Defence	6	3	9	6	3	9	7	3	10
Education	Not a separate sector			0	15	15	8	23	31
Health and Community Services	13	21	34	6	10	16	3	19	22
Cultural and Recreational Services	9	7	16	0	3	3	0	3	3
Personal and Other Services				6	6	12	15	6	21
Non-classified/Non-stated	14	9	23	12	0	12	9	0	9
Total for All Industries	115	76	191	166	86	252	199	157	356
Share of Agriculture, Forestry and Fishery to Total Employment	17.4	3.9	12.0	12.7	14.0	13.1	19.1	1.9	11.5
Share of Top Three Sectors to Total Employment	47.0	56.6	46.1	39.2	48.8	36.5	42.7	52.9	36.2
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a , 2002/03 - 2004/05 - Western Australia and the Wheatbelt Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Wheatbelt Region	153	140	116	671	610	527
of which: Jurien Bay's Share (%)	39.7	51.1	43.3	36.7	39.4	37.3
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Wheatbelt Region	21	3	24	130	42	318
of which: Jurien Bay's Share (%)	20.2	100.0	100.0	43.6	100.0	100.0
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Wheatbelt Region	3,003	3,343	3,124	73,425	63,511	67,157
of which: Jurien Bay's Share (%)	17.8	17.3	16.8	17.8	17.3	16.8
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Wheatbelt Region	33	34	33	91	93	91
of which: Jurien Bay's Share (%)	11.1	11.8	9.8	11.1	11.8	9.8
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Wheatbelt Region	3,210	3,520	3,297	74,317	64,256	68,093
of which: Jurien Bay's Share (%)	11.0	10.8	10.6	10.6	10.2	10.1

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated thaty they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Jurien Bay						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Jurien Bay	741,335	582,573	442,634	534,707	591,466	537,754
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Jurien Bay	797,556	690,802	487,262	426,136	357,865	344,142
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Jurien Bay	46	44	31	30	26	25
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Jurien Bay	125	133	95	95	81	78
(Source of Data: Department of Fisheries, Western Australia.)						

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - Shire of Dandaragan								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	76,500	71.2	65,500	66.2	62,500	64.8	66,000	67.0
Visiting Friends/Relatives	9,500	8.8	14,000	14.1	14,500	15.0	10,500	10.7
Business /c	11,000	10.2	10,500	10.6	14,500	15.0	15,500	15.7
Other /d	3,000	2.8	2,000	2.0	1,500	1.6	3,000	3.0
Total	107,500	100.0	99,000	100.0	96,500	100.0	98,500	100.0
International Visitors								
Holiday/Leisure	17,500	96.7	18,400	100.0	16,000	98.2	13,600	94.4
Visiting Friends/Relatives	300	1.7	100	0.5	200	1.2	500	3.5
Business	100	0.6	0	0.0	0	0.0	200	1.4
Other	200	1.1	0	0.0	100	0.6	200	1.4
Total	18,100	100.0	18,400	100.0	16,300	100.0	14,400	100.0
Total Visitors								
Holiday/Leisure	94,000	74.8	83,900	71.5	78,500	69.6	79,600	70.5
Visiting Friends/Relatives	9,800	7.8	14,100	12.0	14,700	13.0	11,000	9.7
Business	11,100	8.8	10,500	8.9	14,500	12.9	15,700	13.9
Other	3,200	2.5	2,000	1.7	1,600	1.4	3,200	2.8
Total	125,600	100.0	117,400	100.0	112,800	100.0	112,900	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Jurien Bay				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Wheatbelt District	496	509	573	672
of which: Jurien Bay (number)	23	1	9	19
as percent of the District	4.6	0.2	1.6	2.8
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Wheatbelt District	446	536	476	322
of which: Jurien Bay (number)	6	7	6	7
as percent of the District	1.3	1.3	1.3	2.2
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Wheatbelt District	554	545	446	310
of which: Jurien Bay (number)	8	3	2	3
as percent of the District	1.4	0.6	0.4	1.0
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Wheatbelt District	7	5	10	7
of which: Jurien Bay (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Wheatbelt District	103	158	131	75
of which: Jurien Bay (number)	3	4	1	0
as percent of the District	2.9	2.5	0.8	0.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

CERVANTES

1.0 GEOGRAPHIC SETTING

Cervantes is the second largest town site in the Shire of Dandaragan. The town lies 255 km north of Perth on the coast at Thirsty Point. Jurien Bay is the nearest neighbouring town, located 27 km north of Cervantes. Famous for its seasonal wild flowers, Cervantes is also home to the world-renowned Pinnacles (limestone pillars up to three metres tall), which constitutes a small part of the 17, 491 hectare Nambung National Park located south of the town site.

Mild, wet winters and hot, dry summers generally characterise the area. Temperatures range from a mean maximum of 30.2 degrees Celsius in February to a mean minimum of 9.2 degree Celsius in August. Average annual rainfall is 519 mm.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[1]

The town of Cervantes was named after an island to the south of Thirsty Point where an American whaling ship - the Cervantes – was wrecked off its coast in 1844. Apparently the ship was anchored off Thirsty Point when a gale blew up and the ship was blown ashore on the island.[2]

Prior to World War II, the town of Cervantes saw little activity in view of a general lack of interest in the area due to its isolation. But the development of the rock lobster industry in the late 1940s and the 1950s resulted in the fishery's expansion to more remote waters and isolated coastal locations. From the late 1940s, crayfishing vessels used Frenchman's (Ronsard) Bay as an anchorage for catcher boats and freezer boats.[3] In the 1950/51 fishing season, thirteen catcher boats serviced by four freezing vessels were stationed in Cervantes.

The shore-based facilities began to develop in the early 1960s despite the town not having a proper system of roads and the lack of water, sewerage and electricity utilities. Crayfishers continued to fish off shore and camp in makeshift shacks in what is now the present town. Tropical Traders established a factory and built a jetty in 1962 and a larger jetty was constructed in 1964/65 by the Fremantle Fishermen's Cooperative. The third jetty was constructed in 1967 by the Cervantes Export Processing Company.

The town site expanded after it was allocated 505 hectares from the Nambung Reserve in 1962, "in order to establish a town site to accommodate people engaging in the crayfishing industry" (Cervantes Tourist Brochure, p. 12, cited in Shire of Dandaragan, 1993:214).

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[1] This section is based on information from *Plateau, Plain and Coast: A History of Dandaragan* (Shire of Dandaragan, 1993), *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999, and Cervantes <http://www.walkabout.com.au/locations/WACervantes.shtml> (cited 21 January 2005).

[2] This refers to the promontory that lies to the west of the town and that separates Nambung Bay on the south from Ronsard Bay in the north.

[3] Freezer boats refer to vessels, usually of 15-25 metres, that operated as factory ships, processing, packing and freezing rock lobster tails in export packs (Gray, 1999:276).

Some of the first settlers in the area were crayfishers like Max and Jan Beissel. Other fishers to settle at Cervantes were Ron Rogers, Doug Corser, John McLay, Tom Meagher, George Margaria, Victor Russell, John McMahon, and George and Charlie Starr. Max and Jan Beissel built their first home in the gazetted town site after purchasing a newly-released block from the Lands Department in 1965 (Plates 1A and 1B). Ron and Grace Rogers, owners of the Cervantes Export Processing Company, had previously built the first proper house in the industrial area behind their factory.

Plates 1A and 1B: Beissel Residence under Construction, Early 1960s

(Source: Jan Beissel, 2006.)

While the town site was gazetted in November 1963, the development of Cervantes was not as rapid as that of Jurien Bay founded in December 1956. Given the seasonal nature of fishing, the residential pattern was mostly non-permanent in nature with the majority of the landholders living in Perth and commuting to Cervantes for the rock lobster season (Plate 2). Figure 1 shows the town map of Cervantes that features the location of social and fishery-related infrastructure facilities.

Plate 2: Getting Ready to go to Cervantes

(Source: Jan Beissel, 2006.)

(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Cervantes, 2006

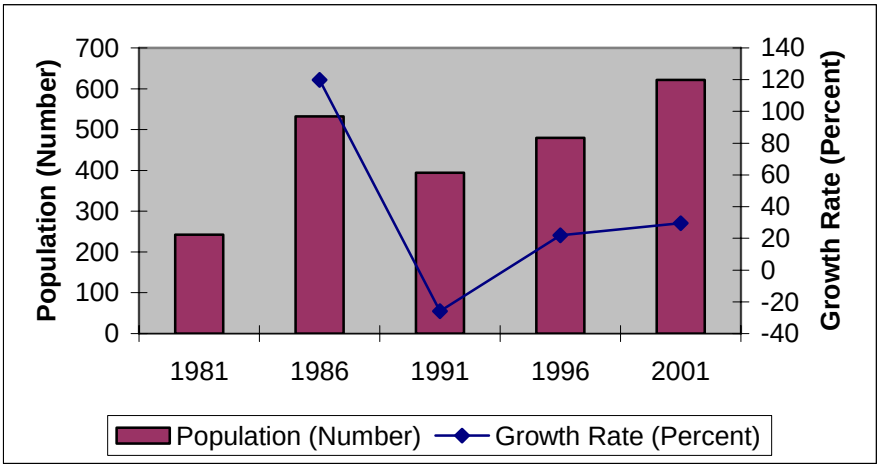
Given its proximity to the Nambung National Park and the growing interest in tourism along the coastal region associated with the profusion of wildflowers during spring, the town started to grow. By the late 1970s, the local community established a Progress Association. The nature of the development of the town is best summed up in the following words of a long-term resident rock lobster fisher in Cervantes (Interviewee No. 116, 2004):

> *Most of the early families in the town are from fishing backgrounds but there was also a fair bit of holiday makers, mostly farmers from inland areas holidaying here. While the town had fewer amenities, everyone interacted and was more involved in the town. We put in the school oval, built the golf course, put in the bowling green. Everyone was involved in building the town.*

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

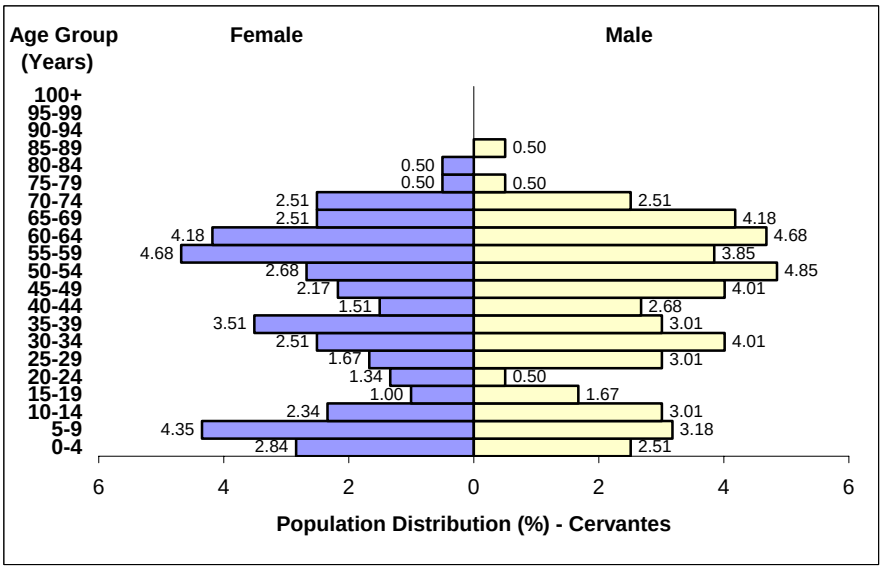
After experiencing a decline in population from 1986 to 1991, population numbers increased between 1996 and 2001 (Figure 2).[4] This increase partly reflected the improved employment potential of the mineral sand mines located in the nearby community of Cataby and the increasing popularity of Cervantes among people of retirement age.



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981 - 2001, Cervantes

There was a noticeable shift to a male-dominated population in 2001 compared to 1996. While the number of females were more significant in the younger age group (0-14 years), males comprised more than half of the population of employable age and those aged 65 years and over (Figure 3).



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Cervantes

[4] Census data refer to the population of Cervantes as an urban centre/locality (UC/L). A locality is a population cluster of between 200 to 999 people who are classified as rural for statistical purposes (1996 Census Dictionary).

The town also experienced a higher degree of overseas born resident population (23%), mostly from the United Kingdom, New Zealand and Ireland (Table 1). Census data in 2001 reported that a large majority of the resident population (67 %) were Christians, with the most common being either Anglicans or Catholics. Almost 20 per cent of the population declared no religion practiced and the rest did not report their religious affiliation. The presence of indigenous persons in Cervantes was marginal (1% for both 1996 and 2001).

Table 1: Population Indicators, 1991-2001 - Cervantes

Urban Centre/Locality	*1991*	*1996*	*2001*
Total Resident Population	533	486	535
Male	289	246	291
Female	244	240	244
Population under 15 years	141	98	109
Population of employable age	351	331	344
of which: Population aged 15-19	24	15	16
Population over 65 years	41	57	82
Dependency Ratio /a	51.9	46.8	55.5
Child Dependency Ratio	40.2	29.6	31.7
Elderly Dependency Ratio	11.7	17.2	23.8
Median Years	32	41	45
% of Overseas Born	12.5	13.4	15.7
% of Indigenous Population	0.6	1.4	1.4

/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Residents below 14 years of age comprised almost 20 per cent of the total population, providing evidence that coastal towns are increasingly seen as good places to raise young children. However, the limited number of residents in the 15-19 age range may be attributable to the lack of post secondary education facilities. Children are required to travel to Jurien Bay to attend the Jurien District High School or to board at other secondary schools located elsewhere in the state, i.e. Perth.

The median age of the population of Cervantes in 2001 (45 years) was higher than the Western Australian median age of 34 years. The proportion of the population aged over 65 years had doubled over the ten year period, from 8 per cent in 1991 to 15 per cent in 2001, resulting in a higher elderly dependency ratio for the community.[5]

In terms of the highest level of schooling completed, the bulk of the population in Cervantes reported finishing Year 10 or equivalent (34 %), followed by those who finished Year 12 or equivalent (20 %). Fifteen per cent reported finishing Year 8, 11 per cent reported finishing Year 9 and another 11 per cent reported finishing Year 11.

Of the 136 households in Cervantes characterised as 'couple family' households in 2001, 56 per cent are 'couple families without children' (Table 2). In general, the average household size in Cervantes was 3.0 persons.

[5] Used as a measure of the dependence that non-working people have on working people, the elderly dependency ratio is defined as the number of elderly people (over 65 years) for every 100 people of working age (15-64 years).

Table 2: Family and Household Characteristics, 1991-2001 - Cervantes			
Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	60	43	53
Couple Family without Children	50	68	83
One Parent Family	13	12	8
Other Family	0	3	3
Total	123	126	147
Proportion of Couple Families with Children to Total Families	48.8	34.1	36.1
Proportion of Couple Families without Children to Total Families	40.7	54.0	56.5
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.2 DWELLING CHARACTERISTICS

Of the estimated 254 dwellings in the town, 80 per cent are classified as separate (detached) houses, of which close to 60 per cent were either fully owned or being purchased (Table 3). However, half of the dwellings in the town were unoccupied. This proportion is one of the highest among the communities hosting the rock lobster fleet.[6] One rock lobster fisher (No. 101, 2004) noted that, "a lot more people are buying retirement/holiday homes here but the owners are not here; you see them only on long weekends." An interviewee (No. 128, 2004) indicated that "land in Cervantes is expensive because there is not much land available for housing development." Residential property in 2004 ranged in price from $60,000 to as high as $300,000 for larger and more improved properties.

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

In 2001, the accommodation, cafes and restaurant sector was a major employer in Cervantes, followed by the agriculture, forestry and fishery sector (Appendix 1). These two sectors accounted for almost 40 per cent of the total jobs in the town, with the former mostly made up of females and the latter largely male-dominated. The retail trade sector accounted for a further 13 per cent and was the third largest employer.

About 62 per cent of the population in Cervantes in 2001 were of employable age (15-64 years). Of the total employed population, 45 per cent were employed full-time while the remainder were employed on a part-time basis (Table 4). The total unemployment rate was 13 per cent, with males registering a higher rate of unemployment of 19 per cent.

[6] The proportion of unoccupied dwellings to total dwellings is 60 per cent in Lancelin and Green Head and more than 70 per cent in Ledge Point and Seabird compared to 15-20 per cent in Dongara, Kalbarri, Mandurah, Two Rocks, Busselton and Yanchep.

Table 3: Dwelling Characteristics, 1991-2001 - Cervantes			
Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	198	200	254
By Structure			
Separate House	162	167	204
Semi Detached	0	3	3
Flat, Unit or Apartment	3	3	3
Other /a	30	27	39
Not Stated	3	0	5
By Tenure			
Fully-Owned	80	101	112
Being Purchased	45	36	38
Rented	47	48	49
Other	26	6	18
Not Stated		9	37
Unoccupied Private Dwellings	234	268	255
Median Monthly Housing Loan Repayments	$476 - $550	n.a.	$600 - $799
Median Weekly Rent	$78 - $107	n.a.	$100 - $149

/a For 1991 Other Dwellings includes caravans, etc. in caravan parks.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Table 4: Employment Indicators, 1991-2001 - Cervantes			
Urban Centre/Locality	***1991***	***1996***	***2001***
Employed	163	147	196
Male	89	69	115
Female	74	78	81
Full Time	78	65	91
Male	53	40	68
Female	25	25	23
Part Time	76	70	99
Male	27	23	44
Female	49	47	55
Not Stated	9	12	6
Male	9	6	3
Female	0	6	3
Unemployed	63	51	28
Male	57	36	25
Female	6	15	3
Total Labour Force	226	198	224
Male	146	105	140
Female	80	93	84
Unemployment Rate (in %)	27.9	25.8	12.5
Male	39.0	34.3	17.9
Female	7.5	16.1	3.6
Labour Force Participation Rate (in %)	57.7	51.0	52.6
Male	65.8	52.2	58.6
Female	47.1	49.7	44.9

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

The town's median weekly income has remained steady between 1996 and 2001 (Table 5) at $200-299 per week. This was below the Western Australian median weekly income of $300-399. An interviewee (No. 138, 2004) noted that, "there are a lot of people who come to Cervantes who are on unemployment benefits and who don't want to work but just remain on the dole."

Table 5: Individual, Family and Household Incomes, 1991-2001 - Cervantes

Urban Centre/Locality	*1991*	*1996*	*2001*
	Annual	*Weekly*	*Weekly*
Median Income for Individuals	$12,001-$16,000	$200-299	$200 - $299
Median Income for Families	$20,001-$25,000	n.a.	$600 - $699
Median Income for Households	$20,001-$25,000	$300-499	$500 - $599

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[7]

In terms of the attraction of living in Cervantes, most interviewees noted that Cervantes is 'more laid back than most coastal towns', 'a very friendly place', 'a safe place where no one is going to harass you at night', and 'where everyone, regardless of age, mingles and mixes together'. Of the residents surveyed, 63 per cent rated their community as a 'good place" to live and 28 per cent rated it as an 'excellent place' to live (Figure 4).

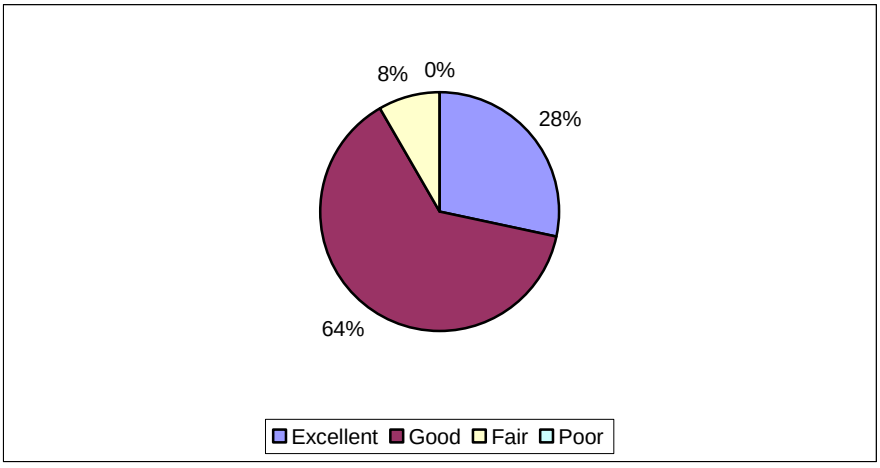


Figure 4: Respondents' Perception of Cervantes as a Place to Live

However, a large percentage of the respondents (37%) reported that they are unlikely to be living there in 5 years time. This could partly be explained by the following comments of a resident (Interviewee No. 136, 2004):

[7] This section is based on the results and analysis of the responses of 27 community residents who participated in a telephone survey conducted in late 2005 and 17 residents who participated in semi-structured interviews conducted in 2004 and early 2005. All of the 27 residents who participated in the survey were born in Australia. A majority of those surveyed were in full and part-time employment (56%), fully owned their houses (67%) and consisted of older families (52%), including mature singles. Five survey participants were engaged in the rock lobster industry. Notes of the community workshop held in Cervantes in 2006 were also utilised in the analysis.

Pensioners are starting to leave because the cost of living in Cervantes has gone through the roof and they need more elderly care so they are moving to Perth. The younger people are moving out of town for the kids' schooling and because of family issues, with the new generation wives wanting their husbands with them in Perth.

On their feelings of attachment to the community, 78 per cent of survey respondents reported 'strong to very strong feelings of attachment' to Cervantes (Figure 5). People in Cervantes also reported high levels of 'knowing most of the people in the neighbourhood' (65%) and 'nearly always' running into people they know while shopping (78%). One community resident (No. 138, 2004) noted that:

Everybody knows everybody's business in this town. But if you're away on holidays, your neighbours will keep an eye on your house without being asked. My neighbours even put my [garbage] bins out when I've forgotten to do so. If you're in someone's yard and you're a stranger, people will notice and will ask what you are doing there. If a child falls off a bike, someone will pick [him/her] up and take [him/her] home.

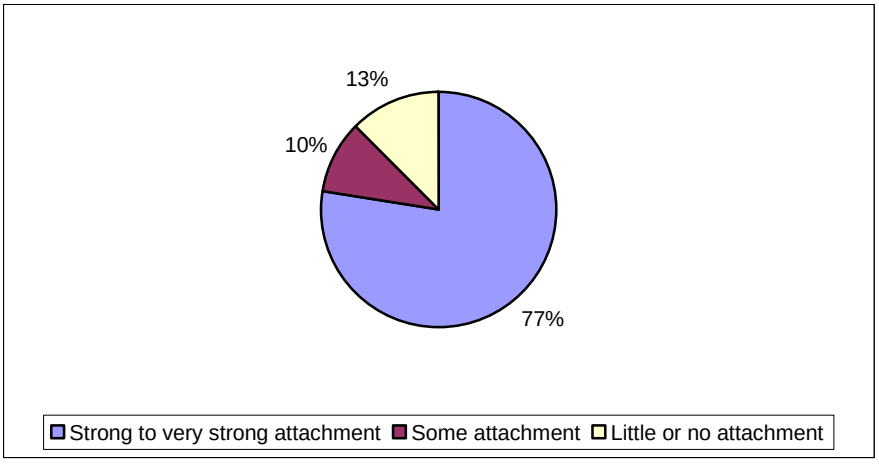


Figure 5: Respondents' Attachment to Cervantes

Figure 6 presents the main rationale cited for choosing to live in Cervantes. These include lifestyle (55%), the beach, ocean and the environment (37%) and work (23%). In the interviews conducted in the community, most residents noted that Cervantes is both 'a holiday place as well as a tourism and fishing place' and that it is 'a good place for raising kids'.

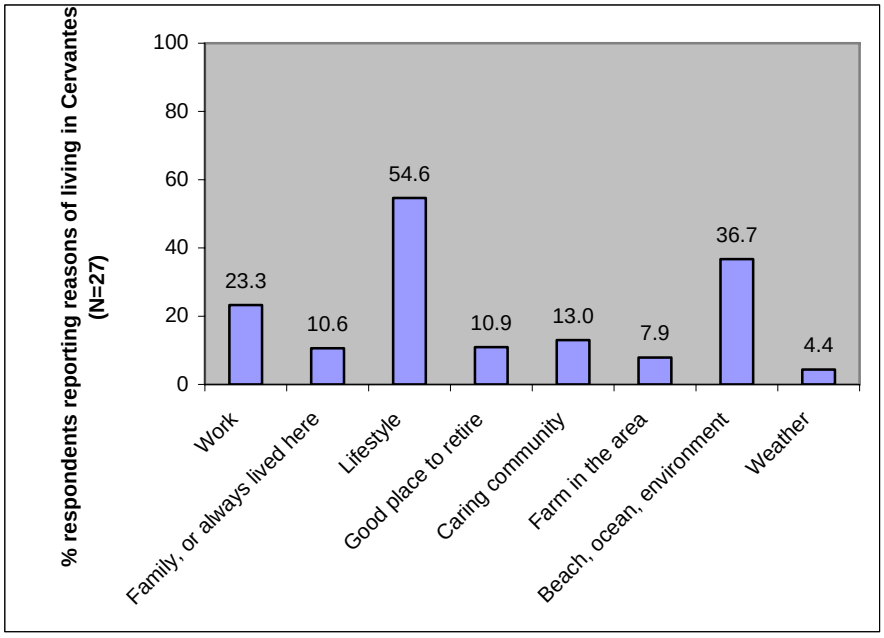


Figure 6: Reasons for Living in Cervantes

Most of the community residents surveyed reported attending local community events, some once or twice a year (48%) and some three or more times a year (36%). Participation in projects to develop new services, activities or facilities, was however low, with 68 per cent of those surveyed indicating non-participation. Those who were interviewed noted that:

> *Thirty years ago, people were different from what they are now. There are now fewer people who are used to running things on a volunteer basis. Some have died, some have moved to Perth because of their health, and some are just worn out and don't want to do it anymore. The people who are coming in are more city type people who are not used to volunteering (Interviewee No. 106, 2004).*

> *People in Cervantes have always volunteered, including the fishers. If something needed to be done, it was done. But the number of these volunteers has dwindled. A lot of those people have passed away and the others have actually moved on to other towns and still do volunteer work. But the new generation, they're just not interested and their values have changed (Interviewee No. 136, 2004).*

On their participation in local organisations, 59 per cent of survey respondents reported participation in sports/recreation facilities (Figure 7). One interviewee (No. 113, 2004) noted that, "If you're into sports, people will be more welcoming and you'll know people through sports."

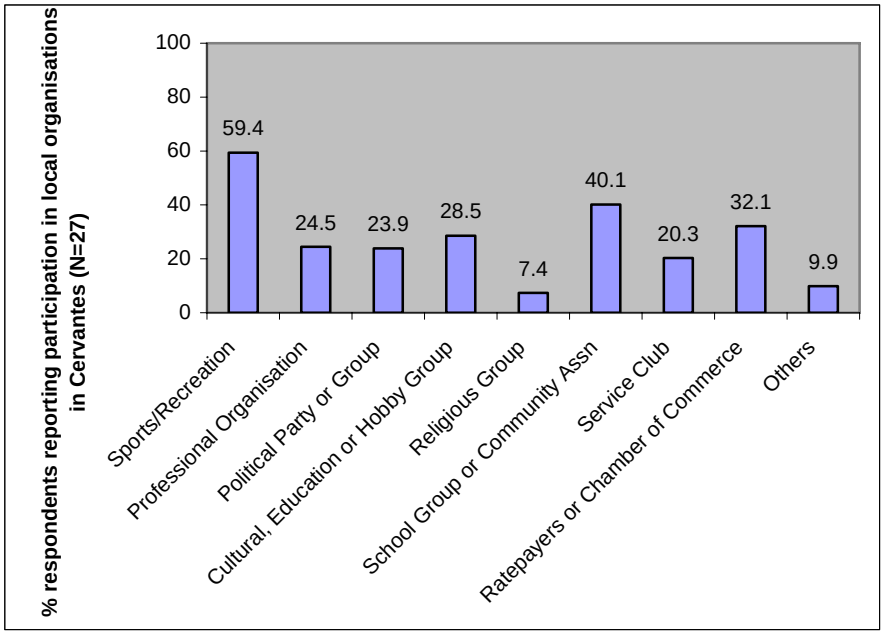


Figure 7: Participation in Local Organisations in Cervantes

The sports/recreation groups in Cervantes utilise the Community and Sporting Club that opened in 1974 as their clubrooms. Cervantes also has a modern recreation centre with a gym hall with indoor multi-purpose courts for basketball and indoor cricket (Plate 3A). A golf course, bowling greens, tennis courts and football oval are located adjacent to these facilities.

Plates 3A and 3B: Cervantes Community Recreation Centre and Volunteer Fire Brigade

(Source: Veronica Huddleston, 2004.)

Survey respondents also reported participation in school groups or community associations (40%), ratepayers or chambers of commerce (32%), and cultural, education or hobby groups (28%). Twenty-two per cent of those surveyed also reported involvement in voluntary state emergency services, fire or rescue services. Cervantes has a Volunteer Bush Fire Brigade manned by a fire control officer (Plate 3B).

Based on the results of the survey, Cervantes residents perceive their community as a cohesive community (Figure 8A and 8B).[8] Cervantes residents have high levels of agreement that 'if there was a serious problem, people would get together and solve it' and that 'there is strong local support for community events'. Residents also feel strongly that their community is friendly towards newcomers. The community cohesiveness score of 7.13 for Cervantes respondents was within the middle range of the scores generated for the 19 communities included in the survey.

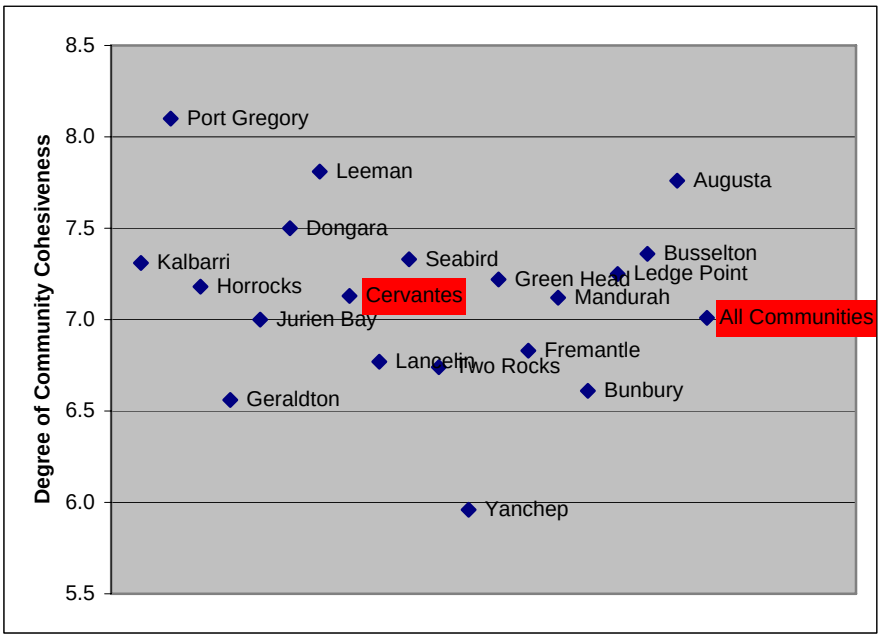


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

[8] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <*http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf*> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

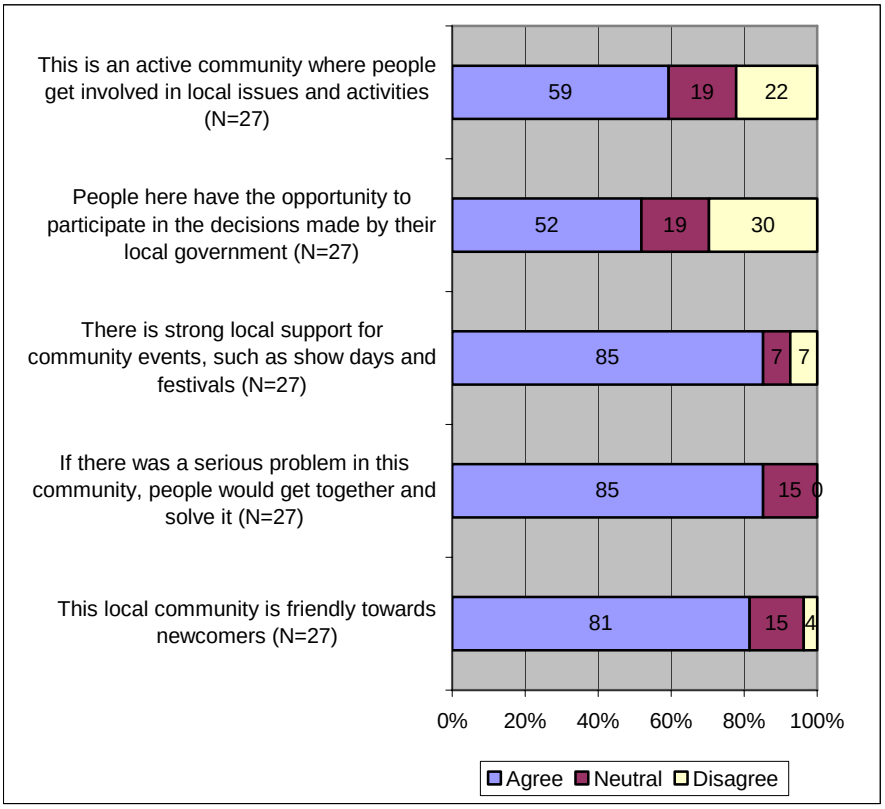


Figure 8B: Perceptions of Community Cohesiveness, Cervantes

4.0 THE LOCAL ECONOMY

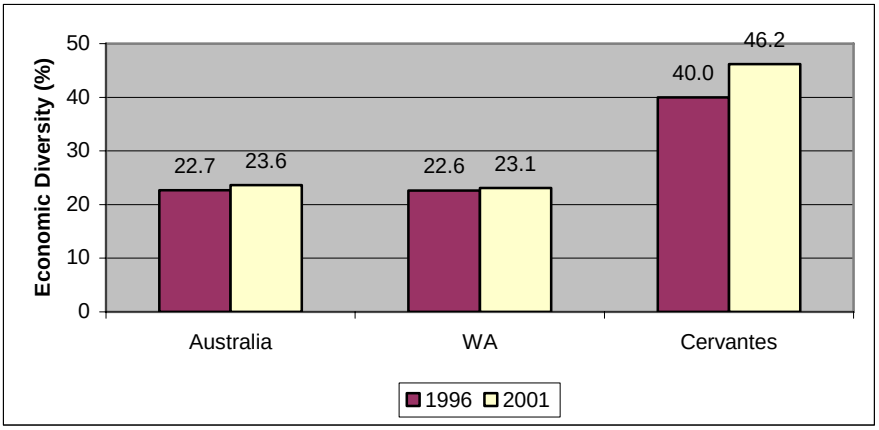
4.1 ECONOMIC ACTIVITIES

Since 1991, the share of the agriculture, forestry and fishery sector in the total employment in Cervantes ranged from 18 per cent to 22 per cent (Appendix 1). In 2001, the sector provided the second largest employment base in the community, with around 70 per cent of the sector's employment being accounted for by the rock lobster fleet. Business groups in Cervantes note that "crayfishing and tourism are all that the town has going for it" (Interviewee No. 155, 2004) and that "crayfishing is still the primary industry of the town and that tourism is still in its infancy" (Interviewee No. 151, 2004).

The local economy is still very much dependent on a limited number of sectors for employment compared to the economy of Western Australia and Australia as a whole (Figure 9).[9] Almost 50 per cent of the total work force in 2001 was employed in the accommodation, cafes and restaurants industry subdivision, followed by commercial fishing and road transport. One community resident (No. 160, 2004) noted that, "Cervantes needs a more secure employment base and perhaps, an alternative to fishing." Participants at the community workshop held in Cervantes in May 2006 emphasised that "the social and cultural

[9] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

fabric of the town is tied to rock lobster fishing; we want to diversify our economic base but not lose the rock lobster industry altogether" (Community Workshop Results, 2006).



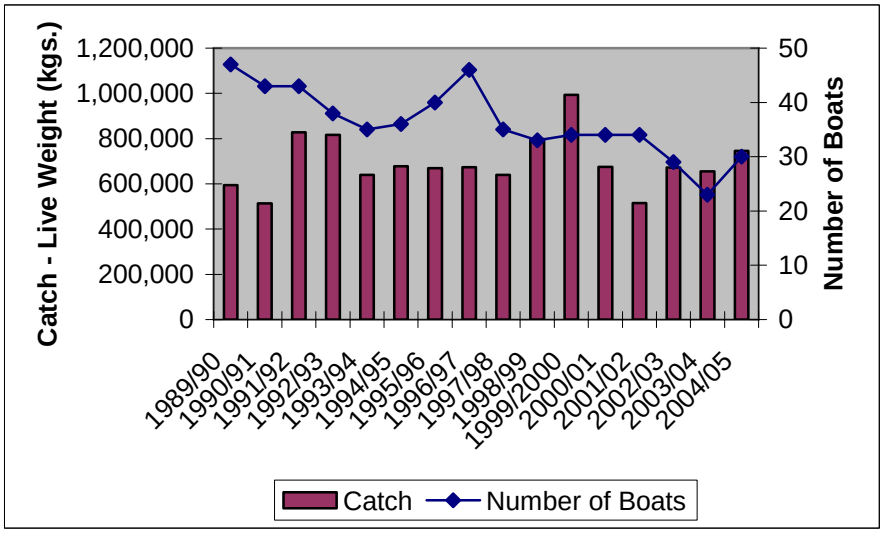
(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 - 2001, Cervantes

4.1.1 Fishing Industry

The main type of activity of the Cervantes fishing fleet is rock lobster fishing. Cervantes contributed almost 25 per cent of the total estimated value of rock lobster catch of the Wheatbelt Region in 2004/05 (Appendix 2).[10] It also contributed between 13 per cent and 20 per cent of the total catch of fish and molluscs of the Wheatbelt Region from 2002/04 to 2004/05.

The home fleet size has decreased by more than 50 per cent since 2001 (Figure 10 and Appendix 3).[11] Some boats that previously fished out of Cervantes in 2001/02 are now fishing in other regions within the C Zone of the rock lobster fishery and are now considered to be mobile or transient vessels.



(Source of Data: Department of Fisheries, Western Australia.)

[10] Covering an area of 154,000 square kilometers, the Wheatbelt Region adjoins Perth and extends from the Indian Ocean in the northwest, to the western edge of the Goldfields and to the northern border of the Great Southern Region (Patterson Market Research, 1999).

[11] In 2001/02, there were 40 boats in the Cervantes rock lobster fishing fleet and in 2003/04, there were only 17 boats. However, data for 2004/05 indicated an increase in both boat numbers and catch landed in Cervantes.

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Cervantes

Three private jetties serviced the fishing industry in 1995/96, each opposite a crayfish reception facility (receival depot) – Blue Wave/Fremantle Fishermen's Cooperative, Cervantes Lobsters and WA Seafoods (Plates 4A and 4B). In 1997/98, the Cervantes Keys Steering Committee was formed to address the state of disrepair of the three jetties and the fact that the location of the receival depots conflicted with residential and tourism zones. The Committee recommended the construction of a common jetty. It was completed in June 2001. The Central West Coastal Professional Fisherman's Association Inc. (CWCPFA) agreed to pay for the loan incurred to construct the jetty.[12]

Plates 4A and 4B: Cervantes Jetty and Cervantes Lobsters Receival Depot

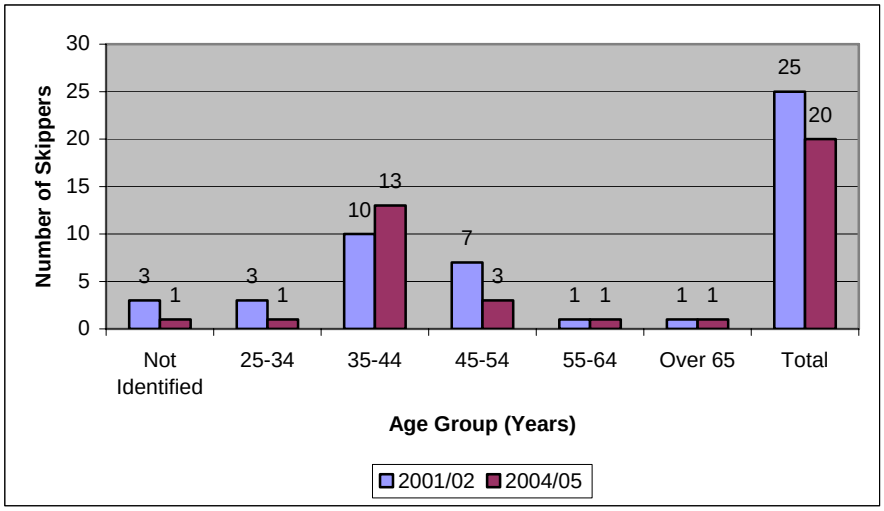
(Source: Veronica Huddleston, 2004.)

The 2002/03 fishing season was characterised by a drop in the 'beach' price of lobsters, higher operating costs, a reduction in the rock lobster fleet that operates from Cervantes, and the closure of both the Blue Wave/FFC and Cervantes Lobsters processing plants in the town.[13] This decrease in the number of boats has had "serious implications on the capacity of Cervantes rock lobster fishers to repay capital costs and cover the operational, repair and maintenance upkeep costs of the public jetty' (Huddleston, 2005:17-18). One rock lobster fisher (No. 136, 2004) commented that "the fishers are struggling to meet their commitment and repay the loan." Due to these factors, the CWCPFA in July 2004 requested a waiver of the 'user cost' fees imposed on the local rock lobster fishery to service the construction loan (CWCPFA and the Cervantes Maritime Advisory Committee, 2004).

As Figure 11 shows, the number of skippers who are resident in Cervantes and who use Cervantes as their anchorage point has declined from 25 in 2001/02 to 20 in 2004/05. One interviewee (No. 154, 2004) noted that, "[Cervantes] has just become a transit port where fishers come in, fish the waters and then leave." Skippers are mostly aged 35-44 years and use between 91 and 120 pots during the rock lobster season. Some fishers lease a further number of pots between 91 and 140. While they may be missing the fishing lifestyle, one rock lobster fisher (No. 116, 2004) noted that, "a lot of the older fishers now have just become investors since there is more money in doing so."

[12] The Central West Coastal Professional Fishermen's Association Inc. was formed in 1973. This association represented fishermen from south of Cervantes to Leeman in the north (Jurien and Districts Heritage and Maritime Museum Committee, 1996:34).

[13] 'Beach' price refers to the average price paid to fishermen selling their catch directly to licensed rock lobster processors (Department of Fisheries, 2002:13).



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Cervantes, 2001/02 and 2004/05

Survey respondents echoed the same sentiments expressed by those who participated in the semi-structured interviews undertaken in Cervantes, namely that the decrease in the number of boats in Cervantes has affected the town. Some interviewees noted that "crayfishing brings the workers that spend their money in the town" (Interviewee No. 112, 2004) and that "there used to be more money in the town when there were more fishers around" (Interviewee No. 116, 2004). Community residents in Cervantes indicated strong agreement that 'the decline in the number of commercial rock lobster boats has had a negative impact on local businesses in the community' (Figure 12). Survey respondents also highly agreed that 'the decrease in the number of rock lobster skippers and deckhands is a significant problem in this community'.

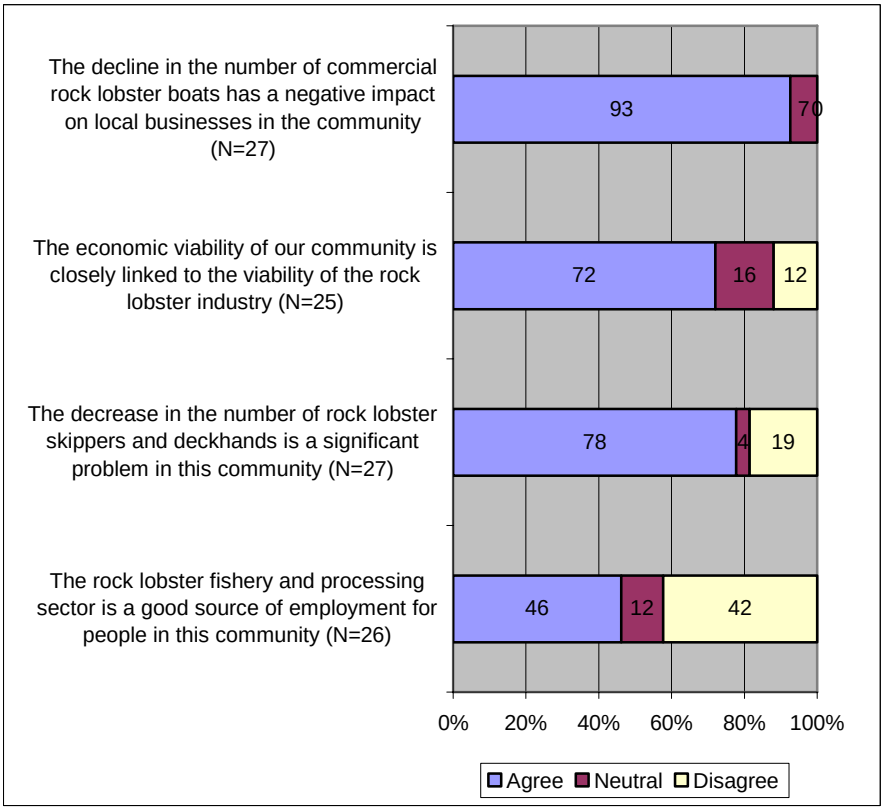


Figure 12: Perceptions of the Rock Lobster Industry, Cervantes

Given their perceptions of the rock lobster fishery, only 36 per cent of the survey respondents indicated agreement to the question of whether they would encourage young people to become involved in the commercial rock lobster fishery (Figure 13). Close to 50 per cent indicated they would not, which reflects the recognition of community residents of the difficulties and problems facing the rock lobster fishery.

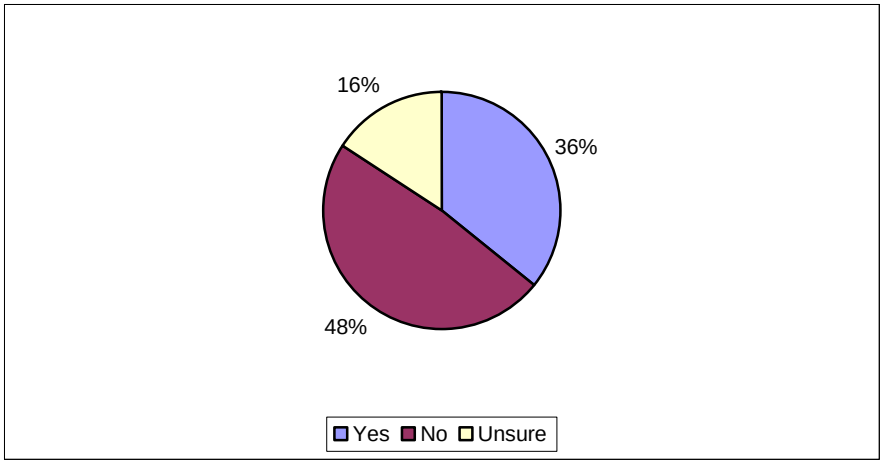
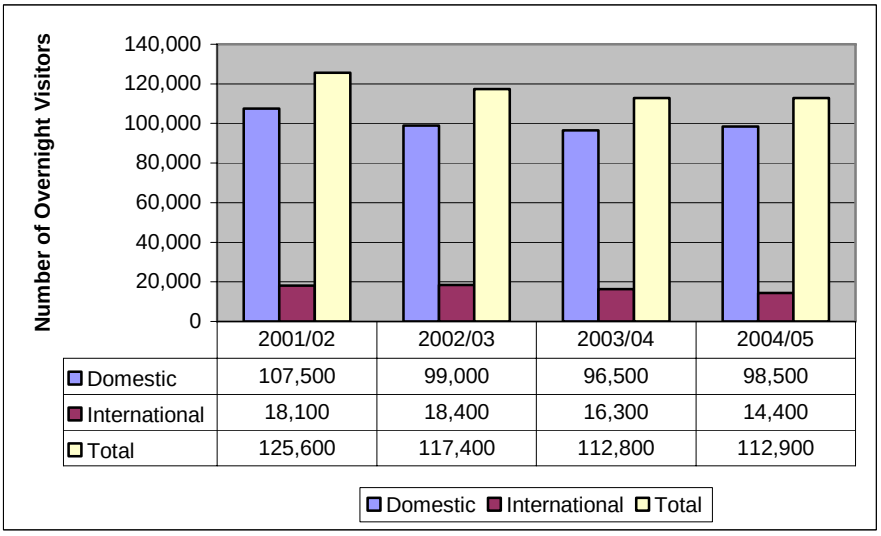


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Cervantes

4.1.2 Tourism

Cervantes forms part of the Shire of Dandaragan, together with Jurien Bay, Badgingarra, Dandaragan and Regans Ford. The majority of visitors to the Shire visit for holiday or leisure activities (Appendix 4). Domestic tourists comprise the bulk of visitors, averaging between 81 to 83 per cent of overnight visitors to the shire for the 2001/02-2004/05 period. As Figure 14 indicates, the number of overnight tourists to the area had slightly declined since 2001/02. International visitors have increased the number of days that they stay in the area from 1.4 days in 2001/02 to 2 days in 2004/05.



	2001/02	2002/03	2003/04	2004/05
Domestic	107,500	99,000	96,500	98,500
International	18,100	18,400	16,300	14,400
Total	125,600	117,400	112,800	112,900

(Source of Data: Tourism Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 – 2004/05, Shire of Dandaragan

The Pinnacles (pillars of wind-carved limestone stands in an array of shapes and sizes) located within the neighbouring Nambung National Park is a popular destination for day tours from Perth (Plate 5A). The Department of Conservation and Land Management estimated that over 150,000 visitors were attracted to the Pinnacles in 1997/98. Other attractions include Lake Thetis situated about 2 kilometres to the southeast of the township (Plate 5B). This is one of only five known sites where stromatolites can be found in Western Australia (Plate 5C). The impact on tourism in Cervantes of the much-awaited completion of the Indian Ocean Drive between Lancelin and Cervantes will be considerable. A study undertaken on the economic and social impact of the Indian Ocean Drive predicted that "the Shires of Dandaragan and Gingin are expected to attract approximately 80 per cent of the total visitor market expected to increase from a base of 541,000 in 1996 to more than 1 million by 2016" (Pracsys Management Consultants, 2003: 36).

Plates 5A, 5B and 5C: The Pinnacles, Lake Thetis and Stromatolites in Cervantes

(Sources: <http:en.wikipedia.org/wiki/Cervantes, Western Australia>and <http://www.cervanteslodge.com.au,> cited 01 March 2007.)

Visitors to Cervantes can choose from a variety of accommodation that ranges from a caravan park (200 sites), a motel (42 units) and a backpackers accommodation (Plates 6A and 6B). In addition, there are also holiday rental homes and private bed and breakfast accommodation.

Plates 6A and 6B: Cervantes Caravan Park and Cervantes Lodge (Backpackers)

(Sources: Veronica Huddleston, 2004 and http://www.cervanteslodge.com.au, used with the permission of Cervantes Lodge, 2004)

Residents of Cervantes are optimistic about the tourism potential of their community. Of the surveyed respondents, 70 per cent indicated high levels of agreement that 'the coast around this community is suitable for more tourism activities than we have at present' (Figure 15). There are plans currently underway to promote tourism more actively in Cervantes, with promotions emphasising that 'there's more to Cervantes than just the Pinnacles' with the

community's natural pristine environment, marine parks, fishing and wildflowers (Turquoise Coast Tourism Marketing Plan, 2006/07). Cervantes is also gaining reputation as a premier windsurfing location in Western Australia, with the resulting emergence of support services such as windsurfing lessons and hire, associated aquatic activities and other ancillary services.

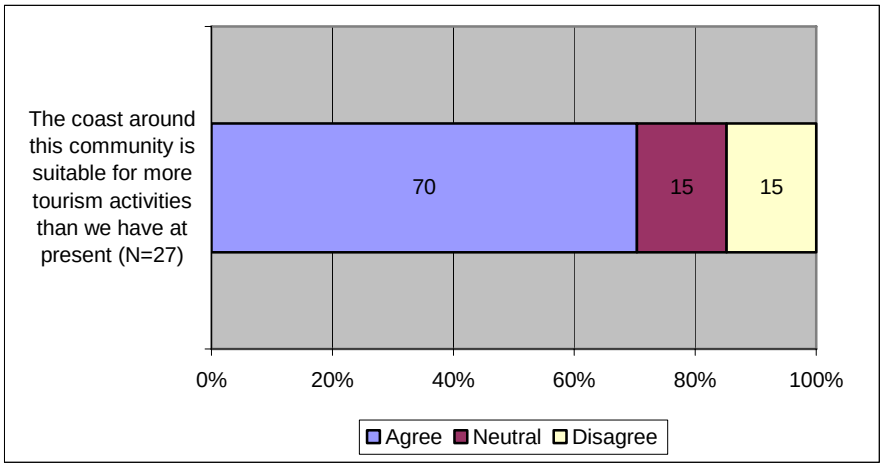


Figure 15: Perceptions of Tourism Potential, Cervantes

4.1.3 Business and Commerce

In recognition of the importance of the business community in the development of the town, the Cervantes Chamber of Commerce works to improve the standard of facilities in the town. Businesses also utilise the Business Enterprise Centre located in Lancelin, which is jointly funded by the Shires of Dandaragan, Chittering and Gingin in conjunction with the State government. The Centre assists both new and established businesses to access information and assistance to support their endeavours.

The 2003 Cervantes telephone directory lists 50 businesses operating within the town including a general store, a variety of hospitality outlets (restaurant and accommodation) and other retail, service, light industrial and commercial operations. One interviewee (No. 159, 2004) summed up the problems facing local businesses as follows:

> *The real challenge now is that the population in Cervantes is almost at a critical point, or getting close to a critical point, of not being able to support businesses as they stand today during the non-tourist season. When we first came to town, there were probably about 600 permanent residents who lived here and stayed in town more than 10 months a year. That permanent population, which is what you rely on as a base for business, is shrinking in this town. When the fishing season finishes, the fishermen and the deckhands all disappear. The population goes back up when the fishing season starts and during school holidays and the long weekend in January. The challenge is how to maintain business in that seasonal environment and take advantage of the times when we get a very large influx of people to the town.*

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

Cervantes is 50 km from the Brand Highway that links Perth and Geraldton. Bibby and Munbinea Roads connecting Cervantes to the Brand Highway are bituminised and regularly maintained. A program of street kerbing/drainage and the construction of adjacent footpaths in the community is ongoing.

Transport within the town is restricted to private vehicles. There are daily coach tours to the Pinnacles as well as private air charters. Twice a week, a bus service to Perth is available with stops at Joondalup and Perth City.

4.2.2 Water and Electricity

Cervantes has an independent water supply consisting of four submersible bore holes sunk to the depth of approximately 15 meters, with an average pumping capacity of 30 kiloliters per hour. The southern residential subdivision of Cervantes utilises an underground sewer system and water treatment ponds. The remainder of the town site utilises individual septic systems.

Western Power provides electricity to Cervantes which currently consumes approximately 0.5 Megavolt ampere (M.V.A.) units of electricity.

4.2.3 Communications

Cervantes has both a telephone land line service and a digital radio concentrated service. Residents also use the Telstra Mobile Net Digital Mobile Telephone Network.

Residents have access to WAFM (101.5 FM) and television viewers are able to tune into both Golden West Network (GWN) and the Australian Broadcasting Corporation (ABC).

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Administration

Cervantes is generally serviced by the Shire of Dandaragan from its administrative centre in Jurien Bay and by Government State Departments based in the sub-regional centre of Moora. A small number of government departments have representatives based in Cervantes, such as the Department of Conservation and Land Management, the Department of Fisheries and Community Health.

4.3.2 Education and Health

Cervantes has a primary school with about 70 students enrolled as of December 2005 (Plate 7A). There is also a playgroup that was established to provide pre-primary education in Cervantes. Upon reaching high school age, children attend either Jurien District High School (commuting by bus daily) or Central Midlands Senior High School in Moora. A residential College (St. James Hostel) is also available or alternatively, children attend boarding schools in Perth or Geraldton.

Plates 7A and 7B: Cervantes Primary School and Community Health Centre

(Source: Veronica Huddleston, 2004.)

The Multi-Purpose Health Centre located in Jurien Bay provides essential medical services to the residents of Cervantes. In addition, Cervantes has a Home and Community Care support coordinator working at the Community Health Centre (Plate 7B). This service enables older people to stay in their homes instead of aged care accommodation or other aged care facilities.

4.3.3 Law and Order

Ensuring law and order and the safety of the town of Cervantes is in the hands of the six-man Police Station based in Jurien Bay. Similar to other coastal towns, opportunist crimes such as theft and robbery are more pronounced during the Christmas/summer holiday period. Overall, residents feel safe and as one community resident noted, "We hardly have any crimes. We don't have break-ins and home invasions or car theft so it's an ideal place for retirees" (Interviewee No. 138, 2004).

In general, there is a wider degree of tolerance to drugs or alcohol and most incidences handled by, and or reported to, the Police are related to anti-social behaviour that are drug or alcohol-related. As detailed in Appendix 5, there is an increasing number of assault offences reported in 2004/05 although these offences made up a small percentage of the total crimes reported in the Wheatbelt Region. The Cervantes community continues to lobby for Police Department presence in the town, as the closest Police Station is located in Jurien Bay (Shire of Dandaragan and the Wheatbelt Development Commission, 1998:n.p.).

