

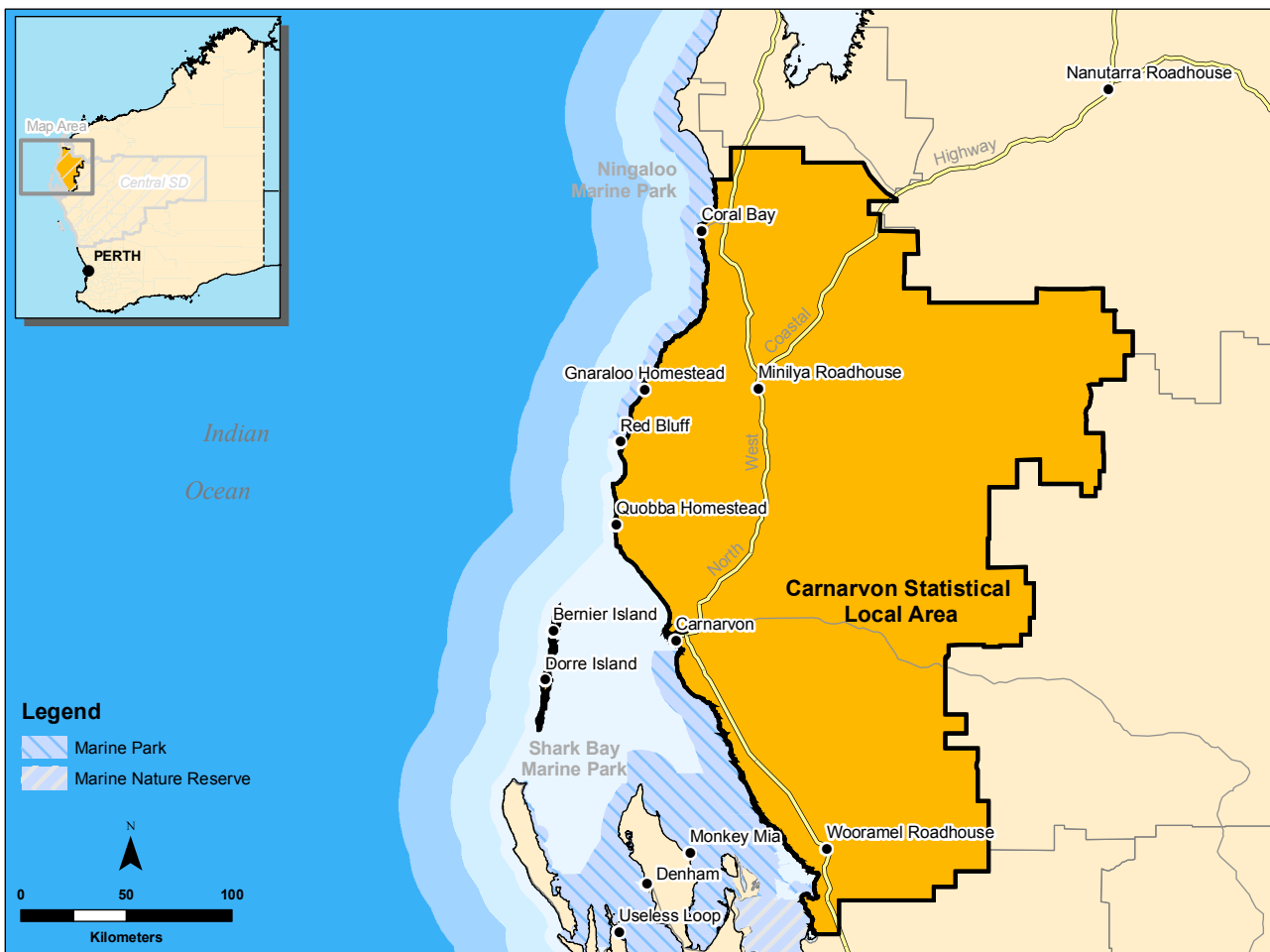
Chapter Two: Carnarvon

2.1 Introduction

The Carnarvon Statistical Local Area (here after referred to as Carnarvon; Figure 2.1) is an established horticultural and pastoral area of Western Australia. Carnarvon also has a long history of commercial fishing, and more recently has experienced growth from the development and expansion of inland mining operations. Carnarvon has a long coastline, incorporating a large area of the world famous Ningaloo Reef Marine Park. Participation in human activities within Carnarvon’s marine and coastal environment is expected to increase over the coming decade. This expected increase in activity may have implications for the management of the natural resources of the coastal and marine environment. Therefore, identifying the nature and location of uses and probable priority concerns for the coastal and marine environment is an essential step towards effective on-going natural resource management in Carnarvon. The following section outlines the major demographic features of Carnarvon’s population.

Between 1996 and 2001 Carnarvon experienced population growth, increasing from 8,616 to 9,152 persons (ABS, 2007). Between 2001 and 2006 the area experienced a period of population decline, with a growth rate of -1.1% (ABS, 2007). Changes in employment opportunities in the region underpinned population growth and decline trends.

Figure 2.1 Carnarvon Statistical Local Area



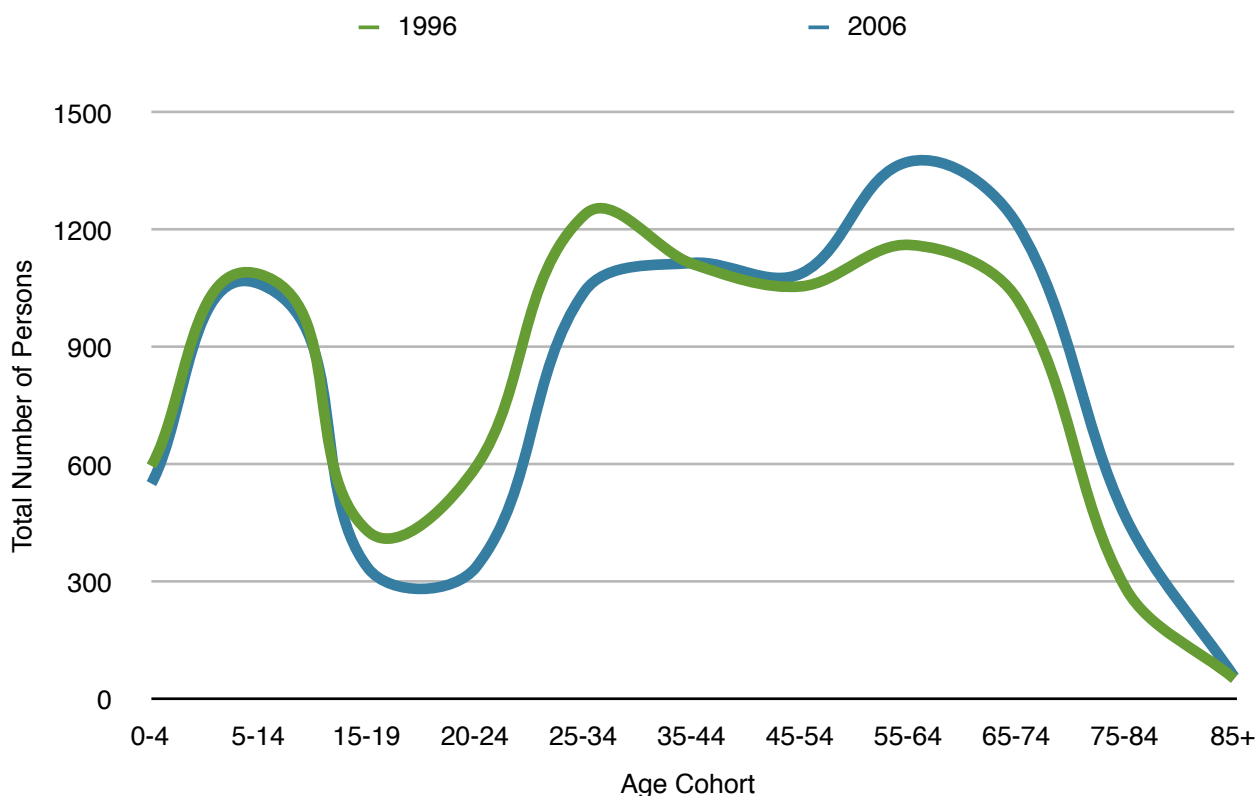
Migration trends for the Central Statistical Division (smallest data unit available, illustrated in Figure 2.1) reveal that high rates of outmigration and low rates of immigration have had a considerable effect on the population growth rate. Since 1996, migration trends indicate that of those moving out of the region approximately 50% moved to Perth and 34% moved to other regions within Western Australia (ABS, 2007). The next most popular destinations for outmigrants were regional areas of New South Wales (1.9%),