Appendix 1: Employment by Industry, 1991-2001 - Cervantes									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	22	9	31	17	8	25	23	8	31
of which: Rock Lobster Fishing			--			0			21
Mining	3	0	3	3	0	3	4	0	4
Manufacturing	3	0	3	7	0	7	7	0	7
of which: Seafood Processing			--			3			9
Electricity, Gas and Water Supply	0	0	0	0	0	0	0	0	0
Construction	6	3	9	5	3	8	17	0	17
Wholesale Trade	9	7	16	6	3	9	7	3	10
Retail Trade				8	9	17	10	11	21
Accommodation, Cafes and Restaurants	Not a separate sector			7	17	24	8	27	35
Transport and Storage	3	0	3	3	6	9	6	3	9
Communication Services	0	3	3	0	3	3	0	0	0
Finance and Insurance	3	0	3	0	0	0	0	0	0
Property and Business Services				0	0	0	0	3	3
Government Administration and Defence	3	3	6	0	0	0	0	3	3
Education	Not a separate sector			0	9	9	3	9	12
Health and Community Services	0	19	19	0	9	9	0	0	0
Cultural and Recreational Services	9	20	29	4	3	7	0	3	3
Personal and Other Services				3	0	3	6	0	6
Non-classified/Non-stated	13	0	13	6	3	9	3	3	6
Total for All Industries	74	64	138	69	73	142	94	73	167
Share of Agriculture, Forestry and Fishery to Total Employment	29.7	14.1	22.5	24.6	11.0	17.6	24.5	11.0	18.6
Share of Top Three Sectors to Total Employment	54.1	75.0	57.2	46.4	47.9	46.5	53.2	50.7	52.1
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a , 2002/03 - 2004/05 - Western Australia and the Wheatbelt Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish/d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Wheatbelt Region	153	140	116	671	610	527
of which: Cervantes' Share (%)	10.7	11.6	15.1	13.2	16.2	18.7
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Wheatbelt Region	21	3	24	130	42	318
of which: Cervantes' Share (%)	79.8	0.0	0.0	56.4	0.0	0.0
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Wheatbelt Region	3,003	3,343	3,124	73,425	63,511	67,157
of which: Cervantes' Share (%)	22.4	19.2	23.3	22.4	19.2	23.3
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Wheatbelt Region	33	34	33	91	93	91
of which: Cervantes' Share (%)	20.1	18.5	18.3	20.1	18.5	18.2
Total/e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Wheatbelt Region	3,210	3,520	3,297	74,317	64,256	68,093
of which: Cervantes' Share (%)	13.1	11.0	13.3	13.2	11.1	13.5

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Cervantes						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Cervantes	827,743	673,927	515,658	672,578	655,766	745,293
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Cervantes	922,578	854,026	610,643	549,626	464,024	522,991
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Cervantes	43	46	34	29	23	30
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Cervantes	127	143	101	91	70	92
(Source of Data: Department of Fisheries, Western Australia.)						

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - Shire of Dandaragan								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	76,500	71.2	65,500	66.2	62,500	64.8	66,000	67.0
Visiting Friends/Relatives	9,500	8.8	14,000	14.1	14,500	15.0	10,500	10.7
Business /c	11,000	10.2	10,500	10.6	14,500	15.0	15,500	15.7
Other /d	3,000	2.8	2,000	2.0	1,500	1.6	3,000	3.0
Total	107,500	100.0	99,000	100.0	96,500	100.0	98,500	100.0
International Visitors								
Holiday/Leisure	17,500	96.7	18,400	100.0	16,000	98.2	13,600	94.4
Visiting Friends/Relatives	300	1.7	100	0.5	200	1.2	500	3.5
Business	100	0.6	0	0.0	0	0.0	200	1.4
Other	200	1.1	0	0.0	100	0.6	200	1.4
Total	18,100	100.0	18,400	100.0	16,300	100.0	14,400	100.0
Total Visitors								
Holiday/Leisure	94,000	74.8	83,900	71.5	78,500	69.6	79,600	70.5
Visiting Friends/Relatives	9,800	7.8	14,100	12.0	14,700	13.0	11,000	9.7
Business	11,100	8.8	10,500	8.9	14,500	12.9	15,700	13.9
Other	3,200	2.5	2,000	1.7	1,600	1.4	3,200	2.8
Total	125,600	100.0	117,400	100.0	112,800	100.0	112,900	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2000/01 - 2004/05 - Cervantes				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Wheatbelt District	496	509	573	672
of which: Cervantes (number)	9	1	4	9
as percent of the District	1.8	0.2	0.7	1.3
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Wheatbelt District	446	536	476	322
of which: Cervantes (number)	3	1	4	2
as percent of the District	0.7	0.7	0.2	0.8
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Wheatbelt District	554	545	446	310
of which: Cervantes (number)	1	1	4	1
as percent of the District	0.2	0.2	0.9	0.3
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Wheatbelt District	7	5	10	7
of which: Cervantes (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Wheatbelt District	103	158	131	75
of which: Cervantes (number)	1	2	1	0
as percent of the District	1.0	1.3	0.8	0.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

LANCELIN

1.0 GEOGRAPHIC SETTING

Lancelin is a coastal town located on the west coast of Western Australia, 127 kilometres north of Perth (Latitude of 31° 01' south and longitude of 115° 20' east). It is one of the 5 towns and 6 rural residential estates that make up the Shire of Gingin.[1] Lancelin Bay is one of the town's main attractions and one of the safest natural anchorages between Fremantle and Geraldton. Nestled between Lancelin and Edward Islands and protected by a significant reef formation, it is home to an abundant marine life. Lancelin's strong sea breeze and sand dunes attract adventure enthusiasts such as wind and kite surfers and sand boarders.

Similar to the other coastal towns of the central coast, Lancelin experiences a Mediterranean climate of hot, dry summers and cool, wet winters. Average annual rainfall is around 620 mm falling between May and October. The maximum mean daily temperature reaches 24 degrees and the minimum temperatures reach 13 degrees Celsius.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[2]

Lancelin Island was first discovered and charted by the French Explorer Captain Baudin in June 1801. The name Lancelin was in honour of P. F. Lancelin, a scientific writer and author of the World Map of Sciences who worked on the planetary system and analyses of science. Given its relative isolation from Perth, limited development occurred in the area until the early 1920s when the area became popular with residents of the nearby farming communities as a holiday destination. A number of crude holiday shacks were constructed as more people discovered the area. There were no permanent homes prior to World War II although the land occupied by the Army had a semi-permanent campsite at the south end of the bay. During World War II, a training area for the army was established, and Lancelin Island was used as bombing range. The Navy, RAAF and Army continue to use the area located north of Lancelin.

With the advent of professional crayfishing in the area in 1947, the area attracted increased residents and services. The first rock lobster fishers in Lancelin were the crew from an ex-

[1] The Shire of Gingin adjoins the local authorities of Dandaragan to the north, Victoria Plains to the northeast, Chittering to the east and Wanneroo to the south. Covering an area of 3, 325 square kilometers, the Shire includes the inland town and administrative centre of Gingin, the four coastal towns of Guilderton, Seabird, Ledge Point, and Lancelin, the six rural residential areas of Woodridge, Sovereign Hill, Moondah Ridge, Seaview Park, Redfield Park and Ocean Farm, the rural industrial area of Frogmore Estate, and extensive tracts of agricultural land and National Parks and Reserves (<http:www.gingin.wa.gov.au/geographical.htm> cited 04 October 2006).

[2] This section is based on information from *Background Information about Lancelin*, <http://www.lancelin.org.au/background.html> (cited 01 March 2007); *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999; *Lancelin Maritime Facility*, <http://www.dpi.wa.gov.au/boatharbour.2845.asp> (cited 14 March 2007); *Lancelin*, <http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+country+town+names+-+l> (cited 16 March 2007), *Lancelin*, <http://www.australianexplorer.com/perth_information.htm> (cited 14 March 2007); and *Welcome to Lancelin*, <http://members.iinet.net.au/~mick/welcome.html> (cited 14 March 2007).

Broome pearling lugger (Salvadore Cicerello, Frank Raffael and Vincent Lombardo) who fished in Lancelin in 1946. In early 1947, a group of Fremantle fishers (Frank Ianello, Vince La Rosa and Sergio Capelluti, explored the coast north of Fremantle for rock lobsters which at that time, was showing significant export potential. Not only did they find that rock lobsters could be caught easily in the immediate vicinity of Lancelin Island, they also found that the Island offered safe anchorage on its lee side. To address the difficulties of transporting the lobsters by land across the bush and sand-hill tracks, the lobsters were initially ferried to Fremantle every few days by a larger vessel. Towards the end of the 1947 season, Jack Longaline and Sam Miragliotta started processing their own catch. The fleet grew to twenty seven by the end of 1948, and three boats combined to operate as a floating factory to the increasing number of catching vessels.

The fishers in Lancelin, many of whom were newly-arrived Italians, initially lived on their boats when they fished for rock lobsters. When daily excursions to sea from a shore base became the method of operation in the fishery, a few scattered huts appeared. The increased volume of rock lobster being caught in the area resulted in the construction of shore-based processing facilities and accommodation in Lancelin. These included Penn Boucaut's land-based processing plant (Lancelin Products), Mick Perry's snap freezer plant in 1949, Paterson and Company's larger facility in 1950 and the Fremantle Fishermen's Cooperative depot in 1951. Jim Pekin also ran a Tiger Moth service, transporting people and gear using a round airstrip constructed behind the shoreline sand dunes. Paterson's also constructed the first jetty and undertook to help improve the road system.

In the late 1940's, interest in the Lancelin Island area for camping and as a port for the lobster fishery resulted in the town site being declared in 1950. Lancelin was not considered a suitable name, and "Wangaree", an Aboriginal word for fish was chosen when the town site was gazetted. Although the official name was Wangaree, the more popular name of Lancelin was used by most locals. In 1953, the Gingin Road Board requested that the town site be renamed Lancelin. The name change was approved in 1953 and the town was gazetted the following year.

The arrival of fisher's wives and families to Lancelin, mostly in the immediate years following its creation, resulted in further demands for community facilities. With its coastal location and its leisurely lifestyle, Lancelin started to attract an increasing number of permanent residents and tourists. In 1986, a concrete T-shaped jetty was constructed to support the local fishing industry, opening in time for the 1986/87 rock lobster season. Since the mid-1980s, Lancelin has also been home to the famous Lancelin Ocean Classic, the longest running windsurfing event in Australia. The event attracts the most competitors of any windsurfing event in Australia.

Today, Lancelin residents avail of community services and facilities that include a post office, police station, primary school, sporting complex, multi-purpose health centre, aged person's units, fire and rescue service, business enterprise centre, and a volunteer St. John Ambulance service. It also has a variety of shops and businesses that cater to both the fishing and tourism industries. Figure 1 features the location of social and fishery-related infrastructure facilities in Lancelin.

North of the Lancelin town site is Wedge Island, a small crayfishing community that consists of squatter shacks. Numbering about 500, these shacks have been built over the last 30 or so years from any old building material that was acquired by the residents. The town's power comes from a communal generator but not all of the 'shacks' are connected to the power grid. The population in the land mass point adjacent to Wedge Island is mostly made up of local

cray fishers and their families, people who are retired who either live there all year round or who use the shacks during weekends. There are no shops or conveniences available on Wedge Island.

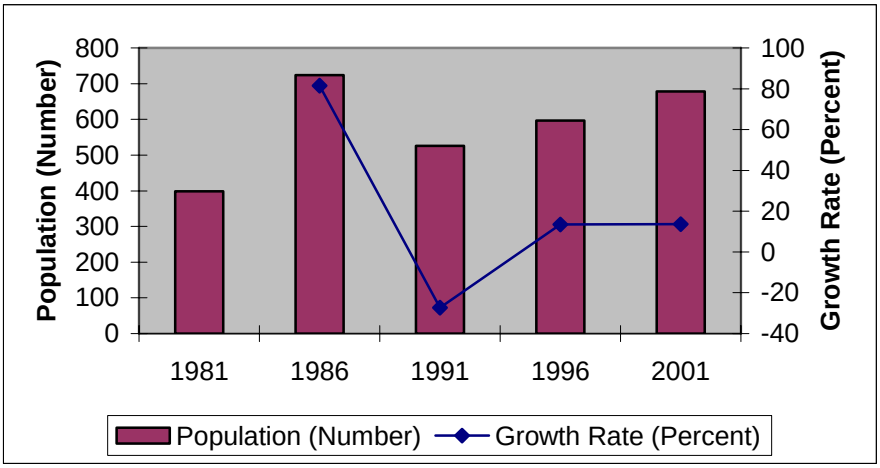
(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Lancelin, 2006

3.0 THE PEOPLE

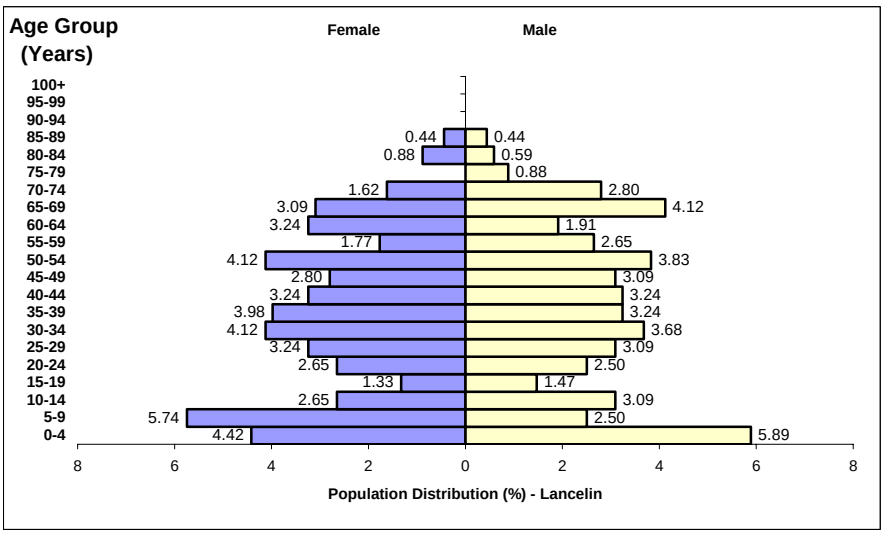
3.1 POPULATION CHARACTERISTICS

After experiencing a population decline in 1991, Lancelin has since enjoyed a steady increase in population, growing 14 per cent over the next decade (Figure 2).[3] The town has a young population, with a large proportion of the population below 14 years of age (Figure 3). The 2001 Census also indicates a significant reduction in the total population of 15-19 year olds. This is most likely due to the need for young people seeking secondary or tertiary education to leave town in order to access educational facilities. As one community resident (No. 179, 2005) noted, "People moved here because it was good for raising young families. However, families leave the town because of the lack of secondary schooling facilities."



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981-2001, Lancelin



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Lancelin

[3] Census data refer to the population of Lancelin as an urban centre/locality (UC/L). A locality is a population cluster of between 200 to 999 people who are classified as rural for statistical purposes (1996 Census Dictionary).

The median age of the population in Lancelin in 2001 was 36 years, another evidence of its youthful population (Table 1). However, while the segment of the population under 15 years continued to register an increase from 1996 to 2001, the elderly population has increased at a faster rate (22 per cent for the latter compared to 11 per cent for the former). The result is a dependency ratio of 66 per cent, which is higher than the dependency ratios for both Australia and Western Australia (50 per cent and 48 per cent, respectively).

Table 1: Population Indicators, 1991-2001 - Lancelin

Urban Centre/Locality	*1991*	*1996*	*2001*
Total Resident Population	486	604	668
Male	273	313	333
Female	213	291	335
Population under 15 years	111	148	165
Population of employable age	316	373	402
of which: Population aged 15-19	24	15	19
Population over 65 years	59	83	101
Dependency Ratio /a	53.8	61.9	66.2
Child Dependency Ratio	35.1	39.7	41.0
Elderly Dependency Ratio	18.7	22.2	25.1
Median Years	37	37	36
% of Overseas Born	13.3	10.9	15.0
% of Indigenous Population	0.0	0.0	0.4

/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Lancelin's resident population in 2001 comprised mostly of Australian born residents. Less than one percent of the population were of indigenous Australian descent. The numbers of overseas born residents have steadily increased from 13 per cent in 1991 to 15 per cent in 2001. The non-Australian born residents came primarily from the United Kingdom and New Zealand, followed by Germany, Greece and the United States. Lancelin has a large Christian population (57 per cent), of which the majority were of the Anglican faith. 'Couple families' continued to constitute the majority of the households in Lancelin since 1991, evidence of Lancelin's attraction to families with children and families without children (Table 2). Ten per cent of the total families were single parent households.

Table 2: Family and Household Characteristics, 1991-2001 - Lancelin

Urban Centre/Locality	*1991*	*1996*	*2001*
Couple Family with Children	68	73	85
Couple Family without Children	75	75	81
One Parent Family	13	19	18
Other Family	0	0	0
Total	156	167	184
Proportion of Couple Families with Children to Total Families	43.6	43.7	46.2
Proportion of Couple Families without Children to Total Families	48.1	44.9	44.0

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.2 DWELLING CHARACTERISTICS

Table 3 shows that in the majority of the occupied dwellings in Lancelin in 2001 consisted of separate houses (80 per cent). Sixty-five per cent of these dwellings were fully owned or being purchased. While there were a limited number of apartments or flats in 2001, this already represented a huge increase compared to the number available in previous years. The number of rented dwellings registered an increase between 1996 and 2001 (53 per cent), even as the median weekly rent increased.

Table 3: Dwelling Characteristics, 1991-2001 - Lancelin

Urban Centre/Locality	*1991*	*1996*	*2001*
Occupied Private Dwellings	216	249	298
By Structure			
Separate House	196	223	238
Semi Detached	3	14	22
Flat, Unit or Apartment	8	3	15
Other /a	9	3	13
Not Stated	0	6	10
By Tenure			
Fully-Owned	91	122	133
Being Purchased	45	59	62
Rented	59	57	87
Other	21	0	8
Not Stated		11	8
Unoccupied Private Dwellings	493	493	515
Median Monthly Housing Loan Repayments	$476-$550	n.a.	$600 - $799
Median Weekly Rent	$78-$107	n.a.	$100 - $149

/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

A large proportion of dwellings in Lancelin in 2001 were unoccupied (60 per cent). This proportion is one of the highest among the communities hosting the rock lobster fleet.[4] Residents and business owners in Lancelin expressed their concern about this trend, with one interviewee (No. 181, 2005) commenting that:

> *The big problem here in Lancelin is that somewhere between 70 and 80 per cent of the properties are owned by non-residents, either those from the inland farming areas or those from Perth. Not only are these homes unoccupied, they are also poorly maintained. This is a very poor presentation of the town to outsiders and visitors and show lack of pride in the community.*

[4] The proportion of unoccupied dwellings to total dwellings is 50 per cent in Cervantes, 60 per cent in Green Head and more than 70 per cent in Ledge Point and Seabird compared to 15-20 per cent in Dongara, Kalbarri, Mandurah, Two Rocks, Busselton and Yanchep.

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

Since 1991, there has been a steady increase in the number of people employed in Lancelin (Table 4). The number of people employed between 1996 and 2001 increased by 25 per cent. Despite this improvement, the unemployment rate for 2001 was still high at 12 per cent, higher than both the Australian and Western Australian rates. This was nonetheless a huge improvement over the 32 per cent unemployment rate registered in 1996.

Table 4: Employment Indicators, 1991-2001 - Lancelin

Urban Centre/Locality	*1991*	*1996*	*2001*
Employed	152	177	221
Male	88	97	117
Female	64	80	104
Full Time	66	85	89
Male	40	63	58
Female	26	22	31
Part Time	77	92	132
Male	39	34	59
Female	38	58	73
Not Stated	9	0	0
Male	9	0	0
Female	0	0	0
Unemployed	71	56	29
Male	50	37	23
Female	21	19	6
Total Labour Force	223	233	250
Male	138	134	140
Female	85	99	110
Unemployment Rate (in percent)	31.8	24.0	11.6
Male	36.2	27.6	16.4
Female	24.7	19.2	5.5
Labour Force Participation Rate	59.5	51.1	49.7
Male	66.0	55.4	54.9
Female	51.2	46.3	44.4

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Of those employed in 2001, 40 per cent were in full-time employment and 60 per cent worked part time. Males comprised the majority of full-time workers while females dominated part-time employment. One female community resident (No. 037B, 2005) noted that "being able to work part-time was a good way of doing something away from home for a few hours and meeting other people."

Table 5 presents income levels in 2001. The median weekly income for individuals was $300-399, at par with those received by Australians in general and Western Australians in particular. However, both the median family and household incomes were lower than the Australian and Western Australian median incomes. This may be due to the part-time nature of employment of a significant section (60%) of the workforce.

Table 5: Individual, Family and Household Incomes, 1991-2001 - Lancelin			
Urban Centre/Locality	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$8,001-$12,000	$200-299	$300 - $399
Median Income for Families	$16,001-$20,000	n.a.	$700 - $799
Median Income for Households	$16,001-$20,000	$300-499	$500 - $599
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[5]

Among the respondents in Lancelin, almost half have lived there for more than 15 years and another one-third have lived there between 6 to 15 years. Close to 75 per cent expect to still be living in Lancelin in 5 years time. Eight out of 10 respondents in Lancelin rated their community as either an 'excellent place' or 'good place' to live (Figure 4). However, only 66 per cent of the survey respondents reported 'strong to very strong feelings of attachment' to the community (Figure 5).

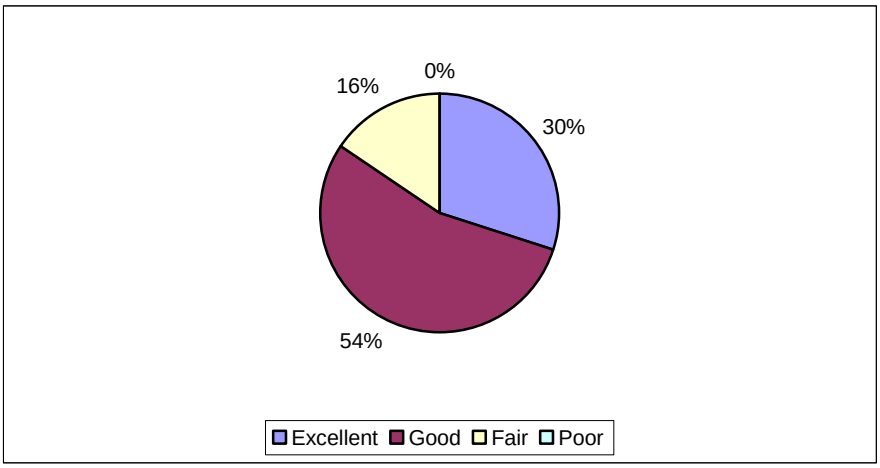


Figure 4: Respondents' Perception of Lancelin as a Place to Live

[5] This section is based on the results and analysis of the responses of 42 community residents who participated in a telephone survey conducted in late 2005 and 15 residents who participated in semi-structured interviews conducted between 2004 and 2006. A community workshop was also held in Lancelin in June 2006 with 15 participants from business and community groups and the fishing industry. A majority of the 42 survey respondents were born in Australia and New Zealand (91%) and fully owned their houses (62%). Half of the respondents were employed, either in full or part time basis. In terms of age group representation, respondents were evenly distributed among the 6 age group categories (from 18 to over 65 years old). One fourth of the total respondents finished Year 12 or equivalent schooling. Eleven survey participants were engaged in the rock lobster industry. Notes of the community workshop held in Lancelin in 2006 were also utilised in the analysis.

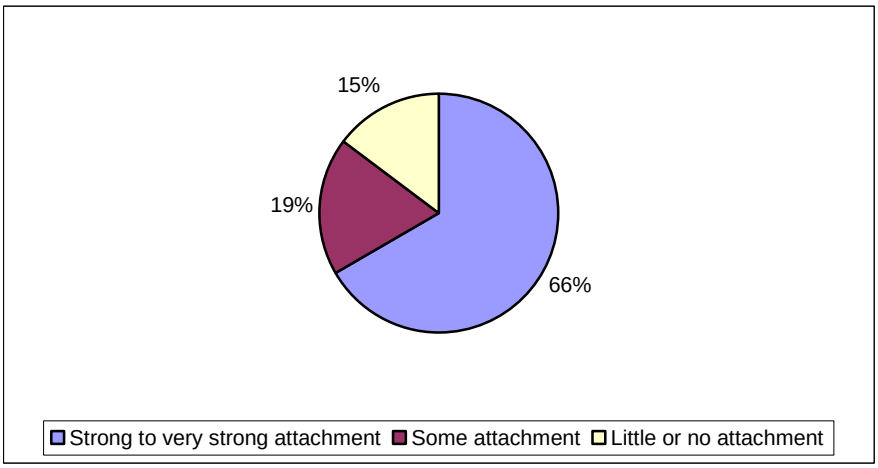


Figure 5: Respondents' Attachment to Lancelin

One of the main reasons cited by the survey respondents for choosing to live in Lancelin was the lifestyle (Figure 6). As some residents noted:

> *I like living in Lancelin, being away from the hustle and bustle of Perth and having the quietness. The way of living, the lifestyle here, is really very good (Interviewee No. 178, 2005).*

> *People move to Lancelin for the lifestyle, to get away from being burnt out working in Perth seven days a week (Interviewee No. 181, 2005).*

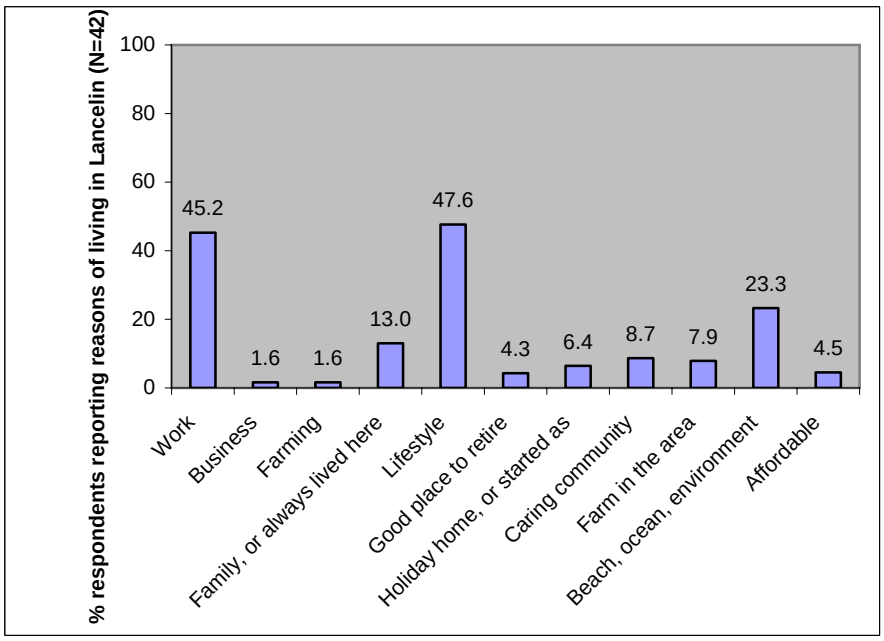


Figure 6: Reasons for Living in Lancelin

Another reason cited by respondents was the opportunity to work, with 45 per cent of respondents citing work as the reason for living in Lancelin. However, interviews with residents, fishers and business representatives, painted a different picture, with some interviewees noting that:

The loss of the processing plants in the area had resulted in fewer people being employed in the town and less income for the town. The processors are now only in 'live' operations in town now whereas they used to do processing and tailing in the past which gave a lot of younger people work to do in town (Interviewee No. 176, 2005).

In the old days, the boats here were smaller and they were serviced here. But the boats grew bigger and modern, pot numbers increased and now, they are no longer serviced here. They go to Two Rocks or Fremantle. Also the processors supply most of what the fishers need so there are not really a lot of things that can be sold to them by small businesses (Interviewee No. 180, 2005).

There are very limited work opportunities in this town. There's not a great deal of jobs for wives or partners or girlfriends. Some find work in other areas, like the mines in Cataby or in Perth, but then one has to commute and with the cost of fuel and the tax you need to pay, you're not really that far ahead (Interviewee No. 178, 2005).

Community organisations active in Lancelin include the Lancelin Chamber of Commerce and Industry Inc., the Lancelin Ratepayers and Residents Association Inc., Lancelin Community Sporting Club Inc., Lancelin Youth Advisory Council, Country Women's Association, Returned Servicemen's League, Friends of Lancelin Island Group, Lancelin Angling and Aquatic Club, Coast to Country Tourist Group, and a number of other volunteer, sporting and community groups. Figure 7 shows the level of participation in various local organisations. Most surveyed respondents indicated that they mainly participate in sporting/recreation groups and school groups or community associations. There was also participation reported in professional organisations, ratepayers or chamber of commerce, and cultural, education or hobby groups.

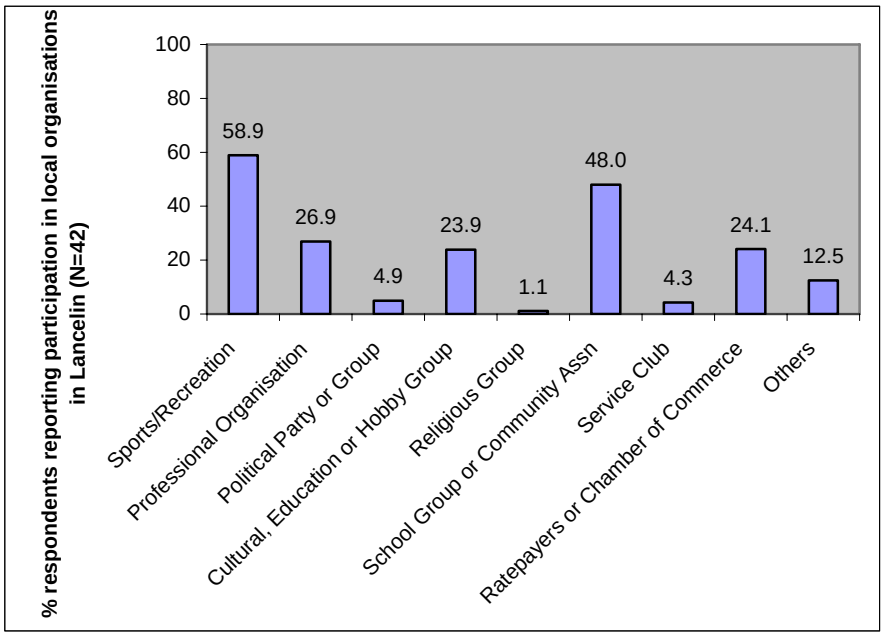


Figure 7: Participation in Local Organisations in Lancelin

The majority of the respondents (85%) indicated that they have attended at least one local community event but in terms of participation in projects to develop new services or facilities, almost half of the respondents indicated non-participation. Among the possible reasons could be the following:

> *The town used to be more community-orientated, especially from the schooling point of view. In the old days, parents had to create a lot of activities involving children. Maybe it's because they have less time now, or that there's probably more disposable income around. Or maybe it's because of problems with public liability (Interviewee No. 177, 2005).*

> *In the early days, the town was more unified. However, in more recent times, the various [interest] groups in town all seem to have their own agenda (Community Workshop Notes, 2006).*

> *This town is very cliquey. Each have their own little group and by and large, there is a great deal of animosity among them (Interviewee No. 181, 2005).*

> *Unfortunately, there are a number of fragmented fractions and groups in town. If we all get involved and work together as one instead of being perceived as splinter groups, we may be able to get things done in this town. We need genuine community associations, not focused interest groups, so that we can get somewhere (Interviewee No. 178, 2005).*

The community cohesiveness score of 6.77 for Lancelin, while lower than the scores of most of the 19 other communities included in the survey, still display a certain degree of cohesiveness (Figures 8A and 8B).[6] As noted earlier, there is strong local support for community events. One of the things noted by the workshop participants in Seabird was the recent event in Lancelin of capturing the fishing history of Lancelin and holding a crayfish/wine tasting event in the community hall in March 2006 (Community Workshop Notes, 2006). Support for activities such as this will ensure that, despite the move towards being a tourist town, the history and legacy of the crayfishing industry is not lost.

[6] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

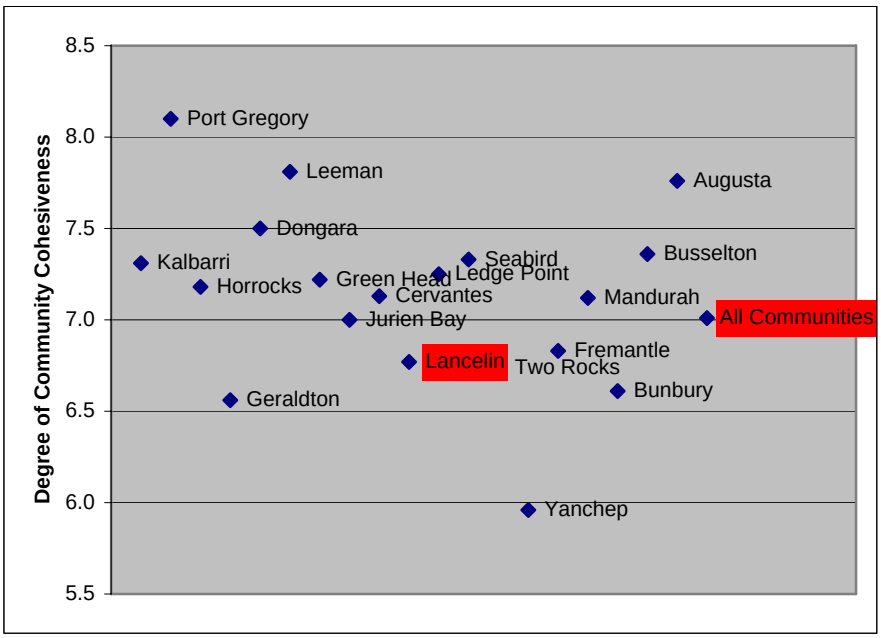


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

There is a general perception among Lancelin residents that 'the community is friendly towards newcomers'. As one rock lobster fisher (No. 036, 2004) noted, "We like the people. It's what keeps us interested in this place." Another community resident (No. 204, 2006) noted that "People here are friendly and personal and take the time to speak to you." Respondents also generally agree that 'if there was a serious problem, people would get together and solve it'

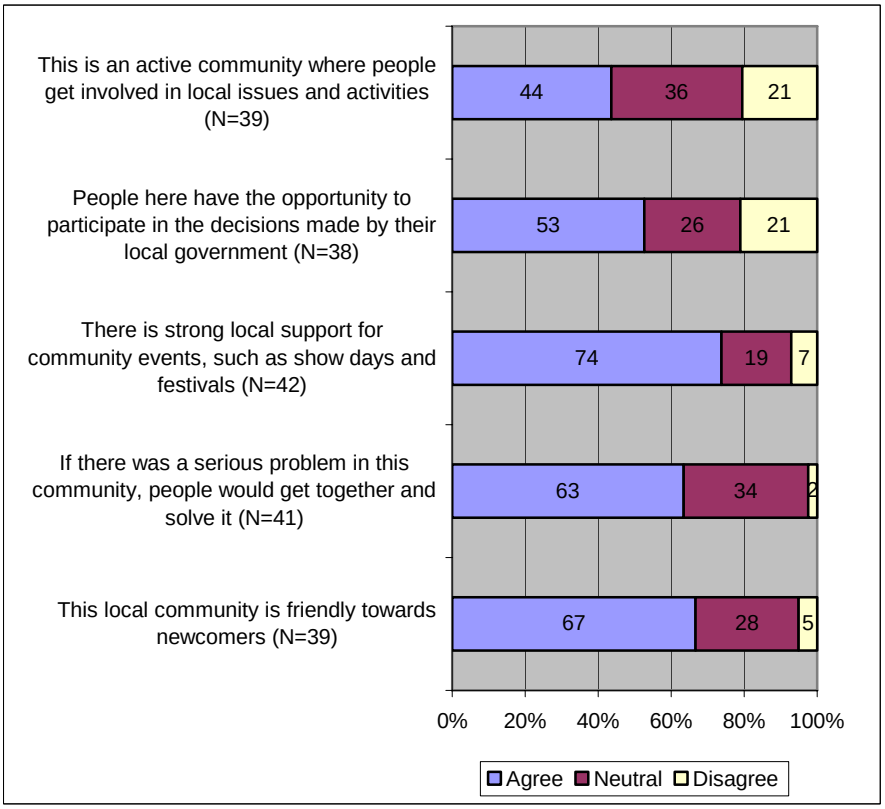
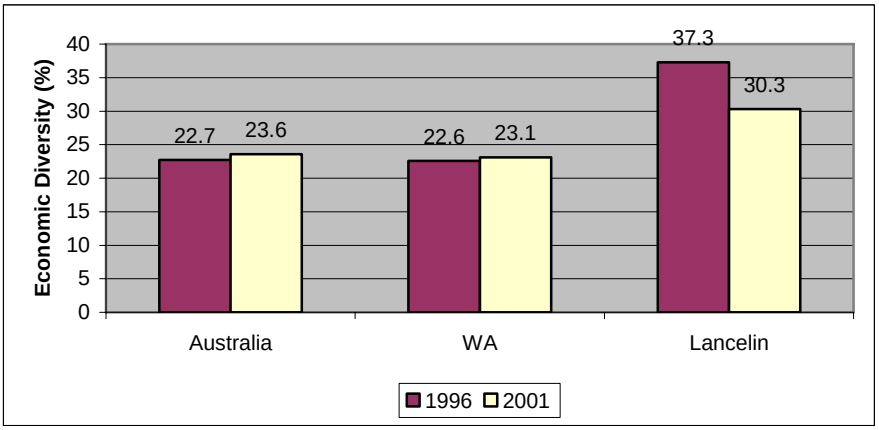


Figure 8B: Perceptions of Community Cohesiveness, Lancelin

4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

Since 1991, the agriculture, forestry and fishing industry division continued to be a significant employer in Lancelin. In 2001, the division was the major employer, accounting for 17 per cent of the total persons employed in the town (Appendix 1). During the same year, retail trade and the property and business services sectors were the second and third largest employers, respectively. Other sectors that provided employment were the accommodation, cafes and restaurant sector and the construction sector. The level of economic diversity of the town, even though relatively higher than the Australian and West Australian economies, improved between 1996 and 2001 (Figure 9).[7]



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Lancelin

Even as the local economy diversifies, most residents of Lancelin consider their town as a crayfishing and tourism town. This maybe attributed to the fact that in both 1996 and 2001, the accommodation, cafes and restaurants and the commercial fishing industry subdivisions employed the most number of persons in Lancelin. As community residents noted during the community workshop in Lancelin:

> *There is still a positive future for the rock lobster fishery especially in the move toward a more intensive tourism campaign for Lancelin. There are a number of areas like Portland, San Francisco and Fremantle, that have tourism all built around the fishing industry. The two – rock lobster fishing and tourism - can co-exist beautifully (Community Workshop Notes, 2006).*

[7] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

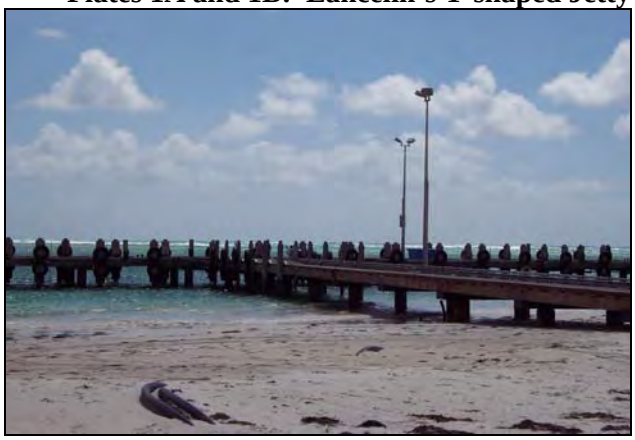
The Indian Ocean Drive Economic and Social Impact Study (2002) concluded that, with the linking of the final section of road between Lancelin and Cervantes, the amount of economic activity is projected to triple over the next 10-15 years and the industrial mix is projected to change in favour of tourism and associated industries. Business owners and community residents in Lancelin certainly look forward to the completion of this coastal road which they see as important for the growth and development of Lancelin.

4.1.1 Fishing

The harvesting of fish, particularly the western rock lobster, around Lancelin Bay is an important primary industry and one that contributes significantly to the economy of the Wheatbelt Region.[8] The landing and processing facilities (storage and consignment) associated with fishing located in Lancelin generate significant revenue and employment for the town. For the period 2002/03 to 2004/05, Lancelin accounted for almost 20 per cent of the estimated value of total fish caught within the Wheatbelt Region (Appendix 2). In terms of monetary value, fish and rock lobsters landed in Lancelin also make up a third of the total catch of fish and rock lobsters in the region.

Facilities for fishing (both commercial and recreational) in Lancelin include swing moorings for fishing boats and two jetties for refuelling, loading and unloading of the catch (Plate 1A). Lancelin also has an informal boat ramp, where recreational boats and tenders for fishing vessels can be launched (Western Australian Planning Commission (WAPC), 2006:21). Lancelin also has landing and processing facilities associated with fishing, including receival depots for rock lobsters (Plate 1B). The shift from processing and tailing crayfish to only handling 'live' lobsters had affected the town in terms of reduced employment opportunities, especially for younger workers.

Plates 1A and 1B: Lancelin's T-shaped Jetty and the GFC Receival Depot in Lancelin



(Source: Veronica Huddleston, 2005 and 2006.)

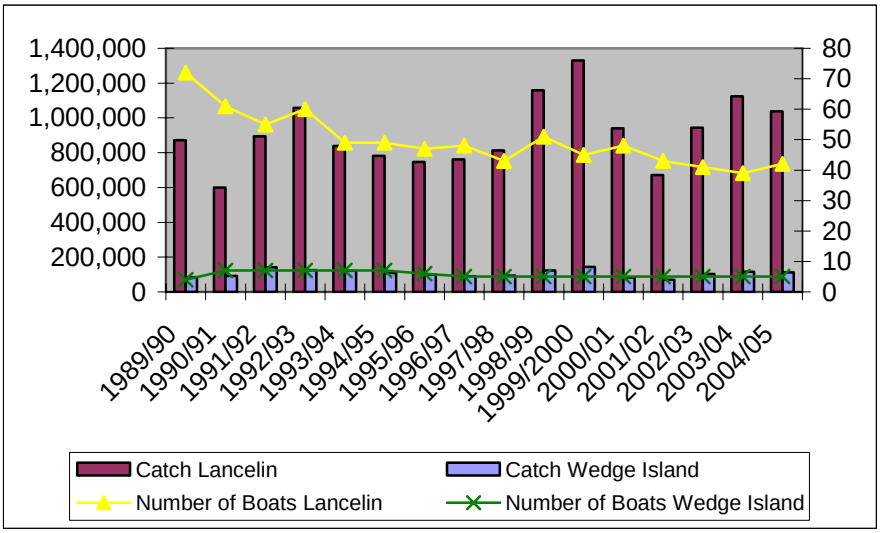
Professional crayfishing has been the major industry in Lancelin since the mid-1940s. It has provided employment to the male population and during the 1970s when the industry was considered a very high risk business, also provided fishers' wives with an active role in their husbands' fishing career. Their supportive role encompassed activities such as balancing the

[8] Covering an area of 154,000 square kilometers, the Wheatbelt Region adjoins Perth and extends from the Indian Ocean in the northwest, to the western edge of the Goldfields and to the northern border of the Great Southern Region (Patterson Market Research, 1999).

books, driving to Perth for much-needed spare parts, salting their own bait to reduce costs, installing motors and going to slipways.

Since 1989/90, the number of boats in the Lancelin fishing fleet has declined steadily while the catch had fluctuated (Figure 10). The decline in the number of boats (from 62 boats in 1991/92 to 47 boats in 2004/05) has resulted in a decline in the number of people engaged in the industry (Appendix 3). Interviews with rock lobster fishers provided insights on the changes in the fishing industry in Lancelin, with one resident (No.180, 2005) noting that:

> *In the early days, there were 102 boats that used to fish out of Lancelin. Not all fishers lived here but we used to have the Portuguese and the Italians come up from Fremantle and live in the 25 or so huts owned by the Fremantle Fishermen's Cooperative. But boats have since been sold and the number of fishers who operated their own boats and licenses had gone down.*

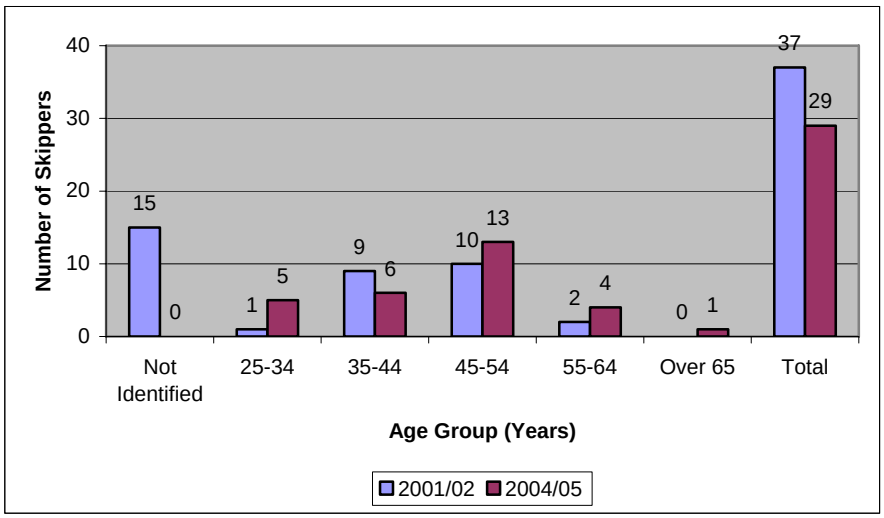


(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 - 2004/05, Lancelin and Wedge Island

The number of skippers who are residing in Lancelin also declined from 2001/02 to 2004/05 (Figure 11). The majority of skippers in 2004/05 are in the 35-44 and 45-54 age groups, using between 91 and 130 rock lobster pots. During the same period, the number of skippers aged 25-34 years increased, evidence that "as long as they put their mind to it, young fishers can still make it in the fishery and earn good income" (No. 179, 2005). It was, however, noted that "there are not many around Lancelin who want to have a career in fishing" (Community Workshop Notes, 2006).

The importance of crayfishing to Lancelin's socio-economic structure is highlighted in the responses generated in the community survey on the residents' perception of the rock lobster industry (Figure 12). Surveyed respondents have high levels of agreement that 'the decline in the number of boats has had a negative impact on local businesses'. However, the respondents noted that 'the economic viability of Lancelin is closely linked to the viability of the rock lobster industry'.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Lancelin, 2001/02 and 2004/05

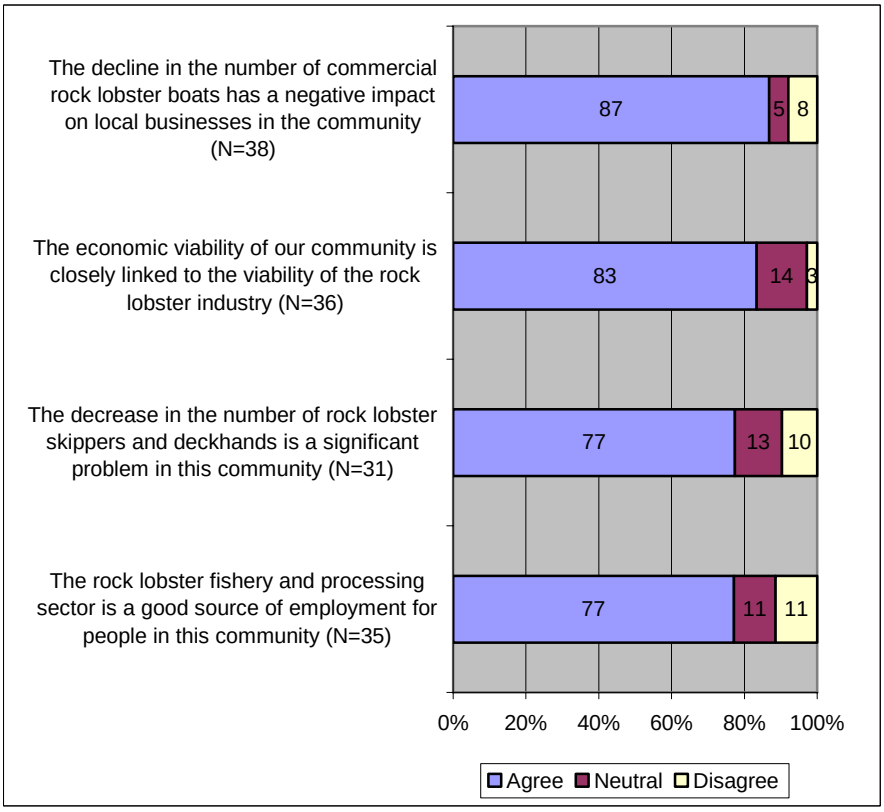


Figure 12: Perceptions of the Rock Lobster Industry, Lancelin

Lancelin residents were in general agreement that, 'there is good income to be made in the fishery'. As Figure 13 shows, 55 per cent of the surveyed respondents will still recommend that young people enter the fishery. There is nevertheless, recognition of the problem of finding deckhands and holding on to good and experienced deckhands, with the participants of the community workshop held in Lancelin noting that (Community Workshop Notes, 2006):

The fishery has to compete with other sectors (e.g. mining) that also demand labour and can pay better wages.

The loss of the fishermen's huts has had a big impact as there is no reasonably priced accommodation available to the fishing industry.

In addition to accidents, the lack of available deckhands or people who can relieve the crew when they are sick also result in many people continuing to work even they are still ill.

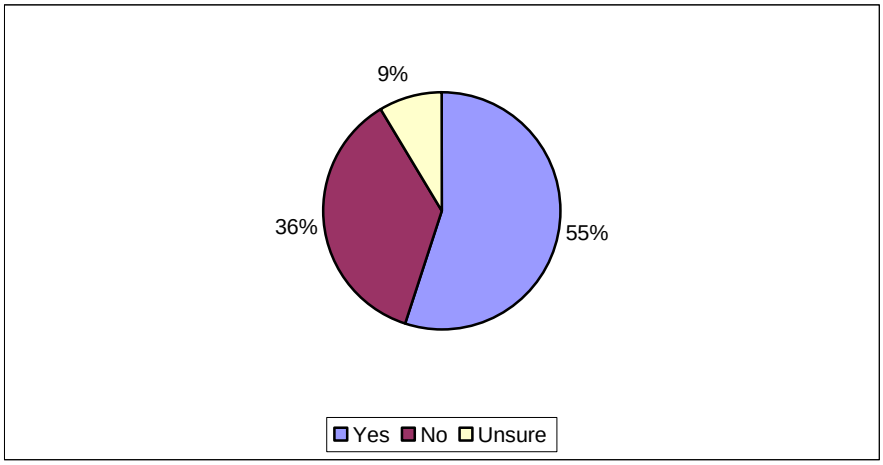


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Lancelin

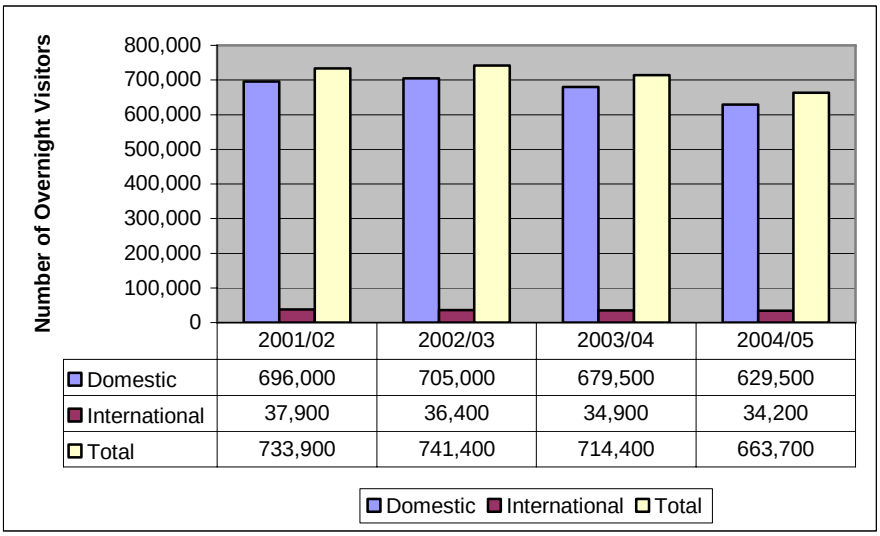
4.1.2 Tourism

The growing tourism industry capitalises on Lancelin's natural attractions. The coastline and dune systems in Lancelin are accessed for a range of recreational pursuits, including windsurfing, sand-boarding and off-road vehicle driving (Plates 2A and 2B). The excellent windsurfing conditions in Lancelin attract many short stay visitors not only from Perth but also worldwide. Lancelin is the home of the Famous Lancelin Ocean Classic, the longest running windsurfing event in Australia that has been running for 22 years (<http://members.iinet.net.au/~mick/welcome.html> cited 16 March 2007).

Plates 2A and 2B: Windsurfing and Sandboarding in Lancelin

(Source: Veronica Huddleston, 2006 and<http://www.lancelin.org.au/desertstorm.html> (cited 16 March 2007)).

Lancelin has a range of tourist accommodation including hotels, bed and breakfast guesthouses, and a caravan park. Lancelin forms part of the Wheatbelt Region where the number of tourists remained at a steady level (Figure 14). Of the tourists that remain overnight, the majority are domestic tourists who visit for holiday purposes and to visit family and friends (Appendix 4).



	2001/02	2002/03	2003/04	2004/05
Domestic	696,000	705,000	679,500	629,500
International	37,900	36,400	34,900	34,200
Total	733,900	741,400	714,400	663,700

(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, Wheatbelt Region

Improvements to the road network between Perth and Lancelin have improved tourism access, and tourism is predicted to be a growth industry in Lancelin. One business person (No. 181, 2005) indicated that:

> *People in Lancelin see that the future is more with tourism than the crayfishing industry. Tourism is the only avenue we have to create employment in this town, otherwise this town will stagnate. But that very much hinges upon the completion of the coastal road and the sewerage system.*

Participants in the community workshop also noted that "the lack of suitable accommodation and tourism infrastructure could impede the growth of the tourism industry in Lancelin" (Community Workshop Notes, 2006). In this regard, only 56 per cent of surveyed respondents agreed to the statement that 'the coast around this community is suitable for more tourism activities' (Figure 15).

Lancelin is also one of the areas identified by the State Government in its habitat and biodiversity protection program, ensuring that key fishing grounds remain in good condition (Figure 16). There was general support from the community for the Lancelin Island Lagoon Fish Habitat Protection Area whose objective is the conservation and protection of fish, fish breeding areas, fish fossils or the aquatic ecosystem and the management of fish and activities relating to the appreciation or observation of fish (Fisheries Management Paper No. 149).

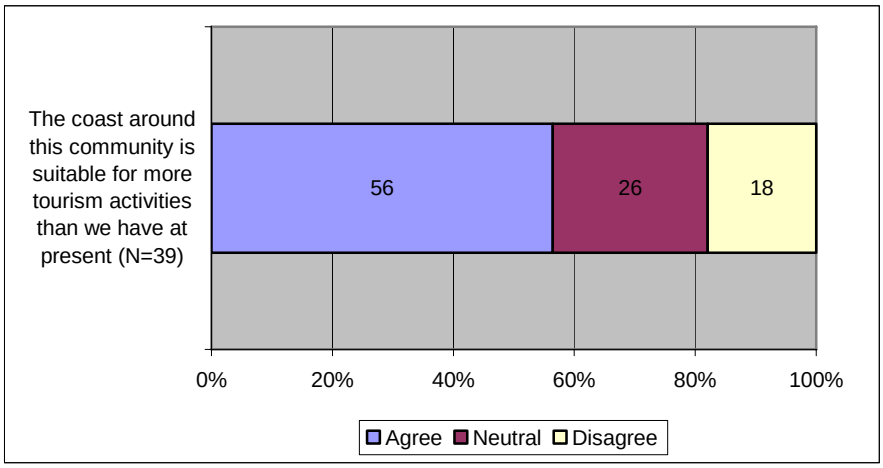
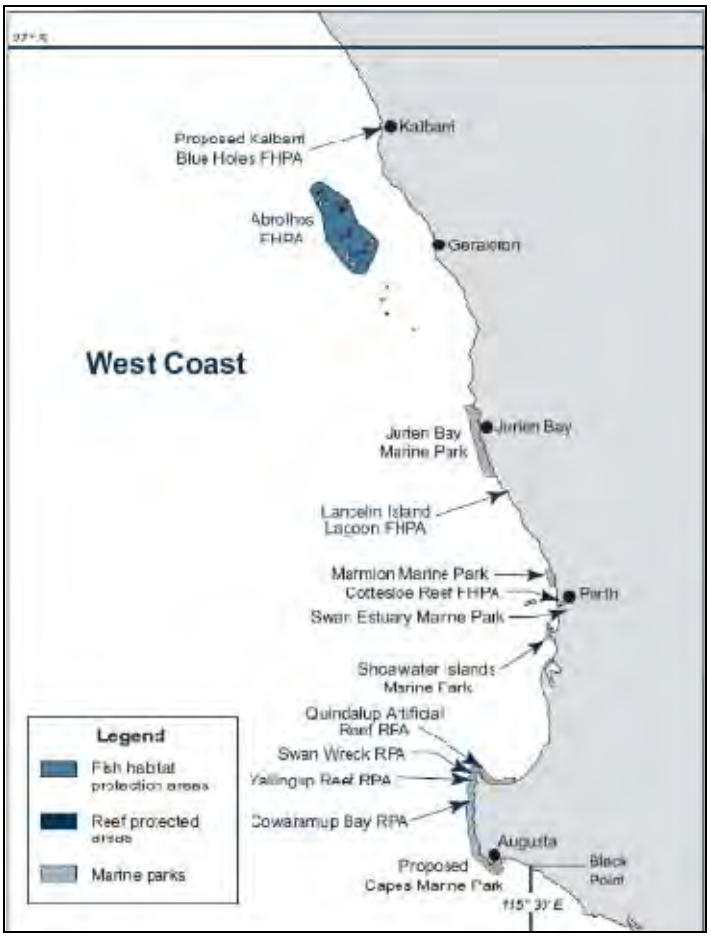


Figure 15: Perceptions of Tourism Potential, Lancelin



(Source: <http://www.fish.wa.gov.au/docs/sof/2003/sof20032004-0202.pdf>)

Figure 16: Current and Proposed Areas of Protected Fish Habitat in the West Coast Bioregion

4.1.3 Business, Commerce and Industry

The retail and business establishments in Lancelin is mostly reflective of its functions as a service centre to the locally based fishing industry and the surrounding agricultural hinterland. With the influx of tourists to Lancelin, there is also potential for business and services that support the tourism industry such as those in the accommodation, cafes and restaurant sector.

Lancelin has all the facilities of a small town, mostly located along Gingin Road (Plates 3A and 3B). It has a supermarket, some take away food shops, real estate offices (for accommodation), surf/sail shops, bakery, and petrol stations. There are also some trades people who are able to do some sail and board repairs.

Plate 3: Business Establishments along Gingin Road

(Source: Veronica Huddleston, 2005.)

4.2 INFRASTRUCTURE SUPPORT[9]

4.2.1 Roads and Transport

The major link between Perth and Geraldton for freight and through traffic is the Brand Highway. This highway forms the 'spine' for access to coastal and inland tourist destinations between Perth and the Jurien Bay turn-off. The Lancelin Road, which links Lancelin to Northern Perth, provides for recreational traffic and light industrial and commercial traffic servicing the rock lobster and fishing industries. The road has a mix of vehicle types and speeds. Another road called the KW road provides a disjointed link from Lancelin to the Brand Highway. It connects Lancelin Road to the Sappers Road and the Orange Springs Road and links the coastal lime sand mining operations and the inland Wheatbelt areas to Lancelin. It also provides a tourist/recreational link with the Brand Highway.

The much-awaited Lancelin to Cervantes Road will involve approximately 65 kilometres of new sealed road from just south of Lancelin extending north to join the existing Pinnacles Drive, approximately 10 kilometres south of Cervantes. The project, expected to commence in 2007, will provide an alternative scenic coastal route to the Brand Highway.

In terms of rail transport, there is currently no rail corridor that traverses the towns comprising the Shire of Gingin. There are also no major or regional commercial airports in Lancelin or in the Shire of Gingin, in general.

[9] This section is based on information from the *Gingin Coast Structure Plan,* Western Australian Planning Commission, 2006, pp. 28-35.

4.2.2 Water and Electricity

The principal water source of Lancelin is from ground water sourced from the Leederville aquifer. The collected water is held in high level tanks and is subject to testing and treatment before being distributed under normal gravity reticulation to the public. The Lancelin scheme well-field, consisting of five production wells and two monitoring wells, is located east of the town site.

Wastewater and sewerage is mostly collected in individual tanks at residences and businesses. Some new residential areas are connected to a sewer system. The community of Lancelin does have access to a wastewater collection and treatment service, under the 25-year sewerage services license agreement between the Water Corporation and the Office of Water Regulation. The largest landfill facility for solid waste within the Shire of Gingin is located in Lancelin.

Electricity is supplied within Lancelin from the existing southwest transmission network of the Western Power Corporation. At present, natural gas is not reticulated within Lancelin.

4.2.3 Communications

Lancelin has land-based telephone lines and also some mobile phone coverage for both GSM and CDMA receivers. Television services are provided through retransmission services for all free-to-air stations. Lancelin also has a Community Telecentre that provides internet access to residents and offers a variety of desktop publishing and secretarial services (Plate 4). The 2001 census recorded that 27 per cent of Lancelin's population had regular access to the internet and 35 per cent had home computers.

(Source: <http://www.lancelin.org.au/telecentre.html> cited 16 March 2007.)

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

Lancelin is one of the four coastal towns that form part of the Shire of Gingin that also includes the inland town and administrative centre of Gingin, six rural residential areas and a rural industrial area. The Shire is governed by a Council made up of 10 Councilors who represent the eight wards comprising the Shire.

Lancelin is identified as the major local centre in the Gingin Coast Structure Plan (WAPC, 2006:60). A development investigation area has been identified to the south of Lancelin for further consideration given the numerous constraints to developing on the areas immediately adjacent to and south-south-east of the existing Lancelin town site.

4.3.2 Education and Health

There is one primary school located in Lancelin and one preschool. The nearest secondary school is located at Gingin, 82 kilometres by road from Lancelin, and the nearest TAFE and university facilities are both 100 kilometres by road from Lancelin (WAPC, 2006:37). The limitations in educational facilities available to the residents of Lancelin have resulted in many young people having to board in Perth or Geraldton to access secondary or tertiary facilities. In some cases, the lack of educational facilities has resulted in whole families moving out of the town to areas with better access to educational facilities.

Lancelin has a Multi Purpose Health centre, which was established in 2000 (Plates 5A and 5B). The health centre is equipped to treat emergencies, prevent illness and promote good health. It provides direct patient services during standard office hours, and provides emergency care in collaboration with Silver Chain Emergency Care. Lancelin currently has one part-time doctor and one community nurse. Lancelin is also serviced by Silver Chain which provides nursing service for the aged, frail and disabled. The nearest hospital campus and nursing home facilities are the Joondalup Health Campus or the Swan District Hospital in Midland – both over 100 kilometres by road from Lancelin.

Plates 5A and 5B: Lancelin Multi-Purpose Health Centre

(Source: Veronica Huddleston, 2005.)

4.3.3 Law and Order

The Lancelin police sub-district covers the townships of Guilderton, Lancelin, Ledge Point, Seabird and the squatters' community of Wedge Island. Lancelin's reported crime rates are quite low when compared to the total Wheatbelt District (Appendix 5). Of the reported assaults in the Wheatbelt District, those committed in Lancelin made up about 3 per cent. Five per cent of the dwelling burglaries and 4 per cent of the stolen vehicles in the District were also committed in Lancelin. One resident noted that, "Crime is not bad here, with only a few break-ins usually in the off season when it's quieter. But it's good that we have a lot more police personnel up here now" (No. 182, 2005).

Appendix 1: Employment by Industry, 1991-2001 - Lancelin									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	16	9	25	23	3	26	34	9	43
of which: Rock Lobster Fishing			--			0			16
Mining	0	0	0	3	0	3	14	0	14
Manufacturing	12	3	15	3	4	7	6	3	9
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	0	0	0	3	0	3	0	0	0
Construction	12	0	12	12	3	15	17	3	20
Wholesale Trade	14	9	23	3	3	6	3	3	6
Retail Trade				14	7	21	10	22	32
Accommodation, Cafes and Restaurants	Not a separate sector			12	15	27	6	16	22
Transport and Storage	0	0	0	0	0	0	6	0	6
Communication Services	0	0	0	3	0	3	0	3	3
Finance and Insurance	0	3	3	0	0	0	0	0	0
Property and Business Services				0	6	6	9	15	24
Government Administration and Defence	3	0	3	0	0	0	9	3	12
Education	Not a separate sector			0	12	12	3	11	14
Health and Community Services	6	21	27	0	11	11	0	12	12
Cultural and Recreational Services	11	20	31	0	0	0	3	0	3
Personal and Other Services				9	6	15	17	0	17
Non-classified/Non-stated	10	15	25	12	9	21	15	6	21
Total for All Industries	84	80	164	97	79	176	152	106	258
Share of Agriculture, Forestry and Fishery to Total Employment	19.0	11.3	15.2	23.7	3.8	14.8	22.4	8.5	16.7
Share of Top Three Sectors to Total Employment	50.0	62.5	50.6	50.5	48.1	42.0	44.7	50.0	38.4
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a , 2002/03 - 2004/05 - Western Australia and the Wheatbelt Region						
	Catch (tonnes)			Estimated Value ($ '000)/c		
	2002/2003	2003/2004	2004/2005/b	2002/2003	2003/2004	2004/2005/b
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Wheatbelt Region	153	140	116	671	610	527
of which: Lancelin's Share (%)	44.0	28.4	30.2	43.0	33.5	33.1
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Wheatbelt Region	21	3	24	130	42	318
of which: Lancelin's Share (%)	--	--	--	--	--	--
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Wheatbelt Region	3,003	3,343	3,124	73,425	63,511	67,157
of which: Lancelin's Share (%)	31.4	32.9	32.4	31.4	32.9	32.4
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Wheatbelt Region	33	34	33	91	93	91
of which: Lancelin's Share (%)	30.0	28.2	30.1	30.0	28.1	30.1
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Wheatbelt Region	3,210	3,520	3,297	74,317	64,256	68,093
of which: Lancelin's Share (%)	18.6	19.0	18.7	18.5	19.1	18.8

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Lancelin and Wedge Island						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Lancelin	894,928	761,065	671,911	942,950	1,123,590	1,038,016
Wedge Island	141,209	89,675	69,035	103,761	116,774	112,502
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Lancelin	993,937	865,148	811,563	787,827	752,371	756,202
Wedge Island	150,523	106,352	96,170	96,100	97,656	98,376
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Lancelin	55	48	43	41	39	42
Wedge Island	7	5	5	5	5	5
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Lancelin	152	134	130	122	116	124
Wedge Island	21	17	15	15	15	15

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - Wheatbelt Region								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	318,500	45.8	334,500	47.4	309,500	45.5	288,000	45.8
Visiting Friends/Relatives	212,500	30.5	212,000	30.1	210,500	31.0	194,000	30.8
Business /c	132,000	19.0	122,000	17.3	117,000	17.2	110,500	17.6
Other /d	22,500	3.2	26,500	3.8	28,500	4.2	24,000	3.8
Total	696,000	100.0	705,000	100	679,500	100	629,500	100
International Visitors								
Holiday/Leisure	34,300	90.5	32,100	88.2	30,200	86.5	28,000	81.9
Visiting Friends/Relatives	2,800	7.4	3,400	9.3	3,400	9.7	3,700	10.8
Business	600	1.6	800	2.2	600	1.7	1,200	3.5
Other	1,000	2.6	800	2.2	1,300	3.7	2,000	5.8
Total	37,900	100.0	36,400	100	34,900	100	34,200	100
Total Visitors								
Holiday/Leisure	352,800	48.1	366,600	49.4	339,700	47.6	316,000	47.6
Visiting Friends/Relatives	215,300	29.3	215	0.0	213,900	29.9	197,700	29.8
Business	132,600	18.1	122,800	16.6	117,000	16.4	111,700	16.8
Other	23,500	3.2	27,300	3.7	28,500	4.0	26,000	3.9
Total	733,900	100.0	741,400	100	714,400	100	663,700	100

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Lancelin				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Wheatbelt District	496	509	573	672
in which: Lancelin (number)	24	16	25	15
as percent of the District	4.8	3.1	4.4	2.2
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Wheatbelt District	446	536	476	322
in which: Lancelin (number)	34	18	30	27
as percent of the District	7.6	3.4	6.3	8.4
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Wheatbelt District	554	545	446	310
in which: Lancelin (number)	7	3	5	4
as percent of the District	1.3	0.6	1.1	1.3
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Wheatbelt District	7	5	10	7
in which: Lancelin (number)	0	0	0	1
as percent of the District	0.0	0.0	0.0	14.3
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Wheatbelt District	103	158	131	75
in which: Lancelin (number)	11	2	5	3
as percent of the District	10.7	1.3	3.8	4.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

LEDGE POINT and SEABIRD

1.0 GEOGRAPHIC SETTING

Situated along the Gingin Coast are the two coastal communities of Ledge Point and Sea Bird. Seabird is approximately 100 kilometres from Perth (Latitude 31° 16' S Longitude 115° 26' E) and Ledge Point (Latitude 31° 07' S Longitude 115° 22' E) is 20 kilometres further north. Both towns are popular destinations for recreational fishers; however, the growth of Ledge Point and Seabird has been largely based on the commercial rock lobster fishing industry.

Annual rainfall reaches approximately 600 millimetres per year and the maximum mean daily temperature reaches around 24 degrees and the mean minimum temperature reaches around 13 degrees Celsius. January and February are the hottest months and the coldest months are July and August.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITES[1]

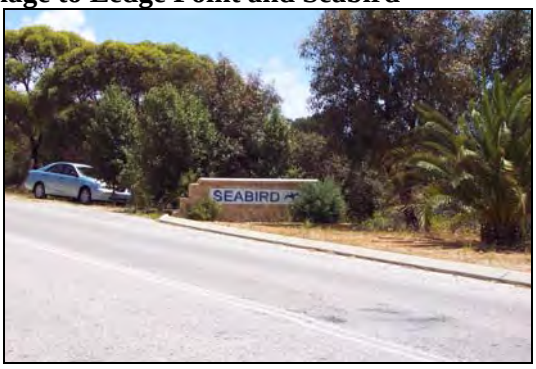
Ledge Point was first surveyed in 1847-1848 by J.W. Gregory. The town site derives its name from Ledge Point, a coastal feature first shown on maps in 1875 from a Royal Navy hydro-graphic survey. The Point takes its name from rocky ledges in the vicinity. In 1937 the Government reserved land in the area for camping and recreation following a request from the Gingin Road Board. There were three squatters' houses in the reserve close to the beach by 1952. When a road to Lancelin was constructed close by in 1953, there was interest from other fishers and holiday makers to lease land and build holiday cottages. The Government decided to subdivide the area and declare a town site which was gazetted in 1955.

Seabird was first surveyed in 1801 by a French Expedition. The area was first named Leschenault; however, this was later changed to Chalon (sur-saone), after it was discovered that there was already an area in Western Australia named Leschenault. The town grew from 1950 following the establishment of a local commercial fishing industry. Like many similar coastal town sites northwest of Perth, the area was first settled by squatters. When this was reported on in 1965, a decision was taken to form a town site. Pressure from the Shire of Gingin and local residents resulted in the name Seabird being adopted in 1968, the name being derived from the pastoral property within which it is located. The property name is named after the schooner "Seabird" which was stranded with a gaping hole in her port side in this area in 1874. The town site was gazetted in March 1968.

At present, both towns offer a range of recreational activities catering mostly to holiday makers who want to relax and enjoy the tranquillity of small coastal towns. The entrances to both towns from the Lancelin Road are well-marked (Plates 1A and 1B). Figures 1A and 1B feature the social and fishery-related facilities in Ledge Point and Seabird, respectively.

[1] The information presented and compiled in this section were based on data from <http://www.totaltravel.com.au/travel/wa/pertharea/sunsetcoast/guide/ledge-point>, <http://www.gdc.asn.au/attractions.php> and <http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+country+town+names> (cited 16 March 2007).

Plates 1A and 1B: Entrance Signage to Ledge Point and Seabird



(Source: Veronica Huddleston, 2005.)

(Source: Institute for Regional Development, 2006.)

Figure 1A: Town Map of Ledge Point, 2006

(Source: Institute for Regional Development, 2006.)

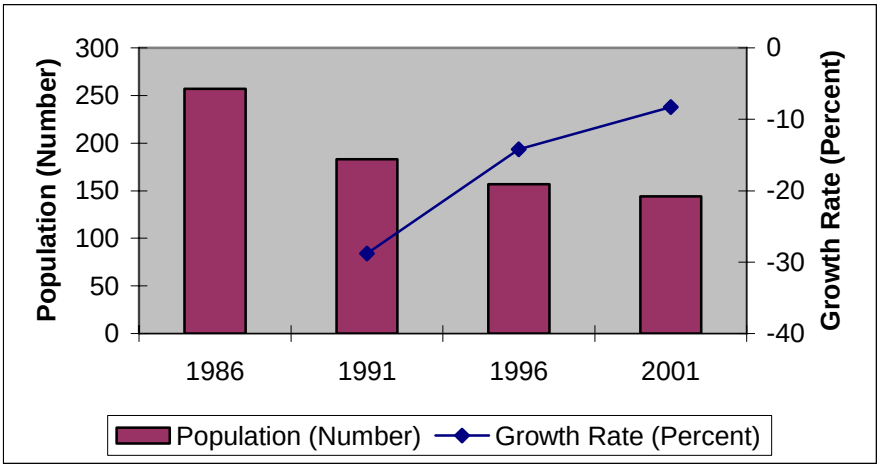
Figure 1B: Town Map of Seabird, 2006

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

Both Ledge Point and Seabird have small populations. Since 1986 Ledge Point has experienced a decline in the number of resident population, with a substantial decline between 1986 and 1991 (Figure 2).[2] Census data indicates a population of 45 permanent residents in 2001 (Table 1).

[2] Census data refer to the population of Ledge Point and Seabird as collection districts. A census Collection District (CD) is the smallest geographic area defined in the Australian Standard Geographical Classification (ASGC) (1996 Census Dictionary).



(Source of Data: ABS 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1986-2001, Ledge Point

Table 1: Population Indicators, 1991-2001 - Ledge Point and Seabird

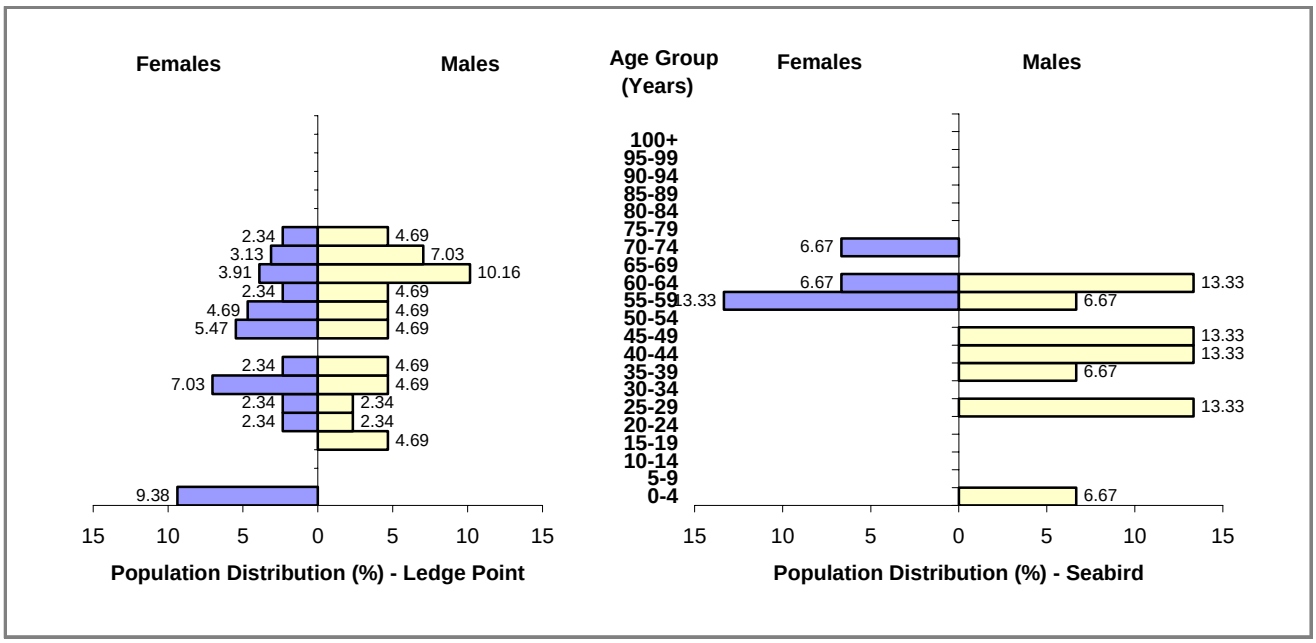
Collection Districts	***Ledge Point***			***Seabird /a***
	1991	***1996***	***2001***	***2001***
Total Resident Population	184	180	128	45
Male	111	88	70	33
Female	73	92	58	12
Population under 15 years	52	46	12	3
Population of employable age	118	125	76	30
of which: Population aged 15-19	3	12	6	0
Population over 65 years	14	9	40	12
Dependency Ratio /b	55.9	44.0	68.4	50.0
Child Dependency Ratio	44.1	36.8	15.8	10.0
Elderly Dependency Ratio	11.9	7.2	52.6	40.0
Median Years	31	34	49	48
% of Overseas Born	14.9	12.8	11.8	23.2
% of Indigenous Population	0.0	0.0	0.0	0.0

/a No data is available prior to the 2001 Census of Population and Housing.

/b Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

In 2001, the population of both Ledge Point and Seabird had a higher proportion of males than females (Table 1). This may be due to the fact that work opportunities favour the male population in these towns. The median age of Ledge Point residents is 49 years while the median age of Seabird residents is 48 years. These communities also have few young people, as indicated by their population pyramids (Figures 3A and 3B). Ledge Point had no residents aged between 5-14 years and Seabird had no residents aged between 5-24 years. This may be due to the lack of facilities in the towns catering to these young age groups.



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Ledge Point and Seabird

Table 2 demonstrates the low numbers of 'couple families with children'. In the ten-year period from 1991-2001, this number had decreased by over 20 couples, resulting in few youth living in Ledge Point. Conversely, the number of 'couple families without children' has increased by 17, partly a reflection of the increasing status of the town as a retirement location. The same trend is apparent in Seabird, which in 2001 had more 'couple families without children'.

Table 2: Family and Household Characteristics, 1991-2001 - Ledge Point and Seabird

Collection Districts	***Ledge Point***			***Seabird /a***
	1991	***1996***	***2001***	***2001***
Couple Family with Children	29	22	9	3
Couple Family without Children	17	20	34	10
One Parent Family	3	9	3	0
Other Family	3	0	0	3
Total	52	51	46	16
Proportion of Couple Families with Children to Total Families	55.8	43.1	19.6	18.8
Proportion of Couple Families without Children to Total Families	32.7	39.2	73.9	62.5

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.2 DWELLING CHARACTERISTICS

Table 3 shows that in Ledge Point and Seabird, a large proportion of dwellings were unoccupied at the time of the 2001 Census. This could be attributed to the fact that the town provides accommodation to fishers (both professional and recreational) during key fishing seasons, with many moving out of the town for the periods between fishing seasons. A number of the houses may also be holiday houses, owned by residents of adjacent inland agricultural regions. Of those dwellings that were occupied, most were separate houses. The majority of dwellings in both towns were also fully owned. An increasing number of houses were being rented out in Ledge Point. Houses in both towns ranged from those that typify the fishing nature of the town to modern houses (Plates 2A and 2B).

Table 3: Dwelling Characteristics, 1991-2001 - Ledge Point and Seabird

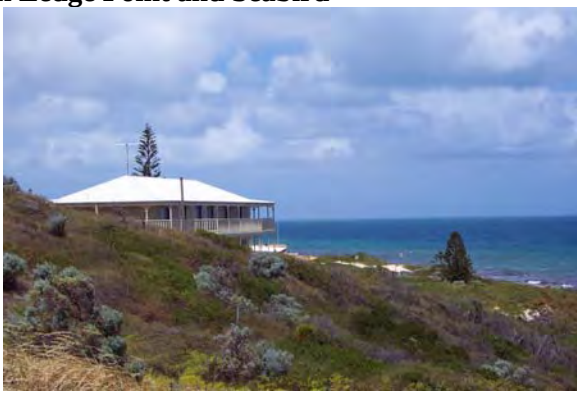
Collection Districts	*Ledge Point*			*Seabird /a*
	1991	*1996*	*2001*	*2001*
Occupied Private Dwellings	68	62	66	25
By Structure				
Separate House	68	59	63	19
Semi Detached	0	0	3	0
Flat, Unit or Apartment	0	0	0	0
Other /b	0	3	0	6
Not Stated	0	0	0	0
By Tenure				
Fully-Owned	30	32	41	13
Being Purchased	26	14	11	5
Rented	9	10	14	4
Other	3	0	0	3
Not Stated		6	0	0
Unoccupied Private Dwellings	194	142	239	59
Median Monthly Housing Loan Repayments	$551-$625	n.a.	$600 - $799	$600 - $799
Median Weekly Rent	$78-$107	n.a.	$100 - $149	n.a.

/a No data is available prior to the 2001 Census of Population and Housing.

/b For 1991, Other Dwellings includes caravans, etc. in caravan parks.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Plates 2A and 2B: Houses in Ledge Point and Seabird



(Source: Veronica Huddleston, 2005.)

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

The agriculture, forestry and fishing sector was the biggest employer in Ledge Point and Seabird, with the construction sector and the wholesale and retail trade sector also providing employment to a significant proportion of the recorded workforce (Appendix 1). Both communities have small working populations and over half of those employed in Seabird (57%) and Ledge Point (60%) are on part-time employment (Table 4).

Table 4: Employment Indicators, 1991-2001 - Ledge Point and Seabird

Collection Districts	*Ledge Point*			*Seabird /a*
	1991	*1996*	*2001*	*2001*
Employed	48	33	47	21
Male	23	12	24	15
Female	25	21	23	6
Full Time	16	15	16	9
Male	7	12	9	9
Female	9	3	7	0
Part Time	26	18	28	12
Male	10	0	15	6
Female	16	18	13	6
Not Stated	6	0	3	0
Male	6	0	0	0
Female	0	0	3	0
Unemployed	29	22	6	0
Male	26	13	3	0
Female	3	9	3	0
Total Labour Force	77	55	53	21
Male	49	25	27	15
Female	28	30	26	6
Unemployment Rate (in %)	37.7	40.0	11.3	0.0
Male	53.1	52.0	11.1	0.0
Female	10.7	30.0	11.5	0.0
Labour Force Participation Rate	58.3	41.0	45.7	50.0
Male	60.5	37.9	38.6	50.0
Female	54.9	44.1	56.5	50.0

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Based on the 2001 Census, over 16 per cent of all males in the Ledge Point workforce were unemployed. Although the unemployment rates had decreased over the ten-year period between 1991 and 2001, the unemployment rate of 14 per cent in 2001 is still higher than the Western Australian and Australian rates. Of those employed in Seabird in 2001, the majority were in part-time employment. All of those fully employed were males.

Table 5 shows the individual, family and household incomes for Ledge Point and Seabird. In 2001, Ledge Point had a median weekly income for individuals of $300-399 which was equal to the Australian and Western Australian averages. The weekly income for families and

household were, however, both lower than the Australian and Western Australian figures. Seabird residents, on the other hand, had a higher weekly income for individuals and families in 2001 of $500-599 and $1500-1900, respectively.

Table 5: Individual, Family and Household Incomes, 1991-2001 - Ledge Point and Seabird

Collection Districts	*Ledge Point*			*Seabird /a*
	1991	*1996*	*2001*	*2001*
	Annual	*Weekly*	*Weekly*	*Weekly*
Median Income for Individuals	$12,001-$16,000	$200-299	$300 - $399	$500 - $599
Median Income for Families	$20,001-$25,000	n.a.	$600 - $699	$1,500 - $1,999
Median Income for Households	$20,001-$25,000	$500-699	$500 - $599	$400 - $499

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[3]

Forty per cent of the respondents in Ledge Point have lived there for more than 15 years while the majority of the respondents in Seabird have lived there for more than 15 years. Two-thirds of Ledge Point respondents expect to still be living there in 5 years time while more than one third of Seabird respondents did not expect to be living there in 5 years time.

Close to two-thirds of the respondents gave Ledge Point a high level of endorsement as an 'excellent' place to live and also indicated very strong feelings of attachment to the community (Figures 4 and 5). During the community workshop held in Ledge Point, it was observed that, "People who live here have pride on what was developed in the town and immediately buy Ledge Point license plates within two weeks of living in town" (Community Workshop Notes, 2006).

Seabird residents also gave their community a high level of endorsement as an 'excellent' place to live but in terms of their feelings of attachment to the community, it was a mixed response (Figures 4 and 5). Half of the surveyed resident indicated that they only have some attachment to the community, which may account for the higher percentage of residents not expecting to still be living in Seabird in 5 years time.

Access of basic services such as medical clinics, general practitioners and primary schools are available within the Shire of Gingin. Given the close proximity to Perth, residents of both communities avail of more sophisticated levels of services in Perth.

[3] This section is based on the results and analysis of the responses of 31 community residents who participated in a telephone survey conducted in late 2005 and 10 residents who participated in the semi-structured interviews conducted from 2004 to 2006. A majority of the survey respondents was born in Australia and New Zealand (87%), lived in separate houses (84%) and fully owned their houses (68%). Ledge Point respondents comprised mostly of older couples with older children and no children at home (74%) while Seabird respondents were a mix of both young and old couples. Survey respondents were also a mix of employed and retired residents. Ten survey participants were engaged in the rock lobster industry. A community workshop was also conducted in both communities in June 2006, with 9 attendees for Seabird and 5 attendees for Ledge Point.

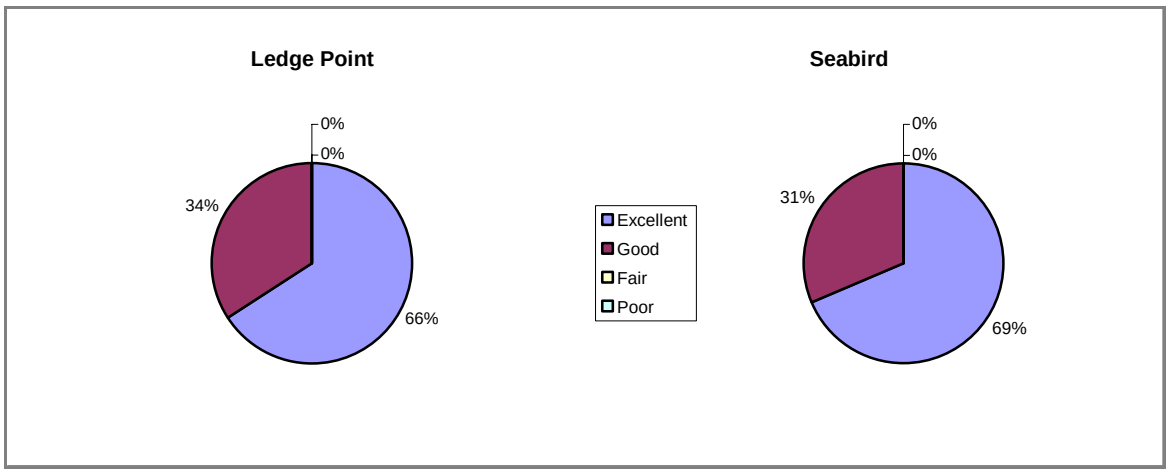


Figure 4: Respondents' Perception of Ledge Point and Seabird as a Place to Live

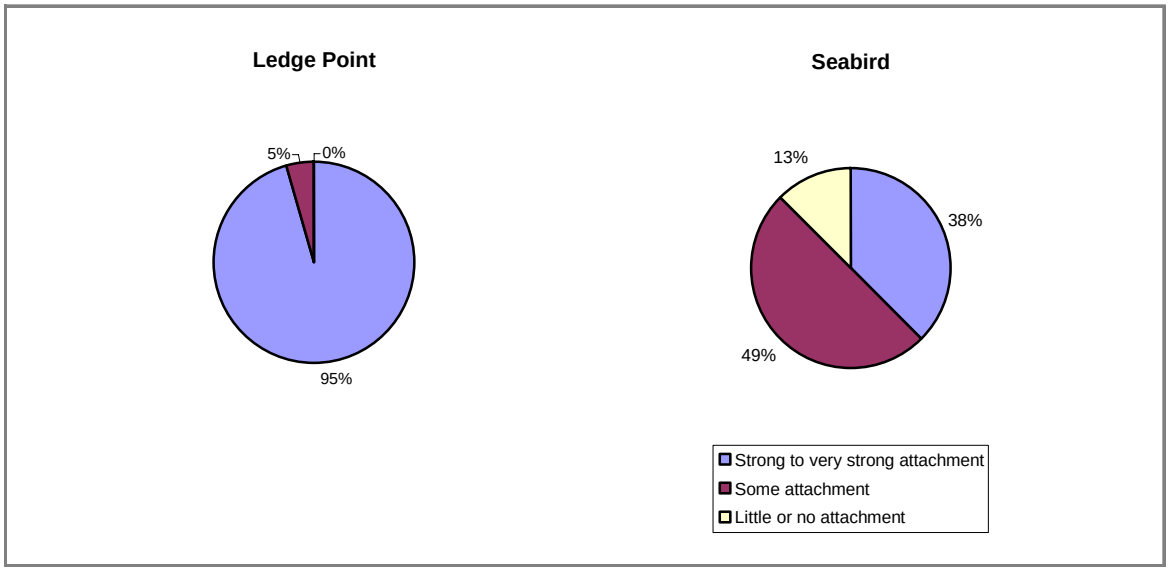


Figure 5: Respondents' Attachment to Ledge Point and Seabird

As Figure 6 indicates, the main reasons cited for choosing to live in Ledge Point and Seabird are the beach, ocean and the overall environment and the lifestyle. Some of those interviewed noted that:

> *I like the casual nature of living in a town like Ledge Point, the views and just walking across the road to the ocean is also quite nice (Interviewee No. 046, 2004).*
>
> *Ledge Point is just your typical little, small community that is nice and quiet (Interviewee No. 048, 2004).*
>
> *Just being out of the city is great. Ledge Point is a small town and socially, it's a quiet lifestyle (Interviewee No. 047).*
>
> *Ledge Point is small, laid back and very genuine (Interviewee No. 208, 2006).*
>
> *Living in Seabird allows us to be away from the hustle and bustle of the city. It gives one an opportunity for a change of lifestyle (Interviewee No. 035, 2004).*

Work is another important reason for choosing to live in these communities, although the lack of employment opportunities in the area was noted by most respondents.

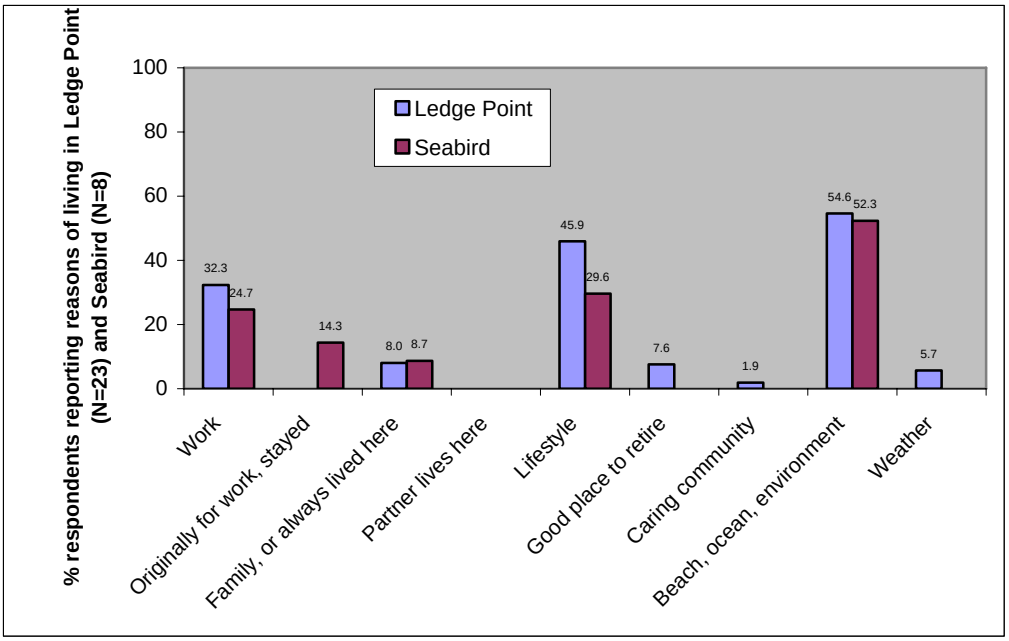


Figure 6: Reasons for Living in Ledge Point and Seabird

Participation in local sports and recreation groups is higher among Ledge Point residents than those living in Seabird. This may be due to the fact that Ledge Point has a Country Club which is "the central hub in the town and is the vehicle by which participation in, and support for, community activities is encouraged" (Community Workshop Notes, 2006). Nevertheless, close to two thirds of surveyed respondents in Ledge Point indicated that they do not have any involvement in voluntary state emergency, fire or rescue services. In Seabird, 75 per cent of surveyed respondents reported that they do not participate at all in projects to develop new services or facilities and they do not have any involvement in voluntary state emergency, fire or rescue services. Respondents in both towns also indicated their involvement and participation in local groups such as professional organisations, community associations and ratepayers groups.

Overall, the residents of Ledge Point and Seabird perceive their community as cohesive communities (Figures 8A and 8B).[4] In terms of attitude towards the community, Ledge Point and Seabird respondents gave higher ratings to residents' involvement in local issues and activities and in getting together when there is a serious problem. Like residents in Seabird,

[4] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

they gave low ratings to having opportunities to participate in local government decisions. Respondents in both communities also indicated that residents are more likely to contribute money rather than their time to community projects.

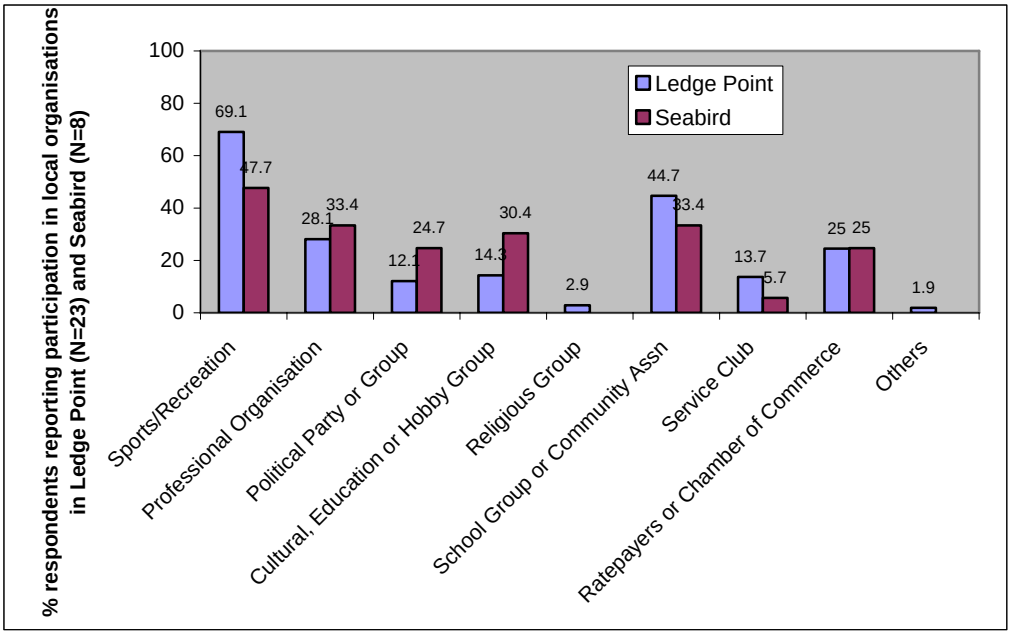


Figure 7: Participation in Local Organisations in Ledge Point and Seabird

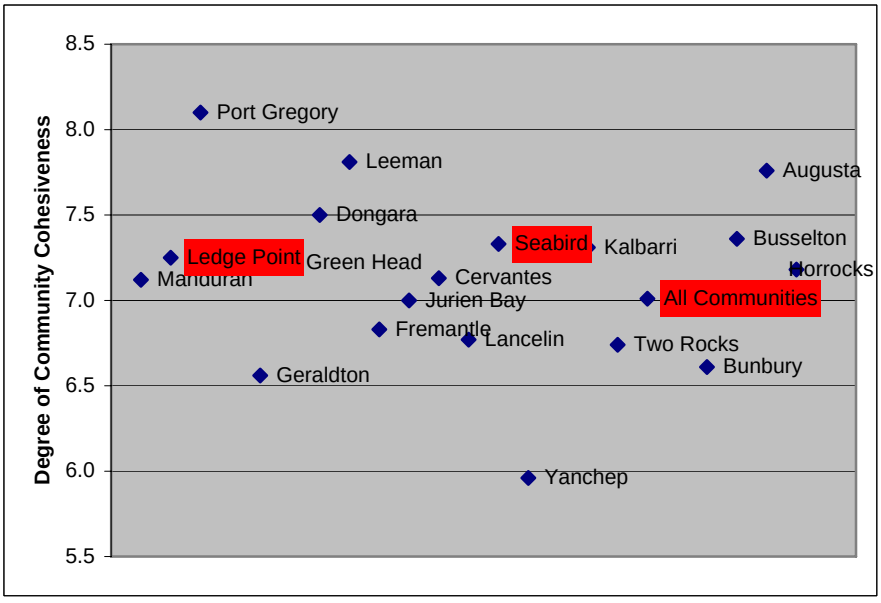


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

Most of those surveyed in Ledge Point also reported attending local community events between 2-3 times in a year while Seabird respondents reported attending local community events at least once a year. Residents in both communities have high levels of agreement that 'if there is a serious problem in the community, people would get together and solve it'. One resident (No. 209, 2006) noted that "Seabird is a small and tight-knit community". A rock lobster fisher (No. 049, 2004) in Ledge Point also noted that:

The community works together here. In fact, we had raised funds of over $2 million to build the golf course. People thought at first that there was no way they could do something like this but it was done and it changed the attitude of the people for the community. There's a good feeling around the community these days.

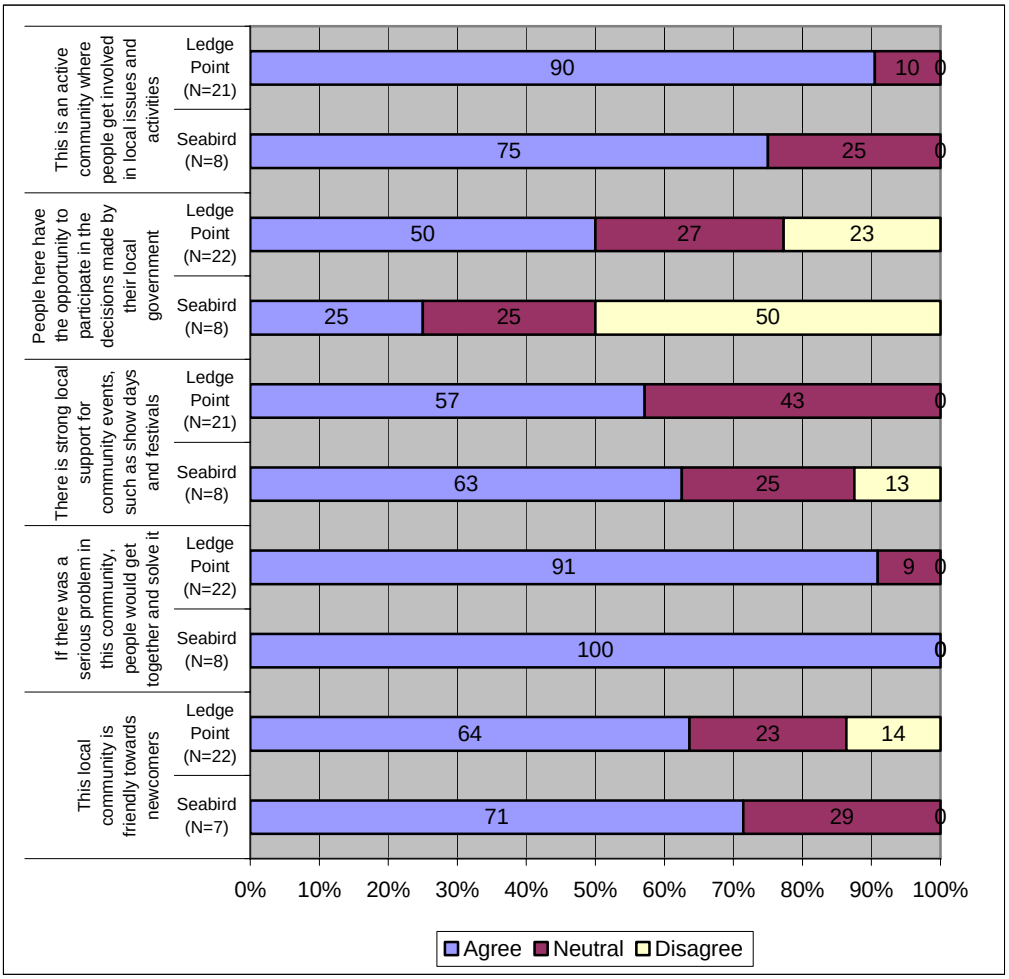


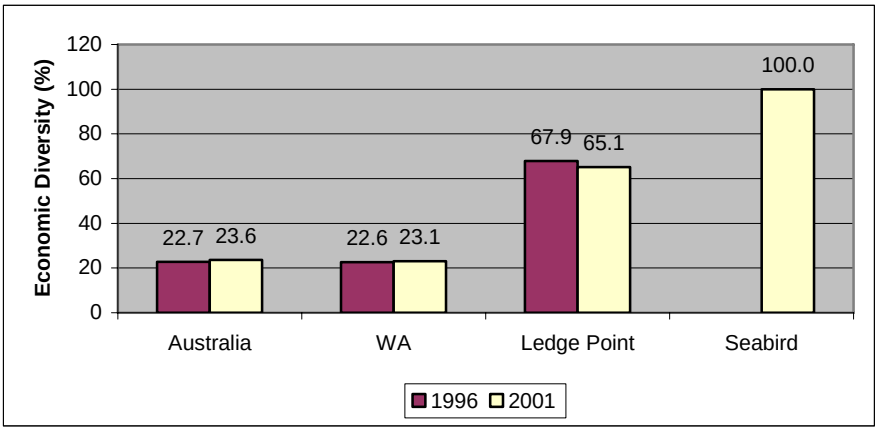
Figure 8B: Perceptions of Community Cohesiveness, Ledge Point and Seabird

4.0 THE LOCAL ECONOMY

4.1 Economic Activities

As noted in Section 3.3, both Ledge Point and Seabird remain dependent on a few sectors in terms of employment opportunities. As one Ledge Point rock lobster fisher (No. 046, 2004) noted, "There are limited work opportunities out here, other than a few farms; not enough to cater to everyone and most are casual work." The lack of work opportunities was also noted by participants in the community workshop held in Seabird (Community Workshop Notes, 2006).

In terms of economic diversity, both towns exhibited less diversified economies as compared to Western Australia and the whole of Australia (Figure 9).[5] In 2001, the bulk of those employed in Ledge Point worked in the commercial fishing industry subdivision and the accommodation, cafes and restaurants subdivision. Those employed in Seabird worked primarily for the accommodation, cafes and restaurants industry subdivision and the agriculture industry subdivision.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Ledge Point and Seabird

4.1.1 Fishing[6]

Rock lobsters make up the bulk of the commercial fishing catch in Ledge Point, in addition to fish and molluscs (Appendix 2). The Seabird fishing fleet, on the other hand, is mostly tied to the rock lobster fishery. The contribution of both towns to the overall value of rock lobsters caught in the Wheatbelt Region is close to 25 per cent.[7]

The importance of the rock lobster fishing industry to both towns can be traced back to the history of the fishery. The 1948/49 rock lobster fishing season saw nearly a doubling of the number of rock lobster fishers as crayfishing became financially attractive. It was at this time that the fishery expanded to remote waters and isolated coastal locations. The Fremantle fleet's traditional grounds expanded northward to small anchorages such as Yanchep and Ledge Point. Some fishers continued to come up to Ledge Point during the fishing season and some decided to settle in the area. As one rock lobster fisher (No. 049, 2004) noted, "Once you're in Ledge Point, you don't seem to leave. It's really lucrative as far as crays go; even in the bad seasons, you always seem to sustain some sort of a living out of crayfishing."

[5] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

[6] This section is based on information from *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999, interview transcripts and community workshop notes.

[7] Covering an area of 154,000 square kilometers, the Wheatbelt Region adjoins Perth and extends from the Indian Ocean in the northwest, to the western edge of the Goldfields and to the northern border of the Great Southern Region (Patterson Market Research, 1999).

Workshop participants also noted that, "fishers here in Ledge Point are still very much involved in community activities and serve on various committees. They are very strongly involved in the fire brigade and the country club. Together with other permanent residents, fishers got together and built the caravan park" (Community Workshop Notes, 2006).

Horrie and Mary McCormick were among the first fishers to use Seabird as an anchorage, starting with an old lifeboat and gradually building up to a respectable vessel. Horrie started 'Seafood Fisheries' to process his and the local catch for export as 'Fortune Foods'. Mary and the other fishers' wives helped out, often working from the afternoon to early mornings to get the job finished. Lou Johnson, Bob Coates, Laurie Plumber, Frank Douglas, Ray Parker Ken Brown, Mick Ward, Fred Alan, Brian Dickson, Ernie Cook were among other early fishers at Seabird.

Today, Ledge Point and Seabird remain closely tied to the rock lobster fishing industry, with the seasonal variations in employment and population characterising both towns. There are no processing facilities in either town primarily due to their proximity to Perth and Fremantle but most processing plants still have fish reception facilities (receival depots) in these towns (Plates 3A and 3B).

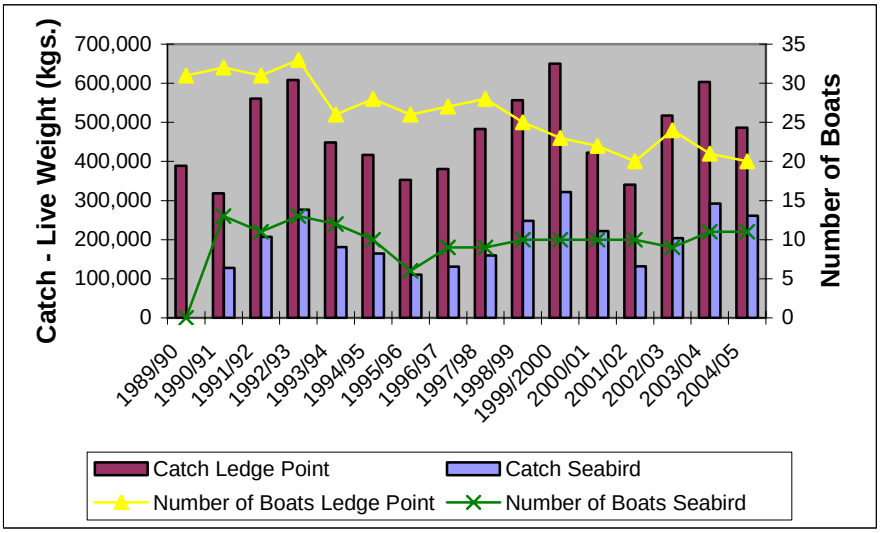
Plates 3A and 3B: Receival Depots in Ledge Point and Seabird

(Source: Veronica Huddleston, 2005.)

Figure 10 presents the number of boats operating from Ledge Point and Seabird and the levels of the rock lobster catch in kilograms recorded since the 1989/90 season. Ledge Point has experienced a continuing decline in the number of boats operating from the town, from 33 boats in 1992/93 to 20 boats in 2004/05. One rock lobster fisher (No. 049, 2004) observed that, "because Ledge Point is a small town, there are not a lot of boats that come here. There are fewer boats now than it used to be." In terms of catch levels, seasonal fluctuations have been observed for the same period, with the highest catch level recorded during the 1999/2000 fishing season.

Data for Seabird since 1990/91 indicates a constant number of boats and seasonal fluctuations in catch. One rock lobster fisher (No. 035, 2004) noted that, "when we first started fishing in the 1970s, there were 32 boats here fishing during the whites. They are now in pens and marinas."[8] It was also noted that, "around 40 boats from Two Rocks and Lancelin are in Seabird most of the time but there are only about 10-12 resident boats."

[8] 'Whites' refer to the adolescent phase of the western rock lobster, evidenced externally by a moult to a pale exoskeleton, lasting several weeks. They usually reach legal size with this moult, and are typically hungry, so they represent a significant part of the catch, this portion of the season being referred to as 'the whites' (Gray, 1999:277).



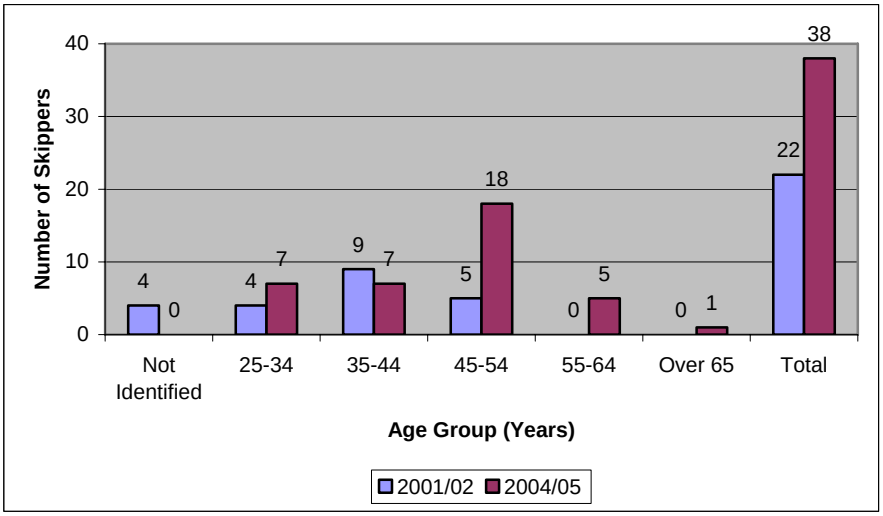
(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 – 2004/05, Ledge Point and Seabird

The number of persons engaged in the fishery as crew (skippers and deckhands) in the Ledge Point fleet notably declined from 77 persons in 1991/92 to 55 persons in 2004/05 (Appendix 3). This may be attributed to various reasons noted during the interviews, with some noting that "some deckhands have gone out of the fishery since there is no future for them" (No. 048, 2004) and that "a lot of people are buying houses in Perth and moving there for their kids education" (No. 045, 2004). In the case of Seabird, the number of persons engaged had been steady over time but registered an increase to 34 persons in more recent years. This may be attributed to the boat configuration of the Seabird fleet, where "most of the boats have 2 crew members [since] some boats are not set up for 1 or 2 people" (Community Workshop Notes, 2006).

Despite the decrease in the overall number of persons engaged in the Ledge Point and Seabird fishing fleets, the number of skippers residing in Ledge Point and Seabird has increased since the 2001/02 season (Figure 11). The majority of the skippers in the 2004/05 season were in the 45-54 age group. Among Ledge Point fishers, there is a concern that "there is not a core of young people who will be ready to take on the job of taking care of the community" (Community Workshop Notes, 2006). Fishers in Ledge Point and Seabird have shown over the years that they can be a formidable force in local and state politics when fishers such as John Servaas, Jason Barrett and Tim Coleman protested the plans to develop heavy industry at Breton Bay (Gray, 1999:259).

On their perceptions of the rock lobster industry, surveyed respondents in both Ledge Point and Seabird gave high levels of agreement to the statement that 'the economic viability of their community is closely linked to the viability of the rock lobster industry' and that 'the rock lobster industry is a good source of employment in the community' (Figure 12). Residents in Seabird gave a higher level of agreement to the statement that 'the decline in the number of boats has a negative impact on local businesses'. One business owner (No. 209, 2006) noted that, "Business here is very seasonal; during the rock lobster off-season, the place is very quiet."



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Ledge Point and Seabird, 2001/02 and 2004/05

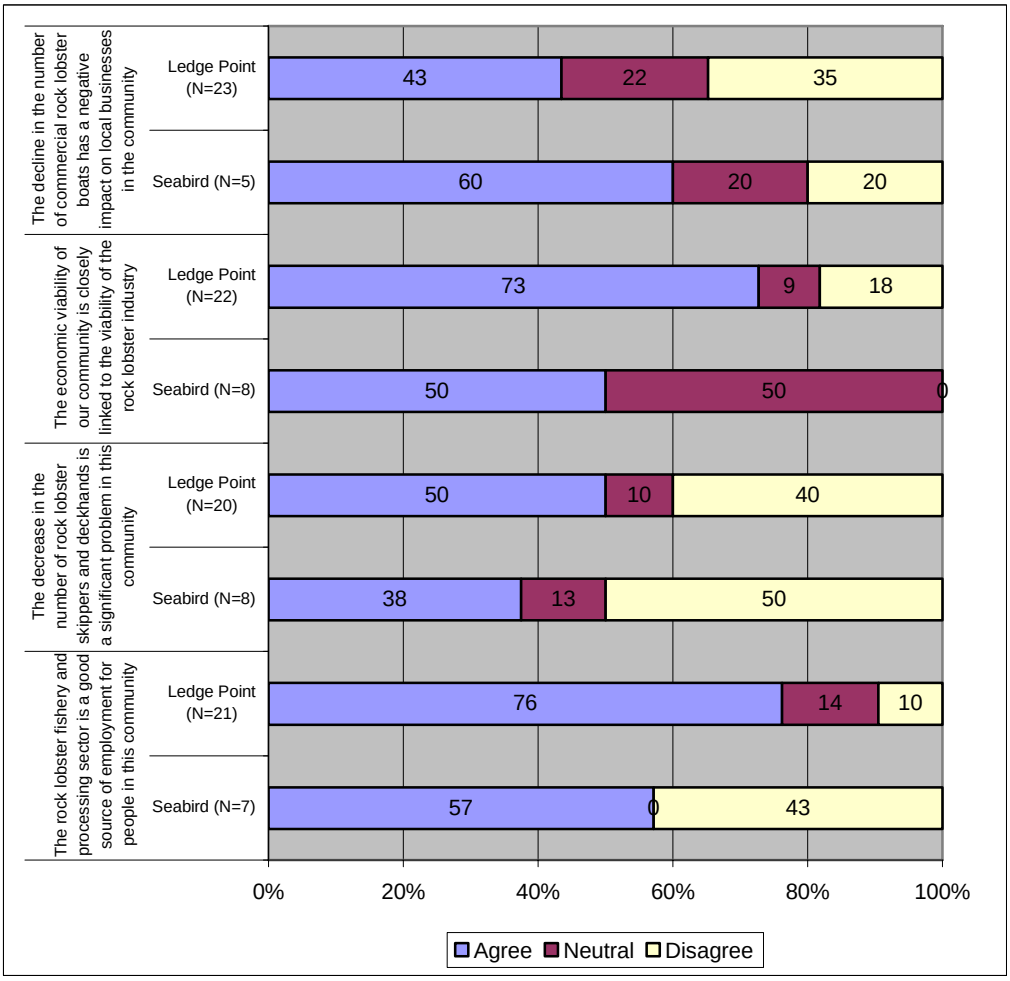


Figure 12: Perceptions of the Rock Lobster Industry, Ledge Point and Seabird

There was a mixed response by Ledge Point residents on the question of whether they would encourage young people to be involved in rock lobster fishing with close to half indicating that they will do so and a little bit more than 50 per cent indicating they wouldn't do so or they are unsure. Respondents in Seabird, on the other hand, were more unequivocal, with 70 per cent of the respondents indicating that they will do so.