Brisbane (1.6%) and Melbourne (1.6%) (ABS, 2007). Of those who moved to the Central region most tended to come from regional Western Australia (40%) and Perth (39%). New residents were also drawn from Queensland (3.2%) and regional New South Wales (2.3%) (ABS, 2007).

Between 1996 and 2006 the median age in Carnarvon increased from 38 years to 44 years (ABS, 2007). An increasing proportion of young people leaving for education, lifestyle and employment opportunities and an increasing number of older people locating to Carnarvon for employment and lifestyle opportunities have influenced this ageing trend. Figure 2.2 illustrates the ageing trends in Carnarvon between 1996 and 2006.

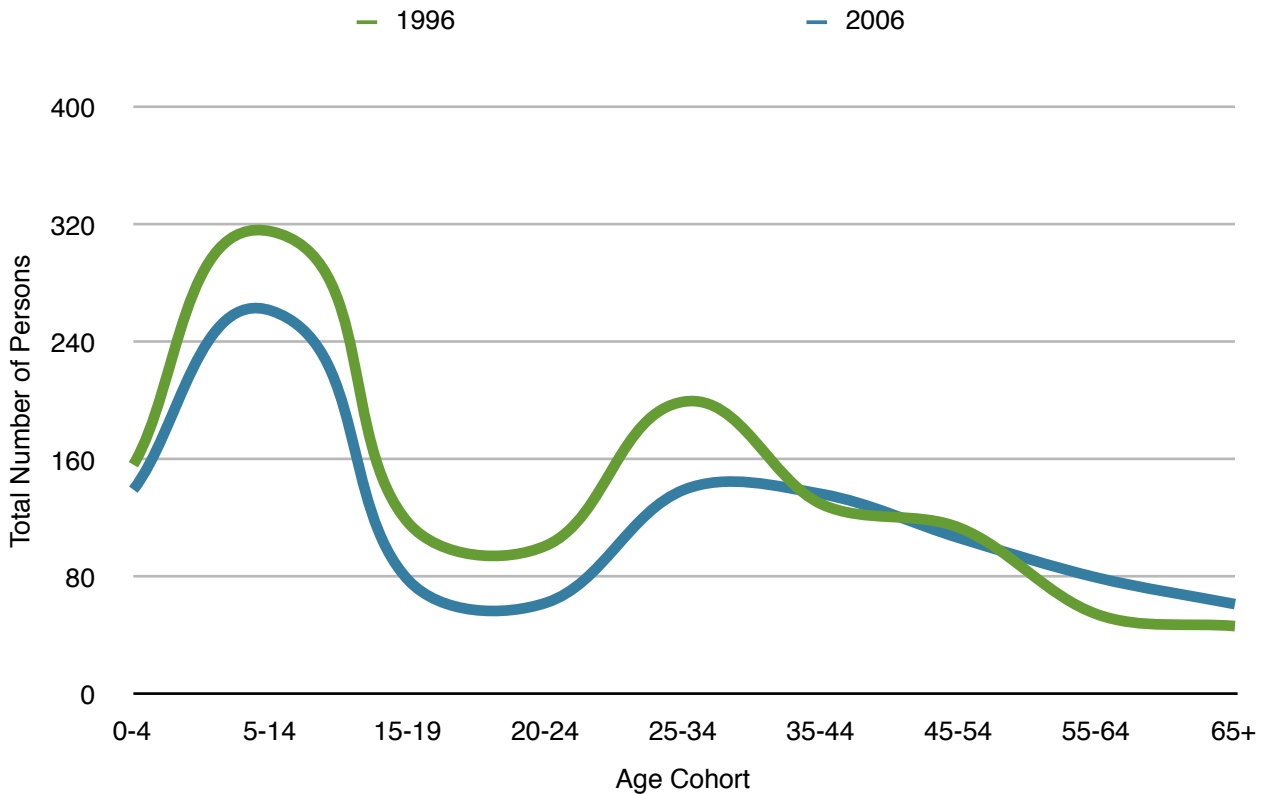
12.5% of Carnarvon's population identified as Indigenous Australians in 2006. In the decade from 1996 the total number of Indigenous people in Carnarvon declined, as did the percentage of Indigenous people in the population. In 1996, 14.5% of the population identified as Indigenous Australian. Figure 2.3 shows that much of the decrease in population occurred for the age group(s) 14 to 34. This trend was driven by an increase in the outmigration of Indigenous people aged between 14 and 34.

Figure 2.2 Ageing Trends in Carnarvon Between 1996 and 2006



Source: Australian Bureau of Statistics, 2007

Figure 2.3 Ageing Trends in the Indigenous Population in Carnarvon Between 1996 and 2006



Source: Australian Bureau of Statistics, 2007

Between 1996 and 2006, Carnarvon experienced a slight increase in the number of jobs available, reflected by a decline in unemployment (from 7.3% to 3.2%) and a steady labour force participation rate (at 50%) (ABS, 2007). In 2006, the key employment industries, in terms of the number of employees, were (ABS, 2007):

- Agriculture, forestry and fishing
- Retail trade
- Health care and social assistance
- Public administration and safety
- Accommodation and food services

The industries that formed the major economic drivers of Carnarvon were not necessarily those with the greatest number of employees. Using the location quotient analysis technique (see Appendix A for details) the key drivers of Carnarvon's economy included (ABS, 2007):

- Agriculture, forestry and fishing
- Mining
- Electricity, gas, water and waste services
- Administrative and support services

The growth in these driving industries has contributed to the stabilisation of Carnarvon's population. In 2005, the Western Australia Planning Commission forecasted that Carnarvon would experience an average annual growth rate of 0.8% until 2011 and a growth rate of 0.3% per annum until 2021. This growth rate,

which is much lower than the State average, is higher than the averaged growth rate experienced between 1996 and 2006. Population growth in Carnarvon is likely to be driven by expected expansions in the core driving industries, including agriculture, fishing and mining. Population growth is also likely to be driven by immigration to the region for lifestyle reasons.

As previously mentioned, much of the immigration to the region is by older people. This trend is caused, in part, by the nature of employment available in the region, which often requires experienced/ skilled workers (with over 18% of the labour force holding at least a degree) (ABS, 2007). The trend is also, in part, due to the lifestyle opportunities available in the region. Interestingly, over 40% of those relocating to the region were from other areas within regional Western Australia, and over 10% were from other regional areas across Australia (ABS, 2007).