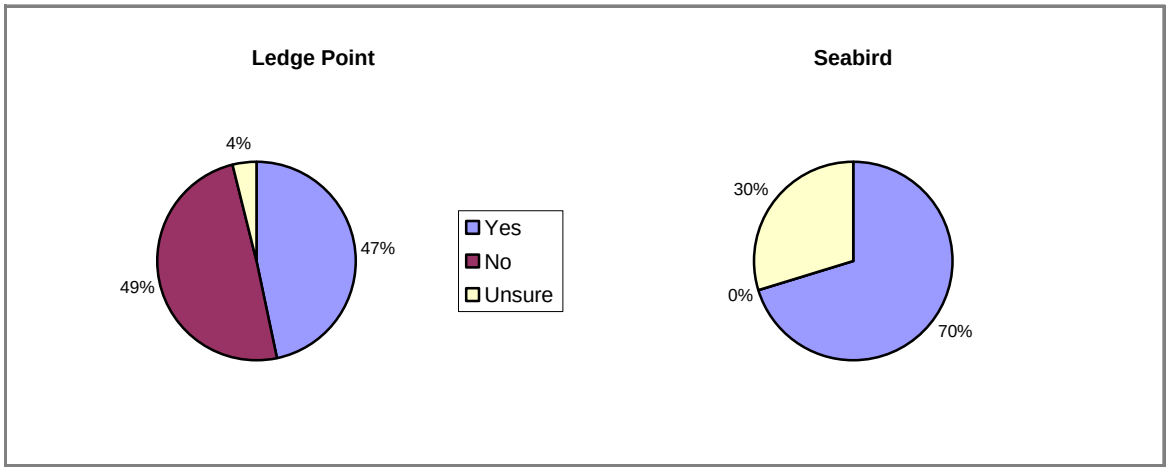


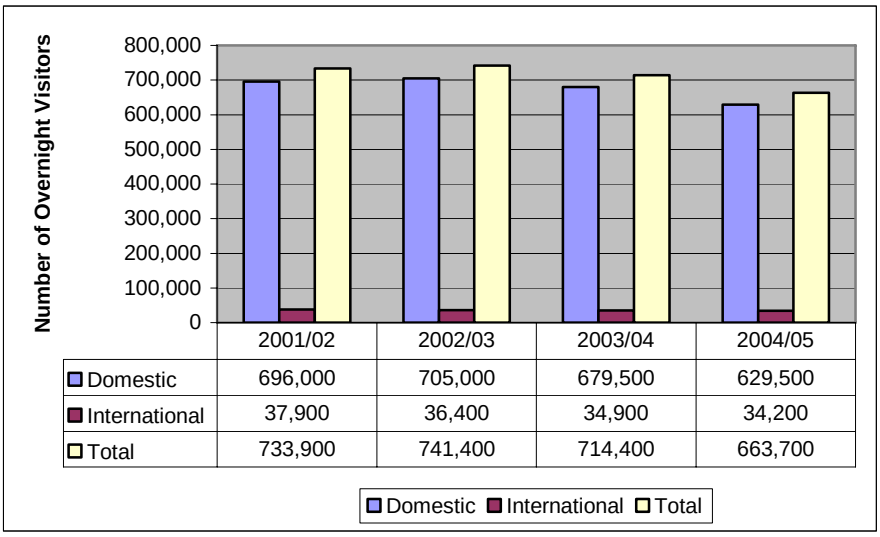
Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Ledge Point and Seabird

4.1.2 Tourism

Tourism is not a large employment industry in Ledge Point or Seabird, due in part to the nature of tourism that these communities attract. Ledge Point and Seabird have long been popular holiday destinations for recreational fishers and with the limited facilities offered in both locations, the communities generally attract domestic tourists who are largely self-sufficient in terms of accommodation and other services. As Figure 14 shows, the number of overnight stays in the Wheatbelt region indicated a great majority of domestic tourists as opposed to international tourists. Of those domestic visitors staying overnight, the majority visit for holiday or to meet family and friends, while international tourists visit predominantly for holiday purposes (Appendix 4). Accommodation is provided in both towns through rental properties and holiday homes and in the case of Seabird, a caravan park (Plates 4A and 4B). The caravan park in Ledge Point is currently under construction and is expected to be operational in early 2007.

With the development of the Indian Ocean Drive road, their proximity to Perth, and the northward expansion of Perth, there is potential for increased tourism activities in these communities. Residents in Ledge Point are, however, more optimistic over this issue than residents in Seabird (Figure 15). The fact that the Annual Windsurfing Lancelin Ocean Classic kicks off from Ledge Point every January to take advantage of the town's wind surfing conditions could account for this optimism. The Gilt Dragon Wreck is also located just off the coast of Ledge Point and diving tours can be arranged to explore the site. Nevertheless, as one rock lobster fisher in Ledge Point (No. 049, 2006) noted, "It may take 50-60 years before we get to consider tourism as an alternative. With no land opening up, there are no places for people to stay. There is next to nothing in terms of accommodation in this place; hence the importance placed on having a caravan park." There is, however, some degree of recognition among Seabird residents that "there is a potential for tourism in Seabird, probably capitalising on the rock lobster fishery. There have already been preliminary

discussions with the Shire of Gingin for an interpretative centre in Seabird that will showcase the history of the crayfishing and the development of the town" (Community Workshop Notes, 2006).



	2001/02	2002/03	2003/04	2004/05
Domestic	696,000	705,000	679,500	629,500
International	37,900	36,400	34,900	34,200
Total	733,900	741,400	714,400	663,700

(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, Wheatbelt Region

Plates 4A and 4B: Turtle Cove, Ledge Point and Seabird Caravan Park

(Source: <http//www.stayz.com.au> cited 23 March 2007 and Veronica Huddleston, 2005.)

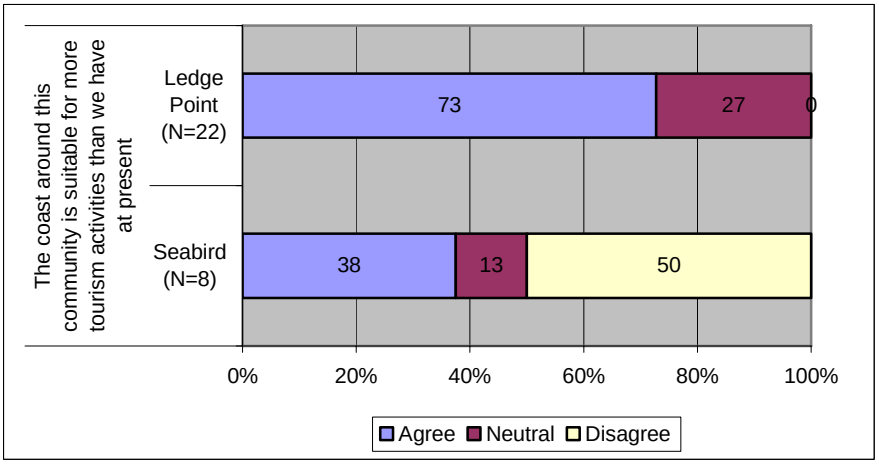


Figure 15: Perceptions of Tourism Potential, Ledge Point and Seabird

4.1.3 Business and Commerce

Retail and wholesale trading and small businesses in Ledge Point and Seabird are limited in view of the small population and the proximity to Joondalup and Perth. Ledge Point has a small general store that provides the basics for residents and holiday-makers and a hardware store and craypot making shop that service the fishing industry and the people employed in this industry while Seabird has a general store/café (Plates 5A and 5B). The Ledge Point Country Club serves meals on Fridays and Saturdays and the Seabird Tavern caters to both locals and visitors every day (Plates 6A and 6B).

Plates 5A and 5B: Ledge Point Trading and Hardware and Seabird Sunset Cafe

(Source: Veronica Huddleston, 2005.)

Plates 6A and 6B: Ledge Point Country Club and Seabird Tavern

(Sources :<http://www.ledgepointcaravanpark.com.au/Country-Club.130.0.html> cited 23 March 2007 and Veronica Huddleston, 2005.)

4.1.4 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

Both Seabird and Ledge Point are connected to Perth via the Indian Ocean Drive. Planned and on-going upgrades to this road are likely to increase the accessibility to both communities. Minor sealed roads link the Indian Ocean Drive to Gingin (which is the administrative centre for the Shire) and also the Brand Highway. The nearest regional airport is located in Perth and the nearest passenger rail station is at Currambine.

4.2.2 Water and Electricity[9]

The water supply scheme in Ledge Point consists of two production wells locate north-east of the town. The well-field draws water from a relatively shallow superficial aquifer that is directly recharged by rainfall. The depth of the water table ranges from 12 to 25 metres.

[9] This section is based on information from the *Gingin Coast Structure Plan*, WAPC, 2006:32–35.

In Seabird, the water supply scheme well-field is located to the east of the town, about 800 metres from the coast. Consisting of two production wells, water is drawn from the confined Leederville aquifer with the bores screened at approximately 96 and 104 metres.

A community-based wastewater collection and treatment facility exists at Ledge Point. The Water Corporation has a 25-year sewerage services license agreement for Ledge Point with the Office of Water Regulation for the treatment of effluents. The residential settlements in Seabird, on the other hand, are unsewered. The Water Corporation will construct a wastewater treatment plant to serve the needs of Seabird and nearby Guilderton.

The existing southwest electricity transmission network of the Western Power Corporation serves both Ledge Point and Seabird. Gas is not reticulated in these towns.

4.2.3 Communications

Ledge Point and Seabird both have radio towers located in areas adjacent to the town. As such, residents can access a number of radio services, and have limited mobile phone coverage. Both communities have access to landline telephone facilities, with at least one public pay telephone located in each community. The community is currently not serviced by Broadband or ADSL.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

Ledge Point and Seabird are situated within the Shire of Gingin and are administered from the inland town of Gingin. The Shire is governed by a Council consisting of 10 Councillors who represent the eight wards comprising the Shire.

The settlement hierarchy as outlined in the Gingin Coast Structure Plan designates Ledge Point as a village providing local level shopping and tourist facilities (WAPC, 2006:61). Seabird, on the other hand, is designated as a minor local centre with a population expected to support local convenience shopping and tourist facilities (*Ibid*:62).

4.3.2 Education and Health

Residents of Ledge Point and Seabird send their children to school either at Lancelin or Gingin. Ledge Point and Seabird residents also access medical services located in nearby communities such as Gingin and Lancelin. The latter communities both have medical centres that have permanent general practitioners and are also serviced regularly by specialist practitioners and complementary medicine practitioners.

4.3.3 Law and Order

Ledge Point and Seabird do not have permanent police presence in either town site. Both towns are both under the supervision of the Lancelin Police Service. There has been little crime reported in both towns since 1999, particularly when compared to the entire Wheatbelt District (Appendix 5).

Appendix 1: Employment by Industry, 1991-2001 - Ledge Point and Seabird

Collection Districts	*Ledge Point*									*Seabird /a*		
	1991			*1996*			*2001*			*2001*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
Agriculture, Forestry and Fishery	9	3	12	3	3	6	9	6	15	0	3	3
of which: Rock Lobster Fishing			--			0			9			0
Mining	0	0	0	0	0	0	0	0	0	0	0	0
Manufacturing	3	0	3	3	0	3	3	0	3	0	0	0
of which: Seafood Processing			--			0			0			0
Electricity, Gas and Water Supply	0	0	0	0	0	0	0	0	0	0	0	0
Construction	6	0	6	0	0	0	10	0	10	0	0	0
Wholesale Trade	0	0	0	0	3	3	3	3	6	0	0	0
Retail Trade				0	3	3	0	6	6	0	0	0
Accommodation, Cafes and Restaurants	Not a separate sector			0	6	6	0	7	7	0	3	3
Transport and Storage	0	3	3	0	0	0	0	0	0	0	0	0
Communication Services	0	0	0	0	0	0	0	0	0	3	0	3
Finance and Insurance	0	3	3	0	0	0	0	0	0	0	0	0
Property and Business Services				0	0	0	0	0	0	0	0	0
Government Administration and Defence	0	3	3	0	0	0	0	0	0	0	0	0
Education	Not a separate sector			0	0	0	0	0	0	0	0	0
Health and Community Services	0	3	3	0	0	0	0	0	0	0	0	0
Cultural and Recreational Services	3	11	14	0	0	0	0	0	0	0	0	0
Personal and Other Services				0	0	0	3	0	3	0	0	0
Non-classified/Non-stated	6	0	6	0	0	0	0	0	0	0	0	0
Total for All Industries	27	26	53	6	15	21	28	22	50	3	6	9
Share of Agriculture, Forestry and Fishery to Total Employment	33.0	11.5	22.6	50.0	20.0	28.6	32.1	27.3	30.0	0.0	50.0	33.3
Share of Top Three Sectors to Total Employment	66.7	65.4	60.4	100.0	80.0	71.4	78.6	86.4	64.0	100.0	100.0	100.0

/a No data is available prior to the 2001 Census of Population and Housing.

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Appendix 2: Catch and Value of Wildcaught Species/a, 2002/03 - 2004/05 - Western Australia and the Wheatbelt Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Wheatbelt Region	153	140	116	671	610	527
of which: Ledge Point's Share (%)	4.1	7.1	8.8	6.5	9.6	9.5
of which: Seabird's Share (%)	0.0	0.0	0.0	0.0	0.1	0.0
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Wheatbelt Region	21	3	24	130	42	318
of which: Ledge Point's Share (%)	--	--	--	--	--	--
of which: Seabird's Share (%)	--	--	--	--	--	--
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Wheatbelt Region	3,003	3,343	3,124	73,425	63,511	67,157
of which: Ledge Point's Share (%)	17.2	17.7	15.2	17.2	17.7	15.2
of which: Seabird's Share (%)	6.8	8.6	8.1	6.8	8.6	8.1
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Wheatbelt Region	33	34	33	91	93	91
of which: Ledge Point's Share (%)	34.5	36.3	38	34.6	36.3	38.1
of which: Seabird's Share (%)	0.0	0.7	0.0	0.0	0.7	0.0
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Wheatbelt Region	3,210	3,520	3,297	74,317	64,256	68,093
of which: Ledge Point's Share (%)	9.8	10.1	8.8	10.1	10.2	8.8
of which: Seabird's Share (%)	3.8	4.8	4.5	4.0	4.9	4.7

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates.

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Ledge Point and Seabird						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Ledge Point	560,805	380,753	340,897	517,133	603,326	485,950
Seabird	207,353	130,762	131,652	204,037	292,625	261,135
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Ledge Point	581,445	448,015	390,101	445,446	401,965	392,345
Seabird	228,434	159,781	157,272	172,236	183,565	202,181
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Ledge Point	31	27	20	24	21	20
Seabird	11	9	10	9	11	11
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Ledge Point	77	69	57	71	59	55
Seabird	27	25	28	26	34	34

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - Wheatbelt Region								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	318,500	45.8	334,500	47.4	309,500	45.5	288,000	45.8
Visiting Friends/Relatives	212,500	30.5	212,000	30.1	210,500	31.0	194,000	30.8
Business /c	132,000	19.0	122,000	17.3	117,000	17.2	110,500	17.6
Other /d	22,500	3.2	26,500	3.8	28,500	4.2	24,000	3.8
Total	696,000	100.0	705,000	100	679,500	100	629,500	100
International Visitors								
Holiday/Leisure	34,300	90.5	32,100	88.2	30,200	86.5	28,000	81.9
Visiting Friends/Relatives	2,800	7.4	3,400	9.3	3,400	9.7	3,700	10.8
Business	600	1.6	800	2.2	600	1.7	1,200	3.5
Other	1,000	2.6	800	2.2	1,300	3.7	2,000	5.8
Total	37,900	100.0	36,400	100	34,900	100	34,200	100
Total Visitors								
Holiday/Leisure	352,800	48.1	366,600	49.4	339,700	47.6	316,000	47.6
Visiting Friends/Relatives	215,300	29.3	215	0.0	213,900	29.9	197,700	29.8
Business	132,600	18.1	122,800	16.6	117,000	16.4	111,700	16.8
Other	23,500	3.2	27,300	3.7	28,500	4.0	26,000	3.9
Total	733,900	100.0	741,400	100	714,400	100	663,700	100

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Ledge Point and Seabird				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Wheatbelt District	496	509	573	672
in which: Ledge Point (number)	2	3	1	3
as percent of the District	0.4	0.6	0.2	0.4
in which: Seabird (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Wheatbelt District	446	536	476	322
in which: Ledge Point (number)	4	6	3	3
as percent of the District	0.0	0.0	0.0	0.0
in which: Seabird (number)	3	5	1	5
as percent of the District	0.7	0.9	0.2	1.6
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Wheatbelt District	554	545	446	310
in which: Ledge Point (number)	1	1	2	1
as percent of the District	0.2	0.2	0.4	0.3
in which: Seabird (number)	0	2	0	0
as percent of the District	0.0	0.4	0.0	0.0
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Wheatbelt District	7	5	10	7
in which: Ledge Point (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
in which: Seabird (number)	0	0	0	0
as percent of the District	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Wheatbelt District	103	158	131	75
in which: Ledge Point (number)	0	0	0	1
as percent of the District	0.0	0.0	0.0	1.3
in which: Seabird (number)	0	0	0	1
as percent of the District	0.0	0.0	0.0	1.3

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

TWO ROCKS AND YANCHEP

1.0 GEOGRAPHIC SETTING

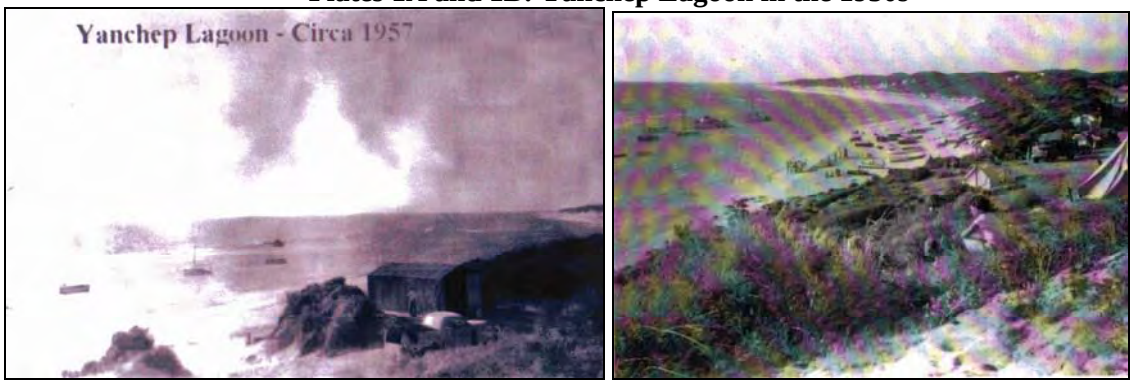
The towns of Two Rocks and Yanchep (Latitude: 31° 33' 2 South and Longitude: 115° 35' 20 East) are located in the region known as the Sunset Coast that is 57 kilometres and 47 kilometres north of the City of Perth, respectively. Together with ten other coastal communities, Two Rocks and Yanchep form part of the Coastal Ward of the City of Wanneroo.[1] As such, many services and development opportunities for these communities are administered through the City of Wanneroo.

Being co-located, these communities are often referred to as Yanchep Two Rocks and boast some of the most pristine beaches only a 45 minute drive north of Perth.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITES[2]

The development of the rock lobster fishing industry in the late 1940s to the 1950s resulted in the expansion of the fishery to remote waters and isolated coastal locations (Gray, 1999: 112). As crayfishing became financially attractive, the Fremantle fleet's traditional fishing grounds expanded northward to small anchorages such as Yanchep and Two Rocks (Plates 1A and 1B). Together with other suitable anchorages, formally used as holiday camps, they later served as the nuclei for the establishment of settlements along the coast.

Plates 1A and 1B: Yanchep Lagoon in the 1950s



(Source: Jim Maloney, 2005.)

[1] The City of Wanneroo is located in Perth's northern metropolitan region and covers an area of 686 square kilometres. Nearly 15 per cent of the City's 80,000 people were born in the United Kingdom. The City is also home to significant Italian, Macedonian, Chinese and Vietnamese minorities. Bounded by Beach Road to the south, Alexander Drive to the east, Wanneroo Road and Lake Joondalup to the west and the Shire of Gingin to the north, the City has been divided into 7 wards. The Coastal Ward encompasses 12 coastal communities, which include Alkimos, Butler, Clarkson, Eglinton, Jinadalee, Merriwa, Mindarie, Quinns Rocks, Ridgewood, Tamala Park, Two Rocks and Yanchep a (<http://en.wikipedia.org/wiki/City_of_Wanneroo>, cited 23 March 2007).

[2] This section is based on information from *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999; Two Rocks, <http://www.totaltravel.com.au/travel/wa/pertharea/sunsetcoast/guide/two-rocks> (cited 23 March 2007); Yanchep-Sun City, <http://www.smh.com.au/news/western-australia/yanchep/2005/02/17/1108500208772.html> (cited 23 March 2007); and Two Rocks and Yanchep, <http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+metropolitan+suburb+names+-+T> (cited 16 March 2007).

Two Rocks was named after two prominent rocks offshore from Wreck Point while the name Yanchep is derived from the aboriginal word "yanget", a native flax or bulrush abundant in the area. These two adjacent communities were sparsely settled until the late 1970s and 1980s, and operated principally as service centres for the commercial and recreational fishing industries. Both communities have small populations but both have enjoyed significant population growth since the 1980s following major investments in infrastructure and the active promotion of the area for tourism and residential construction led by private investment companies. In this regard, Alan Bond launched a project to develop the area as a major marina and tourism destination resulting in the construction of the Sun City Marina at Two Rocks, and an adjacent holiday village. The expansion of Perth's northern communities over the last 10-15 years has also resulted in increased residential populations in both towns. Figures 1A and 1B shows the present maps of Two Rocks and Yanchep featuring the location of social and fishery-related facilities.

(Source: Institute for Regional Development, 2006.)

Figure 1A: Town Map of Two Rocks, 2006

(Source: Institute for Regional Development, 2006.)

Figure 1B: Town Map of Yanchep, 2006

The Two Rocks/Yanchep area has not grown as rapidly as was envisaged by investors, however, due in part to the collapse of the Bond Corporation in the 1990s. Today these communities continue to offer a number of recreational activities for tourists. Yanchep is a holiday resort town with two golf courses (one 18-hole and one 9-hole) and horse and camel riding, in addition to its outstanding beaches. Two Rocks, on the other hand, is a relaxed seaside community that has a marina and a shopping complex.

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

As shown in Table 1, Two Rocks has a population of 1,494 persons in 2001, of which 34 per cent were born overseas.[3] The median age of Two Rock residents is 42 years, 8 years higher than the Western Australian median age. Yanchep's slightly larger population of 1,954 residents has a median age that is four years lower than Two Rocks. Almost a third (32%) of Yanchep's population in 2001 was born overseas. The dependency ratios for both communities have increased between 1991 and 2001, mainly due to an increase in the number of elderly population.[4] The percentage of indigenous population is higher in Two Rocks than in Yanchep, although both communities do not have a high proportion of residents of indigenous Australian descent.

Table 1: Population Indicators, 1991-2001 – Two Rocks and Yanchep

Urban Centres/Localities	*Two Rocks*			*Yanchep*		
	1991	*1996*	*2001*	*1991*	*1996*	*2001*
Total Resident Population	1,266	1,367	1,494	1,544	1,785	1,954
Male	620	672	765	869	990	1,123
Female	646	695	729	770	909	981
Population under 15 years	286	292	319	402	455	452
Population of employable age	793	843	923	959	1,103	1,199
of which: Population aged 15-19	80	59	72	76	103	128
Population over 65 years	187	232	252	183	227	303
Dependency Ratio /a	59.6	62.2	61.9	61.0	61.8	63.0
Child Dependency Ratio	36.1	34.6	34.6	41.9	41.2	37.7
Elderly Dependency Ratio	23.6	27.5	27.3	19.1	20.6	25.3
Median Years	37	42	42	34	35	38
% of Overseas Born	37.2	35.5	34.4	38.1	33.8	32.1
% of Indigenous Population	1.7	1.1	1.4	0.6	1.3	0.8

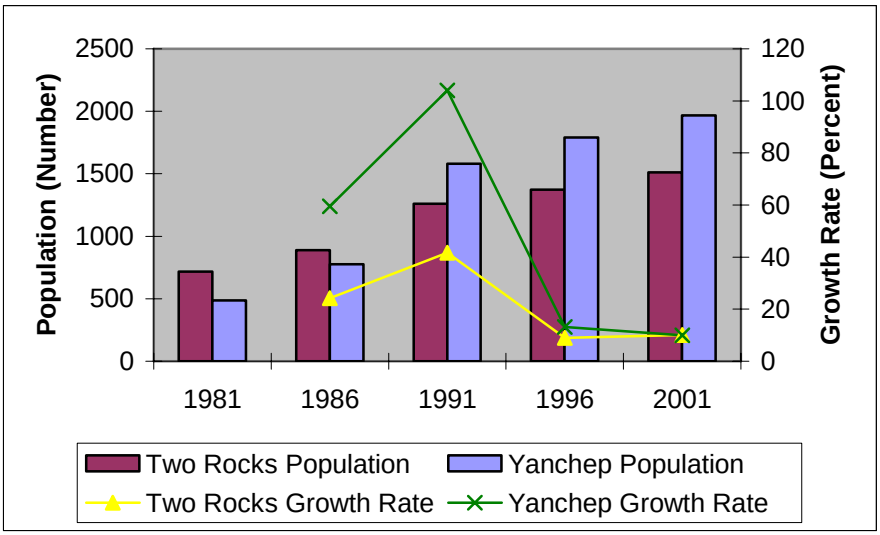
/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Since 1981, both towns have experienced a steady population increase, although the growth rate in 2001 is considerably lower than the growth rate registered in 1991 (Figure 2). There is an under representation of people aged between 15 and 29 years in Two Rocks but conversely, there is an over-representation of those at, or near, the age of retirement (Figure 3). The limited number of people in the youth age groupings account for Two Rocks having a median age 8 years greater than the Western Australian average and 7 years greater than the Australian average.

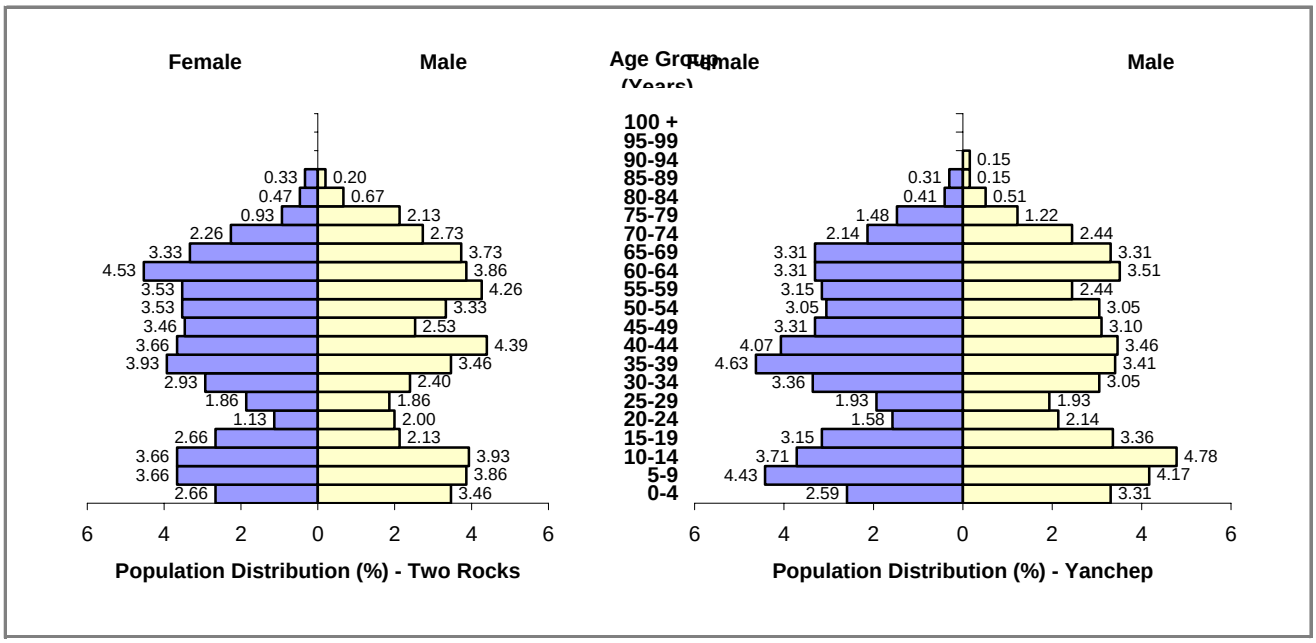
[3] Census data refer to the population of Two Rocks and Yanchep as an urban centre/locality (UC/L). An urban centre is a population cluster of 1,000 or more people who are classified as urban for statistical purposes (1996 Census Dictionary).

[4] Defined as the number of children (less than 14 years) and elderly people (over 65 years) for every 100 people of working age (15-64 years), the dependency ratio is used to measure the dependence that non-working people have on working people.



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981 - 2001 – Two Rocks and Yanchep



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Two Rocks and Yanchep

Yanchep's population pyramid illustrates an under-representation of youth aged 20-29 years. Unlike the case of Two Rocks, however, Yanchep does not have a significant over representation of people of retirement age, and therefore it has a lower median age. In 2001, the proportion of 'couple families with children' is also higher in Yanchep than in Two Rocks, which also contributes to its lower median age (Table 2). The converse is true for the proportion of 'couple families without children', wherein Two Rocks registered a higher proportion than Yanchep.

Table 2: Family and Household Characteristics, 1991-2001 – Two Rocks and Yanchep						
Urban Centres/Localities	***Two Rocks***			***Yanchep***		
	1991	***1996***	***2001***	***1991***	***1996***	***2001***
Couple Family with Children	148	136	153	215	210	220
Couple Family without Children	178	216	235	208	242	271
One Parent Family	53	59	71	46	59	100
Other Family	0	6	3	0	3	7
Total	379	417	462	469	514	598
Proportion of Couple Families with Children to Total Families	39.1	32.6	33.1	45.8	40.9	36.8
Proportion of Couple Families without Children to Total Families	47.0	51.8	50.9	44.3	47.1	45.3
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)						

3.2 DWELLING CHARACTERISTICS

Table 3 shows that the most popular type of occupied dwelling structure in Two Rocks and Yanchep are separate houses, which registered an increase of between 15 and 17 per cent from 1996 to 2001. Both communities have only a few occupied apartment units.

Table 3: Dwelling Characteristics, 1991-2001 – Two Rocks and Yanchep						
Urban Centres/Localities	***Two Rocks***			***Yanchep***		
	1991	***1996***	***2001***	***1991***	***1996***	***2001***
Occupied Private Dwellings	500	611	661	584	685	799
By Structure						
Separate House	486	565	652	572	664	779
Semi Detached	8	13	0	0	9	3
Flat, Unit or Apartment	0	0	3	3	0	0
Other /a	0	9	6	3	3	10
Not Stated	6	24	0	6	9	7
By Tenure						
Fully-Owned	220	265	286	237	262	323
Being Purchased	162	219	212	240	264	278
Rented	83	96	107	86	123	159
Other	35	3	18	21	3	13
Not Stated		28	38		33	26
Unoccupied Private Dwellings	124	162	172	179	193	204
Median Monthly Housing Loan Repayments	$401-$475	n.a.	$600 - $799	$476-$550	n.a.	$600 - $799
Median Weekly Rent	$78-$107	n.a.	$149	$78-$107	n.a.	$149
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.						
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)						

Forty-four per cent of the occupied private dwellings in Two Rocks in 2001 were fully owned, 33 per cent were being purchased, and 16 per cent were rented. There were a higher proportion of houses being purchased or rented in Yanchep during the same period, accounting for 36 per cent and 20 per cent, respectively, of the occupied private dwellings. The median weekly rent and housing loan repayments have increased over the decade ending in 2001 for both Two Rocks and Yanchep.

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

The number of people employed in Two Rocks and Yanchep increased from 1996 to 2001 by 23 per cent and 19 per cent, respectively, while the number of unemployed decreased (Table 4). While the unemployment rate for both communities registered a decline since 1991, the unemployment rate of 17 per cent for Two Rocks and 12 per cent for Yanchep were still well above the State and National averages. One resident (No. 198, 2006) noted that, "Because there are no employment opportunities in the town, people work somewhere else such as Perth, Joondalup, and even Fremantle."

Table 4: Employment Data, 1991-2001 – Two Rocks and Yanchep

Urban Centres/Localities	*Two Rocks*			*Yanchep*		
	1991	*1996*	*2001*	*1991*	*1996*	*2001*
Employed	294	353	434	469	567	675
Male	167	192	247	274	314	371
Female	127	161	187	195	253	304
Full Time	201	224	240	294	336	406
Male	138	147	168	214	225	274
Female	63	77	72	80	111	132
Part Time	81	119	179	163	222	247
Male	23	38	67	54	80	83
Female	58	81	112	109	142	164
Not Stated	12	10	15	12	9	22
Male	6	7	12	6	9	14
Female	6	3	3	6	0	8
Unemployed	140	98	89	148	114	96
Male	106	71	66	99	76	69
Female	34	27	23	49	38	27
Total Labour Force	434	451	523	617	681	771
Male	273	263	313	373	390	440
Female	161	188	210	244	291	331
Unemployment Rate (in percent)	32.3	21.7	17.0	24.0	16.7	12.5
Male	38.8	27.0	21.1	26.5	19.5	15.7
Female	21.1	14.4	11.0	20.1	13.1	8.2
Labour Force Participation Rate	44.3	42.0	44.5	54.0	51.2	51.3
Male	57.0	49.6	52.5	65.0	61.3	60.1
Female	32.1	34.5	36.3	43.0	41.9	43.0

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Males and full-time workers comprised the bulk of those employed in 2001 in Two Rocks (57% and 55%, respectively). Similar to Two Rocks, the majority of those employed in Yanchep for the same period were males (55%). There is a slightly higher percentage of full-time employed workers in Yanchep (60%) than in Two Rocks.

Table 5 shows that in 2001, both communities had median weekly individual incomes of $200-299, a level that is lower that the Western Australian average of $300-399. The median household income level was slightly higher in Yanchep than was the case in Two Rocks.

Table 5: Individual, Family and Household Incomes, 1991-2001 - Two Rocks and Yanchep

Urban Centres/Localities	*Two Rocks*			*Yanchep*		
	1991	*1996*	*2001*	*1991*	*1996*	*2001*
	Annual	*Weekly*	*Weekly*	*Annual*	*Weekly*	*Weekly*
Median Income for Individuals	$8,001-$12,000	$160-199	$200 - $299	$8,001-$12,000	$200-299	$200 - $299
Median Income for Families	$16,001-$20,000	n.a.	$500 - $599	$20,001-$25,000	n.a.	$600 - $699
Median Income for Households	$16,001-$20,000	$300-499	$400 - $499	$20,001-$25,000	$300-499	$500 - $599

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[5]

Of the 84 Two Rocks and Yanchep surveyed respondents, almost half have lived in the area for over five years. There were also a notable portion of residents who have lived in the two areas for less than five years. Over 85 per cent of respondents in both communities regarded their town as a 'good' to 'excellent' place to live (Figure 4). Further to this, 60 per cent of surveyed respondents felt 'strong' to 'very strong' attachment to their communities (Figure 5). Around 40 per cent of respondents from Two Rocks and Yanchep reported 'knowing a few people in the neighbourhood', even as the majority of community respondents suggested they often 'run into people they know when shopping'.

[5] This section is based on the results and analysis of the responses of 84 community residents who participated in a telephone survey, conducted in late 2005, and 12 fishers and residents who participated in the semi-structured interviews conducted from 2004 to 2006. A majority of the survey respondents were born in Australia and New Zealand (69%) and lived in separate houses (96%). The proportion of respondents who fully owned their houses is slightly higher than those who were renting (44% and 37%, respectively). Surveyed respondents consisted mostly of older couples with no children and young couples with younger children at home (65%). Survey respondents were also a mix of employed and retired residents. A community workshop was also conducted in Yanchep for both communities in June 2006, with 7 attendees.

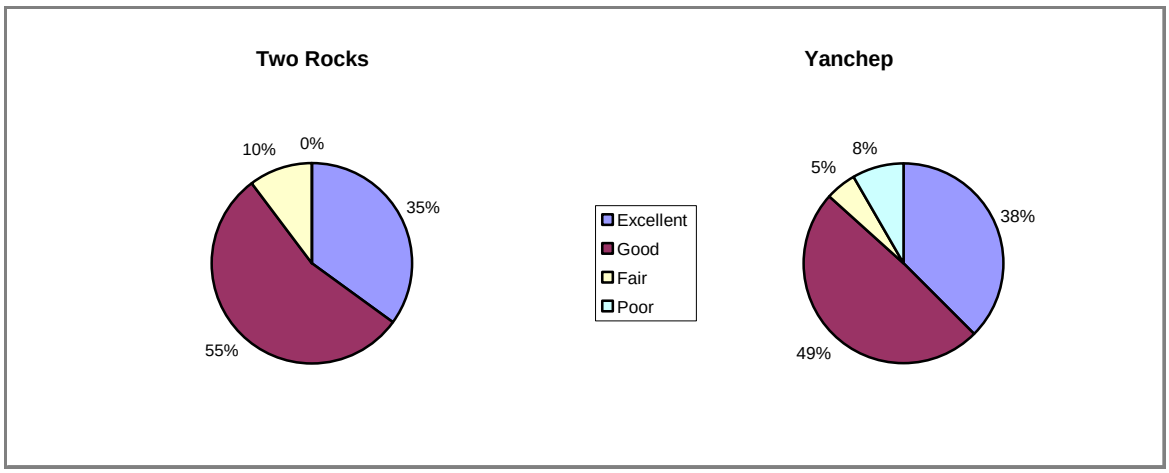


Figure 4: Respondents' Perception of Two Rocks and Yanchep as a Place to Live

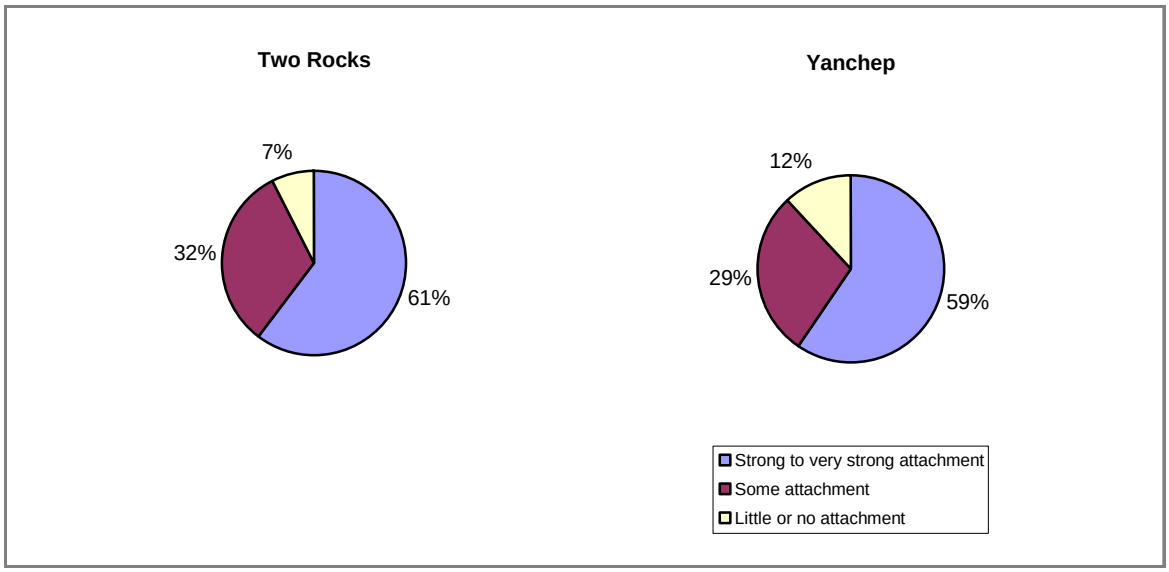


Figure 5: Respondents' Attachment to Two Rocks and Yanchep

Figure 6 shows that the primary reasons for living in Two Rocks and Yanchep were the lifestyle and the beach and ocean environment. Family connections and having lived in the area most of their lives also factored prominently as a reason for living in Two Rocks and Yanchep. As noted by some interviewees:

> *"It's quiet and peaceful here. You always feel you are on holidays every day because it's very laid back here (Interviewee No. 197, 2006).*
>
> *The friendships/family/social network we had formed over the years make for a great lifestyle here. It's simple and great for family life. It's being able to live in the country and the city is not that far away (Interviewee No. 195, 2006).*
>
> *It's like a country town, not as dense, a lot quieter than other built up areas, such as Mindarie (Interviewee No. 196, 2006).*

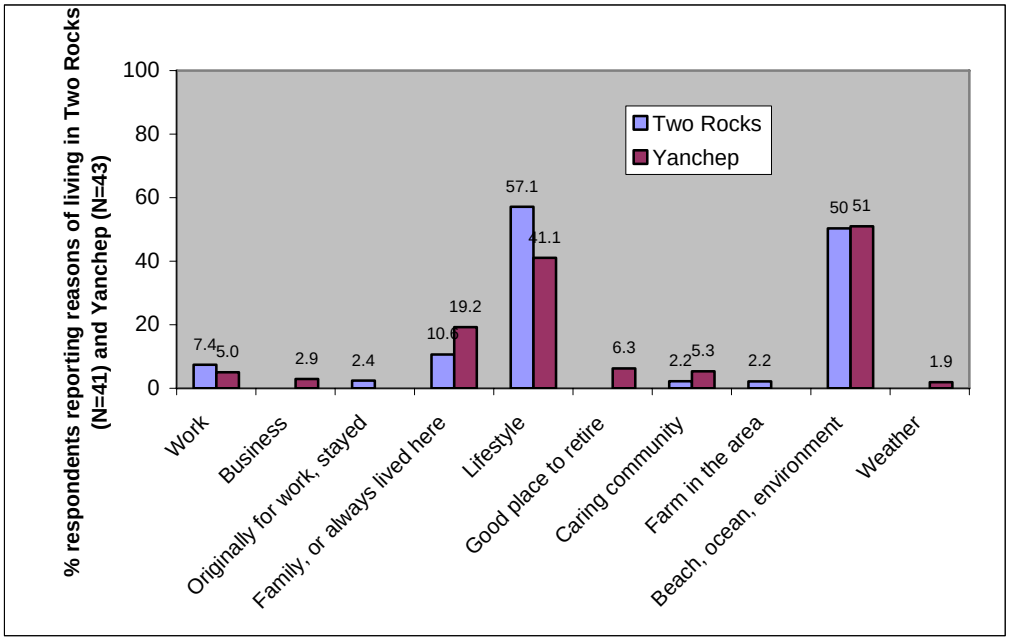


Figure 6: Reasons for Living in Two Rocks and Yanchep

The two communities are serviced by a range of community facilities. However, major specialist services like hospital services are located in the nearby City of Joondalup or in the City of Perth.

In terms of participating in local organisations, most of the surveyed respondents indicated participation in local sports or recreational associations (Figure 7). Other groups where participation from community residents was higher were in school groups or community associations and the cultural, education or hobby groups. Most respondents from Two Rocks and Yanchep also indicated that people were more prepared to provide money than their personal time to community projects.

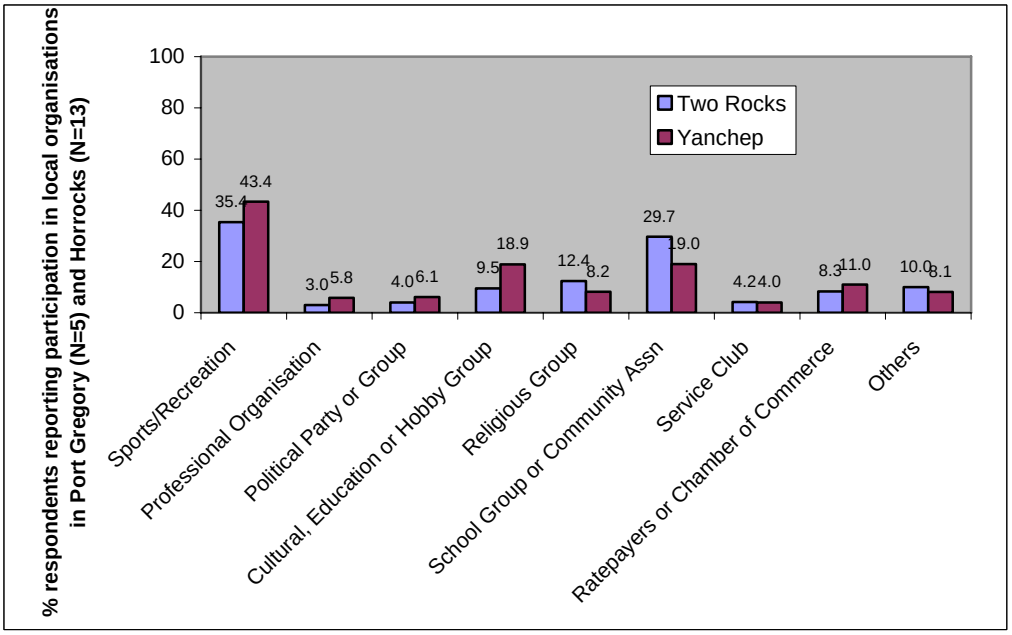


Figure 7: Participation in Local Organisations in Two Rocks and Yanchep

With regard to community events, 75 per cent of the respondents reported having attended at least one local community event per year. Among the local events held in Two Rocks is the annual blessing of the fleet at the start of the rock lobster fishing season in November (Plates 2A and 2B). However, as one business person (No. 195, 2006) noted, "There are so many regulations that it gets to the stage where the cost outweighs the benefits of undertaking local activities."

Plates 2A and 2B: Annual Blessing of the Fleet in Two Rocks, 2004

(Source: Neil Drew, 2004.)

The community cohesiveness scores of 6.74 for Two Rocks and 5.96 for Yanchep were lower than the scores of the 19 other communities included in this survey. Nevertheless, the residents' perceptions of their community still demonstrate a high degree of cohesiveness (Figures 8A).[6]

Residents in Two Rocks and Yanchep have high levels of agreement that 'if there was a serious problem, people would get together and solve it' (Figure 8B). This sentiment can be summed up in the following words of one resident (No. 195, 2006):

> *If someone is in trouble, or if something happens, [the people here] would not hesitate to help. They would drive them to the hospital if there were an accident, even though they do not know them as well.*

Commercial rock lobster fishers also assist the communities whenever they can. As one fisher (No. 004, 2004) noted, "There were a couple of occasions when the rescue boat went out of action, so we went out and actually towed in a couple of recreational fishers."

[6] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

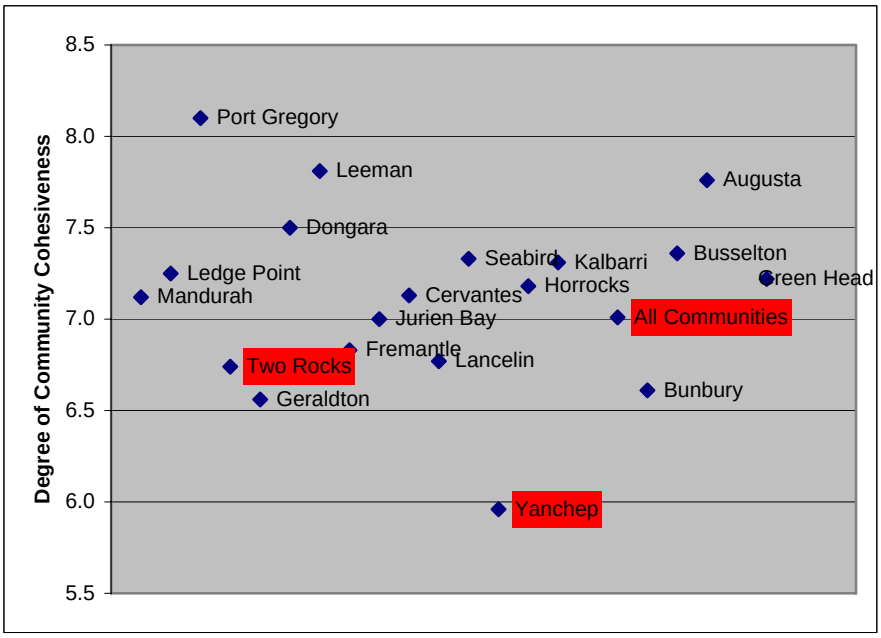


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

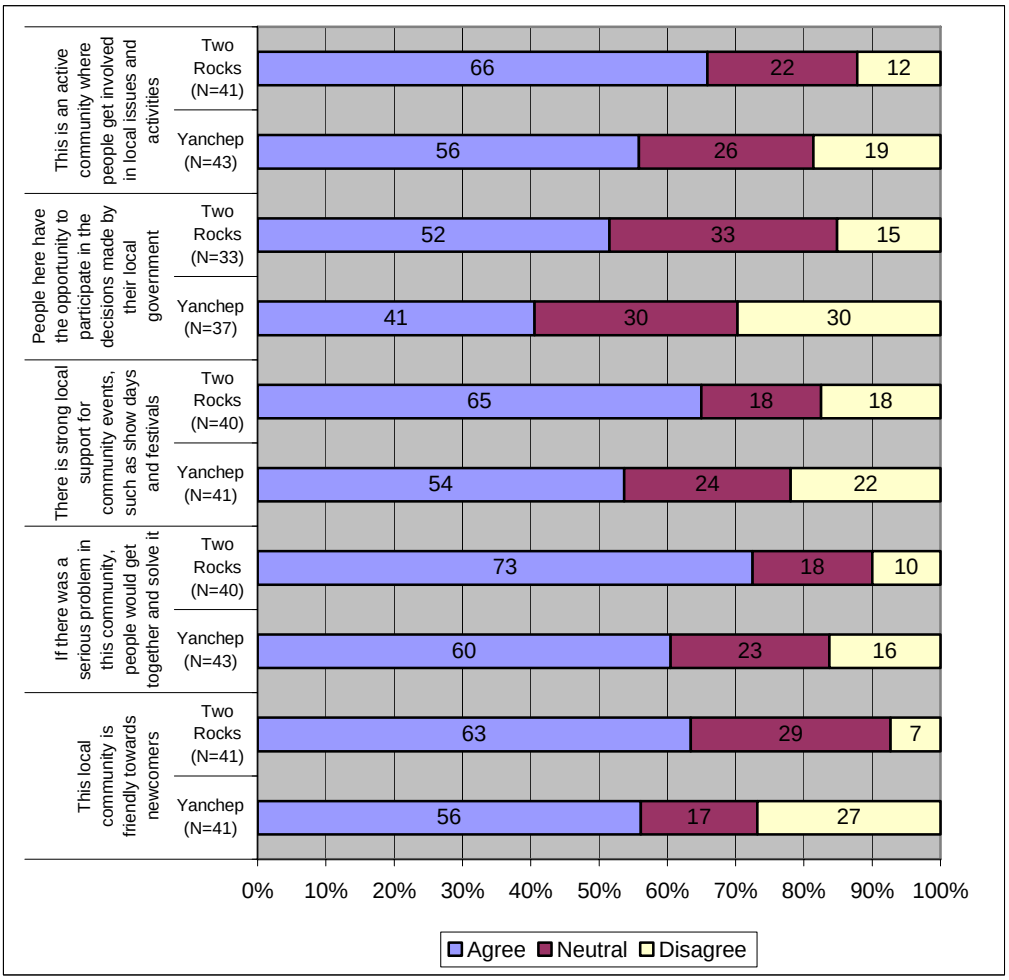


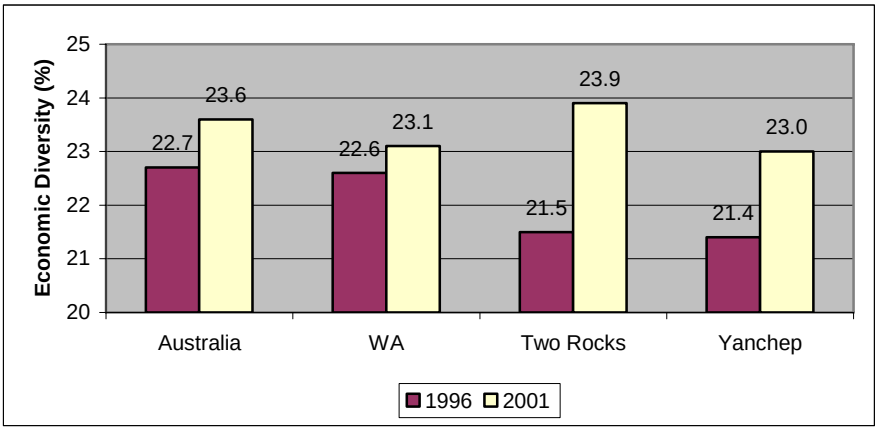
Figure 8B: Perceptions of Community Cohesiveness, Two Rocks and Yanchep

Surveyed respondents in both communities also generally agree that Two Rocks and Yanchep are 'active communities where people get involved in local issues and activities'. However, some fishers noted that they have less time to participate in local sports or community activities because of the long hours of work. One community resident (No. 197, 2006) also noted that, "Either there is general apathy or the people here are just too busy with their own lives that they don't air out their concerns or join local groups."

4.0 THE LOCAL ECONOMY

4.1 Economic Activities

The retail trade, construction and manufacturing industry divisions provided the bulk of employment in both Two Rocks and Yanchep between 1996 and 2001 (Appendices 1A and 1B). Both communities compared well with the Australian and Western Australian economies in terms of economic diversity (Figure 9).[7] In 2001, the major employers in Two Rocks were the construction trade services industry subdivision, followed by education and business services. The Yanchep workforce in 2001 was employed primarily by the accommodation, cafes and restaurants industry subdivision, followed by construction trade services and education.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Two Rocks and Yanchep

4.1.1 Fishing

In both Yanchep and Two Rocks, fishing has long been a major industry. While tourism and residential development in both communities have diversified their socio-economic function, commercial and recreational fishing remains a major industry in both communities. Located adjacent to the Two Rocks town centre is the Sun City Marina which offers complete boat servicing for large commercial fishing vessels as well as for pleasure boats. With its easily accessible boat ramp, the marina has a handling capacity for vessels up to 65 tonnes and leasing pens from 8 to 20 metres (Plates 3A and 3B).

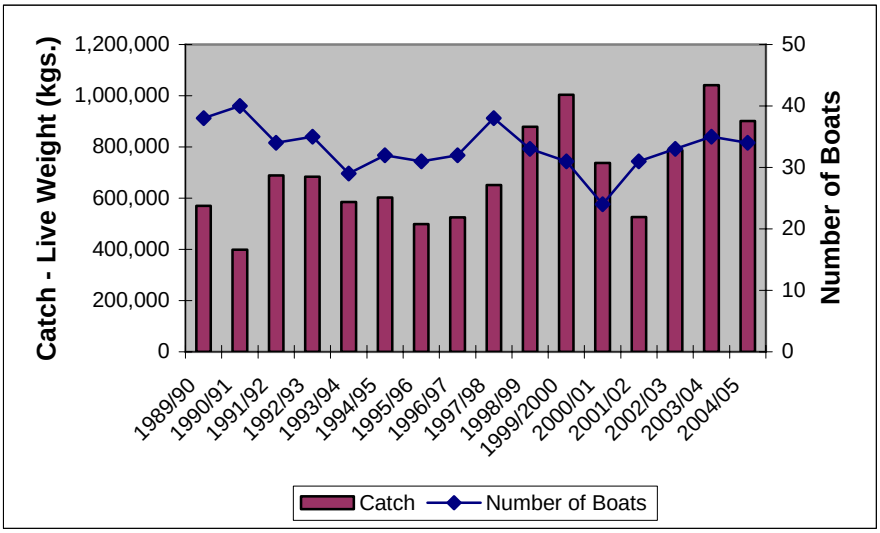
[7] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

Plates 3A and 3B: Facilities and Mooring Pens at the Sun City Marina in Two Rocks

(Source: Veronica Huddleston, 2005.)

Forty-two per cent of the rock lobster catch (both volume and value) in the Perth region for the 2002/03 to 2004/05 fishing seasons was landed in Two Rock and Yanchep (Appendix 2). As Figure 10A shows, the number of boats operating in the two areas has fluctuated since 1989/90 (from 40 boats in 1990/91 to only 24 boats ten years later). As of 2004/05, there has been a small increase to 35 boats and a subsequent rise in the number of persons engaged in the fishery (Appendix 3). The catch weight from these boats has averaged 840,000 kilograms of rock lobsters per year since the 1998/99 fishing season. The high volume of rock lobsters landed in Two Rocks and Yanchep is accounted for largely by the huge influx of mobile fishers who fish in these areas. As one rock lobster (No. 031, 2004) noted:

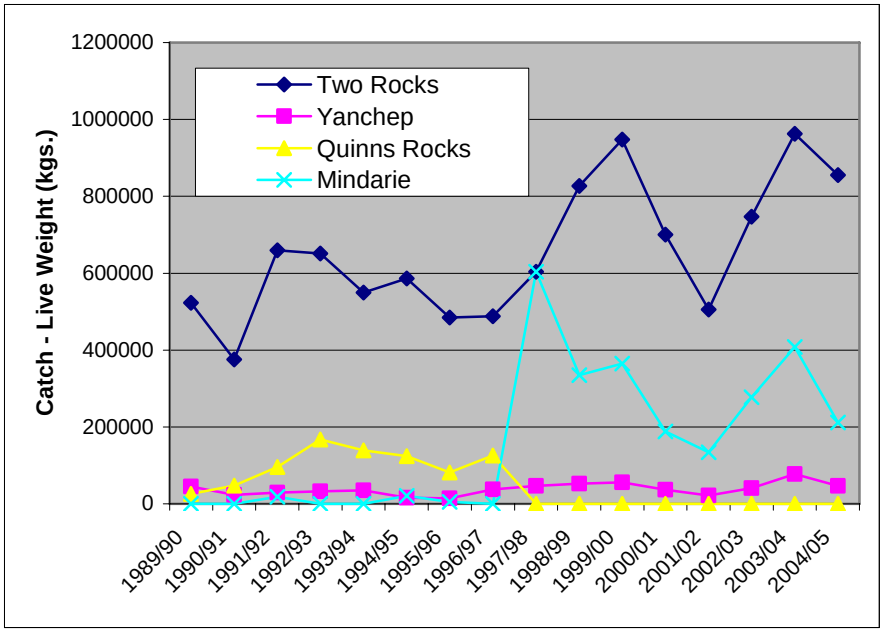
> *There are probably only 10 resident boats in Yanchep Two Rocks out of about 80-84 boats. The rest come from Fremantle or Jurien Bay or anywhere along the coast and they will stay here until the crays move. So, it is mainly a travelling fleet that we have here.*



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10A: Trend in Live Weight Catch (kgs.) and Number of Boats, 1989/90 – 2004/05, Two Rocks and Yanchep

Up to the 1996/97 fishing season, a number of fishers have landed their catch at the nearby suburb of Quinn's Rocks and from the 1997/98 fishing season to date, at Mindarie (Figure 10B). In the 1950s, it was commonplace to get a lease on the beachfront reserve and build shacks on the ocean front at Quinn's Rocks. With the completion of the harbour and marina in Mindarie, fishers have also been using this town to land their catch.



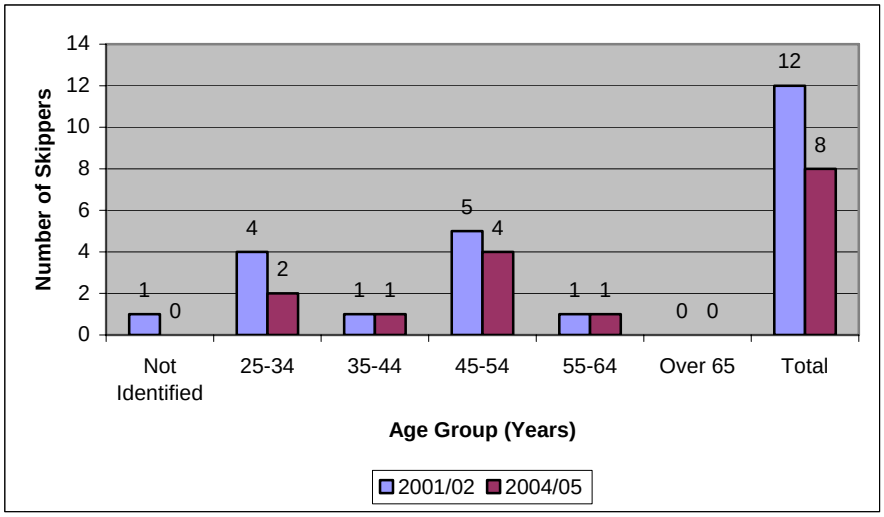
(Source of Data: Department of Fisheries, Western Australia.)

Figure 10B: Trend in Live Weight Catch (kgs.) 1989/90 – 2004/05, City of Wanneroo

Of the resident skippers in the area, the majority of rock lobster boat skippers in 2001/02 were between 25 and 64 years old (Figure 11). The same configuration characterised the skippers in 2004/05, except that there had been a decline in the number of skippers residing and operating from Two Rocks and Yanchep. During the community workshop held in Yanchep, some skippers indicated that 'there are only a handful left of the guys they started out with, with some moving out somewhere else to make more money and take advantage of the opportunities in the building or mining sector" (Community Workshop Notes, 2006). It was observed, "Business failures and family breakdowns are happening on a big scale in the Two Rocks/Yanchep fishing fleet" (Community Workshop Notes, 2006).

The same declining trend can be observed for deckhands. As one rock lobster fisher (No. 004, 2004) noted, "Some move out of the fishery because there is no future for them if you are just working as a crew. You get older and it gets more difficult to do the work." While it was noted that some deckhands are qualified to be skippers, there was also a recognition that "they couldn't afford to work as skippers because of the daunting start-up costs" (Community Workshop Notes, 2006). Another rock lobster fisher (No. 031, 2004) also noted that:

> *To survive in this industry, you have to work extremely hard and catch a little bit more than the average. That is just to survive and pay your debt back from one year to the next.*



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Two Rocks and Yanchep, 2001/02 and 2004/05

Figure 12 shows the perceptions that community residents in Two Rocks and Yanchep have on the rock lobster fishery. As highlighted during the community workshop, "Without the crayfishing industry, many businesses in town would not be profitable. In the summer months, we would have about 70 odd boats out there. These guys rent property in the area, they buy their local food and groceries, they go to the local pub or restaurant, they buy the paper, they're spending their money here" (Community Workshop Notes, 2006). It thus comes as no surprise that more than half of the surveyed respondents agree to the statement that the decline in the number of commercial rock lobster boats has a negative impact on local businesses in the community. The same proportion indicated general agreement that 'the economic viability of their community is closely linked to the rock lobster industry'.

On the question of whether they will encourage young people to be involved in rock lobster fishing, residents of Two Rocks show more confidence in the fishery, with 44 per cent of the surveyed respondents reporting that they would do so (Figure 13). Only 30 per cent of Yanchep residents reported doing so, with 42 per cent responding in the negative. This may be due to the positive view of Two Rocks residents of the fishery. As one Two Rocks resident (No. 197, 2006) noted, "Fishers are generally respectful of the ocean environment; it's their livelihood so they look after their lot. Those who live here contribute to the town and even start local businesses."

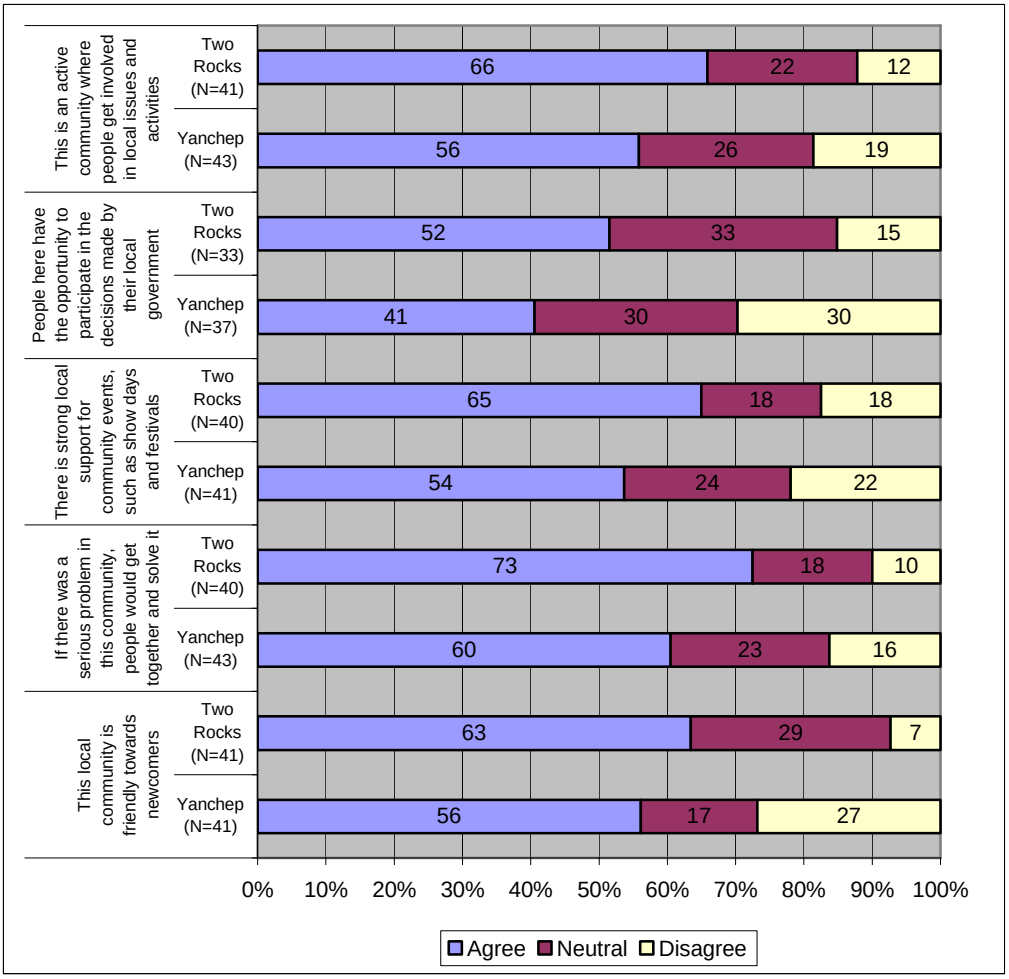


Figure 12: Perceptions of the Rock Lobster Industry, Two Rocks and Yanchep

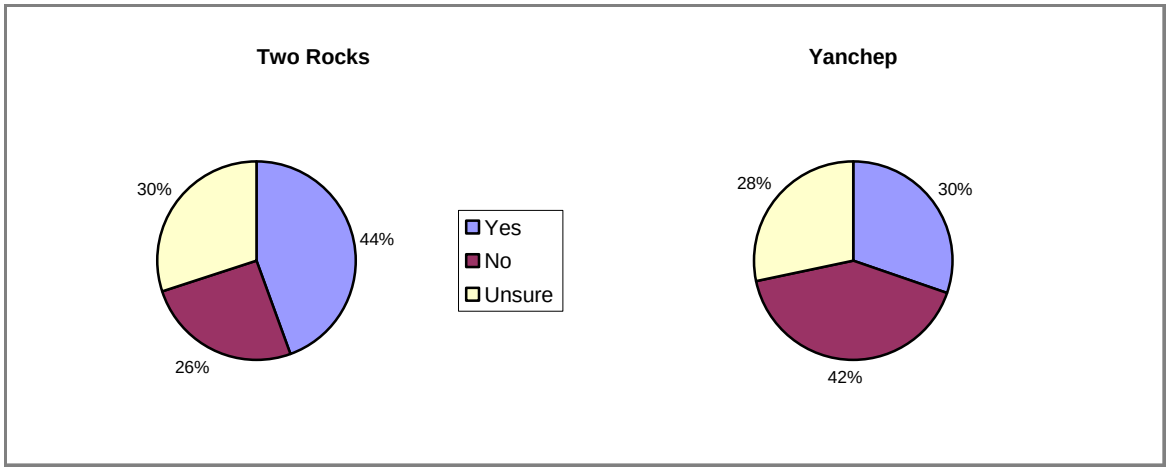
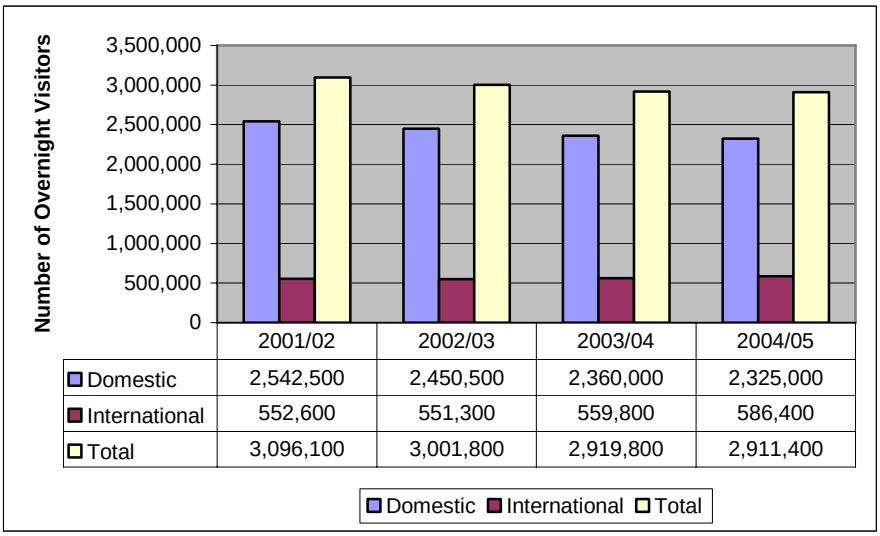


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Two Rocks and Yanchep

4.1.2 Tourism

Yanchep and Two Rocks contribute towards the overall tourism activity for the Perth metropolitan region. Figure 14 shows that the number of international and domestic overnight tourists in Perth has remained relatively constant since 2001/02. Of the domestic visitors to Perth metropolitan region, the majority come to visit with friends and family, while the majority of international tourists visit for holiday and leisure purposes (Appendix 4).



	2001/02	2002/03	2003/04	2004/05
Domestic	2,542,500	2,450,500	2,360,000	2,325,000
International	552,600	551,300	559,800	586,400
Total	3,096,100	3,001,800	2,919,800	2,911,400

(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, Perth Metropolitan Area

Since the 1980s, tourism in Two Rocks and Yanchep has steadily grown. Much of this tourism growth has been associated with the Yanchep National Park and the development of the Sun City Marina and the tourist accommodation village. The National Park's unique flora and fauna, caves and aboriginal heritage make it a popular destination. Other activities in the area include horse riding, fishing, bushwalking, caving, sailing, swimming, surfing and scuba diving.

Tourism in the area is likely to continue to grow, and servicing this growing industry is likely to continue to be an important economic function for both communities. Sixty-five per cent of surveyed community respondents generally perceive their communities as suitable for more tourism activities (Figure 15). Participants of the community workshop echoed the same sentiment, noting that (Community Workshop Notes, 2006):

> *There would be positive benefits to have a small display in the groove in the Yanchep Lagoon to show case how the fishing industry started in these towns, in addition to activities such as the blessing of the fleet. There could be collaborative endeavours to feature displays and photo exhibits showcasing the best of the fishery and Yanchep Two Rocks.*

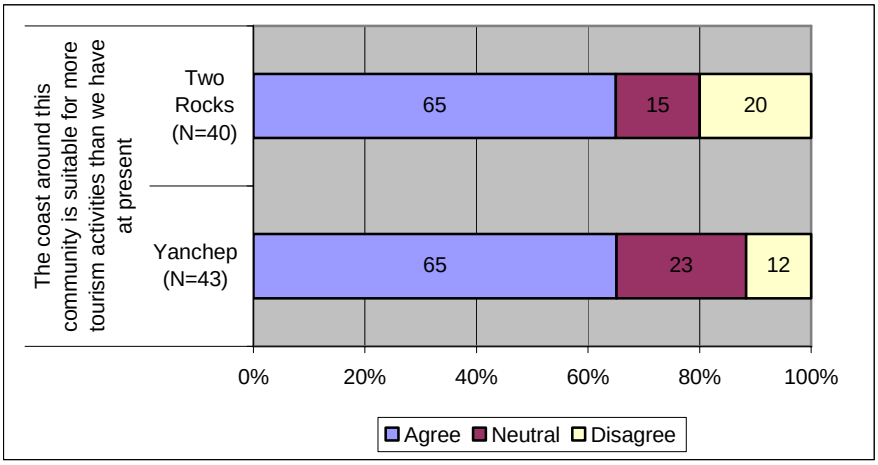


Figure 15: Perceptions of Tourism Potential, Two Rocks and Yanchep

Accommodation in Yanchep ranges from farm stay and bed and breakfast accommodation to self catering and motel style accommodation. Tourists can also stay at the Yanchep Inn, a heritage listed building located in the scenic Yanchep National Park (Plate 4A). Nestled between Two Rocks and Yanchep is Club Capricorn, a relaxed and peaceful resort offering a choice of lodge rooms, two and three bedroom chalets, caravan and camping facilities (Plate 4B). There are a number of licensed restaurants in Two Rocks and Yanchep, with opening hours subject to seasonal variations.

Plates 4A and 4B: Yanchep Inn and Club Capricorn

(Sources: <http://www.yanchepinn.com.au/yanchep-national-park-perth.shtml >; and <http://www.clubcapricorn.com.au/public/Privacy.html> , cited 23 March 2007.)

4.1.3 Business and Commerce

Yanchep and Two Rocks have a range of businesses that include shopping centres and other supply stores, real estate agents and restaurants (Plate 5). Due to their close location to the major metropolitan retail and administrative hub of Joondalup and to Perth, it is unlikely that Yanchep and Two Rocks will experience any significant growth in higher order businesses in the next few years. The expansion of Perth's northern communities and the associated growth

in residential population in Yanchep and Two Rocks is likely to generate increased business activity and opportunities in both communities.

Plate 5: Two Rocks Shopping Centre

(Source: Veronica Huddleston, 2005.)

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

Yanchep and Two Rocks are accessible from Perth by the Indian Ocean Drive. This road is the most popular access route to Yanchep and Two Rocks. Local sealed roads that join to the Brand Highway also service both communities. In Two Rocks, 96 per cent of residents have access to private motor vehicles while 95 per cent of Yanchep's residents have such access. The nearest passenger rail link to Yanchep and Two Rocks is at Currambine Station in Perth's northern communities.

4.2.2 Water and Electricity

Both Two Rocks and Yanchep have potable water supplied by the Water Corporation. In 2000, the Water Corporation installed a new calgon dosing facility at the Two Rocks Water Treatment Plant as part of an extensive program of works which the water utility has been pursuing throughout its facilities in Western Australia.[8] The development and implementation of the calgon technology is being done in conjunction with Hydramet, under a licensing agreement with the Water Corporation. The total investment for the calgon treatment plant, which is entirely separate from the wastewater treatment plant, involved around AU$500 million between 1998 and 2002.

Electricity for both Two Rocks and Yanchep is provided through the southwest electricity transmission network of the Western Power Corporation.

[8] The addition of low concentrations of calgon, sodium hexametaphosphate (NaPO3)6, improves potable water quality in hard water areas. Calgon is a registered food additive which has been approved by Australia's National Health and Medical Research Council. The chemical is added to the water supply at low concentrations to inhibit scale formation when hard water is heated. This approach provides most of the customer benefits of full softening, but at a fraction of the cost, by reducing the effect of scaling problems experienced in domestic hot water systems and electrical appliances. However, it has no effect in aiding the lathering of hard water (<http://www.water-technology.net/projects/two_rocks/>, cited 23 March 2007).

4.2.3 Communications

Residents of Yanchep and Two Rocks have access to land based telephone lines. In Yanchep, more than 28 per cent of residents have access to the internet at home while access to the internet in Two Rocks is enjoyed by more than 24 per cent of residents. There is limited digital mobile phone coverage in both communities but there is good CDMA phone coverage.

In May 2006, Optus announced a further boost to its network coverage with the installation of a new mobile facility at Two Rocks. This new site will increase the depth of coverage for both residents and visitors to the area.

4.3 INSTITUTIONAL SERVICES

4.3.1 Government Services

Yanchep and Two Rocks are located within the City of Wanneroo that maintains the basic services of local roads, rates and rubbish collections. The City of Wanneroo maintains the public access areas such as beach access and local parks and reserves. The City also provides and maintains local facilities such as a library and recreational areas (playing fields, indoor/outdoor courts).

4.3.2 Education and Health

Due to their small residential populations, both towns have limited locally based medical and educational facilities. They have some primary health care services and educational services, with a senior high school campus in Yanchep offering a limited range of subjects (Plate 6). To access private secondary schools or tertiary education and training facilities, residents must travel to Joondalup or other metropolitan locations. The nearest hospital and other specialist medical services to Two Rocks and Yanchep are also located in Joondalup.

Plate 6: Yanchep District High School

(Source: <http://www.yanchep.wa.edu.au/HISTORY/YDHS25.htm#_Toc493214309> cited 23 March 2007.)

4.3.3 Law and Order

The Police Unit established at the Two Rocks Shopping Centre in 1991 services Yanchep and Two Rocks. Both communities have almost negligible crime rates. Both communities accounting for less than one percent of the total Metropolitan crime rate for assault, burglary, robbery and stolen vehicles (Appendix 5).

Appendix 1A: Employment by Industry, 1991-2001 - Two Rocks									
Urban Centres/Localities	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	12	7	19	13	7	20	6	12	18
of which: Rock Lobster Fishing			--			0			3
Mining	6	3	9	13	0	13	17	0	17
Manufacturing	14	6	20	25	11	36	39	14	53
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	3	0	3	0	0	0	0	0	0
Construction	18	3	21	29	7	36	40	9	49
Wholesale Trade	24	35	59	13	4	17	12	6	18
Retail Trade				24	25	49	32	38	70
Accommodation, Cafes and Restaurants	Not aseparate sector			6	21	27	4	11	15
Transport and Storage	3	3	6	7	3	10	9	12	21
Communication Services	0	6	6	3	0	3	3	3	6
Finance and Insurance	17	10	27	6	9	15	6	6	12
Property and Business Services				10	7	17	16	21	37
Government Administration and Defence	11	3	14	6	0	6	11	7	18
Education	Not aseparate sector			7	13	20	7	21	28
Health and Community Services	13	26	39	4	33	37	9	26	35
Cultural and Recreational Services	25	31	56	6	5	11	6	3	9
Personal and Other Services				9	10	19	18	9	27
Non-classified/Non-stated	22	6	28	6	6	12	6	3	9
Total for All Industries	168	139	307	187	161	348	241	201	442
Share of Agriculture, Forestry and Fishery to Total Employment	7.1	5.0	6.2	7.0	4.3	5.7	2.5	6.0	4.1
Share of Top Three Sectors to Total Employment	39.9	66.2	50.2	41.7	49.1	35.1	46.1	42.3	38.9
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 1B: Employment by Industry, 1991-2001 - Yanchep									
Urban Centres/Localities	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	23	6	29	19	18	37	26	15	41
of which: Rock Lobster Fishing			--			0			6
Mining	6	0	6	25	3	28	15	6	21
Manufacturing	30	9	39	42	6	48	52	6	58
of which: Seafood Processing			--			3			0
Electricity, Gas and Water Supply	0	3	3	9	0	9	3	0	3
Construction	21	0	21	53	9	62	76	3	79
Wholesale Trade	54	39	93	17	12	29	25	10	35
Retail Trade				35	41	76	38	54	92
Accommodation, Cafes and Restaurants	Not a separate sector			13	27	40	18	37	55
Transport and Storage	28	0	28	11	3	14	16	6	22
Communication Services	3	0	3	4	0	4	4	3	7
Finance and Insurance	29	24	53	5	9	14	3	9	12
Property and Business Services				13	26	39	24	27	51
Government Administration and Defence	20	9	29	13	12	25	13	10	23
Education	Not a separate sector			15	30	45	15	34	49
Health and Community Services	29	55	84	6	36	42	13	56	69
Cultural and Recreational Services	33	33	66	16	12	28	11	8	19
Personal and Other Services				13	7	20	20	14	34
Non-classified/Non-stated	13	11	24	15	16	31	15	12	27
Total for All Industries	289	189	478	324	267	591	387	310	697
Share of Agriculture, Forestry and Fishery to Total Employment	8.0	3.2	6.1	5.9	6.7	6.3	6.7	4.8	5.9
Share of Top Three Sectors to Total Employment	40.5	67.2	50.8	40.1	40.1	31.5	42.9	47.4	34.4
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a, 2002/03 - 2004/05 - Western Australia and Perth						
	Catch (tonnes)			Estimated Value ($ '000)/c		
	2002/2003	2003/2004	2004/2005/b	2002/2003	2003/2004	2004/2005/b
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Perth	1,618	1,400	888	2,100	1,983	1,772
of which: Two Rocks/Yanchep's Share	3.5	3.2	7.3	9.1	8.0	14.4
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Perth	280	254	157	1,542	1,565	877
of which: Two Rocks/Yanchep's Share	--	--	--	--	--	--
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Perth	2,366	3,231	2,416	57,854	61,381	51,951
of which: Two Rocks/Yanchep's Share	36.4	35.4	41.8	36.4	35.4	41.8
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Perth	151	166	116	1,961	1,430	1,341
of which: Two Rocks/Yanchep's Share	5.0	2.3	3.3	1.5	1.3	1.6
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Perth	4,430	5,084	3,585	63,619	66,703	56,021
of which: Two Rocks/Yanchep's Share	19.9	21.3	27.0	33.2	32.1	38.3

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Two Rocks and Yanchep						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Two Rocks/Yanchep	688,575	525,487	526,733	787,732	1,040,631	901,422
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Two Rocks/Yanchep	789,427	712,712	689,577	716,368	794,599	809,755
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Two Rocks/Yanchep	34	32	31	33	35	34
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Two Rocks/Yanchep	88	84	90	96	100	96
(Source of Data: Department of Fisheries, Western Australia.)						

Appendix 4: Number and Purpose/a of Overnight Visits, 2001/02 - 2004/05 - Perth Metropolitan Area								
	2001/2002		2002/2003		2003/2004		2004/2005	
	Visitors	Percent	Visitors	Percent	Visitors	Percent	Visitors	Percent
Domestic Visitors								
Holiday/Leisure /b	715,500	28.1	711,500	29.0	674,500	28.6	632,000	27.2
Visiting Friends/Relatives	891,000	35.0	912,000	37.2	935,000	39.6	940,000	40.4
Business /c	686,000	27.0	580,500	23.7	530,500	22.5	546,000	23.5
Other /d	248,000	9.8	255,500	10.4	232,500	9.9	214,000	9.2
Total	2,542,500	100.0	2,450,500	100.0	2,360,000	100.0	2,325,000	100.0
International Visitors								
Holiday/Leisure	323,500	58.5	330,700	60.0	317,900	56.8	299,800	51.1
Visiting Friends/Relatives	154,000	27.9	149,100	27.0	162,900	29.1	186,400	31.8
Business	55,100	10.0	57,300	10.4	59,800	10.7	68,900	11.7
Other	50,700	9.2	49,700	9.0	52,400	9.4	63,400	10.8
Total	552,600	100.0	551,300	100.0	559,800	100.0	586,400	100.0
Total Visitors								
Holiday/Leisure	1,039,000	33.6	1,042,200	34.7	992,400	34.0	931,800	32.0
Visiting Friends/Relatives	1,045,000	33.8	1,061,100	35.3	1,097,900	37.6	112,400	3.9
Business	741,100	23.9	637,800	21.2	590,300	20.2	614,900	21.1
Other	298,700	9.6	305,200	10.2	284,900	9.8	277,400	9.5
Total	3,096,100	100.0	3,001,800	100.0	2,919,800	100.0	2,911,400	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Two Rocks and Yanchep				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Metropolitan Area	12,035	11,813	12,216	14,511
in which: Two Rocks (number)	8	12	9	20
as percent of the Metropolitan Area	0.1	0.1	0.1	0.1
in which: Yanchep (number)	14	18	11	16
as percent of the Metropolitan Area	0.1	0.2	0.1	0.1
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Metropolitan Area	31,382	32,005	1,517	20,710
in which: Two Rocks (number)	21	19	20	11
as percent of the Metropolitan Area	0.1	0.1	1.3	0.1
in which: Yanchep (number)	22	28	17	28
as percent of the Metropolitan Area	0.1	0.1	1.1	0.1
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Metropolitan Area	15,182	14,552	13,174	10,076
in which: Two Rocks (number)	9	7	15	1
as percent of the Metropolitan Area	0.1	0.0	0.1	0.0
in which: Yanchep (number)	17	9	20	14
as percent of the Metropolitan Area	0.1	0.1	0.2	0.1
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Metropolitan Area	12,464	10,886	9,081	7,237
in which: Two Rocks (number)	0	1	0	0
as percent of the Metropolitan Area	0.0	0.0	0.0	0.0
in which: Yanchep (number)	0	0	0	0
as percent of the Metropolitan Area	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Metropolitan Area	10,984	9,262	7,677	6,137
in which: Two Rocks (number)	4	7	7	1
as percent of the Metropolitan Area	0.0	0.1	0.1	0.0
in which: Yanchep (number)	7	6	4	1
as percent of the Metropolitan Area	0.1	0.1	0.1	0.0

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

FREMANTLE

1.0 GEOGRAPHIC SETTING

Fremantle (Latitude: 32°03′15″South and Longitude: 115°44′53″East) is part of the Perth metropolitan area. Located at the mouth of the Swan River, it is bounded on the west by the Indian Ocean and on the north by the Swan River. Fremantle is Western Australia's major commercial port and handles the majority of the State's imports and exports. Fremantle, with its lively multicultural and relaxed lifestyle, has long been known as Western Australia's second city.

Fremantle experiences a Mediterranean climate with cool, wet winters and hot, dry summers. Fremantle benefits from afternoon sea breezes that reduce the high temperatures experienced during the summer months. It has an average rainfall of approximately 770 millimetres per year, falling largely between May and October. The mean maximum daily temperature throughout the year is 22 degrees Celsius.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[1]

Europeans settled Fremantle in 1829 as a port service centre. It was named after Captain Charles Howe Fremantle who arrived at the Swan River Colony on May 2, 1829 on the HMS Challenger.[2] The development of Fremantle has always revolved around the city's port facilities. Its development was slow, but the use of convict labour from 1850 resulted in the settlement's expansion. By 1881, the port town was connected to Perth by rail. The first Fremantle municipal council was formed in 1883 and the Town hall was opened in 1887.

In 1897, Irish-born engineer C.Y. O'Connor deepened Fremantle harbour, establishing Fremantle as serviceable port for commercial shipping. The harbour has undergone significant upgrades over time and operates today as an efficient port. Fremantle experienced rapid growth in the 1890s following the discovery of gold in Western Australia's Goldfields Region. From a struggling port town with only a few essential public facilities, the colonial town was transformed into a vibrant and attractive Victorian port city with a thriving international port. Fremantle was declared a city in 1929.

During World War II, Fremantle was the second largest base for Allied submarines operating in the Pacific. Up to 125 American, 31 British and 11 Free Dutch Submarines operated out of Fremantle during the war.

[1] This section is based on information from *Fremantle – Where is Freo* and *Fremantle - History*, <http://www.freofocus.com/main/html/about.cfm> (cited 02 March 2007); *Fremantle*, <http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+metropolitan+suburb+names+-+T> (cited 16 March 2007) and *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999.

[2] The name Fremantle has at times and in various records been incorrectly spelt as "Freemantle". The Western Australian vernacular diminutive for Fremantle is "Freo".

Historically, Fremantle also operated as a major fishing port, with the town servicing this industry. After the war, the prospects of fishing, particularly rock lobster fishing, were bright. Disputes over the marketing of fish led to a decision by Fremantle fishers of all nationalities to form a properly organised cooperative to handle their catch directly and avoid being under the control of buyers. With just 20 members, the Fremantle Fishermen's Cooperative held their inaugural meeting in August 1947 through the efforts of Frank Ianello, Frank Del Rosso and Sergio Capellutti. Wet lining and netting were still the major industries when the Cooperative was formed.

As the fishing industry began to grow and change and post-war immigrants began to flow in increasing numbers, the fishing community at Fremantle also grew and changed. Funds became more readily available for accommodation rather than living aboard their vessels. Fishers bought houses in shares with others, as was done with their boats. The improving prosperity provided the funds required by the fishers to bring their families from overseas. The growing prosperity of the Italian, Sicilian, Yugoslav and other nationalities was not only evident in the development of fishing facilities and their communities but in the introduction of cultural events such as the blessing of the fleet, first held in Fremantle in 1948. The fleet blessing has gradually developed into a major festival, in which all denominations and fishers participate (Plates 1A and 1B).[3]

Plates 1A and 1B: The Statue of Our Lady of Martyrs and the Statue of the Madonna of Capo D'Orlando

(Source: <http://members.iinet.net.au/~oblatewa/pages/fleet.htm>, cited 24 March 2007.)

[3] First held on September 8, 1948, the Blessing of the Fishing Fleet is a well-established religious and civic tradition in the City of Fremantle. It is a reminder of the religious traditions of the Italian people, especially those from Molfetta and Capo D'Orlando. Molfetta is a sea port facing the Adriatic Sea on the south-east coast of Italy while Capo D'Orlando is a town on the north-east coast of Sicily. The two statues which are carried in the procession are representative of the two towns from which the majority of Fremantle fishermen migrated from. The Statue of Our Lady of Martyrs, the patroness of the people of Molfetta, was crafted locally by Con Samson of Subiaco. The statue was paraded through the streets of Fremantle to the Fishing Boat Harbour for the first time in 1950. In 1952, the people of Capo D'Orlando gave the tiny statue of the Madonna of Capo D'Orlando to their fellow Sicilians in Fremantle. In 1954, the Madonna di Capo D'Orlando joined the Madonna dei Martiri in procession. Whilst the Madonna dei Martiri is carried by the men, the Madonna di Capo D'Orlando is carried by young women. These two statues are housed in the Marian Chapel in the Basilica of St Patrick in Fremantle (<http://members.iinet.net.au/~oblatewa/pages/fleet.htm>, cited 24 March 2007.)

The development of the rock lobster industry brought boom times to the established centres of Fremantle and Geraldton. In addition to their traditional fishing grounds that centred on Garden Island, Rottnest Island, Direction Bank and south to Point Person, the Fremantle fleet expanded northward. In 1947, a group of Fremantle fishers explored the coast north of Fremantle and found out that rock lobsters could be caught easily in the immediate vicinity of Lancelin Island. The Fremantle fleet also expanded northward to the small anchorages of Yanchep and Ledge Point. The Fremantle Fishermen's Cooperative also installed factories and jetties in other areas such as Jurien Bay and Lancelin.

The construction and further redevelopment of the Fremantle fishing harbour from 1959-1962 enabled fishing vessels to return to safety from the hazardous anchorages along the coast. The improved harbour and the growth of support services resulted in the development of Fremantle as a major centre for the processing of rock lobsters. In the 1960s, Fremantle continued to develop as a major centre for the rock lobster fleet, particularly as a winter base for those who spent the summer months fishing from anchorages up and down the coast. The expansion also spread to other industries as another 70 rock lobster boats were built in Fremantle in 1960.

The sustained high catches and market demand throughout 1962 to 1972 created generally favourable economic conditions, enabling reinvestment in the fishing industry and funds to address many of the safety issues. Improvements in boat design, construction materials and fittings, together with accumulating experience, decreased the rate of misadventure. The replacement of older vessels with purpose-built vessels continued. Steel and aluminium became more commonly used and later in the decade, fibreglass construction began. The move to fibreglass boats was adopted enthusiastically from the mid-1970s.

In 1982, in an effort to obtain a return on discarded carapaces (heads) of lobsters, a $150,000 plant was constructed at Coogee, south of Fremantle, with the potential to produce stockfeed, fertiliser and rock lobster bait. The plant closed a year later due to complaints about the smell.

In 1983, Fremantle became a major tourist destination after Alan Bond's Australia II yacht won the Americas Cup. The Americans had been unbeaten for 132 years and, by winning the cup, Fremantle became the place to be seen! In preparation for the event, most old buildings in the city were renovated. Fremantle became a hive of excitement, businesses thrived and the local people developed a new sense of pride in their port city.

In 1986/87, Fremantle hosted the America's Cup Defence Series. As one rock lobster fisher (No. 040, 2004) commented, "Fremantle used to be a very quiet town but there had been a lot of changes since the Americas Cup. It has become very similar to Northbridge. A lot of people now come here just for a cappuccino." Rock lobster fishers seized the opportunity presented by the America's Cup defence at Fremantle to publicly protest the 10 per cent pot reduction, with about 45 rock lobster vessels forming an armada, impeding the progress of the races start-up.

Fremantle's maritime history and the distinctive nature of the port city and the creative conversions of the city's warehouses and factories resulted in an influx of private developers and residents that were more affluent. Its historic buildings and cultural activities made it a major tourist attraction. Figure 1 shows the town map of Fremantle that features the location of social and fishery-related infrastructure facilities.

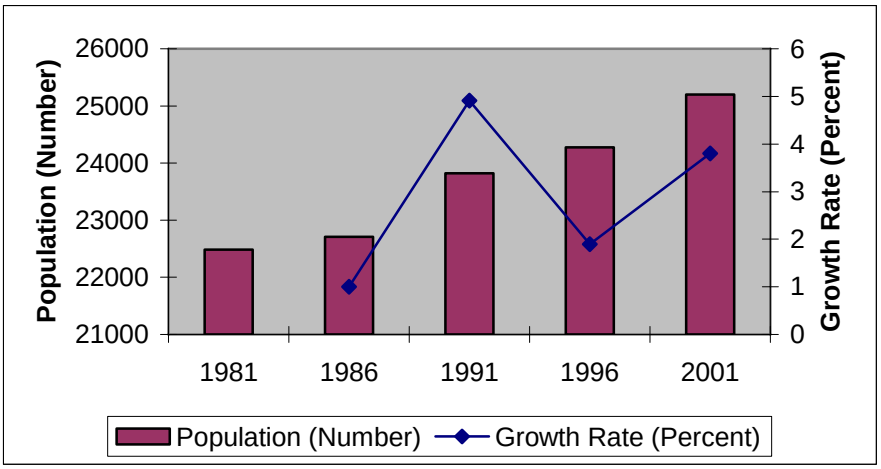
(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Fremantle, 2006

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

Fremantle has had a small but steady increase in population from 1981 to 2001.[4] As Figure 1 shows, the population growth rate has remained steady, growing by 3 per cent annually on average for the last two decades. With the redevelopment of former warehouse areas for residential use and residential infill, the population of Fremantle is forecast to gradually rise in the coming years (City of Fremantle, 2004: 2).



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981 - 2001, Fremantle

Fremantle's total resident population in 2001 stood at 24,709 persons (Table 1). Males and females are evenly distributed within the Fremantle population, with males making up 49 per cent and females accounting for 51 per cent of the population since 1996. Fremantle's overseas-born population represented 34 per cent of its total population in 1996. Most of the overseas-born population hailed from Europe, in particular southern European countries. The presence of indigenous persons in Fremantle was marginal (1%) in the 1991-2001 decade. The median age of Fremantle residents in 2001 was 40 years, an increase over the median age of 38 years in the previous Census period. This median age is higher than the Australian median age of 32 years and the Western Australian median age of 31 years.

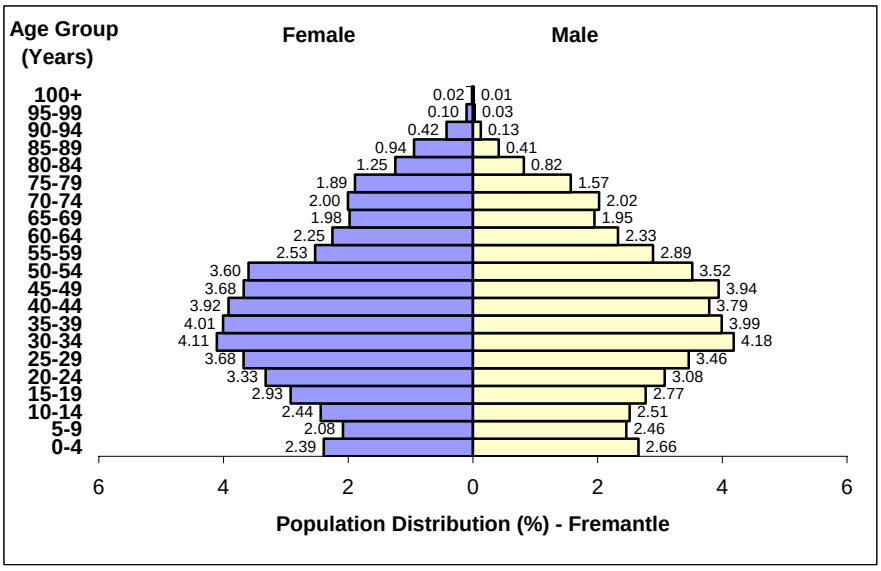
Based on the 2001 Census data, a majority of the resident population in Fremantle (56%) were Christians, with the most common being Catholics (53%) and Anglicans (29%). Close to one-fourth (23%) of the population declared no religion practiced and 12 per cent did not report their religious affiliation.

In 2001, the bulk of the population in Fremantle reported finishing Year 12 or equivalent (45 %), followed by those who finished Year 10 or equivalent (19 %). Ten per cent reported finishing Year 8, 8 per cent reported finishing Year 11 and another 6 per cent reported finishing Year 9.

[4] Census data refer to the population of Fremantle as a statistical local area (SLA). Statistical local areas are areas defined in the Australian Standard Geographical Classification (ASGC) which consist of one or more collection districts (1996 Census Dictionary). All Census data presented in this report refer to the combined data for Fremantle (Inner) and Fremantle (Remainder) SLAs.

Table 1: Population Indicators, 1991-2001 - Fremantle			
Statistical Local Area	***1991***	***1996***	***2001***
Total Resident Population	23,831	24,029	24,709
Male	11,917	11,807	12,222
Female	11,914	12,222	12,487
Population under 15 years	4,068	3,784	3,665
Population of employable age	16,267	15,936	17,126
of which: Population aged 15-19	1,627	1,401	1,435
Population over 65 years	3,496	3,709	3,918
Dependency Ratio /a	46.5	45.3	44.2
Child Dependency Ratio	25.0	22.9	21.4
Elderly Dependency Ratio	21.5	22.4	22.9
Median Years	38	38	40
% of Overseas Born	37.3	35.2	33.9
% of Indigenous Population	1.3	1.2	1.4
/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

Figure 3 presents the population distribution by age for Fremantle. The largest proportion of the population is aged between 30 and 50 years. This aging or maturing population is reflected in Fremantle's dependency ratio that is higher than the Western Australian ratio.[5] In terms of household configuration, there is a higher proportion of 'couple families without children' in Fremantle in 2001 compared to previous years (Table 2). The number of 'couple families with children' has decreased, while the number of one-parent families registered an increase.



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Fremantle

[5] Used as a measure of the dependence that non-working people have on working people, the dependency ratio is defined as the number of children (0-14 years) and elderly people (over 65 years) for every 100 people of working age (15-64 years).

Table 2: Family and Household Characteristics, 1991-2001 - Fremantle			
Statistical Local Area	***1991***	***1996***	***2001***
Couple Family with Children	2,476	2,311	2,279
Couple Family without Children	2,055	2,230	2,517
One Parent Family	1,056	1,106	1,214
Other Family	148	131	147
Total	5,735	5,778	6,156
Proportion of Couple Families with Children to Total Families	43.2	40.0	37.0
Proportion of Couple Families without Children to Total Families	35.8	38.6	40.9
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.2 DWELLING CHARACTERISTICS

Table 3 shows that the majority of Fremantle's housing stock in 2001 is made up of separate houses (62%). For the same period, there were also a large number of flats, units, apartments and semi-detached dwellings. Since 1996, most of the occupied private dwellings in Fremantle are rented dwellings, with their number slightly higher than fully owned dwellings. The median weekly rent has increased marginally over the 1991 level. Ten per cent of the private dwellings in the Fremantle area in 2001 were unoccupied.

Table 3: Dwelling Characteristics, 1991-2001 - Fremantle			
Statistical Local Area	***1991***	***1996***	***2001***
Occupied Private Dwellings	9,170	10,136	10,904
By Structure			
Separate House	6,093	6,398	6,764
Semi Detached	1,769	1,965	2,396
Flat, Unit or Apartment	1,038	1,456	1,460
Other /a	192	183	226
Not Stated	78	134	58
By Tenure			
Fully-Owned	3,504	3,661	3,722
Being Purchased	1,845	2,120	2,494
Rented	3,259	3,844	3,776
Other	562	53	241
Not Stated		458	611
Unoccupied Private Dwellings	782	953	1,198
Median Monthly Housing Loan Repayments	$476-$550	n.a.	$800 - $999
Median Weekly Rent	$78-$107	n.a.	$100 - $149
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

Fremantle's unemployment rate is slightly higher than the State and National averages, with the male unemployment rate being higher than females (Table 4). Nevertheless, the unemployment rate has decreased over the ten-year period by over 8 per cent. Close to 11,000 people were employed in Fremantle in 2001, with more than 60 per cent employed on a full time basis and 38 per cent in part-time employment. There are more males in the workforce in Fremantle than females, a trend that is in line with the state and national data. The median weekly wage for individuals has increased to $300-399 in 2001, while household weekly income has risen to $600-699 (Table 5).

Table 4: Employment Indicators, 1991-2001 - Fremantle

Statistical Local Area	*1991*	*1996*	*2001*
Employed	9,045	10,062	10,907
Male	5,016	5,389	5,655
Female	4,029	4,673	5,252
Full Time	5,791	6,390	6,490
Male	3,762	4,043	3,994
Female	2,029	2,347	2,496
Part Time	2,679	3,449	4,127
Male	943	1,241	1,492
Female	1,736	2,208	2,635
Not Stated	575	223	290
Male	311	105	169
Female	264	118	121
Unemployed	2,023	1,403	1,219
Male	1,304	862	790
Female	719	541	429
Total Labour Force	11,068	11,465	12,126
Male	6,320	6,251	6,445
Female	4,748	5,214	5,681
Unemployment Rate (in percent)	18.3	12.2	10.1
Male	20.6	13.8	12.3
Female	15.1	10.4	7.6
Labour Force Participation Rate	56.0	56.6	57.6
Male	64.0	63.3	62.6
Female	48.0	50.3	52.9

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Table 5: Individual, Family and Household Incomes, 1991-2001 - Fremantle			
Statistical Local Area	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$8,001-$12,000	$200-299	$300 - $399
Median Income for Families	$25,001-$30,000	n.a.	$800 - $999
Median Income for Households	$20,001-$25,000	$500-699	$600 - $699
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[6]

Of the 113 residents surveyed in Fremantle, 42 per cent have lived there for more than 15 years and at least 7 out of 10 respondents expect to remain living in Fremantle for a further five years. Almost 9 out of 10 respondents rated Fremantle as a 'good' or 'excellent' place to live Figure 4). As one Focus Group participant noted, "Fremantle is a fantastic community and lovely place to live in. It's a vibrant place and has a colourful, rich and interesting mix of residents with different ethnic backgrounds" (Focus Group Notes, 2006). Despite this high rating, only 53 per cent of surveyed respondents reported having 'strong to very strong attachment' to the community (Figure 5). This may be because Fremantle is a larger and more metropolitan area. When asked about the levels of neighbourhood connection, the majority of the respondents indicated that 'they know only a few people in the neighbourhood' and that 'they only run into people they know while shopping some of the time'.

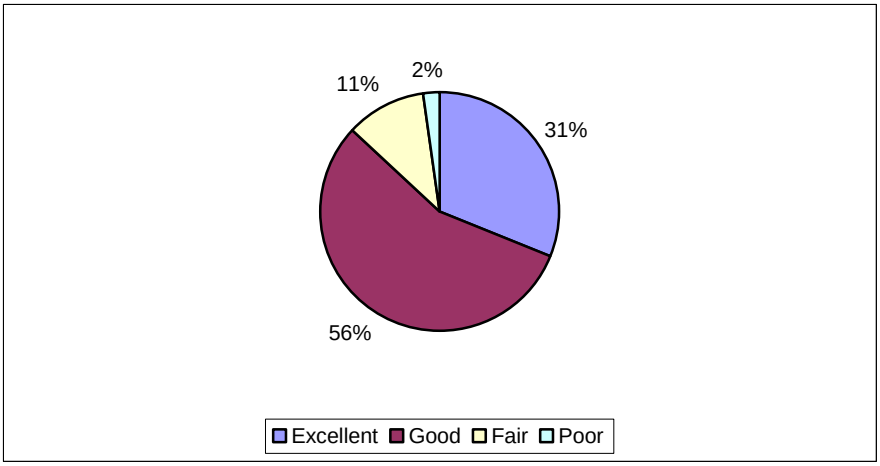


Figure 4: Respondents' Perception of Fremantle as a Place to Live

[6] This section is based on the results and analysis of the responses of 113 community residents who participated in a telephone survey conducted in late 2005 and 7 interviews conducted during the same period. Surveyed respondents were mostly born in Australia and New Zealand (66%) and lived in separate houses (86%). The respondents either fully owned their houses (43%) or were paying off the mortgage (44%). Twenty-five per cent of respondents constitute older families with children mainly 15 years and older and 20 per cent were mature singles. Twenty-four per cent have Bachelor or Honours Degrees and 18 per cent finished Year 12 schooling. The analysis also incorporates the results of the focus group discussion held in Fremantle in February 2006 attended by 8 participants and the community workshop held in August 2006 attended by 4 participants.

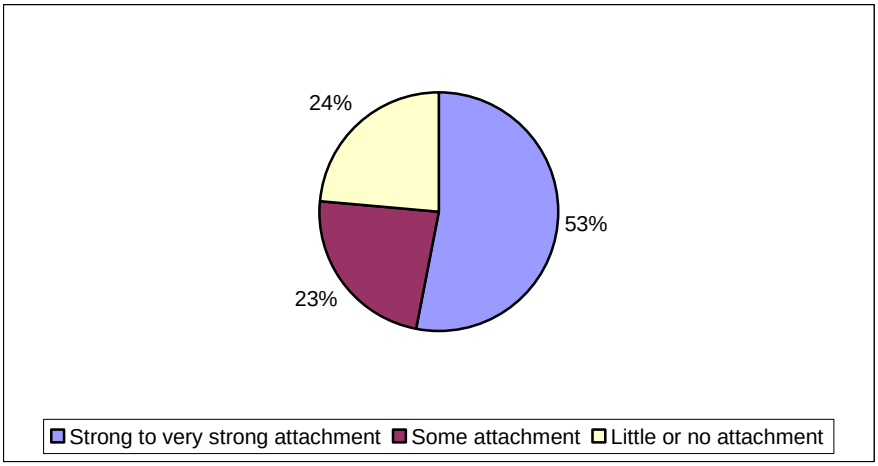


Figure 5: Respondents' Attachment to Fremantle

Surveyed respondents reported the river, lifestyle and family are among the main reasons cited for choosing to live in Fremantle (Figure 7). One rock lobster fisher (No. 190, 2005) noted that, "Once you have lived in Fremantle and become a part of the community, it's a place that will be hard to move away from." It was also recognised that "Fremantle is unique in that the city centre is so close to the working harbour" (FGD Notes, 2006).

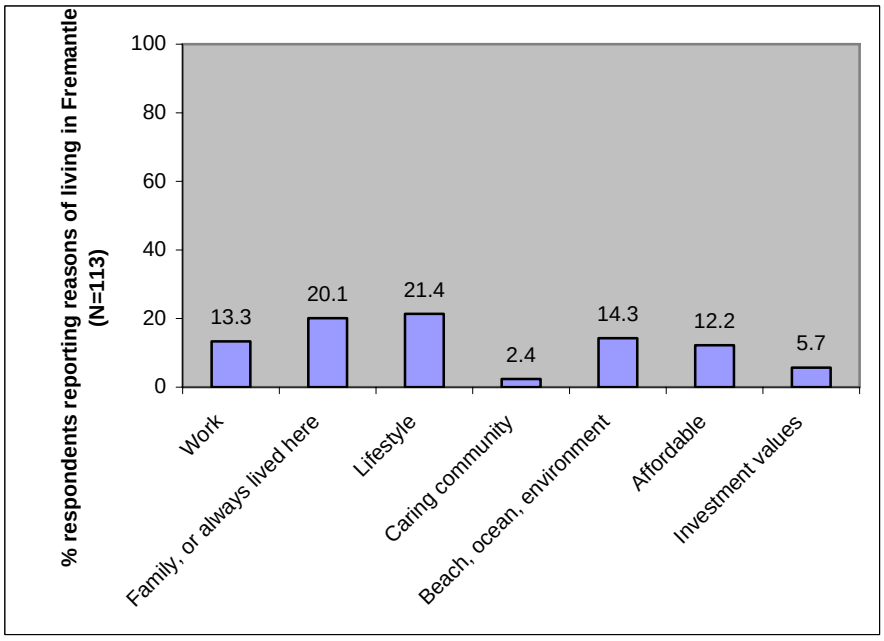


Figure 6: Reasons for Living in Fremantle

Participation in local organisations reported by the community residents was varied (Figure 8). Respondents reported higher participation rates in sports or recreation groups (35%), school groups (30%), cultural and educational or hobby groups (22%), and religious groups (19%).

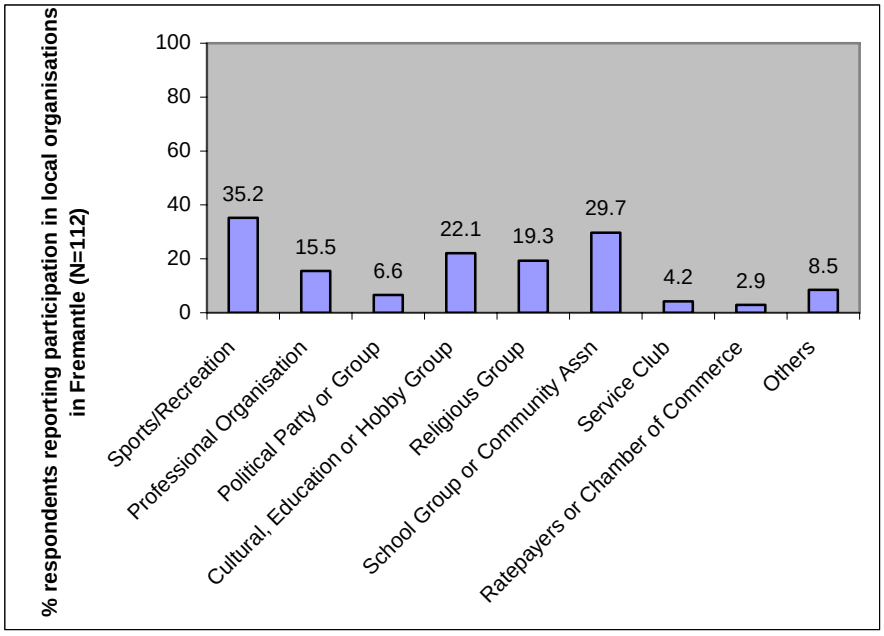


Figure 7: Participation in Local Organisations in Fremantle

Overall, Fremantle residents perceive their community as a cohesive community (Figures 8A and 8B).[7] Respondents generally agree that Fremantle is friendly to newcomers. Nevertheless, there was also recognition that "the mix of nationalities living in Fremantle gives it diversity but also brings in a bit of competition" (Interviewee No. 033, 2004). While the surveyed respondents reported general agreement that "there is strong local support for community events, only 60 per cent of community residents indicated they have attended at least one local event. About a third of the respondents indicated that many people would contribute both time and money to community projects.

Participants of the Focus Group discussion held in Fremantle gave credit to the contribution of fishing in general, and rock lobster fishing in particular, to the multicultural activities and lifestyle that had become part of Fremantle. It was noted that, "The fishing industry still has events that draw crowds to Fremantle such as the Blessing of the Fleet, the Sardine Festival and Portuguese Club events" (FGD Notes, 2006).