The focus of this report is on human uses of the marine and coastal environment. This focus is particularly relevant given the social and economic importance of the marine and coastal environment across the Rangelands region. Indeed, within Carnarvon the resources of the marine and coastal environment provide employment opportunities in two key driving industries, fishing and mining. The marine and coastal environment is also a key site for recreational activities and is an environment that holds cultural significance to traditional Indigenous owners. The following section will outline the nature of human activities within Carnarvon's marine and coastal environments.

2.2 Human Uses of the Coastal and Marine Environment

2.2.1 Introduction

Along the Carnarvon coastline, there has been a long history of commercial fishing and shipping activities. These activities have made a significant contribution to the social and economic development of that area. The considerable potential for petroleum development in the region may also increase the economic contribution of the marine environment to the region's development. In terms of the number of people employed, marine and coastal-based tourism is a major economic activity within Carnarvon's coastal zone.

The marine and coastal environment is an important site for recreational activities for both local residents and visitors. The coastline is popularly used for fishing, camping and water sports. The most popular activities include fishing (boat based and rock/ beach based), camping, surfing, kite surfing, wind surfing, nature appreciation and, to a lesser extent, diving.

The following paragraphs summarise the key commercial and recreational activities that occur at popular activity sites along the Carnarvon coast.

2.2.2 Activities at the Carnarvon Townsite

The coastal environment adjacent to the townsite of Carnarvon is widely used by local residents and tourists. The most popular activities in this area include recreational boating and recreational and commercial fishing. Commercial fishers operate out of the Carnarvon Small Boat Harbour and predominantly travel to the west or east side of Bernier and Dorre Islands. Recreational boat based fishing and boating takes place between Carnarvon and Bernier and Dorre Islands, depending on wind conditions (prevailing wind conditions hamper boat based activities during the summer months). Recreational boat based fishing is more popular in the region than beach based or rock fishing. Compared to Western Australia's average boat ownership trends, Carnarvon has a high per capita ratio of boat ownership. For Carnarvon, which is widely regarded as lacking a comparative drawcard like the Ningaloo Reef at Coral Bay, the opportunity to participate in good quality recreational fishing is a considerably important factor in attracting and retaining both local residents and tourists. Figure 2.4 illustrates the preferred locations for recreational and commercial fishing activities in the Carnarvon region.

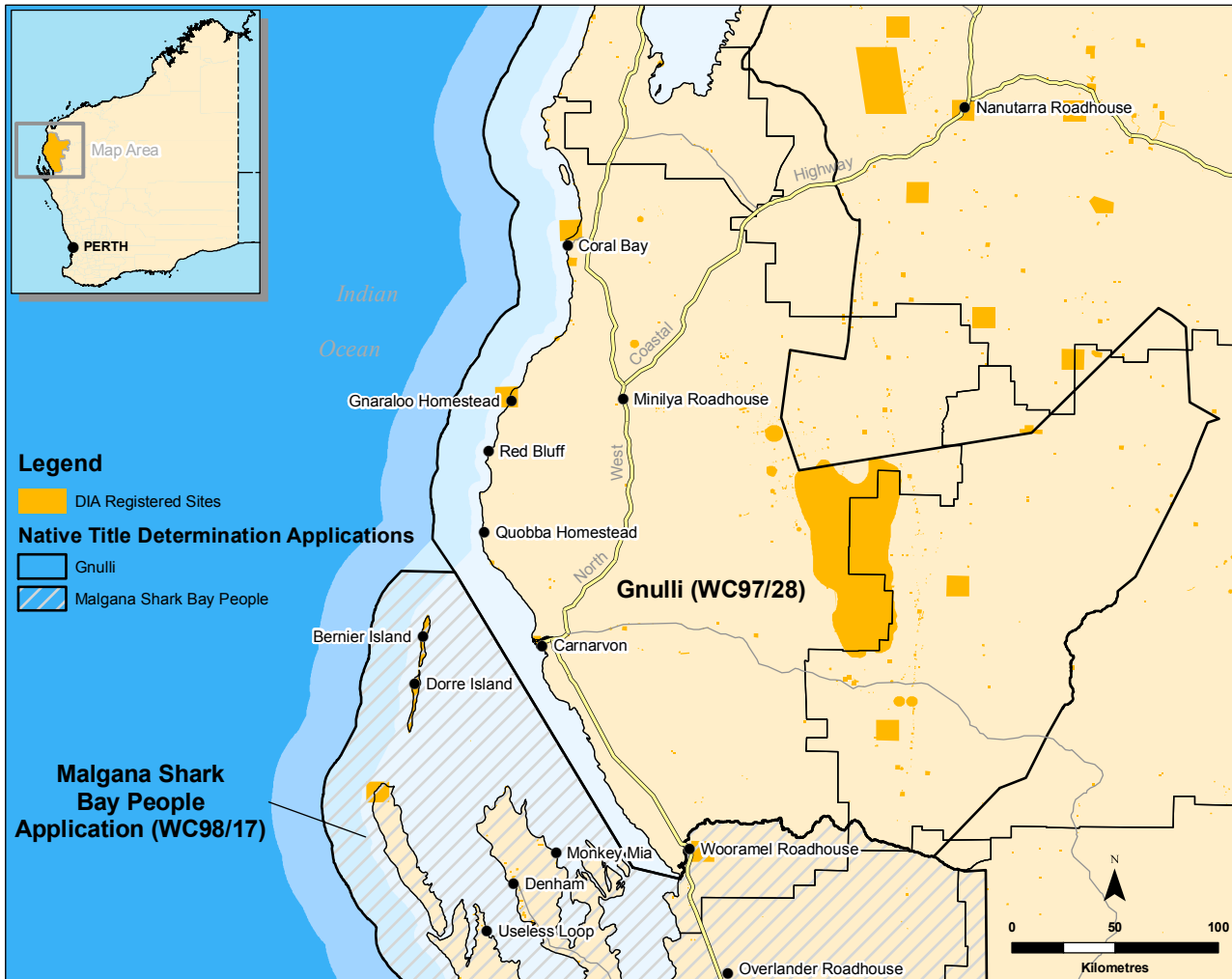
Other uses of the Carnarvon coastline include yachting, scuba diving, charter fishing, wind surfing and whale watching. The Carnarvon Yacht Club is a small club, which runs weekend sailing races and supports development programmes for youth. The Yacht Club is an important strategic port-of-call for yachts (including both sail and power yachts) travelling along the Western Australian coastline. Most activities associated with the Yacht Club take place in the waters south of Carnarvon. Wind surfing and recreational boating are also popular activities in this area. Charter operators tend to visit the waters around the Bernier, Dorre and Koks Islands.

Figure 2.4 Popular Recreational and Commercial Fishing Locations



The Carnarvon coastline also contains a number of sites of significant cultural value. Figure 2.5 illustrates the locations of registered sites of Indigenous value. It is also noted that traditional Indigenous owners value many parts of the marine and coastal environment that are not site specific. Indeed, in 1997 the Yamati Marlpa Barna Baba Maaja Aboriginal Corporation lodged an application for native title including the Carnarvon coastal area (as shown in Figure 2.5). This native title claim has yet to be determined. In terms of non-Indigenous cultural and heritage values of the Carnarvon coastal environment, the One Mile Jetty is a recognised significant site. Interview participants suggested that there are many others, including pastoral station homesteads, which have not been formally recognised.