[7] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <*http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf*> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

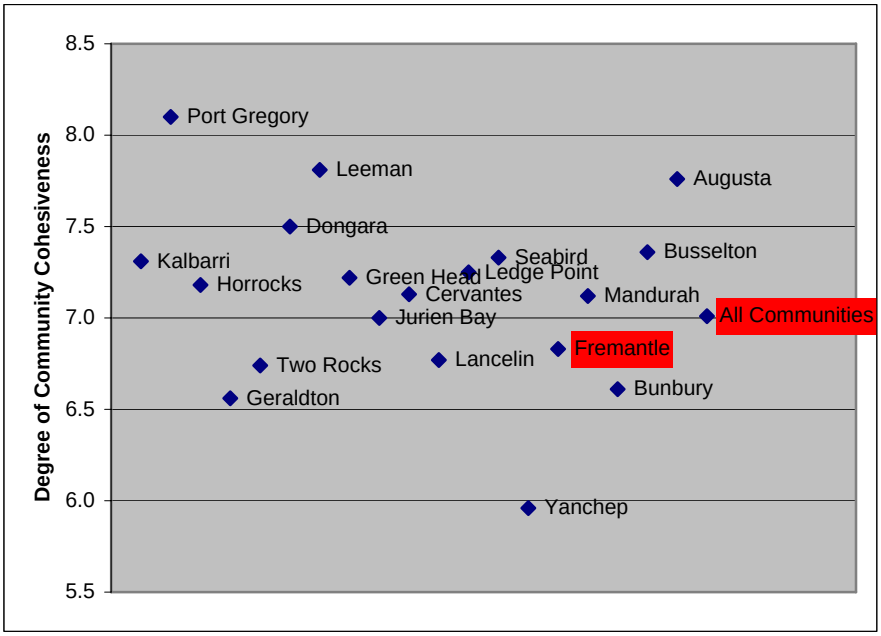


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

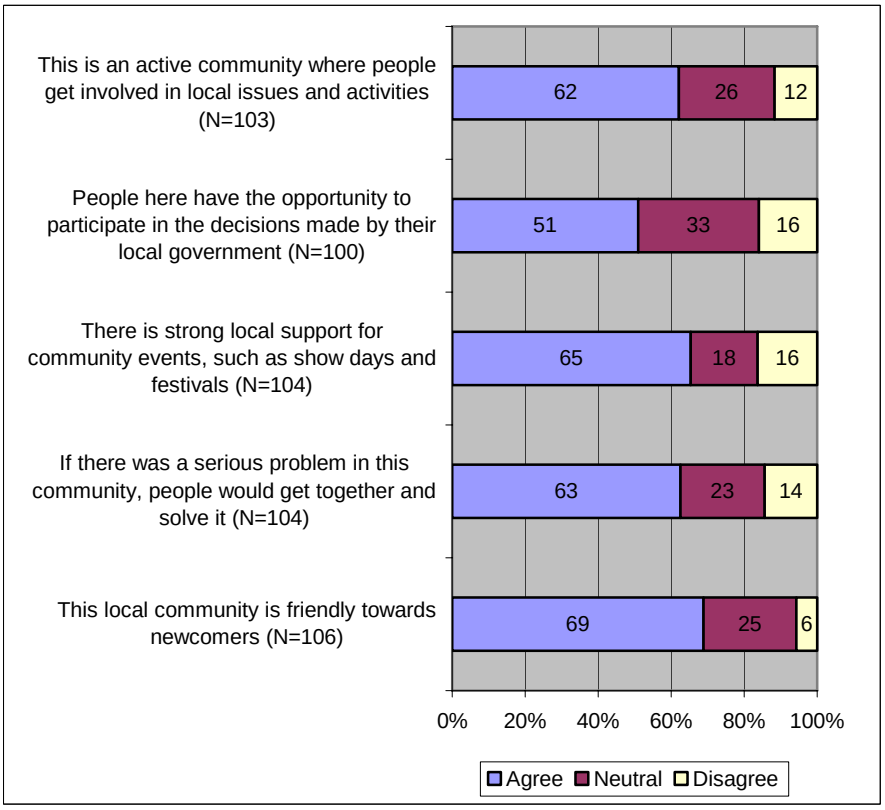


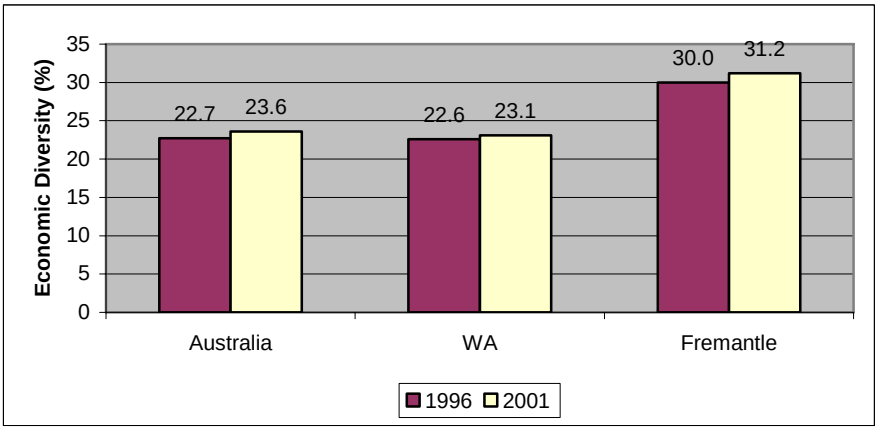
Figure 8B: Perceptions of Community Cohesiveness, Fremantle

4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

The largest industry divisions that provided employment in Fremantle in 2001 were the health and community services sectors, reflecting Fremantle's function as a major regional centre for health, culture and entertainment (Appendix 1). Other industries that provide employment to Fremantle residents included retail trade, property and business services, and education. It is worth noting that Fremantle has a number of public and private primary and secondary schools, with specialty courses that attract students from surrounding areas. Fremantle is home to the Western Australian Maritime College and the Notre Dame University of Western Australia. Manufacturing is also a significant employer, with many Fremantle residents working in the Kwinana industrial areas.

With its diverse infrastructure established through decades of investment, Fremantle has become home to a number of important economy-driving industries including freight and logistics, fishing and maritime industries, education, tourism and retail.[8] As Figure 9 shows, the Fremantle economy compared well in terms of economic diversity with the Australian and Western Australian economies.[9] The education, business services and health services industry subdivisions were major employers in both 1996 and 2001. Local businesses were set up by residents over time. One rock lobster fisher (No. 040, 2004) noted that, "In the early days, fishers came out here and in partnership with other people, bought and established their own local businesses."



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Fremantle

[8] For details, please refer to *The Chelsea Project: West End Business Report*, Department of Transport and Regional Services, WA Government, City of Fremantle.

[9] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

4.1.1 Fishing

Fishing has long been a major industry in Fremantle. Many Southern European migrants found work in the fishing industry that had developed into a lucrative industry. Major infrastructure improvements to the fishing boat harbour resulted from the 1987 America's Cup Defence. These included the construction of Challenger Harbour adjacent to the Fishing Boat Harbour catering for syndicates participating in the Americas Cup, which have now been modified to cater for recreational vessels (<http://www.dpi.wa.gov.au/boatharbour/2921.asp.> cited 24 March 2007).

The Fishing Boat Harbour has its origins based on the fishing industry (Plates 2A and 2B). Its development started with a single jetty for the discharge of fishers catch before they proceed to the inner harbour for anchorage. In 1962 a southern breakwater was constructed to provide a larger sheltered mooring area, increased wharf space, an additional service jetty and a dinghy mooring area. Waterfront land was also provided for fish processing companies and various service industries. Between 1969 and 1972, pens were constructed to house 120 fishing boats. In 1982, land was reclaimed and the first stage of the boat lifting facility was constructed. This facility is now the major fishing and marine industry refit site in the state, with boats using the facility for their annual refits and surveys.

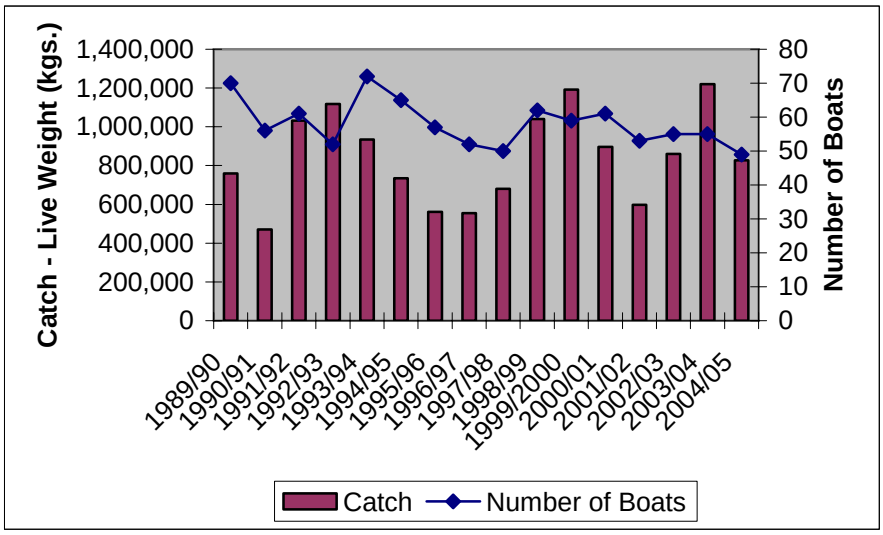
Like Geraldton, Fremantle has had a long association with the commercial fishing industry. The total estimated value of fish products taken by the 'wild capture fisheries' landed in Fremantle constituted between 43 and 46 per cent of the total catch landed in the entire Perth region (Appendix 2). In addition to the Western Rock Lobster Fishery, commercial fishing activities in Fremantle include western king prawns and saucer scallops, blue swimmer crabs, finfish species and demersal scalefish (Department of Fisheries, 2005).

Plates 2A and 2B: Jetty 2 and Jetty 3, Capo D'Orlando Drive, Fremantle

(Source: http://www.dpi.wa.gov.au/boatharbour/2847.asp cited 24 March 2007.)

Rock lobsters landed in Fremantle account for close to 40 per cent of the value of rock lobsters for the Perth region. Since 1989/90, there has been a decreasing number of rock lobster vessels located at Fremantle, from a high of 70 boats in 1993/94 to 50 boats operating in 2004/05 (Figure 10). The volume of rock lobster catch landed in Fremantle has also fluctuated over this period. The Fremantle fleet directly employed 10 per cent of the total

number of persons engaged in the rock lobster fishery and close to 20 per cent of the total employed in the C Zone of the fishery (Appendix 3).[10]

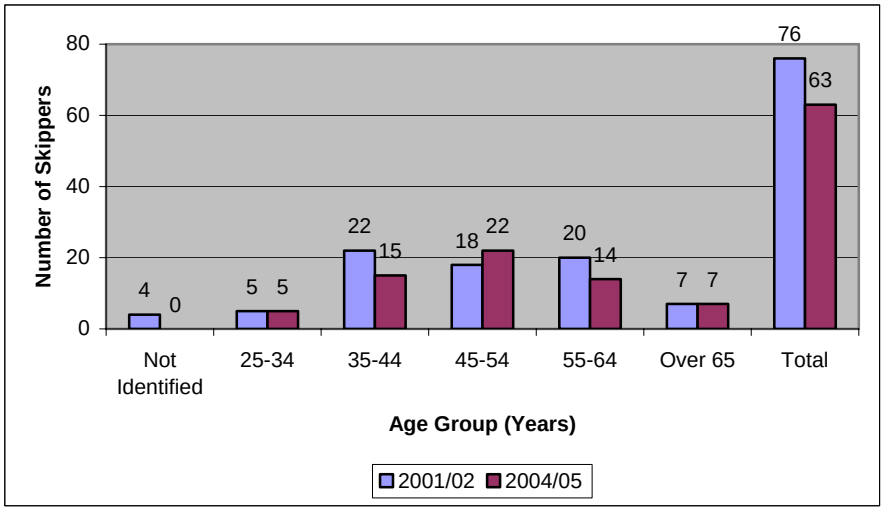


(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 – 2004/05, Fremantle

Between 1991/92 and 2004/05, the number of people working directly in rock lobster fishing in Fremantle has only decreased by 23 individuals. However, the number of skippers residing in Fremantle has gone down from 76 in 2001/02 to 63 in 2004/05. One rock lobster fisher (No. 033, 2004) noted that, "A lot of fishers got out of the fishery in 2004 because with the pot reduction, they were effectively working 20 per cent below capacity. They couldn't pay their bills and had to sell their boats and/or downsize their operations." In terms of age distribution, close to 60 per cent of Fremantle-based skippers are between the ages of 35 and 54 years (Figure 11). About a third of skippers for the same period belong to the 55 years and over category.

[10] The number of boats licensed to fish for rock lobsters in the various zones are carefully controlled. Provided certain conditions are met, boat/license owners are able to transfer their pot entitlements between fishing zones (A, B or C zones). The zones are defined as follows: Zone A – Abrolhos Islands; Zone B – coastal fishery from 21°44'S to 30°S excluding the A zone; Zone C – the waters between 30° south latitude and 34°24' south latitude excluding all waters on the south coast east of 115°8' east longitude; and Big Bank (Department of Fisheries, 2002: 5).



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Fremantle, 2001/02 and 2004/05

In terms of mobility, a majority of Fremantle fishers normally fish close to home but some fishers fish most of the year and stay in places like Seabird, Ledge Point, Lancelin and Cervantes (Community Workshop Notes, 2006). A number of factors affect this mobility and as rock lobster fishers noted:

> *I do not like staying away because my family lives here. I do not think you have to go fish up the coast because you can still make a living out of Fremantle (Interviewee No. 040, 2004).*
>
> *Some boats go to Two Rocks or outside of Mandurah but the boats always go back to Fremantle. It's just how some people prefer it. This way, they don't have to pay pen fees at two different ports (Community Workshop Notes, 2006).*
>
> *If you don't catch crays, you haven't got a job next week because the owners are involved and outside forces are forcing you. If you don't maintain high catch rates, you are out the door and if your boss rings you and says they are killing them down at Jurien Bay, you'll be there tomorrow and if you don't want to go, someone else will be on the boat tomorrow and you can stay at home. Or if you are at Jurien and they are catching them in Augusta, you go tomorrow regardless of the situation or where you live, you have to do what the boss tells you and that's when dangerous things start to come into the industry (Interviewee No. 033, 2004).*

On their perceptions of the rock lobster industry, residents in Fremantle have lower ratings of agreement that 'the rock lobster industry is a good source of employment' and that 'the decline in rock lobster boats has had a negative impact on local businesses' (Figure 12). This may be due to the fact that while culturally, fishing is regarded as an important feature of Fremantle's community identity, the fishing industry only directly employed 2 per cent of Fremantle's labour force in 2001 (Appendix 1). There is, however, recognition by the business community of the important contribution the rock lobster fishery makes to Fremantle's economy, to wit (FGD Notes, 2006):

The crayfishing industry has pumped a lot of money into the local economy. There have been many boats built in Fremantle and most of the boat building companies in town made their mark with crayboats. There are also a number of marine maintenance companies that have benefited.

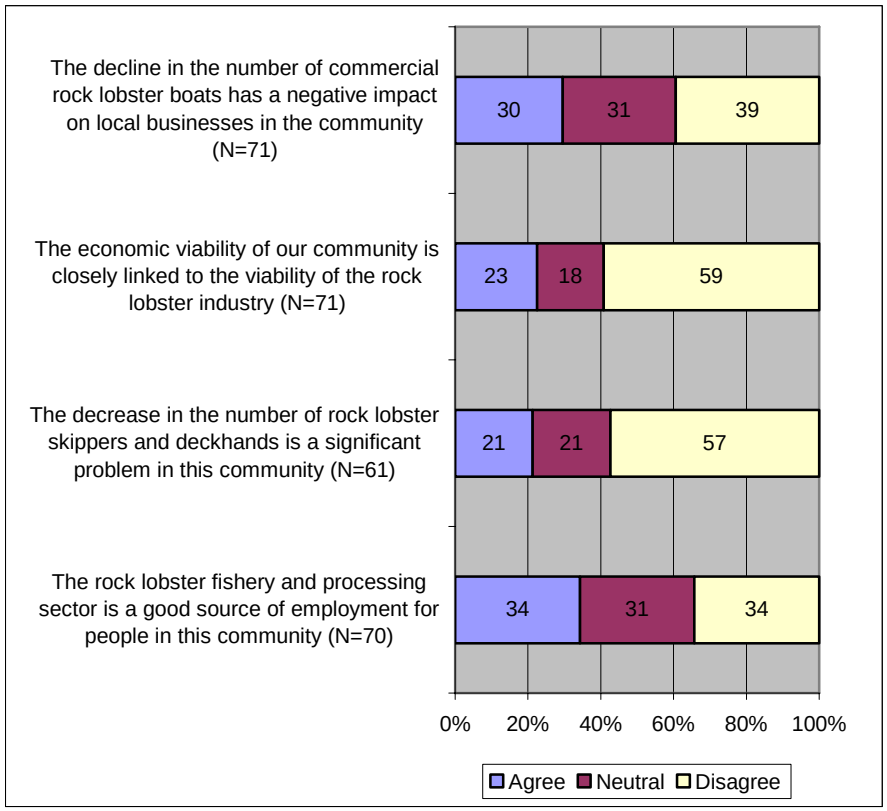


Figure 12: Perceptions of the Rock Lobster Industry, Fremantle

On the response to the question of whether they would encourage young people to be involved in rock lobster fishing, close to 40 per cent of the respondents indicated they will do so (Figure 13). About the same percentage indicated they would not.

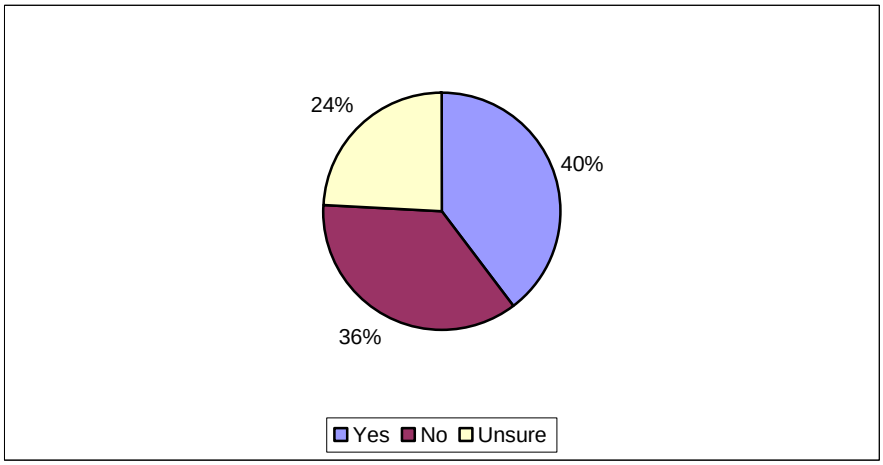
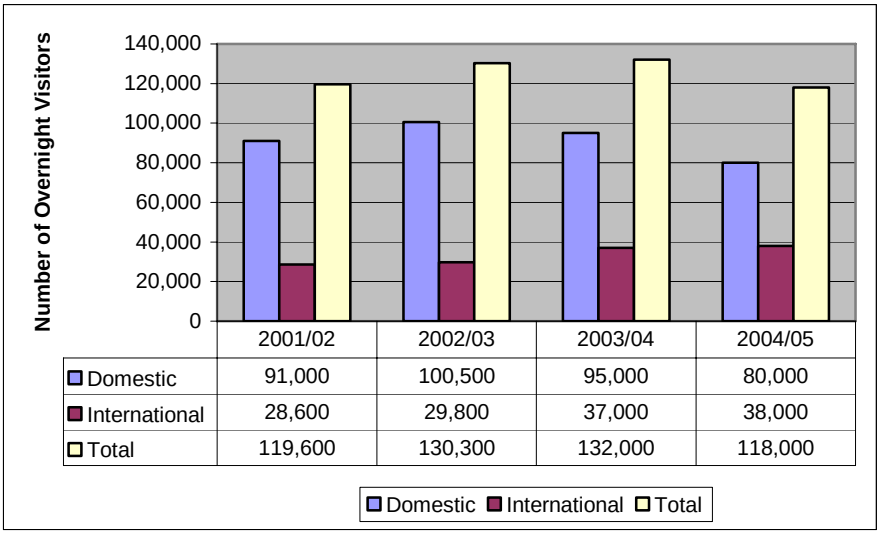


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Fremantle

4.1.2 Tourism

Fremantle has a growing tourism industry that is becoming an important industry for its economic viability. Fremantle has a unique cultural heritage and has developed many tourist attractions including: the Maritime Museum; Fremantle prison tours; heritage tours; Fremantle markets; coffee strip; E-Shed markets; retail attractions; and night life attractions. Large ranges of accommodation facilities have been built to service the tourist industry. Fremantle's close location and easy access to Perth has enabled tourism operators in Fremantle to attract day visitors and international tourists. Domestic tourism has slightly decreased since 2001/02; however, international overnight visitors to Fremantle have increased (Figure 14). Many international tourists who visit Fremantle come for a holiday and leisure time, as opposed to the greater majority of domestic visitors who come to visit with family, friends and relatives (Appendix 4). Close to 60 per cent of surveyed community respondents were generally in agreement that Fremantle has greater tourist potential (Figure 15). One rock lobster fisher (No. 040, 2004) noted that, "Fremantle has grown into a very nice city and it is attracting lots of tourists."



	2001/02	2002/03	2003/04	2004/05
Domestic	91,000	100,500	95,000	80,000
International	28,600	29,800	37,000	38,000
Total	119,600	130,300	132,000	118,000

(Source of Data: Tourism Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 – 2004/05, City of Fremantle

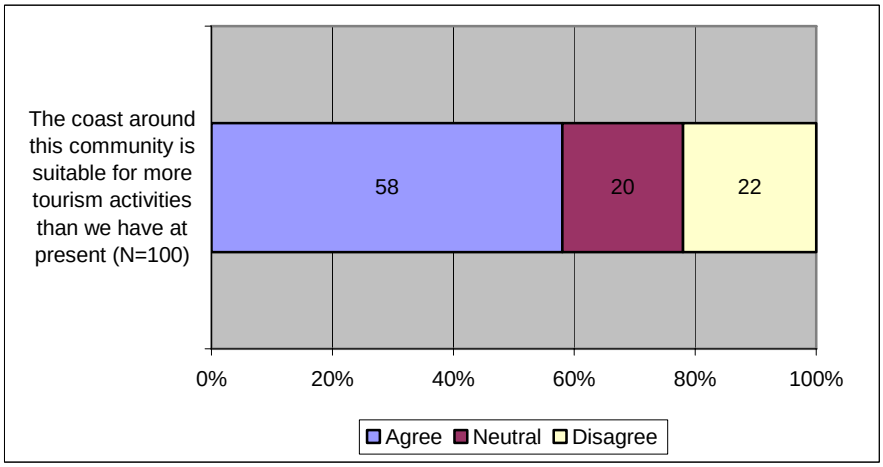


Figure 15: Perceptions of Tourism Potential, Fremantle

4.1.3 Business and Commerce

Fremantle Port is one of Western Australia's major individual generators of jobs and revenue (Fremantle Port, 2000: 1). It is estimated that each ship that visits the Port represents 3.3 full time jobs. The Port's activity accounted for 5,700 full time direct and flow-on jobs. The total annual economic output from the town is $728 million. Many businesses in Fremantle service this large industry. Businesses servicing the fishing industry also account for significant employment in Fremantle.

In the West End of Fremantle, there are a number of industries with potential for expansion from both value and supply chain perspectives. These include: accommodation services; mineral and resources; professional services, including legal; fashion; film/multimedia; and creative arts/design.

There are industrial precincts in and adjacent to Fremantle that offer a wide range of options for businesses intending to relocate to the area. These include the South Fremantle area and the Robb's Jetty area as well as the Kwinana Industrial area and the O'Connor Industrial estate.

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport

As a major port, road and rail transport networks service Fremantle. Fremantle has a well-maintained network of local roads and a passenger rail system connecting Fremantle to Perth.

Fremantle has a number of marinas for small recreational craft and large recreational craft, facilities for fishing vessels and facilities for major commercial and shipping liners to dock.

4.2.2 Water and Electricity

Fremantle residents have secure access to water and energy. It is connected to the greater metropolitan scheme, with the Water Corporation and Western Power responsible for these utilities. Many of the large manufacturing operations in South Fremantle, Cockburn and Kwinana have their own power plants, along with their own water recycling schemes.

4.2.3 Communications

Fremantle residents have good access to land based telephone lines and mobile coverage. A number of telephone service providers service Fremantle, offering residents a range of services and prices. Fremantle residents can also access the internet, including ADSL and Broadband services.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

The Strategic Plan of the City of Fremantle outlines the city's visions of a vibrant economy, with a focus on heritage and tourism (City of Fremantle, 2000). The City's management team is committed to the continuous improvement and building on the unique and diverse character

of Fremantle. The City of Fremantle supports arts, leisure and volunteers centres, a library and a recreation centre. Services are also provided to the suburbs of Fremantle, namely, Beaconsfield, East Fremantle, Hilton, North Fremantle, O'Connor, Samson, South Fremantle and White Gum Valley.

4.3.2 Education and Health

There are 13 primary and 4 secondary schools in Fremantle. Of the total population in Fremantle, a fifth attended some kind of educational institution in 2001. Fremantle has a high tertiary enrolment rate compared to other costal cities in Western Australia. This can be accounted for by the close proximity of Fremantle to metropolitan tertiary institutions. The University of Notre Dame campus and the Western Australian Maritime College are located in Fremantle. There has been a significant increase in the proportion of the population that has technical or tertiary level education since 1991, from 15 per cent to 27 per cent of the population.

Fremantle Hospital is one of three tertiary general public teaching hospitals in Western Australia. Services administered from Fremantle Hospital include: Woodside Maternity Hospital (East Fremantle), the Rottnest Island Nursing Post, and Fremantle Community Health Services which delivers a broad range of services in clinics and in primary and secondary schools throughout the region. Fremantle Hospital is a 24-hour acute-care public teaching hospital. There are 450 beds across the campuses, including a 66 bed psychiatric and psycho-geriatric service. The Fremantle Community Health Service provides residents with child health and community health services. The private medical system in Fremantle consists of Kaleeya Hospital and the Attadale Maternity Hospital. There are also a number of private medical practices providing general healthcare specialist services. A large range of complementary and eastern medicine health care services are also available in Fremantle.

4.3.3 Law and Order

The Fremantle Police Station services the surrounding suburbs of North Fremantle, East Fremantle, Beaconsfield, South Fremantle, Hilton, O'Connor, Samson, Fremantle, Leighton and White Gum Valley. The Station also supports a Detective division. The Fremantle Police Station operates 24 hours a day with the general office open during normal business hours.

As a large area of the greater metropolitan region of Perth, Fremantle has a high rate of crime. Compared with the Greater Metropolitan district, Fremantle accounts for 3 per cent of all reported assaults, 2-3 per cent of the stolen vehicles and approximately 1.5 per cent of burglary crimes (Appendix 5).

Appendix 1: Employment by Industry, 1991-2001 - Fremantle									
Statistical Local Area	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	90	39	129	92	34	126	98	42	140
of which: Rock Lobster Fishing			--			9			33
Mining	68	3	71	73	23	96	130	44	174
Manufacturing	892	307	1,199	857	298	1,155	855	269	1,124
of which: Seafood Processing			--						
Electricity, Gas and Water Supply	52	9	61	38	13	51	33	19	52
Construction	420	78	498	550	80	630	534	95	629
Wholesale Trade	851	764	1,615	362	163	525	320	168	488
Retail Trade				567	647	1,214	616	760	1,376
Accommodation, Cafes and Restaurants	Not a separate sector			243	335	578	281	377	658
Transport and Storage	390	121	511	285	110	395	266	118	384
Communication Services	52	18	70	58	34	92	79	38	117
Finance and Insurance	405	405	810	84	151	235	93	152	245
Property and Business Services				636	480	1,116	775	588	1,363
Government Administration and Defence	254	165	419	256	182	438	260	256	516
Education	Not a separate sector			399	716	1,115	443	784	1,227
Health and Community Services	740	1,331	2,071	287	873	1,160	345	1,046	1,391
Cultural and Recreational Services	310	450	760	167	173	340	192	164	356
Personal and Other Services				180	202	382	188	192	380
Non-classified/Non-stated	459	319	778	256	175	431	161	129	290
Total for All Industries	4,983	4,009	8,992	5,390	4,689	10,079	5,669	5,241	10,910
Share of Agriculture, Forestry and Fishery to Total Employment	1.8	1.0	1.4	1.7	0.7	1.2	1.7	0.8	1.3
Share of Top Three Sectors to Total Employment	49.8	63.5	53.8	38.2	47.7	35.0	39.6	49.4	37.9
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/a, 2002/03 - 2004/05 - Western Australia and Perth						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Perth	1,618	1,400	888	2,100	1,983	1,772
of which: Fremantle's Share (%)	91.6	92.6	87.3	81.2	84.3	77.9
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Perth	280	254	157	1,542	1,565	877
of which: Fremantle's Share (%)	90.6	85.1	76.9	92.7	89.7	82.4
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Perth	2,366	3,231	2,416	57,854	61,381	51,951
of which: Fremantle's Share (%)	39.8	41.5	38.4	39.8	41.5	38.4
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Perth	151	166	116	1,961	1,430	1,341
of which: Fremantle's Share (%)	82.6	92.1	90.7	71.5	79.2	71.5
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Perth	4,430	5,084	3,585	63,619	66,703	56,021
of which: Fremantle's Share (%)	65.3	63.7	59.0	44.1	46.3	42.6

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Fremantle						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Fremantle	1,031,991	554,127	598,343	859,660	1,219,995	827,188
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Fremantle	1,128,375	678,585	738,682	738,163	783,246	620,480
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Fremantle	61	52	53	55	55	49
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Fremantle	177	163	166	179	172	154
(Source of Data: Department of Fisheries, Western Australia.)						

Appendix 4: Number and Purpose/*a* of Overnight Visits, 2001/02 - 2004/05 - City of Fremantle								
	2001/2002		***2002/2003***		***2003/2004***		***2004/2005***	
	Visitors	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***	***Visitors***	***Percent***
Domestic Visitors								
Holiday/Leisure /b	37,500	41.2	53,000	52.7	39,000	41.1	28,000	35.0
Visiting Friends/Relatives	2,900	3.2	28,000	27.9	32,500	34.2	33,500	41.9
Business /c	20,000	22.0	13,000	12.9	16,000	16.8	14,000	17.5
Other /d	5,000	5.5	5,000	5.0	5,500	5.8	3,000	3.8
Total	91,000	100.0	100,500	100.0	95,000	100.0	80,000	100.0
International Visitors								
Holiday/Leisure	23,800	83.2	21,600	72.5	25,300	68.4	25,800	67.9
Visiting Friends/Relatives	2,600	9.1	4,200	14.1	6,400	17.3	7,300	19.2
Business	1,800	6.3	2,900	9.7	4,300	11.6	4,300	11.3
Other	900	3.1	1,700	5.7	1,700	4.6	1,700	4.5
Total	28,600	100.0	29,800	100.0	37,000	100.0	38,000	100.0
Total Visitors								
Holiday/Leisure	61,300	51.3	74,600	57.3	64,300	48.7	53,800	45.6
Visiting Friends/Relatives	31,600	26.4	32,300	24.8	38,900	29.5	40,800	34.6
Business	21,800	18.2	15,900	12.2	20,300	15.4	18,300	15.5
Other	5,900	4.9	6,700	5.1	7,200	5.5	4,700	4.0
Total	119,600	100.0	130,300	100.0	132,000	100.0	118,000	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Fremantle				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Metropolitan Area	12,035	11,813	12,216	14,511
in which: Fremantle (number)	388	445	429	428
as percent of Metropolitan area	3.2	3.8	3.5	2.9
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Metropolitan Area	31,382	32,005	1,517	20,710
in which: Fremantle (number)	306	254	274	302
as percent of Metropolitan area	1.0	0.8	18.1	1.5
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Metropolitan Area	15,182	14,552	13,174	10,076
in which: Fremantle (number)	232	194	232	239
as percent of Metropolitan area	1.5	1.3	1.8	2.4
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Metropolitan Area	12,464	10,886	9,081	7,237
in which: Fremantle (number)	82	74	51	52
as percent of Metropolitan area	0.7	0.7	0.6	0.7
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Metropolitan Area	10,984	9,262	7,677	6,137
in which: Fremantle (number)	211	186	188	192
as percent of Metropolitan area	1.9	2.0	2.4	3.1

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

MANDURAH

1.0 GEOGRAPHIC SETTING

Mandurah is a coastal city in the south west (Latitude: 32° 32' South and Longitude: 115° 43' East) located 72 kilometres south of Perth. Its administrative area covers 173.5 square kilometres and forms a narrow, curving band less than ten kilometres wide. It is flanked by the Indian Ocean to the west and for most of its length by the Peel-Harvey Estuary to the east. Mandurah's coastal environment is heavily modified in parts to support artificially created canal systems that extend southward from the Peel Inlet. The City of Mandurah and the Shires of Boddington, Murray, Serpentine-Jarrahdale and Waroona constitute the Peel Region, an area covering nearly 5,500 square kilometres.

The climate reflects a Mediterranean environment with cool and wet winters and hot and dry summers. Rainfall is largely concentrated between the months of May to September occurring over an average of 119 rainfall days per year.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITE[1]

The establishment of the Swan Colony in 1829 paved the way for the initial European settlement of the Peel Region in general and Mandurah in particular, under the Peel Settlement Scheme. Prior to European settlement, the earliest known inhabitants of the area were Aborigines of the Pindjarup dialect group of the Noongar people. The Peel Settlement Scheme encountered resistance from the aboriginal inhabitants of the area and at its start-up was poorly administered and inadequately supplied.

Under the land settlement scheme, Thomas Peel who had secured a 250,000 acre land grant was forced to forfeit his grant due to his late arrival along with workmen, equipment and stores as a result of many mishaps and Peel's continual ill health. The land was originally reserved for a town site to be named "Peel" on the west side of the entrance to Peel Inlet in July 1831 but no development took place in this area as most early settlers took up residence on the east shore. The Aboriginal name for the area was Mandurah, a name believed to have been derived from the aboriginal word 'Mandjar', meaning 'meeting place'.[2]

Together with Peel who named his residence "Mandurah House", a few early settlers established small farms in Mandurah. At that time, Mandurah was a day's journey by sea or two or more days by horse and cart, traveling across very rough country to the Swan Settlement. It thus remained isolated until 1850 when a road was built and a ferry punt was constructed across the estuary. With this development, the early inhabitants preferred to settle

[1] This section is based on information from *City's History*, <http://www.mandurah.wa.gov.au/council/history> (cited 14 June 2005); *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999; *Peel Geographic Perspective*, Department of Land Administration and Peel Development Commission, 2003; and *Mandurah*, < http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+country+town+names+-+m > (cited 16 March 2007).

[2] In some instances, the aboriginal word *Mandjar* is given the meaning of 'trading place'.

in the inland regions of Murray due to the poor resources for pastoralism and other farming activities along the coast of Mandurah.

In July 1855, Thomas Peel surrendered to the Crown the area now bounded by Mandurah Terrace, Peel, Sholl and Gibson Streets to settle outstanding debts. This area would have likely become a town site under the Land Act, but in 1898, it was discovered that the same area was included in lands held under Certificate of Title by G.C. Knight of Fremantle. The Registrar reported that the land had passed beyond the reach of caveat and consequently the Crown was unable to regain possession. As a result, Mandurah, although a fast growing settlement worthy of government interest, was developed purely by means of private subdivisions.

Upon Peel's death in 1865, Mandurah continued to expand slowly over the years. A new inland road which ran through the nearby town of Pinjarra was built in 1876. This improved means of transportation resulted in more people settling in the Pinjarra area instead of Mandurah. Nevertheless, Mandurah developed a vibrant fishing industry encouraged by a major fish cannery set up by Charles Broadhurst in 1878. Charles Tuckey also established the Peel Inlet Preserving Works in 1880, canning sea mullets. The construction of Mandurah's Traffic Bridge by Matthew Price in 1894 gave easier access to areas south of Mandurah and thus the area once again attracted a few more settlers. The area was made more attractive to travelers when the limestone road was replaced with bitumen cutting the travel time from Perth from four hours to one hour. Consequently, by the turn of the century, Mandurah developed a small tourism market based mostly on holidaymakers from the inland areas and the Perth region.

Mandurah continued to prosper with the fishing and canning industry and a timber mill, established in approximately 1911, providing jobs for local people. Upon the closure of the timber mill in 1926 and as the canning industry declined after Tuckey's death in 1912, the main industry in Mandurah became tourism. Anecdotal and historical records provide evidence of the attraction of 'Goldfields' residents to Mandurah's holiday environment. At this time, Mandurah's permanent population was estimated to have been no more than 150 permanent inhabitants but population numbers fluctuated greatly during holiday periods. When the holiday periods were over, however, Mandurah reverted back to being a peaceful little village.

As Mandurah experienced growth in the 1940s, residents felt the isolation from and unease with the administrative jurisdiction of the Murray Roads Board located in Pinjarra. They thus examined the possibility of secession or withdrawal from the Murray Roads Board. In April 1948, the then Minister for Local Government gave the Mandurah Progress Association a number of points to consider prior to the establishment of its own local authority. When all the conditions stipulated were complied with, the Mandurah Roads Board was established by mid-1949 and held its inaugural meeting in September 1949. Thus, Mandurah headed into the second half of the 1900s as a separate local government entity.

In the 1950s, with the development of Kwinana as a major industrial centre, together with new immigration and resettlement policies following World War II, Mandurah experienced rapid growth and it was declared a town site under the Local Government Act in 1950. In April 1960, the Mandurah Roads Board was reformed in order to vest control to members elected by ratepayers. The gazettal of the Mandurah Shire Council was effected in July 1961 in accordance with the Local Government Act of 1960. The establishment of the alumina refinery at Pinjarra in the early 1970s resulted in further population growth in Mandurah. It was upgraded to town status in July 1987, with Cr. Bruce Cresswell elected as the first Mayor

of Mandurah. Mandurah was granted city status in April 1990 and is now considered one of Australia's most rapidly growing cities. Figure 1 presents the social and fishery-related infrastructure of Mandurah.

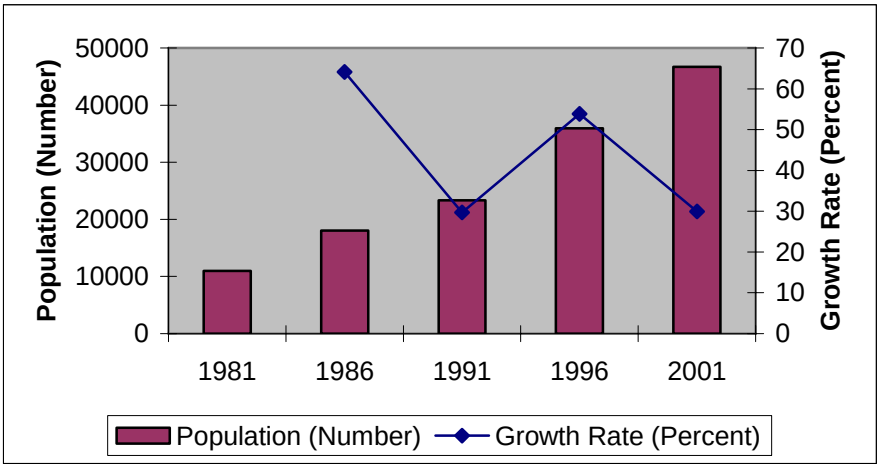
(Source: Institute for Regional Development, 2006.)

Figure 1: Town Map of Mandurah, 2006

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

Mandurah has had a rapidly growing population over the last two decades, registering high overall growth rates in spite of a growth rate decline from 1991 to 2001 (Figure 2).[3] It is a large city centre with a population exceeding 46,000 in 2001 (Table 1).[4] One resident (No. 055, 2004) noted that, "From being a small country town where everyone knew everyone else, it has expanded so much that you need a directory to find your way around."



(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth, 1981 - 2001, Mandurah

Table 1: Population Indicators, 1991-2001 - Mandurah

Urban Centre/Locality	*1991*	*1996*	*2001*
Total Resident Population	23,325	35,839	46,548
Male	11,454	17,461	22,623
Female	11,871	18,378	23,925
Population under 15 years	5,476	8,727	9,989
Population of employable age	13,876	21,324	28,185
of which: Population aged 15-19	1,454	2,245	3,230
Population over 65 years	3,973	5,788	8,374
Dependency Ratio /a	68.1	68.1	65.2
Child Dependency Ratio	39.5	40.9	35.4
Elderly Dependency Ratio	28.6	27.1	29.7
Median Years	35	36	39
% of Overseas Born	19.5	20.4	20.7
% of Indigenous Population	1.0	1.6	1.6

/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

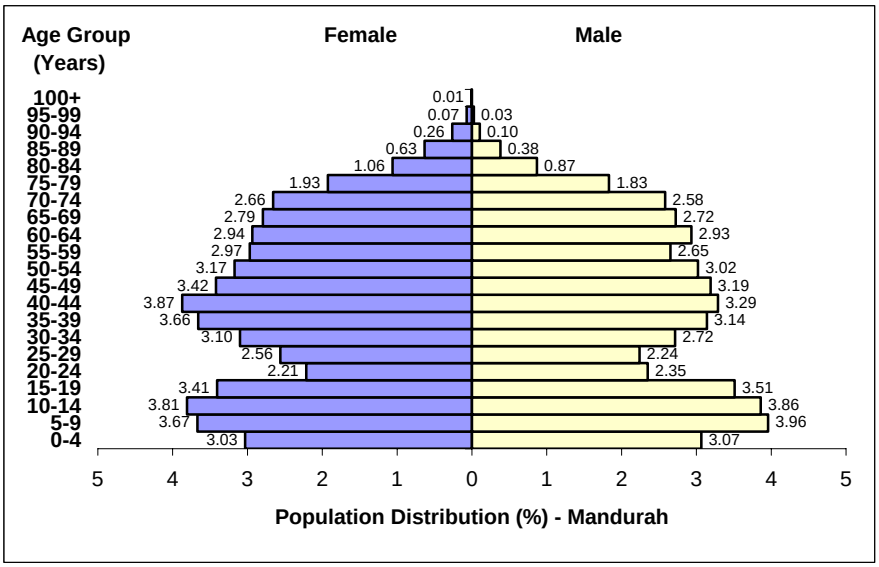
[3] Census data refer to the population of Mandurah as an urban centre/locality (UC/L). An urban centre is a population cluster of 1,000 or more people who are classified as urban for statistical purposes (1996 Census Dictionary).

[4] Mandurah's population in February 2007 is estimated to be 68,600 (Mandurah Mail, 2007).

The overseas-born population in Mandurah made up 21 per cent of the total population in 2001, of which the majority were born in the United Kingdom. A number of residents have also come from New Zealand, Netherlands, Germany and South Africa. Close to 2 per cent of the population in 2001 was of indigenous Australian descent.

Of the 2001 population, Christians made up the majority (66%) while those who reported practising a religion. Those who reported having no religion or who did not state their religious affiliation made up 13 per cent. Of the Christian population, the majority were Anglicans (48%), followed by Catholics (28%) and the Uniting Church (8%).

Mandurah has a large aging population, reflecting its popularity as a retirement destination (Figure 3). The median age of 39 years, an increase from the 35 years median age in 1991 was relatively high, compared to both the Western Australian and Australian median age of 34 years and 35 years, respectively. Consequently, Mandurah has a high dependency ratio of 65 in 2001, a ratio that is lower than the ratio registered in previous Census periods.[5] Mandurah's youth population has also experienced an increase in recent years reflecting the large number of young families moving into the area. One community resident (No. 054, 2004) noted that, "Mandurah's got it all. It is a new community, it is growing and there are schools for the kids. It is also a good place for old people to retire."



(Source of Data: ABS 2001 Census of Population and Housing.)

Figure 3: Population Distribution by Age, 2001, Mandurah

The proportion of families classified as 'couple families with children' has increased slightly in 2001 while the proportion of 'couples without children' has declined over the ten year period since 1991 (Table 2). Households characterised as 'one-parent families' almost doubled between 1996 and 2001, with the majority having children under 15 years old. The median household size of Mandurah families in 2001 was 3.1.

[5] Defined as the number of children (less than 14 years) and elderly people (over 65 years) for every 100 people of working age (15-64 years), the dependency ratio is used to measure the dependence that non-working people have on working people.

Table 2: Family and Household Characteristics, 1991-2001 - Mandurah			
Urban Centre/Locality	***1991***	***1996***	***2001***
Couple Family with Children	2,768	4,252	4,967
Couple Family without Children	2,977	4,438	6,229
One Parent Family	786	1,428	2,134
Other Family	51	91	127
Total	6,582	10,209	13,457
Proportion of Couple Families with Children to Total Families	42.1	41.6	36.9
Proportion of Couple Families without Children to Total Families	45.2	43.5	46.3
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.2 DWELLING CHARACTERISTICS

The most popular type of dwellings in Mandurah was separate houses (Table 3). Although recent developments at the Mandurah Marina and on the canal estates has increased the stock of apartments and semi-detached dwellings, the ongoing expansion of housing estates around Mandurah will ensure that separate houses remain the dominant type of dwelling. Of the existing occupied dwellings, less than half (40%) were fully owned while 30 per cent were being purchased. Rented private dwellings increased by 13 per cent between 1996 and 2001, even as the median weekly rent increased. The proportion of unoccupied dwellings to total dwellings had declined over the ten-year period from 1991 to 2001, representing 21 per cent of the total private dwellings in 2001.[6]

Table 3: Dwelling Characteristics, 1991-2001 - Mandurah			
Urban Centre/Locality	***1991***	***1996***	***2001***
Occupied Private Dwellings	9,149	14,047	18,990
By Structure			
Separate House	7,290	11,566	15,362
Semi Detached	1,395	1,529	2,527
Flat, Unit or Apartment	155	524	397
Other /a	225	243	589
Not Stated	84	185	115
By Tenure			
Fully-Owned	3,968	5,524	7,605
Being Purchased	2,350	4,223	5,672
Rented	2,342	3,819	4,320
Other	489	45	534
Not Stated		436	859
Unoccupied Private Dwellings	3,389	4,607	4,962
Median Monthly Housing Loan Repayments	$476-$550	n.a.	$600 - $799
Median Weekly Rent	$78-$107	n.a.	$100 - $149
/a For 1991, Other Dwellings includes caravans, etc. in caravan parks.			
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

[6] The proportion of unoccupied dwellings to total dwellings is 60 per cent in Lancelin and Green Head and more than 70 per cent in Ledge Point and Seabird compared to 15-20 per cent in Dongara, Kalbarri, Mandurah, Two Rocks, Busselton and Yanchep.

3.2 EMPLOYMENT AND INCOME CHARACTERISTICS

The importance of retail trade and health, education, community, cultural and recreation services to employment, reflects the service function of Mandurah. Mandurah is a service centre to the large and growing, residential population and the surrounding hinterland. Mandurah has a significant tourism industry but supports various manufacturing and mining industries (Appendix 1). Many workers employed in manufacturing commute to the Kwinana industrial area, while those employed in the mining industry commute to mine sites and processing plants in the surrounding hinterland.

Of those employed in the Mandurah area, 57 per cent are employed on a full-time basis and 40 per cent are on part time employment (Table 4). The unemployment rates for both male and female workers had decreased over the ten-year period between 1991 and 2001. However, these rates are still higher than the State and national averages. The average weekly median income for individuals is $200-299 (Table 5). This median weekly individual income was lower than the state or national averages. The median weekly income for households has increased, nevertheless, by $200 over the five-year period from 1996 to 2001 (from $300-499 in 1996 to $500-599 in 2001).

Table 4: Employment Indicators, 1991-2001 - Mandurah

Urban Centre/Locality	*1991*	*1996*	*2001*
Employed	7,233	11,886	15,964
Male	4,254	6,768	8,821
Female	2,979	5,118	7,143
Full Time	4,596	7,321	9,156
Male	3,309	5,166	6,380
Female	1,287	2,155	2,776
Part Time	2,244	4,254	6,303
Male	720	1,434	2,159
Female	1,524	2,820	4,144
Not Stated	393	311	505
Male	225	168	282
Female	168	143	223
Unemployed	1,714	1,961	2,293
Male	1,069	1,223	1,350
Female	645	738	943
Total Labour Force	8,947	13,847	18,257
Male	5,323	7,991	10,171
Female	3,624	5,856	8,086
Unemployment Rate (in percent)	19.2	14.2	12.6
Male	20.1	15.3	13.3
Female	17.8	12.6	11.7
Labour Force Participation Rate	50.1	51.1	49.9
Male	61.6	61.5	58.0
Female	39.3	41.5	42.5

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Table 5: Individual, Family and Household Incomes, 1991-2001 - Mandurah			
Urban Centre/Locality	***1991***	***1996***	***2001***
	Annual	***Weekly***	***Weekly***
Median Income for Individuals	$8,001-$12,000	$200-299	$200 - $299
Median Income for Families	$20,001-$25,000	n.a.	$600 - $699
Median Income for Households	$16,001-$20,000	$300-499	$500 - $599
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[7]

The majority of community residents who participated in the community survey have lived in Mandurah for at least six years, with over 29 per cent having lived there for over 15 years. Furthermore, 87 percent of respondents indicated they intended on still living in Mandurah within another five years (Figure 4). Over 85 per cent of surveyed respondents were of the view that Mandurah was a 'good to excellent place to live' (Figure 5). However, only 60 per cent of surveyed respondents stated they felt a 'strong or very strong attachment to the community'. At the neighbourhood scale, Mandurah residents indicated 'they knew only a few people in the neighbourhood although most respondents reported that 'they nearly always run into people they know while shopping'. This dichotomy was reflected in the interviews with one resident (No. 054, 204) who noted, "Mandurah is fairly quiet and small, yet it is a big enough place for everybody not to be in each other's pockets."

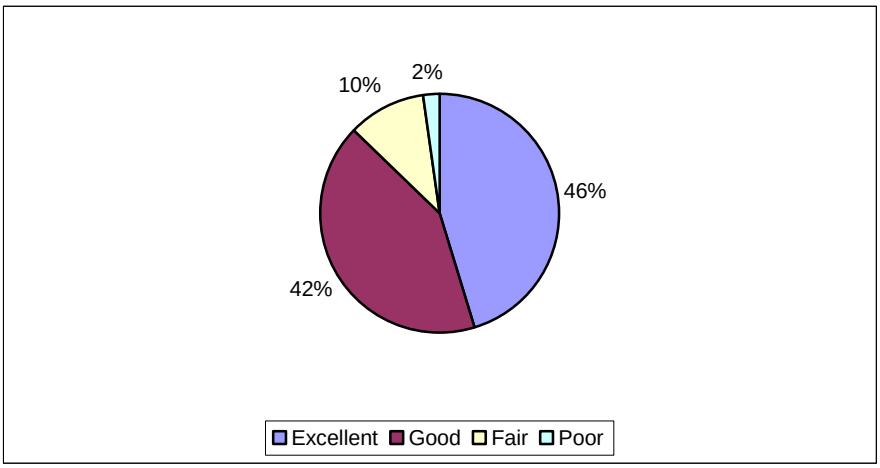


Figure 4: Respondents' Perception of Mandurah as a Place to Live

[7] This section is based on the results and analysis of the responses of 110 community residents (52 males and 58 females) who participated in a telephone survey conducted in late 2005 and 9 residents who participated in semi-structured interviews conducted between 2004 and 2006. Seventy-six per cent of the 110 survey respondents were born in Australia and New Zealand. A majority (64%) belonged to residents aged 45 years and over. More than half of the respondents belong to older households with no children at home and mature singles (53%). Most respondents fully owned their houses (57%). One-fourth of respondents reported completing Year 10 or equivalent schooling. Those who were fully employed and who were retired or semi-retired constituted close to 40 per cent of surveyed respondents, engaged in full-time employment (40%) and completed Year 10 or equivalent schooling (30%). Only two of the survey participants were engaged in the rock lobster industry.

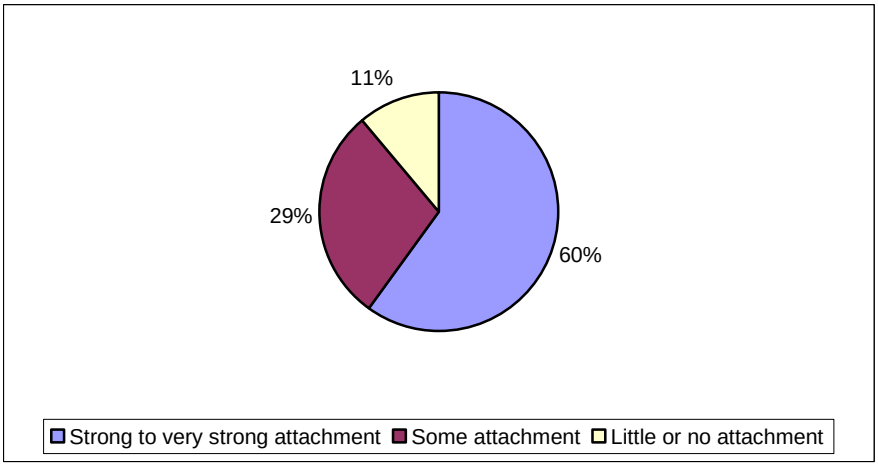


Figure 5: Respondents' Attachment to Mandurah

Figure 6 shows the reasons identified by those who participated in the survey for living in Mandurah. Lifestyle was the foremost reason for 52 per cent of surveyed respondents, followed by the beach and ocean environment of the area. Another 11 per cent of residents indicated that Mandurah was a good place to retire. A rock lobster investor (No. 192, 2006) noted that, "Mandurah has a lot of retirees who move here for the lifestyle."

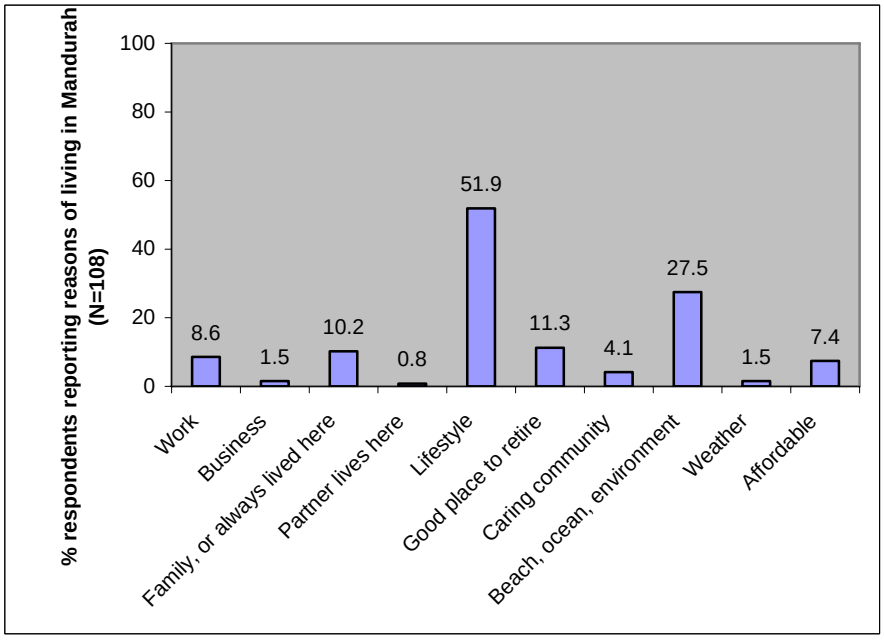


Figure 6: Reasons for Living in Mandurah

Mandurah is a large urban area and provides a range of services, including medical and dental facilities, schools, banks and mechanical services. Most of the community survey respondents indicated that they used the services locally, with the occasional specialist services accessed out of Perth. Mandurah respondents also suggested that they participate in a number of local organisations (Figure 7). Foremost of these groups was the sports and recreational organisations, with 44 per cent of residents reporting their participation in this type of local association. Mandurah is home to the Peel Thunder (Australian Rules) Football Club in the Western Australian Football League. Other groups where most participants were

members of were the school group or community association (28%), cultural, education or hobby groups (23%), and religious groups (21%).

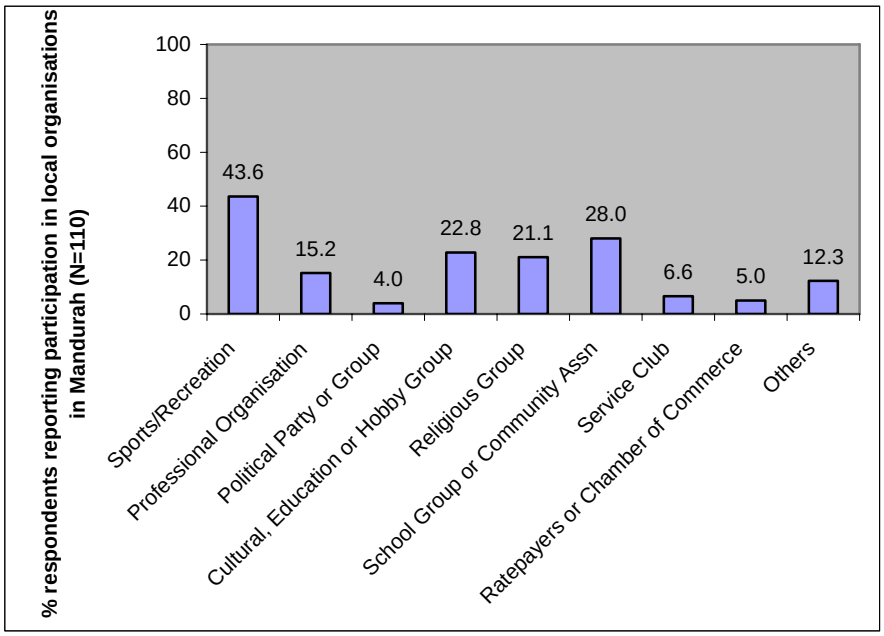


Figure 7: Participation in Local Organisations in Mandurah

Overall, Mandurah residents perceive their community as a cohesive community (Figures 8A and 8B).[8] Mandurah's favourable cohesiveness score is indicative of the thinking among those surveyed that 'their community strongly supports community events', 'it is friendly towards newcomers' and that 'if there was a serious problem, people would get together to solve it.' Mandurah respondents also indicated that there are easily accessible training facilities that people can use to improve their qualifications and skills.

The City of Mandurah's Community Charter and Strategic Plan for 2005-2008 highlights the vision for Mandurah to be a 'Vibrant City, innovative, creative and diverse'. As such, the city continues to undertake activities that are aimed at developing community spirit and pride but also to highlight the cultural diversity within the community. The annual Mandurah Crab Festival held every March is one such activity (Plates 1A and 1B). The event was held for the first time in 1999 and was designed to raise Mandurah's profile, capitalising on the blue manna crabs found in Mandurah's waterways. The weekend long celebration features fun activities for the whole family such as concerts and water sports and kites demonstrations,

[8] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

topped with a fireworks display and attracts a large crowd to the Mandurah Foreshore every year.

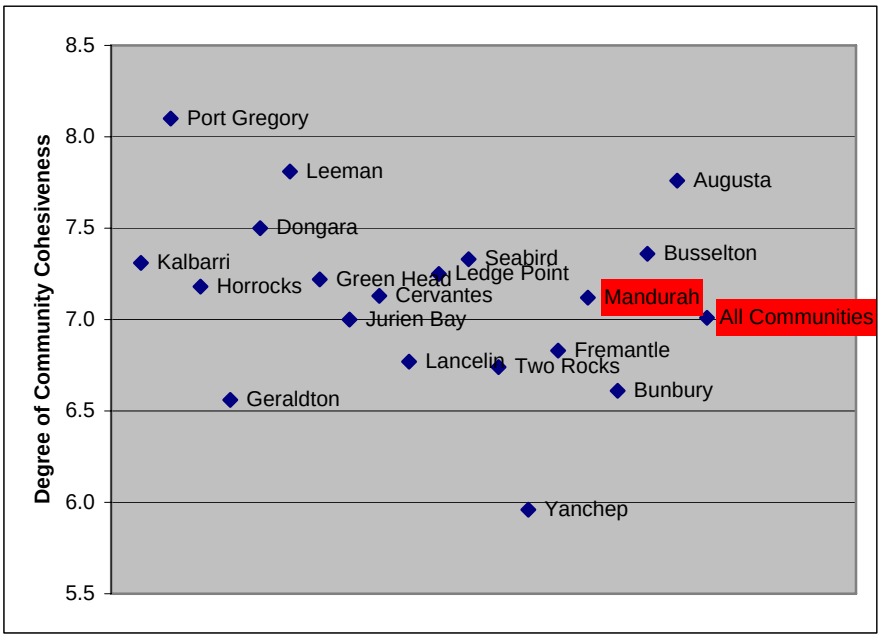


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

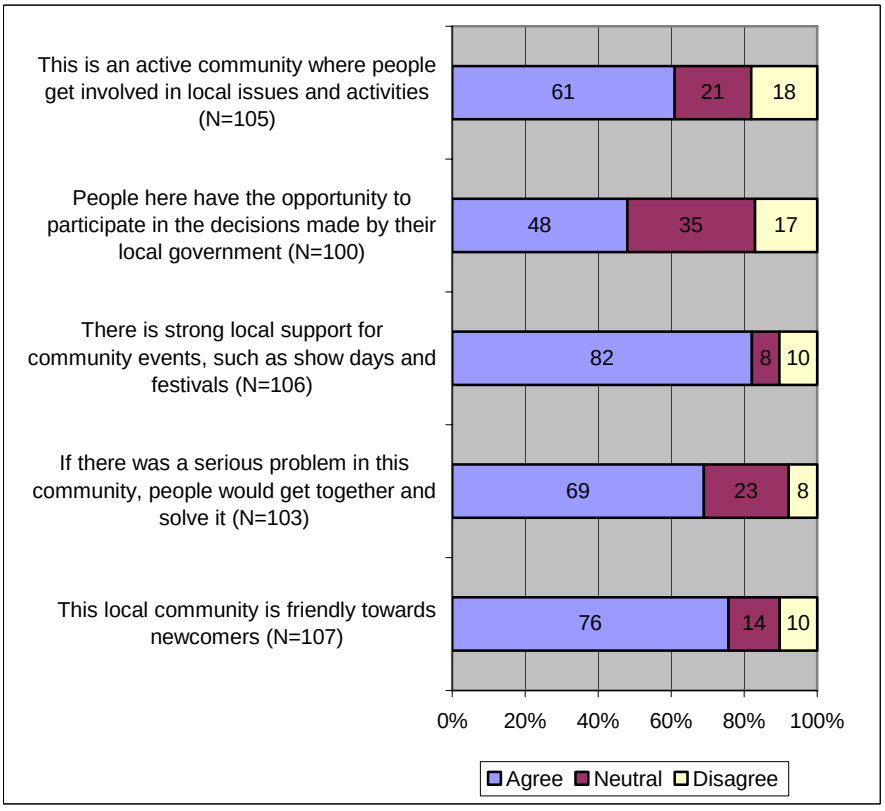


Figure 8B: Perceptions of Community Cohesiveness, Mandurah

Plates 1A and 1B: Crab Fest Logo and Kites on the Eastern Foreshore

(Source: <http://www.mandurah.wa.gov.au/news/2006/february/evalution> cited 24 March 2007.)

4.0 THE LOCAL ECONOMY

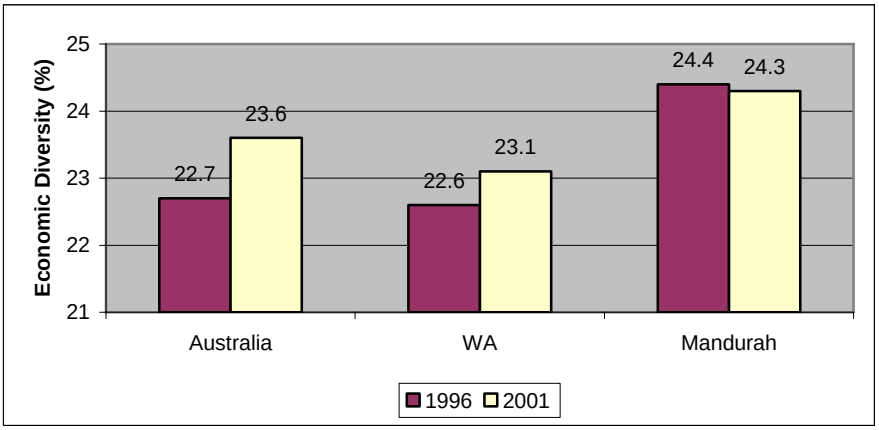
4.1 ECONOMIC ACTIVITIES

Retail trade, manufacturing and construction employed the bulk of the Mandurah workforce in 2001. Mandurah is also a major service centre to the various industries found in the Peel Region, with a number of local businesses providing direct services to these industries. These include agricultural production industries, namely beef cattle and pig production, dairying, wool growing, eggs, cut flowers, grain, and poultry as well as 'new' agricultural pursuits such as olive growing and olive oil production, wine and table grape production and freshwater aquaculture.

Timber production is another significant industry in the region, providing employment opportunities to residents and local businesses. The mining industry is a large employer of Mandurah residents. Mining focuses on bauxite, mineral sands and limited gold production. Alcoa has a major refinery located in Pinjarra, which is currently undergoing expansion. A large commuter workforce from Mandurah works in their refineries and on various mine sites. Employment opportunities include: general operations, chemical research, environmental research and practice, occupational health and safety, administration and management. The region also has a large manufacturing industry that relies on the mining industry. Over two thirds of the manufacturing industry is based on value adding to the region's mineral wealth.

One community resident (No. 050, 2004) noted that, "Alcoa is the main employment provider in Mandurah. Most of the people here also work in Perth or Kwinana or Rockingham or Fremantle." Industry subdivisions that significantly employed workers in Mandurah were metal product manufacturing, food retailing, and personal and household goods retailing. Between 1996 and 2001, the Mandurah economy, overall, has shown an improved level of diversification that compared well with the State or national economies (Figure 9).[9]

[9] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Mandurah

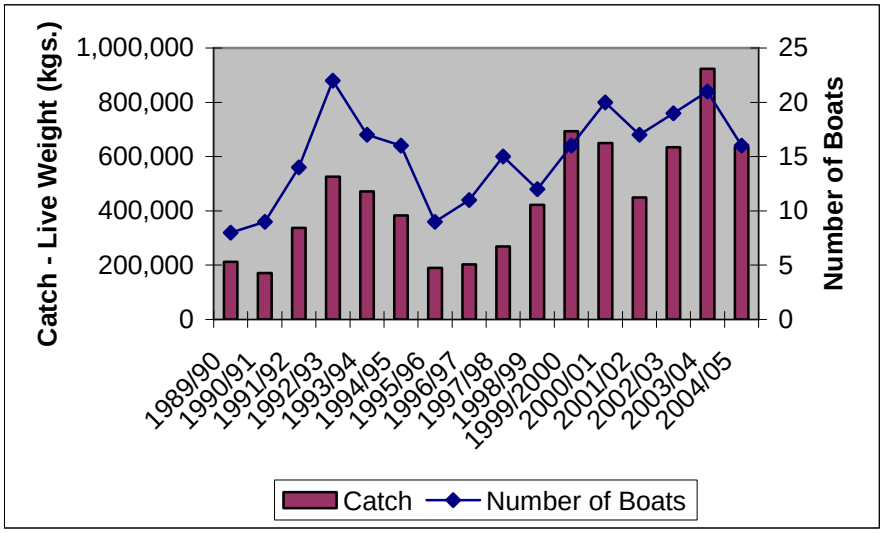
4.1.1 Fishing[10]

One rock lobster fisher (No. 192, 2006) noted that, "Mandurah was a fishing town but now, it can live on tourism." Although the fishing industry's dominance of economic activity in Mandurah has decreased over the last 50 years, it is still an important sector. As the only port in the Peel Region, fishing by the Mandurah fleet contributed between $15 and $17 million to the Peel regional economy since 2002/03 (Appendix 2). While the bulk of the catch is accounted for by the western rock lobsters, other fish species, crabs and molluscs are also caught and landed in Mandurah.

In 2004/05, rock lobsters landed in Mandurah contributed 93 percent of the fishing value for the Peel region. Contributing to this catch were 16 rock lobster fishing vessels in 2004/05 (Figure 10). The total catch weights have increased since 1989/90, with the catch averaging 630,000 kilograms between the 1998/99 and 2004/05 fishing seasons (Appendix 3).

Rock lobster fishing only commenced in Mandurah in the 1950s, following the invention of the echo sounder that provided more detailed understanding of the rock lobster distribution. As the fishery expanded, the visually recognisable reefs along the Western Australian coast were fully explored by 1952/53 and intensively fished. In search of newer fishing grounds, some vessels fished seaward as far as the edge of the continental shelf. The development of areas to the south of Fremantle occurred more slowly. The reefs around Safety Bay, and later down to Mandurah, were fished from about the mid-1950s with fishers like 'Spud' Ward, joined by Claude Choules and later Mick Warne, Tony Parentich, Crom Wilson and Bill Waters. The waters west of Mandurah was fished for the first time in 1953 by local wet-line fishers and Fremantle boats venturing south in deeper waters.

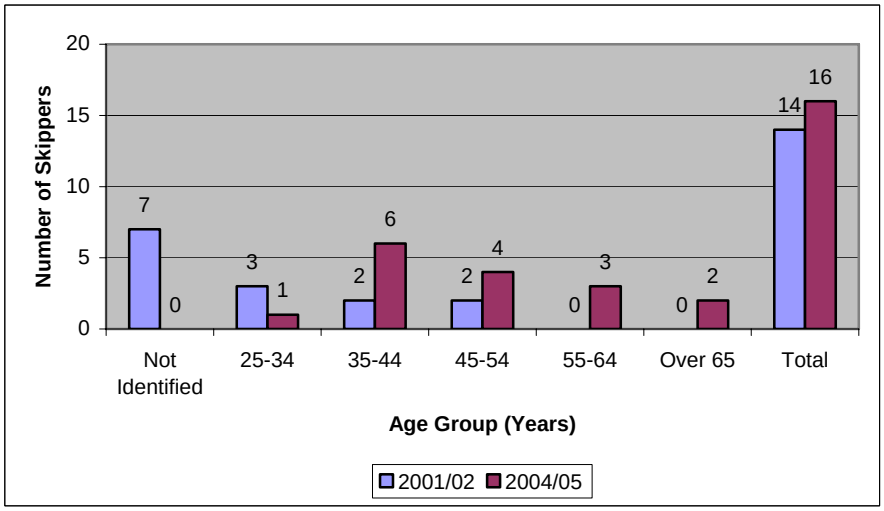
[10] The historical account of rock lobster fishing in Mandurah is based on information from *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.) and Number of Boats, 1989/90 – 2004/05, Mandurah

Since 2001/02, there has been an increase in the number of skippers in the western rock lobster fishery residing in Mandurah (Figure 11). Of these skippers, the majority are in the 35-54 age groups. While only a minority, a rock lobster fisher (No. 052, 2004) noted that, "There's good living to be made out of the fishery." Despite their limited numbers, Mandurah fishers continue to engage in promotional activities highlighting the tradition of fishing in Mandurah such as the blessing of the fleet (Plates 2A and 2B). In 2005, the Mandurah Offshore Fishing and Sailing Club in conjunction with the Ocean Marina hosted the event.



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Age of Skippers Residing in Mandurah, 2001/02 and 2004/05

Plates 2A and 2B: Decorated Boats at the Ocean Marina and the Procession on the Foreshore

(Source: Veronica Huddleston, 2005.)

On their perceptions of the rock lobster industry, most of the surveyed respondents gave a high level of agreement to the statement that 'those who are employed in the rock lobster fishery make a good income' (Figure 12). Like other southwest towns, Mandurah residents gave a lower level of agreement to the statement that 'the economic viability of their community is closely linked to the viability of the rock lobster industry'. On the response to the question of whether they would encourage young people to be involved in rock lobster fishing, 40 per cent of the respondents indicated they will do so (Figure 13).

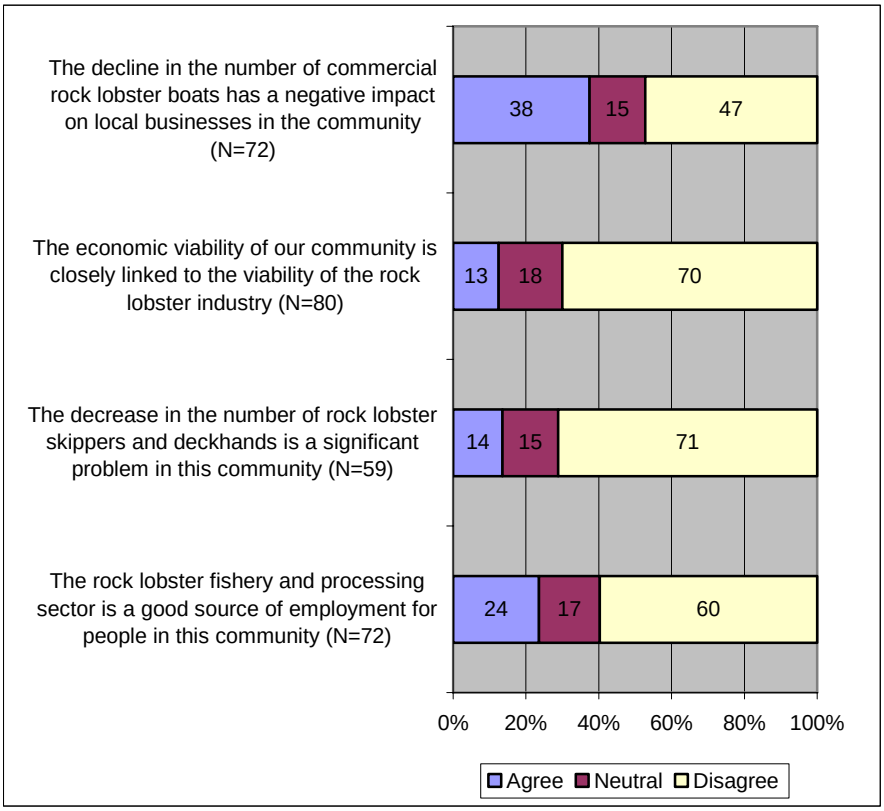


Figure 12: Perceptions of the Rock Lobster Industry, Mandurah

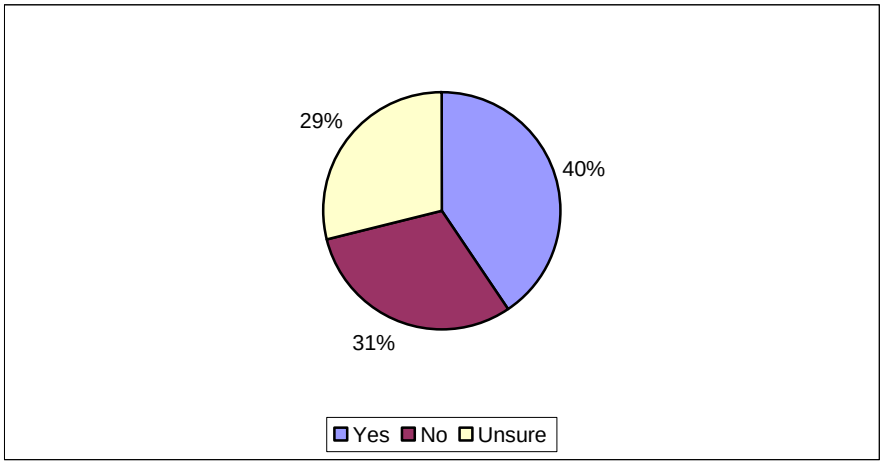
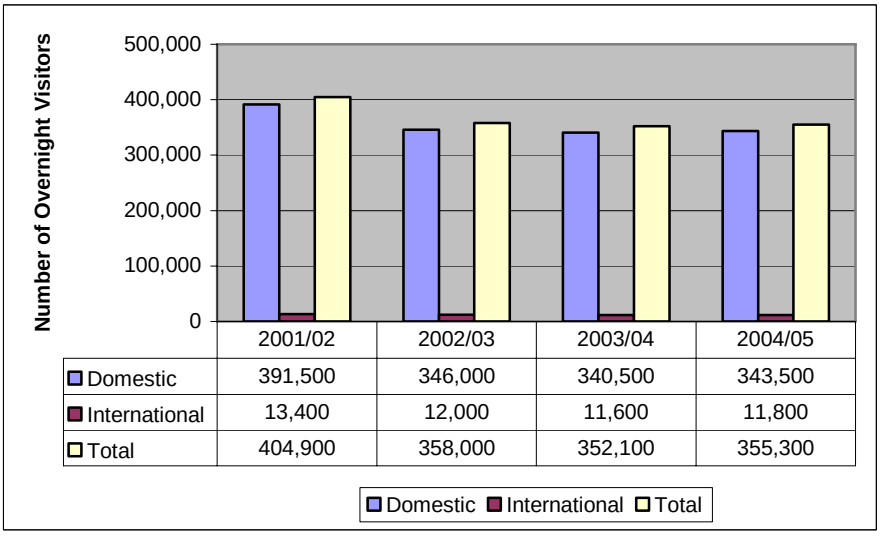


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Mandurah

4.1.2 Tourism

The City of Mandurah has a rapidly growing tourism industry. The recent development of the Mandurah Marina and the canal estates has attracted day-trippers from the Perth metropolitan area and the surrounding hinterland. The growth in holiday accommodation has also resulted in an increase in overnight visitors.

Many businesses in Mandurah cater to the tourism market, creating large employment opportunities in the town. A 2002 survey by Western Australian Tourism Commission showed that Mandurah and the Peel region serviced 1.9 million day-trippers and over a half million overnight visitors, which generated more than $153 million for the local economy and supported 1,200 jobs. The domestic market dominates the overnight visitor numbers with very little international overnight stays (Figure 14). In 2004/05, just over half of the domestic and international tourists indicated that the purpose of their overnight visit to the City of Mandurah was for holiday and leisure time, while other tourists were largely there to visit with friends and relatives (Appendix 4).



	2001/02	2002/03	2003/04	2004/05
Domestic	391,500	346,000	340,500	343,500
International	13,400	12,000	11,600	11,800
Total	404,900	358,000	352,100	355,300

(Source of Data: Tourism Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 – 2004/05, City of Mandurah

Mandurah offers a variety of marine-based recreational activities in its many natural attractions that include 75 kilometres of accessible coastline, the Peel Harvey Estuary, the Darling Range escarpment, the Murray River and the extensive native forest areas. Mandurah also offers heritage attractions, which involve Aboriginal and European history.

Despite the strong push for tourism, surveyed respondents did not agree that there was unlimited scope for the development of more tourism activities in Mandurah. Only 52 per cent of surveyed respondents agree that 'the coast around this community is suitable for more tourism activities than we have at present' (Figure 15).

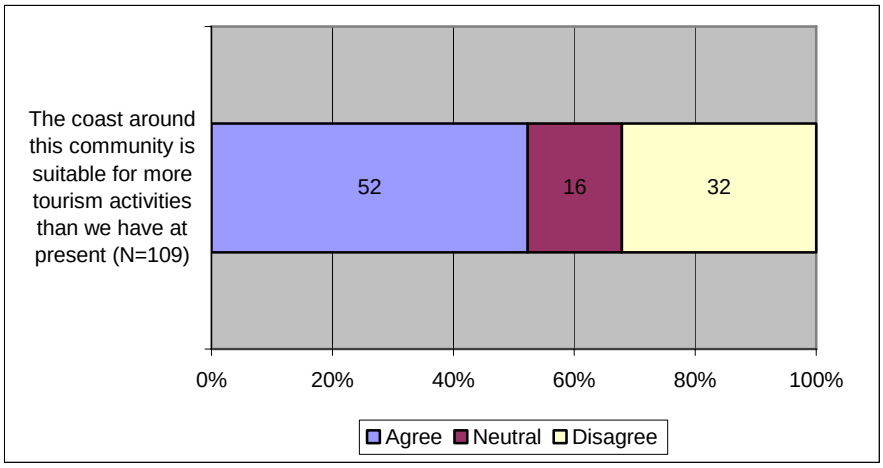


Figure 15: Perceptions of Tourism Potential, Mandurah

4.1.3 Business and Commerce

The City of Mandurah is the major commercial centre of the Peel Region and accommodates banking, investment and financial services, retail, wholesale, real estate, hospitality and accommodation services. The retail sector, with more than 3,000 jobs, is the largest employing industry sector accounting for a fifth of the City's workforce. Health and community services, property and business services, construction and education combined account for nearly another 30 per cent of its workforce. For 2001/02, retail turnover for the Peel Region was estimated to be $506.8 million.

There were 113 manufacturing locations in the Peel Region and most of these were located in the City of Mandurah.[11] More than a fifth (22%) of these businesses was engaged in manufacturing fabricated metal products. Machinery and equipment accounted for another 19 percent. Other manufacturing business in Mandurah include: wood products, food, beverage, and transport equipment.

Significant building and construction activity has also accompanied the rapid population growth in the Peel Region in general and in Mandurah in particular. The launch of the Mandurah Ocean Marina owned and managed by the City of Mandurah is expected to stimulate further economic opportunities in the area (Box 1). As of June 2006, 32 business enterprises operated within the marina complex, excluding the shops, cafes and market stalls operating in the Dolphin Quay (Plate 3).

[11] Mineral processing plants were located in the greater Peel Region and not within the City.

Plate 3: Dolphin Quay, Mandurah Ocean Marina

(Source: Veronica Huddleston, 2005.)

Box 1: The Mandurah Ocean Marina

August 2001 marked the opening of the Mandurah Ocean Marina, a major project that was conceptualised and deliberated upon since 1998. Developed by Landcorp and under the guidance of a Task Force composed of representatives of the Peel Development Commission, the City of Mandurah, DOLA and DPI, the Marina is a realisation of a long-held vision of local residents for a boating and tourist facility in their community. It was a long-drawn process involving numerous and protracted consultation with numerous stakeholders to iron out differences in perspectives and ensure that the design of the marina and its operations become an integral part of the Mandurah community.

With its 36 commercial boat pens and 174 recreational boat pens (to reach 290 once fully constructed) and marine services facilities as well as a resort, retail and residential facilities, the Mandurah Ocean Marina is fast becoming a tourism attraction providing a sense of pride and achievement for Mandurah residents.

Host of the Club Marine Mandurah Ocean Marina Boat and Fishing Show since its inauguration, the Mandurah Ocean Marina was awarded the "WA Marina of the Year" award.

(Based on information from the Marina Administration Centre; Photos courtesy of MAC)

4.2 INFRASTRUCTURE SUPPORT

4.2.1 Roads and Transport Networks

Mandurah, the fastest growing regional city in Western Australia, is ideally situated in relation to Perth. Major regional transport network upgrades are presently being constructed. These include a passenger rail service between Mandurah City and Perth City and extensions to the Kwinana Freeway that will link Perth through the eastern side of Mandurah, away from central Mandurah, to the South West of the state. Transport network upgrades are also on going in an effort to cater to the massive growth in local traffic in recent years. Mandurah has a marina with pens for over 550 boats, sullage and fuel facilities, and facilities for fishing boats and other smaller commercial vessels. The Murrayfield Airpark that has a 1300 metre sealed airstrip is used as a pilot training facility and services the Mandurah community.

4.2.2 Water and Electricity

Mandurah City sources its water for domestic and industrial use from the Integrated Water Supply Scheme. The water is sourced from major dams in the Darling Range, supplemented by groundwater bores at Ravenswood and Park Ridge. Wastewater treatment plants are located in the Mandurah, Halls Head and Dawesville suburbs.

Mandurah is at the centre of a water recycling project known as the *Halls Head Indirect Water Reuse Project*. Based in Mandurah, it has recently been awarded the Western Australian Water Corporation Award for Water Treatment and Recycling.

A 22 kilovolts ampere (KVA) feeder from the Mandurah substation is the major source of power supply in the city. Western Power is working on improving capacity of the feeder from Mandurah substation to the Halls Head area. Alinta Gas provides natural gas services to the Mandurah City and its hinterland.

4.2.2 Communications

Most Mandurah residents have good access to secure, high-capacity telecommunications. Telecommunication facilities available include: land based telephone lines, broadband internet access, ADSL coverage, optic fibre STD loops, and digital and CDMA mobile coverage. While there are small areas within Mandurah where some of these services are not available, Mandurah is connected with the Peel Region's Telstra inter-exchange networks that have been described as "a secure, high capacity and state-of-art facility that has the capability to cater for Region's requirement in the foreseeable future".[12]

The Mandurah Coastal Times and Mandurah Mail are among the major local newspapers of the city. The ABC Regional radio networks and many Perth radio station signals are received in Mandurah apart from the Coast FM radio station that broadcasts programs from the city. ABC regional television, Golden West Network (GWN), WIN TV, some coverage by Perth commercial stations and SBS are available from Mandurah.

[12] Department of Local Government and Regional Development, *Peel: Economic Perspective, an Update on the Economy of Western Australia's Peel Region*, May 2003.

4.3 INSTITUTIONAL RESOURCES

4.3.1 Government Services

The City of Mandurah provides a diverse range of sport and recreation facilities; public halls, active reserves, passive reserves, cultural centre, hard courts, boat launching facilities, barbecue areas, trails, cycle ways and pathways, foreshores, aquatic and recreation centres, senior citizens centre, skateboard park and youth centre. Their services also include the City's newest facilities such as the Halls Head Recreation Centre and the Mandurah Ocean Marina.

4.3.2 Education and Health

In June 2003, the Peel region had 35 schools. Mandurah City has more that 15 primary schools, five secondary schools and a regional TAFE campus. In an innovative programme to assist school leavers into trades, the Mandurah Senior High Schools shares a campus, and some teaching facilities with the TAFE campus. Mandurah residents also have easy access to the Murdoch University Campus at Rockingham. Mandurah primary schools have a high enrolment rate; however, the enrolment rates for secondary schools are much lower. Secondary school retention rates for Mandurah in 2001 were 51 percent for Government schools and 78 percent for non-government schools, which were much below the national averages of 70 percent and 84 percent, respectively. Mandurah's youth also have a low level of university enrolment. With Mandurah's school age population growing at over 500 persons per year, and a high youth unemployment rate of 40 percent, Mandurah faces the challenge of providing adequate education facilities to the growing population and increasing retention rates.

The Peel Health Campus in Mandurah is the town's principal medical facility, providing 20 private and 110 public hospital beds (Plate 4). It also provides a wide range of surgical, medical and diagnostic expertise as well as obstetrics. Other services include rehabilitation, palliative care, renal, oncology and day hospital and emergency services. At present there are three nursing homes operating in the Mandurah area, providing 138 beds. In addition, there are Community Health Centres in Mandurah that service the larger Mandurah population and a Child Health Centre. There are a number of private medical practices in the city, with over 30 general practitioners. The National Social Health Atlas Project (1999) indicates that Mandurah residents had low socio-economic status, low health service utilisation and low social health status.

Plate 4: Peel Health Campus

(Source: Veronica Huddleston, 2005.)

4.3.3 Law and Order

The City of Mandurah houses the largest police station in the Peel District and services areas including Pinjarra, Dwellingup, Waroona, Boddington and Mundijong on a 24 hour basis. There is a dedicated Forensic Unit, Traffic Unit, Training Branch and Prosecuting Branch located at the Mandurah Police Unit. Furthermore, due to the large expanse of waterways in the area, Water Police often attend Mandurah and provide assistance to local police through extensive patrols of the estuary and canal systems.

As a major regional centre with a growing population, there is an increase in anti-social behaviour. Mandurah has a high crime rate when compared with the rest of the Peel District (Appendix 5). It has over 30 per cent of the stolen vehicles and 37 per cent of the assaults reported in the Peel District and over 50 per cent of robberies. Mandurah incidences of burglaries for dwellings account for 20 per cent of the dwelling burglaries for the Peel District. One rock lobster fisher (No. 052, 2004) noted that, "with progress also come some anti-social incidents - crime and cars roaring around, black marks everywhere."

Appendix 1: Employment by Industry, 1991-2001 - Mandurah									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	136	33	169	101	57	158	175	90	265
of which: Rock Lobster Fishing			--			0			29
Mining	324	30	354	390	56	446	557	62	619
Manufacturing	928	180	1,108	1,603	310	1,913	1,928	363	2,291
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	73	6	79	59	10	69	90	14	104
Construction	566	108	674	1,067	177	1,244	1,447	212	1,659
Wholesale Trade	706	749	1,455	303	128	431	344	184	528
Retail Trade				888	1,302	2,190	1,310	1,858	3,168
Accommodation, Cafes and Restaurants	Not a separate sector			189	330	519	245	508	753
Transport and Storage	137	66	203	213	85	298	304	131	435
Communication Services	77	30	107	110	50	160	111	64	175
Finance and Insurance	245	305	550	82	176	258	90	150	240
Property and Business Services				466	428	894	655	675	1,330
Government Administration and Defence	171	128	299	247	169	416	254	253	507
Education	Not a separate sector			269	518	787	342	716	1,058
Health and Community Services	322	752	1074	169	770	939	235	1,179	1,414
Cultural and Recreational Services	249	363	612	95	115	210	165	151	316
Personal and Other Services				255	231	486	339	326	665
Non-classified/Non-stated	385	257	642	263	211	474	231	212	443
Total for All Industries	4,319	3,007	7,326	6,769	5,123	11,892	8,822	7,148	15,970
Share of Agriculture, Forestry and Fishery to Total Employment	3.1	1.1	2.3	1.5	1.1	1.3	2.0	1.3	1.7
Share of Top Three Sectors to Total Employment	50.9	62.0	49.6	52.6	50.6	45.0	53.1	52.5	44.6
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/*a*, 2002/03 - 2004/05 - Western Australia and the Peel Region						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
Peel Region	212	227	179	628	660	544
Mandurah	212	227	179	628	660	544
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
Peel Region	55	65	79	234	276	337
Mandurah	55	65	79	234	276	337
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
Peel Region	634	924	635	15,504	17,548	13,650
Mandurah	634	924	635	15,504	17,548	13,650
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
Peel Region	14	13	18	40	40	51
Mandurah	14	13	18	40	40	51
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
Peel Region	936	1,245	923	16,684	18,737	14,739
Mandurah	936	1,245	923	16,684	18,737	14,739

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - Mandurah						
	1991/1992	***1996/1997***	***2001/2002***	***2002/2003***	***2003/2004***	***2004/2005***
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Mandurah	337,666	203,369	449,236	634,033	921,307	634,881
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Mandurah	321,464	255,437	474,873	500,702	534,879	463,191
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Mandurah	14	11	17	19	21	16
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Mandurah	37	27	50	55	65	48
(Source of Data: Department of Fisheries, Western Australia.)						

Appendix 4: Number and Purpose/a of Overnight Visits, 2001/02 - 2004/05 - City of Mandurah								
	2001/2002		2002/2003		2003/2004		2004/2005	
	Visitors	Percent	Visitors	Percent	Visitors	Percent	Visitors	Percent
Domestic Visitors								
Holiday/Leisure /b	213,500	54.5	181,000	52.3	178,500	52.4	180,000	52.4
Visiting Friends/Relatives	139,500	35.6	141,500	40.9	143,500	42.1	138,000	40.2
Business /c	29,000	7.4	13,500	3.9	11,000	3.2	17,000	4.9
Other /d	6,500	1.7	7,000	2.0	4,500	1.3	5,500	1.6
Total	391,500	100.0	346,000	100.0	340,500	100.0	343,500	100.0
International Visitors								
Holiday/Leisure	10,900	81.3	9,900	82.5	7,900	68.1	6,500	55.1
Visiting Friends/Relatives	2,300	17.2	2,400	20.0	3,900	33.6	4,600	39.0
Business	300	2.2	300	2.5	300	2.6	300	2.5
Other	0	0.0	0	0.0	100	0.9	400	3.4
Total	13,400	100.0	12,000	100.0	11,600	100.0	11,800	100.0
Total Visitors								
Holiday/Leisure	224,400	55.4	190,900	53.3	186,400	52.9	186,500	52.5
Visiting Friends/Relatives	141,800	35.0	143,900	40.2	147,400	41.9	142,600	40.1
Business	29,300	7.2	13,800	3.9	11,300	3.2	17,300	4.9
Other	6,500	1.6	7,000	2.0	4,600	1.3	5,900	1.7
Total	404,900	100.0	358,000	100.0	352,100	100.0	355,300	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5: Crime Data, 2001/02 - 2004/05 - Mandurah				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Peel District	558	496	586	841
in which: Mandurah (number)	196	144	201	314
as percent of the District	35.1	29.0	34.3	37.3
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Peel District	1,104	1,183	1,450	949
in which: Mandurah (number)	305	226	305	231
as percent of the District	27.6	19.1	21.0	24.3
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Peel District	865	857	506	564
in which: Mandurah (number)	317	276	168	213
as percent of the District	36.6	32.2	33.2	37.8
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Peel District	46	53	44	44
in which: Mandurah (number)	29	25	14	26
as percent of the District	63.0	47.2	31.8	59.1
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Peel District	270	308	249	224
in which: Mandurah (number)	109	94	83	63
as percent of the District	40.4	30.5	33.3	28.1

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

BUNBURY, BUSSELTON and AUGUSTA

1.0 GEOGRAPHIC SETTING

Bunbury, Busselton and Augusta are located in the 23,998 square kilometres area known as the South West Region, facing the Indian and Southern Oceans. The region has abundant mineral deposits, rich native and plantation forests and good agricultural soils, as well as substantial manufacturing, commercial, retail, construction and tourism industries (Department of Local Government and Regional Development and South West Development Commission, 2006: 2) [SWDC and DLGRD]. A number of commercial fishing fleets operate out of several communities in the region, including Augusta, Bunbury and Busselton, and recreational fishing and diving is widely practiced.

Bunbury (Latitude: 33° 20' and Longitude: 115° 39'), located 173 kilometres south of Perth, is home to one of Western Australia's principal ports. It is one of the major commercial centres in the South West Region, together with Busselton (Latitude: 33° 39' and Longitude: 115° 21'). Located 232 kilometres south of Perth, Busselton's safe harbour in Geographe Bay provides opportunities for export and related business. Augusta (Latitude: 34° 19' and Longitude: 115° 09') is located at the mouth of the Blackwood River and is 320 kilometres south-west of Perth. It is a popular tourism destination for domestic travellers and services the local fishing and agricultural industries.

The south-west corner of Western Australia experiences a wet and cool winters and warm and dry summers. Rainfall is typical recorded between May and September, with a total of 900 millimetres expected throughout the region annually.

2.0 HISTORY AND DEVELOPMENT OF THE TOWN SITES[1]

2.1 Bunbury

First mapped in 1803 by a French expedition led by Captain Louis de Freycinet, the City of Bunbury was named in honour of Lieutenant Henry William St. Pierre Bunbury (1812-1875) of the 21st Fusiliers. Bunbury carried out explorations in this area in 1836, and in a book of his letters and papers published in 1930 he wrote of Bunbury, "A township has been formed, or at least laid down on the maps, comprising the southern promontory and part of the north beach at the entrance of Port Leschenault Inlet, which the Governor named "Bunbury" in compliment to me....."

[1] This section incorporates information from History of Country Town Names, <http://www.landgate.wa.gov.au/corporate.nsf/web/History+of+country+town+names+-+m> cited 16 March 2007.

The Bunbury town site was mentioned in the Government Gazette in 1839, but the lots in the town were not surveyed until 1841, and declared open for selection in the same year. The town of Bunbury functioned as a service centre to the growing fishing and whaling industries and the expanding agricultural industry in the hinterland. Figure 1A features the social and fishery-related infrastructure in the town.

(Source: Institute for Regional Development, 2006.)

Figure 1A: Town Map of Bunbury, 2006

In 1871, Bunbury became a municipality. The town's population and function grew steadily through the nineteenth century as the railway lines linking Boyanup (1891) and Perth (1893) were constructed. The growing timber industry in the region resulted in a further growth of

the town and its port throughout the twentieth century. Bunbury's growth was anchored on the provision of services to the port and its hinterland. Major port infrastructure including a breakwater was constructed in the early 1900s. Bunbury was officially recognised as a city on 8 October 1979 and continues today as a major service centre for the South West Region's mining, agricultural, fishing, tourism and commercial activities.

2.2 Busselton

Busselton was first surveyed by a French expedition in 1801 but was not settled until the1830s and, then, by the British. The town was named in honour of the Bussell's, an early and notable family of pioneers who were the first settlers in the area. J.G. Bussell and his family had previously settled at Augusta in 1830 but disenchanted with the hardships encountered there, discovered land of 'parkland' nature in the Vasse region in 1831. While he was granted land in the area in 1832, he did not move there until 1834. Bussell built a home named 'Cattlechosen', and the remainder of his family moved from Augusta in 1835/6.

The first official mention of the name Busselton was on 30 June 1835, when the Colonial Secretary wrote informing the Surveyor General that nine towns, including Busselton, were to be considered open for the purchase of allotments. On 4 July 1835 a General Notice to that effect was issued from the Surveyor General's office in Perth. The district continued to be referred to as 'the Vasse', and in general both names were used equally as late as the turn of the century, when the use of 'Vasse' began to be infrequently used.

The present town site of Busselton was surveyed in 1937, and the area initially grew as the local whaling, agricultural and timber industries prospered. Significant population growth in Busselton occurred following the State Government's group settlement policy in 1921. Busselton enjoyed further growth in the 1980s as the area became popular as a holiday and retirement destination for Western Australians. Busselton has continued to grow as a major tourism centre, and is regarded as Western Australia's most popular rural tourist destination. A current town map featuring social and fishery-related infrastructure is presented in Figure 1B.

2.3 Augusta

Augusta is the most south westerly town in the state. The traditional land of the Wardanid people, the town site was settled by Europeans in 1830 when in May 1830, Governor Stirling led a party of settlers on board the 'Emily Taylor' to the confluence of an ocean inlet and a river. Exploring the river, Stirling named it the Blackwood, after Vice Admiral Sir Henry Blackwood under whom he had served. Stirling also decided to declare a town site at the mouth of the river, naming it Augusta in honour of Princess Augusta Sophia, 2nd daughter of King George IV and Queen Charlotte (1768-1840). The town's earliest settlers were the Molloy, Turner and Bussell families.

The Augusta region has supported primary production of wheat, sheep and cattle for many years. During the early sixties, the area experienced difficult economic times with fluctuating international commodity prices. Since the mid-seventies, the region has increasingly focused on the production and processing of wine grapes and the associated wine tourism industry. Development and subsequent expansion of the wine industry has resulted in a general improvement in the economic viability of Augusta. Other emerging industries include cheese production and aquaculture. Augusta was a summer holiday town for many during most of

the twentieth century, but late in the 1900s, an increasing number of people chose to retire to the region for the cooler weather resulting in a rising price of real estate in the area. It is also a favourite destination for recreational fishers because of its long coastline and the Blackwood River. Figure 1C shows the town map of Augusta that features social and fishery-related infrastructure.

(Source: Institute for Regional Development, 2006.)

Figure 1B: Town Map of Busselton, 2006

3.0 THE PEOPLE

3.1 POPULATION CHARACTERISTICS

The 2001 Census data for Bunbury, Busselton and Augusta are presented in Table 1.[2] As a large city centre, Bunbury has over 45,000 people while Busselton has 14,000 and Augusta 1,000. All three communities have slightly higher female populations. Bunbury and Busselton both have relatively young population with the median age at 33 and 36 years, respectively. Augusta has a much older population, with median age in 2001 at 51 years. Each community has a substantial overseas born population, with Augusta having the largest proportion at 18 per cent. Bunbury has the largest indigenous Australian population with close to 3.0 per cent of its population being of indigenous Australian descent.

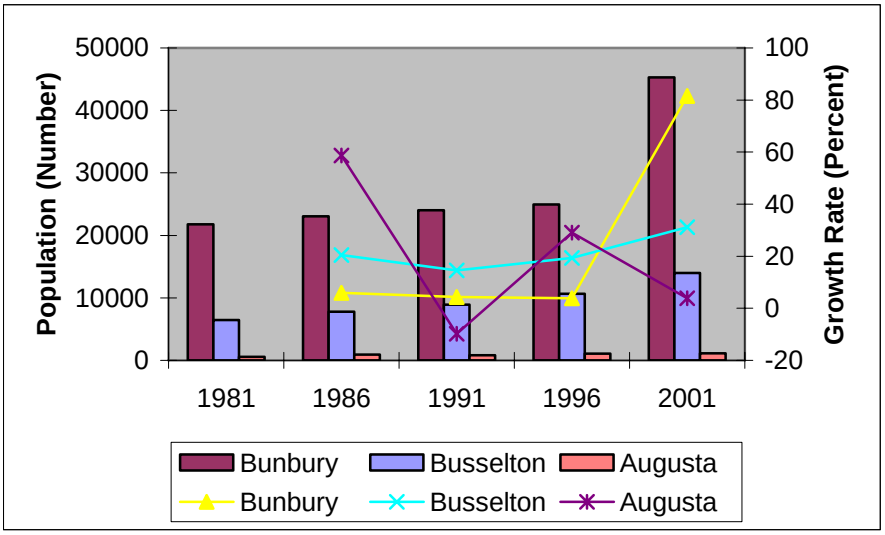
[2] Census data refer to the population of Bunbury, Busselton and Augusta as an urban centre/locality (UC/L). An urban centre is a population cluster of 1,000 or more people who are classified as urban for statistical purposes (1996 Census Dictionary). For 1996-2001, the population growth for Bunbury is 82 per cent. This sharp increase in population growth is due to the change in the size of the geographical region that made up the Bunbury UC/L (Garner, Margaret, margaret.garner@abs.gov.au "Queries on the Resident Population Figures for 1996 and 2001" Personal e-mail, 18 December 2006).

(Source: Institute for Regional Development, 2006.)

Figure 1C: Town Map of Augusta, 2006

Table 1: Population Indicators, 2001 - Bunbury, Busselton and Augusta			
Urban Centres/Localities	***Bunbury***	***Busselton***	***Augusta***
Total Resident Population	45,155	13,863	1,097
Male	22,368	6,637	527
Female	22,787	7,226	570
Population under 15 years	10,597	3,217	159
Population of employable age	29,916	8,366	594
Of which: Population aged 15-19	3,844	949	37
Population over 65 years	4,642	2,280	344
Dependency Ratio /a	50.9	65.7	84.7
Child Dependency Ratio	35.4	38.4	26.8
Elderly Dependency Ratio	15.5	27.2	57.9
Median Years	33	36	51
% of Overseas Born	16.7	14.9	18.1
% of Indigenous Population	2.6	1.9	0.8
/a Defined as the combined child population and aged population persons in the dependent ages to every 100 people of the economically active ages (15-64 years).			
(Source of Data: ABS 2001 Census of Population and Housing.)			

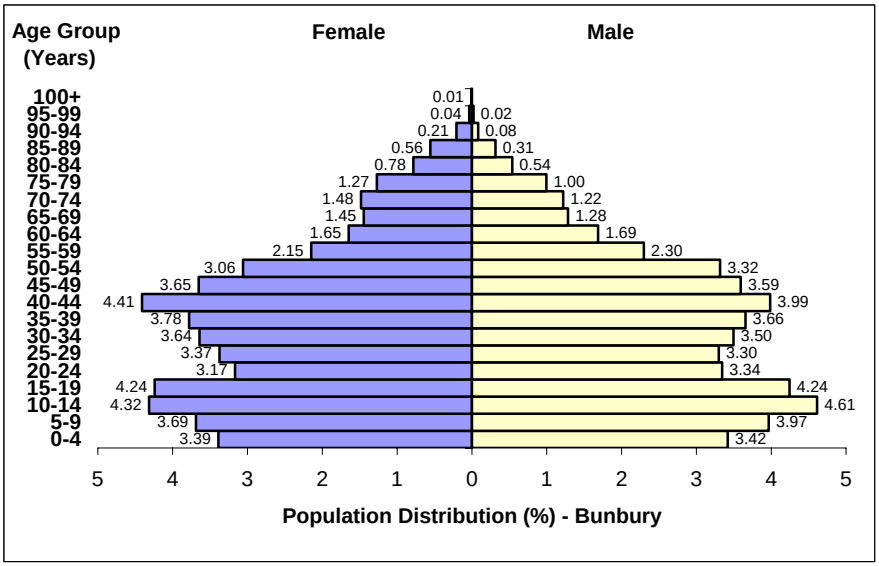
Since 1981, Bunbury has experienced huge population increases, Busselton has registered slow population growth and Augusta has maintained a relatively stable population size (Figure 2). All three communities register relatively higher dependency ratios as compared with the Western Australian ratio.[3] Bunbury and Busselton had a greater child dependency ratio as opposed to Augusta that had a much greater elderly dependency ratio in 2001. These differences are reflected in the population distribution diagrams for each community presented in Figures 3A, 3B and 3C. One interesting feature is the decrease in the number of residents between the ages of 20 and 29 in each of these communities. This may be because people have left the community to pursue educational, training or employment opportunities in larger communities.

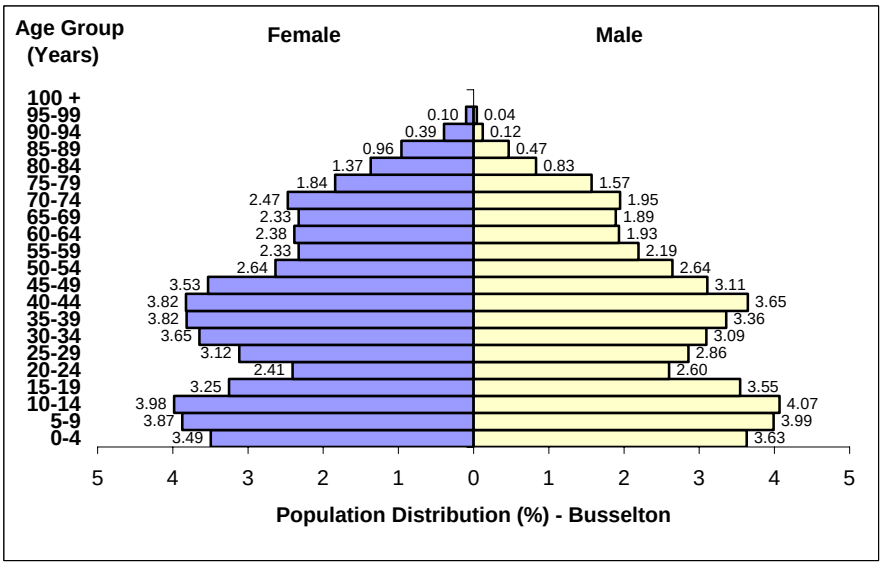


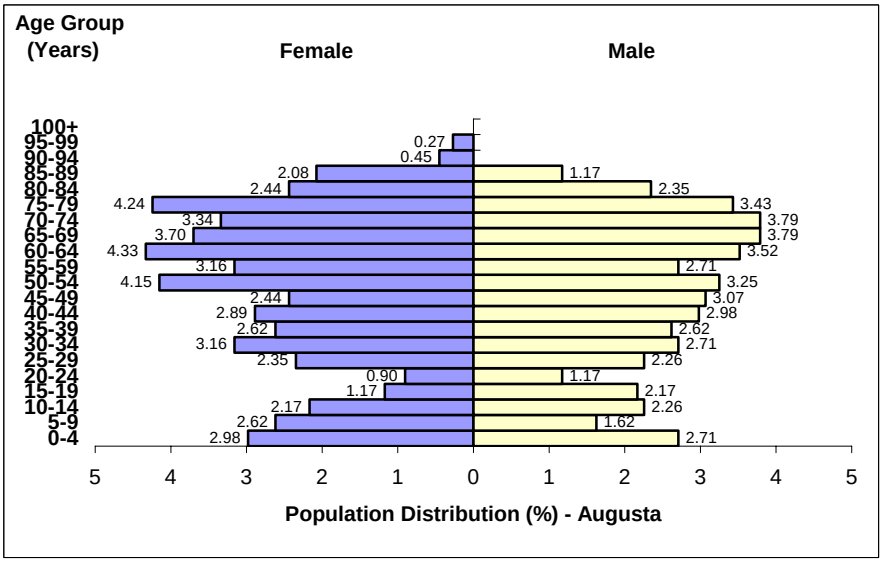
(Source of Data: ABS 1981, 1986, 1991, 1996 and 2001 Census of Population and Housing.)

Figure 2: Trends in Population Size and Growth Rate, 1981-2001, Bunbury, Busselton and Augusta

[3] Defined as the number of children (less than 14 years) and elderly people (over 65 years) for every 100 people of working age (15-64 years), the dependency ratio is used to measure the dependence that non-working people have on working people.







(Source of Data: ABS 2001 Census of Population and Housing.)

Figures 3A, 3B and 3C: Population Distribution by Age, 2001, Bunbury, Busselton and Augusta

Table 2 presents family and household characteristics of the three communities. In Augusta, there are more 'couple families without children' than 'couple families with children', while the opposite is true for Bunbury. In Busselton, the difference between the two is not significant but the community has a greater proportion of single parent households.

Table 2: Family and Household Characteristics, 2001 - Bunbury, Busselton and Augusta			
Urban Centres/Localities	***Bunbury***	***Busselton***	***Augusta***
Couple Family with Children	5,664	1,518	68
Couple Family without Children	4,439	1,555	199
One Parent Family	2,005	597	40
Other Family	173	37	0
Total	12,281	3,707	307
Proportion of Couple Families with Children to Total Families	46.1	40.9	22.1
Proportion of Couple Families without Children to Total Families	36.1	41.9	64.8
(Source of Data: ABS 2001 Census of Population and Housing.)			

3.2 DWELLING CHARACTERISTICS

Table 3 suggests that in each of the three communities, the dominant type of occupied private dwellings in 2001 was the separate house, although there were also significant numbers of semi-detached houses, flats, apartments and units. This may be attributed to the attraction of these towns as holiday and tourist destinations. In terms of ownership, only a third of Bunbury and Busselton dwellings in 2001 were fully owned compared to 68 per cent for Augusta. Rental properties ranged from 23 per cent in Augusta to 32 per cent in Busselton. The median weekly rents in all areas were comparable to the Western Australian median weekly rent.

Table 3: Dwelling Characteristics, 2001 - Bunbury, Busselton and Augusta			
Urban Centres/Localities	**Bunbury**	**Busselton**	**Augusta**
Occupied Private Dwellings	16,860	5,376	509
By Structure			
Separate House	14,270	4,330	398
Semi Detached	1,574	423	41
Flat, Unit or Apartment	746	385	22
Other /a	187	198	45
Not Stated	83	40	3
By Tenure			
Fully-Owned	5,454	1,970	270
Being Purchased	5,990	1,343	63
Rented	4,577	1,724	118
Other	371	112	33
Not Stated	468	227	25
Unoccupied Private Dwellings	1643	959	317
Median Monthly Housing Loan Repayments	$800 - $999	$800-$799	$800 - $999
Median Weekly Rent	$100 - $149	$100-$149	$100 - $149
(Source of Data: ABS 2001 Census of Population and Housing.)			

3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

Of those employed in Bunbury, Busselton and Augusta in 2001, over 50 per cent were in full time positions (Table 4). More males than females occupied full-time positions, while females dominated the part-time job market. The unemployment rates in Bunbury and Busselton were higher than the Western Australian average of 7.5 per cent while the converse was true for Augusta. The labour participation rate was nevertheless lowest in Augusta, which could be due to its older retiree population.

Table 4: Employment Indicators, 2001 - Bunbury, Busselton and Augusta

Urban Centres/Localities	*Bunbury*	*Busselton*	*Augusta*
Employed	20,416	5,589	359
Male	11,287	3,052	207
Female	9,129	2,537	152
Full Time	12,710	3,143	189
Male	8,813	2,210	138
Female	3,897	933	51
Part Time	7,124	2,275	155
Male	2,145	735	57
Female	4,979	1,540	98
Not Stated	582	171	15
Male	329	107	12
Female	253	64	3
Unemployed	1,873	477	21
Male	1,138	296	15
Female	735	181	6
Total Labour Force	22,289	6,066	380
Male	12,425	3,348	222
Female	9,864	2,718	158
Unemployment Rate (in percent)	8.4	7.9	5.5
Male	9.2	8.8	6.8
Female	7.5	6.7	3.8
Labour Force Participation Rate	64.5	57.0	40.5
Male	73.4	66.9	48.9
Female	56.0	48.2	32.6

(Source of Data: ABS 2001 Census of Population and Housing.)

Table 5 shows the median weekly income for individuals, households and families. The median individual income for Busselton's residents is the same as the Western Australian and Australian figures. Household incomes vary amongst the three communities, with Bunbury having the highest weekly income of $700-799 as compared with Augusta at $400-499. Families in Bunbury also have the highest median weekly income of $800-899.

Table 5: Individual, Family and Household Weekly Incomes, 2001 - Bunbury, Busselton and Augusta			
Urban Centres/Localities	***Bunbury***	***Busselton***	***Augusta***
Median Income for Individuals	$300 - $399	$300 - $399	$200 - $299
Median Income for Families	$800 - $899	$700 - $799	$500 - $599
Median Income for Households	$700 - $799	$600 - $699	$400 - $499
(Source of Data: ABS 2001 Census of Population and Housing.)			

3.4 COMMUNITY IDENTITY, INTEGRATION AND PARTICIPATION CHARACTERISTICS[4]

A third of community survey residents in Busselton and Augusta had only lived in the town for 0-5 years whereas almost one in two Bunbury respondents have had two or more generations of their family living in the area. The combined survey results indicate that over 80 per cent of respondents expect to be living in the same area in five years time. Surveyed respondents gave a high rating of their communities, with 95 per cent reporting that their town is a 'good or excellent place to live' (Figure 4). Seventy-two per cent of the respondents also reported 'strong to very strong feelings of attachment' to their community.

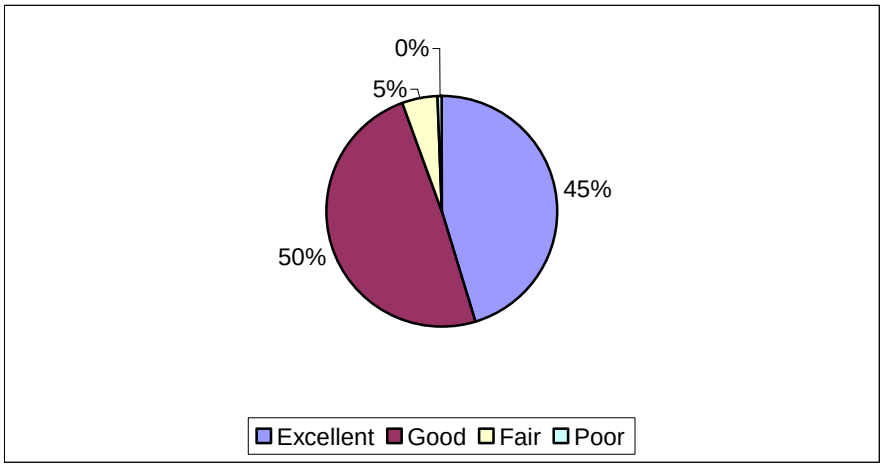


Figure 4: Respondents' Perception of Bunbury, Busselton and Augusta as a Place to Live

[4] This section is based on the results and analysis of the responses of 204 community residents (103 in Bunbury, 78 in Busselton and 23 in Augusta) who participated in a telephone survey conducted in late 2005. A majority of the survey respondents was born in Australia and New Zealand (79%) and lived in separate houses (86%). Less than half of the survey respondents in Bunbury and Busselton fully owned their houses while over 70 per cent of Augusta respondents fully owned their houses. The majority of Augusta respondents have a household structure mostly composed of older couples with no children while there were about a fourth of respondents from Bunbury and Busselton who were young family households with children under 14 years old. In Bunbury, the bulk of respondents reported completing Year 10 and Year 12 schooling. In Busselton, a fifth of respondents completed university education in addition to those who finished Year 10 or Year 12. The majority of Augusta respondents were university educated and Year 12 graduates. In terms of age structure, the bulk of respondents from Bunbury were 45-54 years old, in Busselton, 25-34 years old and in Augusta, over 65 years old.