Figure 2.5 Registered Sites of Indigenous Value and Native Title Claim Boundaries



2.2.3 Activities at Bernier and Dorre Islands

As mentioned previously, Bernier and Dorre Islands are important sites for recreational fishing, charter operations and diving activities. The Islands are managed by the Department of Environment and Conservation and are home to some of the world’s rarest mammals (Department of Conservation and Land Management, 2005). Living or camping on the Islands is prohibited, however day visitors are allowed. The Islands do provide popular anchorages for recreational boat-based fishers, recreational boaters and charter boat operators who often stay overnight in protected bays. Popular anchorages include Disaster Cove, Red Cliff and Cliff Rocks. Red Cliff and Cliff Rocks are also popular diving locations, as are Wedge Point and Cape Ronsard.

2.2.4 Activities at Gladstone, Bush Bay, New Beach and Rocky Pool

Popular camping locations south of Carnarvon include Gladstone, Bush Bay, New Beach, Rocky Pool and Greenough Point (as indicated in Figure 2.6). The facilities provided at these camping locations are basic and, as such, are mostly used by ‘self-sufficient’ tourists and locals. Water and power is not available at these camping locations, however, rubbish bins are provided.

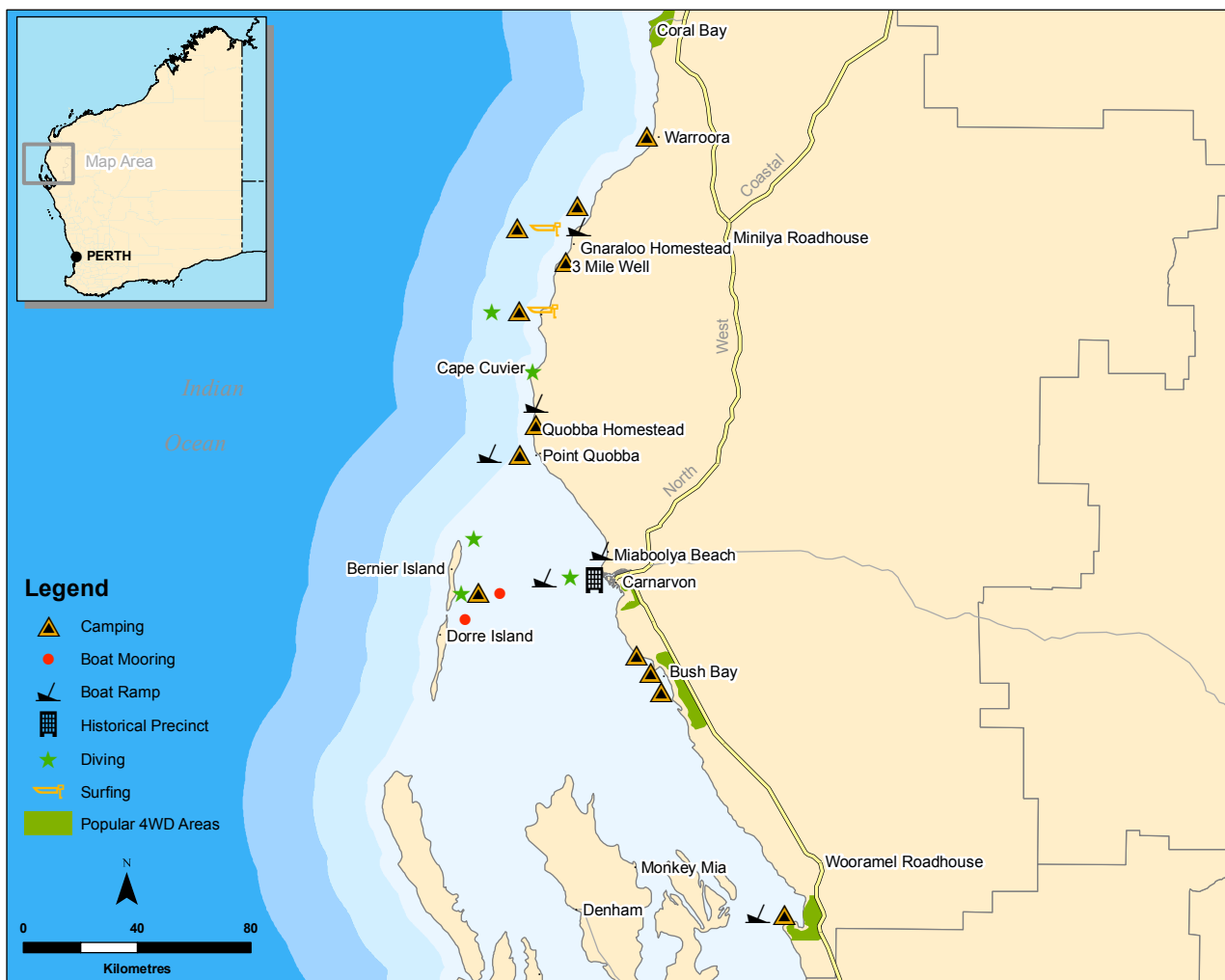
The accessibility of the camping locations varies. Gladstone, which is in a World Heritage area, is relatively easily accessible via a well-graded and signposted road. The location has two composting toilets and a small landing jetty for recreational boats. Visitors to Gladstone are required to pay a nominal fee for camping.

Bush Bay and New Beach camping locations do not attract fees, and are therefore popularly used by ‘grey-nomads’ and locals who wish to avoid camping fees. These locations are also well known as good fishing

locations for crayfish, crab and mullet, and are regarded as having a number of relatively safe sites for rock fishing. There are two composting toilets available at Bush Bay. The camping locations can only be accessed via four-wheel drives, with numerous access tracks created through the dune vegetation. Most visitors tend to only use the main four-wheel drive tracks.

Rocky Pool is a small free camping area close to Carnarvon. This site has a composting toilet and fresh water swimming and fishing in the Gascoyne River. It is accessible by sealed road and is popular with families and those wishing to observe local bird life.

Figure 2.6 Popular Coastal Camping Locations in Carnarvon



2.2.5 Activities at Miaboolya Beach, the Blowholes, Beagle Hill, Point Quobba, Quobba Station, Red Bluff, Cape Cuvier, Three Mile Camp, Gnaraloo Bay and Warrora Station

To the north of Carnarvon, there are a number of popular camping, fishing, diving and recreational sites including Miaboolya Beach, the Blowholes, Beagle Hill, Point Quobba, Quobba Station, Red Bluff, Cape Cuvier, Three Mile Camp, Gnaraloo Bay, Warrora Station and Carbadia Station. Figure 2.6 illustrates the location of each of these sites. There is no access to drinking water along this section of the coast so visitors must be self-sufficient.

Miaboolya Beach is used by locals and visitors for recreational fishing and crab netting. The site has an informal sand boat ramp suitable for launching and retrieving small boats.

The Blowholes is also a popular site for recreational fishing. The site has approximately 30 small ‘shacks’, which are largely owned by local Carnarvon residents. The ‘shacks’ provide temporary accommodation for

the ‘owners’ when they visit the Blowholes. This informal accommodation is scheduled for removal, with arrangements being made to enable the construction of leasable accommodation governed by a formal management structure. At the Blowholes, there are facilities for campers, with an area provided for caravans. The locality has composting toilets, a chemical toilet dump and a small boat ramp. The Blowholes is a popular location for long and short term camping, rock fishing, launching of small boats and it has a sheltered swimming beach suitable for young families. Access to Blowholes is via a paved road and a graded track, enabling access by caravaners.