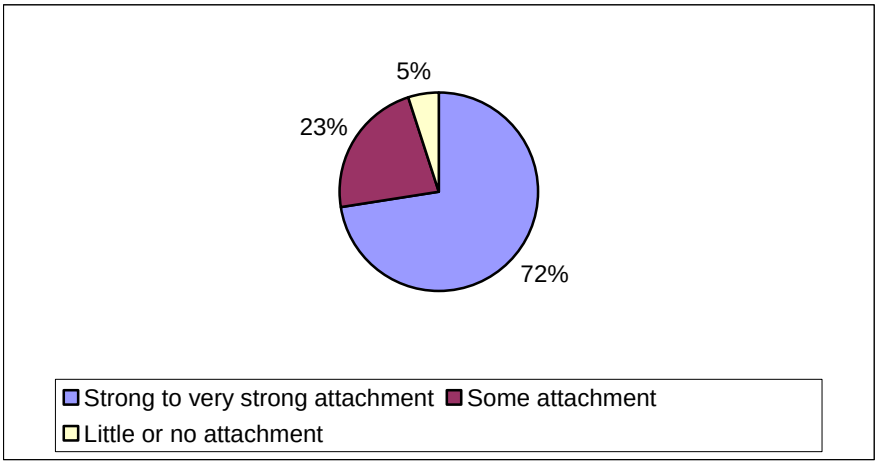


Figure 5: Respondents' Attachment to Bunbury, Busselton and Augusta

Overall, lifestyle consistently ranked the highest in terms of the reasons for living in the community (Figure 6). Work was another motivating factor, with 29 per cent of respondents citing work as a reason for choosing to live there. Another 20 per cent of respondents cited the fact that their family lives there as their reason for staying.

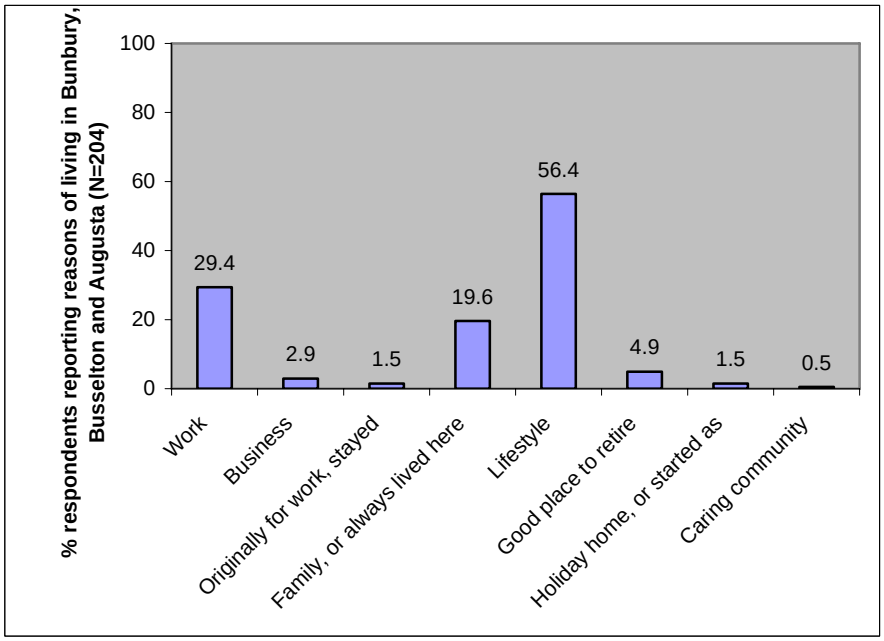


Figure 6: Reasons for Living in Bunbury, Busselton and Augusta

Figure 7 shows the level of participation of surveyed respondents in local organisations. The residents of Bunbury, Busselton and Augusta reported participation in sports or recreational organisations (57%), cultural, education or hobby groups (25%) and ratepayers or chambers of commerce (22%). Participation in professional organisations was reported by 19 per cent of respondents in these communities.

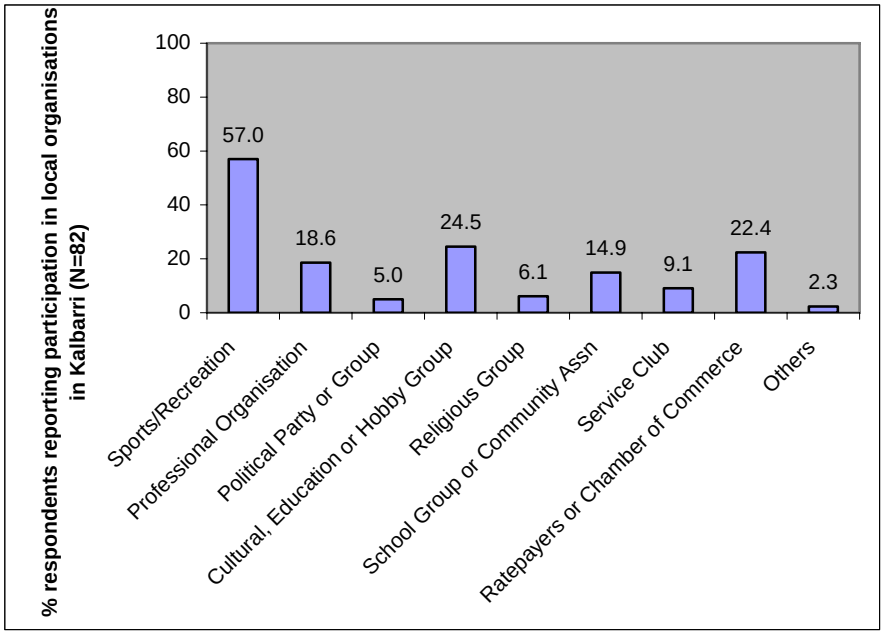


Figure 7: Participation in Local Organisations in Bunbury, Busselton and Augusta

As Figure 8A shows, the community cohesiveness scores of 7.76 for Augusta, 7.36 for Busselton and 6.61 for Bunbury display a certain degree of cohesiveness that compares well with other communities.[5] The smaller communities of Busselton and Augusta registered higher scores than the larger community of Bunbury.

Residents in all three communities have high levels of agreement that their community will get together and solve problems and that there is strong support for community activities and local events (Figure 8B). They also generally agree that the communities are active ones where people get involved and participate in local decision-making.

[5] A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Local Government Association, *Community Cohesion – An Action Guide*, <*http://www.lga.gov.uk/Documents/Publication/communitycohesionactionguide.pdf*> (cited 20 December 2006). Five items were combined to measure community cohesiveness. These were: 1) This is an active community where people get involved in local issues and activities; 2) There is strong local support for community events; 3) If there was a serious problem, people would get together and solve it; 4) This local community is friendly towards newcomers; and 5) People hare have opportunities to participate in decisions made by local government. When combined as a scale, these five items had a Cronbach's alpha coefficient of 0.768. Scores for the 19 communities ranged from a low score of 5.96 and a high score of 8.10. The mean score for the total sample of 1,033 respondents was 7.01.

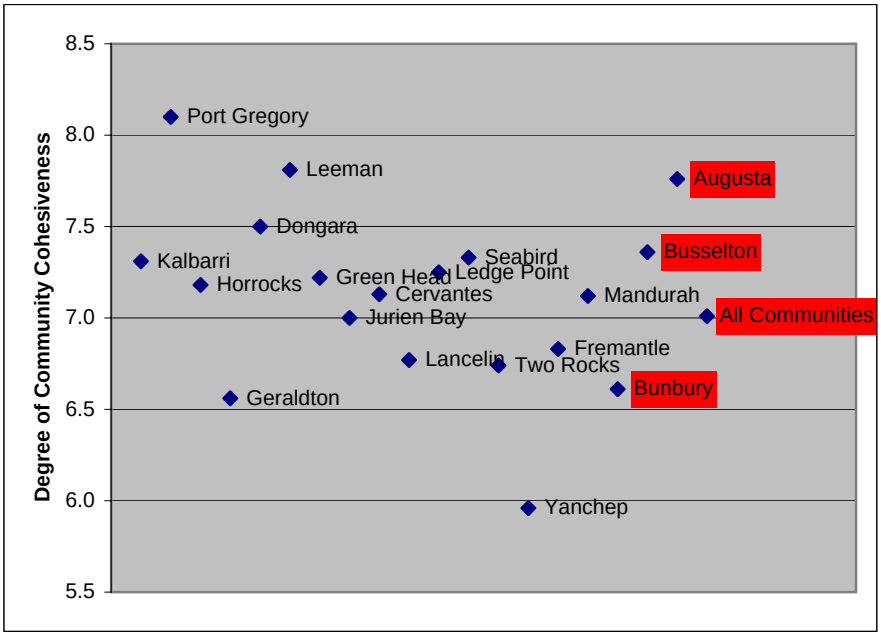


Figure 8A: Community Cohesiveness Scores across 19 Selected Communities

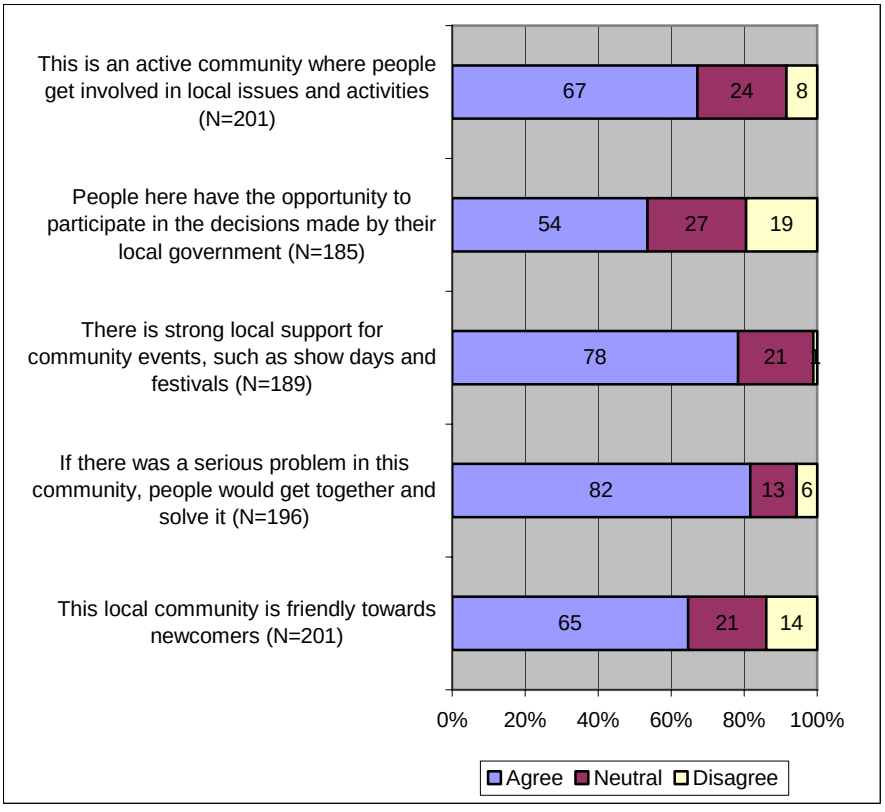


Figure 8B: Perceptions of Community Cohesiveness, Bunbury, Busselton and Augusta

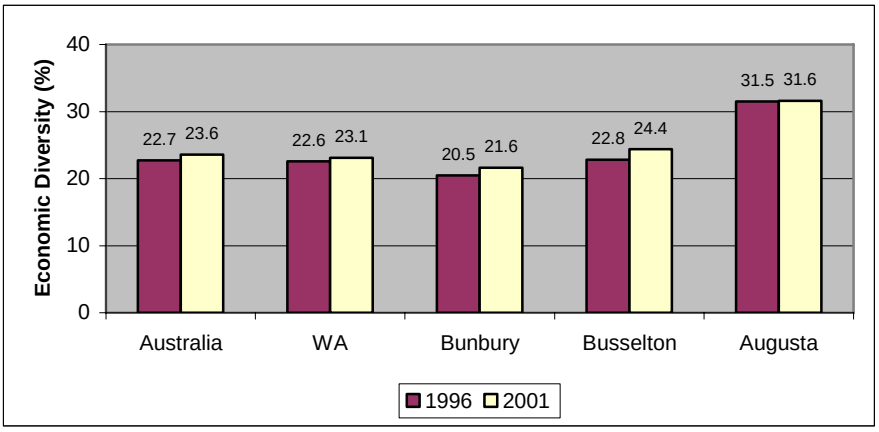
4.0 THE LOCAL ECONOMY

4.1 ECONOMIC ACTIVITIES

Retail trade, manufacturing and construction were the major employers in 2001 in Bunbury (Appendix 1A). Mining activity in Bunbury is a steadily growing industry, with recent trends indicating a 19 per cent per annum growth rate between 1996 and 2001. Mining activities in the Bunbury region concentrate on bauxite, mineral sands and coal exported through the port for domestic and international markets.

In Busselton, the bulk of the workforce was in the retail trade, construction and health and community services (Appendix 1B). As a major sub-region for the South West, Busselton provides medical, education, shopping, sports and cultural facilities for residents of nearby local government areas. Agriculture employed a significant proportion of the workforce in Augusta, followed by retail trade and the accommodation, cafes and restaurant sectors (Appendix 1C). The major agricultural industries included beef cattle production, wine grape production, vegetable growing and forestry.

In terms of economic diversity, both Bunbury and Busselton compared well with the Western Australian and Australian economies between 1996 and 2001 (Figure 9).[6] Augusta, on the other hand, had a less diversified economy for the same period.



(Source of Data: ABS 1996 and 2001 Census of Population and Housing.)

Figure 9: Economic Diversity, 1996 – 2001, Bunbury, Busselton and Augusta

[6] The proportion of persons employed in the top three subdivisions of employment (represented by the two-digit ANZSIC code) to the total number of persons employed is used as a measure of economic diversity. Only the 1996 and 2001 data were presented and compared since the 1986 and 1991 industry classification used different coding practices (King, David, d.king@abs.gov.au "Number of People Employed". Personal e-mail, 18 August 2005). A higher ratio would indicate that the community is highly dependent on the top three subdivisions of employment and is thus less diversified in economic terms. An ideally diversified economy, on the other hand, would be one that would have equal levels of activity across subdivisions.

4.1.1 Fishing[7]

From 2002/03 to 2004/05, the fishing industry contributed $18 to $23 million to the South West regional economy (Appendix 2). The catch was primarily made up of rock lobsters, molluscs and finfish. The majority of the South West Region's finfish catch consisted of shark, mullet, whiting, herring, dhufish and snapper. The commercial fishery catch landed in Bunbury and Busselton accounted for close to 25 per cent of the total value of catch in the South West, while the amount of fish landed in Augusta accounted for over 40 per cent.

Commercial aquaculture in the South West is dominated by the production of marron. The Department of Fisheries continue to play a significant role in aquaculture development in the Region, with the recent completion of major national research project to improve marron production. Other freshwater species grown in the Region include yabbies, silver perch and trout. Research continues into refining and maximising the production techniques for these species.

In terms of fishery-related infrastructure, all three communities have facilities to unload catch, refuel and undertake boat maintenance. Bunbury's Casuarina Harbour is located within the southern portion of Bunbury's 'Outer Harbour' while Augusta has a commercial fishing jetty at Point Ellis, constructed in 1984. The Busselton Jetty operated commercially until 1972 and over the past 15 years, has been undergoing restoration and preservation through funds raised by the community (Plate 1).

Plate 1: Busselton Jetty

(Source: <http://en.wikipedia.org/wiki/Image:BusseltonJetty1_gobeirne.jpg,>, cited 24 March 2007.)

Even as rock lobsters were the predominant catch in these communities, the rock lobster industry in these communities operates on a limited scale. This is because the development of fishing grounds occurred more slowly because the area south of Mandurah was considered

[7] The historical account of rock lobster fishing in the South West Region is based on information from *The Western Rock Lobster Book 2: A History of the Fishery*, Howard Gray, Westralian Books, 1999, *South West Economic Perspective*, South West Development Commission and Department of Local Government and Regional Development, 2006; *Bunbury Maritime Facilities*, <http://www.dpi.wa.gov.au/boatharbour/2849.asp> (cited 24 March 2007) and *Augusta Maritime Facilities*, <http://www.dpi.wa.gov.au/boatharbour/2850.asp#intro> (cited 24 March 2007.)

poor ground for rock lobsters. A 1959 survey of southern areas by the Fisheries Department in association with the Poole Brothers and their vessel 'Bluefin' revealed the presence of rock lobsters from Cape Leeuwin to Bunbury and plenty of suitable breeding ground in the 22 fathom zone. Despite this, there remained a belief that rock lobster potting would not be successful in the area. When a couple of enterprising individuals (Bob Jones and Steve Riley) took up diving for rock lobsters using 'hookah' apparatus for three to four hours a day in around sixty feet of water, an agreement was eventually reached for them to stop diving out of Bunbury, in return for licenses of 75-80 pots.

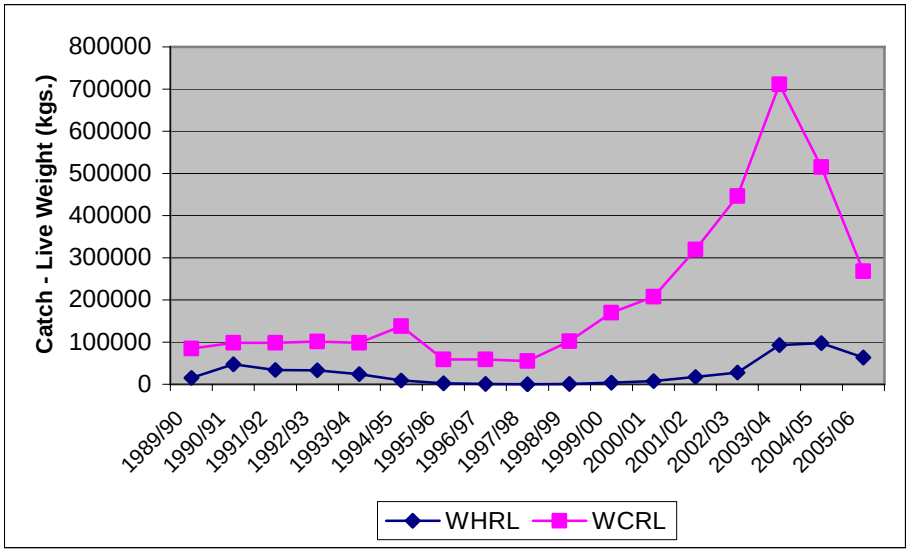
The waters off Bunbury and Busselton remained unrestricted and in 1961, four vessels fished the area, increasing to about a dozen in 1962. Some very large jumbo crays of 8-10 pounds were common. In the late 1970s, Nic Sofoulis (a Ledge Point resident) decided to head south of Mandurah out in deep water, around 70-80 fathoms where they set lines of pots and caught a substantial catch, yielding 11 bags out of the first line. In addition to the small local fishing fleet, a number of mobile rock lobster boats fish in the South West. In addition to the West Coast Rock Lobster fishery, there is also a small contingent of boats based in Augusta involved in the Windy Harbour Rock Lobster fishery.[8]

The amount of rock lobsters caught and landed in the South West has been relatively stable since the 1998/99 season (Figure 10). The amount of the catch then started to rise starting in the 2000/01 season, reaching a peak catch of 711,295 kilograms in the 2003/04 season. Although large numbers of rock lobster fishers has not historically targeted the Capes Region, there was a relatively large number of commercial fishing vessels in the South West during the 2001/02 and 2003/04 fishing seasons. This is because the life cycle and environmental variables result in rock lobster catches that occur on a boom and bust cycle.[9]

The number of WCRL boats operating in the region has also fluctuated on a month-to-month basis starting in the 2000/01 season given the large number of lobsters available, above what would normally be available during most fishing seasons (Figure 11). Therefore, in recent years, more commercial boats fish in the area during the months of February to April.

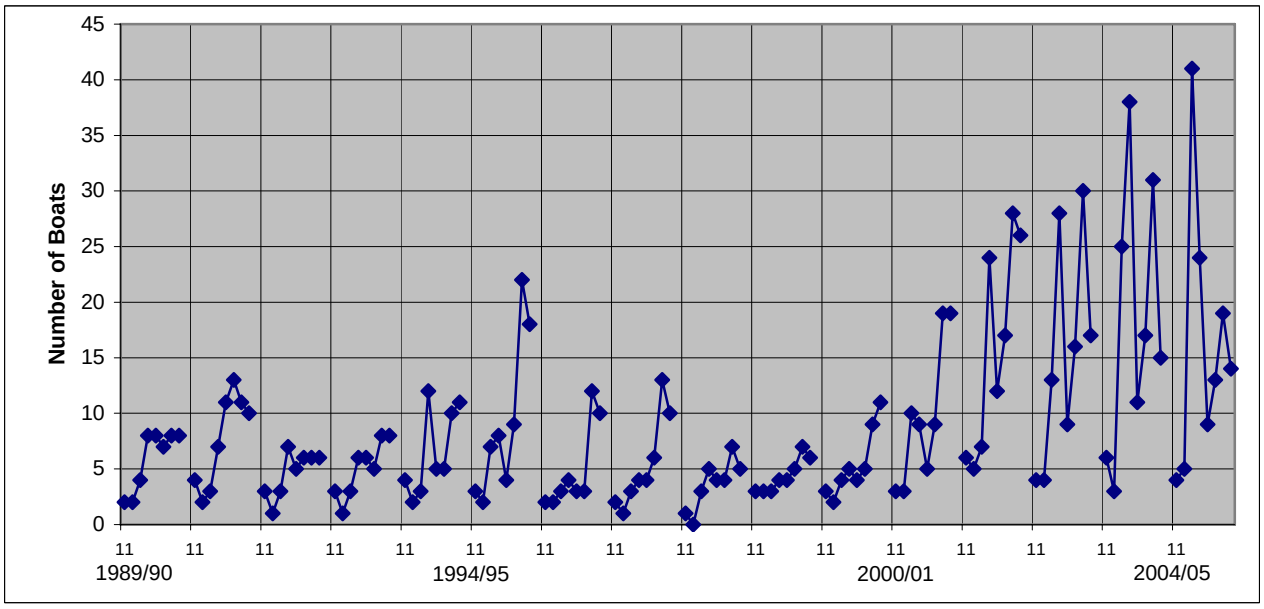
[8] As a result of declining catches over time and a high degree of non-profitability within the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Minister [of Fisheries] restructured the fishery under the Fisheries Adjustment Scheme from 17 December 1996. The rationalisation of the fishery reduced the number of boats authorised to fish, down to two boats and at the same time, reduced the number of pots by 60 per cent to 350 pots (200 and 150 pots, respectively) (Fisheries Department, 2002: 7-8).

[9] The Capes Region refers to the area between Cape Naturaliste in the north to Cape Leeuwin in the south, including Hamelin Bay and Cowaramup Bay. Due to variations in climate, weather patterns (such as predation and food availability), and external factors (such as fishing pressure), variability in the rock lobster population is high. Consequently, the number of puerulus returning to the coast each season is not stable. This variation has been accounted for by the managers and scientists of the Fisheries Department and is included in their prediction of the future catch. However, large scale patterns, such as changes in the Southern Oscillation Index which are linked to the El Nino phenomenon also affect the Western Rock Lobster fishery, by changing the strength of the Leeuwin current, and consequently affecting the recruitment of puerulus back into the coastal population. Events such as this occur on a cyclic basis, with El Nino events occurring roughly every 4-7 years. These events also alter the strength and duration of the Leeuwin Current (the predominant current running southwards down the WA coastline which is also responsible for bringing puerulus recruits back to WA's coastal areas), and researchers have developed a method for determining the strength of the Leeuwin current using sea levels. When the Leeuwin current is stronger, such as during La Nina years, more puerulus are recruited back into WA's populations along the coast (including towards the southern limits of their distribution) and this consequently increases the number of recruits into the Capes Region. Following a few years of growth in the colder, nutrient rich waters of WA's south western coast, these lobsters become a prime target for the highly mobile commercial fishing fleet, as occurred in the Capes Region in the 2002/03 season. This seasonality of the Leeuwin Current also explains why there is a sudden increase in commercial activity in the Capes Region in some years followed by reduced activity for a few seasons (*Western Rock Lobster Industry Code of Conduct for Fishers Operating between Cape Naturaliste and Cape Leeuwin*, WRLC, 2005).



(Source of Data: Department of Fisheries, Western Australia.)

Figure 10: Trends in Live Weight Catch (kgs.), 1989/90 - 2005/06, WCRL and WHRL Fisheries



(Source of Data: Department of Fisheries, Western Australia.)

Figure 11: Monthly Trends in the Number of Boats in the WCRL Fishery, 1989/90 – 2004/05, Southwest Region

Surveyed residents in the three communities indicated that they were largely unaware of the rock lobster industry and were in general agreement that the economic viability of their communities was not dependent on this fishery (Figure 12). The suggestion that the management of the commercial rock lobster fishing should include greater consultation received general agreement among the respondents. Average ratings of agreement were highest in Busselton/Augusta (8.4) and Bunbury (8.2). The statement that the decline in the number of crayfish boats has had a negative impact on local business is low in all the towns.

Other issues of concern raised by residents in Busselton/Augusta and Bunbury included concerns that commercial boats come too close to recreational fishers, concerns about the safety of surfers and concerns that boats attract sharks. In view of the sudden and irregular influx of commercial fishing vessels to the area, a Code of Conduct for fishermen in the Capes Region was drafted in 2005 to address the objections and concerns raised by the local communities.

On whether they will encourage young people to enter the rock lobster industry, 42 per cent of surveyed respondents responded in the affirmative (Figure 13). Almost a third of respondents were unsure about the issue. One rock lobster fisher (No. 193, 2006) noted that with the uncertainty of the fishing business, "he suggested to his son to get into a trade first and then try fishing afterwards once he'd accomplished something."

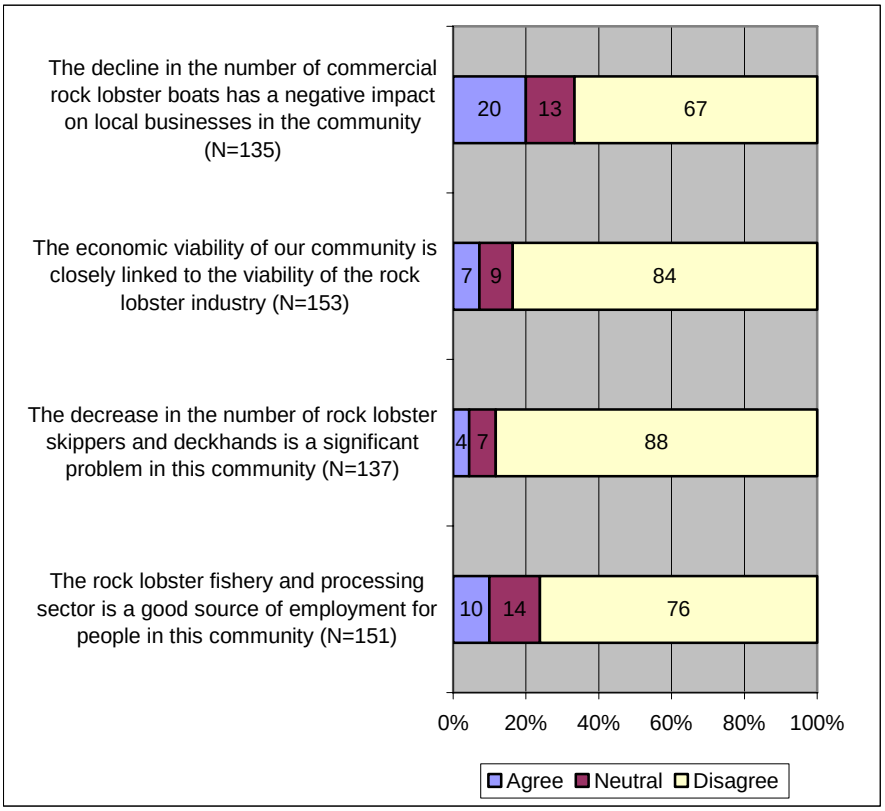


Figure 12: Perceptions of the Rock Lobster Industry, Bunbury, Busselton and Augusta

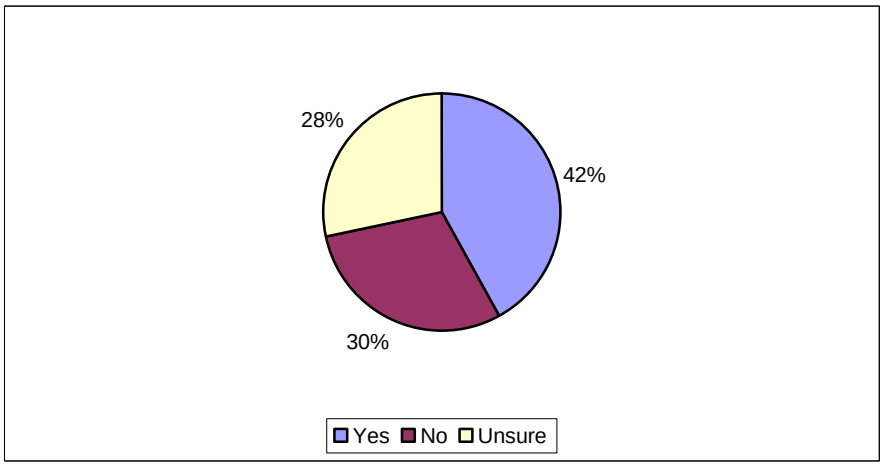
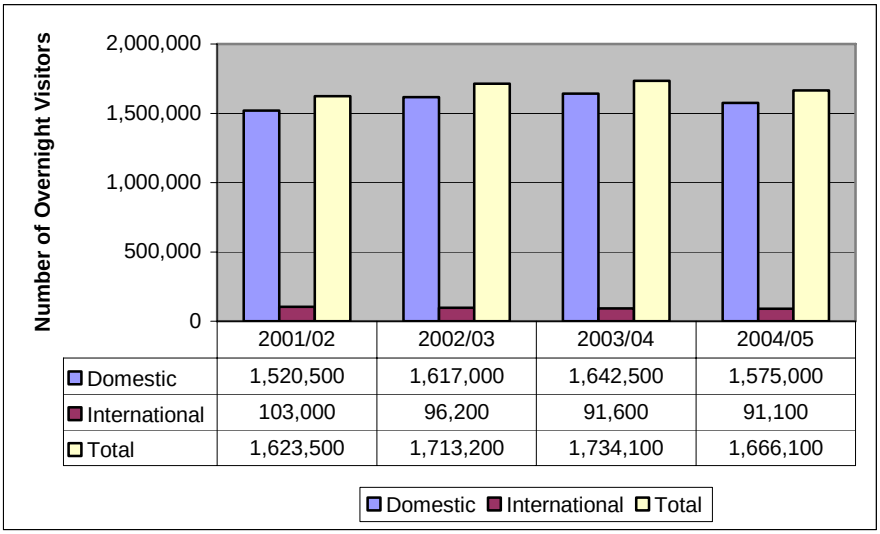


Figure 13: Proportion of Respondents who will recommend Rock Lobster Fishing to Young People, Bunbury, Busselton and Augusta

4.1.2 Tourism

The South West Region of Western Australia has long been regarded as a holiday destination for residents in surrounding agricultural hinterland and the residents of Perth. Tourism has remained an important industry in Bunbury and there has been recent growth in tourism in the nearby Augusta-Margaret River and Busselton shires. Tourism in the South West Region is expected to continue to grow in importance in terms of income and employment (SWDC and DLGRD, 2006). The Region continues to have the largest number of tourism accommodation projects in the planning and construction stages compared to other regions. Another emerging market is the business conference/meetings/seminar industry. The South West's proximity to Perth and the provision of high quality accommodation and new conference facilities are being promoted intensively.

The majority of tourists staying overnight in the South West Region have remained relatively consistent since 2001/02 (Figure 14). Over 90 per cent of international tourists visiting Western Australia visited the South West Region for holiday and leisure, while 60 per cent of domestic tourists visit for holidays and another 20 percent visit friends, relatives and family (Appendix 4). When in the region, there are many major tourists' attractions that include natural attractions, such as the beaches, rivers and forests, and water-based and wine-based activities such as fishing and whale watching and cellar door tasting and sales.



	2001/02	2002/03	2003/04	2004/05
Domestic	1,520,500	1,617,000	1,642,500	1,575,000
International	103,000	96,200	91,600	91,100
Total	1,623,500	1,713,200	1,734,100	1,666,100

(Source of Data: Tourism, Western Australia.)

Figure 14: Number of Overnight Visitors, 2001/02 - 2004/05, South West Region

When asked about the opportunity for more tourism activities in their area, over half of the surveyed respondents gave high levels of agreement (Figure 15). The other half was either unsure about the issue or do not agree with the statement. Nevertheless, programs are underway to protect the fishing areas in Western Australia. The State Government in its habitat and biodiversity protection program, ensuring that key fishing grounds remain in good condition (Figure 16), has identified some areas of the Southwest. The Department of Fisheries has provided extensive scientific and management advice to Government in relation to the planning for the proposed Capes Marine Park between Busselton and Augusta (Department of Fisheries, 2004: 11).

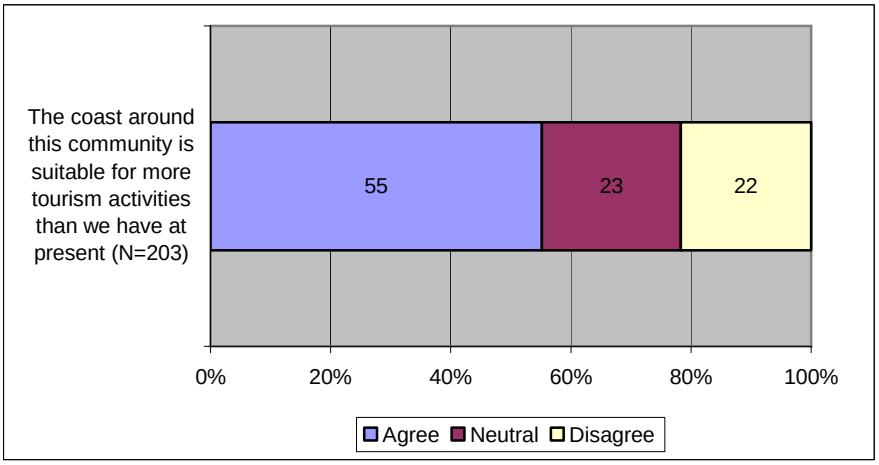


Figure 15: Perceptions of Tourism Potential, Bunbury, Busselton and Augusta

(Source: <http://www.fish.wa.gov.au/docs/sof/2003/sof20032004-0202.pdf>)

Figure 16: Current and Proposed Areas of Protected Fish Habitat in the West Coast Bioregion

4.1.3 Business and Commerce

Strong urban development has led to a corresponding growth in retail and service sector in Bunbury. Retail trading activities are widespread and currently consist of more than 400 different business activities. The range includes everything from basic food and clothing to

retail and wholesale trade, banking, investment and financial services, industrial and building supplies, real estate, accommodation, hospitality, and recreational and cultural requirements. With its access to major road, rail and port facility, Bunbury is the regional distribution centre in the South West Region.

Light and heavy industry also significantly contributes to the economic viability of Bunbury. It has a diverse array of manufacturing activities including: major mineral resource developments, agricultural processing plants, and a variety of cottage industries. Bunbury has a number of small industrial estates and a large industrial park known as the Kemerton Industrial Park. With a total area of 2,106 hectares, the facilities of the Kemerton Industrial Park attract significant investments in the area.

As the second largest urban centre in the region, Busselton also has a strong retail industry. The Vasse Newtown land development project near Busselton will further contribute to the growth of the retail industry. In Augusta, 15 per cent of the work force is employed in the retail trade sector in 2001.

4.2 INFRASTRUCTURE SUPPORT[10]

4.2.1 Roads and Transport

Access to the South West region of Western Australia has greatly improved over the years. At present, the region has a well-integrated and maintained road and rail network. The Bussell Highway runs south of Bunbury and provides access to all three communities. A series of roads were constructed throughout the 1990s to allow traffic to bypass both Bunbury and Busselton. Each of these communities has a well developed internal sealed road network.

The Greater Bunbury Region Plan incorporates a Bunbury outer ring road that will connect the five major roads that lead into Bunbury – the Australind Bypass, South Western Highway, Picton-Boyanup Road, North Boyanup Road and Bussel Highway. The road will cater to the increasing volumes of commuter, tourist and commercial traffic coming to Bunbury and travelling to areas further south.

The local rail network services the port, the industrial area and provides passenger services between Bunbury and Perth. Bunbury and Busselton have regional airports. Bunbury's is a sealed runway and has a terminal building. Augusta has a local airstrip suitable only for small, light aircraft. There are also buses that service all areas of the South West Region from Perth.

Another key transport feature is Bunbury's deep-water port, which consists of an outer and an inner harbour (Plate 2). The outer harbour is generally used for fishing boats and some commodity export. Most commodity export activity, however, occurs from the inner harbour, which unlike the outer harbour, is buffered from nearby residential areas. The Bunbury port is a major export port for alumina, mineral sands and woodchips from the South West and adjacent areas. Total trade through the port in 2003/04 was 12 million tonnes, forming the backbone of the region's economic activity. The Port of Bunbury is recognised as one of Australia's most efficient ports and is undergoing expansion to meet the demands of industry in the region. A casting basin is available at the port for the construction of concrete offshore structures for the oil and gas industry.

[10] This section incorporates information from the *South West Economic Perspective*, South West Development Commission and Department of Local Government and Regional Development., Western Australia, 2006 and About Bunbury Port, <http://www.byport.com.au/index.htm?page=/bpa.html> (cited 27 March 2007).

Plate 2: Berth 1 – Mineral Sands Loading, Bunbury Port

(Source: <http://www.byport.com.au/index.htm?page=/bpa.html>, cited 27 March 2007.)

4.2.2 Water and Electricity

The Department of Water is responsible for the management of water and issues water allocation licenses to the South West Region's three public water utilities – Water Corporation, Aqwest (Bunbury Water Board) and the Busselton Water Board (SWDC and DLGRD, 2006: 15). Bunbury has a relatively secure water supply for domestic, industrial and agricultural uses, provided by local dams and underground water supplies.

Electricity is supplied to the southwest from the South West electricity grid, with over 50 per cent of their power generated by coal (SWDC, 2004). A $260 million gas-fired power station at Kemerton Industrial Park became operational in 2005. It will supply Synergy (formerly Western Power) with 260 megawatts of peak generating capacity over the next 25 years. Bunbury also has access to the natural gas pipeline, which extends from Western Australia's North West Shelf to Busselton, servicing the Worsley alumina refinery and other large industries in the region.

4.2.3 Communications

The southwest region has a good telecommunications network including a fibre optic network and several mobile phone base stations. Most of the population has access to land based telephone lines, internet and mobile phone coverage, although mobile phone coverage in surrounding areas immediately outside of towns is limited. There are a number of internet providers in Bunbury although ADSL is available only in Bunbury town. The Edith Cowan University Campus in Bunbury also has a high capacity microwave telecommunications link.

A current Western Australian State Government project is improving the telecommunications technology and e-commerce opportunities in the Bunbury region. This initiative has a funding of $5.5 million and will support e-commerce and training, the development of an e-library, and a study of the limitations of the current telecommunications infrastructure to economic growth in the region.

4.3 INSTITUTIONAL SERVICES

4.3.1 Government Services[11]

Being the gateway and main centre of the South West, Bunbury has a variety of business and services available in the City Centre. These include a major post office, law services and courts, all financial and banking services, a huge public library (one of 3 public libraries in Bunbury) and insurance and accounting firms. The Bunbury City Council and Council Chambers are also within the City Centre. Although not directly in the City, there are also extensive health services throughout Bunbury including the South West Health Campus. The South West Development Commission also has its main office in Bunbury and a regional office in Busselton.

The Shire of Busselton has one of its two library facilities in Busselton. The Geographe Leisure Centre is also located in Busselton, offering multi-purpose indoor courts and indoor-heated aquatic facility. In Augusta, the Shire operates both the public library and the Augusta Museum.

4.3.2 Education and Health

As a major regional centre, the City of Bunbury has a comprehensive range of educational and health services including: state, church and independent primary and secondary schools; a regional TAFE campus; a regional university campus (Edith Cowan University); a regional private and public hospital; nursing homes, and old age care facilities. There are also a number of childcare and kindergarten centres, education centres for special needs, adult learning facilities and TAFE campuses in Augusta and Bunbury. There are 48 general medical practitioners in Bunbury.

Augusta and Busselton both have a local hospital and general medical practitioners. The hospital in Augusta caters for emergencies and maternity needs. The residents of Busselton can access the South West Health Campus located in Bunbury.

Education in Augusta is well serviced by State and community facilities including a day car centre, a pre-primary school and a local TAFE campus. Due to the town's proximity to Margaret River, residents of Augusta can also access the TAFE and secondary education there. Busselton has a number of State and private primary and secondary schools, a local TAFE campus and access to the regional university campus located in Bunbury.

4.3.3 Law and Order

The Bunbury Police Station services the largest population outside of Perth. It is the only station in the district which operates 24 hours a day. In addition to policing their own area, the staff at Bunbury is responsible for monitoring the district's radio channels, providing a lock-up facility and resource support for outstations. The Bunbury unit also fields all the 000 emergency calls for the South West Region. There are many specialised units operating from Bunbury, including the Canine (K9) division, detective and burglary squads and crime scene officers. Busselton and Augusta also have Police Stations in their respective towns.

[11] This section is based on information from *Bunbury - Government Services*, <http://www.bcgs.wa.edu.au/bunbury_region/bunbury_welcome.htm> (cited 27 March 2007).

As a major regional centre, Bunbury experiences a higher crime rate than Busselton or Augusta (Appendix 5A). While Busselton and Augusta typically have low crime rates, during tourist seasons there is greater criminal activity, mainly opportunistic crimes such as stealing valuables from parked cars (Appendices 5B and 5C). Busselton incurs higher incidences of burglaries.

Appendix 1A: Employment by Industry, 1991-2001 - Bunbury									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	111	27	138	121	39	160	295	119	414
of which: Rock Lobster Fishing			--			0			6
Mining	368	63	431	283	42	325	512	85	597
Manufacturing	1,130	230	1,360	1,382	276	1,658	2,431	451	2,882
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	217	18	235	179	26	205	273	39	312
Construction	620	81	701	894	126	1,020	1,678	268	1,946
Wholesale Trade	1,054	974	2,028	355	139	494	728	324	1,052
Retail Trade				793	987	1,780	1,520	2,134	3,654
Accommodation, Cafes and Restaurants	Not a separate sector			166	369	535	247	624	871
Transport and Storage	398	63	461	365	61	426	601	137	738
Communication Services	71	38	109	80	51	131	111	62	173
Finance and Insurance	373	413	786	80	141	221	144	253	397
Property and Business Services				473	388	861	904	910	1,814
Government Administration and Defence	209	92	301	163	131	294	294	462	756
Education	Not a separate sector			254	551	805	427	1,008	1,435
Health and Community Services	560	1,176	1,736	201	773	974	318	1,537	1,855
Cultural and Recreational Services	259	504	763	103	96	199	153	187	340
Personal and Other Services				193	222	415	405	337	742
Non-classified/Non-stated	360	280	640	214	145	359	246	198	444
Total for All Industries	5,730	3,959	9,689	6,299	4,563	10,862	11,287	9,135	20,422
Share of Agriculture, Forestry and Fishery to Total Employment	1.9	0.7	1.4	1.9	0.9	1.5	2.6	1.3	2.0
Share of Top Three Sectors to Total Employment	47.9	67.0	52.9	48.7	50.6	41.0	49.9	51.2	41.5
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 1B: Employment by Industry, 1991-2001 - Busselton									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	118	54	172	116	48	164	171	50	221
of which: Rock Lobster Fishing			--			13			0
Mining	118	3	121	114	11	125	103	8	111
Manufacturing	239	66	305	322	97	419	388	116	504
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	23	6	29	19	0	19	31	3	34
Construction	182	24	206	374	53	427	551	83	634
Wholesale Trade	391	321	712	110	40	150	153	56	209
Retail Trade				329	338	667	528	566	1,094
Accommodation, Cafes and Restaurants	Not a separate sector			105	210	315	148	308	456
Transport and Storage	66	27	93	70	32	102	113	49	162
Communication Services	32	3	35	46	16	62	50	17	67
Finance and Insurance	136	130	266	44	64	108	48	80	128
Property and Business Services				172	140	312	226	227	453
Government Administration and Defence	73	27	100	107	45	152	105	80	185
Education	Not a separate sector			82	181	263	112	238	350
Health and Community Services	162	389	551	84	302	386	95	428	523
Cultural and Recreational Services	105	188	293	23	17	40	37	36	73
Personal and Other Services				74	72	146	116	114	230
Non-classified/Non-stated	133	98	231	68	65	133	75	62	137
Total for All Industries	1,778	1,336	3,114	2,259	1,731	3,990	3,050	2,521	5,571
Share of Agriculture, Forestry and Fishery to Total Employment	6.6	4.0	5.5	5.1	2.8	4.1	5.6	2.0	4.0
Share of Top Three Sectors to Total Employment	45.7	67.2	50.4	45.4	49.1	37.9	48.1	51.6	40.4

(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)

Appendix 1C: Employment by Industry, 1991-2001 - Augusta									
Urban Centre/Locality	***1991***			***1996***			***2001***		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Agriculture, Forestry and Fishery	16	12	28	25	6	31	46	15	61
of which: Rock Lobster Fishing			--			0			0
Mining	3	0	3	24	0	24	6	0	6
Manufacturing	12	6	18	26	3	29	12	8	20
of which: Seafood Processing			--			0			0
Electricity, Gas and Water Supply	3	0	3	6	0	6	0	0	0
Construction	24	7	31	97	6	103	30	6	36
Wholesale Trade	13	21	34	10	3	13	0	3	3
Retail Trade				25	20	45	28	27	55
Accommodation, Cafes and Restaurants	Not a separate sector			15	28	43	15	28	43
Transport and Storage	9	3	12	0	0	0	8	6	14
Communication Services	0	0	0	8	0	8	3	0	3
Finance and Insurance	13	6	19	0	6	6	0	3	3
Property and Business Services				17	14	31	12	7	19
Government Administration and Defence	6	6	12	8	4	12	6	9	15
Education	Not a separate sector			3	6	9	6	8	14
Health and Community Services	16	30	46	3	19	22	6	26	32
Cultural and Recreational Services	17	29	46	6	0	6	3	3	6
Personal and Other Services				16	3	19	3	15	18
Non-classified/Non-stated	12	12	24	6	6	12	6	6	12
Total for All Industries	144	132	276	295	124	419	190	170	360
Share of Agriculture, Forestry and Fishery to Total Employment	11.1	9.1	10.1	8.5	4.8	7.4	24.2	8.8	16.9
Share of Top Three Sectors to Total Employment	39.6	60.6	45.7	50.2	54.0	45.6	54.7	47.1	44.2
(Source of Data: ABS 1991, 1996 and 2001 Census of Population and Housing.)									

Appendix 2: Catch and Value of Wildcaught Species/*a*, 2002/03 - 2004/05 - Western Australia and the South-West Region						
	Catch (tonnes)			***Estimated Value ($ '000)/c***		
	2002/2003	***2003/2004***	***2004/2005/b***	***2002/2003***	***2003/2004***	***2004/2005/b***
Fish /d						
Western Australia	16,378	17,301	15,798	42,527	45,882	45,867
South-West Region	1,772	1,795	1,916	3,478	3,627	3,790
of which: Bunbury's Share (%)	44.4	32.6	43.7	46.5	32.5	48.7
of which: Busselton's Share (%)	11.9	9.4	9.8	14.5	8.3	11.9
of which: Hamelin Bay/Augusta's Share (%)	12.0	17.6	7.7	18.7	31.4	14.5
Crabs						
Western Australia	1,229	1,167	1,225	7,325	7,413	7,457
South-West Region	28	26	24	186	110	147
of which: Bunbury's Share (%)	69.6	85.9	80.1	43.9	83.5	56.2
of which: Busselton's Share (%)	7.3	4.8	6.1	4.6	4.7	4.3
of which: Hamelin Bay/Augusta's Share (%)	15.1	7.0	7.7	46.0	9.5	29.9
Rock Lobsters						
Western Australia	11,477	13,744	12,303	281,023	261,434	264,659
South-West Region	474	817	642	11,607	15,537	13,826
of which: Bunbury's Share (%)	32.7	20.5	22.6	32.7	20.4	22.5
of which: Busselton's Share (%)	31.8	29.7	27.0	31.8	29.7	26.9
of which: Hamelin Bay/Augusta's Share (%)	31.3	40.6	43.6	31.3	40.6	43.6
Molluscs						
Western Australia	7,607	4,080	7,538	37,609	27,342	38,120
South-West Region	67	94	94	3,036	3,792	3,749
of which: Bunbury's Share (%)	13.3	12.5	3.9	7.4	9.2	0.9
of which: Busselton's Share (%)	13.7	9.6	13.1	9.3	5.9	8.6

(continued next page)

Appendix 2: Catch and Value of Wildcaught Species/*a*, 2002/03 - 2004/05 - Western Australia and the South-West Region (cont.)						
	Catch (tonnes)			*Estimated Value ($ '000)/c*		
	2002/2003	*2003/2004*	*2004/2005/b*	*2002/2003*	*2003/2004*	*2004/2005/b*
Total /e						
Western Australia	40,969	40,234	40,570	418,961	388,093	399,242
South-West Region	2,341	2,732	2,676	18,307	23,066	21,512
of which: Bunbury's Share (%)	41.5	28.8	37.6	31.0	20.7	23.4
of which: Busselton's Share (%)	15.9	15.5	14.0	24.6	22.4	21.0
of which: Hamelin Bay/Augusta's Share (%)	17.1	26.2	18.4	33.9	45.1	44.4

/a Excludes the take of specimen shells, marine aquarium fish, corals and sponges taken by commercial fishers under special licenses. The wildcaught and estimated value data represent a gross estimate value of the fish products taken by the "wild capture fisheries" only. The data relate to the port of landing at which the fishers indicated that they have unloaded their catches, which may or may not relate to the area from which the catch was taken.

/b Catch and value data for 2004/2005 are estimates.

/c All dollar values are estimates

/d Estimated values of shark fin are included in this category.

/e Total values include prawns, other crustaceans and other classes.

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 3: Selected WCRL Fishery Indicators, 1991/92, 1996/97, 2001/02 - 2004/05 - South West Region						
	1991/1992	**1996/1997**	**2001/2002**	**2002/2003**	**2003/2004**	**2004/2005**
Catch - Live Weight (in kg.)						
All Zones	12,130,113	9,901,466	8,965,875	11,387,239	13,593,362	12,138,377
Zone A	3,063,669	2,893,615	2,374,410	2,656,146	3,015,930	3,142,484
Zone B	2,993,499	2,549,657	2,076,405	2,311,497	2,406,317	2,292,105
Zone C	6,072,945	4,458,193	4,515,060	6,419,596	8,171,115	6,703,788
Southwest Communities	132,105	60,115	336,833	474,160	809,728	611,115
Total Potlifts						
All Zones	12,696,189	10,618,735	10,334,890	10,179,222	10,130,930	9,722,986
Zone A	2,965,790	2,390,837	2,359,318	2,367,535	2,270,112	2,289,252
Zone B	3,148,133	2,745,414	2,640,864	2,458,276	2,481,810	2,351,521
Zone C	6,582,266	5,482,484	5,334,708	5,353,411	5,379,008	5,082,213
Southwest Communities	156,156	81,549	328,276	356,654	462,206	419,332
Number of Boats (as of December)						
All Zones	680	610	569	563	549	535
Zone A	176	149	142	145	138	136
Zone B	167	154	143	137	136	130
Zone C	337	307	284	281	275	269
Southwest Communities	6	3	7	6	5	7
Number of Persons Engaged (as of December)						
All Zones	1,755	1,654	1,590	1,594	1,525	1,489
Zone A	436	383	367	375	348	351
Zone B	394	390	375	362	347	330
Zone C	925	881	848	857	830	808
Southwest Communities	13	8	20	19	16	22

(Source of Data: Department of Fisheries, Western Australia.)

Appendix 4: Number and Purpose/a of Overnight Visits, 2001/02 - 2004/05 - South West Region								
	2001/2002		2002/2003		2003/2004		2004/2005	
	Visitors	Percent	Visitors	Percent	Visitors	Percent	Visitors	Percent
Domestic Visitors								
Holiday/Leisure /b	922,500	60.7	973,500	60.2	1,028,000	62.6	992,500	63.0
Visiting Friends/Relatives	420,000	27.6	454,500	28.1	427,500	26.0	405,000	25.7
Business /c	142,500	9.4	148,000	9.2	142,500	8.7	141,000	9.0
Other /d	38,000	2.5	43,500	3	40,500	2	39,000	2
Total	1,520,500	100.0	1,617,000	100.0	1,642,500	100.0	1,575,000	100.0
International Visitors								
Holiday/Leisure	94,600	91.8	87,900	91.4	81,600	89.1	78,700	86.4
Visiting Friends/Relatives	7,900	7.7	7,300	7.6	8,800	9.6	10,500	11.5
Business	800	0.8	1,600	1.7	2,200	2.4	2,100	2.3
Other	2,100	2.0	2,100	2.2	1,300	1.4	2,100	2.3
Total	103,000	100.0	96,200	100.0	91,600	100.0	91,100	100.0
Total Visitors								
Holiday/Leisure	1,017,100	62.6	1,061,400	62.0	1,109,000	64.0	1,071,200	64.3
Visiting Friends/Relatives	427,900	26.4	461,800	27.0	436,300	25.2	415,500	24.9
Business	143,300	8.8	149,600	8.7	144,700	8.3	143,100	8.6
Other	40,100	2.5	45,600	2.7	41,800	2.4	41,100	2.5
Total	1,623,500	100.0	1,713,200	100.0	1,734,100	100.0	1,666,100	100.0

/a Purpose categories may not add up to total overnight visitor estimates as overnight visitors may report several purposes for visiting various locations on a visit to the region.

b Comprises holidays, leisure/relaxation/getting away, entertainment/attending special events, sport participation, sport spectating, shopping.

/c Comprises work (as driver/transport crew), business/other work, conferences/exhibitions/conventions/trade fairs, training and research.

/d Includes everything else such as education (mostly students), employment leisure (e.g. working holiday), personal appointment/business (excl. health), health related and providing transport.

(Source of Data: Tourism Western Australia.)

Appendix 5A: Crime Data, 2001/02 - 2004/05, Bunbury				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Southern Region	2,601	2529	2,778	1,889
of which: Bunbury (number)	175	202	189	261
as a percent of Southern Region	6.7	8.0	6.8	13.8
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Southern Region	3948	3786	3726	1524
of which: Bunbury (number)	233	162	124	196
as a percent of Southern Region	5.9	4.3	3.3	12.9
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Southern Region	3224	2967	2312	1116
of which: Bunbury (number)	178	264	144	171
as a percent of Southern Region	5.5	8.9	6.2	15.3
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Southern Region	122	107	95	59
of which: Bunbury (number)	12	9	8	16
as a percent of Southern Region	9.8	8.4	8.4	27.1
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Southern Region	809	963	801	315
of which: Bunbury (number)	59	39	40	58
as a percent of Southern Region	7.3	4.0	5.0	18.4

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

Appendix 5B: Crime Data, 2001/02 - 2004/05, Busselton				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Southern Region	2,601	2529	2,778	1,889
of which: Busselton (number)	63	96	66	95
as a percent of Southern Region	2.4	3.8	2.4	5.0
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Southern Region	3948	3786	3726	1524
of which: Busselton (number)	82	51	55	98
as a percent of Southern Region	2.1	1.3	1.5	6.4
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Southern Region	3224	2967	2312	1116
of which: Busselton (number)	123	70	75	106
as a percent of Southern Region	3.8	2.4	3.2	9.5
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Southern Region	122	107	95	59
of which: Busselton (number)	2	3	2	8
as a percent of Southern Region	1.6	2.8	2.1	13.6
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Southern Region	809	963	801	315
of which: Busselton (number)	23	20	14	23
as a percent of Southern Region	2.8	2.1	1.7	7.3

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

Appendix 5C: Crime Data, 2001/02 - 2004/05, Augusta				
	2001/2002	***2002/2003***	***2003/2004***	***2004/2005***
Assault /a				
Western Australia	18,209	18,367	19,575	23,444
Regional WA	6,174	6,554	7,359	8,933
Southern Region	2,601	2529	2,778	1,889
of which: Augusta (number)	7	6	4	6
as a percent of Southern Region	0.3	0.2	0.1	0.3
Burglary (Dwelling) /b				
Western Australia	39,931	40,369	9,281	26,813
Regional WA	8,549	8,364	7,764	6,103
Southern Region	3948	3786	3726	1524
of which: Augusta (number)	5	9	0	4
as a percent of Southern Region	0.1	0.2	0.0	0.3
Burglary (Other) /c				
Western Australia	21,269	20,138	17,807	13,973
Regional WA	6,087	5,586	4,633	3,897
Southern Region	3224	2967	2312	1116
of which: Augusta (number)	10	4	6	2
as a percent of Southern Region	0.3	0.1	0.3	0.2
Robbery /d				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	237	215	200	231
Southern Region	122	107	95	59
of which: Augusta (number)	0	0	0	0
as a percent of Southern Region	0.0	0.0	0.0	0.0
Stolen Motor Vehicle /e				
Western Australia	12,701	11,101	9,281	7,468
Regional WA	1,717	1,839	1,604	1,331
Southern Region	809	963	801	315
of which: Augusta (number)	5	3	0	2
as a percent of Southern Region	0.6	0.3	0.0	0.6

/a This group is made up of the following offences: non-aggravated sexual assault, aggravated sexual assault, non-aggravated assault, and aggravated assault.

/b To enter or attempt to enter any building, structure, tent, vehicle or vessel that is ordinarily used for human habitation without consent, with intent to commit an offence such as to steal property.

/c To enter or attempt to enter a building, structure, tent, or conveyance other than a dwelling without the owner's consent, with intent to commit an offence such as to steal property.

/d This group is made up of the following offences: non-aggravated robbery, aggravated robbery (firearm) and aggravated robbery (other).

/e Unlawfully using a motor vehicle without the consent of the owner or the person in charge of that motor vehicle.

(Source of Data: Western Australia Police Service.)

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