North of Blowholes are two small camping locations, Beagle Hill and Point Quobba. Both are popular sites for rock and reef fishing and crayfishing. These sites are not well known and tend to be visited mostly by locals.

Quobba Station, which is a working pastoral station, provides limited cabin and camping style accommodation along the coast. Quobba Station is a comparatively well-known camping location along the Carnarvon coast, and is particularly popular with sport fishers. Access to Quobba Station is limited to a rough track suitable for four-wheel drives. The limited access prevents many ‘day-trippers’ from visiting this section of the coast. However, despite the limited access, during the peak season (from May to August) both the cabin accommodation and campsites are often fully booked. Fishers who visit Quobba Station generally participate in rock fishing (targeting mackerel) as the area is not suitable for launching and retrieving boats.

Cape Cuvier Jetty is owned and operated by Dampier Salt and public access is prohibited. There are two haulage roads that provide access to the Jetty and surrounding coastline, but public use of these roads is also prohibited. Nearby the Cape Cuvier Jetty is the *Korean Star* shipwreck. The *Korean Star* is a well-known diving location for fish viewing. The *Korean Star* site can be reached by a rough informal track suitable only for four-wheel drives. The limited access to the site and the difficult prevailing wind and sea conditions at the diving location restrict the number of visitors.

Red Bluff is an established popular camping location, operated by Quobba Station. Its long lasting popularity is due to the locality’s reputation as a quality surfing and shore fishing destination. The pristine condition of the natural environment is also a major attraction. Accommodation options at Red Bluff range from informal and un-serviced camping sites to safari tents offering fully serviced retreat style accommodation. Peak season extends from May to August, with accommodation frequently fully booked months in advance. Visitors to Red Bluff include local Carnarvon residents and Australian and international tourists. Visitors stay at Red Bluff for anywhere from a few nights up to a few months. In an effort to protect turtle nesting areas near the locality, boat use is strongly discouraged by the site operators. Red Bluff has been identified as a tourist node by the Ningaloo Sustainable Development Office and there are plans to construct permanent tourist accommodation.

Three Mile Camp (see Figure 2.6), near Gnaraloo Bay, is a well-established camping site near the world famous surfing location ‘Tombstones’. The camp is operated by Gnaraloo Station and facilities include an informal boat ramp and running toilets and showers. Cabin and cottage style accommodation is also provided at Gnaraloo Station. Popular activities at Gnaraloo Bay include surfing, kite surfing, wind surfing and rock fishing. Gnaraloo Bay is a popular destination for both domestic and international surfers. At present, public access beyond Gnaraloo Bay (to Warrora Station and Coral Bay along the Gnaraloo Bay Road) is restricted to the station owners and emergency services.

Warrora Station provides camping areas and bunk style accommodation. Access to Warrora Station is via Minilya Exmouth Road. Beach fishing is a core activity of visitors to this site. The site is also suitable for launching small boats, making the area popular for boat based recreational fishers.

2.2.6 Activities at Coral Bay

Coral Bay is an iconic and perennially popular location for snorkelling, swimming, diving, recreational fishing and boating, commercial fishing, four wheel driving and quad biking. Coral Bay is a popular destination for Australian and international tourists, and is also a key holiday destination for local residents of Carnarvon and the Pilbara region. Coral Bay is not classified as a town site and has only three land owners and a permanent population of between 100 and 150 persons. However, during peak holiday periods, between 3000 and 4000 visitors stay in the area.

Coral Bay provides visitors with excellent access to the Ningaloo Reef. Not surprisingly, therefore, snorkelling, diving and nature appreciation are the most popular recreational activities in the area (for local

residents and visitors alike). Popular snorkelling locations include Bill's Bay, Purdy Point, the Lagoon and Oyster Bridge. Glass bottom boat tours allow snorkelers to travel further offshore in Bill's Bay and some tour operators take snorkelers to Five Fingers Reef. Snorkelling opportunities with manta ray and whale sharks are also available through tour operators. Manta ray snorkelling tours operate in Bateman's Bay where the murky water attracts the rays. Whale shark snorkelling and watching tours generally operate along the back of the Ningaloo Reef. Regulations restrict whale shark tour operators from going further north than Blackrock. Humpback whale watching occurs on the outer reef, although mother and calf whales have been known to frequent Bateman's Bay.

Wildlife observation is a major drawcard for tourists to the area. In addition to whale and manta ray viewing, tourists and locals also participate in dugong and turtle watching. Dugong habitat is west of Maud's Landing and turtle nesting occurs in the dunes near Maud's Landing.

The Ningaloo Reef is a major attraction for divers, with popular diving locations along the outer reef and in Maud's Sanctuary.

Despite being located adjacent to a World Heritage nominated Marine Park, one of the biggest uses of Coral Bay is for recreational boat based and beach fishing. Since the completion of the Monck Head boat ramp in 2007, frequent users have observed a large increase in the number, and size, of boats launching at Coral Bay. These frequent users expect boat numbers to continue to increase as the area is developed into a key tourism node. Recreational fishing activities are strictly regulated by Department of Fisheries' arrangements. In addition to bag limits and species bans, fishers must abide by strict 'no take zone' regulations.

Quad biking has long been a popular recreational pastime in the region. Current management regulations have banned the use of quad bikes within the Coral Bay area, unless the activity occurs as part of a sanctioned tour. Some tour operators have been permitted to continue quad bike tours, with tours usually running to Five Fingers Reef and the Lagoon. Quad bike use in the area has been strictly controlled due to perceptions that such activities cause extensive damage to dune systems and disturb turtle nesting activities.

Marine and coastal commercial activities within the Coral Bay area include charter fishing, charter wildlife watching, snorkelling and diving trips, quad bike tours and other sightseeing tours. Charter fishing operators tend to operate about 10 kilometres offshore in deeper waters. The two charter fishing operators participate in catch and release tagging programs. One operator uses Coral Bay as a base to travel to the Montebello islands on nine-day charters, ten times per year.

The number of commercial fishing operators based in the area has declined from five to just one or two over the last decade. Recent adjustments to the Department of Fisheries regulations for commercial fishing in the area have considerably influenced the economic viability of commercial fishing. It is unlikely that commercial fishing in the area will expand.

2.3 Development and Change in Carnarvon

2.3.1 Introduction

The Western Australian Planning Commission (2005) forecasted that the Carnarvon Statistical Area would experience an averaged annual growth rate of 0.15% until 2031. However, if plans (by one major mining company) to establish accommodation bases to support fly-in-fly-out mining operations go ahead, it is probable that population growth will be higher than forecasted by the Western Australian Planning Commission. If the proposal to accommodate mining workers and their families in Carnarvon proceeds, it is probable that new jobs in the construction, retail and services industries will be generated. The proposed expansion of the area's horticultural industry, the on-going efforts by the Shire of Carnarvon to upgrade facilities and attract investment into the region, and the proposed expansion of a high quality housing development (Northwater Stage Three and Four) are likely to result in increased investment in the region and ongoing population growth.

The Carnarvon township has been identified in the State Government of Western Australia's *Statement of Planning Policy No. 6.3* (Ningaloo Coast) as being a key location in which any future residential, higher impact tourism and industrial development should be concentrated. Termed a 'gateway town' by the Western Australian Planning Commission (2004), it is probable that the Carnarvon township will experience increased tourism and investment in infrastructure to support tourism. Investment in tourism and tourism related infrastructure will not be limited to the Carnarvon township. The *Ningaloo Coast Regional Strategy*

Carnarvon to Exmouth (2004) and the Shire of Carnarvon's (2008) *A New Vision for Carnarvon* publication outline a number of core activities and developments to be undertaken at a number of different coastal destinations in relation to infrastructure development and tourism promotion. It is therefore anticipated that coastal and marine related tourism will continue to prosper, and the development of core coastal tourism nodes will be ongoing.

Currently, the major driving industries in Carnarvon include agriculture, forestry and fisheries, mining and administration and support services. As previously mentioned, there is a proposal to extend the area under horticultural production. If this activity were to go ahead, it is likely that the agricultural (horticultural) sector would continue to drive the region's economy. Similar growth is not expected in the fisheries sector. However, commercial fishing is likely to continue to be a major contributor to the social and cultural identity of the area. Mining activities, while important within the greater Carnarvon region, are limited within the coastal zone. As previously mentioned, Dampier Salt export their product from the Lake MacLeod mine at Cape Cuvier. It is unlikely that these activities will considerably expand over the coming decade. The administration and support services sector, which is also a major driving industry in Carnarvon, may experience small growth. Overall, though, it is probable that the structure of Carnarvon's economy will remain stable over the next decade.

As Carnarvon continues to develop as a regional service centre and as a gateway to the Ningaloo coast, it is important to consider how current and future uses of the marine and coastal environment might influence the condition of the natural environment. Within the Carnarvon area, there are numerous agencies that have responsibility for managing various aspects of the marine and coastal environment. The following section presents a summary of resource users' and resource managers' key concerns about current uses of the marine and coastal environment within the Carnarvon area.

2.3.2 Users' and Managers' Key Concerns Regarding the Use of the Marine and Coastal Environment

2.3.2.1 Suitability of Current Recreational Fishing Regulations

Fishing is a very popular recreational activity in the Carnarvon region for both local residents and visitors. Recreational fishing is most popular during the winter months as the prevailing wind and sea conditions enable fishers to participate in boat based, beach based and rock fishing. During this study, researchers interviewed many recreational fishers from the Carnarvon region (both residents and visitors) about recreational fishing activities in the region. The researchers sought to gather information on where activities occurred, overall trends in activities (for example, use of technology), and fishers' perceptions about the environmental impact of their, and other fishers', activities. One of the most commonly discussed issues concerning recreational fishers was related to the nature of current management arrangements for recreational fishers. The vast majority of those interviewed perceived the current management arrangements for recreational fishers, related to catch rates and type, to be ineffective and unsuitable.

Department of Fisheries (WA) management arrangements for recreational fishing in the area have been designed to ensure that fish stocks are maintained. Current management arrangements include regulations that limit the catch for recreational fishers. These regulations specify the number of fish a person can catch in a day, the size of fish permitted to be kept, and the maximum number (or weight) of caught fish a person can transport in the Gascoyne bioregion. While fishers commonly noted that the regulations to limit catch were necessary in the region, there was concern that current regulations promoted some unsustainable fishing practices. In particular, fishers were concerned that bag restrictions had resulted in an increase in the number of fishers 'up-sizing' their catch. Up-sizing is where fishers keep every fish they catch until they reach the bag limit. They then keep fishing and when they catch a 'higher-valued' fish they keep that fish and throw out a previously caught fish, so as to stay within the bag limits. In many cases, the discarded fish are no longer alive, or do not survive.

Interview participants were also concerned that Department of Fisheries' regulations brought about the perception that fish in the 'category two – medium risk' and 'category three – low risk' were less desirable/less valuable. This may have resulted in intensified fishing efforts for the fish identified as 'category one – highest risk'.

Interview participants also reported that Department of Fisheries' regulations did not necessarily protect known fish nursery and breeding areas. Local fishers (both recreational and commercial) commented that they held detailed information relating to where these locations were. There was a considerable level of

'frustration' amongst this group that the information they held was not being used in policy. Associated with this issue was a concern that current Department of Fisheries' regulations which restrict fishing activities in large regional zones, were not appropriate for protecting fish stock. A considerable proportion of interview participants suggested that closures of small 'sensitive' areas such as breeding areas and seasonal closures of some localities could be a more effective way of managing fish stocks and should be fully investigated.

2.3.2.2 Suitability, Maintenance and Upgrading of Boat Ramp Facilities

Boat based fishing, recreational boating and yachting are popular recreational activities within the Carnarvon region. Boat users, interviewed as part of this study, identified that a number of localities within the region did not have adequate boat ramp facilities. Most concern was concentrated on the inadequacies of the boat ramp facilities at the Carnarvon Small Boat Harbour and Pelican Point.

The Carnarvon Small Boat Harbour boat ramp is the most popularly used boat ramp in the Carnarvon region. The boat ramp is used by locals and tourists alike. Compared to the nearby Pelican Point boat ramp, the Small Boat Harbour boat ramp provides a sheltered deep water entry point for boats. The ramp is a single lane slipway with a small car park for cars and trailers with limited space for turning. During the weekends of the peak season (winter months) and during school holiday periods, up to 30 cars can be waiting to launch or retrieve vessels. The infrastructure around the boat ramp is also limited with only a small ablutions block, few rubbish bins and no space/ table for cleaning fish.

Possible implications for the natural environment include:

- The frequent queue to use the Carnarvon Small Boat Harbour (CSBH) boat ramp means that boaters wishing to retrieve their boat from the water have to spend a considerable amount of time idling, or slowly driving, around the boat ramp area while they wait. Boaters perceive that this concentrated and prolonged boating activity may have detrimental effects on the condition of the natural environment.
- The limited parking at the CSBH boat ramp causes many people to park their cars and trailers on verges and park reserve land. This could have detrimental implications for the natural environment, particularly related to soil compaction and runoff.
- The frequent crowded nature of the CSBH boat ramp is well known to locals. To avoid these crowds a considerable number of boaters choose to launch their boats at informal beach boat ramps. This may have implications for the natural environment, particularly the dune systems at these sites. As the popularity of recreational boating and boat based finishing in the region continues to grow it is probable that the pressure on these informal boat ramps will increase as people seek an alternative to the overcrowded CSBH boat ramp.

Within Carnarvon there is a second small boat ramp located at Pelican Point. This ramp is perceived as being very shallow and difficult to launch from. At the Pelican Point boat ramp there are no facilities for cleaning fish and disposing of waste product in an environmental sound manner. Currently, some fishers clean their fish at sea and others clean their catch in their boat while at the boat ramp. In many cases, the waste product is discarded into the water at the boat ramp. This attracts seagulls and some fish and marine mammal species. Some species may become dependent on the fishing waste product. The Pelican Point boat ramp suffers similar issues to the CSBH boat ramp regarding limited parking and no boat wash-down facilities.

2.3.2.3 Availability of Fish Cleaning Facilities for Recreational Fishers

As previously mentioned, at the CSBH boat ramp and the Pelican Point boat ramp there are no facilities suitable for cleaning fish and disposing of fish remains. This problem also exists at many of the other popular sites for launching and retrieving recreational fishing vessels. While some fishers are able to clean and adequately store their catch while at sea, others do not have refrigeration facilities so prefer to clean the catch when back on land. Furthermore, current regulations governing recreational fishing require fishers to bring back whole fish (minus the guts), restricting the ability of fishers to clean their catch while at sea. Currently, the lack of fish cleaning areas and facilities to dispose of waste compels recreational fishers to empty their waste products into the waters surrounding the boat ramps. As mentioned in the previous section, it is perceived that this waste product attracts seabirds and some fish and marine mammal species to the boat ramp areas. There is concern that this activity could result in some bird, fish and marine mammal species becoming dependent on the waste from recreational fishing catch.

The lack of fish cleaning facilities is a particular concern for visitors to the region who often do not have adequate facilities for cleaning fish provided at their place of accommodation.

2.3.2.4 Inadequate Infrastructure within the Built Environment at Key Tourism Nodes

The *Ningaloo Coast Regional Strategy Carnarvon to Exmouth* (Western Australian Planning Commission, 2004) identified four tourism nodes along the Carnarvon Coast. These include the Blowholes, Quobba, Gnaraloo and Ningaloo Beach. Currently, Quobba and Gnaraloo Homesteads offer station stay accommodation and have very limited infrastructure. Very few tourists visit the undeveloped Ningaloo Beach, while Blowholes is considerably developed offering accommodation close to that recommended by the Western Australian Planning Commission (catering for up to 500 overnight visitors).

Many of the individuals interviewed as part of this study recognised that infrastructure at these sites was very limited. Interview participants felt that concentrating tourism activity in these sites, without first putting in the necessary infrastructure (such as waste disposal, fresh water supplies, boat ramps, mooring facilities and so on) could increase the chance of environmental damage caused by human activities.

In addition to the recommendation for key tourist nodes, the *Ningaloo Coast Regional Strategy Carnarvon to Exmouth* identified four localities as being suitable for development into minor tourism nodes along the Carnarvon Coast. These include, Red Bluff, Three Mile Camp, Burboodjoo and Wooroora (Minor Tourism Node). It is proposed that these minor sites be developed to cater for up to 200 persons per night.

In regard to the minor tourism nodes, interview participants expressed similar concerns to those regarding the tourism nodes. The main concern was the lack of infrastructure at these sites to deal with higher concentrations of tourism activity.

Concerns about limited infrastructure were not confined to these proposed tourism development nodes, but also centred on Carnarvon township and Coral Bay. In 2004, the Western Australian Planning Commission identified major limitations with the infrastructure at Coral Bay (Western Australian Planning Commission, 2004). Since this time, the Ningaloo Sustainable Development Office, together with various Western Australian government agencies has undertaken infrastructure development works. These include development of a boat ramp (Department of Planning and Infrastructure), provision of new sewage treatment ponds (Water Corporation), provision of public power facilities (Horizon Power/ Verve Energy) and provision of a potable water supply (Water Corporation). Infrastructure development works in Carnarvon have been very limited, with the Shire of Carnarvon (2008; 2008a) identifying key ongoing priorities for infrastructure development.

2.3.2.5 Lack of Education Opportunities Related to the Rules and Regulations Regarding the Use of the Marine and Coastal Environment

Interview participants, irrespective of background (including commercial fishers, recreational fishers, charter operators and environmental managers) tended to agree that there was not adequate opportunity to acquire information about the various rules and regulations regarding the use of the marine and coastal environment. There was a popular perception that management arrangements introduced through the *Management Plan for the Ningaloo Marine Park and Murion Islands Marine Management Area 2005-2015* (Department of Environment and Conservation, 2005) and subsequent Department of Fisheries regulations, were overly complex, confusing and difficult to remember. Interview participants suggested there needed to be increased opportunities for locals and visitors to 'refresh' their knowledge about current rules and regulations. Interview participants also felt more information should be available to locals and visitors about the reasoning behind various rules and regulations. It was widely agreed that if users were presented with scientific based evidence on which various rules and regulations were developed introduced, and how these influenced the condition of the natural environment, users were more likely to abide by the rules and regulations.

2.3.2.6 Lack of Enforcement of Various Rules and Regulations Relating to the Use of the Marine and Coastal Environment

Interview participants, irrespective of background (including commercial fishers, recreational fishers, charter operators and environmental managers) tended to agree that there was not adequate monitoring and enforcement of the various rules and regulations related to the use of the marine and coastal environment. There was a common perception that the remoteness of the region presented difficulties for various

government agencies to monitor the compliance and effectiveness of various management arrangements. Given the reported sensitivity of the area to human use activities, there was confusion as to why more resources had not been invested in monitoring the compliance with management arrangements, and also the social, economic and environmental effectiveness of these.

2.3.2.7 Access Opportunities and Rights along the Carnarvon Coast

The coastal strip has long been used for pastoral activities, camping, fishing, surfing and windsurfing. In 2004, the Western Australian State Government proposed that the Cape Range National Park be extended to 'a two km coastal strip adjoining the existing Ningaloo Marine Park, comprising parts of Ningaloo Station, Warroora Station and Cardabia Station, and a one km strip adjoining the proposed marine park additions comprising parts of Gnaraloo Station and Quobba Station. The State Government has made a commitment for the coastal strip to be managed for conservation and recreation as Crown reserves' (Department of Conservation and Land Management, 2004). This proposal generated considerable debate and concern within the community regarding access rights and opportunities.

Those in support of the proposal claimed that pastoral activities and activities of un-regulated campers, fishers and surfers had led to damage of the natural environment, particularly the dune systems. They argued that increased regulation was particularly necessary given the probable ongoing increase in tourism activities in the area.

Arguments against the proposal centred on questioning the adequacy and validity of claims that pastoral, camping, fishing and surfing activities had caused long-term damage to the natural environment. Those in opposition to the proposal suggested that many popular uses had very little impact on the marine and coastal environment. Furthermore, it was argued that individuals attracted to the region were drawn by pristine conditions and the remote experiences available, and were likely to ensure their activities had minimal impact on the natural environment.

Opponents to the proposal feared that if the coastal lands of the pastoral stations were to be reclaimed for management by the State Government of Western Australia, then fees to visit favoured localities would increase and access to many areas would be restricted or prohibited. It was also thought that the State Government of Western Australia would improve access to particular locations, in line with the nodal development strategy outlined in the *Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005-2015* (Department of Conservation and Land Management, 2005). This improved access would result in more tourists visiting the area making the coastline more vulnerable to environmental damage from tourism activities. This issue was closely linked to a proposal to upgrade the access track between Carnarvon and Coral Bay to improve tourists' access to this section of coastline.

While this issue remains highly contentious in the region, planning for compulsory acquisitions has commenced. The coastal zone (of a width between 1 to 2 kilometres) from Point Quobba to Ningaloo Station will be managed by the State Government of Western Australia following a proposed compulsory acquisition. For the coastal zone between Quobba and Gnaraloo Stations, the management of the one and two kilometre (respectively) boundary of land has already been relinquished by the pastoral leaseholders in return for continued control over two identified tourism nodes (Note: pastoralist grazing is still permitted within this 1-2km stretch provided stock access to the coast is fenced off and authority remains with the applicable State or Local Government body). The two tourism nodes are Red Bluff (managed by Quobba Station) and Three Mile Camp (managed by Gnaraloo Station). The management of these nodes were granted a 21 year lease of the land in return for an early acquisition of the remaining coastal land.

In addition to the agreements struck for Quobba and Gnaraloo Stations, the management of the coastal zone adjoining Warroora Station will be relinquished in 2015. Ningaloo Station, at present, does not wish to relinquish the coastal section if its pastoral leasehold land and. Consequently, in 2015, the entire leasehold is set to return to Crown Land and this is unlikely to return to the open market.

Given the arrangements for changed tenure within the coastal zone, concerns regarding access rights remain a contentious issue in the region.

2.3.3 What is Being Done?

Within the Carnarvon area there are many initiatives already planned or underway to ensure the on-going environmental sustainability of the marine and coastal environment. A number of these initiatives

specifically address various aspects of the users' and managers' key concerns regarding the marine and coastal environment (as summarised in the previous section). This section presents a summary of these initiatives.

2.3.3.1 Existing Initiatives Addressing the Suitability of Current Recreational Fishing Regulations

The various Department of Fisheries management plans for the Carnarvon area each have implementation plans that indicate an ongoing role for stakeholders and the public. There is however little scope for considerable amendments to current fishing regulations prior to a full review of the *Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005-2015* and associated Department of Fisheries management plans. This Plan will be reviewed during 2015, and this review will involve 'full public consultation' (Department of Conservation and Land Management, 2005, p.104).

2.3.3.2 Existing Initiatives Addressing the Suitability, Maintenance and Upgrading of Boat Ramp Facilities

In 2007, the Department of Planning and Infrastructure finalised the construction of a new boat ramp in Coral Bay. In regard to the Carnarvon township, the Shire of Carnarvon (2008) noted the on-going need for improved boat ramp facilities. Despite plans and funding from the State Government of Western Australia, little progress had been made in developing new boat launching facilities within Carnarvon. On the 17th September 2005 the then Minister for Planning and Infrastructure, Minister Alannah MacTiernan, committed \$350,000 (as a first instalment) to the Shire of Carnarvon to support the development of a new boat launching facility within Carnarvon. At this time it was envisaged that a dual lane facility, including boat holding jetties, a manoeuvring area, space for trailer parking and associated services, be constructed adjacent to the Carnarvon Yacht Club. On the 12th August 2006 Minister Alannah MacTiernan supported the establishment of a steering group to move the project forward. However, ongoing concerns regarding the funding of the project (the funding provided by the Department of Planning and Infrastructure was to be met by the Shire of Carnarvon) and the location of the boat ramp have resulted in little progress being made on this project. Shire representatives are currently unsure when, or if, the project will commence.

The Department of Planning and Infrastructure recognised the need for an upgrade of the Pelican Point boat ramp to take the pressure of the CSBH boat ramp. Initial consideration for this upgrade included adding a finger jetty to assist users in launching and retrieving vessels. Currently, there are no formalised plans to upgrade boat ramps at Gladstone, Miaboolya Beach, Blowholes or Whistling Rock. Furthermore, there are currently no formal plans to further develop the beach launching areas at Gnaraloo Bay and Warrora Station.

2.3.3.3 Existing Initiatives Addressing the Availability of Fish Cleaning Facilities for Recreational Fishers

As part of the planned development of a new boat launching facility in the Carnarvon township it is anticipated that an area for cleaning fish will be provided. Currently, there is no evidence available to suggest that a strategy has been planned to deal with issues associated with fishers discarding fish by-products into the water surrounding boat ramps. Furthermore, there are no monitoring projects underway to describe and quantify the impact of this activity on the natural environment.

2.3.3.4 Existing Initiatives Addressing the Inadequate Infrastructure within the Built Environment at Key Tourism Nodes

All future developments to the identified tourism nodes and minor tourism nodes require masterplans, which must be approved by the Ningaloo Sustainable Development Office (NSDO) prior to the acceptance of building applications.

In regard to infrastructure development at Blowholes, a masterplan is currently being prepared for the NSDO. This masterplan outlines a proposal for the demolition of approximately 30 shacks in the area. It is proposed that the new development would see low-profile, environmentally sensitive chalets constructed, an area set aside for caravan sites, construction of a rangers residence, construction of ablution facilities, and provision of litter disposal units, fencing and pathways. Furthermore, it is proposed that a section of the road into the caravan site area will be sealed to allow caravan access.

In regard to infrastructure development at Red Bluff, a masterplan has been submitted to the NSDO. This

masterplan outlined future development proposals for the area, and is currently being considered by the NSDO. Interview participants familiar with the Red Bluff masterplan commented that the plan contravenes particular aspects of the Ningaloo Regional Strategy, and is not likely to be approved in its current state. If this were the case then infrastructure development at Red Bluff would be further delayed.

In regard to infrastructure development at the Three Mile Camp, a masterplan is being completed by the Gnaraloo Station. This masterplan will outline the leaseholders future aspirations for the locality and detail plans for infrastructure development.

Infrastructure development at other tourism nodes is not being planned at this stage.

2.3.3.5 Existing Initiatives Addressing the Lack of Education Opportunities Related to the Rules and Regulations Regarding the Use of the Marine and Coastal Environment

Interview participants generally agreed that one of the most effective ways to educate visitors and residents at remote locations about appropriate behaviour within the coastal and marine environment was through educational signage. Interview participants suggested that signage could be designed and exhibited in locations in such a way that would not spoil the natural beauty of the coastline. Strategically located signage, in conjunction with the provision of recycling stations, was favoured (by interview participants) as an approach to encourage environmentally sustainable practices in the region. The Rangelands NRM group have recognised this need and are undertaking planning activities to install educational signage at various strategic locations.

2.3.3.6 Existing Initiatives Addressing the Lack of Enforcement of Various Rules and Regulations Relating to the Use of the Marine and Coastal Environment

The masterplan outlining development plans at Coral Bay indicates that accommodation will be constructed to house field officers from the Department of Environment and Conservation and the Department of Fisheries. This indicates a possibility that field officer numbers could be increased in these two key management departments.

There are no publically available plans that suggest there will be any significant increase to investment for improving monitoring and enforcement of environmental regulations in the region.

2.3.3.7 Existing Initiatives Addressing Issues of Access Opportunities and Rights along the Carnarvon Coast

Individuals have the opportunity to comment on the masterplans for the tourism nodes and minor tourism nodes as part of the Ningaloo Sustainable Development Office's approvals process. Through this process there is scope to address some issues and concerns regarding access opportunities and rights along the Carnarvon Coast. However, ultimately human activities along the coast are restricted by the arrangements specified within the *Ningaloo Coast Regional Strategy Carnarvon to Exmouth*, the *Planning Strategy 6.3* and the *Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005 – 2015*.

There are no current research projects to monitor the social and economic impact of the changes to access opportunities and rights along the Carnarvon Coast. Furthermore, there are no current projects explicitly designed to monitor the environmental impact of increasing human activity at some locations, while reducing it at others.

2.4 Conclusion

Carnarvon has experienced steady population growth over the last decade. Typically thought of as a service centre for horticultural and pastoral activities, in recent years, Carnarvon has been recognised as a lifestyle destination. Identified as a 'gateway' town to the world famous Ningaloo Marine Park, residents and visitors are attracted by the recreational and economic opportunities provided by the natural resources of the coastal and marine environment.

Activities and development within the marine and coastal environment in Carnarvon are regulated by a number of different plans, strategies and regulations. Western Australian State Government agencies including the Department of Fisheries, Department of Environment and Conservation and the Western

Australian Planning Commission have major roles in developing and enforcing these plans, strategies and regulations. Appendix C provides a list of these management documents.

Taking into account the scope and geographical extent of the management activities already underway, or planned, for Carnarvon, this study sought to identify users' and managers' ongoing priority concerns about the use and management of the marine and coastal environment.

It was found that users and managers had a number of ongoing concerns, which related largely to infrastructure development and the adequacy and suitability of management arrangements. Chapter Seven provides further discussion on these concerns and outlines possible approaches for addressing them.